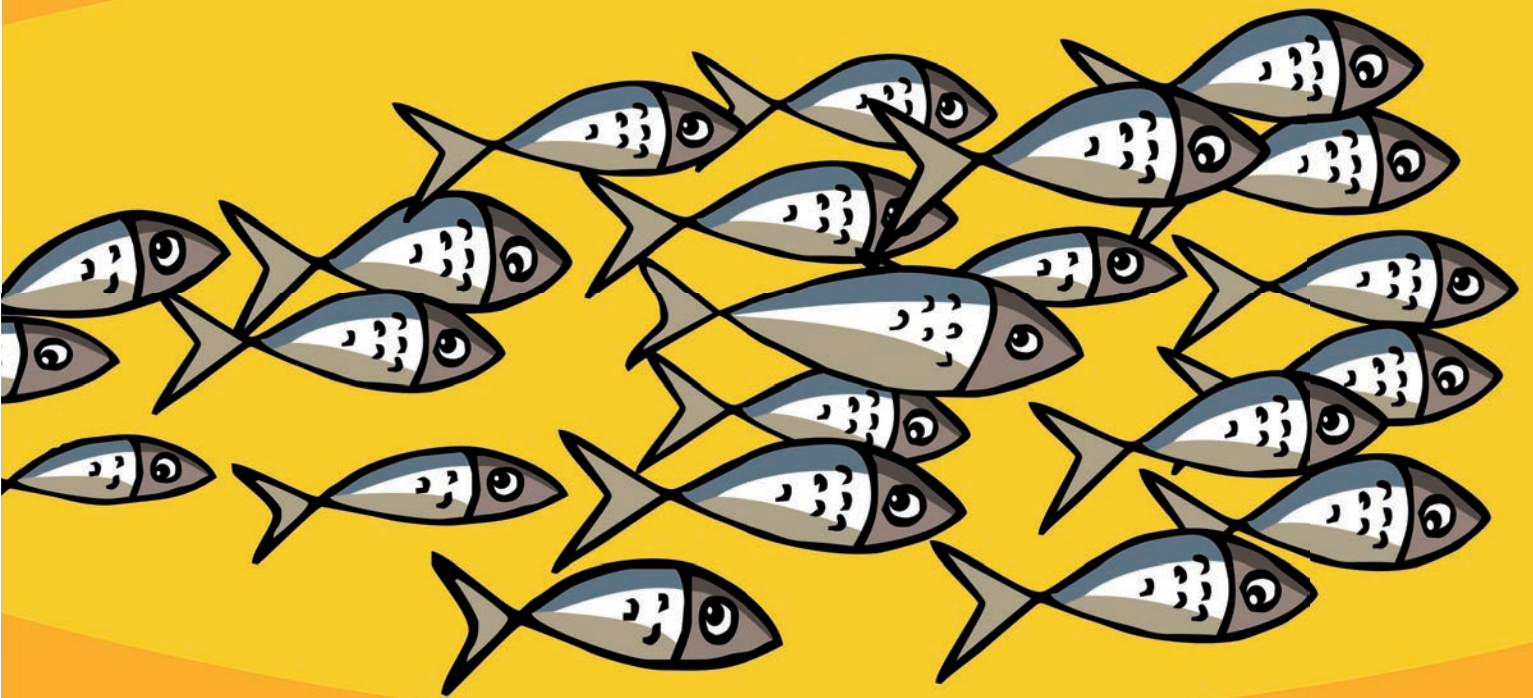




# OECD Review of Fisheries

POLICIES AND SUMMARY STATISTICS

2013





# **OECD Review of Fisheries: Policies and Summary Statistics 2013**

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## *Foreword*

This edition of the *OECD Review of Fisheries: Policies and Summary Statistics* consists of two parts. Part I describes recent trends and policies in the fisheries and aquaculture sectors of OECD countries, in addition to examining fisheries issues in several major emerging economies. Part I also introduces findings from the *OECD-FAO Outlook for 2012-2021*, policy developments in OECD countries as well as in the world and major activities of the OECD Fisheries Committee. Part I is largely based on material submitted by OECD member countries and was written by Gunnar Haraldsson, Roger Martini, Dongsik Woo and Carl-Christian Schmidt of the OECD Fisheries Policy Division.

Part I also presents the results from recent COFI work on fuel tax concessions (FTCs). It discusses appropriate methods for calculation of FTCs, discusses some of the cautions and complications of such calculation, and provides estimates of FTCs in most OECD countries. FTCs are a common policy tool notwithstanding the fact that in 2009 leaders from the Group of Twenty (G-20) nations agreed to “phase out and rationalise over the medium term inefficient fossil fuel subsidies while providing targeted support for the poorest.”

Part II consists of country notes providing a brief review of the fisheries and aquaculture sectors in OECD member countries, as well as in Argentina, China, Chinese Taipei, Indonesia, Russia and Thailand. These reviews all highlight recent policy developments.

The *OECD Review of Fisheries: Policies and Summary Statistics* was edited and formatted by Michèle Patterson, TAD publications assistant, with the assistance of Stefanie Milowski, Assistant to the Head of Fisheries Policies Division.



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## Acronyms

BMSY	Biological Maximum Sustainable Yield
CCAMLR	Convention of the Conservation of the Antarctic Marine Living Resources
CCFFP	Codex Committee on Fish and Fishery Products
CCRF	Code of Conduct for Responsible Fisheries (FAO)
CFCA	Community Fisheries Control Agency
CFP	Common Fisheries Policy of the European Union
CFP	Common Fisheries Policy Exclusive Economic Zones (EEZ)
CPUF	Catch per Unit Effort
EFF	European Fisheries Fund
EMODNET	European Marine Observation and Data Network
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
FQAs	Fixed Quota Allocations
FOS	Friend of the Sea
FTA	Free Trade Agreement
HACCP	Hazard Analysis Critical Control Point
GDP	Gross Domestic Product
GFSI	Global Food Safety Initiative
GFT	Government Financial Transfers
GRT	Gross Registered Tonnes
GTZ	German Agency for Technical Co-operation
HACCP	Hazard Analysis and Critical Control Point
ICES	International Council for the Exploration of the Sea
IMP	Integrated Maritime Policy
IOM	International Ocean Management
ISA	Infectious Salmon Anaemia
ISO	International Organization for Standardisation
ITQ	Individual Transferable Quotas
IUU	Illegal, Unregulated and Unreported Fishing
IWC	International Whaling Commission
LOMA	Large Ocean Management Areas
MEY	Maximum Economic Yield

MPA	Marine Protected Area
MSC	Marine Stewardship Council
MSP	Marine Spatial Planning
MSY	Maximum Sustainable Yield
NAFO	Northwest Atlantic Fisheries Organisation
NAMMCO	North Atlantic Marine Mammal Commission
NGO	Non-Government Organisation
NLDP	National Landings in Domestic Ports
NLFP	National Landings in Foreign Ports
OECD	Organisation for Economic Co-operation and Development
RFMOs	Regional Fisheries Management Organisations
SPS	Sanitary and Phytosanitary
TAC	Total Allowable Catches
TBT	Technical Barriers to Trade
UNCLOS	United Nations Convention on the Law of the Sea
UNFSA	United Nations Fish Stocks Agreement
VPA	Virtual Population Analysis
VQS	Vessel Quota Share
WSSD	World Summit on Sustainable Development
WWF	World Wildlife Fund
WTO	World Trade Organisation

## Executive summary

This report monitors fisheries policies in OECD member countries as well as in key partners and the emerging economies.

### Recent trends in OECD fisheries and aquaculture

#### *Marine capture fisheries*

Global marine capture fisheries production reached its peak in the early 1990s and has begun a downward trend since the mid-2000's. This negative trend began even earlier for OECD production. OECD countries' share of total world catch has also decreased from around half in the early 1980s to less than one-third in 2010. Catches have decreased in most OECD countries, in some cases substantially. Poor fisheries management and excess fishing capacity is likely to blame for the relatively poor performance in the OECD area.

#### *Aquaculture*

In contrast to the trend in capture fisheries, aquaculture production has increased dramatically over the past decades and is the fastest growing food source globally. However, production in OECD countries has not kept pace with the rest of the world, and the share of OECD in total production has declined from about one-fourth to around 8%. In value terms, the OECD's share of global production has also decreased from 40% two decades ago to around 10% in 2010. Innovation and the diffusion of technological know-how has helped sustain growth in aquaculture, and increasing demand for fish and fish products, especially in some emerging economies, continues to provide market opportunities for new aquaculture production.

#### *Trade*

In general, imports of marine products have grown strongly, led by non-OECD economies. The share of OECD countries in total imports has been decreasing since 2000. The OECD countries' share of total exports has also decreased as domestic demand remains strong while domestic supplies are constrained by resource limits.

#### *Outlook*

According to the *OECD-FAO Agricultural Outlook 2012* the total volume of production of fish and seafood is expected to increase by around 15% from the average 2009-11 levels, reaching 172 million tonnes in 2021. Much of this increase will come from aquaculture, which is expected to grow by 33% over this period while capture fisheries are expected to increase by 3%.

Prices and production costs are expected to continue to rise. It is assumed that international trade in fish and fish products will continue to be vigorous with more than one-third of total production being exported. Fishmeal production is expected to be stable over the next decade with more meal and oil products sourced from fish residues rather than from

directed capture fisheries. An increase in per capita fish consumption is expected in all world regions, except Africa. Increased demand for fish and fish products comes from higher incomes, increased availability of fish products, mainly from aquaculture, and higher prices for meat substitutes such as pork or poultry.

## Policy developments

### *Positive rebuilding trends in US fisheries*

The United States has made considerable progress in managing fish stocks over the last decade. A recent report by the NOAA's National Marine Fisheries Service shows that both the number of stocks that are subject to overfishing and the number of overfished stocks has decreased substantially. The Fish Stock Sustainable Index (FSSI) for the US fisheries has increased every year since 2000 with an average annual increase of 4.8%. The National Marine Fisheries Service managed 537 individual stocks and stock complexes in 2011; six stocks were considered to be fully rebuilt, bringing the total number of rebuilt stock since 2000 to 27.

### *Japan and the European Union combat Illegal, Unreported and Unregulated fishing (IUU)*

The European Union and Japan, two of the world's biggest seafood import markets, signed a joint statement on approaches to IUU fishing in July 2012. According to the joint statement, the joint actions will ensure that products in Japanese and European markets are caught legally. The statement recognises that IUU fishing is not only a threat to fish stock sustainability, but also represents an important economic loss for honest fishers and fishing communities.

### *Expo 2012 Yeosu Korea and the Yeosu Declaration*

The Expo 2012 was held in Korea under the banner of "The Living Ocean and Coast" and led to the adoption of the Yeosu Declaration. The Declaration calls for global leadership to raise awareness of the need to protect the marine environment, to halt illegal practices at sea through heightened co-operation between nations and to advance concerted action to promote integrated ecosystem-based management. The Yeosu Declaration looks towards the ocean as a new engine of sustainable economic growth based on a new vision of "green growth from the sea." Expo 2012 also saw the official release of the OECD publication *Rebuilding Fisheries: The Way Forward*, focusing on the economics of rebuilding fisheries.

### *Rio+20 Conference*

Oceans was one of the special issues receiving priority attention at the Rio+20 Conference, held in Rio de Janeiro, Brazil, in 2012. In the final conclusions, countries committed to intensifying their efforts to meet the 2015 target to maintain or restore stocks to levels that can produce maximum sustainable yield as agreed to in the *Johannesburg Plan of Implementation* on an urgent basis. Countries also committed to curb IUU fishing by implementing the UN Port State Measures Agreement as well as the Johannesburg Plan of Action to eliminate subsidies that lead to such fishing. Special attention was also given to ocean acidification.

### *The Oceans Compact*

The Secretary-General of the United Nations launched an initiative, "The Oceans Compact", which set out a strategic vision to deliver on UN's ocean-related mandates, consistent with the Rio+20 document *The Future We Want*.

In order to achieve the common goal of “Healthy Oceans for Prosperity”, the UN Secretary-General proposed to create an Ocean Advisory Group which will operate over a specific period to bring together all ocean stakeholders including governmental representatives, high-level policy makers, scientists, leading ocean experts, private sector representatives, representatives of non-governmental organisations and civil society organisations, and executive heads of involved UN system organisations. The Oceans Compact is nested in the ongoing activities of the United Nations to help provide for sustainable use, management and conservation of the world’s oceans by urging the private sector and civil society to help attain the goal of “Healthy Oceans for Prosperity.”

## **Major activities of the OECD Fisheries Committee (COFI)**

### ***Fisheries and green growth***

The OECD’s *Green Growth Strategy Synthesis Report* was adopted by OECD Ministers in May 2011. The report identifies green policy options and market approaches that would encourage green growth including mitigating the food system’s contribution to climate change.

The COFI has taken action to refine the application of the Green Growth Strategy to fisheries by focusing on four specific areas — energy, waste, governance and aquaculture. This work will apply the principles of the OECD Green Growth Strategy to specific issues in the fisheries and aquaculture sectors with a view to providing policy advice on how best to integrate these principles into policy.

### ***Council Recommendation on the Economics of Rebuilding Fisheries***

In April 2012 the OECD’s Council agreed to a Council Recommendation on Principles and Guidelines for the Design and Implementation of Plans for Rebuilding Fisheries. The Council Recommendation provides fisheries policy makers with a set of practical and evidence-based principles and guidelines to consider when designing and implementing rebuilding plans that enable the fisheries sector to be a source of economic growth and to continue to fill their traditional role in local economies.

### ***Fuel tax concessions***

Leaders from the Group of Twenty (G20) nations agreed in 2009 to “phase out and rationalise over the medium term inefficient fossil fuel subsidies while providing targeted support for the poorest.” Overall, the fuel consumption of fishing vessels has been estimated to be 1.2% of the world total. Part II of this publication examines the extent of fuel tax concessions and fuel consumption in the fisheries sector.

Fuel tax concessions are a common feature of fisheries policy. The estimated total value of fuel-tax concessions in OECD countries was USD 2 billion in 2008. *Fuel Tax Concessions in the Fisheries Sector (OECD Food, Agriculture and Fisheries Papers, No. 56)* reports on the challenges in measuring this form of support and understanding its impacts, while providing an estimate of the amount of such support in most OECD countries. It shows that both the importance of fuel tax concessions as a share of landed value and fuel use per tonne of fish landed varies considerably across countries.



**Part I.**

**GENERAL SURVEY AND SPECIAL ISSUE**





## *Chapter 1\**

### **General Survey 2013**

*This general survey of the Review of Fisheries describes trends in capture fisheries and aquaculture production, trade, fleet development, employment and government financial transfers, providing a snapshot of key developments. It also provides an overview of key recent policy developments. Many member and non-member economies are undertaking important structural and policy reform in their fisheries sector, and new governance structures and management instruments are being put in place. Finally, this general survey offers an overview of the activities of the OECD Committee for Fisheries (COFI) and the OECD Fisheries Secretariat.*

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\* The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

This general survey of the *Review of Fisheries* describes trends in capture fisheries and aquaculture production, trade, fleet development, employment and government financial transfers, providing a snapshot of key developments. It also provides an overview of key recent policy developments. Many member and non-member economies<sup>1</sup> are undertaking important structural and policy reform in their fisheries sector, and new governance structures and management instruments are being put in place. Finally, this general survey offers an overview of the activities of the OECD Committee for Fisheries (COFI) and the OECD Fisheries Secretariat. Major lines of work include climate change, aquaculture, rebuilding of fisheries and certification as well as a section on fossil fuel tax concessions. Part II of this *Review* contains much more detail on policies and statistics for specific countries.

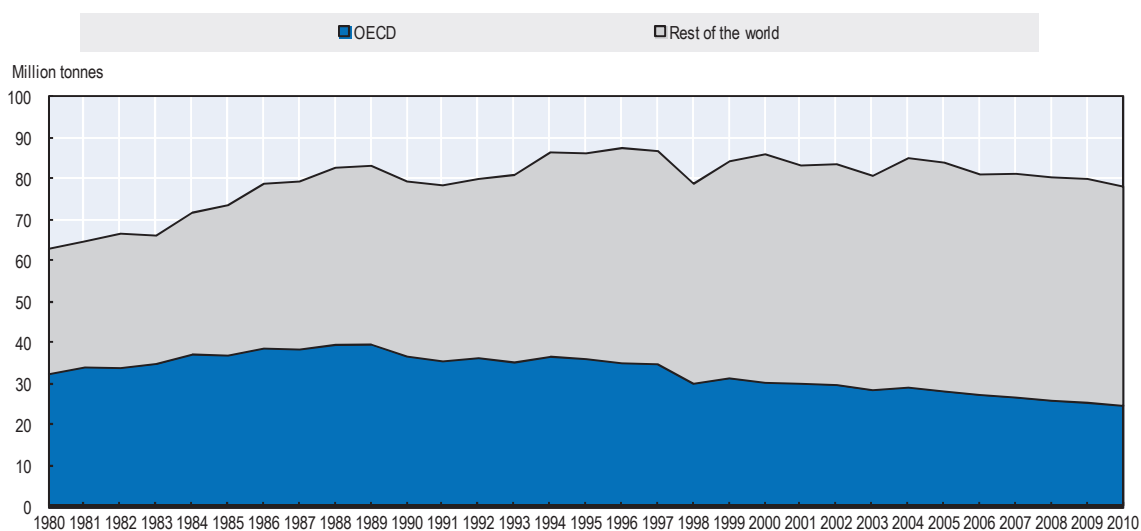
Recent years have seen greater optimism regarding the future for the fishery sector, and improved policies have played an important role in this. Developments reported here show how successful policy reforms can help ensure a brighter future for the fisheries sector.

## 1.1. Recent trends in OECD fisheries and aquaculture

### *Marine capture fisheries*

The world marine capture fisheries production peaked in the 1990s, and a downward trend has become noticeable 2004 (Figure 1.1). This negative trend began earlier in the OECD countries, where catches have been steadily decreasing since the early 1990s.

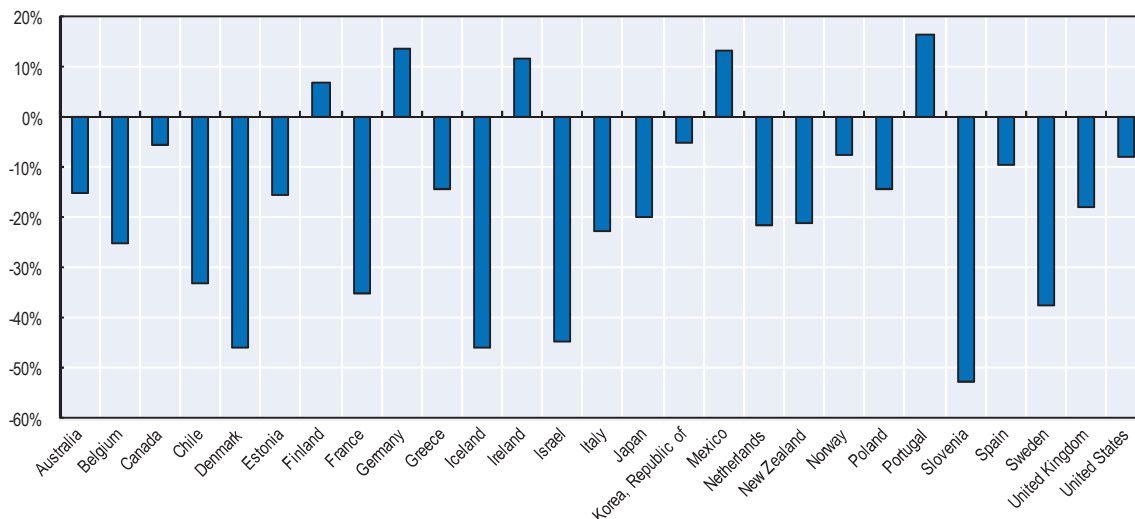
**Figure 1.1. World and OECD capture fisheries production**



Source: OECD (2013) *Fisheries and aquaculture*, OECD Agriculture statistics (database).

This decrease in total catches reflects resource scarcity, reduced profit opportunities, as well as rebuilding efforts undertaken by many countries. The share of OECD countries in the total world catch has also decreased, from around half of total world catches in the early 1980s to less than one-third in 2010.

Figure 1.2. Change in volume of marine capture fisheries, 2000-10



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Source: OECD (2013) *Fisheries and aquaculture*, OECD Agriculture statistics (database).

Catches have decreased in almost all OECD countries, in some cases substantially (Figure 1.2). Volume of catches decreased by more than 50% in Slovenia, and nearly as much in Denmark, Iceland and Israel. Modest increases were found in Poland, Mexico, Finland and Germany. In 2010, the United States recorded the largest catches by volume, followed by Japan and Chile. Nevertheless, these countries have seen their catches reduced over the last decade; the United States by 8%, Japan by 20% and Chile by 33%.

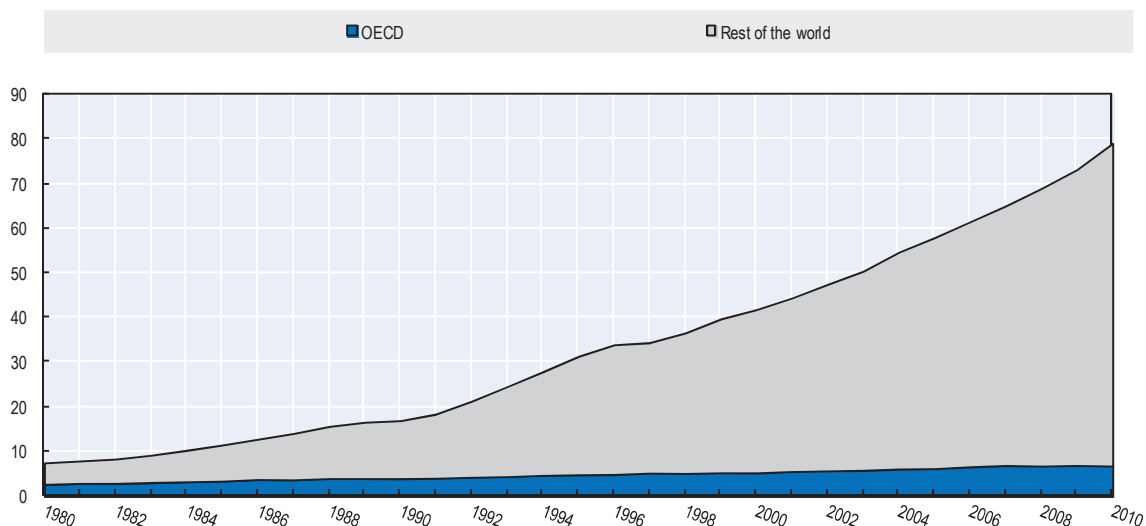
### *Aquaculture*

While the volume produced from capture fisheries is on the decline, the phenomenal increase in aquaculture production has continued. Globally, the rate of aquaculture growth has been stable at around 8% per year over the last 20 years (Figure 1.3). Growth in aquaculture production in OECD countries has been less than half of that. In fact aquaculture production volume in the OECD contracted by more than 1% between 2007 and 2008 and by roughly 2.5% between 2009 and 2010. In the early 1980s, OECD countries accounted for one fourth of total world production. That share is now around 8% and is steadily decreasing.

When looking at the value of aquaculture production the OECD countries have fared better. This reflects the fact that the OECD countries have focussed on high value mariculture species such as salmon, sea bass, bream or oysters. The OECD share in total value has decreased from around 40% two decades ago to around 10% in 2010.

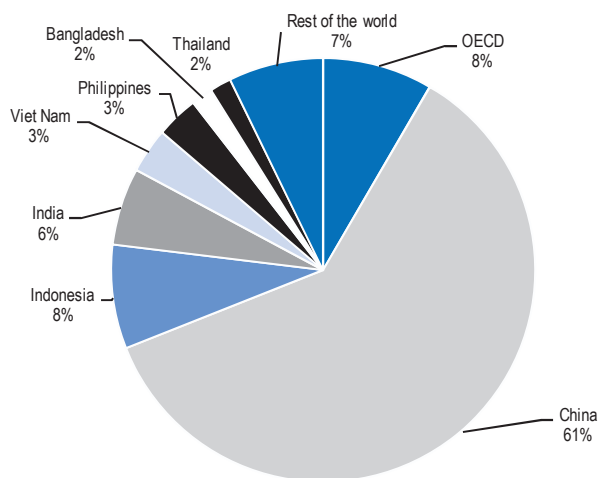
Measured in volumes China has firmly established itself as the biggest aquaculture producer in the world, accounting for 61% of the total production volume (Figure 1.4). Other Asian countries, most notably Indonesia and Thailand, are also increasing their share of the total world production.

**Figure 1.3. World and OECD aquaculture production, 1980-2010**



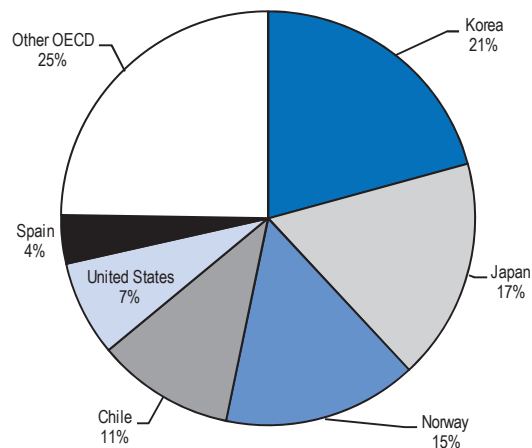
Source: OECD (2013) *Fisheries and aquaculture*, OECD Agriculture statistics (database).

**Figure 1.4. World aquaculture production (volume), 2010**



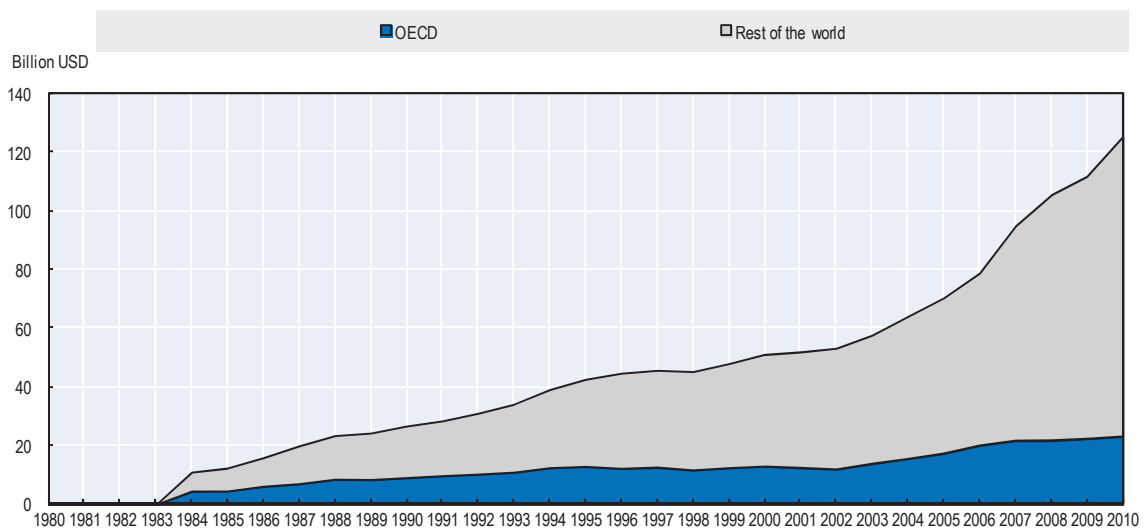
Source: OECD (2013) *Fisheries and aquaculture*, OECD Agriculture statistics (database).

Among OECD countries, Korea is the largest aquaculture producer, measured in volumes, followed by Japan, Norway and Chile. These four countries together produce around 64% of the OECD total (Figure 1.5).

**Figure 1.5. OECD aquaculture production (volume), 2010**

Source: OECD (2013) *Fisheries and aquaculture*, OECD Agriculture statistics (database).

There are several factors behind the trend towards increasing aquaculture production. First, innovation and spread of technological know-how make it possible to increase production both in existing facilities and where new facilities are established. Second, growing populations and rising purchasing power, especially in some emerging economies, has increased demand for protein-rich and healthy food, and aquaculture is well-placed to serve this new market demand. Furthermore, technology in aquaculture is advancing rapidly, and that technology is being transferred through foreign direct investment and other means to locations which are suited for high-volume aquaculture production. These locations have the right combination of environmental endowments, regulatory tractability and access to markets.

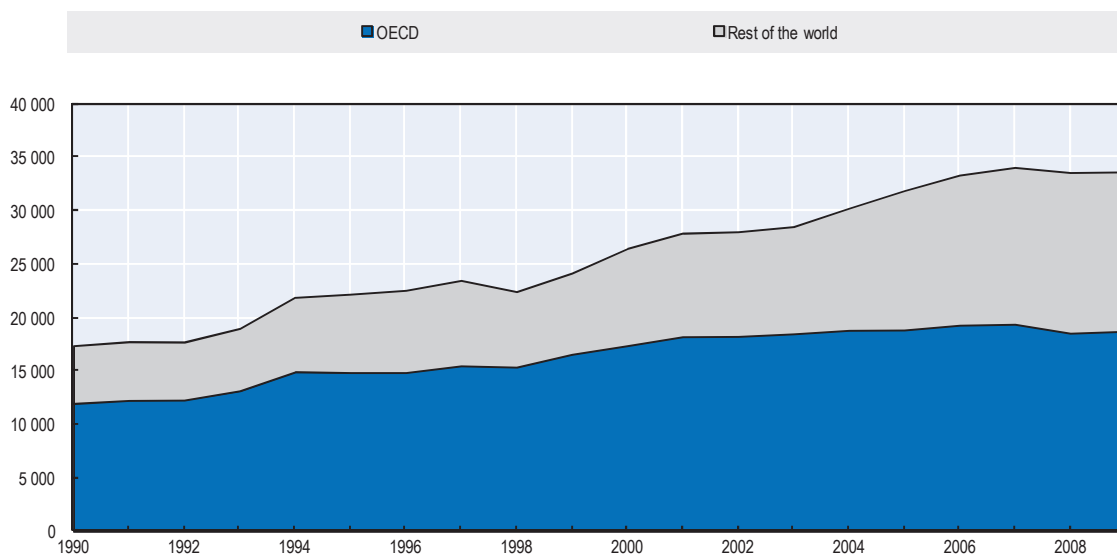
**Figure 1.6. World and OECD aquaculture production value**

Source: OECD (2013) *Fisheries and aquaculture*, OECD Agriculture statistics (database).

## Trade

In general, imports of marine products have been growing strongly, driven by non-OECD economies (Figure 1.7). The emergence of new players on the world market for seafood is clearly evidenced by the changing pattern of imports of marine products on the part of some emerging economies. In the period 1990 to 2009 both Indonesia and Thailand increased their imports of marine products three-fold and China ten-fold. China has in fact become one of the most important import markets while at the same time being the biggest producer. This decreasing share of OECD countries as import countries is evident from Figure 1.7.

**Figure 1.7. World and OECD imports of marine products**

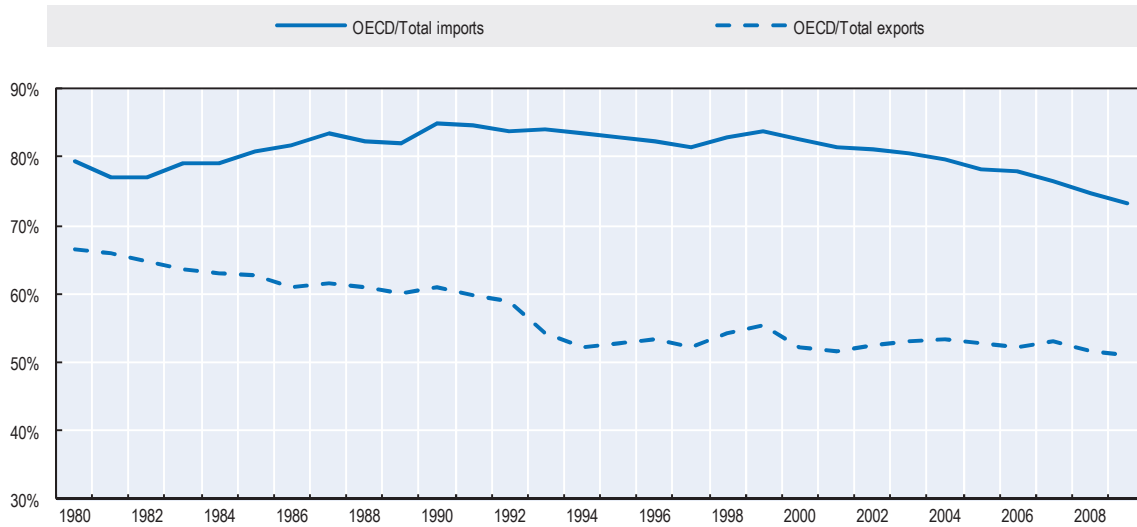


Source: OECD (2013) *Fisheries and aquaculture*, OECD Agriculture statistics (database).

The share of imports destined for OECD countries was relatively stable from the 1980s to the end of the twentieth century, around 80-85% of total value. Since 2000, this share has begun to erode as emerging economies play a more important role in the market (Figure 1.8). Looking at export values, the downward trend of OECD countries' share of the value of exports has been more pronounced and more longstanding. This reflects the limits of OECD capture fisheries production being reached and relatively stagnant growth in aquaculture, combined with sustained demand for fisheries products.

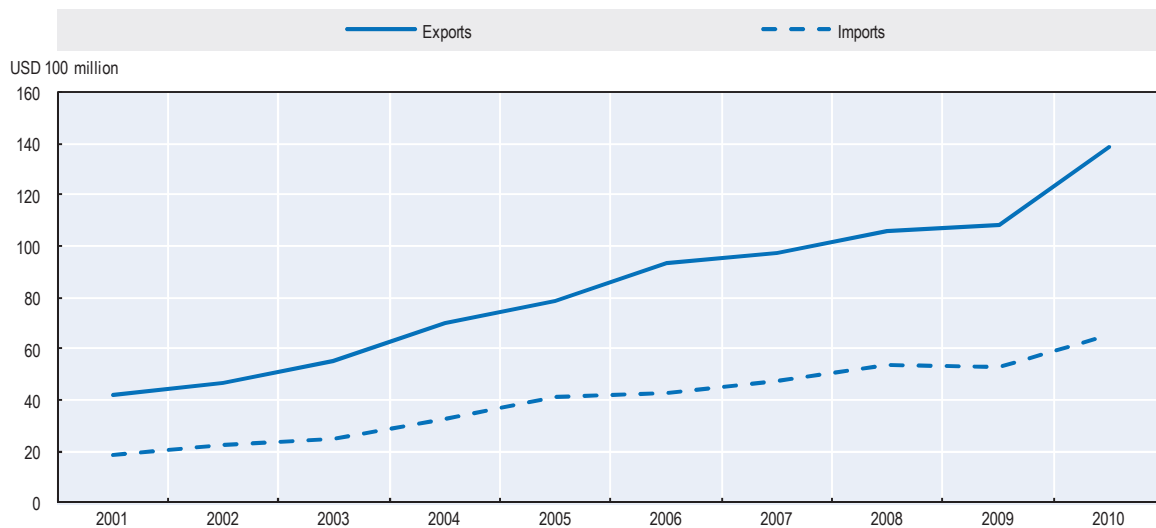
The emergence of new exporters on the international seafood market over this period has also played a role in reducing the share of exports sourced from OECD countries. Moreover, new import market opportunities since around the year 2000 has shifted patterns of trade. With the growth of income and living standards, many emerging economies have not only become important producers of seafood, but also newly important importers. China is a case in point where its share of world seafood imports have risen from being negligible in the early 1980s to accounting for 5% of the world's total imports by value in 2009.

Figure 1.8. Share of OECD in world trade



Source: OECD (2013) *Fisheries and aquaculture*, OECD Agriculture statistics (database).

Figure 1.9. China's imports and exports



Source: Ministry of Agriculture (2011), *China Fisheries Yearbook 2011*, China Agriculture Press and Source: OECD (2013) *Fisheries and aquaculture*, OECD Agriculture statistics (database).

The rapid increase in Chinese international trade for fish products benefits greatly from aquaculture developments and improved fisheries governance in general. Great strides have been made in policy reforms in China for the last few decades to tackle many of the challenges following this rapid increase in fisheries and aquaculture production (Box 1.1).

### Box 1.1. Policy reforms in China's fisheries and aquaculture

Policy reforms and increasing market openness dating back to 1978 led to an increased participation by China in the world market for seafood. The initial policy emphasis was on increasing fisheries production. The effects are clear. China has been the biggest fisheries producer in the world since 1990; fishers' income has increased and the domestic market has grown along with exports. However, the volume-oriented focus has shifted, with more priority given to sustainable fisheries development, environmental protection, fisheries production efficiency, aquaculture for high-value and high-quality fish, development of secondary and tertiary fishing industry, etc. Fisheries governance has also witnessed many new challenges: further enhancement of the fisheries law system, its efficient enforcement, effective monitoring system for aquatic product quality, sustainable development of fisheries resources, restoration of aquatic environment, etc.

Since the middle of the 1980s, in response to a growing awareness of the need to protect fisheries resources, policy has focussed more on aquaculture. The result is that today China is the only country whose aquaculture volume is greater than capture fisheries, and 70% of the world's aquaculture production quantity comes from China. However, this rapid expansion has led to problems with pollution and disease outbreaks, among other things. The government has responded with new regulations and is promoting technological innovations to improve sustainability and more responsible aquaculture. Ecological, safe and efficient aquaculture is seen as the path for future development.

Marine capture harvest has been on the decline in China since 1999, with few exceptions. In some cases it is a result of depleted fish resources, but in most cases this is the result of efforts to build fisheries resources to more productive levels. Since 1999, the government has put restrictions on marine capture harvest levels in place and introduced policies to reduce capacity such as decommissioning schemes.

China is not the only country increasing its share on the international fisheries markets. Indonesia and Viet Nam, along with other Asian countries are also showing strong growth in fisheries trade. These countries face various management challenges and often rely on innovative governance solutions (Box 1.2).

### Box 1.2. Traditional fisheries management in Indonesia

This edition of the Review of Fisheries is the first to include a note on Indonesia. Indonesia is one of the largest fishing and aquaculture producers in the world. With total marine capture in 2011 exceeding 5 million tonnes, inland water catches of more than 347 thousand tonnes, and aquaculture production of almost 7 million tonnes, The value of marine capture fisheries in 2010 was USD 6.5 million with shrimps and lobsters being the most valuable species (10% of total value). The value of Indonesia's aquaculture production is close to USD 7 billion.

Fisheries are managed mostly through the issuance of licenses and gear restrictions. These management measures are applied at district, provincial and national levels. Also, Indonesian authorities have designated various conservation areas as well as spawning grounds which are closed to fishing.

A specific characteristic of the Indonesian fisheries is the importance of traditional management practices which are based on unwritten agreements among coastal people. These traditional management systems differ from one region and fishery to the next. Some include the closing of specific areas for one or two years, followed by limited fishing for a period of one or two weeks. Other traditional management measures include agreements on gear restrictions and fishing practices. Traditional management measures are also applied to aquaculture. Pearl farms sometimes make informal arrangements with villages to lease a part of their fishing grounds. In Bali, plots of submerged land for seaweed culture are subject to informal administration and management systems.

Source: Indonesian submission.

## 1.2. Outlook

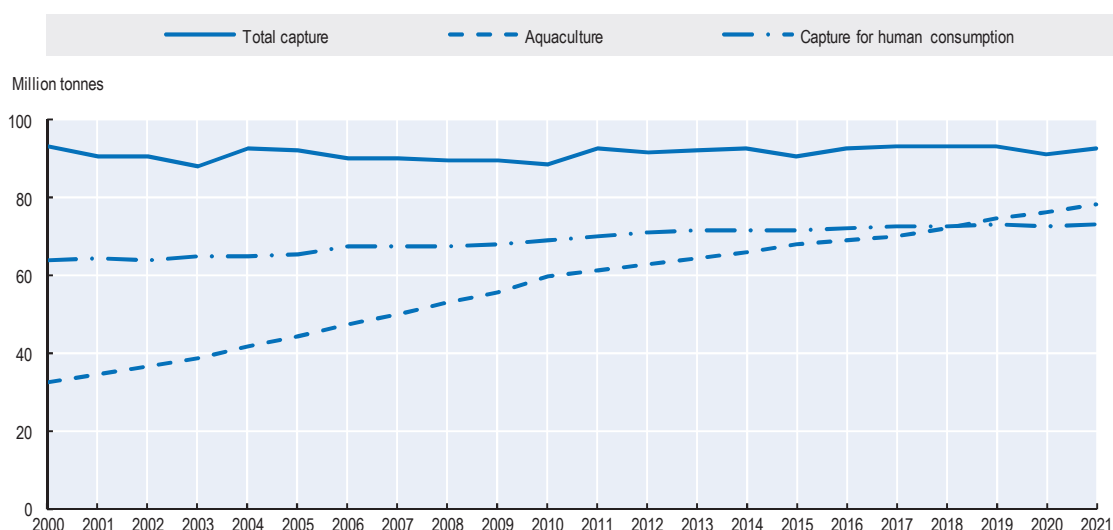
The *OECD-FAO Agricultural Outlook 2012-2021* was published in 2012, providing projections of future fisheries market developments based on the OECD's Aglink and FAO's



Cosimo models. This report discusses important trends in food production and demand and evaluates their possible impacts on prices, production and trade. Fisheries have recently been included as a part of this market outlook exercise, reflecting the growing importance of aquaculture as a supplier of proteins into global markets and as a source of demand for protein meals and oils in competition with traditional terrestrial uses.

According to this modelling exercise the total volume of fish and seafood is expected to increase by around 15% from the average 2009-11 levels, reaching 172 million tonnes in 2021 (Figure 1.10). The bulk of this increase will come from aquaculture, which is expected to grow, measured in volume, by 33% over this period while capture fisheries are expected to increase by 3%.

**Figure 1.10. Aquaculture: The main source of fish for human consumption by 2018**



Source: OECD/Food and Agriculture Organization of the United Nations (2012), *OECD-FAO Agricultural Outlook 2012*, OECD Publishing. doi: [10.1787/agr\\_outlook-2012-en](https://doi.org/10.1787/agr_outlook-2012-en).

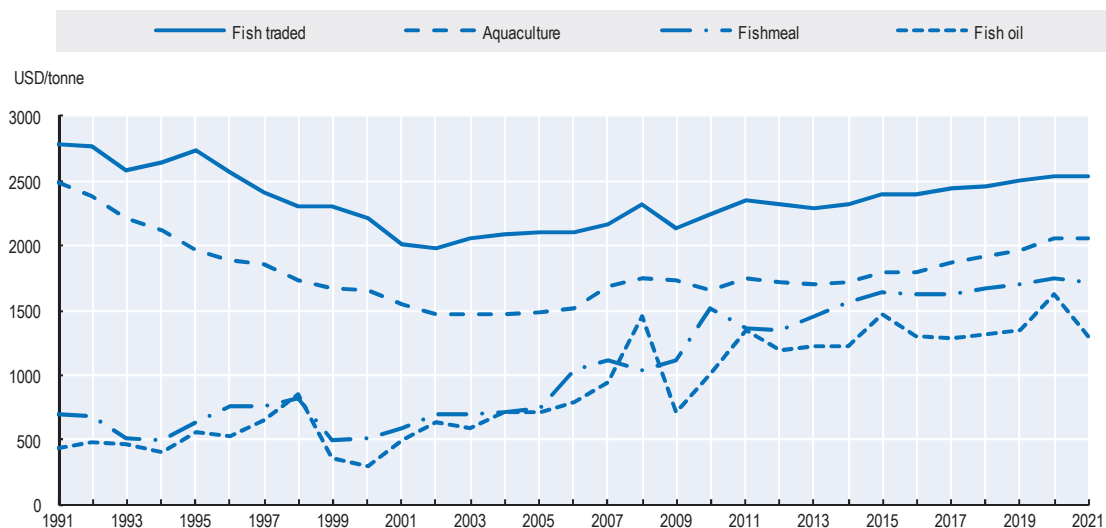
Prices are expected to continue to rise but so will production costs. Higher prices for fish meal and fish oil, which are important feeds in aquaculture, are expected to result in slightly higher rise in prices for farmed products than for capture (Figure 1.11). It is assumed that international trade in seafood and fish trade will continue to be vigorous with more than one-third of total production being exported.

Fishmeal production is expected to be stable over the next decade but at the same time the projections point to changes in the origins of raw material, with a bigger share expected to come from fish residues than from whole fish (Figure 1.12). While capture fisheries for reduction are likely at their limits, a significant amount of raw material is potentially available from processing residues such as trimmings.

An important trend driving the results is the projected increase in demand for whole fish for human consumption. This increased demand is not only due to an increase in human population but also from an increase in per-capita consumption (Figure 1.13).

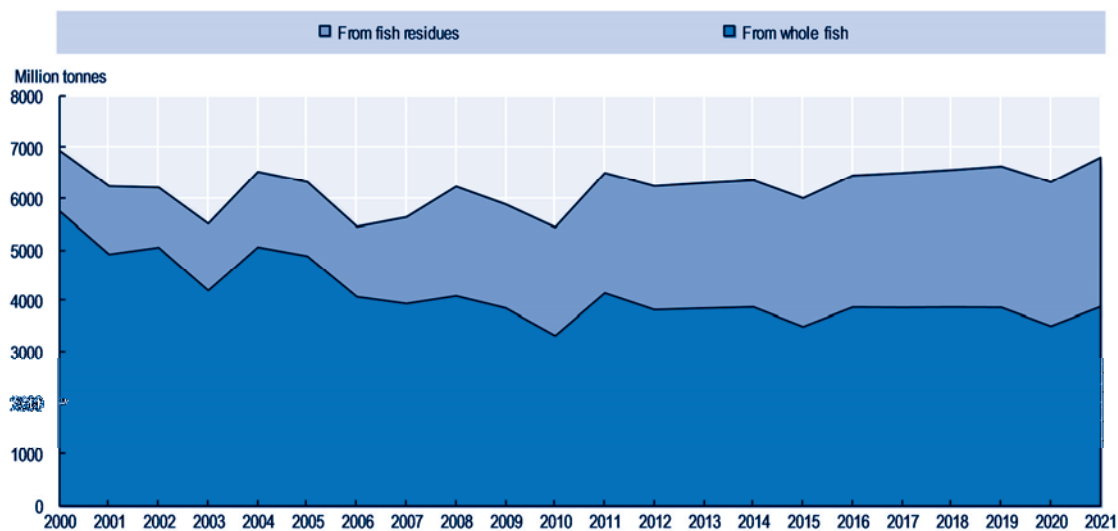
An increase in per-capita fish consumption is expected in all world regions except Africa. Increased consumption comes from higher incomes and increased availability of fish products, especially from aquaculture. At the same time higher prices for substitutes such as pork or poultry are projected to further strengthen the demand for fish products.

Figure 1.11. Rising price trends for most products



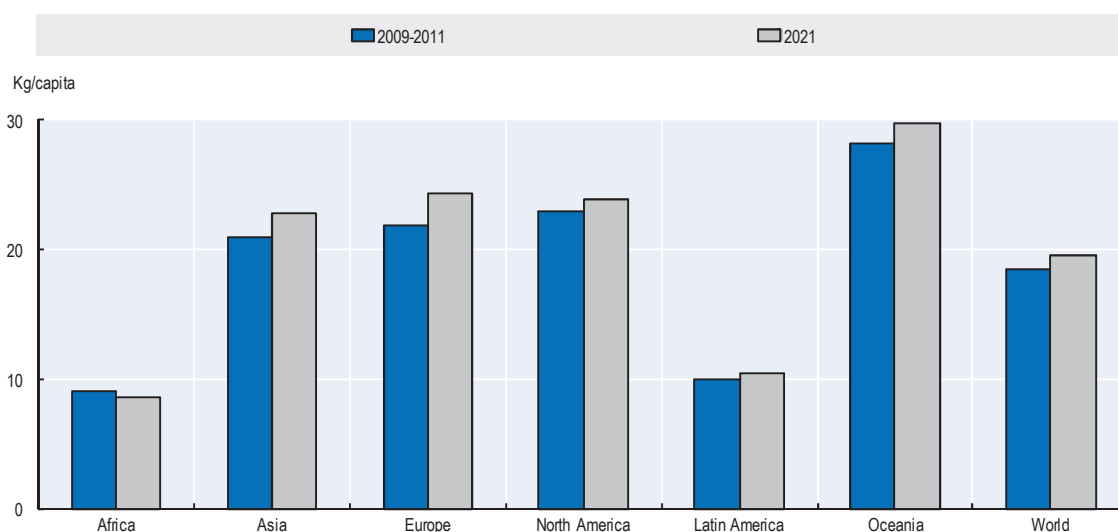
Source: OECD/Food and Agriculture Organization of the United Nations (2012), *OECD-FAO Agricultural Outlook 2012*, OECD Publishing. doi: [10.1787/agr\\_outlook-2012-en](https://doi.org/10.1787/agr_outlook-2012-en).

Figure 1.12. Inputs into fishmeal production



Source: OECD/Food and Agriculture Organization of the United Nations (2012), *OECD-FAO Agricultural Outlook 2012*, OECD Publishing. doi: [10.1787/agr\\_outlook-2012-en](https://doi.org/10.1787/agr_outlook-2012-en).

Figure 1.13. Per capita consumption of fish



Source: OECD/Food and Agriculture Organization of the United Nations (2012), *OECD-FAO Agricultural Outlook 2012*, OECD Publishing. doi: [10.1787/agr\\_outlook-2012-en](https://doi.org/10.1787/agr_outlook-2012-en).

### *Assumptions*

The projections of this modelling exercise start from a number of assumptions regarding macroeconomic factors and policies as well as climate conditions and long-term productivity trends. Assumptions concerning trends in prices, population growth, and global incomes trends also play a role in determining the outcome.

Some important underlying assumptions in the model lie outside the fishing and aquaculture sectors. Prices of substitutes influence the demand for fish products while the cost of inputs will also have a role to play. As a feedstock into aquaculture production, the prices of grains and oilseeds influence the production of aquaculture. Furthermore, energy prices can have a profound effect on the relative demand for different food products.

The assumptions regarding economic growth in emerging economies play an important role regarding the future of fish production and trade. The baseline assumption is that the average annual GDP growth in China and India is equal to 8%, while for Brazil and the Russian Federation the annual growth rate is set at 5%. These countries are important producers of fish products but are also increasingly important as import markets for fish products. Given the uncertainties regarding the status of the world economy and the timing of any rebound from current growth levels, these assumptions might be optimistic.

Oil prices affect both cost of production as well as the purchasing power of consumers. A substantial and sustained increase in oil prices will probably lead to decreased demand and trade of fish products. Changes in exchange rates can dramatically affect trade flows.

## 1.3. Policy developments

### *Positive rebuilding trends in US fisheries*

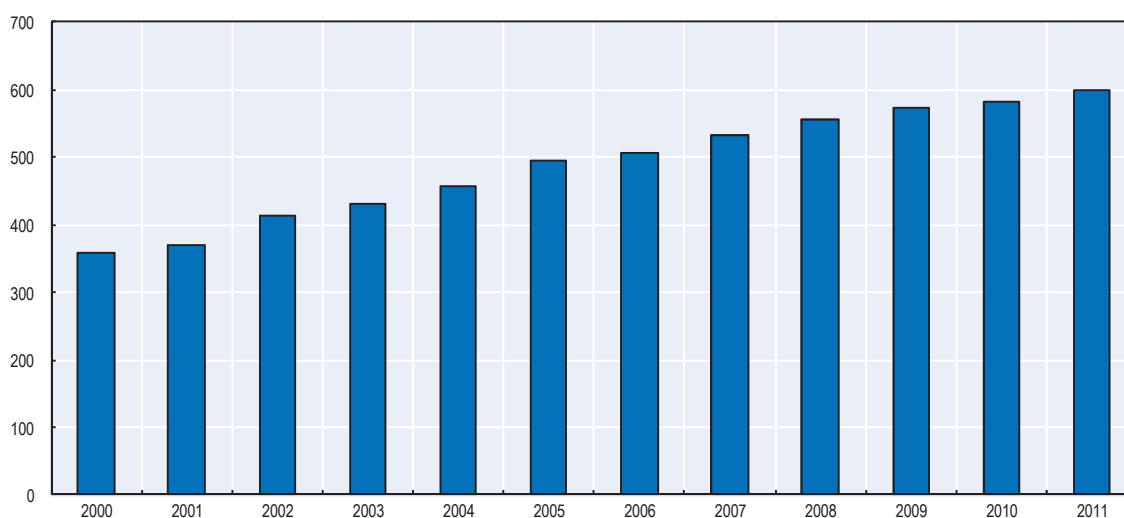
The United States has made considerable progress in managing fish stocks over the last decade. A recent report of the NOAA's National Marine Fisheries Service (NMFS) to Congress on the state of the stocks shows that the both the number of stocks that are subject to overfishing and the number of overfished stocks has decreased substantially. Stocks are considered to be overfished if the stock has a biomass level below a biological threshold

specified in its fishery management plan. A stock is considered to be overfished if the fishing mortality is above the MSY level.

The NFMS managed 537 individual stocks and stock complexes in 2011. It tracks the biomass trends for overfished stocks to monitor rebuilding progress. In 2011, six stocks were considered to be fully rebuilt, bringing the total number of rebuilt stock since 2000 to 27. This is the highest number of rebuilt stocks in a single year for which there are records.

The Fish Stock Sustainable Index (FSSI) for US fisheries measures the performance of 230 key stocks (Figure 1.14). This index increases as additional assessments are conducted, when overfishing ends and when stocks are rebuilt to the MSY level. This index was first reported in 2005 and has been calculated back to 2000. The FSSI has increased every year since 2000 with an average annual increase of 4.8% which is a clear indication of the progress made in sustainably managing the diverse fisheries in the United States.

**Figure 1.14. Fish Stock Sustainability Index, United States**



Source: NOAA (2012), *Status of Stocks: Report on the Status of U.S. Fisheries for 2011*, [www.nmfs.noaa.gov/stories/2012/05/docs/status\\_of\\_stocks\\_2011\\_report.pdf](http://www.nmfs.noaa.gov/stories/2012/05/docs/status_of_stocks_2011_report.pdf).

This is a positive trend and there is much to be gained in rebuilding US fisheries. Studies by NOAA predict that rebuilt fisheries can add about USD 31 billion to the economy as well as provide 500 000 additional new jobs (*Status of U.S. Fisheries*, NOAA).

### ***Japan and the European Union combat IUU fishing***

The European Commissioner for Maritime Affairs and Fisheries, Maria Damanaki, and the Japan's Minister of Agriculture, Forestry and Fisheries, Akira Gunji, signed a joint statement on the approaches to IUU fishing in July 2012.

According to the joint statement of the two of the world's biggest seafood import markets, joint actions will ensure that products in Japanese and European markets were caught legally. The statement recognises that IUU fishing is not only a threat to stock sustainability but also deprives honest fishers and communities of up to USD 23 billion worth of products annually.

The agreement commits the European Union and Japan to:

- exchange information on IUU fishing;
- promote management measures that strengthen control, monitoring and enforcement, through the regional fisheries management organisations of which they are members;

- encourage other countries to ratify and implement the Port State Measures Agreement of the FAO; and
- promote sustainable use of fisheries resources while preserving marine biodiversity.

The European Union signed a similar statement with the United States in September 2011.

### ***Expo 2012 Yeosu Korea and the Yeosu Declaration***

Korea held the Expo 2012 in Yeosu. Yves Leterme, Deputy Secretary-General of OECD, and the Korean Maritime Institute (KMI) signed a statement of intent on co-operation on the ocean economy. The *Yeosu Declaration on the Living Ocean and Coast* was adopted on the 12 July 2012.<sup>2</sup>

The Yeosu Declaration calls for global leadership to raise awareness of the need to protect the marine environment. It furthermore calls for co-operation between nations to halt illegal practices at sea. Among other things, it promotes concerted actions to undertake integrated ecosystem-based management and urges the scientific community to enhance understanding of the ocean. The Declaration looks towards the ocean as a new engine of sustainable economic growth with a new vision of “green growth from the sea”.

Expo 2012 also saw the official release of the OECD publication *Rebuilding Fisheries: The Way Forward*, which presents the main findings of a three-year OECD project that focused on the economics of rebuilding fisheries.

### ***Rio+20 Conference***

Oceans was one of the seven highlighted issues needing priority attention at the Rio+20 Conference, held in Rio de Janeiro, Brazil, on 20-22 June 2012.

In the final conclusions of the conference countries committed to, *inter alia*, intensifying their efforts to meet the 2015 target as agreed to in the *Johannesburg Plan of Implementation* to maintain or restore stocks to levels that can produce maximum sustainable yield on an urgent basis. In this regard they further committed to urgently take the measures necessary to maintain or restore all stocks at least to levels that can produce the maximum sustainable yield, with the aim of achieving these goals in the shortest time feasible, as determined by their biological characteristics.

Other fisheries related topics included member countries’ commitment to curb IUU fishing, e.g. by adopting the UN Port State Measures as well as the Johannesburg Plan of Implementation to eliminate subsidies that lead to such fishing. Special attention was given to ocean acidification, which may lead to drastic changes in the oceans’ ecosystem, especially coral bleaching. This is already a major problem in some parts of the world. Ocean-related challenges for developing and small island states are also high on the agenda, especially capacity building to conserve and manage their fisheries in a sustainable fashion, including through improved market access for fish products from developing countries.

### ***The Oceans Compact***

The Secretary-General of the United Nations launched an initiative to set out a strategic vision to deliver on UN’s ocean-related mandates, consistent with the Rio+20 document *The Future We Want*. This initiative named *The Oceans Compact. Healthy Oceans for Prosperity* provides a platform for all stakeholders to collaborate in achieving the common goal of “Healthy Oceans for Prosperity”.

The Oceans Compact is nested in the ongoing activities of the United Nations to help provide for sustainable use, management and conservation of the world's oceans. By urging the private sector and civil society to help attain the goal of "Healthy Oceans for Prosperity," the UN Secretary-General has set out three inter-related objectives:

- Protecting people and improving the health of the oceans.
- Protecting, recovering and sustaining the oceans' environment and natural resources and restoring their full food production livelihoods services.
- Strengthening ocean knowledge and the management of oceans.

In further moving the issue forward, the UN Secretary-General proposes to create a time-bound Ocean Advisory Group, composed of governmental representatives, high-level policy-makers, scientists, leading ocean experts, private sector representatives, representatives of non-governmental organisations and civil society organisations, and executive heads of involved UN system organisations. This Advisory Group will bring together all ocean stakeholders and contribute to developing a new focus and direction for work on ocean related issues.

#### 1.4. Major activities of the OECD Fisheries Committee

##### *Fisheries and green growth*

In the Ministerial communiqué of 2010, Ministers asked the OECD to identify green policy options and market approaches that would encourage green growth including mitigating the food system's contribution to climate change. This was interpreted to mean ensuring sufficient food production for the global population while reducing carbon intensity and managing resources, reducing environmental impacts and enhancing ecosystem services. The *Green Growth Strategy Synthesis* report was adopted by OECD Ministers in May 2011.

Green growth strategies are needed for the following reasons.

- The impacts of economic activity on environmental systems are creating imbalances which are putting economic growth and development at risk. Increased efforts to address climate change and biodiversity loss are needed to address these risks.
- Natural capital, encompassing natural resource stocks, land and ecosystems, is often undervalued and mismanaged. This imposes costs to the economy and human well-being.
- The absence of coherent strategies to deal with these issues creates uncertainty, inhibits investment and innovation, and can thus slow economic growth and development.

In practice, this has been taken forward for example in the European Union which in its proposed reform of the Common Fisheries Policy suggests that "*The social and economic importance and small-scale coastal fleets and aquaculture in certain regions call for specific measures for these fleets. The measures should support green, smart and inclusive growth and should contribute to sustainable, low-impact fishing and aquaculture, innovation, income diversification, reconversion, improvement of science and a culture of compliance.*"

The COFI has responded by focusing initially on four specific areas of Green growth in fisheries: energy, waste, governance and aquaculture. This work will apply the principles of the OECD Green Growth Strategy to specific issues in the fisheries sector with a view to providing policy advice on how best to integrate these principles into policy in order to achieve goals.

Energy policies and green growth are inherently linked. Energy in the fisheries sector is mainly in the form of fossil fuels, and is a major part of the overall costs of fishing in many cases. Improving policy coherence in managing fisheries can improve efficiency without compromising other objectives for the sector.

Much potential benefit comes from reducing waste in the fisheries value chain. Waste is both a national and global issue. Information on this subject is scarce, but what evidence there is suggests that the amount of waste, its value and environmental impact are significant. The reduction of discards, new uses of offal and better production, storage and transport will all lead to less waste.

Getting fisheries on a green growth path is a complicated process which can put a strain on governance systems. Fostering green growth requires a holistic approach where different policy spheres reinforce each other to create more value and bring social benefits, while at the same time securing sustainable use of natural resources. Productivity, innovation, new markets, investor confidence and stability have been identified as sources of green growth. Policy coherence between different sectors and institutions are needed to harness these sources of green growth.

Aquaculture has grown tremendously in recent decades and is expected to expand further in the future. It has a major potential role in reducing poverty and contributing to green growth. Green growth issues in aquaculture differ from those in fisheries and the role and sphere of policy is different. A major concern for green growth in aquaculture is the stress it creates on feed resources, as aquaculture is the biggest fishmeal and fish oil consumer in the world. Other important issues include, discharges, escapees, diseases, parasites, competition for space and externalities from other sectors.

### ***Council Recommendation on the Economics of Rebuilding Fisheries***

In April 2012 the OECD's Council, agreed to a Council Recommendation on Principles and Guidelines for the Design and Implementation of Plans for Rebuilding Fisheries. The Council Recommendation provides fisheries policy makers with a set of practical and evidence-based principles and guidelines to consider when designing and implementing rebuilding plans that contribute to green growth and preserve the livelihoods that depend on fishing.

#### ***Notes***

1. In addition to OECD member countries the following countries participate in the work of the Fisheries Committee and have submitted information to this *Review*: Argentina, Chinese Taipei, Russian Federation and Thailand. Furthermore, information for this edition has been submitted by Indonesia and China.
2. [eng.expo2012.kr/is/ps/unitybbs/bbs/selectBbsDetail.html?ispsBbsId=BBS001&ispsNttId=0000060031](http://eng.expo2012.kr/is/ps/unitybbs/bbs/selectBbsDetail.html?ispsBbsId=BBS001&ispsNttId=0000060031).

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## Annex I.A1.

## Statistical summary tables to the general survey, 2013

Table I.A1. National Unit per US dollar (USD)

	Monetary Unit	2009	2010	2011
Argentina	Argentine Peso	3.73	3.91	4.13
Australia	Australian Dollar	1.28	1.09	0.97
Belgium	Euro	0.72	0.76	0.72
Canada	Canadian Dollar	1.14	1.03	0.99
Chile	Chilean Peso	558.94	509.98	483.42
Chinese Taipei <sup>1</sup>	Taiwanese Dollar	33.05	31.64	29.46
Czech Republic	Czech Koruny	19.05	19.08	17.67
Denmark	Danish Krone	5.36	5.62	5.36
Estonia	Estonian Krooni	11.26	11.82	0.72
Finland	Euro	0.72	0.76	0.72
France	Euro	0.72	0.76	0.72
Germany	Euro	0.72	0.76	0.72
Greece	Euro	0.72	0.76	0.72
Hungary	Forint	202.06	207.76	200.91
Iceland	Icelandic Krona	123.66	122.24	116.06
Indonesia	Indonesian rupiah	10,376.83	9,078.03	8,760.85
Ireland	Euro	0.72	0.76	0.72
Italy	Euro	0.72	0.76	0.72
Japan	Yen	93.57	87.76	79.71
Korea	Won	1274.95	1155.43	1107.30
Mexico	Peso	13.50	12.63	12.43
Netherlands	Euro	0.72	0.76	0.72
New Zealand	New Zealand Dollar	1.60	1.39	1.27
Norway	Norwegian Krone	6.29	6.04	5.60
Poland	Zloty	3.12	3.01	2.96
Portugal	Euro	0.72	0.76	0.72
Russian Federation	Ruble	31.77	30.37	29.40
Slovak Republic	Slovak Koruny (until 2009), then Euro	0.72	0.76	0.72
Spain	Euro	0.72	0.76	0.72
Sweden	Swedish Krona	7.65	7.20	6.49
Thailand	Baht	34.29	..	..
Turkey	Lira	1.55	1.50	1.67
United Kingdom	Pound	0.64	0.65	0.62
United States	US Dollar	1.00	1.00	1.00

.. not available

Source: OECD.STAT (IMF data, data extracted on 13 September 2012 10:11 UTC (GMT))

Table 1.A1.2. Fishing fleet, 2010 and 2011

	Total vessels				Vessels without engines				Vessels with engines			
	2010		2011		2010		2011		2010		2011	
	Number	GRT/GT	Number	GRT/GT	Number	GRT/GT	Number	GRT/GT	Number	GRT/GT	Number	GRT/GT
Australia	315	30 506	322	28 682	..	..	..	..	315	30 506	322	28 682
Canada	..	..	..	..	..	..	..	..	..	..	..	..
Chile	8 363	187 721	9 177	204 970	362	1 300	429	1 738	8 001	186 421	8 748	203 232
European Union	54 907	921 588	53 779	888 308	4 190	3 192	4 127	3 134	50 717	918 396	49 652	885 175
Belgium	..	..	..	..	..	..	..	..	..	..	..	..
Czech Republic	..	..	..	..	..	..	..	..	..	..	..	..
Denmark	2 819	66 000	2 786	64 498	72	58	71	55	2 747	65 942	2 715	64 443
Estonia	..	..	..	..	..	..	..	..	..	..	..	..
Finland	..	..	..	..	..	..	..	..	..	..	..	..
France	..	..	..	..	..	..	..	..	..	..	..	..
Germany	..	..	..	..	..	..	..	..	..	..	..	..
Greece	17 378	86 958	16 863	83 841	275	136	267	129	17 103	86 821	16 596	83 712
Hungary	..	..	..	..	..	..	..	..	..	..	..	..
Ireland	2 132	68 986	2 167	63 972	7	4	6	3	2 125	68 982	2 161	63 969
Italy	13 239	183 776	13 078	175 523	1 486	1 498	1 511	1 523	11 753	182 278	11 567	174 000
Netherlands	..	..	..	..	..	..	..	..	..	..	..	..
Poland	..	..	..	..	..	..	..	..	..	..	..	..
Portugal	8 492	101 601	8 380	101 574	1 544	953	1 555	942	6 948	100 648	6 825	100 632
Slovak Republic	..	..	..	..	..	..	..	..	..	..	..	..
Spain	10 847	414 267	10 505	398 900	806	543	717	481	10,041	413,724	9,788	398,419
Sweden	..	..	..	..	..	..	..	..	..	..	..	..
United Kingdom	..	..	..	..	..	..	..	..	..	..	..	..
Iceland	..	..	..	..	..	..	..	..	..	..	..	..
Japan	280 752	..	..	..	4 678	..	..	..	276 074	..	..	..
Korea	76 974	600 622	..	..	2 305	2 257	..	..	74 669	598 365	..	..
Mexico	..	..	..	..	..	..	..	..	..	..	..	..
New Zealand	1 401	117 919	..	116 871	..	..	..	..	1 401	117 919	..	116 871
Norway	6 310	366 127	6 250	375 628	..	..	..	..	6 310	366 127	6 250	375 628
Turkey	17 440	185 807	17 165	170 455	..	..	..	..	17 440	185 807	17 165	170 455
United States	..	..	..	..	..	..	..	..	..	..	..	..
OECD Total	446 462	2 410 290	86 693	1 784 914	11 535	6 749	4 556	4 872	434 927	2 403 541	82 137	1 780 043
Argentina	..	..	..	..	..	..	..	..	..	..	..	..
Chinese Taipei	23 782	613 187	23 557	685 130	743	126	694	119	23 039	613 061	22 863	685 011
Russian Federation	..	..	..	..	..	..	..	..	..	..	..	..
Thailand	..	..	..	..	..	..	..	..	..	..	..	..
Total	470 244	3 023 477	110 250	2 470 044	12 278	6 875	5 250	4 991	457 966	3 016 602	105 000	2 465 054

.. not available

Source : OECD (2013), *Fisheries and Aquaculture, Agriculture and Fisheries* (database).

Table A1.3. Employment in fisheries, 2010-2011

	2010				2011p			
	Harvest sector	Aquaculture	Processing	Total	Harvest sector	Aquaculture	Processing	Total
Australia	7 646	3 785	..	11 431	7 325	4 373	..	11 698
Canada	49 530	3 272	29 745	82 547	..	..	..	..
Chile	82 685	14 384	33 998	131 067	85 268	15 581	37 329	138 178
European Union	151 985	15 349	21 329	188 663	106 147	8 061	16 983	131 191
Belgium	614	..	..	614	587	..	..	587
Czech Republic	..	1 428	135	1 563	..	1 428	..	1 428
Denmark	2 012	430	3 782	6 224	..	..	..	..
Finland	2 861	477	870	4 208	2 872	477	870	4 219
France	17 736	..	..	17 736	..	..	..	..
Germany	1 426	..	7 316	8 742	1 287	..	6 856	8 143
Greece	39 708	6 032	2 085	47 825	38 404	5 559	1 910	45 873
Hungary	1 860	1 314	..	3 174	1 921	1 343	..	3 264
Ireland	4 684	1 719	2 867	9 270	4 747	1 713	2 867	9 327
Italy	28 983	..	..	28 983	28 555	..	..	28 555
Netherlands	2 195	320	5 540	8 055	2 110	290	5 540	7 940
Poland	3 071	2 000	13 500	18 571	2 947	2 000	13 500	18 447
Portugal	16 920	..	..	16 920	16 402	..	..	16 402
Slovak Republic	..	895	..	895	..	929	726	1 655
Spain	41 062	6 377	..	47 439	..	..	..	..
Sweden	1 641	399	1 736	3 776	1 604	392	1 807	3 803
United Kingdom	12 703	..	..	12 703	12 405	..	..	12 405
Iceland	5 300	..	3 300	8 600	5 200	..	3 700	8 900
Japan	202 880	..	..	202 880	..	..	..	..
Korea	77 246	34 419	..	111 665	..	..	..	..
Mexico	250 680	43 123	..	293 803	222 744	48 687	..	271 431
New Zealand	1 740	650	5 690	8 080	1 780	670	5 540	7 990
Norway	12 993	5 527	..	18 520	12 791	5 808	..	18 599
Turkey	54 172	6 600	5 833	66 605	45 147	7 520	6 009	58 676
United States	..	..	..	..	..	..	..	..
OECD TOTAL	896 857	127 109	99 895	1 123 861	486 402	90 700	69 561	646 663
Argentina <sup>1</sup>	15 280	94	8 651	24 025	15 586	76	8 949	24 611
Chinese Taipei	250 146	83 525	..	333 671	247 007	81 733	..	328 740
Estonia	..	..	..	..	..	..	..	..
Russian Federation	..	..	..	..	..	..	..	..
Thailand	..	..	..	..	..	..	..	..
Total	1 162 283	210 728	108 546	1 481 557	748 995	172 509	78 510	1 000 014

p: provisional

.. not available

<sup>1</sup>includes harvesting and processing

Source : OECD (2013), « Fisheries and Aquaculture », Agriculture and Fisheries (database)

Table I.A1.4. Government Financial Transfers to marine capture fisheries sector, 2009

	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	USD million	USD million	USD million	USD million	%	%
Australia	..	..	37	37	..	..	..
Canada	257	4	477	738	1 492	49%	49%
Chile	14	..	44	59	1 508	4%	4%
European Union	390	433	435	1 257	2 125	59%	59%
Belgium	14	..	..	14	95	14%	14%
Czech Republic <sup>1</sup>	..	..	..	..	..	..	..
Denmark	2	1	77	80	406	20%	20%
Estonia <sup>2</sup>	..	..	..	..	..	..	..
Finland	5	2	8	15	31	48%	48%
France	93	225	11	329	1 286	..	..
Germany	3	..	2	5	262	2%	2%
Greece	25	31	4	61	448	14%	14%
Hungary	..	..	..	..	..	..	..
Ireland	30	..	183	213	252	..	84%
Italy	75	157	39	271	1 670	16%	16%
Netherlands	3	..	..	3	516	1%	1%
Poland	38	..	..	38	36	..	105%
Portugal <sup>3</sup>	23	..	30	53	337	..	16%
Slovak Republic	..	..	..	..	..	..	..
Spain	61	..	18	79	2 587	3%	3%
Sweden	10	16	60	86	116	75%	75%
United Kingdom	9	..	3	11	1 060	1%	1%
Iceland	..	9	22	31	933	3%	3%
Japan	18	3	2 132	2 153	10 666	..	20%
Korea	85	29	376	490	3 768	13%	13%
Mexico	..	..	..	..	..	..	..
New Zealand	..	..	57	57	206	..	28%
Norway	2	68	217	287	1 798	16%	16%
Turkey	..	68	98	166	718	23%	23%
United States	..	18	1 605	1 623	4 474	36%	36%
<b>OECD Total</b>	<b>767</b>	<b>630</b>	<b>5 501</b>	<b>6 898</b>	<b>27 688</b>	<b>25%</b>	<b>25%</b>
Argentina	..	..	..	..	621	..	..
Chinese Taipei	6	3	15	23	1 662	1%	1%
Russian Federation	..	..	..	..	..	..	..
Thailand <sup>3</sup>	..	..	5	5	1 247	..	0%
<b>Total</b>	<b>772</b>	<b>633</b>	<b>5 521</b>	<b>6 926</b>	<b>31 218</b>	<b>22%</b>	<b>22%</b>

.. not available

1. Aquaculture.

2. Landed value for national landings in domestic ports only.

3. Preliminary data for 2009.

Source : OECD (2013), « Fisheries and Aquaculture », Agriculture and Fisheries (database).

Table I.A1.5. Government Financial Transfers to marine capture fisheries sector, 2010

	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	USD million	USD million	USD million	USD million	%	%
Australia	..	..	..	..	..	..	..
Canada	1	554	..	555	..	..	..
Chile	..	59	78	137	932	15%	15%
European Union	184	253	458	895	7 409	12%	12%
Belgium	..	..	..	..	99	..	..
Czech Republic <sup>1</sup>	..	..	..	..	..	..	..
Denmark	2	76	..	78	519	15%	0%
Estonia <sup>2</sup>	..	..	..	..	..	..	..
Finland	2	0	6	8	9	91%	91%
France	..	..	..	..	..	..	..
Germany	..	4	3	8	253	3%	3%
Greece	..	..	..	..	377	0%	..
Hungary	..	..	..	..	..	..	..
Ireland	..	..	..	..	235	..	..
Italy	162	50	241	452	1 477	31%	27%
Netherlands	..	6	..	6	401	2%	2%
Poland	..	..	11	11	44	24%	..
Portugal	1	18	19	38	340	11%	..
Slovak Republic	..	..	..	..	..	..	..
Spain	..	20	63	83	2 411	3%	3%
Sweden	18	69	83	169	132	128%	76%
United Kingdom	..	11	32	43	1 113	4%	1%
Iceland	..	..	..	..	..	..	..
Japan	28	1 656	..	1 684	11 322	15%	15%
Korea	54	282	..	336	4 566	7%	7%
Mexico	..	..	..	..	848	..	..
New Zealand	..	..	44	44	245	18%	18%
Norway	71	218	317	606	2 208	27%	27%
Turkey	..	94	167	260	718	36%	36%
United States	..	1 813	2 482	4 295	..	..	..
<b>OECD Total</b>	<b>339</b>	<b>4 928</b>	<b>3 545</b>	<b>8 812</b>	<b>28 249</b>	<b>19%</b>	<b>31%</b>
Argentina	..	..	..	..	..	..	..
Chinese Taipei	3	7	31	41	1 767	2%	2%
Russian Federation	..	..	..	..	..	..	..
Thailand	..	..	6	6	..	..	..
<b>Total</b>	<b>342</b>	<b>4 936</b>	<b>3 582</b>	<b>8 859</b>	<b>30 016</b>	<b>30%</b>	<b>..</b>

.. not available

1. Aquaculture.

2. Landed value for national landings in domestic ports only.

Source: OECD (2013), « Fisheries and Aquaculture », Agriculture and Fisheries (database).

Table I.A1.6. Government Financial Transfers to marine capture fisheries sector, 2011

	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	USD million	USD million	USD million	USD million	%	%
Australia	..	..	..	..	..	..	..
Canada	..	..	..	..	..	..	..
Chile	14	..	64	78	899	..	..
European Union	281	2	177	461	8 109	3%	6%
Belgium	3	..	..	3	110	3%	3%
Czech Republic <sup>1</sup>	..	..	..	..	..	..	..
Denmark	..	..	..	..	583	..	..
Estonia <sup>2</sup>	..	..	..	..	..	..	..
Finland	4	2	0	6	12	48%	48%
France	..	..	..	..	..	..	..
Germany	3	..	..	3	275	1%	..
Greece	..	..	..	..	288	0%	..
Hungary	..	..	..	..	..	..	..
Ireland	..	..	..	..	..	..	..
Italy	172	..	69	241	1 531	11%	16%
Netherlands	..	..	..	..	86	..	0%
Poland	11	..	..	11	..	..	..
Portugal	7	..	12	19	356	2%	5%
Slovak Republic	..	..	..	..	..	..	..
Spain	52	..	11	63	2 729	2%	2%
Sweden	3	..	79	83	154	2%	54%
United Kingdom	26	..	6	32	1 984	1%	2%
Iceland	..	..	..	..	..	..	..
Japan	..	..	..	..	..	..	..
Korea	..	..	..	..	..	..	..
Mexico	..	..	..	..	..	..	..
New Zealand	..	..	70	70	..	..	..
Norway	..	71	254	326	115	62%	282%
Turkey	..	82	85	167	718	11%	23%
United States	14	2	2 465	2 482	..	..	..
<b>OECD Total</b>	<b>310</b>	<b>158</b>	<b>3 114</b>	<b>3 582</b>	<b>9 841</b>	<b>5%</b>	<b>36%</b>
Argentina	..	..	..	..	..	..	..
Chinese Taipei	10	5	16	31	2 176	1%	1%
Russian Federation	..	..	..	..	..	..	..
Thailand	1	..	5	6	..	..	..
<b>Total</b>	<b>321</b>	<b>162</b>	<b>3 135</b>	<b>3 619</b>	<b>12 018</b>	<b>4%</b>	<b>30%</b>

.. not available

1. Aquaculture.

2. Landed value for national landings in domestic ports only.

Source : OECD (2013), « Fisheries and Aquaculture », Agriculture and Fisheries (database)

Table I.A1.7. Capture fish production, 2009-2011

	Total volume ('000 tonnes)			Total value (USD million)			Unit value (USD/kg)		
	2009	2010	2011p	2009	2010	2011p	2009	2010	2011p
Australia	172	173	162	..	..	..	..	..	..
Canada	960	952	845	1492	..	..	1.55	..	..
Chile	3 379	2 653	2 884	1 508	932	899	0.45	0.35	0.31
European Union	4 307	3 924	3 552	9 102	7 409	8 170	2.11	1.89	2.30
Belgium	19	20	20	95	99	110	4.95	5.01	5.49
Czech Republic	..	..	..	..	..	..	..	..	..
Denmark	770	820	708	406	519	583	0.53	0.63	0.82
Estonia <sup>1</sup>	..	..	..	..	..	..	..	..	..
Finland	117	121	119	31	9	12	0.27	0.07	0.10
France	446	..	..	1 286	..	..	2.88	..	..
Germany	211	210	223	262	253	275	1.24	1.20	1.24
Greece	83	75	59	448	377	288	5.43	5.03	4.91
Hungary	..	..	..	..	..	..	..	..	..
Ireland	227	293	..	252	235	..	1.11	0.80	..
Italy	242	225	212	1 670	1 477	1 531	6.89	6.57	7.21
Netherlands	380	266	263	516	401	86	1.36	1.51	0.33
Poland	112	115	116	36	44	62	0.32	0.39	0.53
Portugal <sup>1</sup>	191	201	204	337	340	356	1.77	1.69	1.75
Slovak Republic	..	..	..	..	..	..	..	..	..
Spain	728	768	859	2 587	2 411	2 729	3.56	3.14	3.17
Sweden	197	204	169	116	132	154	0.59	0.65	0.91
United Kingdom	584	608	600	1 060	1 113	1 984	1.81	1.83	3.31
Iceland	1 151	..	..	933	..	..	0.81	..	..
Japan	4 200	4 172	3 831	10 666	11 322	..	2.54	2.71	..
Korea	1 839	1 725	..	3 768	4 566	..	2.05	2.65	..
Mexico	1 483	1 357	1 398	726	848	864	0.49	0.62	0.62
New Zealand	280	278	286	206	245	..	0.74	0.88	..
Norway <sup>2</sup>	2 697	2 838	2 443	1 798	2 208	115	0.67	0.78	0.05
Turkey	430	446	478	..	.63	.618	..	..	..
United States	..	..	5 235	..	..	..	..	..	..
OECD Total	20 899	18 517	21 112	30 200	27 532	10 049	1.45	1.49	0.48
Argentina	844	809	774	621	673	..	0.74	0.83	0.00
Chinese Taipei	803	854	903	1 662	1 767	2 176	2.07	2.07	2.41
Russian Federation	..	..	..	..	..	..	..	..	..
Thailand <sup>2</sup>	1 664	1 601	..	1 247	..	..	0.75	..	..
TOTAL	24 210	21 781	22 790	33 730	29 972	12 226	1.39	1.38	0.54

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

.. not available; p provisional

1. National landings in domestic ports only.

2. Preliminary data for 2011.

Source : OECD (2013), « Fisheries and Aquaculture », Agriculture and Fisheries (database).

Table I.A1.8. Aquaculture production, 2009-2011

	Total volume ('000 tonnes)			Total value (USD million)			Unit value (USD/kg)		
	2009	2010	2011p	2009	2010	2011p	2009	2010	2011p
Australia	70	74	75	676	805	978	9.64	10.90	13.01
Canada	143	150	149	626	799	740	4.38	5.32	4.97
Chile	758	713	871	1 754	1 856	2 528	2.31	2.60	2.90
European Union	1 310	1 029	481	3 475	2 346	1 140	2.65	2.28	2.37
Belgium	..	..	..	..	..	..	..	..	..
Czech Republic	20	20	21	59	60	67	2.96	2.95	3.19
Denmark	42	40	40	163	155	177	3.86	3.92	4.41
Estonia	..	..	..	..	..	..	..	..	..
Finland	14	12	11	62	58	67	4.53	4.95	5.93
France	236	..	..	970	..	..	4.10	..	..
Germany	39	41	..	121	124	..	3.11	3.03	..
Greece	126	123	121	581	595	609	4.61	4.84	5.03
Hungary	14	14	16	38	36	42	2.65	2.61	2.71
Ireland	47	..	..	148	..	..	3.12	..	..
Italy	180	189	..	471	499	..	2.62	2.64	..
Netherlands	73	89	41	131	162	105	1.78	1.82	2.57
Poland	36	28	31	..	..	..	..	..	..
Portugal	8	8	9	61	63	..	7.68	7.63	..
Slovak Republic	1	1	1	2	..	..	2.98	..	..
Spain	268	254	..	551	480	..	2.05	1.89	..
Sweden	10	12	14	34	42	57	3.33	3.60	3.92
United Kingdom <sup>1</sup>	194	200	176	84	72	16	0.43	0.36	0.09
Iceland	5	5	5	20	..	..	3.84	..	..
Japan	1 243	1 151	901	4 773	5 248	..	3.84	4.56	..
Korea	1 332	1 376	..	1 601	1 802	..	1.20	1.31	..
Mexico	285	263	263	540	490	567	1.89	1.86	2.16
New Zealand	105	111	117	175	327	321	1.66	2.96	2.74
Norway	962	1 020	1 139	3 570	5 090	5 236	3.71	4.99	4.60
Turkey	159	167	189	616	712	760	3.88	4.26	4.02
United States	..	..	..	..	..	..	..	..	..
OECD Total	6 372	6 058	4 191	17 826	19 476	12 269	2.80	3.21	2.93
Argentina	3	3	3	8	12	11	3.01	4.57	3.48
Chinese Taipei	288	316	308	927	1 158	1 391	3.22	3.67	4.52
Russian Federation	..	..	..	..	..	..	..	..	..
Thailand	1 417	1 252	..	2 621	2 782	..	1.85	2.22	..
TOTAL	8 079	7 629	4 502	21 382	23 429	13 671	2.65	3.07	3.04

.. not available

1. Data for 2009 corresponds to Scotland.

Source : OECD (2013), *Fisheries and Aquaculture*, Agriculture and Fisheries (database).



**Table A1.9. Imports of fish for human consumption  
by major product groups and major world regions, 2010**

USD Mio	All fish	%	Fish, fresh, frozen, incl. Fillets	%	Fish, dried, smoked	%	Crustaceans and molluscs	%	Prepared and preserved	%
<b>Importers</b>										
EU <sup>1</sup>	39 818	51	19 849	54	2 753	78	9 380	44	7 837	49
Japan	13 818	18	6 860	19	253	7	3 972	19	2 733	17
United States	15 275	20	5 864	16	246	7	5 649	27	3 515	22
OECD Total	77 350	100	36 500	100	3 511	100	21 281	100	16 058	100
<b>Origins</b>										
OECD	38 628	50	23 159	63	2 890	82	6 938	33	5 641	35
Non-OECD <sup>2</sup>	38 712	50	13 333	37	620	18	14 341	67	10 418	65
America	5 759	15	1 528	11	52	8	3 138	22	1 041	10
Asia	24 731	63	7 882	57	279	45	8 867	62	7 702	74
Europe	3 641	9	2 284	17	276	44	926	6	154	1
Oceania	417	1	239	2	0	.07	13	.09	165	2
Africa	4 669	12	1 877	14	17	3	1 401	10	1 374	13

**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.

.. not available

1. EU countries members of OECD: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, UK .

2. The total of the imports from 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 (2013), International Trade Statistics Database.**Table I.A1.10. Exports of fish for human consumption  
by major product groups and major world regions, 2010**

USD Mio	All fish	%	Fish, fresh, frozen, incl. Fillets	%	Fish, dried, smoked	%	Crustaceans and molluscs	%	Prepared and preserved	%
<b>Exporters</b>										
EU <sup>1</sup>	22 167	45	11 672	39	1 885	53	4 316	44	4 294	64
Japan	1 863	4	849	3	16	0	351	4	647	10
United States	4 426	9	2 797	9	52	1	1 128	12	449	7
OECD Total	49 789	100	29 738	100	3 556	100	9 769	100	6 726	100
<b>Origins</b>										
OECD	38 211	77	22 409	75	2 827	80	7 380	76	5 594	83
Non-OECD <sup>2</sup>	11 564	23	7 317	25	728	20	2 387	24	1 130	17
America	1 098	10	560	8	392	55	78	3	68	6
Asia	5 981	52	3 168	44	85	12	1 922	81	806	74
Europe	2 897	25	2 501	35	34	5	210	9	153	14
Oceania	51		0		1	.18	9	.36	9	1
Africa	1 415	12	987	14	205	29	163	7	61	6

**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.

.. not available

1. EU countries members of OECD: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary,

2. The total of the exports from the five non-OECD zones may not correspond to the global figure for non-OECD as a whole, since the latter

*Source:* OECD (2013), International Trade Statistics Database.

Table 1A1.11. Imports of fish, crustaceans, mollusc and products thereof by OECD and world economies according to origin, 2010

Origin	Importing country																			Total OECD																			
	Australia	Canada	Chile	Iceland	Israel	Japan	Korea	Mexico	New Zealand	Norway	Switzerland	Turkey	United States	Total EU	Austria	Belgium	Czech Republic	Denmark	Estonia		Finland	France	Germany	Greece	Hungary	Ireland	Italy	Luxembourg	Netherlands	Poland	Portugal	Slovak Republic	Slovenia	Spain	Sweden	United Kingdom			
Australia	4	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	420
Canada	18	20	0	24	2	471	68	7	36	9	1	2 532	626	1	49	2	182	8	4	2	78	42	3	0	0	2	22	1	38	2	3	0	0	0	0	26	26	137	3 840
Chile	7	133	0	0	0	1 636	143	57	2	21	1	1 994	649	1	23	0	25	1	2	127	76	6	0	0	0	0	76	0	13	22	8	1	0	250	1	14	3 649		
Iceland	2	13	0	0	0	136	12	1	0	184	9	11	108	1 323	0	40	5	71	3	3	137	110	8	0	0	0	0	0	1	0	1	0	0	0	0	132	11	466	1 801
Israel	1	1	0	0	0	0	0	0	0	0	0	0	3	22	0	4	0	1	0	0	3	4	1	0	0	0	1	0	1	0	0	2	1	0	0	2	1	4	27
Japan	19	21	0	0	0	166	6	3	2	5	0	277	48	1	6	0	0	0	0	0	7	1	0	0	0	0	0	0	21	1	0	0	0	0	3	0	5	546	
Korea	8	18	3	1	0	972	0	8	1	3	2	1 145	106	1	6	0	1	0	0	0	10	1	0	0	0	0	19	0	2	1	3	0	0	0	0	59	0	5	1 269
Mexico	27	20	0	1	131	12	0	0	0	0	0	1 517	192	0	1	0	0	0	0	0	7	1	8	0	0	0	65	0	2	0	16	0	0	0	91	0	1	900	
New Zealand	206	12	1	0	0	146	23	1	4	1	2	0	142	168	2	4	0	9	0	0	32	21	12	0	1	10	0	4	5	5	0	0	47	4	12	706			
Norway	43	67	1	20	95	900	139	20	2	44	106	363	6 239	29	1	34	420	25	152	774	735	25	0	9	3	5	169	613	2	2	3	132	2 838	169	8 039				
Switzerland	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	24	
Turkey	2	0	0	0	0	58	15	0	6	1	0	9	326	3	5	4	7	0	0	29	64	24	0	0	0	57	0	79	14	0	1	0	32	4	2	417			
United States	45	937	5	4	12	1 419	146	67	8	59	19	7	0	1 376	6	57	7	113	4	2	313	310	7	0	1	86	1	83	41	50	1	0	123	17	153	4 103			
European Union (27 countries)	96	61	1	39	55	474	93	14	2	572	473	22	468	19 754	386	1 283	127	678	87	252	2 706	2 326	398	72	218	3 583	88	1 441	466	1 492	52	57	2 184	459	1 389	22 085			
Austria	0	0	0	0	0	0	0	0	0	0	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	5	0	3	1	0	0	0	0	0	0	0	11	35	
Belgium	0	0	0	0	0	0	0	0	0	0	0	0	672	2	0	1	11	1	1	153	80	4	1	2	32	26	277	5	9	0	0	0	50	6	13	692			
Czech Republic	0	0	0	0	0	0	0	0	0	0	0	0	44	3	1	0	1	0	0	7	7	0	0	6	0	1	0	0	6	0	11	0	1	0	0	0	45		
Denmark	25	18	0	10	2	54	8	0	0	277	81	0	17	2 524	32	109	13	0	10	47	268	463	56	6	5	396	2	211	101	32	2	2	188	262	320	3 016			
Estonia	1	0	0	13	0	2	0	0	0	8	9	0	1	78	2	0	5	9	0	27	4	3	0	0	0	1	0	1	4	0	1	0	7	13	0	112			
Finland	0	0	0	0	0	0	0	0	0	0	0	0	31	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0	33	
France	1	4	0	1	2	48	19	0	0	6	72	10	34	1 541	15	234	4	32	1	3	43	90	17	3	21	389	24	85	18	29	1	1	398	21	100	1738			
Germany	5	4	0	9	3	38	0	0	4	98	1	13	2 123	171	116	24	234	2	18	158	0	45	15	20	226	7	494	149	39	10	4	57	34	300	2 298				
Greece	1	5	0	0	2	9	1	0	0	6	2	34	667	4	2	1	2	0	0	94	28	0	0	0	0	318	1	12	2	38	0	3	119	0	42	728			
Hungary	0	0	0	0	0	0	0	0	0	0	0	0	18	0	0	1	0	0	0	8	1	0	0	0	1	0	0	3	0	3	0	0	0	0	0	0	18		
Ireland	2	3	0	0	0	7	12	0	0	31	5	0	6	514	1	13	6	4	0	174	35	2	0	0	36	0	37	17	5	1	0	89	7	85	980				
Italy	6	6	0	0	0	8	9	0	0	1	38	0	12	509	29	16	7	6	0	51	64	63	4	1	0	2	17	5	13	1	21	201	0	9	593				
Luxembourg	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16		
Poland	5	2	0	1	0	5	0	0	15	24	0	42	1 270	17	19	32	95	2	7	169	718	1	13	2	34	0	11	0	0	0	11	1	8	35	94	1 365			
Portugal	2	7	0	1	1	23	4	0	0	1	11	0	18	627	6	7	0	1	0	100	4	2	0	0	0	74	5	4	0	0	0	1	356	1	66	695			
Slovak Republic	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6		
Slovenia	0	0	0	0	0	0	0	0	0	0	0	0	13	9	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	15		
Spain	2	5	1	0	2	115	7	13	1	5	20	4	56	2 975	6	34	11	12	4	2	481	83	80	6	1	1 257	1	27	13	857	8	18	0	2	71	3 205			
Sweden	1	1	0	0	0	1	0	0	0	71	3	0	3	1 149	3	58	1	110	4	129	43	38	26	1	1	138	0	44	37	288	0	0	111	0	116	1 229			
Netherlands	1	1	0	0	0	4	1	2	0	11	76	0	49	2 684	52	567	8	66	0	14	297	462	79	7	7	444	10	0	41	156	0	3	271	44	155	2 870			
United Kingdom	4	5	0	2	7	41	23	0	136	19	2	173	1 842	7	83	2	76	1	2	588	134	8	2	156	170	5	197	96	26	0	2	312	15	0	2 227				
Non-OECD America	43	155	231	8	23	517	137	64	4	247	6	35	2 058	4 225	3	151	5	543	7	3	685	321	35	2	0	577	1	94	33	38	2	6	1 534	5	180	7 753			
Non-OECD Asia	927	1 140	1 116	11	151	8 245	2 220	353	99	88	174	41	9 260	7 433	68	517	63	174	5	33	951	1 268	94	5	20	869	8	559	237	197	19	9	1 047	137	1 153	30 258			
Non-OECD Oceania	12	3	0	0	0	209	14	19	4	0	0	0	81	130	1	1	0	1	0	7	35	0	0	0	32	0	11	0	0	0	0	0	28	1	11	472			
Africa	45	8	1	5	39	445	63	5	1	5	14	39	112	3 969	13	112	5	28	1	4	653	144	73	0	4	744	1	289	6	148	1	3	1 447	17	268	4 751			
World	1 438	2 658	381	120	387	17 629	3 942	637	158	1 346	769	272	17 556	47 956	501	2 315	256	2 446	152	465	6 632	5 580	708	81	271	6 245	110	3 216	1 585	2 020	92	91	7 263	3 624	4 303	95 248			

Comprises codes SH (0302-0307, 121220, 1504, 1604, 1606 and 230120).

Source: OECD (2013), International Trade Statistics Database.

Table 1A1.12. Exports of fish, crustaceans, mollusc and products thereof by OECD and world economies according to origin, 2010

Origin	Exporting country																											Total OECD										
	Australia	Canada	Chile	Iceland	Israel	Japan	Korea	Mexico	New Zealand	Norway	Switzerland	Turkey	United States	Total EU	Austria	Belgium	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Luxembourg		Netherlands	Poland	Portugal	Slovak Republic	Slovenia	Spain	Sweden	United Kingdom		
Australia	0	10	8	4	0	12	5	0	204	22	0	0	43	48	0	0	0	20	0	0	1	4	1	0	0	2	0	0	1	4	2	0	0	2	1	4	357	
Canada	2	0	69	11	0	10	11	14	9	27	0	2	1 029	52	0	0	13	0	0	0	0	3	1	3	0	0	5	0	1	6	8	0	0	2	1	9	1 237	
Chile	0	3	0	5	0	9	2	5	0	2	0	0	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31
Iceland	0	29	0	0	0	0	2	0	0	18	0	0	2	37	0	0	7	14	0	0	0	0	10	0	0	0	0	0	2	0	0	0	0	0	0	1	87	
Israel	0	2	8	1	0	0	0	0	0	64	0	0	11	21	0	0	0	2	0	0	0	0	0	4	0	0	3	0	4	0	3	0	0	0	1	1 007		
Japan	222	232	1 117	85	4	0	817	37	91	409	0	45	763	230	0	0	0	48	1	19	7	11	0	1	6	0	1	6	0	36	7	5	0	0	19	4 114		
Korea	2	39	71	12	0	195	0	6	31	86	0	7	301	51	0	0	12	0	0	0	2	0	0	0	9	0	1	0	0	0	0	0	0	0	0	19	801	
Mexico	0	0	43	0	0	0	0	0	0	0	0	0	66	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	145	
New Zealand	10	5	1	1	0	17	71	0	0	3	0	0	7	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	118		
Norway	2	13	15	127	0	1	1	0	0	0	0	0	50	509	0	2	319	4	0	6	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8 718		
Switzerland	1	2	0	5	0	3	0	0	0	1	39	0	1	387	3	6	1	70	9	0	68	77	4	0	2	26	0	67	18	7	0	0	0	0	14 443			
Turkey	0	0	0	7	0	0	0	0	0	0	0	0	0	32	0	0	0	1	0	9	11	2	0	0	0	0	0	0	4	0	0	0	0	0	126			
United States	42	2394	577	97	3	226	118	422	124	452	1	8	0	539	0	0	52	3	0	21	11	21	16	0	2	9	0	47	91	16	0	0	36	4	230	5 002		
European Union (27 countries)	18	408	481	1 222	20	35	126	121	124	5104	9	261	1 059	19 433	24	1 093	90	2 366	94	30	1 259	2 072	653	17	390	960	18	2 179	1 144	749	10	9	2 520	2 863	1 594	28 422		
Austria	0	0	0	0	0	0	0	0	0	0	0	2	0	379	0	4	6	38	0	15	220	4	0	1	0	33	0	21	7	6	0	5	4	1	3	391		
Belgium	2	34	16	68	2	3	2	0	4	69	0	16	38	1 036	0	1	74	1	0	189	117	1	0	10	8	9	456	25	6	0	0	21	51	56	1 289			
Czech Republic	0	0	0	1	0	0	0	0	0	12	0	2	0	146	1	0	18	3	0	5	34	1	0	3	0	8	0	13	32	0	6	0	7	13	2	164		
Denmark	0	63	21	56	1	0	0	0	0	21	0	3	42	593	0	18	1	0	9	4	23	200	2	0	0	1	0	42	63	1	0	0	11	164	43	1 454		
Estonia	0	6	1	1	0	0	0	0	0	0	0	0	1	43	0	1	12	0	10	2	2	0	0	0	0	0	0	1	1	0	0	0	0	1	73	1		
Finland	0	4	0	4	0	1	0	0	0	0	0	0	1	185	0	1	0	36	23	0	4	7	0	0	0	0	0	8	5	0	0	0	3	96	1	366		
France	5	61	87	120	3	6	11	6	20	882	1	17	174	3 469	0	421	8	262	1	0	337	89	9	137	55	5	384	138	87	0	1	455	526	553	4 863			
Germany	2	27	55	87	6	4	9	0	29	351	3	41	232	2 421	9	122	14	590	7	0	116	0	32	2	30	74	2	423	646	5	0	0	74	165	120	3 268		
Greece	0	3	1	15	0	0	0	0	0	7	43	0	5	354	2	5	0	61	0	17	59	0	0	2	0	63	0	21	3	3	0	86	24	7	460			
Hungary	0	0	0	0	0	0	0	0	0	0	0	0	0	61	3	0	5	4	1	0	4	11	0	0	0	5	0	5	13	0	6	1	0	0	62			
Ireland	0	1	0	8	0	0	0	0	0	0	0	0	1	226	0	2	1	4	0	12	11	3	0	0	0	0	0	14	4	0	0	2	1	172	257			
Italy	3	14	59	19	1	1	34	30	6	238	1	47	89	2 914	1	34	3	331	0	0	342	182	290	1	23	0	331	33	63	0	1	989	145	144	3 456			
Luxembourg	0	0	0	0	0	0	0	0	0	0	0	0	102	0	38	0	2	0	0	26	9	1	0	0	1	0	14	0	5	0	1	1	4	104				
Poland	2	44	8	112	2	13	4	2	3	302	2	61	170	1 176	1	322	0	155	1	0	50	356	27	0	15	11	0	0	19	6	0	0	30	77	106	1 903		
Portugal	0	1	15	46	0	0	0	0	0	0	0	10	13	832	1	5	7	108	2	0	12	114	2	1	13	4	0	51	0	1	0	12	454	44	1 600			
Slovak Republic	0	3	5	52	0	2	0	2	3	308	0	39	1 272	0	7	0	11	0	0	27	32	31	0	6	2	0	56	1	0	0	689	279	60	1 624				
Slovenia	0	0	0	0	0	0	0	0	0	0	0	0	0	71	2	0	37	3	1	0	0	6	0	1	1	0	0	2	12	0	0	0	4	1	71			
Spain	0	0	0	0	0	0	0	0	0	0	0	0	0	60	3	0	3	0	0	1	6	2	0	0	0	29	0	3	1	0	0	11	1	1	61			
Sweden	2	13	202	172	1	3	55	74	31	293	0	19	121	2 032	0	50	1	111	5	0	287	75	106	0	67	209	0	141	8	529	0	0	200	243	3 017			
Netherlands	0	22	1	9	0	0	0	0	2	375	0	3	15	417	0	9	0	242	12	15	21	21	0	0	0	0	0	46	26	0	0	2	0	14	845			
United Kingdom	1	100	9	385	3	3	6	3	9	422	1	12	100	1 254	0	46	1	275	2	0	81	248	38	0	61	10	1	118	88	34	0	55	195	0	2 308			
Non-OECD America	0	54	409	5	0	13	27	13	4	292	0	0	116	199	0	0	0	20	0	2	2	0	0	1	1	1	0	8	0	76	0	87	0	3	1 133			
Non-OECD Asia	640	482	549	56	2	1 301	467	152	387	789	7	4	1 062	704	0	1	0	221	5	0	75	15	1	0	10	4	0	77	34	3	0	196	2	60	6 604			
Non-OECD Oceania	2	1	2	0	0	19	2	0	12	1	0	0	7	6	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	52			
Africa	1	7	23	86	1	75	21	0	34	281	1	1	25	899	0	8	0	29	0	84	10	1	0	59	27	0	351	1	31	0	0	238	0	52	1 455			
World	945	3 862	3 476	1 845	31	1 970	1 694	773	1 054	8 810	21	359	4 678	23 777	27	1 114	91	3 281	195	43	1 599	2 329	721	17	504	693	19	2 814	1 328	901	10	20	3 298	2 648	2 124	53 296		

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

Source: OECD (2013), International Trade Statistics Database.

**Table I.A1.13. Imports of fish for human consumption by major product groups and major world regions, 2011**

USD Mio	All fish	%	Fish, fresh, frozen, incl. Fillets	%	Fish, dried, smoked	%	Crustaceans and molluscs	%	Prepared and preserved	%
<b>Importers</b>										
EU <sup>1</sup>	45 895	51	22 418	54	3 253	79	11 014	44	9 211	49
Japan	13 818	15	6 860	16	253	6	3 972	16	2 733	14
United States	15 275	17	5 864	14	246	6	5 649	22	3 515	19
OECD Total	89 831	100	41 610	100	4 093	100	25 171	100	18 957	100
<b>Origins</b>										
OECD	44 481	50	26 237	63	3 400	83	8 246	33	6 596	35
Non-OECD <sup>2</sup>	45 301	50	15 331	37	692	17	16 921	67	12 357	65
America	6 572	15	1 571	10	59	9	3 604	21	1 338	11
Asia	29 010	64	9 026	59	301	43	10 465	62	9 217	75
Europe	4 550	10	2 931	19	315	46	1 134	7	169	1
Oceania	458	1	283	2	1	.14	10	.06	165	1
Africa	4 594	10	1 483	10	16	2	1 634	10	1 461	12

**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.

.. not available

1. EU countries members of OECD: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary,

2. The total of the imports from 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 (2013), International Trade Statistics Database.

**Table I.A1.14. Exports of fish for human consumption by major product groups and major world regions, 2011**

USD Mio	All fish	%	Fish, fresh, frozen, incl. Fillets	%	Fish, dried, smoked	%	Crustaceans and molluscs	%	Prepared and preserved	%
<b>Exporters</b>										
EU <sup>1</sup>	25 748	44	13 426	39	2 251	55	5 012	42	5 059	65
Japan	2 270	4	15	0	426	10	638	5	1 190	15
United States	4 727	8	61	0	1 426	35	511	4	2 728	35
OECD Total	57 893	100	34 215	100	4 091	100	11 813	100	7 774	100
<b>Origins</b>										
OECD	43 898	76	25 318	74	3 292	80	8 730	74	6 558	84
Non-OECD <sup>2</sup>	13 942	24	8 867	26	798	20	3 076	26	1 200	15
America	1 224	9	655	8	415	53	77	3	77	7
Asia	7 706	56	4 232	49	84	11	2 536	83	853	74
Europe	3 199	23	2 753	32	28	4	253	8	165	14
Oceania	56		34		2	.27	10	.32	10	1
Africa	1 528	11	1 047	12	251	32	176	6	54	5

**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.

.. not available

1. EU countries members of OECD: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary,

2. The total of the exports from the five non-OECD zones may not correspond to the global figure for non-OECD as a whole, since the latter

Source: OECD (2013), International Trade Statistics Database.



Table 1A1.16. Exports of fish, crustaceans, mollusc and products thereof by OECD and world economies according to origin, 2011

Origin	Exporting country																											Total OECD										
	Australia	Canada	Chile	Iceland	Israel	Japan	Korea	Mexico	New Zealand	Norway	Switzerland	Turkey	United States	TOTAL EU	Austria	Belgium	Czech Republic	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Ireland	Italy	Luxembourg		Netherlands	Poland	Portugal	Slovak Republic	Slovenia	Spain	Sweden	United Kingdom		
Australia	17	7	7	2	1	15	10	0	217	27	1	0	50	58	0	0	0	28	1	0	1	5	1	0	0	2	6	0	1	5	1	0	0	0	2	1	4	
Canada	2	0	71	8	1	10	12	11	10	43	0	1	1177	61	0	0	0	0	0	0	0	3	2	4	0	0	6	0	1	3	9	0	0	0	3	1	7	
Chile														2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43	
Iceland														52	0	0	0	12	12	0	0	0	24	0	0	0	0	0	0	0	1	0	0	0	0	0	1	104
Israel														21	0	0	3	0	3	0	0	0	0	2	0	1	3	0	6	0	2	0	0	1	0	2	128	
Japan														300	0	1	0	52	1	1	18	7	8	0	11	23	0	31	8	8	0	0	0	12	0	16	4851	
Korea														57	0	0	0	8	0	0	2	0	0	0	0	0	0	5	0	0	0	0	0	0	12	0	18	934
Mexico														13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	159
New Zealand														1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	139
Norway														629	0	2	0	352	7	0	6	139	0	0	0	0	0	0	0	0	0	0	0	0	0	79	23	858
Switzerland														4	1	73	10	0	76	109	5	0	3	30	0	73	24	9	0	1	16	3	13	520	13	520		
Turkey														22	0	0	1	0	0	5	5	2	0	0	0	0	0	0	0	0	0	0	0	5	0	1	137	
United States														653	0	0	0	25	3	0	26	14	21	0	1	12	0	50	55	21	0	0	50	6	387	5627		
European Union (27 countries)	16	405	606	1434	19	34	94	161	156	5499	10	321	1314	22461	36	1258	123	2641	127	35	1367	2426	774	21	470	616	18	2898	1329	860	21	13	2938	2750	1741	32531		
Austria														0	4	11	36	0	0	16	283	2	1	1	37	0	30	11	6	0	9	6	9	4	476			
Belgium														1241	0	0	1	86	0	0	219	128	2	0	12	9	9	605	23	7	0	0	25	57	57	1524		
Czech Republic														178	2	1	0	17	3	0	6	37	2	0	3	11	0	16	36	0	8	0	7	27	1	206		
Denmark														704	0	18	2	0	14	8	35	223	1	0	5	2	0	61	78	1	0	0	17	183	56	1615		
Estonia														57	0	1	0	17	0	2	2	0	2	0	0	0	0	0	2	2	0	0	2	19	1	93		
Finland														204	0	2	0	40	27	0	5	11	0	0	0	0	0	12	6	0	0	0	3	96	1	414		
France														3300	0	515	11	286	4	0	382	92	10	167	57	5	468	154	94	0	1	544	585	585	5437			
Germany														2888	12	121	18	651	21	0	131	0	33	3	40	89	3	616	775	6	0	86	145	138	3900			
Greece														337	2	5	0	51	2	0	18	46	0	0	2	66	0	20	1	3	0	0	89	26	8	479		
Hungary														89	5	1	8	4	1	0	4	14	0	0	1	6	0	10	16	0	11	1	7	1	1	90		
Ireland														297	0	2	1	8	0	0	17	15	3	0	0	0	0	16	3	0	0	4	2	226	322			
Italy														3380	2	38	4	345	2	0	370	218	338	1	31	0	0	399	30	73	0	1	1226	142	163	3947		
Luxembourg														115	0	46	0	3	0	0	25	8	1	0	0	1	0	19	0	6	0	0	1	1	1	117		
Poland														1379	2	376	0	173	2	0	59	388	62	0	23	14	0	0	20	4	0	32	87	125	2246			
Portugal														893	2	8	10	122	4	0	14	166	2	2	16	6	0	62	0	0	0	12	416	50	1640			
Slovak Republic														175	0	9	0	13	0	0	22	61	40	0	6	4	0	90	0	0	0	728	341	61	1924			
Slovenia														86	3	0	43	2	1	0	1	8	0	1	1	0	0	2	15	0	0	6	1	1	87			
Spain														72	3	0	3	0	0	1	8	2	0	0	0	34	0	6	1	0	0	14	0	1	73			
Sweden														2309	0	52	1	121	12	0	303	83	117	0	84	220	0	189	9	611	0	0	262	246	3448			
Netherlands														504	0	9	0	295	11	15	21	25	0	0	7	1	0	66	36	2	0	3	0	12	980			
United Kingdom														1469	0	43	1	325	2	1	87	293	46	0	67	9	0	171	92	47	0	82	201	0	2586			
Non-OECD America														246	0	0	0	17	2	0	1	4	0	0	1	1	0	5	1	102	0	108	0	3	1261			
Non-OECD Asia														931	0	2	0	278	7	0	84	27	1	0	8	7	1	89	38	6	0	275	2	106	8389			
Non-OECD Oceania														7	0	0	0	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57		
Africa														991	0	10	0	27	0	0	101	11	0	0	57	24	0	383	1	44	0	0	288	0	33	1569		
World	1107	4208	4586	2211	32	1885	2149	1111	1203	9455	24	435	5607	27803	40	1282	124	3657	226	49	1745	2788	841	22	600	780	19	3581	1480	1070	21	24	3980	2862	2424	6188		

Comprises codes SH03020307, 1212201504, 16041605 and 230120.

Source: OECD (2013), International Trade Statistics Database.

## *Chapter 2*

### **Fuel tax concessions**

*This chapter sheds light on the extent of fuel tax concessions and fuel consumption in the fisheries sector.*

In September 2009, leaders from the Group of Twenty (G-20) nations met in Pittsburgh and agreed, among other things, to “phase out and rationalise over the medium term inefficient fossil fuel subsidies while providing targeted support for the poorest.” Fuel tax concessions (FTCs) in fisheries are a common policy tool used to reduce the cost of fuel for fishing fleets. This support is seen as, *inter alia*, enabling certain fuel-intensive fisheries to continue to operate, assisting fishers to deal with increasing fuel prices and, in some cases, to reflect that fuel excise taxes are used as a user fee for transportation infrastructure.

This chapter sheds some light on the extent of fuel tax concessions and fuel consumption in the fisheries sector. To what extent the various fuel tax exemptions/concessions reported here can be equated to a “fuel subsidy” is still debated in various forums (in particular WTO). This is further underscored by difficulties in measurement that make comparisons across fisheries and countries a very challenging task.

While budgetary policies are used in some cases, the majority of support to fuel use comes in the form of tax concessions (Box 2.1).<sup>1</sup> Many countries have well-established procedures for measuring and reporting tax expenditures in personal and corporate income taxes as well as for broad consumption taxes like the VAT (OECD, 2010). All OECD countries apply excise taxes to some fossil fuels. But the tax rates that apply for some transport fuels are typically different than for other use, e.g. private transport fuels or fossil fuels used for residential heating, for industrial processes or for other purposes. The tax expenditures that fiscal authorities report for reduced rates, refunds or exemptions can represent substantial amounts in many countries.

#### Box 2.1. What are tax expenditures?

Tax expenditures are defined as “a transfer of public resources that is achieved by reducing tax obligations with respect to a benchmark tax, rather than by a direct expenditure” (Kraan 2004) — cited in Tax Expenditures in OECD Countries (OECD 2010). Tax expenditures can be used as an incentive to change behaviour or to provide an income transfer. While the terms “tax expenditure” and “tax concession” are synonymous, the term “tax expenditure” emphasises the similarity to direct budgetary outlays.

Tax expenditures take many different forms. They can be difficult to measure as “some tax measures may not be readily classified as part of the benchmark or an exception to it” (Whitehouse 1999). Tax expenditure estimates measure the benefit of the tax concession to the recipient, whereas direct expenditure estimates measure the impact of the expenditure on the budget on a pre-tax basis (AT 2005). Unlike budgetary outlays, tax expenditures are not always estimated by governments and depend in part on how beneficiaries respond to them. Some examples of tax expenditures are as follows.

*Allowances:* Amounts deducted from the benchmark to arrive at the tax base.

*Exemptions:* Amounts excluded from the tax base.

*Rate relief:* A reduced rate of tax applied to a class of taxpayer or taxable transactions.

*Tax deferral:* A delay in paying tax.

*Credits:* Amounts deducted from tax liability (Anderson, 2008).

Tax concessions for fisheries are usually provided through lower rates, exemptions, or rebates with respect to the two main types of consumption taxes.

- *Value added taxes (VAT)* which are broad-based taxes levied at each stage of the value chain, representing a percentage of the value of the good or service sold.
- *Excise taxes directed at specific fuels.* These are generally the most visible form of tax concessions related to fossil fuels, as they have a direct effect on prices and therefore consumption, though they can be difficult to measure.



Tax concessions directed at fisheries usually are targeted either at fisheries as a specifically-identified industry or part of a group of industries (either as targeted support for the sector or the fact that fuel is used as an input to production rather than for final consumption), or to fisheries by virtue of the type of fuel that is used. In the first case, fuel used in fisheries is taxed less heavily than for users subject to the standard rate of tax. In the second case, specific fuels can be subject to reduced rates or exempted from tax altogether. A common example is a lower tax rate (or exemption) on diesel relative to gasoline.

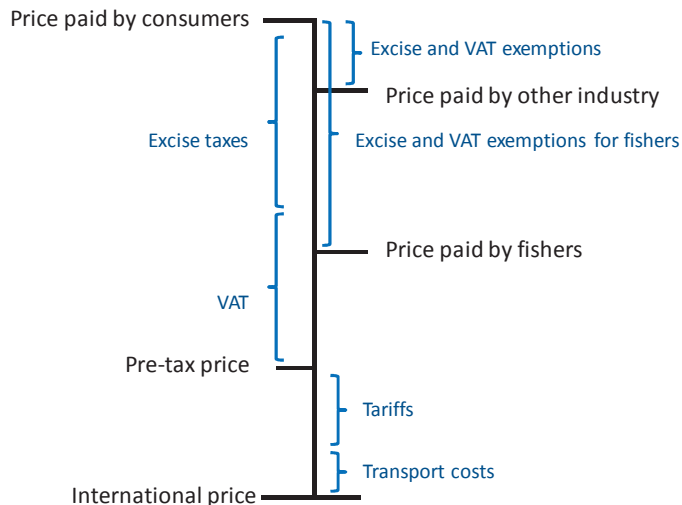
An important point to bear in mind when reviewing any tax concessions relating to VAT and excise taxes on fuel is that, in most OECD countries, the majority of the fuel that is consumed is taxed to some degree, but the rate of taxation and its application can vary widely across countries. The differential treatment of fisheries relative to the standard tax rate reported for a specific country will be reflected in relative prices *within* an economy, but does not by itself provide an indication of differences in fuel costs *between* countries.

Cross-country comparisons of the impact of tax concessions for fisheries cannot be made because a benchmark for comparison does not exist. Within a country there will be many different prices paid for fuels of different types and for different uses according to tax concessions granted to different users (Figure 2.1). Should the price for fuel paid by fishers be compared to consumers or other industrial users? If so, which ones? Between countries, differences in tariffs and transport costs as well as in VAT and excise taxes will lead to different prices faced by fishers, consumers and others in different countries.<sup>2</sup> The level of the tax expenditure is only part of the story if one is interested in evaluating the impact of tax concessions on fisheries, and is not by itself sufficient to draw conclusions about the relative prices paid by fishers in different regions, or the impacts of that price differential. Tax concessions represent real transfers in the domestic economy, from taxpayers to fishers, and in this context the fact that other transfers to other users exist is less important. The size of the transfer reflects, along with other components of the GFT, the level of policy effort expended on the fisheries sector. Measuring the level of policy transfer is a necessary first step in an analysis that may lead to an estimate of their impact.

Tax concessions are one of the less transparent ways to deliver such transfers, such that their scale and importance may not be appreciated by policy makers, i.e. such exemptions are less visible than a direct transfer with a budget line. This is important for policy coherence as well as policy review and evaluation. However, in the context of efforts to reduce emissions related to climate change, a good understanding of all policies that may affect emissions is essential. Understanding the scale of these expenditures is also important to contributing to fiscal reform.

Determining which policies are directed towards fisheries can be a challenge. VAT exemptions can be available for a variety of activities and so may not be exclusive to fisheries. In this case, it can be difficult to claim such an exemption as targeted support to the fisheries sector.

Excise taxes, however, intentionally raise the price of the taxed item, e.g. because its use is deemed harmful to society, or because governments can raise revenues easily and relatively efficiently on their consumption. Given this intent, there is much less rationale for exempting the fisheries sector and exemptions are usually justified for reasons of competitiveness or social equity. Fuel used by producers in primary sectors (agriculture, fishing, forestry and mining) is exempted because users do not operate on publicly financed roads, on the argument that at least part of the tax serves as a means for recovering the cost of building and maintaining those roads. On the other hand, excise taxes may be applied with the intention of internalising the environmental costs of fuel use or to raise revenues, in which case the tax exemptions may limit the effectiveness of the tax.

**Figure 2.1. Tax concessions and price formation**

## 2.1. Data collection

For the purposes of collecting data for this exercise, a questionnaire asked about any government intervention relating to fossil fuels that reduces the cost and increases the revenues of commercial fishers, regardless of whether or not they involve direct financial transfers. This would include a rebate, refund, expenditure or reduction (to fishers) from Value Added Taxes (VAT) and other such direct fuel taxes that are normally levied by the government on fuel users in the economy; price controls that suppress fuel prices below market prices; and programmes that provide direct transfers or payments.

Data on fossil fuel consumption by the fisheries sector, budgetary support and tax concessions were provided through the voluntary responses of OECD member, accession and observer economies covering the years 2007 and 2008. Information was also requested on any specific budgetary or tax concession implemented as a result of the increase in fuel prices in 2008. Existing data collected as part of the annual statistical collection on GFTs was also examined.

This information was supplemented by the data collected on fuel taxes, which are compiled in a database of instruments used for environmental policy and natural resources management by the OECD and the European Environment Agency, as well as a desktop review of the literature.<sup>3</sup> The market price paid for fuel by fishers was supplemented using data from the International Energy Agency where necessary (OECD/IEA, 2009).

The methods used by countries for calculating the total value of fuel-tax concessions depends on how the tax concessions are applied in each case: this may be through a tax refund where an individual pays the fuel tax and the government refunds part or all of it. In such cases, the amount of the refund the government makes (i.e. forgone revenue) is the value of the tax concession. Alternatively, there may be a tax reduction or an immediate exemption; this refers to instances in which an individual pays less or no tax at the time fuel is purchased. Budgetary payments related to fuel use are relatively rare; only Russia reports the use of these during the study period.

## 2.2. Summary of results

While the rate of the fuel-tax concession per litre varies across countries, in the majority of instances, a full tax exemption is applied to the fisheries sector. In some countries, fuel-tax

concessions vary depending on the level of government. For example, in Canada and the United States, fuel taxes, and therefore their value to users, vary at the sub-national (provincial or state) level, as well as from those at the federal level. These sub-national tax concessions or other relief are not fully captured in this exercise.

The estimated total value of fuel-tax concessions for OECD countries was USD 2 billion in 2008, with a total amount of fuel consumed of 9.3 billion litres; this latter figure also includes fuel consumed by fishing vessels that were not eligible for a tax concession or other form of support (Table 2.1). Not all countries report the use of tax concessions, and not all countries have responded to the data request for this report.

The European Union also provides other payments which may be linked to fuel use, but are not captured here. Specifically, the *de minimis* regulation for fisheries, EC Reg. 875/2007, allows a maximum support of EUR 30 000 per firm for each three-year period during 2007-2013. These funds cannot be used to increase fishing capacity, though they may be used to finance variable costs of fishing vessels, including fuel (see the discussion of the European Union in the Country Review section for more details).

The estimate of total value of fuel tax concessions under-estimates the total value of fuel-tax concessions in OECD countries, because:

- not all countries have responded;
- there are sub-national tax concessions that have not been reported; and
- in some cases, a reasonable estimate of the total value of fuel-tax concessions could not be estimated because fuel-consumption data were not available, though the tax and exemption rates were known.<sup>4</sup>

The previous section cautioned against international comparisons of this data, because of the lack of appropriate benchmarks for comparison. To this should be added the issue of the different methods of estimation seen in the data submissions (Box 2.2).

The data in Table 2.1 are assembled from a number of different sources. The primary source of data is the country submissions, with other data sources used where the submissions are incomplete. For example, when domestic fuel price is not available, IEA data on “Automotive Diesel Prices for Commercial” is used. However, comparing fuel prices submitted by countries with the IEA data reveals significant differences which can complicate analysis of the data. Part of the problem may be the definition of “Commercial” in the IEA data, which may or may not already include tax concessions available to fishers. Moreover, while the data reported in Table 2.1 is nominally for 2008, some of the data is for earlier years when 2008 data was not available. Even using this approach, there are number of empty cells in the table where data was not available.

The importance of fuel tax concessions as a share of landed value varies considerably across countries. Fuel tax concessions accounting for less than 3% of the total landed value in a majority of cases, of which seven countries report no concessions and seven others do not have commercial fleets (Table 2.1). Six countries provide concessions worth between 3% and 9% of landed value, while seven countries offered concessions worth more than 10% of landed value. This statistic is only as good as the underlying data, and some of the variation is likely due to data problems such as under-reported landings.

Table 2.1. Fuel Tax Concessions and related statistics, 2008

National Currency (NTC)	Fuel price per litre	Amount of fuel tax concession per litre	Net fuel price for fishers per litre	Total volume of fuel consumed million litres	Total Value of all fuel support NTC millions	Volume caught, metric tons	Landed value NTC millions	FTC as % of total landed per cent	GFT	FTC+GFT	FTC as % of all support
Australia <sup>1</sup>	1.49	0.38	1.10	196.7	75.0	180.7	1 426.2	5%	37.8	112.8	66%
Belgium	0.74	0.00	0.74	45.6	0.1	22.6	84.1	0%	3.4	3.5	3%
Canada	1.25	0.14	1.11	82.7	11.4	950.0	1 873.6	1%	748.2	759.6	1%
Chile	440.50	0.00	440.50	167.3	0.0	3 939.4	855 827.5	0%	25 259.3	25 259.3	0%
Denmark	7.04	2.73	4.31	92.8	253.7	690.2	2 503.6	10%	586.2	839.9	30%
Estonia <sup>3</sup>	17.48	5.17	12.32	4.1	21.0	102.5	231.1	9%	68.3	89.3	24%
Finland	1.04	0.25	0.78	1.2	0.3	158.4	18.5	2%	23.9	24.2	1%
France	1.27	0.63	0.64	285.0	179.6	496.9	958.9	19%	216.4	396.0	45%
Germany	1.12	0.00	1.12	0.0	0.0	229.5	206.6	0%	6.1	6.1	0%
Greece <sup>2</sup>	1.22	0.29	0.93	100.3	29.4	89.4	299.1	10%	56.8	86.2	34%
Iceland	115.28	0.00	115.28	164.0	0.0	1 306.6	111 670.9	0%	4 159.0	4 159.0	0%
Italy	1.34	0.65	0.69	422.0	274.3	237.2	1 236.0	22%	47.5	321.8	85%
Japan <sup>1</sup>	119.41	8.45	110.96	2 021.0	17 078.7	4 354.7	978 258.7	2%	211 290.0	228 368.7	7%
Korea	1 615.0	605.63	1 009.34	836.8	506 799.6	1 957.7	3 439 092.4	15%	968 183.0	1 474 982.6	34%
Latvia	0.76	0.19	0.57	17.9	3.4	157.9					
Mexico <sup>1</sup>	6.42	2.00	4.42	467.5	935.0		596 759.2	0%	931.9	1 866.8	50%
The Netherlands <sup>3,4</sup>	0.90	0.36	0.54	193.0	70.4	416.7	452.1	16%	29.7	100.1	70%
New Zealand	1.29	0.00	1.29	216.0	0.4	451.2	300.8	0%	61.7	62.1	1%
Norway <sup>4</sup>	6.25	1.40	4.86	238.1	332.1	2 430.8	11 611.9	3%	1 713.9	2 046.0	16%
Poland <sup>1</sup>	3.37	1.05	2.33	16.0	16.7	142.5	185.6	9%	56.6	73.4	23%
Portugal	1.13	0.00	1.13	0.2	0.0	240.4	256.5	0%	39.1	39.1	0%
Slovenia	1.13	0.30	0.82	0.2	0.1	0.9					
Spain <sup>4</sup>	0.58	0.10	0.48	334.5	31.8	917.3	1 728.3	2%	168.1	199.9	16%
Sweden <sup>3</sup>	9.22	3.90	5.32	47.5	185.6	231.3	968.4	19%	638.6	824.2	23%
Turkey	3.23	0.94	2.29	93.6	88.3	494.1	207.8	42%	357.0	445.3	20%
United Kingdom	0.83	0.09	0.74	338.6	30.5	596.0	501.9	6%	19.7	50.1	61%
United States	1.00	0.06	0.94	1 337.5	85.6	4 357.0	1 150.0	7%	2 149.9	2 235.5	4%
Russian Federation		18.46		1 590.0	29 351.4	3 394.0					
Thailand		0.00		0.0	0.0		42 147.0				

1. Data for 2008 except as noted: 2007 for Australia and Japan; New Zealand fuel consumption estimate 2005; GFT estimate for Mexico and Poland from 2007

2. Total landings and values for Greece are for vessels of more than 19HP

3. Rate of FTC calculated as weighted average of exemption for different types of fuel.

4. Volume of fuel reported is amount benefiting from FTC. Total fleet consumption may be higher

5. When not otherwise available, data on fuel price is from IEA - Automotive Diesel Oil Prices for Commercial Use. For Iceland, GTZ data was used.

6. Cross-country comparisons are not possible due to differences in baselines and definitions across countries.

Source: Country submissions to the OECD, IEA, OECD.Stat.

### Box 2.2. International comparability

Tax expenditure accounting was never designed with international comparability in mind. The main challenge in any analysis of tax expenditures is to identify the reference point or benchmark tax system to be used in order to establish the nature and extent of any concession. Even where countries have adopted broadly the same methodological approach, the way in which they have implemented it in response to practical issues such as how far a relief should be regarded as a structural part of the tax regime may well differ (e.g. depreciation allowances used in calculating taxable profits). Moreover, differences in reporting in nominal versus present values can impede comparability. Without definitive answers to many of the issues outlined above, countries have either taken different approaches in measuring their tax expenditures or have simply not measured them at all. Ensuring a consistent approach across countries in this regard is a first step.

Leaving aside conceptual difficulties, cross-country comparison of tax expenditures remain a poor measure of how “green” is a country’s tax system. Tax expenditures are dependent on two important factors: (i) the level of the standard or “optimal” tax rate and (ii) the existence of taxes on fossil fuels. As an example of the first issue, if two countries each applied a reduced rate of VAT of 10% to domestic consumption of fuel and power, but the standard VAT rate in one was 20% and in the other it was 25%, the latter would show a higher tax expenditure (in relation to GDP). In the case of the second issue where there are few taxes on fossil fuels, a country that applies a carbon tax with some tax breaks would have more tax expenditures than another country with no carbon tax in an analysis where the baseline was a standard tax and not an “optimal” tax. Clearly, any final statistic must be taken in the context of other statistics.

*Source:* Extracted from OECD (2010a), Tax Expenditures in OECD Countries, OECD Publishing. DOI: 10.1787/9789264076907-en).

Fuel use per tonne of fish landed also shows strong variation across countries. This statistic is obtained by dividing the total amount of fuel consumed by the total landed volume in each country in 2008. Fuel use per tonne of fish landed shows little correlation with the value of tax concessions as a share of output, with only France and Italy showing both high levels of concessions and high fuel use per tonne of landings.

Some of the variation is to be expected, due to the variety of fishing patterns in place. These are determined by, *inter alia*, access to stocks, gear use, management system and price. On the other hand, some of this variation is likely due to data limitations or errors. For example, Greece does not keep records of fishing vessels that may benefit from fuel tax concessions. At the same time, official records of landings exclude small vessels of less than 19 HP which make up 60% of the total fleet, so official records under-report actual landings. It can also be difficult to separate fuel sales to the petroleum industry, shipping, fisheries and distributors. Moreover, statistics on landings may be reported on different weight bases.<sup>5</sup>

In the countries where fuel prices are higher due to higher country-wide taxes or fees, the impact of fuel-tax exemptions is to bring the cost of fuel for fishers closer to the international average. In countries where there are no fuel-tax exemptions or very low fuel-tax exemptions, the costs of fuel to fishers will be higher if country-wide fuel tax rates are high (e.g. Belgium, Germany, The Netherlands, Portugal) or close to the cross-country average if country-wide tax rates are low (e.g. New Zealand and the United States). Differences in fuel prices are also explained by country-specific factors other than tax concessions such as domestic supply and demand balance, refining capacity, degree of competition and relative transportation costs.

## 2.3 The impacts of fuel support

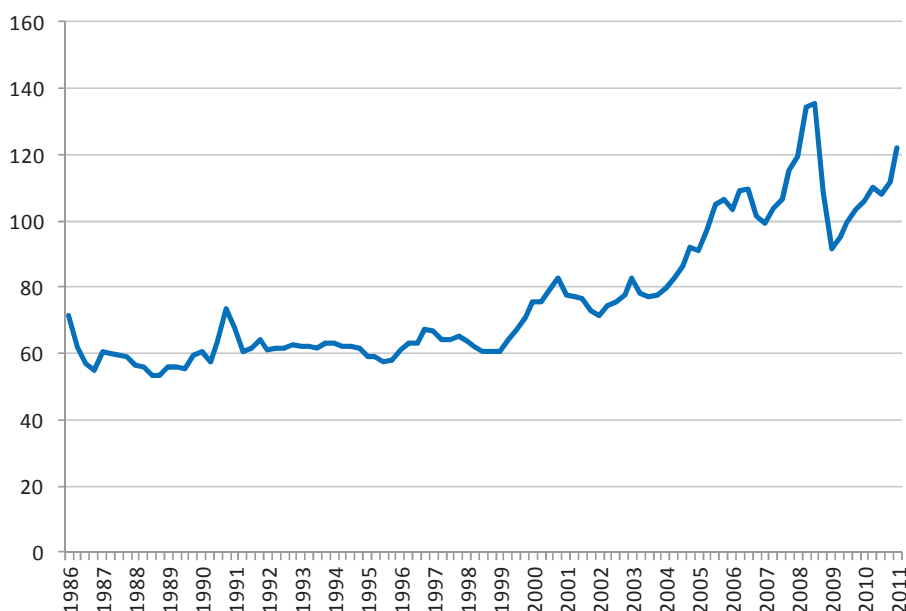
Overall, the fuel consumption of fishing vessels has been estimated to be 1.2% of the world oil use, and fuel represents a large share of variable costs in most fisheries.<sup>6</sup> Fuel prices have been particularly volatile in recent years. The index of OECD real energy prices for end-users of oil products shows substantial price movements after 2004, in particular increases between 2004 and 2005 and a spike in prices followed by a downward correction in 2008-

2009 (Figure 2.2). High fuel prices have motivated fuel tax concessions in the past, and the current fuel price volatility can make removing fuel tax concessions more difficult.

Reducing support to fuel use has received particular attention from the G20 and others because it has the potential to generate both environmental and economic benefits (OECD, 2005). While the analysis of the impacts of similar forms of support demonstrates that they can be some of the most production distorting and inefficient means of transferring income to producers (OECD 2010, 2011), their impact on fisheries is less clear. Central to understanding the impact in the fisheries sector is how the management system operates for the fishery in question. While fuel is an important input and tax concessions can have a significant impact on the fuel price paid by fishers, the impact of such support will be contingent on the management system constraints faced by and alternatives available to the fisher.

**Figure 2.2. Real price of oil products to industry**

Quarterly data, 2005=100



Source: IEA (2009), *Energy Prices and Taxes*, Vol. 2009/3, OECD Publishing.  
DOI: [10.1787/energy\\_tax-v2009-3-en](https://doi.org/10.1787/energy_tax-v2009-3-en).

### ***Theoretical relationship between management systems and fuel support***

The classic analysis of the impact of support to variable input use such as a fuel tax concession is in the context of an **open access fishery**.<sup>7</sup> An open access fishery places no restraints on fishing effort. In this case, support lowers the cost of effort, leading to more effort and a smaller fish stock in equilibrium. Depending on the initial situation, total harvest can be lower than before the support if catch-per-unit-effort declines sufficiently (Figure 2.3). In this case, the fuel tax concession gives no benefit to the fisher; the benefits are competed away through increased effort. The concession can produce increased effort in the fishery, but not increased profits. In the case of inefficient fleets with low profitability, the removal of fuel support could drive the less efficient firms out of the fishery, further reducing pressures on the resource and increasing the profitability of the remaining firms. As drawn, Figure 2.3 shows the initial stock above the MSY level, such that the increased support to fuel use lowers revenue in the fishery.<sup>8</sup>

Fisheries management using **output controls with limited entry** offers something of an opposite example. In the situation where the TAC is set to the MSY level and is effectively controlled, fishers earn positive profits of  $R_1 - C_1$  in the initial situation (Figure 2.4). When a tax concession is introduced that lowers cost, there is no effort response due to the TAC as effort is assumed to be effectively controlled by the TAC. The fuel support leads to higher profits as costs are lower with no changes to stock or effort level. This implies that fuel tax concessions under a binding TAC are transfer efficient - the value of the support tends to be reflected in increased profits. This is a consequence of the management regime; effective control means that support cannot impact effort or stocks and limited access means that positive profits are possible.<sup>9</sup> The result would hold for any form of support that lowers cost.

Figure 2.3. Fuel tax concessions in an open-access fishery

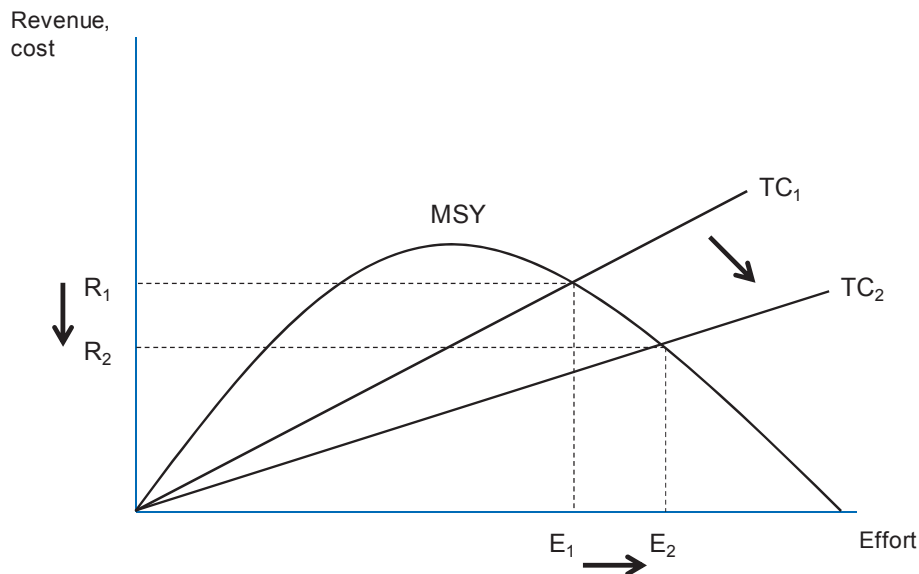
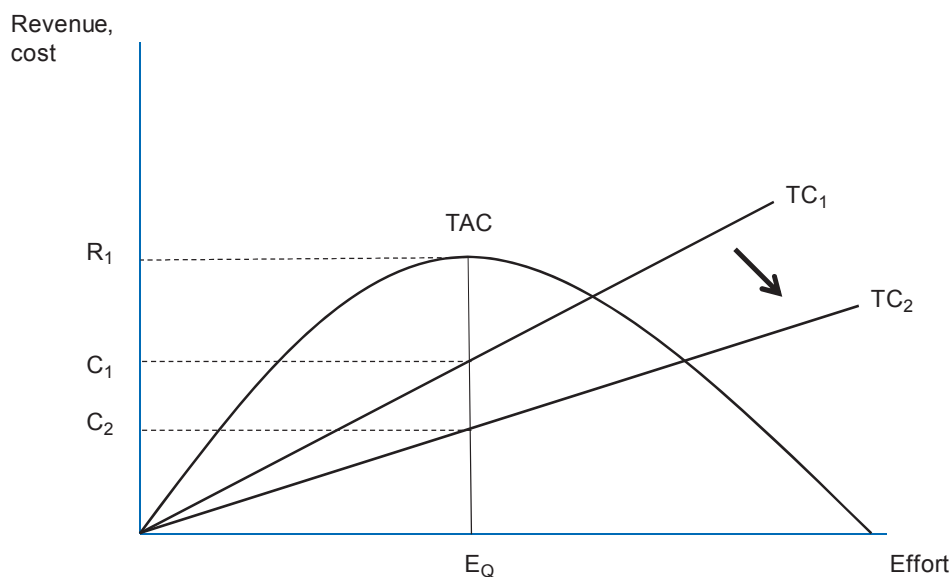


Figure 2.4. Fuel tax concessions with a TAC



Under **rights-based regimes** (such as ITQs), support to fuel use would generally not have any effect on the volume caught, but could distort the choice of production inputs compared with a cost-minimising choice at market prices. The degree to which this effect will produce new outcomes will depend on the extent to which production inputs, or factors of production, are substitutable and whether it is economically efficient to do so. While fishers will not have an incentive to fish more under fixed individual quotas, they may elect, for example, to fish for longer periods of time and with less gear or manpower. Any additional profits deriving from the fuel support should become capitalised in the value of the quota right (OECD, 2006).

In the situation of a **binding TAC but unlimited entry**, the TC curve touches the revenue curve at the TAC level. Fishers compete away profits not by increasing effort as in the open access case, but by bidding up the cost of inputs such as fishing vessels or licenses such that profits are capitalised into the value of these inputs. Adding a fuel tax concession would lower variable costs, but this benefit would also become capitalised in the value of other (fixed) inputs. The result is no change in stock, effort or profits, but higher values for fixed inputs such as fishing vessels. This capitalisation effect may make it difficult to remove tax concessions once they are in place; fishers will have already invested the value of the support in capital and would suffer a real loss if the tax concession were removed (this is also true for rights-based regimes).

Under a fishery managed through **effort controls**, the impact of fuel tax exemptions will be similar to that which occurs under a rights-based regime, and will depend on how effort is controlled. If the number of days at sea is limited, for example, with reduced fuel costs could enable fishers to switch to more powerful engines or bigger boats, which may lead to raising the total real effort of the fleet despite the controls.

### *Empirical evidence*

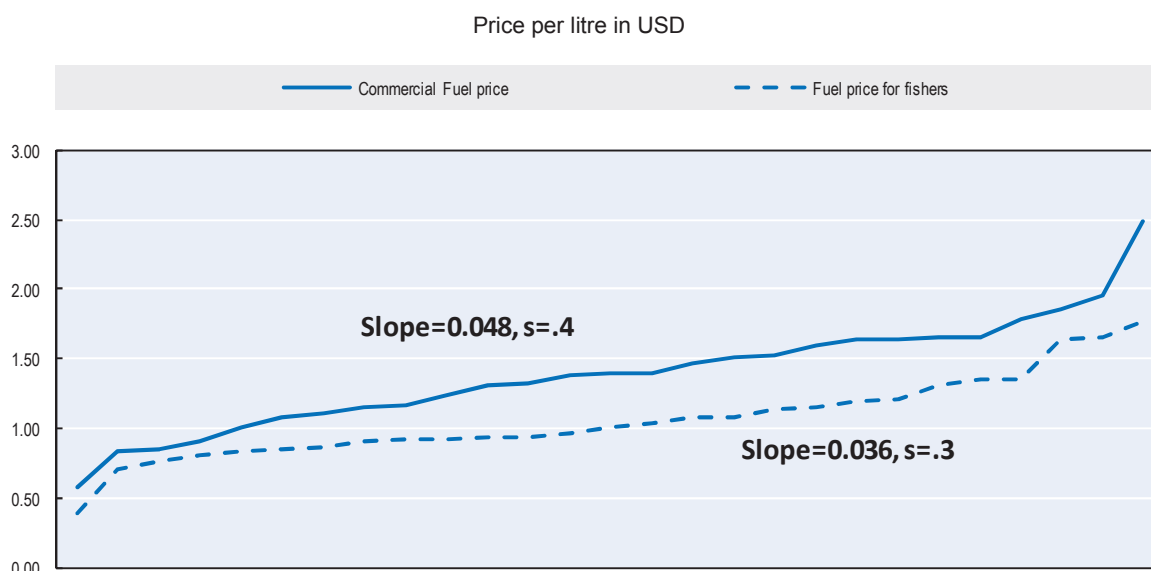
The data collected here can help understand how support affects relative fuel costs for fishers in different countries and its impact on the overall competitive picture for fishing. This can be evaluated by measuring the impact of fuel tax concessions on the variability and distribution of fuel prices.

The data suggests that fuel support does reduce the amount of variation in fuel prices across countries. That is, the distribution of fuel prices paid by fishers is smoother than the distribution of national commercial prices. The standard deviation of the former in the data is 0.3, vs 0.4 for the commercial price. The distribution of prices paid by fishers is also flatter, meaning that generally speaking, fishers in different countries pay more similar prices for fuel after FTCs are taken into account (Figure 2.5). This is calculated by ordering fuel prices from least to most expensive and measuring the slope of the resulting price distribution, for both the commercial price and the net price for fishers.<sup>10</sup>

That fuel tax concessions flatten the price distribution for fishers is not surprising. When higher national fuel prices are the result of high excise taxes, the possible value of an exemption is also higher. That is, price differences driven by differences in the tax regime are likely to be eliminated when FTCs are used and higher taxes are a precondition for higher FTCs. This can be seen by looking at the rate of FTC and resulting net price for fishers by country, ordered by the prevailing domestic fuel price (Figure 2.6). This does not mean that all fuel tax concessions act to equalise relative prices across countries. While fuel concessions in Italy and France (for example) bring the fuel price paid by fishers closer to the OECD average, in some countries where commercial prices are already relatively low FTCs lower fuel prices further below the OECD average (Figure 2.6).

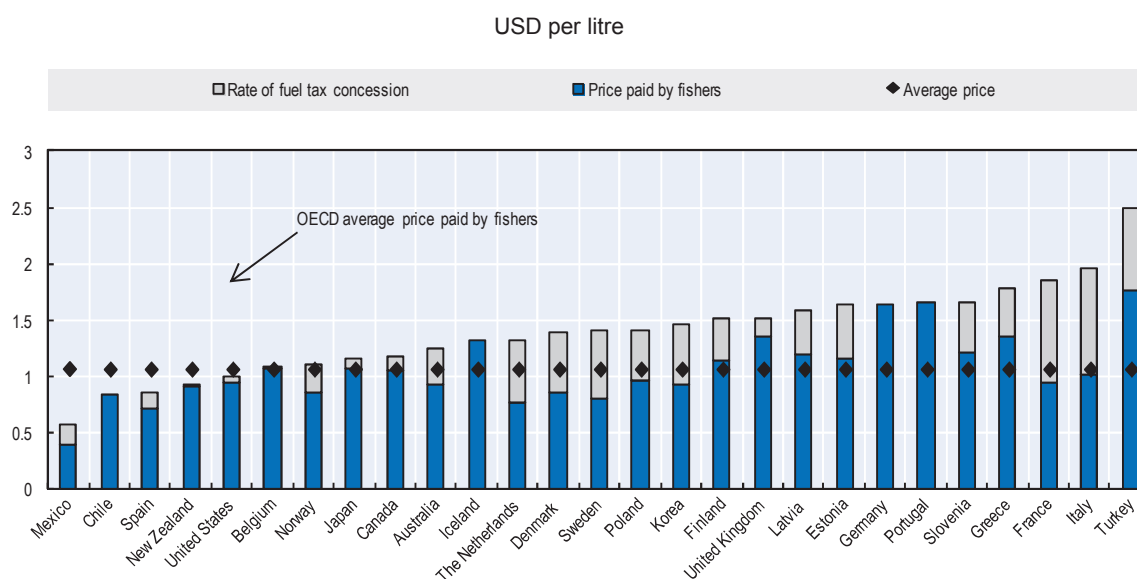


Figure 2.5. Fuel price distribution, commercial and net of FTC, 2008



Source: OECD FTC database 2011.

Figure 2.6. FTC and net fuel price for fishers, 2008



Source: OECD FTC database 2011.

While the need to bring the fuel costs of domestic fishers more in line with their competitors has been put forward as an argument justifying fuel tax concessions, fuel costs are only one part of the story. Whether domestic fisheries are competitive or not depends on a wide range of market and regulatory factors, including the fisheries management regime. In particular, whether fishers participate in domestic or international markets and whether the fleet has fuelling opportunities in other countries are important factors. Moreover, whether tax concessions (or support generally speaking) raise or hinder competitiveness in the long term is an open question. Central to understanding the cost structure in fisheries remains the management regime, and in particular the existence or not of over-capacity and the use of rights-based management regimes.

There are very few empirical studies of the effects of varying fuel-tax concessions on fishing operations. One such study was undertaken of the Senegalese fishery (UNEP, 2002). Based on the operating accounts of small-scale fishing units, a reduction in the fuel subsidy by one-half was estimated to result in a substantial reduction in the operating profits of boats, possibly leading to losses. That notwithstanding, the elimination of such support would not necessarily put an end to small-scale fishing, but it would certainly cause some boats to leave the fishery and so reduce fishing effort. The lower effort would, however, most likely result in a higher catch per unit of effort as fish stocks increase. The study shows that, over time, the catch per unit of effort has declined drastically for most Senegalese stocks, which most likely is due to the increase in effort and the resulting depletion of fish stocks over the same period.

Isaksen and Hermansen (2009) estimated that the Norwegian fishing fleet has limited possibilities for fuel substitution. In response to reduced refunds for CO<sub>2</sub> and mineral oil base tax, vessels would be able to adjust their operations (e.g. reduce the time of travel between fishing areas, more seasonal fisheries, higher capacity for storing fish on each tour) but these modifications would be of minor significance. However, the possibilities of substitution between different vessel groups requires further consideration. In the Norwegian case, it appears that the larger vessels (i.e. the ocean going fleet) will not necessarily adjust or change their input mix to lower the proportion of more costly fuel input if the refunds are terminated but go abroad to purchase fuel at lower cost.<sup>11</sup> Some larger vessels already fuel abroad, and this practice could increase if the refunds are terminated. The vessels that have least flexibility for adaptation, and limited possibilities for fuel consumption reduction or fuelling abroad, are the smaller vessels (coastal fleet). In most cases the coastal vessels have the most favourable operation pattern with least fuel consumption per kilo harvested.

#### 2.4. Conclusion

Fuel tax concessions are a common though not universal feature of the fisheries policy landscape. Tax concessions are a form of support that is challenging to measure in practice. Such support is no different from budgetary support in terms of the transfer it provides from taxpayers to the fisheries sector, but can fall under less scrutiny by virtue of its seemingly smaller fiscal implications and due to the fact that tax concessions are less transparent compared to other GFTs.

Reducing support to fuel use can be an attractive policy option as it has the potential to generate both environmental and economic benefits. The extent to which this is true depends largely on the nature of the fisheries management regime in place. In any case, tax-based policies should be considered as part of the overall management framework, and merit the same level of attention as other forms of support in the policy reform process.<sup>12</sup>

Concerns regarding competitiveness have motivated support reducing fuel costs, under the theory that reducing fuel costs through support are necessary to mitigate any competitive disadvantages of domestic fisheries. The analysis in this report has shown that the effect of fuel support policies can only be understood in the context of the fisheries management regime.

When making the case for reform, it may be more useful to consider the policy objectives motivating support than the impacts of such support. While the impacts of fuel support are uncertain, there is considerable evidence in OECD policy research that better options exist to achieve most common policy objectives. Transfers that are not contingent on production or use of inputs can be much more effective in transferring income to recipients, as they impose less market distortions and don't require fishers to take costly decisions to receive them. Support based on income can also be relatively efficient while at the same time addressing issues of fairness, especially when systems based on or using commonly available social-security frameworks are used. Regional development objectives are likely best met through

targeted programs that are not sector-specific, such as infrastructure development or retraining. If the objective is improving competitiveness, in the long run support can be counter-productive as it delays adjustment and masks structural problems.

### Notes

1. Several countries (Canada, Denmark, Japan, Korea, New Zealand, Norway and the United States) specified they do not consider fuel-tax exemptions or other relief reported here as subsidies, but nevertheless provided data, in keeping with the G-20 leaders' request.
2. In addition, different tax regimes may allow for wide differences in the definition of income and allowable deductions.
3. The database is located at [www2.oecd.org/econstat/queries/index.html](http://www2.oecd.org/econstat/queries/index.html).
4. For example, in Canada, relief of the federal excise tax of 4 cents per litre of diesel is generally available to fishing vessels that fish outside 12 nautical miles offshore (i.e. outside Canada's territorial sea). However, data on how many vessels proceed beyond 12 nautical miles from shore is not available, so the total value of this relief is not calculated here.
5. Green weight, live weight, landed (processed) weight, and weight recalculated to live weight are all used. The composition of catch (fish, crustaceans and algae) may also influence the analysis.
6. Tyedmers, Watson and Pauly (2005) "Fuelling global fishing fleets", *Ambio*, Vol. 34. In particular "As a consequence of burning almost 42.4 million tonnes of fuel in 2000, representing approximately 1.2% of total global oil consumption, fishing boats released approximately 134 million tonnes of CO<sub>2</sub> into the atmosphere at an average rate of 1.7 tonnes of CO<sub>2</sub> per tonne of live-weight landed product."
7. The concept of "open-access fisheries", while theoretical important, is largely non-existent in OECD fisheries in practice. In OECD countries most fisheries are characterised as "regulated open access" (e.g. TAC, permissions, technical regulations) and, increasingly as rights-based fisheries, where access has been curtailed and the allowable catch has been given to individual fishers, their vessels or groups of fishers or vessels. A detailed and complete modelling of the impacts of fuel support and tax concessions therefore needs to be based on individual fisheries regimes in place
8. This is an equilibrium-based analysis; the hill-shaped curve relating effort and revenue defines the long-term relationship between these two things. What is missing is the short-term effects that may be prompted by an FTC before that new equilibrium relationship is established. The effects of an FTC along the time-path of adjustment may be different than that shown in the equilibrium.
9. It is possible that the higher profits earned by fishers could lead to higher input costs as input suppliers increase prices to try to capture some of the rents. The ability of input suppliers to do this depends on how competitive the market for inputs is.
10. As calculated here, slope and smoothness are complementary measures. That is, they are alternative ways of measuring the same change in price distribution, such that a flatter slope measure implies a smaller  $\sigma$  and conversely. Calculations are made on the basis of the price in USD in 2008. Both lines in Figure 2.5 are sorted by value separately, such that any point on the horizontal axis can reflect data for two different countries. Compare this to Figure 2.6, where the data is sorted by the commercial fuel

price only, preserving the relationship in the figure between the commercial price and the price paid by fishers by country.

11. As an extension of this particular case it may be worthwhile to ascertain if similar possibilities are available in other fishing areas characterised by short distances to foreign harbours, e.g. the Baltic Sea, the Southern part of the North Sea, etc. A key issue is if such practices provide a competitive edge to certain types and sizes of vessels that can fuel abroad.
12. See OECD work on *Liberalising Fisheries Markets: Scope and Effects* (2003), *Using Market Mechanisms to Manage Fisheries* (2006), and *Fisheries Policy Reform: National Experiences* (2011).

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**Part II.**  
**COUNTRY CHAPTERS**





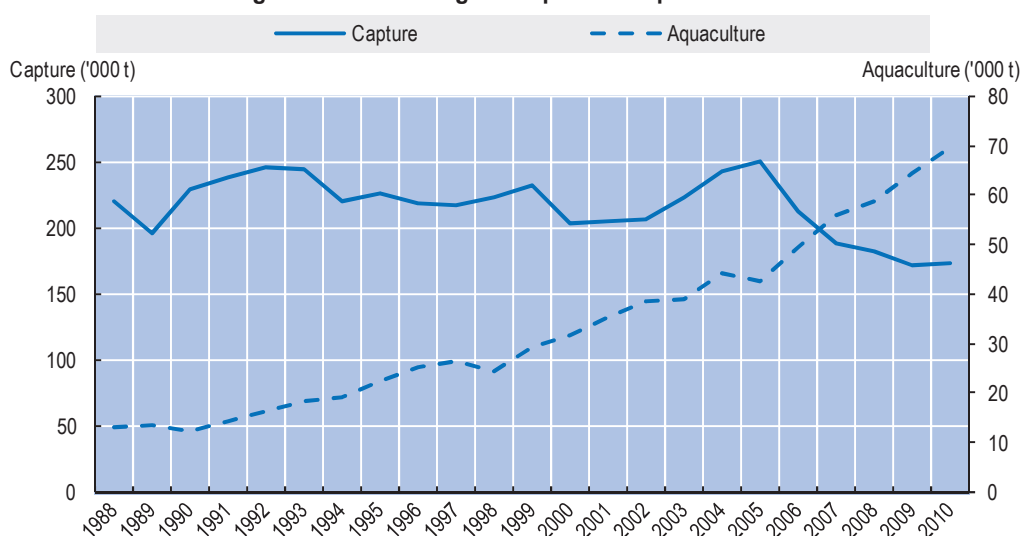
## Chapter 3

### Australia

#### Summary of recent developments

- The value of Australian fisheries production has been negatively affected in recent years by the appreciation of the Australian dollar and increased competition in the domestic market from rising imports. In the 2009-10 financial year, the total volume of fisheries production increased by 2% while the gross value of Australian fisheries production declined slightly from the previous year to AUD 2.2 billion.
- The Australian government is continuing to implement a range of initiatives and measures to improve fisheries management and ensure the sustainability of fish stocks for the long-term viability of the industry.
- Australia is reviewing the Commonwealth Fisheries Harvest Strategy Policy and Guidelines and the Commonwealth Policy on Fisheries Bycatch.
- Australia has reviewed its National Plan of Action for the Conservation and Management of Sharks (Shark-plan 1) which was released in 2004. A revised plan, called Shark-plan 2, was released in July 2012 and provides an updated assessment of the issues concerning sharks in Australian waters.
- The Australian Government has continued its strong action against illegal, unreported and unregulated (IUU) fishing and signed the Food and Agriculture Organization Port State Measures Agreement on 27 April 2010. Australia was in the process of domestic ratification of the Agreement during 2012.
- Australia ratified both the Southern Indian Ocean Fisheries Agreement and the Convention on the Conservation and Management of High Seas Fishery Resources of the South Pacific Ocean in March 2012.

Figure 3.1. Harvesting and aquaculture production



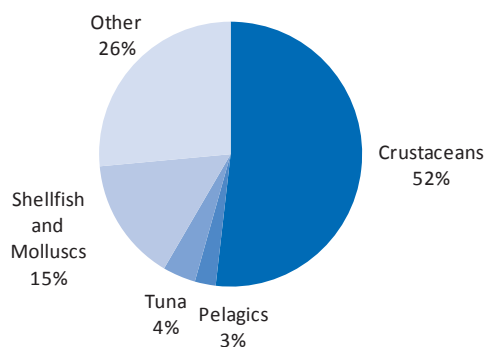
Source: FAO FishStat database.

### Box 3.1. Key characteristics of Australian fisheries

- The gross value of Australia's capture fisheries production decreased in recent years, reflecting a decline in the value of catches from both state and Commonwealth fisheries. Crustaceans continue to be the most important species landed in 2010 in terms of value, followed by shellfish and molluscs and tuna. (Panel A)
- Australia has become a net importer of fish products by value since 2007, and the discrepancy between import and export has been increasing. Since 2000, reduced volumes of major edible export species led to a steady reduction in the value of exports of fisheries products, whereas imports of fishery products have increased in value. Hong Kong, Japan, the United States, China and Singapore are the main export markets whereas Thailand, New Zealand, China and Viet Nam continue to be the main sources of imported edible fisheries products. (Panel B)
- A total of USD 45 million was transferred to the Australia's fisheries sector in 2010, which is a 34% increase compared to the 2005 figures (USD 38 million). (Panel C)
- Compared to 2006, the number of fishers and fish farmers increased by 16% and 26% respectively, while the tonnage decreased drastically and vessels numbers by one-third. (Panel D)

Figure 3.2. Key fisheries indicators

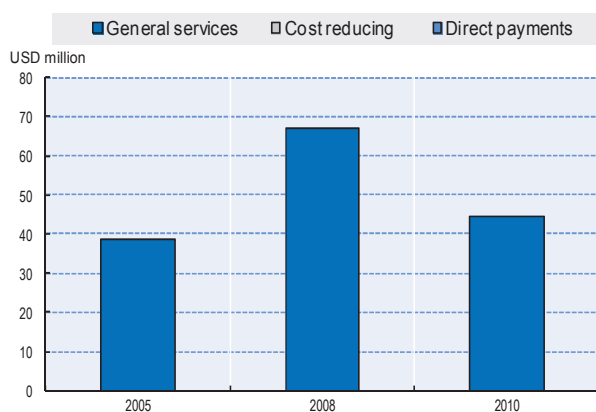
Panel A. Key species by value in 2010



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2006	2011	% change
Number of fishers	6 292	7 325	16.4
Number of fish farmers	3 480	4 373	25.7
Total number of vessels	477	322	-32.5
Total tonnage of the fleet	63 555	28 682	-54.9

1. Cost recovery charges (about USD 13 million in 2010) were not included in the GFT graph.

## Legal and institutional framework

Management responsibility for Australian fisheries is divided between the Australian Commonwealth and the states and the Northern Territory governments and, in some cases, responsibility is shared. The *Offshore Constitutional Settlement 1983* (OCS) is the jurisdictional arrangement between the Commonwealth and states/Northern Territory that sets out responsibilities for offshore activities, such as fisheries, mining, shipping, navigation and crimes at sea.

The OCS provides for state and Northern Territory fisheries laws to apply inside three nautical miles and for Commonwealth fisheries laws to apply from three to 200 nautical miles. However, Commonwealth and the states/Northern Territory fisheries legislation allow alternative arrangements to be made for a fishery that override the existing jurisdictional lines set out by the OCS.

The Department of Agriculture, Fisheries and Forestry (DAFF) develops and reviews policies and programmes to ensure Australian fisheries are competitive, profitable and sustainable. DAFF sets the policy direction for Commonwealth fisheries management, legislative reform/review and negotiates jurisdictional boundaries and resource sharing arrangements. The Australia Bureau of Agricultural and Resource Economics and Sciences (ABARES) provides scientific/economic research and advice to support DAFF's fisheries policy development and engagement in international and domestic issues. DAFF also works with the Fisheries Research and Development Corporation.

The Australian Fisheries Management Authority (AFMA) is responsible for implementing Australian Government fisheries policy and the management of Commonwealth fisheries. AFMA manages fisheries under Commonwealth jurisdiction in accordance with the provisions of the *Fisheries Management Act 1991* and the *Fisheries Administration Act 1991*.

Only Australian boats are authorised to fish under a fishing permit or statutory fishing right granted by AFMA. A foreign boat is not permitted to enter an Australian port unless it is authorised by a port permit granted by AFMA. A person must not land fish at an Australian port from a foreign boat unless the Minister responsible for fishing has expressly authorised that person to do so. A foreign flagged vessel may be declared an Australian vessel for the purposes of the *Fisheries Management Act 1991* on application to AFMA, provided that it meets certain criteria.

Industry is now a partner in managing Commonwealth fisheries. Amendments to fisheries management legislation in 2010–11 enable AFMA to enter into co-management arrangements, giving powers and functions to primary stakeholders in individual fisheries. This new level of co-management strengthens the collaborative approach between AFMA and its stakeholders and further builds the industry “stewardship” approach in managing the marine environment. The arrangements will result in simpler and more efficient administration of Commonwealth fisheries and these benefits will flow to industry.

Under the Commonwealth *Fisheries Management Act 1991* there are objectives to be pursued including: maximising economic efficiency in the exploitation of fisheries resources; ensuring that the exploitation of fisheries resources are conducted in a manner consistent with the principles of ecologically sustainable development; and exercising the precautionary approach. This Act also specifies that management should reduce the impact of fishing activities on non-target species and the long term sustainability of the marine environment. The UN Fish Stocks Agreement is also incorporated as a schedule to the Act.

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the key environmental legislation under the Minister for Sustainability, Environment, Water,

Population and Communities. Implementing the EPBC Act allows assessment of the environmental performance of fisheries and promotes ecological sustainability. The EPBC Act has the following implications.

- It is an offence to kill, injure, take, trade, keep or move protected species in Commonwealth waters.
- Marine products sourced from fisheries are either exempt from export controls, require a Wildlife Trade Operation permit, or cannot be exported, depending on the outcome of fishery assessments.
- The management arrangements of all Commonwealth fisheries, and as well as all state and Northern Territory fisheries that export product, are assessed under the EPBC Act, against the *Guidelines for the ecologically sustainable management of fisheries* (Second edition).

In October 2008, the Minister for the Environment, Heritage and the Arts commissioned an independent review of the EPBC Act. The review assessed the operation of the EPBC Act and the extent to which its objectives have been achieved. The final report was publicly released in December 2009. In August 2011, the government released its response to the review as part of a broad package of reforms for Australia's national environment law.

## Capture fisheries

### *Performance*

Since 2000-01, the real gross value of fisheries production has fallen by 31% reaching AUD 2.2 billion in 2009-10. Since 2004-05, the real gross value of fisheries production has declined by an average of 2% a year while the real value of aquaculture production has grown at an average annual rate of 4%.

Over the three years to 2009-10, rock lobster and prawns remained the highest value wild catch production. The two species contributed 46% of the gross value of wild catch production in 2009-10.

In 2009-10, the real value of Commonwealth fisheries production decreased by 2% to AUD 326 million, contributing 15% of the gross value of Australian total fisheries production. The Southern and Eastern Scalefish and Shark Fishery generated the highest value while the Northern Prawn Fishery continued to be the most valuable single method Commonwealth managed fishery in 2009-10.

The wild-catch sector share of Australia's fisheries gross value of production decreased in recent years, reflecting a decline in the value of catches from both state and Commonwealth fisheries.

In 2009-10, the total production volume of the wild-catch sector declined by 1% to 171 512 tonnes while the gross value of wild-catch production fell by 3% to AUD 1.34 billion. The value of fish production fell by 4 % to AUD 446.7 million in 2009-10 mainly due to declines in production volumes for high-valued products, such as tuna and coral trout.

In 2009-10, 11 431 people were employed in the commercial fishing, hunting and trapping industry, with 7 646 employed in the fishing, hunting and trapping sector, and 3 785 in aquaculture enterprises. Compared with 2008-09, total employment in the commercial fishing, hunting and trapping industry increased by 24% (2 208 people) following a 30% (1 931 people) increase in full-time employment and a 10% (277 people) increase in part-time employment in 2009-10. The most recent ABS Census Survey detailing employment in the fishing industry, by sector and by state, was conducted in 2006.

There are 322 fishing vessels that have been nominated to Commonwealth fishing concessions during 2011. This does not include State registered fishing vessels. More than 74% of the vessels (275) fall in the category of 10-24 m length vessel.

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

In the Commonwealth fisheries, a total of 96 stocks were classified in 2010. The number of stocks assessed in any given year is determined based on the importance of that stock to the current or past economic conditions of the fishery. The reports assess the biological status of the target and key by-product species in each Commonwealth fishery, with respect to their biomass and the level of fishing mortality.

Of the 96 stocks assessed in 2010, 56 were classified as not overfished (59 in 2009) and 71 stocks are classified as not subject to overfishing (73 in 2009). Of these, 53 stocks are classified as both not overfished and not subject to overfishing; that is their biomass is adequate to sustain the stock in the long term and the level of fishing effort will not move the stock to an overfished state.

Eleven stocks are classified as overfished (12 in 2009) and eight stocks are classified as subject to overfishing (ten in 2009). Of these, six stocks are classified as both overfished and subject to overfishing in 2010 (seven in 2009). These stocks have biomass levels below a predetermined limit reference point and this may be inadequate to sustain the stock in the long term, and the level of fishing prevents them from rebuilding to a not overfished state within the specified timeframe.

In 2010, 29 stocks are classified as uncertain in terms of their biomass status (30 in 2009), while 17 stocks are classified as uncertain in terms of their fishing mortality status (18 in 2009). The number of stocks in both criteria has been reducing since 2007 and 2005 respectively. Harvest strategies implemented since the introduction of the *Commonwealth Fisheries Harvest Strategy Policy and Guidelines* and recent investments by the Government in reducing uncertainty in stock status have brought about the reductions.

### ***Management of commercial fisheries: Management instruments and access***

Management instruments for fisheries are outlined in Annex 3.A.

The Australian Government has provisions under the *Fisheries Management Act 1991* for granting foreign fishing licences for commercial fishing in a specified area of the Australian Fishing Zone or a specified fishery. Access for foreign fishing fleets to Australia's Exclusive Economic Zone (EEZ) through bilateral access agreements have been negotiated from time to time. These arrangements allowed foreign fleets to access the EEZ to fish for species under-exploited by the Australian domestic fishing fleet. Significant financial and other benefits, including technology transfer and access to catch and effort data, have flowed to Australia from permitting such access. The growth in the Australian domestic fleets now means that no future access for foreign vessels to the Australian EEZ is likely to be granted as Australia no longer has excess fish stocks.

### ***Management of recreational fisheries***

Recreational fishing is defined as fishing that is not for commercial purposes excluding traditional Indigenous fishing. The management of recreational fishing is for the most part undertaken by the state and territory governments and includes a range of measures including licensing frameworks, controls on types and amounts of fishing gear that may be used and seasonal and/or area closures.

### ***Aboriginal and Torres Strait Islander fisheries***

Torres Strait fisheries are managed in accordance with the *Torres Strait Treaty* made between Australia and Papua New Guinea. Since 1989, all non-indigenous participation in Torres Strait fisheries has been capped to reserve further expansion for traditional inhabitant commercial fishing.

### ***Monitoring and enforcement***

AFMA administers compliance programmes directed at both domestic and foreign fishing vessels. The Commonwealth has flag state responsibilities for fishing by Australian vessels on the high seas.

In all Commonwealth fisheries, mandatory vessel monitoring systems are used to provide real-time position reporting of vessels and movements in and out of port. AFMA has a scientific observer programme to collect independent data on fishing activities.

Fisheries monitoring and enforcement is also conducted by state/territory fisheries agencies.

Australia has developed a National Fisheries Compliance Strategy 2010-15 that outlines the objectives that Australian fisheries agencies will pursue to promote voluntary compliance and create effective deterrence to illegal fishing activities. At the centre of the strategy is the need to achieve collective responsibility and action among major stakeholder groups (commercial, recreational and Indigenous fishing sectors) and the community.

Australia remains concerned about the effects of illegal, unreported and unregulated (IUU) fishing on world fish stocks and the marine environment. Australia has taken a strong stance on the issue through a broad international strategy.

Australia's main enforcement power over illegal foreign fishers is through application of the *Fisheries Management Act 1991*. Amendments to the act in 2008 enabled border protection officers to apprehend ships involved in illegal fishing and created new offences for Australian citizens involved in poaching overseas.

Australia is contributing to various international efforts on illegal, unreported and unregulated (IUU) fishing.

Efforts to deter illegal foreign fishing in southern ocean waters have proven successful, with AFMA involved in patrols provided by the Customs and Border Protection Service. No illegal activity has been detected inside Australia's EEZ surrounding Heard Island and McDonald Islands since 2004.

Australia is also working with its northern neighbours to reduce IUU fishing and improve fisheries management and governance in the South East Asia region. Between 2005-06 and 2010-11 apprehensions of illegal fishing vessels declined by 96%. This reduction was due largely to Australian Government "on-the-water" deterrent measures and a joint Australia-Indonesia public information campaign in coastal fishing communities of eastern Indonesia on the serious impacts of illegal fishing and the consequences for fishers if apprehended fishing illegally in Australian waters.

### ***Multilateral agreements and arrangements***

Australia is a member and active participant of a number of regional fisheries management organisations and continues to strengthen its co-operative maritime relationships in surrounding regions.

Australia is in negotiations to develop a cooperative maritime enforcement and information sharing agreement in the Pacific region. This agreement will sit as a subsidiary

agreement under the *Niue Treaty on Cooperation in Fisheries Surveillance and Law Enforcement in the South Pacific Region*.

The Cooperative Fisheries Enforcement Treaty between Australia and France came into force in January 2011. The treaty formalises cooperative enforcement arrangements against IUU fishing vessels to be undertaken by joint patrols in the French and Australian Southern Ocean EEZ and territorial seas.

Australia is also an active participant in the World Trade Organisation fisheries subsidies rules negotiations.

## **Aquaculture**

### ***Policy changes***

The management and regulation of aquaculture is primarily a state government responsibility. However, the Australian Government has a role in the coordination of policy over national issues such as quarantine, disease outbreak controls, product quality, labelling, trade and taxation.

At a regional level DAFF supports the Network of Aquaculture Centres in the Asia – Pacific (NACA). The work of NACA focuses on determining priority needs for aquaculture development in the Asia Pacific Region and areas in which technical co-operation between member countries and specialist institutions can make significant contributions to meet those needs.

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

The gross value of aquaculture production remained relatively stable in 2009-10, increasing by AUD 3.8 million to AUD 870.4 million compared with 2008-09. Prawns, tuna, salmonids, edible oysters and pearl oysters accounted for 87% of this value, contributing AUD 753 million in 2009-10.

The largest contributor to Australian aquaculture production is salmonids, making up 43% and 42% of total aquaculture production volume and value, respectively. The production value of farmed salmonids rose by 13% between 2008-09 and 2009-10, to AUD 369.1 million.

## **Fisheries and the environment**

### ***Environmental policy changes***

#### *Commonwealth Fisheries Harvest Strategy Policy and Guidelines*

Key Commonwealth commercial stocks are managed in accordance with the Commonwealth Fisheries Harvest Strategy Policy and Guidelines released in 2007. The policy applies an evidence-based, precautionary approach to setting catch levels. Its objective is the sustainable and profitable utilisation of Australia's Commonwealth fisheries in perpetuity through the implementation of harvest strategies that maintain key commercial stocks at ecologically sustainable levels and maximise economic returns to the community. A review of this policy has commenced and is due for completion in 2013.

#### *Marine bioregional planning*

Commitment to a national system of marine protected areas (MPAs) was made in the *Australia's Ocean Policy* in 1998. In 2005, the Government brought its programme of regional marine planning, known as marine bioregional plans, directly under the EPBC Act. The plans identify the conservation priorities in Commonwealth waters, as well as measures to conserve marine protected areas.

The Australian Government has finalised the details of its proposed national marine reserve network after considering the information it received through stakeholder consultations and submissions on the draft proposals, together with detailed socio-economic assessments. These proposed marine reserves will be subject to a final round of public comment as part of the process for proclaiming the marine reserves under the EPBC Act. Once finalised, they will form the Commonwealth waters component of the National Representative System of Marine Protected Areas and will increase the number of marine reserves in Australia from 27 to 60, expanding the national network to cover more than one-third of Commonwealth waters.

#### *Incidental catch of seabirds in longline fisheries*

A Threat Abatement Plan (TAP) for the Incidental Catch (or Bycatch) of Seabirds during Oceanic Longline Fishing Operations was first released in 1998 and revised in 2006. It was developed under the EPBC Act. In 2011, the Australian Government commenced a review of the 2006 seabird TAP.

Australia initiated the negotiation of a multilateral agreement to conserve seabirds under the Convention on the Conservation of Migratory Species of Wild Animals. The Agreement on the Conservation of Albatrosses and Petrels was opened for signature in 2001. To date there are 13 signatories.

In 2011 the Australian Government agreed to develop a National Plan of Action for Reducing Incidental Catch of Seabirds in Fisheries. Following an assessment report for reducing the incidental catch of seabirds in longline fisheries, an assessment of seabird interactions in Australian trawl, purse-seine and gillnet fisheries is currently being undertaken. The assessment is expected to be released in late 2012.

#### *Commonwealth Policy on Fisheries Bycatch*

The *Commonwealth Policy on Fisheries Bycatch* was released in 2000 to ensure that direct and indirect impacts of fisheries on marine systems are taken into account and managed accordingly. In 2008, AFMA released the *Program for Addressing Bycatch and Discarding in Commonwealth Fisheries: an Implementation Strategy*. The programme develops fishery specific work plans which focus on “high risk” bycatch and threatened, endangered and protected species as identified through the ecological risk assessment process in accordance with the implementation strategy. In March 2012, a review of the *Commonwealth Policy on Fisheries Bycatch* was started and it is expected to be completed in March 2013.

#### *National Plan of Action for the Conservation and Management of Sharks*

Australia’s *National Plan of Action for the Conservation and Management of Sharks* (Shark-plan 1) was developed in 2004 in response to the corresponding International Plan of Action by the FAO. A review of Shark-plan 1 was completed in 2010 and released in May 2011. The second National Plan of Action for the Conservation and Management of Sharks (Shark-plan 2) was released in July 2012. The plan identifies the research and management actions that will be pursued over the life of the plan. The plan also provides a framework for the long-term conservation of Australia’s shark populations and for guiding the industries and communities that impact upon them.

#### *National Strategy to Address Interactions between Humans and Seals*

The *National Strategy to Address Interactions between Humans and Seals: Fisheries, Aquaculture and Tourism* was released in 2006 to mitigate adverse impacts of the fisheries, aquaculture and tourism sectors on seal and sea lion populations. AFMA implemented an Australian sea lion management strategy in 2010.



*Threat Abatement Plan for Injury and Fatality to Vertebrate Marine Life Caused by Ingestion of, or Entanglement in, Harmful Marine Debris*

A Key Threatening Process listed under the EPBC Act is “Injury and fatality to vertebrate marine life caused by ingestion of, or entanglement in, harmful marine debris”. A TAP has been developed and released in 2009 to address the threat. It aims to provide a co-ordinated national approach to the implementation of measures to prevent and mitigate the impacts of harmful marine debris. It will also guide Australia's efforts in international forums to build and strengthen collaboration to identify the origins of, and effective responses to, marine debris on a regional and international level.

## Government financial transfers

### *Transfer policies*

The table below shows the estimates of government financial transfers to the fishing industry.

**Table.3.1. Australian government transfers to commercial fishing 2010-11 (AUD million)**

Market Price Support			n.a.
Direct Payments			n.a.
General Services <sup>1</sup> (management costs)	AFMA	Domestic fisheries compliance	8.16
		Foreign fisheries compliance	17.98
		Research and data	5.89
		Licensing and revenue collection	0
	FRDC <sup>2</sup>		16.5
Cost recovery from industry (collected by AFMA) <sup>3, 4</sup>			13.89

1. Total should be taken as indicative of the Australian Government only contributions to management costs (through AFMA) and fisheries R&D by the Fisheries Research and Development Corporation (FRDC).
2. See FRDC 2010-11 annual report for more detail: [www.frdc.com.au/aboutus/annual-reports](http://www.frdc.com.au/aboutus/annual-reports)
3. All values include overhead cost allocations, but these are based on estimates of appropriate cost allocation principles based on AFMA's *Cost Recovery Impact Statement*. Specific calculation and attribution of these costs has not been undertaken for the purposes of this report.
4. Cost recovery from industry excludes amounts representing adjustments for prior period over or under recoveries.

### *Structural adjustment*

The Australian Government policy is that adjustment assistance is not preferred where fishing effort has been or should be removed from a fishery through normal management action to meet fisheries management objectives. Adjustment assistance is only used in special circumstances to facilitate the introduction of new fisheries management arrangements.

Where marine reserves create additional requirements for fishing effort reduction beyond that required for achieving fisheries management objectives, Government-funded adjustment assistance may be considered on a case-by-case basis to support the reduction.

## Post-harvesting policies and practices

### *Food safety*

The *Australia New Zealand Food Standards Code* and food legislation in Australia and New Zealand require all foods offered for sale to be safe for human consumption.

Requirements in the Food Standards Code apply equally to domestically produced and imported seafood.

In 2005, the Food Standards Australia New Zealand (FSANZ) Board approved the *Final Assessment Report for the Primary Production and Processing Standard for Seafood*. This report contains a scientific evaluation of food safety risks within the seafood industry and management options to minimise the risks within Standard 4.2.1—*Primary Production and Processing Standard for Seafood*.

### ***Information and labelling***

Enforcement of food labelling requirements is the responsibility of state and territory governments and DAFF Biosecurity for imported foods at the border.

A comprehensive independent review of food labelling law and policy provided its report to the Council of Australian Governments (COAG) in early 2011. Governments responded to the 61 recommendations of the review in December 2011 through the COAG Forum on Food Regulation.

The Australian Government provides funds for the establishment, promotion and support of the Australian Seafood Consumer Hotline which provides a single point of contact for consumers to lodge complaints regarding mislabelled seafood.

To address the mislabelling of seafood the Australian Fish Names List was created. It was formally endorsed as an Australian Standard in 2007.

### ***Processing and handling facilities***

State and territory governments are responsible for processing, handling and distribution facilities, and for the collection of information related to the seafood and aquaculture industries.

## **Markets and trade**

### ***Markets***

Australian fisheries production is characterised by high-value, low-volume seafood. Total fisheries exports in 2009-10 were valued at AUD 1.2 billion, comprising of edible fisheries exports of AUD 988 million, and non-edible fisheries exports of AUD 259 million. Total fisheries imports in 2009-10 were valued at AUD 1.5 billion. Over 80% of the fisheries imports were edible fisheries imports, whilst pearls made up the majority of non-edible imports (AUD 171 million).

### ***Trade***

Australia has become a net importer of fish products by value since 2007-08, and the discrepancy between import and export became larger in 2009-10. Since 2000-01, reduced volumes of major edible export species led to a steady reduction in the value of exports of fisheries products, whereas imports of fishery products have increased in volume but decreased in value.

### ***Exports***

In 2009-10, total fisheries exports were valued at AUD 1.2 billion. The total value of fisheries exports declined each year from 2000-01 to 2009-10 except for 2007-08. In 2009-10, rock lobster continued to be the most valuable fisheries export, followed by pearls and abalone. In 2009-10, around 79% of total exports were edible fisheries products. In 2009-10,

Australia's major seafood export destinations were Hong Kong, Japan, the United States, China and Singapore.

### *Imports*

The total value of fisheries imports fell by 11% to AUD 1.5 billion in 2009-10. The key cause of this decrease in import value was a 37% decrease in the value of non-edible fisheries products. Thailand, New Zealand, China and Viet Nam continue to be the main sources of imported edible fisheries products.

## **Outlook**

Australia will continue to develop and implement of a number of action plans to address and minimise the interactions between fishing operations and other high risk species.

Improved monitoring and compliance measures and increased surveillance to combat IUU fishing through regional co-operation and domestic measures will ensure that Australia's efforts to ensure the sustainability of our fish stocks are not negatively impacted by non-compliant activities.

The Australian Government recognises that progress towards conservation and management measures and reform agendas requires strong institutions and governance bodies to promote regional and international co-operation. Australia will continue to work through RFMOs and other international institutions to ensure achieve mutually beneficial, sustainable outcomes for fishery resources, implementing the precautionary approach and an ecosystem-based approach to fisheries management.

Fisheries Research and Development Corporation have recently co-funded a collaborative project with ABARES and government fisheries agencies across Australia, to produce the first national Status of Key Australian Fish Stocks reports in 2012. The reports will focus on the stocks of the 50 highest value wild caught fish species around Australia. This information will help stakeholders make informed decisions in relation to the health of various stocks.

The Australian dollar has further appreciated in 2011–12. This will continue to negatively affect the value of fisheries production and exports of higher valued production species that are generally export-oriented. The gross value of total fisheries production in 2011–12 is forecast to remain steady at AUD 2.24 billion and rise slightly in 2012–13. A focus on improving economic productivity will allow the fishing industry to meet the challenges set by an appreciating Australian dollar.

The aquaculture sector is expected to continue to grow in the future and is likely to provide the major impetus for medium to long-term growth in the value of Australia's seafood production.

Consumer demand for healthy and clean seafood continues to represent an opportunity for the Australian fishing industry. Australia's discerning consumer base is increasingly appreciating the benefits of eating seafood products. Australia may see an increasing trend towards innovative marketing and a growth in eco-certification.

## Annex 3.A.

**Management arrangements for Commonwealth Managed Fisheries  
(2010-2011)**

Fishery	Management arrangements	Changes since 2009-2010
Northern Prawn Fishery	Input controls (limited entry, seasonal closures, permanent area closures, gear restrictions, catch limit triggers and bycatch limit triggers), harvest strategy, bycatch and discard work plan applies. <sup>a</sup>	A management plan is being developed to introduce quota management into the fishery. The management plan is expected to be in place during 2013.
Southern Bluefin Tuna Fishery	Output controls (individual transferable quotas) managed under the southern bluefin tuna management plan consistent with obligations under the convention for the conservation of southern bluefin tuna. Bycatch and discards work plan applies.	Australia's national allocation is 4 528 tonnes for the 2011/12 fishing season as agreed by the Commission for the Conservation of Southern Bluefin Tuna.
Southern and Eastern scalefish and shark fishery – comprising gillnet hook and trap, commonwealth trawl sector and great Australian bight trawl fisheries	Managed under the <i>southern and eastern scalefish and shark fishery management plan 2003</i> . Key management arrangements include input controls (limited entry, individual transferable quotas, gear restrictions and area closures) and output controls (total allowable catches) which apply for 34 species or stocks of shark and finfish. Harvest strategy framework used to set total allowable catches for these species. bycatch and discards work plan applies. Seabird management plans and spatial closures to protect Australian sea lions and dolphins.	Rebuilding strategies for school shark, eastern gemfish and blue warehou implemented in 2008 to rebuild stocks within prescribed timeframes. New observer sampling regime implemented in 2010.
Eastern tuna and billfish	Fishery moved to total allowable catches allocated as individual transferable quotas under a new management plan on 1 March 2011. a tap for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations. Bycatch and discards work plan applies.	Management plan came into force on 1 March 2010. Management plan to manage the fishery under individual transferable quotas and total allowable commercial catch was fully implemented on 1 March 2011. Observer coverage is approximately 8%. Met requirements of a tap.
Bass Strait Central Zone Scallop	Input controls (limited entry, gear restrictions and closures). Output controls (total allowable catch/individual transferrable quotas). bycatch and discarding workplan plan applies. The fishery reopened in 2009.	A management plan was determined in September 2002, and individual transferable quotas were introduced. a zero total allowable catch was set over the entire fishery for the period 2006-2008.

Fishery	Management arrangements	Changes since 2009-2010
Torres Strait Protected Zone Joint Authority Fisheries	Input controls (limited entry on fully transferable licences, vessel size restrictions, size limits, gear restrictions, area closures, and seasonal closures) and output controls (possession limits, total allowable catches) on some other hand collection fisheries.	<p>A management plan has been developed for the finfish fishery with planned implementation in 2012-13.</p> <p>Legislative amendments in the finfish fishery have introduced a maximum legal size limit for coral trout, a net size restriction for traditional fishing and removed the limitation on holding live finfish.</p> <p>Legislative amendments have been implemented in the pearl shell fishery to introduce management arrangements for the <i>genus pteria</i>.</p> <p>A harvest strategy has been implemented in the Torres Strait prawn fishery.</p>
Sub Antarctic Fisheries (Macquarie Island; Heard Island and McDonald Islands)	All managed either under or consistent with convention for conservation of Antarctic marine living resources (CCAMLR). Output controls with a total allowable catch and individual transferable quotas and input controls (limited entry, closures) applies.	Increased use of longlining to take toothfish quota over trawling. Longline trial started in the Macquarie Island toothfish fishery in 2007 for a period of four years. Longlining has been approved as a fishing method in the Macquarie Island toothfish fishery
Southern Squid Jig	Input controls (limited entry). Bycatch and discards work plan applies.	A management plan came into effect from 1 January 2006 and introduced a total allowable effort. A trigger point for total catch was established to provide for a decision making process should catch levels significantly increase.
Western Tuna And Billfish Fishery	Fishery moved to total allowable catches allocated as individual transferable quotas under the <i>western tuna and billfish fishery management plan 2005</i> plan on 1 July 2010. a tap for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations. Bycatch and discards work plan applies.	The <i>western tuna and billfish fishery management plan 2005</i> came into force in October 2005. The management plan implements quota management for the fishery and was fully implemented on 1 July 2010.
Christmas Island and Cocos (Keeling) Islands	<p>Trawl and aquarium fish input controls (limited entry, area restrictions) and output controls (total allowable catch).</p> <p>Fishing for tuna and tuna-like species in waters outside 12 nautical miles is covered by the western tuna and billfish fishery management plan 2005. The fishery moved to total allowable catches allocated as individual transferable quotas on 1 July 2010.</p>	<p>In late 2002, the inshore waters (i.e. within 12 nautical miles) of the Christmas and Cocos (Keeling) Islands were exempted from the application of the <i>Fisheries Management Act 1991</i>.</p> <p>Responsibility for managing these waters now lies with the commonwealth department of infrastructure, transport, regional development and local government. the department of infrastructure has entered into a service delivery arrangement with the western Australian department of fisheries for the management of these inshore fisheries.</p>

Fishery	Management arrangements	Changes since 2009-2010
Coral Sea	<p>Input controls (limited entry, spatial closures, size limits)</p> <p>Output controls (TACS for sea cucumber sector, size restrictions, catch triggers)</p> <p>Other: prescribed observer coverage levels, move-on provisions</p>	Trip limits for certain deepwater shark species implemented
Small Pelagic Fishery	<p>Input controls (limited entry, geographic zones, trigger catch levels and total allowable catches applied in certain zones). Bycatch and discards work plan applies. The 2009 statutory management plan provides for the grant of individual transferable quotas and statutory fishing rights.</p>	<p>The <i>small pelagic fish management plan 2009</i> came into effect in November 2009. Individual transferable quota came into effect from 1 May 2012.</p>
Norfolk Island	<p>Inshore fishery:</p> <p>Output controls; voluntary catch limits on redthroat emperor to align with spawning season (usually from December to January).</p> <p>A new management policy (the Norfolk Island inshore fishery management policy 2009) was developed by the Norfolk Island government for the management of recreational and charter fishing in the NIIF. The AFMA commission endorsed the management policy and entered into a memorandum of understanding with the Norfolk Island government to maintain a monitoring and advisory role in the fishery.</p> <p>Offshore demersal finfish fishery:</p> <p>Exploratory fishing ceased on 31 December 2003.</p>	<p>AFMA continues to examine the feasibility of developing a small-scale fishery in the area of the NIIF under the provisions of the <i>Fisheries Management Act 1991</i>.</p>
North West Slope Trawl	<p>Input controls (limited entry (seven permits with a five-year duration), cod end mesh size restrictions), move-on provisions and compulsory observer requirements, harvest strategy</p>	<p>The harvest strategy for the north west slope trawl fishery was revised in 2011. The revised harvest strategy introduces detailed catch limits and triggers for key commercial species and for species identified through the ecological risk assessment framework.</p>
South Tasman Rise	<p>Allocated total allowable catch for orange roughy (shared with New Zealand under a memorandum of understanding). Australia has input controls (limited entry, and compliance requirements).</p>	<p>The fishery has been closed to commercial fishing until further information is gathered on the current status of stocks (orange roughy and oreo dory).</p>

Fishery	Management arrangements	Changes since 2009-2010
South Tasman Rise	Allocated total allowable catch for orange roughy (shared with New Zealand under a memorandum of understanding). Australia has input controls (limited entry, and compliance requirements).	The fishery has been closed to commercial fishing until further information is gathered on the current status of stocks (orange roughy and oreo dory).
Western Deepwater Trawl	limited entry (11 permits with a five-year duration) harvest strategy	The harvest strategy for the western deepwater trawl fishery was revised in 2011. The revised harvest strategy introduces detailed catch limits and triggers for key commercial species and for species identified through the ecological risk assessment framework.

a. In fisheries where a bycatch of threatened or endangered species occurs, the Bycatch Action Plans (required for all Commonwealth managed fisheries) should protect these species adequately from the impact of fishing. For example, Northern Prawn Fishery vessels must now use turtle excluder devices and bycatch reduction devices.

*Source:* Australian Fisheries Management Authority.





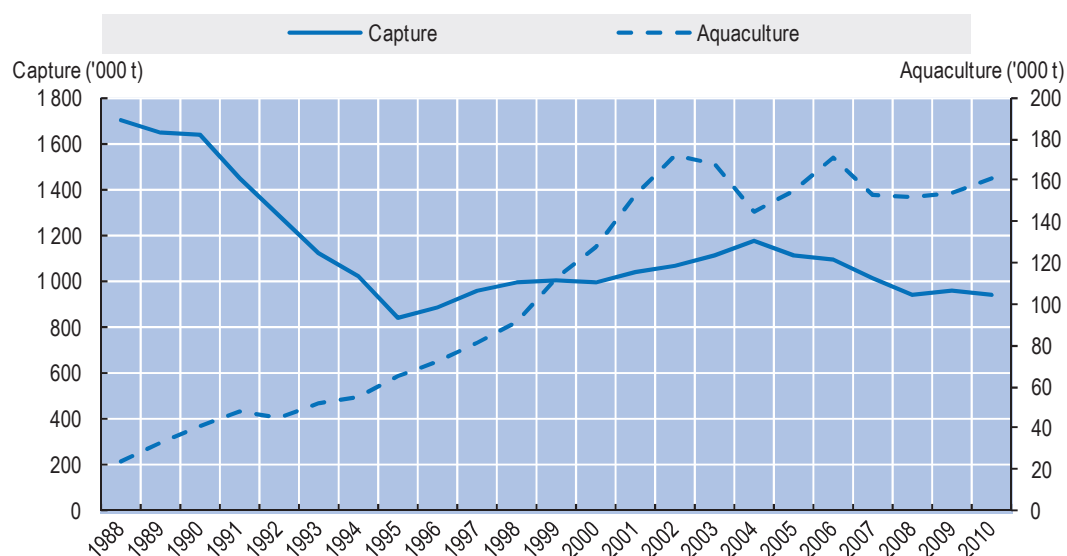
## Chapter 4

### CANADA

#### Summary and recent developments

- Canada will be updating its primary piece of legislation that governs fisheries in Canada, the *Fisheries Act*. This will allow the Canadian Government to update its policy suite in order to streamline processes in the areas of technology, fisheries management, and enforcement, resulting in better transparency and reduced costs.
- The Federal Government has committed to balancing its budget by the 2014-15 fiscal year. Due to this, the Government conducted a comprehensive review of direct spending by its federal departments and agencies and will aim to achieve over CAD 5 billion in savings over the next three years.
- The Government of Canada is committed to building a stronger, more competitive Canadian economy that will thrive in the years ahead by:
  - securing favourable terms of access to the markets, investment and innovation opportunities where Canadian commercial interests are greatest.
  - attracting global investment and innovation to Canada and facilitating Canadian commercial engagement abroad.

Figure 4.1. Harvesting and aquaculture production



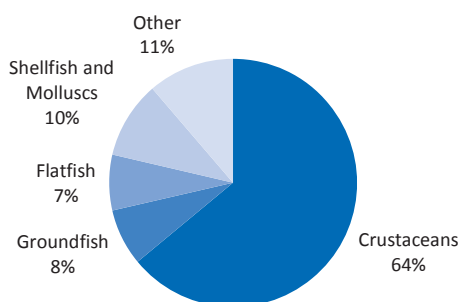
Source: FAO FishStat Database.

### Box 4.1. Key characteristics of Canadian fisheries

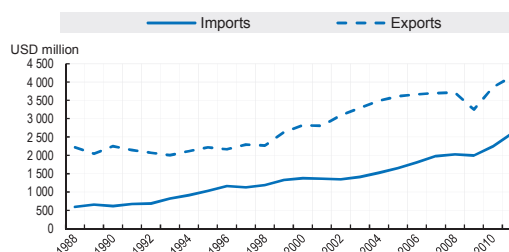
- More than 80% of Canadian landings by value are from the Atlantic fishery. Crustaceans are the most important product, primarily lobster, shrimp and crab. The value of Canadian landings increased by 7% between 2010 and 2011. (Panel A)
- Canada is a net exporter of fish products. Its most important export by value is crustaceans and the United States is the largest export market. The value of exports increased by 5% between 2010 and 2011 while the value of imports increased by 12% in the same period. (Panel B)
- Government financial transfers by the federal government increased by 20% between 2008 and 2010, mainly due to a large increase in expenditures on fisheries management, research, enforcement, and infrastructure. (Panel C)
- The number of fishers in Canada increased by 5% between 2005 and 2010, even as the number of vessels declined by 9%. (Panel D)

Figure 1.2. Key fisheries indicators

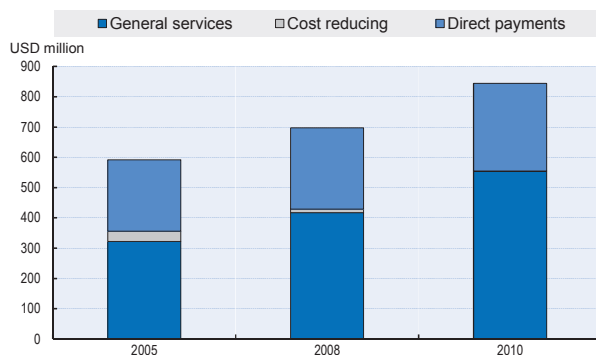
Panel A. Key species by value in 2010



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2006	2011	%change
Number of fishers	47 158	49 530	5
Number of fish farmers	3 920	3 272	-17
Total number of vessels	21 857	19 984	-9
Total tonnage of the fleet	..	..	..

## Legal and institutional framework

The federal, i.e. national, government is responsible for the conservation, protection, and sustainable use of all fisheries and fish habitat in Canadian marine waters. This authority is granted to the Minister of Fisheries and Oceans under the *Constitution Act* of 1867 and administered by Fisheries and Oceans Canada (DFO). However, the federal government has delegated the management of inland fisheries to the provinces (with the exception of Newfoundland and Labrador), while still retaining its jurisdictional responsibility. The federal government, working in partnership with the provincial and territorial governments, i.e. sub-national governments, is also responsible for the sustainable development of the Canadian aquaculture industry. In February 2009, the British Columbia Supreme Court decided that aquaculture was the responsibility of the federal government and therefore, new regulations came into force in December 2010. These regulations established a licensing regime tailored to address the aquaculture sector in that province. The new regulations apply only to British Columbia; aquaculture activities in other provinces continue to be regulated according to a mix of federal, provincial/territorial, and municipal requirements.

Discussion of and co-operation on fisheries and aquaculture issues among different levels of government has been facilitated in the last decade by the *Agreement on Interjurisdictional Cooperation with Respect to Fisheries and Aquaculture*, signed by Ministers from all jurisdictions in 1999. The Agreement committed governments to co-operate within a formal structure: the Canadian Council of Fisheries and Aquaculture Ministers (CCFAM). It also formally established a committee of Deputy Ministers and a committee of senior officials, the Interjurisdictional Working Group, to support the activities of the Ministers' Council and monitor the progress of annual work plans.

Canada's primary statute for the conservation and protection of fish and fish habitat is the *Fisheries Act*. Under the authority granted by the *Act*, a variety of instruments are employed to manage Canadian fisheries: primarily total allowable catches (TACs), but other common measures include individual quotas and a variety of technical measures related to the size, age and/or sex of fish that may be landed, and the areas and/or times of fishing opportunities.

## Capture fisheries

### *Performance*

Canadian commercial landings of fisheries products totalled over 950 000 tonnes annually in 2009 and 2010 (Table 4.1). The 2009 landings represented a 2.5% increase from those one year earlier, driven largely by an increase in the landed volume of Atlantic herring, mackerel and Pacific salmon. Overall value decreased by over CAD 200 million in that same time frame (2008-09) because of price drops for shellfish species like lobster, snow crab and shrimp. From 2009 to 2010, landed quantities decreased slightly but value increased by over 7%, largely due the increase of sockeye salmon value as well as overall landed values for lobster and shrimp. The majority of the landed value of Canada's fisheries is accounted for by three species primarily caught on the Atlantic coast (lobster, snow crab, and shrimp) that together accounted for approximately 60% of the total value of the capture fishery in 2009 and 2010. Approximately 50 000 people were employed as commercial fish harvesters in 2010, with a further 30 000 employed in seafood product preparation and packaging. In 2010, there were 19 984 registered vessels in Canada.

**Table 4.1. Landed quantities and values of capture fisheries products from Canada's Atlantic and Pacific fisheries from 2008 to 2010**

	2008			2009			2010		
	Atlantic	Pacific	Total	Atlantic	Pacific	Total	Atlantic	Pacific	Total
Quantity	782	155	937	801	159	960	799	152	952
Value	1 643	262	1 905	1 435	268	1 702	1 528	298	1 826

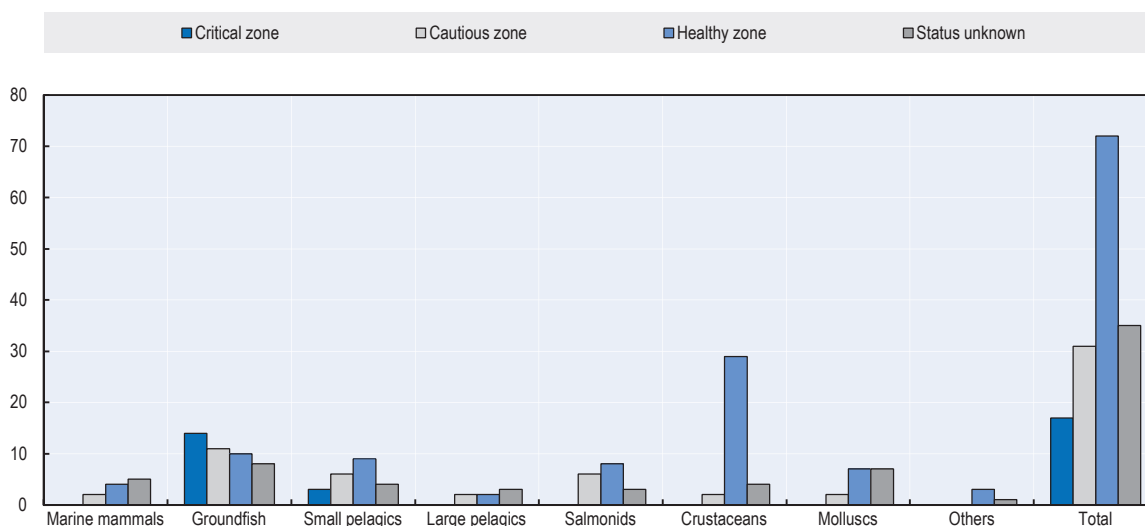
Note: Landings from Arctic fisheries are included under the Atlantic heading. Quantities are in thousands of metric tonnes, while values are in millions of Canadian dollars (\*numbers may not add up due to rounding).

Source: [www.dfo-mpo.gc.ca/stats/commercial/sea-maritimes-eng.htm](http://www.dfo-mpo.gc.ca/stats/commercial/sea-maritimes-eng.htm).

### Status of fish stocks

Canada uses a Fishery Checklist, initially developed in 2007, as a tool to collect data on major stocks and fisheries that can be used for various reporting purposes. The Checklist is divided into three topics: science, e.g. stock status, presence of stock reference points); fisheries management, e.g. adequacy of monitoring and harvest rules; and enforcement, e.g. degree of compliance with fisheries management measures. The data addresses eight areas: information; stock assessment; harvest tools; stock status; biodiversity; habitat and ecosystems; governance; and conservation and protection.

**Figure 4.2. Status of categories of major fish stocks, Canada, 2010**



Source: Fisheries and Oceans Canada (2012) *Fishery Checklist v.4*, <http://www.dfo-mpo.gc.ca/rpp/2012-13/index-eng.htm>.

The Checklist has been used in recent years to assess the status of specific fisheries and fish stocks in Canada. Status is determined by assessing stock abundance relative to a limit reference point (LRP) and an upper stock reference (USR) in accordance with the precautionary approach. Stocks with abundance less than their LRP are deemed “critical”, those with abundance greater than their LRP but less than their USR are “cautious,” while those greater than their USR are “healthy.” The subset assessed for 2010 is different from that assessed for 2009 and 2008, and the methodology and checklist questions have evolved over the years. As such, the results of the three years are not comparable, but together give a snapshot of the status of a significant number of Canadian fisheries during this period.

There were 136 major stocks for the 2010 Checklist cycle. Thirty-four of these stocks could not be assessed (unknown), 11 stocks were assessed as critical, 40 as cautious and 51 were in the healthy zone.

DFO conducts a variety of scientific studies on the status of fish stocks and species, and on a number of related issues. The results of many of these studies are published by the Canadian Science Advisory Secretariat and can be found at: [www.dfo-mpo.gc.ca/csas-sccs](http://www.dfo-mpo.gc.ca/csas-sccs).

### ***Management of commercial fisheries***

#### *Management instruments*

A key component for the management of commercial fisheries in Canada is the Sustainable Fisheries Framework<sup>1</sup> (SFF). The SFF was developed through engagement with resource users and others with an interest in sustainable fisheries, and published by DFO in 2009. It provides the basis for ensuring Canadian fisheries are conducted in a manner that supports conservation and sustainable use. The Framework incorporates existing fisheries management policies along with new and evolving policies, and includes tools to monitor and assess initiatives geared toward ensuring an environmentally sustainable fishery, and identifies areas that may need improvement. Overall, the SFF is designed to provide the foundation of an ecosystem-based and precautionary approach to fisheries management in Canada.

Combined with reforms to socio-economic policies and initiatives, the SFF is a key instrument in developing environmentally sustainable fisheries that also support economic prosperity in the industry and fishing communities.

The Framework comprises two main elements: (1) conservation and sustainable use policies; and (2) planning and monitoring tools.

Conservation and sustainable use policies incorporate precautionary and ecosystem-based approaches into fisheries management decisions to support the continued health and productivity of Canada's fisheries and healthy fish stocks, while striving to protect biodiversity and fisheries habitat. Combined, these policies demonstrate Canada's commitment to the principles of ecosystem-based fisheries management. Three policies were published in 2009 along with the SFF:

- A Fishery Decision-Making Framework Incorporating the Precautionary Approach;
- Managing Impacts of Fishing on Benthic Habitat, Communities and Species; and
- Policy on New Fisheries for Forage Species.

Other DFO conservation and sustainable use policies that support the SFF include:

- Canada's Policy for Conservation of Wild Atlantic Salmon; and
- Pacific Wild Salmon Policy.

#### *New measures supporting sustainability*

During 2010 and 2011, under the auspices of the SFF, DFO worked on the development of a new Policy for Managing Bycatch, as well as two new tools to help implement existing SFF policies: Guidance for the development of rebuilding plans under the existing Precautionary Approach Framework, and an Ecological Risk Assessment Framework in support of the Sensitive Benthic Areas Policy. The former SFF policy benefitted from the OECD work on Rebuilding Fisheries. All three documents will be published on DFO's website when they are finalised.

Managing bycatch has long been part of Canadian fisheries management. Despite improvements in the selectivity of fishing, some amount of incidental catch has been unavoidable, and conservation problems related to bycatch persist in some fisheries. As such, DFO developed a draft Policy on Managing Bycatch to guide additional improvements that are in line with the FAO International Guidelines for Bycatch Management and Reduction of Discards released in 2011. The draft Policy has two objectives: (i) to ensure that Canadian fisheries are managed in a manner that supports the sustainable harvesting of aquatic species that minimises the risk of serious or irreversible harm to bycatch species; and (ii) to account for total catch, including retained and non-retained bycatch.

The draft Guidelines for the development of rebuilding plans under the Precautionary Approach Framework (PA Framework) will be used by fisheries managers to develop rebuilding plans for those stocks that have fallen into the “critical zone” as defined by the PA Framework. The Guidelines will serve as a framework for managing the rebuilding process, from plan development through to implementation and monitoring.

The draft Ecological Risk Assessment Framework (ERAF) will assist in measuring the level of ecological risk of fishing and its impact on sensitive benthic areas. It will be applied to coldwater corals and sponges dominated communities, which are currently the focus of international efforts to reduce the impacts of fishing on benthic environments, and hence the most understood from a management perspective.

Over time, new policies could be added to the Framework to address other issues, including on the management of top fish predators in marine ecosystems, and the impact of lost fishing gear.

The conservation and sustainable use policies will be implemented in the fisheries management process through various Planning and Monitoring Tools. Integrated Fisheries Management Plans (IFMPs) identify goals related to conservation, management, enforcement, and science for individual fisheries, and describe access and allocations among various fish harvesters and fleet areas. The Plans also incorporate biological and socio-economic considerations that are factored into harvest decisions. IFMPs are an important reporting tool, and a valuable source of information on a given fishery for fisheries managers, industry, and other resource users. They also include a requirement to conduct a regular review of the fishery against the Plan’s objectives. In addition, self-diagnostic tools like the Fishery Checklist (a tool for internal use), can help the Department monitor improvements that support sustainable fisheries, and identify areas of weakness that require further work.

While applying the policies and tools of the SFF in the decision-making process for each fishery, DFO ensures that the biological and socio-economic consequences of all proposed management measures are considered. The policies and tools included in the SFF will also be linked to broader integrated management processes, such as the planning forums for managing sections of Canada’s oceans known as Large Ocean Management Areas.

The SFF and its policies are being implemented progressively over time. This phased approach is being conducted according to the priorities identified through fishery planning sessions. The initial focus for implementation in 2010 and 2011 has been given to the PA Framework. Significant work has also been completed to advance the application of the Sensitive Benthic Areas Policy, including the identification of coral and sponge concentrations in Canadian marine waters and the development of the Ecological Risk Assessment Framework to facilitate implementation of the policy. Further details can be found at: [www.pac.dfo-mpo.gc.ca/oceans/protection/docs/cscs-pcce-eng.pdf](http://www.pac.dfo-mpo.gc.ca/oceans/protection/docs/cscs-pcce-eng.pdf).

The implementation of the SFF, including changes to harvest arrangements, is also the subject of engagement with Aboriginal groups. The implementation process will use adaptive

management principles, where experience applying the policies to fisheries management will guide future applications.

#### *Access arrangements for foreign fleets*

Access to Canada's exclusive economic zone (EEZ) for the purposes of fishing is provided for through bilateral treaties. Canada's Pacific albacore tuna fishery had been conducted in the coastal waters of Canada and the United States, as well in the high seas. The Canada-US Pacific Albacore Tuna Treaty allowed Canadian and US vessels reciprocal access to each other's waters for harvesting activities and to land catches in a limited set of ports (designated under the Treaty) in the other country. Under the previous agreement which expired in 2011, 110 Canadian vessels had access to US waters to fish for albacore tuna each year from 15 June until 31 October. The provisions of the previous agreement expired at the end of the 2011 fishing season. A new agreement was not reached in time for the 2012 North Pacific albacore fishing season. Negotiations are planned for a new agreement to be reached in time for the 2013 fishing season.

On Canada's Atlantic coast, the 1972 *Agreement between Canada and France on their Mutual Fishing Relations* calls for reciprocal fishing rights for France and Canada in each other's waters. The maritime boundary between the two countries with respect to Saint-Pierre et Miquelon (SPM) was delimited in June 1992. This was followed by the 1994 *Procès-Verbal Applying the March 27, 1972 Agreement between Canada and France on their Mutual Fishing Relations* (or "PV" for short), established as the result of bilateral negotiations on how to manage transboundary stocks in Northwest Atlantic Fisheries Organization (NAFO) area 3Ps (near the south coast of Newfoundland, and around SPM). Under the PV, France receives a set percentage of TACs for transboundary stocks of Atlantic cod, American plaice, witch flounder, Iceland scallop, squid, and redfish, as well as fixed allocations of several other stocks found solely in Canadian waters (Atlantic cod, Greenland halibut, grenadier, redfish, and silver hake). Canadian fishers have access to a portion of the TAC for an Iceland scallop fishery that is located primarily in French waters. In all of the above-listed fisheries, Canadian and French vessels have reciprocal access to each other's waters in order to catch their respective allocations. The PV was automatically renewed for an additional five-year period on 17 April 2012.

To access Canadian fisheries waters and ports, foreign fishing vessels must apply for a licence from the Minister of Fisheries and Oceans in accordance with the *Coastal Fisheries Protection Act and Regulations*. Since signing the *Port State Measures Agreement* in November 2010, work has been undertaken in Canada to amend the Act and Regulations in order to fully implement the Agreement.

#### *Management of recreational fisheries*

Recreational fishing is popular with Canadians and tourists, with an estimated 3.3 million adult anglers participating in 2010, including over 400 000 tourists who come to Canada to fish. In 2010, the last year for which national survey data are available, anglers spent over CAD 2.5 billion on consumable goods and services directly associated with recreational fishing, such as transportation, food and lodging, package deals and supplies. They spent an additional CAD 5.8 billion on durable goods related to their recreational fishing activities, such as fishing equipment, boats, motors, camping equipment and real estate. Anglers caught 193 million fish of all species in 2010, and retained almost 63 million of these. The most popular species caught across the country were walleye, trout, perch, bass and northern pike. Survey results and summary tables are found in the latest report *2010 Survey of Recreational Fishing in Canada*: [www.dfo-mpo.gc.ca/stats/rec/canada-rec-eng.htm](http://www.dfo-mpo.gc.ca/stats/rec/canada-rec-eng.htm).

Managing Canada's recreational fisheries is a shared responsibility between federal, provincial and territorial governments. While roles vary between different provinces and territories, generally the federal government is responsible for all marine species (with the exception of anadromous and catadromous species in inland waters in some regions), while provincial and territorial governments are responsible for freshwater species.

Working collaboratively, the federal and provincial governments and the recreational fishing community in British Columbia have created the Vision for Recreational Fisheries in British Columbia 2009-2013 as a foundation for protecting and maintaining recreational fisheries and the complex marine aquatic environments on which they depend. The collaborative vision is for "a vibrant and sustainable recreational fishery in British Columbia, providing broad social and economic benefits through diverse opportunities that recognise and respect other users of the resource". Principles, goals and strategies were also developed to ensure success. Recognition of recreational fishing as "a socially and economically valuable use of fishery resources" and as "the means by which many Canadians access and experience these resources" is a guiding principle of this Vision. The document can be found at: [www.pac.dfo-mpo.gc.ca/fm-gp/rec/docs/rec-vision-eng.pdf](http://www.pac.dfo-mpo.gc.ca/fm-gp/rec/docs/rec-vision-eng.pdf).

### ***Aboriginal fisheries***

Fishing rights for Canada's Aboriginal people are shaped by several pieces of legislation, foremost by the *Constitution Act* of 1982, which recognises "existing Aboriginal and treaty rights of Aboriginal people" to fish. Two key Supreme Court of Canada decisions in the 1990s further specified these rights, as described below.

In 1990, the *Sparrow* decision described an Aboriginal right to fish for "food, social and ceremonial purposes". This decision led to the establishment of a collaborative DFO approach aimed at integrating First Nations participation into established fisheries across Canada. The decision was implemented nationwide through programmes including: the Aboriginal Fisheries Strategy (AFS), initiated in 1992, which provides negotiated agreements for harvesting plans for food, social and ceremonial (FSC) fisheries and involvement in fisheries co-management; the Allocation Transfer Program (ATP), begun in 1994, which provides commercial fisheries-related economic opportunities; and the Aboriginal Aquatic Resource and Oceans Management Program (AAROM), started in 2004, which supports the involvement of Aboriginal groups in integrated watershed/ecosystem-based planning and management processes.

In 1999, the *Marshall* decision established commercial fishing rights for certain Atlantic First Nations to earn a "moderate livelihood." The decision led to increased DFO collaboration aimed at integrating First Nations commercial fishing participation into established fisheries in Atlantic Canada. The resulting Marshall Response Initiative (MRI) involved transferring licenses/quotas and fishing vessels/gear to participating First Nation communities, and provided additional support for commercial fisheries capacity building within these communities. Although the *Marshall* decision related to certain areas of Atlantic Canada, other Aboriginal groups in coastal areas were able to benefit from similar programmes.

Two key current programmes are the Atlantic Integrated Commercial Fisheries Initiative (AICFI), and the Pacific Integrated Commercial Fisheries Initiative (PICFI).

AICFI was launched in 2007 to sustain the public investment made in the Mi'kmaq and Maliseet First Nations (MMFN) commercial fisheries through the MRI, and to continue to work with MMFNs to further build their capacity to manage successful commercial fishing enterprises (CFE) and to participate fully in the collaborative management of the integrated commercial fishery, along with other commercial harvesters. The 34 MMFNs in the provinces



of Nova Scotia, New Brunswick, Prince Edward Island and the Gaspé region of Québec are affected by the Initiative.

A major emphasis of AICFI is to achieve greater stability in relation to MMFNs' participation in the Atlantic commercial fishery in support of conditions that foster economically prosperous and sustainable fisheries through supportive co-management and capacity building initiatives. Implementation is carried out in four distinct, yet integrated components designed to follow a step-by-step approach to business development. The four key components of AICFI are as follows:

- *Integrated Commercial Fisheries Governance* – Activities that support increased accountability, transparency, and well-managed and operated CFEs;
- *Integrated Commercial Fisheries Management Practice Enhancement* – Activities that support preparation or upgrading of Business Development Plans, implementation of Business Development Plans, implementation of the Fisheries Management System, and training and at-sea mentoring;
- *Integrated Commercial Fisheries Co-management Capacity Building* – Activities and support that builds the capacity of MMFNs to successfully participate in the collaborative management of the integrated commercial fishery; and
- *Integrated Commercial Fisheries Diversification* – Includes acquisition of new vessels and gear, vessel modifications, overhauls of vessel engines, improvements to on-shore fish handling facilities, and small adjustments (increases) in fishing access through the addition of partial/seasonal or even temporary allocations.

To date, AICFI has had significant success in assisting MMFNs to maximise the potential of their CFEs and strengthening community economic self-sufficiency. Many MMFN fishery enterprises are operating more effectively and are fishing a significant portion of their licences notwithstanding industry fluctuations. MMFN commercial fishing licences now generate approximately CAD 49 million per year in landed commercial value from the catch. Approximately 1 400 jobs in participating MMFN communities are now directly associated with fish harvesting.

PICFI was launched in 2007 with the aim of supporting environmentally sustainable and economically viable integrated Pacific commercial fisheries, where conservation is the first priority and First Nations' aspirations to be more involved are supported. The four key elements of PICFI are as follows.

- *Acquiring Commercial Fisheries Access and Delivering to First Nations*: Acquisition of access to a broad range of fisheries resources through voluntary retirement of existing commercial licenses or quota, and allocation of this access to First Nations to increase their opportunities for participation in commercial fisheries.
- *Enhanced Accountability Measures*: Enhancement of fisheries monitoring, catch reporting, and enforcement, and establishment of a basis for a new approach to trace fish from harvest to consumer;
- *Capacity Building*: Capacity-building to provide eligible First Nations with the tools necessary to support successful and sustainable community-owned and operated commercial fisheries enterprises.
- *Engagement*: Strengthened collaboration among First Nations, industry, government, and other interests in managing the fishery which supports transition to clear harvest sharing arrangements for the salmon fishery.

Over the span of the five-year programme the emphasis focussed on building foundations for the longer-term objectives of the programme. First Nations and First Nations aggregates submitted expressions of interest as the first step to business and training plan development, and to receiving access in the commercial fishery and capacity building to take best advantage of that access. Over the five-year programme, CAD 108 million worth of relinquished access (licenses and quotas) was acquired in a range of fisheries for allocation to 24 First Nation Commercial Fishing Enterprises (CFE).

The 2010 Formative Evaluation of PICFI recommended that the programme be continued after 2012 to capitalise on positive results, notably acquiring fisheries access at fair market value, in essential capacity building (e.g. training and collaborative management), and in supporting necessary fisheries reforms coast-wide in British Columbia.

### ***Monitoring and enforcement***

DFO is responsible for contributing to fisheries conservation, the protection of fish habitat and the protection of species at risk by ensuring compliance with relevant legislation such as the *Fisheries Act*, the *Coastal Fisheries Protection Act*, the *Species at Risk Act* and the associated regulations. Compliance and enforcement activities are primarily carried out by fishery officers who conduct land-based patrols, aerial surveillance patrols, sea patrols in near shore, mid shore and high seas areas as well as inspections at dockside and at processing plants. It uses independent at-sea observers and dockside monitors, as well as satellite vessel monitoring systems and other forms of electronic monitoring to aid in monitoring fishing activity and fleet movement. The programme is in the process of implementing a dedicated intelligence service within the Conservation and Protection Directorate to enhance the effectiveness of the programme and to aid in priority setting.

### ***Multilateral agreements and arrangements***

Canada signed the *Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing* in November 2010. Canada also participated in many multilateral negotiations under the auspices of the Food and Agriculture Organization of the United Nations, including the negotiations of the Guidelines on Aquaculture Certification in 2010, the Global Record in 2010 and the Criteria for Flag State Performance in 2011 and 2012. Canada also played an active role in negotiating the Sustainable Fisheries and Law of the Sea Resolutions in the United Nations General Assembly (UNGA) in these years. Lastly, Canada participated actively in the 2011 review of the commitments made by States in protecting vulnerable marine ecosystems from significant adverse impacts of bottom fishing as outlined in UNGA Resolutions 61/105 and 64/72.

Canada participates in a number of regional fisheries management organisations (RFMOs) and similar bodies (Table 4.2). Canada co-led with the European Union a process for members of NAFO to adopt an amended Convention for the Organization in 2007, which the Canadian Government ratified in late 2009. The amended Convention provides for better management decisions that incorporate precautionary and ecosystem-based approaches, improves governance by limiting objections, and provides a robust dispute settlement mechanism. Five Contracting Parties have ratified the amended Convention domestically to date. As nine out of the twelve Contracting Parties are required to ratify the amended Convention to bring it into force, Canada continues to urge others who have not done so to ratify the Amendments as soon as possible.

With strong support from Canada, NAFO has also taken specific steps to adopt an ecosystem-based approach to fisheries management, for example, through research and analysis to identify and protect vulnerable marine ecosystems in its Regulatory Area (NRA), and the closure in 2009 of 11 coral and sponge areas to bottom fishing. NAFO also took steps

to improve monitoring and enforcement in the NRA, and in 2012, adopted a range of measures to improve the accuracy and timeliness of catch reporting to be outlined in NAFO Conservation and Enforcement Measures.

**Table 4.2. RFMOs and similar bodies in which Canada participates**

Organisation	Canada's role
Northwest Atlantic Fisheries Organization (NAFO)	Member
International Commission for the Conservation of Atlantic Tuna (ICCAT)	Member
North Atlantic Salmon Conservation Organization (NASCO)	Member
North Pacific Anadromous Fish Commission (NPAFC)	Member
Western and Central Pacific Fisheries Commission (WCPFC)	Member
Inter-American Tropical Tuna Commission (IATTC)	Member
North East Atlantic Fisheries Commission (NEAFC)	Non-Contracting Co-operating Party
Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)	Non-Contracting Co-operating Party
North Atlantic Marine Mammal Commission (NAMMCO)	Observer

Source: [www.dfo-mpo.gc.ca/stats/commercial/sea-maritimes-eng.htm](http://www.dfo-mpo.gc.ca/stats/commercial/sea-maritimes-eng.htm).

The amendments to the NAFO Convention and efforts to implement the precautionary approach are among the key improvements that are identified in an independent review of the performance of the Organization that took place in 2011. During the 2012 annual meeting, the Organization adopted an Action Plan to ensure the recommendations of the performance review are implemented.

In 2009, Canada joined the negotiations to establish a North Pacific RFMO, a process that began in 2006. Canada is seeking to ensure that the Convention text establishes the framework for a modern and cost effective RFMO that is consistent with the United Nations Fish Stocks Agreement. Canada also participated as an observer in the South Pacific RFMO process.

Canada continues to work within individual tuna RFMOs in an effort to strengthen decision-making and improve the overall management of tuna species, using the principle of sustainable management based on scientific advice. Within ICCAT, Canada has long been a strong advocate of strengthening decision-making within the organisation. Canada was an active participant in the Future of ICCAT Working Group, which held its first meeting in 2009 and concluded its work in 2012. The goal of this Working Group was to identify both short-term and long-term actions that can be implemented by the Commission to improve the overall management of tuna species in the Atlantic. Canada has also continued to push for the adoption of sustainable management measures for species such as Atlantic bluefin tuna, North Atlantic swordfish and porbeagle shark.

Within the Western and Central Pacific Fisheries Commission (WCPFC), Canada is closely involved in work to develop a Precautionary Approach-based management framework for North Pacific albacore, including limit and target reference points as well as association harvest decision rules should those reference points be breached. Within the Inter-American Tropical Tuna Commission (IATTC), Canada has been a full member since 2010 and is actively working to promote sustainable fish management measures by the Commission.

## Aquaculture

### *Policy changes*

The aquaculture sector in Canada exists in diverse regions and environments across the country and in a jurisdictional context involving the participation of municipal, provincial/territorial and federal governments, as well as First Nations. This situation presents a complex environment for policy development and implementation in the sector.

Following the February 2009 decision from the British Columbia Supreme Court that aquaculture was the responsibility of the federal government; new regulations came into force in December 2010. These regulations established a licensing regime tailored to address the aquaculture sector in that province. The new regulations apply only to British Columbia; aquaculture activities in other provinces continue to be regulated according to a mix of federal, provincial/territorial, and municipal requirements.

Fisheries and Oceans Canada has recently begun development of a regulatory regime to manage the release of aquaculture substances. This could provide a mechanism for overall coordination between different levels of government to better ensure that measures are integrated and effective in managing risk. A notice of Intent to Regulate was published in *Canada Gazette* on 5 November 2011. Progress continues on this initiative, including discussions with provincial governments.

The Sustainable Aquaculture Program (in effect since 2008) has reported many significant results, among them the following:

- Projects completed under the Aquaculture Innovation and Market Access Program that have resulted in new tools and techniques, development of new green technology, increased diversification, and movement towards sustainability certification.
- Regulatory reform in the areas noted above.
- Development of the National Aquaculture Strategic Action Plan, including targeted plans to facilitate growth in five sub-sectors of the Canadian aquaculture industry.
- Regulatory science initiatives to ensure that appropriate scientific research underpins all management decisions.
- The first report of the Aquaculture Sustainability Reporting Initiative was released in May 2012. This report documents the current information on the sustainability of aquaculture in Canada, and summarises key management practices that are in place to demonstrate how industry and government work together to address sustainability.

More information on Canadian aquaculture is available on Fisheries and Oceans Canada's web site at [www.dfo-mpo.gc.ca/aquaculture](http://www.dfo-mpo.gc.ca/aquaculture).

### *Production facilities, values and volumes*

According to Statistics Canada's Business Register, aquaculture establishments in Canada provided approximately 3 272 direct jobs and produced 161 000 tonnes of fish and seafood worth CAD 927 million in 2010.<sup>2</sup> Most aquaculture production was composed of salmon products, the majority of which was Atlantic salmon produced on both the Atlantic and Pacific coasts, with almost three-quarters of the total produced in British Columbia. The other major species include trout, mussels and oysters.

## Fisheries and the environment

### *Environmental policy changes and sustainable development initiatives*

Canada has taken action both domestically and internationally in developing policy and instruments that help to manage the effects of a variety of activities on marine environments.

Much of Canada's approach to sustainable development and environmental policy related to fisheries is embodied in the SFF described earlier in this chapter. One key component of the SFF with respect to environmental impacts of fishing is the "Policy to Manage the Impacts of Fishing on Sensitive Benthic Areas," which applies to all commercial, recreational, and Aboriginal marine fishing activities that are licensed and/or managed by DFO both within and outside Canada's exclusive economic zone.

The draft Policy on Managing Bycatch will also address the environmental impacts of fishing on species being taken incidentally (non-targeted species), including non-commercial species. Once published, the policy will provide guidance on managing the impacts of fishing on bycatch species, including an evaluation of whether or not bycatch rates and magnitudes are low enough to be sustainable and avoid serious harm.

Internationally, Canada continues to support efforts to implement the commitments contained in United Nations General Assembly (UNGA) Resolutions 61/105, 64/72 and 66/68 for the identification and protection of vulnerable marine ecosystems (VMEs) from significant adverse impacts, especially through the work within regional fisheries management organisations (RFMOs).

At the 2012 annual meeting, NAFO continued to make progress on protecting vulnerable marine ecosystems (VME), with the further mapping of VME indicator species, refinement of encounter threshold levels for sponges and sea pens based scientific advice and the strengthening of the protocol for exploratory fisheries. NAFO also merged the Working Group of Fisheries Managers and Scientists on VMEs with a new evergreen working group on an Ecosystem Approach to fisheries management.

In March 2011, negotiations were successfully concluded on the Convention text to establish the North Pacific Fisheries Commissions within the overall framework of the Multilateral Meetings on the Management of High Seas Fisheries in the North Pacific Ocean. Canada was active in the development of the Convention text, and worked with other States to ensure that the Commission is mandated to adopt conservation and management measures to prevent significant adverse impacts on VMEs in the Convention Area. The draft Convention includes a prohibition on directed fishing for four orders of deep water corals, and a mechanism for identifying other indicator species of VMEs, which would also be subject to the prohibition. At the same time, the "Interim Measures for the Protection of Vulnerable Marine Ecosystems in the Northeastern Pacific Ocean" were adopted to ensure adequate protection before the Convention comes into effect.

Beyond RFMOs, Canada also supports the Food and Agriculture Organization of the United Nations (FAO) to undertake further technical work to help States and RFMOs to implement the relevant commitments of UNGA Resolutions 61/105, 64/72 and 66/68 and the FAO International Guidelines for the Management of Deep Sea Fisheries in the High Seas. Canada supports the outcomes of the FAO Expert Consultation on Progress on Implementing the FAO Deep-Sea Fishery Guidelines held in Busan, Korea in 2010, which identified progress on and approaches for stronger implementation of the Guidelines.

In addition, Canada is active in the Convention on Biological Diversity (CBD) processes to describe ecologically or biologically significant areas (EBSAs). Parties to CBD, through the 2008 and 2010 Conference of Parties, have developed and endorsed criteria for EBSAs and a process for collecting data on areas that meet the criteria, as well as approved scientific

guidance related to a biogeographic classification system for designing representative networks of marine protected areas.

### Government financial transfers

Total government financial transfers (GFTs) to the fisheries and aquaculture sector by Canada's federal government increased by 20% between 2008 and 2010 (Table 4.3) mainly due to a large increase in general services.

**Table 4.3. Government financial transfers to the fisheries and aquaculture sector by Canada's federal government, in millions of CAD**

(CAD million)

Type of transfer	2008	2009	2010
Direct payments	290	296	301
Cost-reducing transfers	25	22	25
General services	476	577	610
Cost recovery charges	-43	-44	-40
<b>Total</b>	<b>748</b>	<b>851</b>	<b>896</b>

Source: [www.dfo-mpo.gc.ca/stats/commercial/sea-maritimes-eng.htm](http://www.dfo-mpo.gc.ca/stats/commercial/sea-maritimes-eng.htm).

The bulk of the cost-reducing transfers comes from the aquaculture sector in the form of training and development, and also in research and development, comprising approximately 65% of the cost-reducing transfers.

General services in Canada can be explained as how the Canadian federal government delivers services to the fishing industry in the form of fisheries management, research, enforcement, and infrastructure. Due to the vast coastline and large amount of small scale fisheries in Canada, the provision of infrastructure comprises 30% of the general services category.

### Post harvesting policies and practices

#### *Policy changes*

In 2009, Fisheries and Oceans Canada opened its Catch Certification Office (CCO), an online application system (the Fisheries Certificate System) that enables qualified applicants to acquire the required certificates to export to the European Union market. The CCO has also taken over the issuance of permits for the Convention on International Trade of Endangered Species (CITES) for marine species. In 2010, Chile announced its plans to initiate a catch documentation scheme for imports of fish and seafood. Presently, the CCO issues attestations for Canadian catches destined for Chile stating that they are legally harvested until an official catch certification scheme is created.

### Markets and trade

#### *Markets*

Canadians' consumption of fish and seafood increased slightly from 2008 through 2010. Apparent per capita annual consumption of fish products was 7.1 kg in 2008, 7.2 kg in 2009, and 7.3 kg 2010. This includes consumption of fresh and frozen sea fish, processed sea fish, shellfish, and fresh water fish. More specific details can be found at [www.dfo-mpo.gc.ca/stats/commercial/consumption-eng.htm](http://www.dfo-mpo.gc.ca/stats/commercial/consumption-eng.htm).

## Trade

The volume and value of Canada's fish and seafood trade in 2009-11 is shown in Table 4.4. Exports saw an increase in 2010 but quantity decreased somewhat in 2011, most likely due to the high value of the Canadian dollar. Imports of fish and seafood increased by a steady amount during 2009-11, but at a minimal rate. Details and updates can be found at [www.dfo-mpo.gc.ca/stats/trade-commerce/can-eng.htm](http://www.dfo-mpo.gc.ca/stats/trade-commerce/can-eng.htm).

**Table 4.4. Quantity and value of Canada's exports and imports of fish and seafood products**

Quantities are in thousand tonnes, values in millions of CAD

		2009	2010	2011
Exports	Quantity	603	656	609
	Value	3 636	3 902	4 097
Imports	Quantity	488	504	523
	Value	2 361	2 392	2 687

Source: [www.dfo-mpo.gc.ca/stats/commercial/sea-maritimes-eng.htm](http://www.dfo-mpo.gc.ca/stats/commercial/sea-maritimes-eng.htm).

## Policy changes

### Bilateral trade agreements

In 2010 and 2011, progress was made on Canada's bilateral trade agreements agenda. The Canada-Columbia free trade agreement came into force on 11 August 2011, the Canada-Panama free trade agreement was signed on 14 May 2010, and negotiations for the Canada-Honduras free trade agreement have concluded. These agreements will provide eventual duty-free access for all Canadian fish and seafood products into these markets.

Canada completed a feasibility study on the economic benefits of a Free Trade Agreement with Japan and concluded that significant benefits could be gained by both countries, including the fish and seafood sector. The first round of negotiations will be held in the fall of 2012. Another joint study was completed to examine areas where Canadian and Chinese economies are complementary and the Parties will proceed to exploratory discussions on deepening our trade and economic relationship.

Canada has also been invited to join the Trans-Pacific Partnership Agreement negotiations. With the addition of Canada and Mexico, the Trans-Pacific Partnership countries represent a market of over 650 million people, with a combined Gross Domestic Product of CAD 20.5 trillion. Twelve rounds of negotiations have taken place, and Canada is expected to join the negotiations in the late fall of 2012.

The Canada-European Union Comprehensive Economic and Trade Agreement negotiations were launched at the Canada-European Union Summit on 6 May 2009. Nine formal negotiating rounds have taken place, and negotiations entered a more focused and intensive phase in 2011/2012, with more frequent discussions. These negotiations represent an ambitious trade initiative, which is expected to yield significant benefits for the economies of both Parties. The goal of Canada and the European Union is to conclude in 2012. Canada also continued its ongoing Free Trade Agreement negotiations with a number of other trading partners, including India, the Caribbean Community, Morocco, Ukraine, Korea, Central America 3 (El Salvador, Nicaragua, Guatemala) and the Dominican Republic, as well as the modernisation of existing free trade agreements with the European Free Trade Area (EFTA), Costa Rica, Chile and Israel.

### *Technical trade measures*

Canada has been working since 2006 toward amendments of its *Health of Animals Regulations* and *Reportable Diseases Regulations*. This initiative has included extensive consultations with other levels of government, industry members and other stakeholders from 2006 to 2009. The proposed regulations were pre-published in December 2009 in the *Canada Gazette*, and revised based on the resulting feedback. Other countries were consulted about the proposed Regulations, and Canada's trade partners were notified under the Committee on Sanitary and Phytosanitary Measures of the World Trade Organization in January 2010.

The revised Regulations will better control the import of aquatic animals and their products in order to prevent the introduction of disease, require the mandatory reporting of specified aquatic animal diseases, and establish a national framework that meets the international standards established by the World Organisation for Animal Health (OIE) in order to protect Canadian aquatic resources (wild and farmed) from serious infectious diseases and maintain markets for Canadian exports. The Aquatic Animal Health regulations will come into force December 2012, after a transitional period of one year.

### **Outlook**

Canada's fisheries are beginning to realise the benefits of the first comprehensive revision of the Fisheries Act in more than a century and a half. The amended Act, which took effect in June 2012, gives Canada the means to update its policy suite and transform the way it protects fisheries and increase efficiencies. The revised Act represents a practical approach to managing threats to fisheries and fish habitat. It provides the tools to make better use of modern technology and ensure services are consistent, while bringing greater stability to the fishing industry and reducing costs for taxpayers. It strengthens the Government's enforcement ability by aligning penalties with the tougher provisions of Canada's Environmental Enforcement Act and making it easier to crack down on those who break the rules.

The Canadian government is currently pursuing an ambitious trade expansion plan. In the last six years, Canada has concluded free-trade agreements with nine countries and is negotiating with many more. Canada has also concluded foreign investment promotion and protection agreements with 12 countries including China, and is in active negotiations with 14 others. The outcome sought not only deals with the reduction or elimination of tariffs but also allows effective reciprocal market access to be realised through rules of origin that ensure exporters can benefit from preferential access being negotiated through the agreements, as well as mechanisms to address non-tariff barriers. For the fish and seafood industry specifically, it would result in new and expanded opportunities in new markets, and cost savings for the industry with the elimination of tariffs, particularly on product of interest for our industry.

### *Notes*

1. More information on the SFF, including some of the specific policies, is available at [www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/overview-cadre-eng.htm](http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/fish-ren-peche/sff-cpd/overview-cadre-eng.htm).
2. In a study from 2007, it was estimated that there were approximately 14 500 jobs resulting from aquaculture operations including direct, indirect, and induced employment. Further details can be found at: [www.dfo-mpo.gc.ca/aquaculture/ref/stats/aqua-ff-fc-2009-eng.htm#ch3](http://www.dfo-mpo.gc.ca/aquaculture/ref/stats/aqua-ff-fc-2009-eng.htm#ch3).



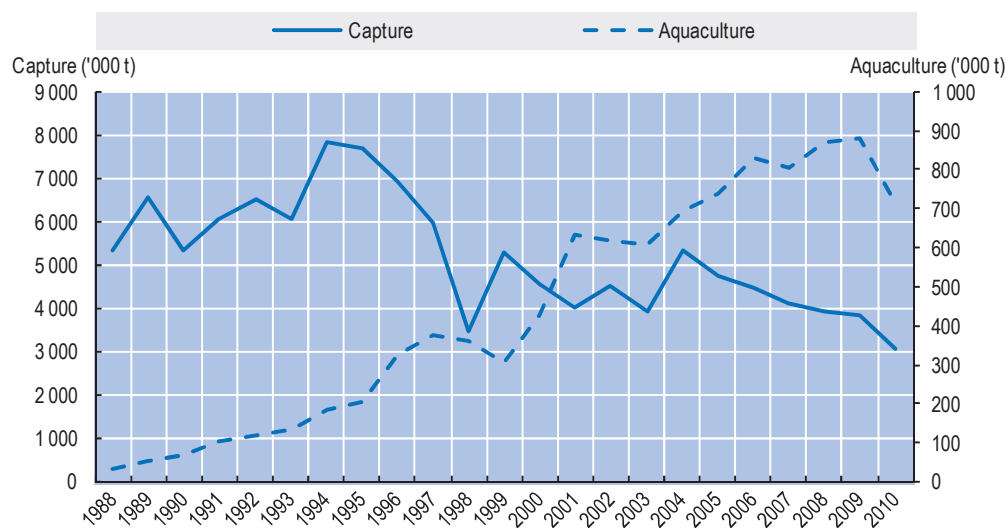
## Chapter 5

### CHILE

#### Summary of recent developments

- Since the crisis in the Chilean salmon farming industry that followed the outbreak of the ISA virus and in response to the need to incorporate a preventive approach to address unwanted harmful environmental and sanitary conditions, Law No. 20.434 was enacted in 2010 amending the General Law of Fisheries and Aquaculture (GLFA). The successful implementation of the new production model has led to the recovery of the salmon industry as a main activity, exporting 461 577 tonnes in 2011.
- In the last few years, landings from the main fish stocks have decreased. Total catches have fallen 30% since 2004, particularly because of a 50% decrease of industrial catches. Small-scale catches, however, have increased 80% since 2004 and represent almost half of national capture fisheries production.
- A programme to promote consumption of seafood in Chile is under development. The focus is to increase consumption of seafood per capita, which is currently 7.2 kg. Initiatives taken by the government includes gastronomic fairs and exhibitions, and projects to build processing plants and improve selling stalls at small-scale fisheries landing sites in Chile.
- Chile participated in negotiations to establish the South Pacific Regional Fisheries Management Organizations (SPRFMO); the SPRFMO Convention was adopted in November 2009. Chile signed the Convention on 23 February 2010 and began the ratification process in the National Parliament in August 2011. The instrument of ratification was deposited on 25 July 2012, enabling the entry into force of the Convention.
- In 2011, the Motu Motiro Hiva marine protected area was established. It is located in Islas Salas y Gomez and is the largest marine protected area in Chile, covering 150 000 km<sup>2</sup>.

Figure 5.1. Harvesting and aquaculture production



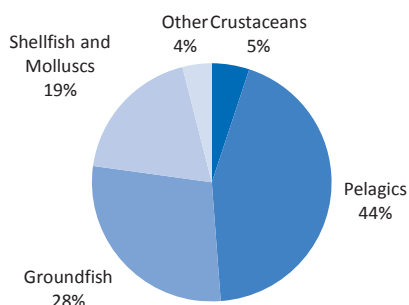
Source: FAO, FishStat database.

### Box 5.1. Key characteristics of Chilean fisheries

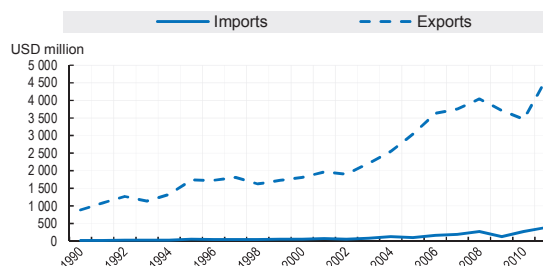
- Fishing is comprised of small-scale and industrial landings. Over the last years, total landings from the main resources have decreased. Catches have decreased 30% since 2004, mainly because of a 50% decrease of industrial catches over the same period. Small-scale catches, however, have increased 80% since 2004, representing almost half of national catches. In 2010, total landings amounted to 1.47 million tonnes with a value of CLP 493million. (Panel A)
- In 2011, exports reached a total of USD 4 697 234, 31% above 2010 results. This increase is explained by a 19% increase in quantity and a 10.3% increase in price. Seventy per cent of the exported value is provided by aquaculture, representing 45% of the quantity exported. This positive development is explained by the recovery of Atlantic salmon exports, which reached pre-ISA levels, recording a 55% export increase with respect to 2010. (Panel B)
- The most significant programme created in 2010 is the *Volvamos a la Mar* (“Let’s go back to the sea”) in response to the earthquake and tsunami of February 2010 It allowed for the replacement of fishing vessels, engines and nets, benefiting 11 000 small-scale fishers in the affected zone. (Panel C)
- The 2007 National Fisheries and Aquaculture Census indicates that a total of 151 949 persons were employed in fisheries and aquaculture. Most are employed in either the artisanal fishing fleet or in the processing industry. (Panel D)

Figure 5.2. Key fisheries indicators

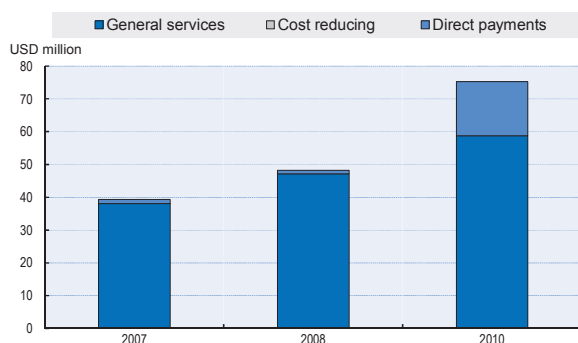
Panel A. Key species landed by value in 2010



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity (USD million)

	2007	2008	2010
General services	38	47	59
Cost reducing	0	0	0
Direct payments	1	1	17

## Legal and institutional framework

Chile is a unitary state in which the regulation of fisheries and aquaculture is under the jurisdiction of the Under-Secretariat for Fisheries, which defines policies and regulatory framework, the National Fisheries Service, which controls, monitors and inspects the enforcement of the national fisheries and aquaculture regulation, and the Fisheries Research Agency, (*Instituto de Fomento Pesquero*, IFOP), a public-private institution that provides the scientific information and analysis required to develop proposals and recommendations on the regulation and conservation of fisheries resources and their ecosystems. Furthermore, the legislation provides that institutions such as the Police and the Chilean Navy may inspect and enforce the fisheries and aquaculture regulation.

Fisheries and aquaculture in Chile are basically regulated by the General Law on Fisheries and Aquaculture, N° 18892, and its various amendments, henceforth GLFA, as well as by other administrative acts (decrees, resolutions). The main tools used in the management and conservation of fishing resources include the establishment of fishing bans per species in a specified area; prohibition of temporary or permanent capture of species protected under agreements to which Chile is a party; establishment of annual catch quota per species in a specific area; declaration of marine parks to ensure the conservation and diversity of hydrobiological species; establishment of percentage of species landed as bycatch; establishment of minimum extraction sizes or weights per species in a determined area; and regulations of fishing gears and nets.

Regarding the conditions for foreign access, the GLFA establishes that in order to obtain a fishing authorisation as a natural person, a foreign individual should have a permanent residence visa in Chile. In the case of a juridical person, it should be legally established in Chile; if foreign capital is involved, it should be proven that the investment was previously approved, when applicable.

## Capture fisheries

Fishing comprises small-scale and industrial landings. Over the last years, the total landings from the main resources have decreased. Catches have decreased 30% since 2004, mainly because of a 50% decrease of industrial catches over the same period. Small-scale catches, on the other hand, have increased 80% since 2004, representing almost half of national catches.

**Table 5.1. Total value (millions CLP) and volume (t) landed, by fleet and fishery, 2010-11**

	Small-scale landings				Industrial landings			
	2010		2011		2010		2011	
	Value (Millions CLP)	Quantity (t)	Value (Million CLP)	Quantity (t)	Value (Millions CLP)	Quantity (t)	Value (Millions CLP)	Quantity (t)
Algae	3 966	23 832	5 466	21 740	0	0	0	0
Fish	161 430	1 053 275	146 029	1 231 098	257 972	1 433 697	235 564	1 504 370
Molluscs	34 042	91 690	25 944	71 232	457	3 284	3 438	24 745
Crustaceans	16 199	11 729	19 586	13 305	10 403	12 025	10 333	12 052
Others	9 592	24 025	10 429	25 842	0	0	0	0
Total	225 229	1 204 550	207 454	1 363 217	268 832	1 449 006	249 335	1 541 166

Source: National Fisheries Service (Chili).

The main harvested species are as follows.

#### *Small-scale fisheries*

- Giant Kelp corresponds to 81% of harvested algae and contributing 80% of the total value of algae;
- Sardine and Anchovy, respectively 54% and 22% of total harvested fish, and 24% and 10% of total value of landed fish.
- Although of limited quantities, species such as Giant Squid, King Crab, Sea Urchin, Clam and Chilean abalone provide important revenues for the small-scale sector.

#### *Industrial landings*

- Anchovy, Jack mackerel and Sardine, respectively representing 39%, 23% and 18% of total fish landings and 20%, 30% and 9% of total landed fish value.

Regarding employment, the industrial fleet and the aquaculture sector accounted for 3 500 and 15 000 jobs respectively in 2011. Processing plants generated around 26 500 jobs. In terms of small-scale fisheries, 86 500 fishers are currently registered in the Small-Scale Fisheries Registry. These figures have been estimated on the basis of information from the National Fisheries Service and the Fisheries Research Agency.

**Table 5.2. Composition of authorised and operating industrial fleet, 2010-11, according to GRT**

GRT range	2010		2011	
	Authorised	Operating	Authorised	Operating
> 1 500	13	12	16	12
1 000 – 1 500	28	27	32	27
500 – 1 000	118	57	138	52
< 500	313	104	587	100
Total	472	200	773	191

**Table 5.3. Operation small-scale fleet, 2010-11, according to length**

Length range	2010	2011
	Operating	Operating
15 m < Length ≤ 18 m	593	621
12 m < Length ≤ 15 m	481	525
8 m < Length ≤ 12 m	2 736	3 338
Length ≤ 8 m	4 394	4 504
Total	8 204	8 988

#### *Status of fish stocks*

The following table provides an overview of the status of fish stocks.

Table 5.4. Status of fish stocks

Fishery unit	Change in the status as of 2010-11	Spawning stock biomass (t)
<b>Pelagic fish stocks</b>		
Anchovy XV-II Regions	Maintained status	1 640 000
Anchovy III-IV Regions	Maintained status	228 000
Anchovy V-X Regions	Overfished	115 000
South Pacific Pilchard XV- II Regions	Maintained status	(*)
South Pacific Pilchard III-IV Regions	Maintained status	(*)
Common sardine V-X	Maintained status	3 300 000
Chilean Jack Mackerel	Overfished	760 000
<b>Demersal fish stocks</b>		
Chilean hake IV- X Regions	Overfished	204 000
Southern hake X-XII Regions	Overfished	96 600
Hoki V-XII Regions	Overfished	177 000
Southern blue whiting X-XII Regions	Maintained status	130 000
Golden kingclip X-XI Regions	Overfished	6 500
Golden kingclip XI-XII Regions	Overfished	8 300
Yellownose skate VIII-X Regions	Overfished-Depleted (ban)	880
Roughskin skate	Depleted (ban)	Unknown
Cardinal fish III-X Regions	Depleted (ban)	50
Patagonian toothfish 47°S-XII Region	Overfished	8 000
Splendid alfonso XV-XII Regions	Overfished	3 000
Orange roughy	Unknown (ban)	Unknown
<b>Crustacean stocks</b>		
Red squad lobster XV-IV Regions	Maintained status	12 000 (**)
Red squad lobster V-VIII Regions	Maintained status	57 000 (**)
Yellow squad lobster III-IV Regions	Maintained status	20 000 (**)
Yellow squad lobster V-VIII Regions	Maintained status	30 000 (**)
Nylon shrimp II-VIII	Maintained status	37 000 (**)

(\*) Marginal/negligible abundance and harvest levels do not permit a stock assessment of this resource.

(\*\*) Corresponds to biomass vulnerable to be fished.

### *Management of commercial fisheries*

Government policy in 2011 responded mainly to issues related to the February 2010 earthquake and to improving the regulation of small-scale fishing, including regulations of the management areas for benthic resources.

Some of the laws passed in the period 2010-11 include the following.

- The February 2010 earthquake strongly affected several small-scale fishing communities in central-southern Chile. Vessels and fishing gears were lost. Industrial fishing was hard hit, having lost many of its processing plants. In July 2010, Law N° 20451 was enacted, incorporating new elements in the GLFA and temporarily eased some of their demands to promote a rapid rebuilding of artisanal and industrial fisheries. One element incorporated for processing plants was the requirement to be enrolled in a registry kept by the National Fisheries Service, eliminating the requirement to be authorised by the Under-Secretariat for Fisheries. The law also established a 3% quota reserve of the annual global quota due to catastrophe, to be deducted from the quota of the following year. For small-scale fishing, more flexibility was introduced so that fishers did not lose their registration in the

RAE. Additionally, it allowed fishers to replace vessels in distress, other than those owned.

- In order to comply with a conservation measure of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), Law No. 20,509 was adopted in May 2011, in order to punish the Chileans on board of foreign vessels conducting illegal fishing activities in the area of jurisdiction of the Commission.
- In August 2011, Law No. 20.525 was adopted, prohibiting finning of sharks, and requiring sharks to be landed with their fins naturally attached to the body.

### *Management instruments*

The main management instruments in place for industrial and small-scale fisheries are indicated in Table 5.5.

**Table 5.5. Main management measure in force in 2011**

Type of control	Management measure
Output	Total Allowable Catch (for all main fisheries) Maximum Catch Limit per vessel owner (for industrial fisheries under full exploitation regime) Individual Transferable Quota (for fisheries under recovery regime) Small-scale Extraction Regime (for specific small-scale fisheries, currently applicable on small pelagic fisheries and two hake fisheries, in specific regions)
Input	Limitation to the number of vessels licences (industrial and small-scale) Restrictions on the number of vessels per operator (applicable to small-scale vessel owners and small industrial owners) Restrictions on fishing gears
Biological	Minimum legal size of catch Restrictions on sex catch (for crustaceans fisheries) Maximum percentage of by-catch
Time closures	Biological ban (to protect reproductive and recruitment processes) Extractive ban (prohibits fishing a specific area for conservation reasons)
Area regulations	Fisheries exclusion zone (in general terms, industrial vessels are not allowed to operate in the first five miles reserved for small-scale fisheries) Benthic Management Areas (for small-scale communities) Marine Reserves Marine Parks Coastal Marine Spaces for Indigenous Communities

### *Access arrangements for foreign fleets*

Foreign vessels are not allowed to operate in waters under the Chilean jurisdiction. Notwithstanding the foregoing, foreign vessels may conduct fishing as a research activity which may be allowed for short periods on specified resources. During 2010-11, no authorisation was given to foreign vessels for research activities.

Conversely, there are no agreements that allow the operation of Chilean vessels in foreign jurisdictions.

### *Management of recreational fisheries*

The Law on Recreational Fishing (N°20256) has been in place since 2008. It defines recreational fishing as carried out by individuals that aims to capture aquatic species with

fishing gear for personal use, not for profit for the fisher and for purposes of sport, tourism or entertainment. This law also includes underwater fishing, only when for non-profit and for recreational purposes. Specific regulations have been developed for areas (rivers and lakes) and certain species, fishing seasons, authorised fishing gear and a maximum amount of fish that can be taken per day. Similarly, sanitary measures have been incorporated to prevent the spread of pests between different rivers or lakes.

### ***Aboriginal fisheries***

In 2008, Law 20249 was enacted which created Marine Coastal Spaces for Indigenous Peoples; the related regulation was published in 2009. The regulation safeguards determined spaces for indigenous communities in order to maintain their customary use and traditions (religious, recreational, fishing, medicinal and other uses). Customary use is understood as the customary practices and behaviours of members of communities or community associations and which are recognised collectively as an expression of their culture. Since the enactment of the Law, 22 requests for marine coastal spaces for indigenous peoples have been received for the IX, XIV and X Regions. However, no marine coastal space for indigenous peoples has been established. In order to strengthen this law and its application, a commission involving different government institutions was created, to define actions, to streamline procedures and to disseminate the rules to indigenous communities.

### ***Monitoring and enforcement***

*Conditions for exercising the activity:* Industrial vessels must have a fishing authorisation. The authorisation entitles vessels to conduct fishing of specified species, area and fishing gear for an indefinite period. The registration of vessels is the condition that enables them to effectively fish. Only vessels registered in Chile and flying Chilean flag may be registered. Small-scale fishers must be registered with the Small-scale Fishing Registry. The registration classifies data by region and species. It has four categories: vessel owners and their vessels, crew, shellfish diving collectors, and beach resources collectors. A five nautical mile coastal area is reserved for small-scale fisheries, measured from the normal baselines, from the northern limit of the Republic up to 41° 28,6'S parallel, as well as internal waters to the south of that last point.

*Accreditation of operation area:* Industrial vessels registered in Chile that conduct fishing, whether in or beyond jurisdictional waters, as well as industrial vessels conducting research fishing activities, whether registered in Chile or not, and fishing or factory vessels flying foreign flag, authorised to berth at Chilean ports, shall have the obligation to install and maintain operative satellite positioning device onboard. In small-scale fisheries, there is no obligation to use an automatic-register satellite-positioning device.

*Information of catch and landings:* Industrial vessel owners conducting any type of fishing shall inform the National Fisheries Service of their catches, including species and fishing ground. This obligation covers any national or foreign fishing vessel berthing at Chilean ports and covers all, or a part of, the result of its activity. All catch information, per fishing trip, shall be certified at landing. With this provision, 100% of industrial landings are audited and certified, both by volume and by species composition.

Traceability of the fish starts at landing and continues until they reach market. Small-scale vessel owners shall inform the National Fisheries Service, at landing, of their catch per species and fishing ground. This obligation covers people and fishing organisations that markets fish from small-scale fishing. It is not an obligation to certify the aforementioned catch information, per fishing trip, at landing; however, in the main fisheries (that constitute about 70% of the resources landed by the small-scale fleet), landings are verified under the conditions established by the National Fisheries Service. With this provision, 85% of small-

scale landings are audited and verified, both by volume and species composition. In August 2011 an amendment to the GLFA was published, which provides that industrial and small-scale vessel owners and small-scale industry must report their catches by species and fishing grounds to the National Fisheries Service, whether the landing is taking place in Chile or abroad. This same requirement should be fulfilled by shellfish diving collectors, beach collectors, and fishers' organisations with benthic management areas. Also, industrial and small-scale vessel owners must notify the National Fisheries Service before arriving at port.

*Authorisation for processing:* an amendment to the GLFA was published in July 2010; it provides that processing plants shall be entered in the Registry of Processing Plants. The GLFA previously stated that any processing plant should have a permit issued by the Undersecretariat for Fisheries. If a processing plant has not operated for two consecutive years it will be removed from the registry. Processing plants have the obligation to inform the National Fisheries Service of their resource supply, both industrial and small scale, as well as the final products. These obligations apply to plants that process, elaborate or markets fish resources. This information is part of the traceability process started at landing.

*Accrediting movement of the catch and derived products:* information is also provided on the movement of fish products that modifies the stock of finished products thus establishing and accrediting whether the elaborated product has a legal origin. This information is part of the traceability process started at landing.

*Accrediting legal origin of the exported product:* Before export processors and traders must accredit the origin of the product to be exported.

### ***Multilateral agreements and arrangements***

Chile participated in the negotiations to establish the South Pacific Regional Fisheries Management Organizations (SPRFMO), a Convention adopted in November 2009. Chile signed this Convention on 23 February 2010 and started the ratification process in the National Parliament in August 2011. The instrument of ratification was deposited on 25 July 2012, enabling the entry into force of the Convention.

Chile participated in the negotiation of the FAO Port State Measure Agreement which was signed by Chile in November 2009 and approved by the National Parliament in September 2011. It is currently in the final stages for the deposit of its instrument of ratification. Also, Chile participated in the negotiation and adoption of the Technical Guidelines on Aquaculture Certification, the Guidelines for the Ecolabelling of Fish and Fishery Products from Marine Capture Fisheries and the International Guidelines on Bycatch Management and Reduction of Discards. Finally, Chile participated in Technical Consultation on Flag State Performance of FAO.

Chile also participated actively in the negotiation of the Sustainable Fisheries and Law of the Sea Resolutions in the United Nations General Assembly.

## **Aquaculture**

### ***Policy changes***

Since the crisis in the Chilean salmon farming industry following the outbreak of the ISA virus (Infectious salmon anaemia) and in response to the need to incorporate a preventive approach to address the appearance of unwanted harmful environmental and sanitary conditions, Law No. 20.434 was enacted in 2010, and which amended the GLFA. The Law:

- Modifies the model of provision and operation of fish farms, in order to improve environmental and sanitary conditions, through the definition of groups of concessions which have to coordinate their operations and sanitary measures.



- Establishes mechanisms to facilitate and provide certainty to the creation and implementation of guarantees on aquaculture concessions and authorisations.
- Strengthens the regulatory powers of the National Fisheries Service in order to better monitor the compliance with environmental and health provisions to be met by farms as well as to prevent undesirable events.
- Gradually increases the amount of aquaculture tax on fish farms.

The implementation of this Act considers the development or modification of a total of 15 specific regulations.

Additionally, a new law was enacted in April 2012 under No. 20.583. This Law addresses the following:

- Improve spatial planning rules;
- Changes fines for infringements and sanctions.
- Eliminate the aquaculture tax for small-scale algae farmers.
- Provide powers to the National Fisheries Service to inspect, register and seize biological products in laboratories, experimentation centres and others.

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

The successful implementation of a new production model after the ISA crisis allowed the salmon industry to recover, exporting 461 577 tonnes in 2011, an increase of 30% compared to 2010 and the highest export level for the last three years. In addition, progress has been made to diversify the industry, and increase production of abalone and mussels; new markets have also been opened. Regarding aquaculture concessions, there are currently 3 081 concessions, covering a total of 31 940 ha.

**Table 5.6. Production of total and main aquaculture species, 2010-11**

	2010	2011
	Harvest (t)	Harvest (t)
Total fishes	467 156	550 028
Atlantic Salmon	123 233	241 867
Coho Salmon	122 744	133 153
Rainbow Trout	220 244	173 662
Total molluscs	233 906	306 632
Mussel	221 522	289 921
Total algae	12 179	14 363
Gracilaria Seaweed	12 150	14 358

Source: National Fisheries Service. *Annual Fisheries Statistics*.

**Table 5.7. Exports of main aquaculture species, in value and volume, 2010-11**

	2010		2011	
	Volume (t)	Value (USD '000)	Volume (t)	Value (USD '000)
Atlantic salmon	93 271	725 243	144 539	1 215 243
Coho salmon	84 118	437 392	112 382	644 874
Rainbow trout	126 208	902 273	130 013	1 065 624
Mussel	47 734	106 819	68 785	182 002
Gracilaria seaweed	4 325	39 411	4 919	48 816

Source: National Fisheries Service and Fisheries Development Agency.

**Table 5.8. Concessions per main type of farming in 2011**

	2011	
	Number of concessions	Surface covered (ha)
Salmons	1 299	13 634
Molluscs	1 191	15 723
Algae	504	1 628

## Fisheries and the environment

Regarding environmental policies and fisheries, recent management measures and initiatives include the following.

- Dialogue and working groups have been set up to ensure the appropriate management of demersal and benthic fisheries. The aim is to reach consensus and validate economically and socially relevant national decisions with stakeholders. Representatives of the different sectors involved in the management, inspection, and use of fishing resources participate in dialogue/working groups.
- Scientific Committees are to provide advice on scientific and technical matters related to the conservation and management of the most relevant national fisheries. During 2011, ten committees operated: Demersal Resources of the Southernmost Fisheries (Southern hake, Southern blue whiting, Golden kingclip and hoki), Chilean hake, Chilean Jack Mackerel, Benthic resources, Crustaceans, Small pelagic (Anchovy, Sardine and Chub mackerel), Deep waters (Splendid alfonso, Orange roughy and Patagonian toothfish), Sharks, Biodiversity, and Swordfish.
- In order to implement the Ecosystem Approach, the Under-secretariat for Fisheries signed an Advisory Agreement called “Integrated Assistance for Decision Making in Fisheries and Aquaculture, 2010”, with the Fisheries Research Agency (IFOP).
- The GLFA establishes that marine protected areas called Marine Parks and Marine Reserves constitute fisheries management measures aimed to preserving ecologic units of interest for science and watch over areas that ensure the conservation and diversity of aquatic species and their habitat. In 2011, the marine protected area called “Motu Motiro Hiva”, located in Isla Salas y Gomez, was established. This is currently the widest marine protected area in Chile, covering 150 000 km<sup>2</sup>. Besides, management schemes have been developed for five marine reserves and the Francisco Coloane Marine Park
- Regarding species conservation, a permanent catch prohibition was established in 2009 for three shark species (Whale shark, White shark and Basking shark) whose status is under

great threat. This complies with requirements of the Convention for the Conservation of Migratory Species of Wild Animals (CITES).

- Concerning mitigation of by-catch of non-commercial species several activities have been carried out in the framework of the National Plan of Action of Seabirds, including the evaluation of seabird interaction with trawl nets. Also, a programme to release incidentally caught Sea turtles in Highly Migratory fisheries is under development.
- Law N° 20.525 as of 2011, which prohibits the finning of sharks.
- In January 2010 the Ministry for the Environment, the Environmental Assessment Service and the Superintendence for the Environment were created establishing a new institutional structure for environmental issues.

### Government financial transfers

The most relevant programmes, mainly benefitting small-scale fisheries, are:

- The programme *Volvamos a la Mar* (“Let’s go back to the sea”) was created in response to the earthquake and tsunami of February 2010, which strongly affected a number of coastal communities and caused significant losses to small-scale fishing vessels and nets. The programme allowed for the replacement of fishing vessels, engines and nets, thus benefiting 11 000 small-scale fishers in the affected zone.
- During this period, a life insurance scheme was established for workers of the small-scale fisheries sector and, as of 2014, for aquaculture producers.
- In 2002, Law 19849 created a special fund “Fishing Administration Fund” (FAP), to finance progress in fisheries administration, capacity building, social support and training of former fishermen who lost their jobs as a consequence of the Law of Maximum Catch Limit. The FAP has participated in regional programmes for the development of small-scale fisheries, with a view to improving the working conditions, providing fishers with competences and seeking value added and diversification of resources and activities, in the framework of a sustainable resource use.
- Another strategic axis in terms of small-scale fisheries is the funding of territorial programmes and programmes which allow the co-ordination of business units related the processing of raw material. This provides for the development of processing units located in small-scale landing sites, increasing their income through price increase and added value and not through harvesting capacity.

The details of Government Financial Transfers are provided in the Fisheries statistics.

### Post-harvesting policies and practices

#### *Policy changes*

##### *Food safety*

During 2011, legal amendments were introduced in regard to imported fishing products for re-exports aiming at requesting sanitary certificates by a competent authority, according to standards established by the Codex Alimentarius.

In addition, the National Policy on Food Security was improved. At the same time, a Law is underway, focused on turning the Chilean Agency for Food Security and Safety in a public agency.

As a result of the ISA incident, companies started a process of sustainability certification with recognised international entities through the responsible aquaculture programme. Thus, by the end of 2011 and beginning of 2012, a number of farming centres and related processing plants have been certified and other have started the process.

In 2011 the Ministry of Economy, through CORFO, granted a programme to develop an environmental certification in the mussel farming industry.

#### *Processing and handling facilities*

**Table 5.9. Volume and value of exports per processing line**

	2010		2011	
	Volume (t)	Value (USD '000)	Volume (t)	Value (USD '000)
Frozen	415 555	1 979 320	562 985	2 838 201
Fresh refrigerated	82 632	572 368	106 064	801 308
Fishmeal	318 639	534 902	333 204	479 131
Canned	36 894	143 946	23 446	138 128
Smoked	5 562	74 886	7 048	108 033
Fish oil	50 025	50 281	61 963	88 476
Other	79 704	222 606	81 825	243 957

## **Markets and trade**

### *Markets*

#### *Trends in domestic consumption*

Since 2011, a study to diagnose the domestic consumption of seafood has been conducted. Results are still under revision. The focus is on proposing a methodology that allows a follow up of promotion policies currently under design or development. In this context, there is information available from 2010 and 2011. The National Survey on Food Quality (ENCA), conducted by the Ministry of Public Health, showed that seafood consumption is low (compared to other meats, e.g. red and white meat, pork). The consumption of seafood is around 4 kg per capita in 50% of the people surveyed. People with the highest income record a higher consumption of seafood. On average, the estimated domestic consumption of seafood is 7.2 kg per capita.

#### *Promotional efforts*

Albeit low, the consumption of fish products in Chile is provided mainly by small-scale fisheries. Opportunities to improve the chain have been identified, and improvements are introduced to help a better position of small-scale fisheries with a subsequent improvement of income and value of fisheries.

Local consumption is encouraged through gastronomic fairs and the development of recipe books. Different initiatives of small-scale fisheries have been supported to improve the production and technologic innovation, add value to processes, achieve productive diversification and develop new markets with a view to strengthen small-scale fisheries.

In terms of international trade, joint work is under development with ProChile and Corfo to improve the competitiveness of fisheries and aquaculture. This takes place in the framework of the programme of innovation for fisheries sustainability which will develop guidelines for access to markets.

## **Trade**

### *Volumes and values*

In 2011, exports reached a total of USD M 4 697 234, 31% above 2010 results. This increase is explained by a 19% increase in the quantity and 10.3% increase in price. Seventy per cent of the exported value is provided by aquaculture, representing 45% of the quantity exported. This positive development is explained by the recovery of Atlantic salmon exports, which have reached pre-ISA levels, recording a 55% export increase with respect to 2010.

### *Policy changes*

During 2010, a FTA with Malaysia was signed; during 2011, FTAs with Nicaragua and Viet Nam were completed although not yet administratively ratified. Trade agreements with Thailand and the group Trans Pacific Partnership (TPP) are under negotiation. Besides, a chapter is being inserted in the FTA with China, and observations are being made to the Partial Scope Agreement (AAP) with India.

Key elements of trade agreements include the following.

- Chile has 22 trade agreements with 59 countries.
- Access to markets with custom tariff preferences for Chile represents 62% of the world market.
- Chile has 4 302.36 million potential customers, equivalent to 85.7% of the world's GDP.
- 93% of the Chilean exports are produced with countries with which there exists a trade preference.

## **Outlook**

During 2011, an important reform of the General Law on Fisheries and Aquaculture was started. The reform focuses on fisheries sustainability, in response to the state of the main national fisheries most of which are overexploited. One of the main elements incorporated in this reform is a changed structure of the decision-making process, which will be firmly based on scientific information, compared to the current system, in which stakeholders are involved, leading to sometimes socioeconomic criteria being prioritised over sustainability. In addition, the reform strengthens fisheries research, introduces new inspection elements for small-scale fisheries (setting VMS and catch certification for large vessels), upgrades the industrial and small-scale fisheries access system, and introduces mechanisms for the establishment of a rebuilding programme in accordance to the OECD guidelines, among other elements. Two other legal initiatives are currently under discussion: the regulation, control and sanction of discards, and the protection of vulnerable marine ecosystems.

In July 2012, Chile ratified the SPRFMO, allowing this organisation to come into force in August of the same year. This means that the binding measures will start to be adopted; they will benefit the Chilean jack mackerel, species that currently is subject to a heavy exploitation and on which Chile is highly socio-economically dependent.



## Chapter 6

### EUROPEAN UNION

#### Summary of recent developments

- The European Union aims for a sound fisheries management that will ensure that living aquatic resources are exploited sustainably. The European Union advocates a progressive implementation of an ecosystem-based approach to fisheries management, which will contribute to efficient fishing activities within an economically viable and competitive fisheries industry, while minimising the impact of fishing on marine ecosystems.
- For the period under review, the European Union applies the precautionary approach to fisheries management and seeks to ensure that fish stock exploitation restores and maintains these stocks at levels which can produce the maximum sustainable yield.
- The main vehicle for achieving this goal is the multiannual management plan. The European Union has steadily increased the number of plans governing fisheries, bringing the large majority of catches under multiannual management. In addition, fishing opportunities (Total Allowable Catches, effort restrictions) are fixed annually by the European Union (for some stocks, bi-annually). A broad array of technical conservation measures also come into play.
- During the review period, the European Commission launched an intensive consultation on the future Common Fisheries Policy, based on a Green Paper on the reform of the Common Fisheries Policy (CFP).<sup>1</sup> The public consultation on the Green Paper was summarized early 2010<sup>2</sup> (see also Outlook). On that basis, the European Commission adopted a reform package<sup>3</sup> in July 2011. The legal proposal for a new regulation on the CFP currently still under internal discussion has sustainability at its heart. The proposal aims to bring all fish stocks above MSY levels, it envisages the gradual elimination of discards, the introduction of multiannual multispecies plans, the application of the precautionary approach and of the ecosystem approach to conservation addressing the issues of the protection of habitats of specific concern, and fighting IUU fishing. The domestic discussion process should lead to the entry into force of the new policy framework by 2014.
- The reform contains also a revision of the Common Market Organisation which aims amongst others at better consumer information by means of new marketing standards on labelling, quality and traceability and strengthening producer organisations.
- The reform package includes also a Communication on the External Dimension of the CFP that promotes coherent action at global (UN, FAO, etc.), regional (Regional Fisheries Management Organisations) and bilateral level in view of the Union's responsibility as global fishing and market entity for higher sustainability and better fisheries governance in international fisheries.
- Since January 2010, compliance with conservation and management rules governs our external trade with fishery products under the IUU Regulation.<sup>4</sup> This is a major change compared to the past situation where the regulatory framework for the external trade with fishery products was essentially influenced by customs and sanitary rules and, to a minor extent, by conservation and management rules.
- The new Generalised System of Preferences (GSP) adopted with Council Regulation (EC) No 732/2008 of 22 July 2008 sets a scheme of generalised tariff preferences for the period from 1 January 2009 to 31 December 2011 and amends Regulations (EC) No 552/97, (EC) No. 1933/2006 and Commission Regulations (EC) No 1100/2006 and (EC) No 964/2007.

- On 10 October 2007, the European Commission adopted an Integrated Maritime Policy (IMP) for the European Union. The EU Integrated Maritime Policy (IMP) has established itself as new approach to enhance the optimal development of all sea-related activities in a sustainable manner. The IMP is implemented via integrated sea basin strategies (Mediterranean, Baltic, and Atlantic) and cross-cutting instruments on marine knowledge, maritime spatial planning, and maritime surveillance that aims at fostering synergies and the competitiveness of maritime activities. The Policy has strategic policy orientations for the future and will focus its action primarily in the following five areas:
  - Maximise the sustainable use of the oceans and seas;
  - Build a knowledge and innovation base for the maritime policy;
  - Deliver the highest quality of life in coastal regions;
  - Promote Europe's leadership in international maritime affairs; and
  - Raise the visibility of maritime Europe
- The Policy seeks to provide a more coherent approach to maritime issues, with increased coordination between different policy areas. It seeks to coordinate, not to replace policies on specific maritime sectors.
- The most recent Commission initiative on “Blue Growth”<sup>6</sup> aims at fostering the 'blue economy' and focuses on five key economic activities: (i) maritime, coastal and cruise tourism, (ii) ocean renewable energy, (iii) aquaculture, (iv) marine biotechnologies for pharmaceuticals and cosmetics and (v) marine mineral resources.
- The Arctic Communication<sup>7</sup> contains a series of measures to support the effective stewardship of the Arctic. Summarised in three words, "knowledge, responsibility, engagement", the strategy adopted today contains a set of tangible actions that contribute to research and sustainable development in the region and promote environmentally friendly technologies that could be used for sustainable shipping and mining. It also underlines the European Union's activities in the Arctic since 2008.

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1. COM (2009) 163 of 22 April 2009

2. See SEC(2012)428 final of 16 April 2010 Synthesis of the Consultation on the Reform of the Common Fisheries Policy

3. COM(2011) 417, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Reform of the Common Fisheries Policy; COM(2011) 418, Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, on reporting obligations under Council Regulation (EC) No 2371/2002 of 20 December 2002 on the conservation and sustainable exploitation of fisheries resources under the Common Fisheries Policy; COM(2011) 425, Proposal for a Regulation of the European Parliament and of the Council on the Common Fisheries Policy; COM(2011) 416, Proposal for a regulation of the European Parliament and of the Council on the Common Organisation of the Markets in fishery and aquaculture products; COM(2011) 424, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on External Dimension of the Common Fisheries Policy.

4. Council Regulation (EC) No 1005/2008 of 29.09.2008

5. COM(2007) 575 final of 10.10.2007 and SEC(2007) 1278 of 10.10.2007

6. COM(2012) 494 final of 13.9.2012

7. COM(2012)19 final of 26.06.2012



## Legal and institutional framework

The institutional framework has changed following the adoption of the Lisbon Treaty on 13 December 2007 which entered into force on 1 December 2009. The term “European Community” is replaced by the “European Union.” This change does not particularly affect fisheries. On the basis of the Treaty on the Functioning of the European Union (Articles 3 and 38 to 44), as provided until 30 November 2009 by the Treaty establishing the European Community (Article 3 and Articles 32 to 38), the European Union has exclusive competence for conservation and management of marine fish stocks. The European Union therefore has responsibility for the adoption of all relevant rules in this area — which are then implemented by the Member States — and for entering into external agreements or arrangements with third countries or qualified international organisations.

The European Union’s competences include fishing activities in waters under national jurisdiction 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 the Member States, under the conditions laid down in the EU legislation.

Responsibility for a number of policy areas, which are not directly related to the conservation and management of fishery resources, such as research, technological development and development co-operation, is shared by the European Union and Member States. This is also the case for issues related to biodiversity and environment when they are not directly related to conservation and management.

Council Regulation (EC) No 2371/2002 of 20 December 2002<sup>1</sup> on the conservation and sustainable exploitation of fisheries resources under the Common Fisheries Policy provides for a legal framework on the basis of which fisheries management is conducted under the Common Fisheries Policy (CFP). This framework is currently under review (see *Outlook* chapter).

The Regional Advisory Councils (RACs)<sup>2</sup> introduced by the 2002 reform of the CFP have become efficient and well-functioning stakeholder bodies, that have provided the Commission with hundreds of recommendations on important legislative proposals and issues, either of a regional character (North Sea RAC and North Western Waters RAC advice on cod recovery plan) or on broader policy issues such as the future reform of the CFP. RACs contribution to the evaluation and preparation of long term management plans has also been very constructive and useful. In its reform proposals the Commission acknowledges the success of this model of stakeholder consultation and advocates further improvements and extension of their role, in particular in the framework of the proposed decentralisation and regionalisation of the policy.

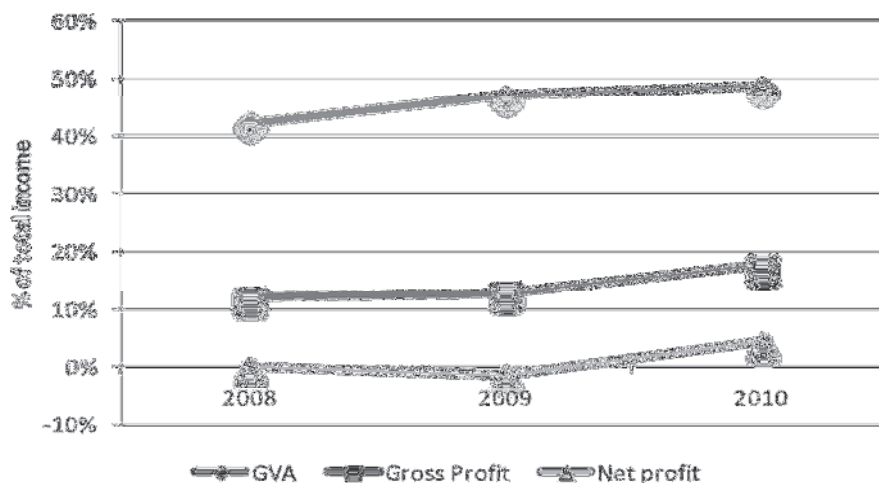
## Capture fisheries

### *Economic performance and employment*

According to the most recently available data (Annual Economic Report — AER 2012), the EU fleet moved from a loss making position to a profitable position in 2010. The total amount of gross value added (GVA), gross profit and net profit (all excluding subsidies) generated by the EU fishing fleet (excluding Greece) in 2010 was EUR 3.4 billion (a 5.7% increase from 2009), EUR 1.2 billion (a 39.5% increase from 2009) and EUR 288 million (an increase of over EUR 300 million from 2009). The figures below show GVA, gross profit and net profit as a proportion of total income. Each of these profitability indicators all show improvement from 2009 and 2008 results. GVA as a proportion of total income has increased steadily from 42% in 2008 to 47% in 2009 to 49% in 2010. Gross profit as a proportion of

total income increased from 12% in 2008 to 13% in 2009 to 18% in 2010. Net profit as a proportion of total income increased from negative 0.4% in 2009 to 4% in 2010.

**Figure 6.1. EU fleet economic performance indicators 2008-2010**



Source: Annual Economic Report 2012.

The total costs of the EU fishing fleet in 2010 (excluding Greece) were EUR 6.6 billion. This amount consisted of just under EUR 1.9 billion in crew wages, EUR 1.3 billion in fuel costs, EUR 576 million in repair costs, EUR 943 million in other variable costs, EUR 614 million in fixed costs, EUR 64 million in fishing rights leasing costs, EUR 278 million in unpaid labour, EUR 793 million in depreciation costs and EUR 141 million in calculated opportunity costs (interest).

The data suggest that as fuel prices eased in 2009, expenditure on crew wages and repairs increased (15% and 12% respectively), while the total fuel cost of the EU fleet fell significantly (-23%), both in real terms and in relation to total income. Data for 2010 suggests a reverse trend, with a 7% reduction in the amount spent on crew wages compared to 2009 and an 11% increase in the amount of expenditure on fuel compared to 2009, largely due to the steady increase in fuel prices during 2010.

Regarding employment, the total number of fishers employed in the EU fishing fleet (excluding Greece) in 2010 was 138 500, an increase of around 2.4% when compared to 2009 figures.

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

The conservation policy has not fully delivered on sustainability issues. In addition, half of the total of managed stocks is not fully assessed. However, there are improvements, in particular for stocks in Union waters in the North-east Atlantic and adjacent waters.

More specifically, during 2009 and 2010 the following positive developments can be highlighted concerning the state of fish stocks

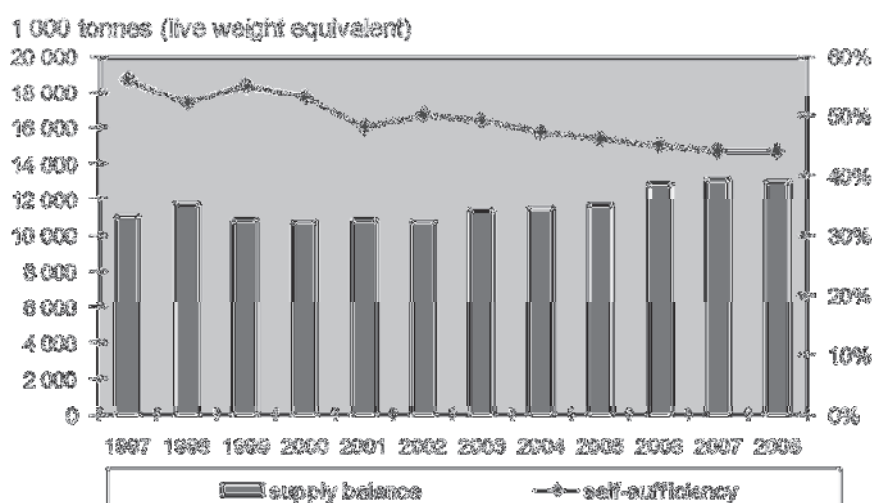
- The number of stocks that are not overfished has increased from 2 in 2005 to 11 in 2010.
- Twenty stocks were subject to a “stop fishing” recommendation in 2009, these have now decreased to 14.
- Stocks outside safe biological limits (but not subject to a 'stop fishing' recommendation) have dropped from 30 in 2003 to 22 in 2010;

- While total allowable catches (TACs) are still set at much higher levels than those recommended by scientists, they have dropped to 34% in 2010;

However, there are still problems with a considerable number of stocks where scientists have not provided recommendations due to concerns about the quality of the data or for other reasons.

There are signs of improvement and the situation has since 2010 further improved. This is however only a beginning. Success in recovering stocks is far from guaranteed and efforts to eliminate overfishing must be continued. Recurrent and regular overfishing has led to a situation where the fish stocks in EU waters contribute much less to the European economy and to the food supply than they did in the past. This reduction in productivity has led to increased dependence on imported raw materials for the European food industry and for the European market. While 75% of fish products for the European market originated from domestic resources in the early 1970's, domestic products now only contributes some 40% (Figure 6.2).

**Figure 6.2. Evolution of the supply balance of the EU (1997-2008) in volume**



Source: Eurostat.

### **Management of commercial fisheries**

#### *Total Allowable Catch (TAC)*

One of the main instruments used by the European Union to manage fish stocks in EU waters is the setting of Total Allowable Catches and effort limits. They are fixed on an annual or bi-annual basis and on the basis of scientific advice provided by ICES and its own Scientific, Technical and Economic Committee for Fisheries (STECF). For the setting of limits, various key principles are followed as set out in a Commission Communication.<sup>3</sup> Firstly, TACs are set at a level which ensures the sustainable exploitation of resources in environmental, economic and social terms. Secondly, to ensure a stable and predictable framework for operators depending on fisheries, annual variations are kept within pre-determined limits. Thirdly, international commitments must be respected, including the commitment to rebuild stocks so that they reach their maximum productivity. Furthermore, long-term plans in force must be implemented, fishing on overexploited stocks must be reduced and depleted stocks must be rebuilt. Overall, a precautionary approach is applied. The aim of setting levels of Total Allowable Catches (TACs) and quotas and the fishing effort levels for European fisheries for next years will be to phase out overfishing.<sup>4</sup>

Each TAC is divided into quotas between Member States and they are responsible for the correct management and appropriate use of them. The distribution of the quotas is based on the so-called “*relative stability*” principle, which provides Member States with their relative share of each concerned TAC for which they have historic rights. Therefore, quotas are normally allocated according to a fixed allocation key: each Member State's quota is a fixed percentage of the TAC. In this way relative stability between Member States is ensured. The application of the relative stability principle implies a deviation from this system which allows for the special needs of regions that are particularly dependent on fishing to be met in cases when the TAC reaches a low level. The preferences are expressed as minimum quantities which the relevant Member State should obtain as a quota for each stock, even if the TAC falls to a low level.

Recent practice has been that fishing opportunities are divided into five separate regulations for deep-sea species, for the Baltic Sea, for the Black Sea, for the remaining EU waters (North-East Atlantic, including the North Sea) and for international waters to transpose TACs decided in RFMOs or bilateral agreements. The regulation concerning deep-sea species covers a two-year period, while the others are annual Regulations.

Apart from setting TACs and quotas, these fishing opportunity regulations also establish maximum fishing effort levels where necessary, as well as certain additional conditions relevant to ensure the appropriate use of the fishing opportunities concerned or needed to comply with the international obligations under the fisheries agreement to which the European Union is bound. The management of fish stocks in the Mediterranean Sea is done by the EU Member States through management plans which have to set specific conservation targets and technical measures to achieve them.

In the Black Sea,<sup>5</sup> TACs are the main tool whereas this instrument is complemented in the Baltic, the North Sea and the European Western Waters by long-term management plans. For the rest of the Atlantic Waters such plans are in preparation. TACs and the quota system are not applied in the Mediterranean Sea, except in the case of Bluefin tuna, for which TACs are established under an ICCAT<sup>6</sup> recovery plan.

#### *Long term management plans*

Since 2002, multi-annual recovery and management plans with clear objectives and harvest rules have become the core of the conservation policy. They balance ecological requisites (state of the stocks and exploitation rates) with economic and social considerations (consistent levels of catches). Effort management, specific inspection and monitoring provisions were introduced in these plans where relevant. Community plans were adopted for 17 stocks in the EU waters. There is also a plan for the recovery of stocks of the European eel, and additional proposals currently under negotiation or preparation (Annex 6.A). By the end of 2010 around 25% of the stocks and 80% of the catches concerned (in tonnes) can be considered under multiannual plans and harvest rules. Technical conservation measures are in place in the Atlantic waters, the North Sea, the Mediterranean and in the Baltic as well as specific fishing effort provisions for the Western Waters. A high-grading ban was gradually introduced for the Atlantic, North Sea and Baltic sea in 2009/2010. A limited number of fisheries conservation measures were taken in the context of Member States' obligations under the European Union's Habitat and Birds directive (“Natura 2000”).

All current management plans are subject to a process to evaluate their effectiveness in taking the stocks to safety levels where necessary, and beyond this, to levels capable of producing the maximum sustainable yield. The objective is to replace current single-stock-based plans with multi-annual multi-stock management plans. The first proposal to be presented in 2013 will be a multi-species plan for the Baltic Sea, incorporating biological interactions such as predation and competition. Work is also underway on a mixed-fisheries

plan for the North Sea, which will incorporate technical interactions, i.e. the way in which different fleets and fishing gears catch different mixtures of fish. Such plans will help in ensuring the best return for the fleets from the available resources while paving the way for an ecosystem-based management of the exploited stocks.

Work is underway within the various bodies that provide advice to the European Union on conservation and management to set the technical base for these multi-species plans. Until this base is available, the European Union will consider introducing short-term updates and improvements to the various plans in force, in light of the results of the evaluation processes led over the last two years.

For stocks that are not covered by multi-annual management plans, the European Union has taken great steps towards reaching the objective set forth at the Johannesburg summit of 2002 to bring stocks to MSY in 2015.

**North Sea:** the present long-term management plans for North Sea sole and plaice<sup>7</sup> and for cod in the North Sea, Skagerrak, Kattegat and other areas,<sup>8</sup> include provisions to restrict fishing effort in line with fishing mortality targets. The multi-annual plan for cod also provides incentive rules for Member States to implement cod avoidance and discards reductions measures. In line with this, several Member States have implemented voluntary real time closures and permanent closures to reduce cod fishing mortality. In the North Sea and Skagerrak there are also obligatory real time closures to protect juveniles of cod, haddock, whiting and saithe. A number of multi-annuals plans are jointly prepared and implemented between the European Union and Norway in the North Sea, including cod, haddock, whiting, saithe, herring and plaice.

Since 2000, a number of technical measures have been adopted to ensure the greater responsiveness of North Sea fisheries to on-going developments in the knowledge and status of fish stocks and of their broader ecosystems. These include the use of real time closures and the banning of high-grading, as well as other more targeted measures. Since 2000, in accordance with Council Regulation (EC) No 43/2009<sup>9</sup> Annex III point 4, commercial fishing for sandeel has been prohibited in the Firth of Forth (North Sea, Scotland) given studies demonstrating the link between low sandeel availability and the poor breeding success of the black-legged kittiwake (*Rissa tridactyla*).

**Baltic Sea:** a multi-annual plan for the two cod stocks in the Baltic Sea has been in force since 2007 (Council Regulation (EC) No. 1098/2007<sup>10</sup>). As well as setting the appropriate levels of TAC, the plan also restricts fishing effort in terms of numbers of days of absence from port. The effort observed since the implementation of the cod plan has demonstrated effective year on year reductions in total effort deployed.<sup>11</sup>

Cod fisheries in the Baltic are also regulated by seasonal closures in order to protect spawning aggregations of cod in an environment where salinity and oxygen in-flow from the North Sea determine successful cod egg survival. In the Eastern Baltic (ICES sub-divisions 24-32) since 2005 a closure for all fisheries at all times in specific areas of the Bornholm Deep, the Gotland Basin and the Gdansk Deep has been in place with the aim of reducing fishing mortality.

Capacity has been capped at 2005 levels for cod fisheries. Capacity has also been substantially reduced, resulting in reductions in some Baltic countries in excess of 30%.<sup>12</sup> There has been a noticeable improvement in the control of Baltic Sea cod fisheries. During 2000 to 2007 industry and enforcement sources indicated that catches were around 32 to 45% higher than the reported figures. Since 2008, unreported landings have been reduced to less than 7% of reported landings.<sup>13</sup> The use of Joint Deployment Programmes of inspectors from across the Baltic Member States is considered to have contributed to this.

In line with the generalised approach to long-term management plans a first proposal for a multi-species approach is currently under preparation for the long-term management of Baltic cod, herring and sprat.

Various technical measures have been adopted to ensure the greater responsiveness of Baltic Sea fisheries to on-going developments in the knowledge and status of fish stocks and of their broader ecosystems. These include the prohibition of high-grading, the establishment of minimum landing sizes as well as restrictions on the fishing for certain species whether temporal (e.g. flounder and turbot) or linked to specific gears (e.g. eels, electro fishing, with explosives and/or chemicals), as well as other more targeted measures. These measures are included in Council Regulation (EC) No 2187/2005<sup>14</sup>.

Significant work has been undertaken over the past decade to pursue increased selectivity in Baltic cod fisheries. The latest modifications to the gears allowed were adopted in 2010 (Commission Regulation (EU) N°686/2010<sup>15</sup>). A further study is underway on collaboration between the scientific community and the fishing sector on how to further minimize discards in Baltic cod fisheries. It will be finalised in 2013.

**European Western Waters:** multi-annual management is also well established for the stocks exploited in the European western waters. West of Scotland and Irish Sea cod are regulated together with the North Sea, Skagerrak and Kattegat stocks under Regulation (EC) N°1342/2008 (see above). In addition, key stocks such as those of hake (north<sup>16</sup> and south<sup>17</sup>), sole (Bay of Biscay<sup>18</sup> and the western Channel<sup>19</sup>) and herring (West of Scotland,<sup>20</sup> Celtic Sea<sup>21</sup>) are managed in accordance with long-term harvesting rules. The Commission has made further proposals to regulate two other stocks of high economic importance, namely the western stock of horse mackerel<sup>22</sup> and the stock of anchovy in the Bay of Biscay.<sup>23</sup> These proposals are still under discussion between the European parliament and the Council of Ministers. The annual fishing opportunities decisions taken since their tabling have followed the harvesting rules as proposed.

**Mediterranean Sea:** in the Mediterranean Sea the European Union is bound to apply the decisions adopted by ICCAT and GFCM.<sup>24</sup> This concerns in particular the bluefin tuna recovery plan adopted in 2006 and amended and reinforced since then. The plan was established to address the significant over capacity of fleets fishing bluefin tuna as well as the high level of non-compliance with ICCAT conservation and management measures. The plan has, and continues to be transposed into EU legislation<sup>25</sup> and has been complemented by a control and inspection programme which defines objectives and priorities and benchmarks. The multi-annual recovery plan which continues to be reinforced provides a system of TACs and a suite of monitoring and control measures which are binding for contracting parties. These provisions are contributing to enhanced levels of catch monitoring, allowing the Commission and/or Member States to close fisheries where the risk of overfishing is detected. The plan has contributed to progressively reduce overcapacity of fishing fleets notably purse-seiners and a significantly reduce non-compliance with ICCAT provisions. Specific conservation measures have also been reinforced for the Mediterranean swordfish, in particular by extending a seasonal fishing ban and ring-fencing the pelagic long-line fisheries.

As regards the other Mediterranean and Black Sea fish stocks, a substantial part is being overfished and significant efforts are needed to ensure a sustainable exploitation. The European Union has been active on several fronts in this respect.

At EU level, the Mediterranean Regulation<sup>26</sup> is the first example of EU legislation regarding fishery matters, where environmental concerns have been substantially integrated. Moreover, with a view to elicit bottom-up approaches and greater participation of stakeholders, a more decentralised decision-making approach, through the development of national multiannual management plans has been implemented. Most of EU Mediterranean countries have adopted management plans for their various fisheries, and further plans were

under preparation by the end of 2011. Under the Mediterranean Regulation, EU Member States have to apply technical measures to ensure that fishing activities have the least possible impact on juvenile fish. They also have to identify and monitor sensitive habitats (*mäerl*, *coralligenous* and seagrass beds) to be protected from certain fishing activities.

At the level of the GFCM, fishing effort has been restricted in the fisheries restricted area of Gulf of Lions, while fishing with towed dredges and bottom trawl nets has been prohibited in three further areas: Lophelia reef off Capo Santa Maria di Leuca, Nile delta area cold hydrocarbon seeps and Eratosthenes Seamount. Restrictions on gear for the dolphin fishery were adopted and a minimum mesh size for trawl nets set for the Black Sea. These restrictions were transposed into EU law in 2011.

### *Fleet management*

Fleet capacity management is an integrated part of the Common Fisheries Policy (CFP). With the entry into force of the current CFP, fleet management is regulated in the following way.

Fleet capacity reduction targets are no longer decided at EU level. Each Member State fleet is subject to strict fishing capacity management measures that ensure that any entry of capacity has to be compensated by the exit of at least an equivalent capacity expressed in terms of tonnage and engine power. Additionally capacity withdrawn (scrapped) with public aid cannot be replaced.

It is up to individual Member State to adjust the size of the fleet to the fishing opportunities allocated to them.

EU and national funding can be used for decommissioning of vessels. Since 2004, the CFP put an end to public aid for the construction of vessels and for the export of capacity to third countries.

The rules in combination with the decommissioning possibility imply that the capacity of the EU fleet should decrease steadily over time and this has indeed been the case. However, these simpler rules have resulted in modest capacity reductions compared to what would have been needed to achieve a healthy balance between the size of the fleet and the fishing resources.

The European Commission maintains a fleet register that includes data on fishing vessel identification, physical and technical characteristics, fishing gear, owner and agent information. Based on the information in the fleet register in combination with annual reporting by Member States on fleet evolution, the Commission presents annually a report on the state of the Union's fleet. The reporting by Member States does not allow the Commission to provide a quantitative assessment of the adequate fleet size.

### ***Monitoring and enforcement***

#### *EU Fisheries control system*

The European Union fundamentally reformed its fisheries control system by adopting the Regulation (EC) N°1224/2009 in October 2009 and its Implementing Regulation (EU) N°404/2011 in April 2011. It comprises the whole chain from net to plate and ensures full respect of the rules of the Common Fisheries Policy. It provides for a level playing field for all operators and guarantees that no discrimination is made between Union and third country vessels. The new control system is making a wide use of modern technologies and is generally based on a risk based approach allowing to target irregularities in a resource efficient manner.

In the new system, all vessels above 10 m must keep a logbook and vessels above 12 must be equipped with an electronic recording and reporting system (ERS) and a vessel monitoring system (VMS). For monitoring the whole chain after landing the EU control system has introduced a traceability system allowing the identification of the origin of the fisheries products at any stage of the production down to the final consumer.

To improve the management of fleet capacity and effort regimes new, replaced and technically modified engines exceeding 120 kW must be systematically certified. Furthermore, the whole fleet is subject to the verification of engine power, including physical checks on the basis of national, risk-based sampling plan.

The Control Regulation provides that the overall level of sanctions has to deprive offenders of the economic benefit derived from their infringements and discourage them from further offences. The Regulation also establishes a point system for serious infringements both for fishing licences and masters where a licence or a master's certificate can be suspended or withdrawn after the assignation of points for the repeated commission of defined serious infringements.

The Regulation includes a number of measures to ensure that Member States effectively enforce the rules of the Common Fisheries Policy, i.e. by deducting quotas in case of over-utilisation of fishing opportunities or for non-respect of the Common Fisheries Policy rules. EU financial assistance may also be withheld if a MS does not comply and if the offence may pose a serious threat for conservation or the effective operation of the fisheries control system.

The new control system establishes common standards for the management of fisheries related data in all Member States and provides for the systematic data exchanges between Member States in real time and access for the European Commission to the databases of Member States. Fisheries control data will be improved by systematic cross-checks by means of a computerised data validation system allowing the easy identification of irregularities and ensuring a good data quality both for fisheries management and science.

Finally, with the Control Regulation, the European Fisheries Control Agency (EFCA) based in Vigo (Spain) is in a position to effectively assist the Commission and Member States for the purpose of implementing the rules of the Common Fisheries Policy. In particular, the Agency contributes to bring about harmonised inspection standards, and it has the possibility to acquire, rent or charter the equipment for the implementation of joint deployment plans. In addition, officials of the EFCA may be assigned in international waters as Union inspectors, which will increase their inspection competences. The Agency is also the appropriate body to set up an emergency unit to tackle serious risks to the Common Fisheries Policy that cannot be addressed otherwise.

#### *Measures to address Illegal, Unreported and Unregulated (IUU) fishing activities*

In view of the high level of IUU fishing in the world and the responsibility the European Union has to assume as a key player in global fisheries, the European Union decided to take action in addition to international regional and international efforts to stop this harmful activity. Based on the FAO International Plan of Action against IUU fishing of in 2001, Council Regulation (EC) 1005/2008<sup>27</sup> to prevent, deter and eliminate IUU fishing (the IUU Regulation) was adopted on 29 September 2008 and entered into force on 1 January 2010. This Regulation aims at preventing the marketing of IUU products in the European Union and thereby cutting off profit for illegal operators.

The system requires that all fishery products entering the European Union must be accompanied by a catch certificate which is validated by a competent public authority of the flag State of the vessel catching the fish. Through this instrument, the competent authorities of the flag State will validate that the catches concerned have been made in accordance with



applicable laws, regulations and international conservation and management measures. Products that don't have a catch certificate will be denied entry to the European Union. The Regulation requires all flag States to take responsibility as a flag State, as failure may result in a ban of import and corrective measures. In addition, vessels which are not sanctioned for their illegal activities by the relevant States risk ending up on the EU IUU vessel list, which may include both EU and non EU vessels. Countries that do not respect the rules established by international Law, as a flag, coastal, port or market State and refuse to cooperate in the fight against IUU fishing risk being listed as non-cooperating and no longer be able to trade fish with the European Union.

The Regulation also includes provisions on port State control, mutual assistance and a Community alert system.

The fight against IUU fishing has high political support at all levels in the European Union. For instance, the European Parliament adopted a report<sup>28</sup> on “*Combating Illegal Fishing at the Global Level – the role of the EU*”, supporting, amongst others, the full implementation of the EU IUU Regulation.

Since the entry into force of the main EU tool to combat IUU fishing, the EU IUU Regulation 1005/2008, on 1 January 2010, the co-operation has increased considerably with flag States, coastal States, processing States and market States and civil society making it more difficult to be an illegal operator. The Commission is currently conducting an extensive investigative work with flag States and coastal States of both third country and EU vessels. Up to now this has in some cases resulted in coastal and flag States taking action against vessels fishing in its waters, such as removal of licenses or heavy fines.

The Commission and Member States have increased the use of tools foreseen in the EU IUU Regulation (e.g. mutual assistance system, exchange of information, risk management and co-operation between Member States, verification of catch certificates issued by third countries, etc.) in order to prevent illegally caught products from entering the European Union.

On the international level the increased political focus is reflected by the signing of a Joint Statement in September 2011 between the United States of America and the European Union on increased co-operation in the fight against IUU fishing. Also at the international level the European Union is promoting the adoption of IUU measures in RFMO's, including catch documentation schemes. The Commission cooperates administratively with these third countries on the implementation of the IUU Regulation and fisheries governance. In addition, the Commission has since 2010 a programme of technical assistance of developing countries where external consultants help countries understand the principles of the EU IUU Regulation and assist countries in assessing their systems.

### ***External dimension of the Common Fisheries Policy***

#### *International co-operation to promote sustainable fisheries*

In view of its role as an important global player in fisheries and as market "state", the European Union is fully committed to promote conservation and sustainable management of international fish stocks through strengthened global fisheries governance and intensified dialogue with neighbours and key partners.

In that vein the European Commission adopted in July 2011 a Communication on the External Dimension of the Common Fisheries Policy.<sup>29</sup> It outlines EU actions aimed at transforming bilateral dialogues into working partnerships, fighting IUU, upholding and strengthening the global architecture for fisheries governance, enhancing the performance of RFMOs and reinforcing the governance of bilateral fisheries agreements, including more effective support for sustainable fisheries in partner countries.

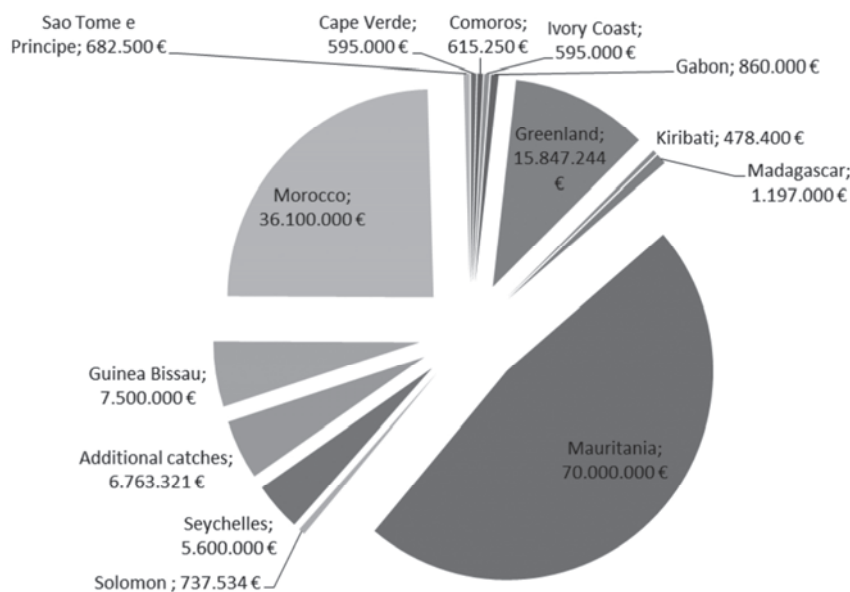
It also pledges for greater synergies between EU actions and policies in the realm of international fisheries governance and the domains of development, trade, environment, research and innovation, foreign policy and others. The EU member states have endorsed this vision by virtue of Council Conclusions of March 2012, effectively granting the Commission a mandate for bold action covering the entire spectrum of external fisheries policies.

### *Bilateral agreements*

Fisheries Partnership Agreements (FPA) are negotiated and concluded by the Commission, on behalf of the European Union. Through FPAs, the European fleet has access to surplus resources which its partners cannot or do not wish to fish, in accordance with UN principles. In return, the European Union provides a financial contribution based on two elements: the economic evaluation of the access by Community vessels to third country waters and fisheries resources, and the needs expressed by the partner country for supporting the implementation of a sustainable fisheries policy in its waters. Each FPA is an 'exclusive' agreement: once it is in place, EU vessels can only fish under the FPA, and cannot enter into private agreements with the partner country except under certain conditions.

On 31 December 2011, there were 11 FPAs in force, which can be divided into two categories: eight bilateral tuna agreements (with Cape Verde, Ivory Coast, São Tomé and Príncipe, Madagascar, Comoros, Seychelles, Kiribati and the Solomon Islands) and three multi-species agreements with Greenland, Mauritania and Guinea Bissau. A protocol with Morocco was negotiated in February 2011 and provisionally applied until December 2011, when the European Parliament decided not to consent to its conclusion. In 2011, a new protocol was initialled with Mauritius — it should enter into force in coming months. Negotiations on the renewal of the protocol with Gabon are on-going.

**Figure 6.3. Budgetary commitments per agreement in 2011**



All in all, during the last few years, an average of 300 vessels fished under the FPAs, half of them fishing tuna. In 2011, the total amount committed and paid in respect of Bilateral Fisheries Agreements was respectively EUR 147 571 249 and EUR 155 655 109. Graph 6.3 above provides details on budgetary commitments per agreement in 2011.

### ***Multilateral agreements and arrangements***

The European Union has substantially contributed to the work in the area of fisheries of international organisations such as the UN, the OECD and the FAO. Within FAO, the European Union has actively participated in the negotiations of the FAO Port States Agreement which was adopted in November 2009. The European Union has ratified that Agreement in 2011. In February 2009, the Commission adopted and communicated to the FAO a Community Plan of Action for the Conservation and Management of Sharks, following the FAO IPOA Sharks.

On the multilateral side, the European Union plays an active role in six tuna Regional Fisheries Management Organisations (RFMOs) (including the Agreement on the International Dolphin Conservation Programme – AIDCP) and nine non-tuna RFMOs. The European Union is also member of two advisory Regional Fisheries Organisations. Over the last few years, the European Union’s involvement in these RFMOs has been key for increasing the efficiency of RFMOs with regard to sustainable fisheries management and the protection of vulnerable marine eco-systems. At the same time the European Union has been adamant to make sure that vessels flying the flags of its Member States comply with management and conservation rules of RFMOs. The Conference on Regional Fisheries Management Organisations RFMOs “Fit for the future,” (Brussels, 1 June 2012) was the opportunity to enhance dialogue between RFMOs and to identify key areas that determine the performance of RFMO. Political will and commitment by the parties, co-operation across RFMOs, compliance, robustness of data and science, capacity-building, the fight against IUU fishing, the need for transparency and better communication were recurrent themes during the day.

## **Aquaculture**

### ***Policy changes and actions for sustainable aquaculture***

Sea water and fresh water aquaculture play an important role in numerous Member States. In April 2009, the European Commission adopted its Communication “Building a sustainable future for aquaculture – A new impetus for the Strategy for the Sustainable Development of European Aquaculture.”<sup>30</sup> The Council welcomed this Communication and adopted Council Conclusions on a Strategy for the Sustainable Development of European Aquaculture in June 2009. In this Communication the Commission examined the root causes of the stagnation in EU aquaculture production.

The Commission also adopted detailed rules on organic aquaculture animal and seaweed production,<sup>31</sup> as well as a proposal for legislation exempting biosecure “closed aquaculture facilities” from the permit requirement.<sup>32</sup>

The proposal for the reform of the CFP takes this analysis a step further and intends to promote a collaborative approach among Member States to remove unnecessary administrative burdens, address difficulties to access space, and introduce measures to improve the competitiveness of sustainable EU aquaculture and promote on the market its high value production. On the basis of this process the Commission will issue, in 2013, strategic guidelines for a sustainable aquaculture.

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

After an economic downturn in 2009, the economic performance of EU aquaculture sector has substantially recovered in 2010.

EU production is concentrated in a few MS and species. The five most important countries<sup>33</sup> (France, Spain, Italy, the United Kingdom, Greece) accounted for about 75% of the total value and volume, and the following five countries accounted for a further 17%. This

means that aquaculture production in at least 17 Member States is at a very low level. EU aquaculture is also concentrated on a relatively small number of species. Four species represent 68% of the total value of production and 75% of the total volume.<sup>34</sup>

Total aquaculture production in the EU-27 reached approximately 1.26 million tonnes, worth some EUR 3.1 billion in 2010. There are approximately 15 000 aquaculture firms in the EU. Regarding the structure of the sector, the vast majority of the enterprises are SMEs. A small number of larger enterprises play an important role in some specific sub-sectors, particularly for salmon and sea bass / sea bream industries.

Direct employment in the European Union's aquaculture sector concerns approximately 85 000 people. However, in full time equivalent (FTE) terms, the employment is only about 30 000. The significant difference between the employment in numbers and the fulltime equivalents shows the existence of important seasonal or part-time occupation in the sector.

### **Fisheries and the environment**

The CFP reform approved in December 2002 was a turning point in fisheries management. The new CFP focuses more on the impact of fisheries on the environment and encourages sustainable development.

The main legal instrument driving the reformed CFP is the Framework Regulation, EC No 2371/2002, on the conservation and sustainable exploitation of fisheries resources under the CFP. According to this Regulation, "the Community shall apply the precautionary approach in taking measures designed to protect and conserve living aquatic resources, to provide for their sustainable exploitation and to minimise the impact of fishing activities on marine ecosystems.

The Union's Marine Strategy Framework Directive (adopted in June 2008) is to protect more effectively the marine environment across Europe, through the achievement of a good environmental status of the EU's marine waters by 2021 and through protection of the source based upon which marine-related economic and social activities depend. The Marine Strategy Framework Directive constitutes the vital environmental component of the Union's future maritime policy, designed to achieve the full economic potential of oceans and seas in harmony with the marine environment

To facilitate the policy development that allows for achieving the good environmental status, the Commission, together with Member States, has developed the criteria and methodological standards for the good environmental status.<sup>35</sup> These criteria are elaborated in eleven so-called descriptors. The latter will guide the Member States in defining the good environmental status. Important for fisheries is in particular descriptor 3: populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock. Criteria under this descriptor are 1) the level of pressure of the fishing activity 2) the reproductive capacity of the stock and 3) the population and age size distribution. Both Member States and the Union fisheries measures will have to integrate these criteria into the policy.

### **Government financial transfers**

The European Fisheries Fund (EFF) provides funding to the fishing industry and coastal communities to help them adapt to changing conditions in the sector and become economically resilient and ecologically sustainable in line with the objective of the Common Fisheries Policy.

The EFF has a budget of EUR 4.305 billion for 2007-2013. Funding is available for all sectors of the fisheries industry: sea and inland fishing, aquaculture (the farming of fish,

shellfish and aquatic plants), and processing and marketing of fisheries products. Particular attention is given to fishing communities most affected by recent changes in the industry.

Projects are funded on the basis of strategic plans and operational programmes drawn up by national authorities. There are five priority areas (axes) for EFF funding.

- Axis 1: Adjustment of the fleet (e.g. to support scrapping of fishing vessels).
- Axis 2: Aquaculture, processing and marketing, and inland fishing (e.g. to support the shift to more environmentally friendly production methods).
- Axis 3: Measures of common interest (e.g. to improve product traceability or labelling).
- Axis 4: Sustainable development of fisheries areas (e.g. to support diversification of the local economy).
- Axis 5: Technical assistance to finance the administration of the fund.

According to *Fourth Annual Report on Implementation of the European fisheries Fund* (2010), by the end of 2010, 36.13% of the overall EFF allocation was committed to specific projects with some Member States exceeding 50%, with the following distribution: 13.2% (EUR 567 485 078) for Axis 1 (measures for the adaptation of the Community fishing fleet, 11.7% (EUR 504 633 674) for Axis 2 (aquaculture, inland fishing, processing and marketing of fishery and aquaculture products), 9.7% (EUR 418 147 084) for Axis 3 (measures of common interest) and 0.7% (EUR 33 844 305) for Axis 4 (sustainable development of fisheries areas).

In 2011, the European Commission presented its proposal for a new fund to support the European Union's maritime and fisheries policies over the 2014-2020 period: the European Maritime and Fisheries Fund (EMFF).

*De minimis* State aid (Commission Regulation (EC) No. 875/2007 of 24 July 2007) is aid deemed not to distort competition. Under the Regulation, the ceiling is set at EUR 30 000 per three-year period, per beneficiary, on condition that the total amount of such aid represents less than 2.5% of the annual national fisheries output. None of this aid may be used to purchase or construct new vessels, or to enhance existing fleet capacity, to ensure that the overarching objective of the CFP to obtain a better balance between fishing fleet capacity and available fisheries resources is not compromised. Member States will have to record all relevant information to show that these conditions have been respected.

## Post-harvesting policies and practices

### *Food safety*

EU measures to control BSE (the so-called 'mad cow' disease) were further reviewed. A strategy paper on Transmissible Spongiform Encephalopathies for 2010–2015, entitled the TSE Road map 2 (COM (2010) 384 final, 16.7.10) was published which considered possible easing of the feed ban, including the possibility of allowing non-ruminant processed animal protein in feeds for farmed fish.

New limits were set and new checks were run on contaminants and residues of veterinary drugs in food. The list of currently authorised food additives was reviewed, and the first EU list for approved flavourings was created — for smoke flavours.

### *Biotxin detection*

The mouse bioassay and the rat bioassay had been the EU official methods for the detection of lipophilic biotoxins in shellfish, but EFSA in an opinion noted that these bioassays have shortcomings and are not considered an appropriate tool for control purposes

because of high variability in results, the insufficient detection capability and the limited specificity. The legislation was consequently amended in 2011 to make a chemical method (EU-RL LC-MS/MS liquid chromatography-mass spectrometry) the new reference method, with a phasing out of the biological methods over four years. During this period a modified mouse bioassay is still permitted.

### *Parasites*

Regulation (EC) No 853/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific hygiene rules for food of animal origin, provides that the food business operator must ensure that certain fishery products, including those meant to be consumed raw or almost raw, undergo a freezing treatment to kill live parasites that may represent a risk to health of the consumer. Changes were introduced to the legislation dealing with treatment to kill viable parasites in fishery products for human consumption in order to update the requirements based on information provided by a recent opinion from The European Food Safety Authority (EFSA) on Parasites in Fishery Products and experience gained from the application of the present legislation.

An alternative freezing treatment is introduced and the new legislation provides for the possibility that if food business operators can document that farmed fish is free of parasites that may represent a risk to health of the consumer, the fish may be exempted from the freezing requirement.

An associated Guidance document on Parasites in Fishery Products<sup>36</sup> is available on the internet.

### *Food information for consumers*

A new regulation on the provision of food information to consumers was adopted by the Parliament and the Council. The legislation lays down general principles on food labelling. It provides new rules on legibility of information. It also strengthens the rules intended to prevent misleading practices and provides for additional information, for instance on substances causing allergies. There are also new requirements to provide information on the nutrient content of foods. The new rules will help consumers make better-informed decisions when they buy food, boost consumer empowerment and contribute to the fight against the rising levels of obesity and chronic diseases in the European Union.

New EU rules on organic food labelling, including the requirement to display the new EU organic logo, entered into force in July 2010.

To protect citizens against misleading health claims on food, the Commission is working to establish lists of permitted health claims, based on the scientific assessment of the European Food Safety Authority (EFSA) and following authorisation procedures at EU level. In 2011, three health claims were authorised for decosahexanaeic acid (DHA) for children (relating to normal brain development, normal visual development and eye development). In additional favourable scientific advice was received from EFSA for a number of additional claims for adults relating to DHA and eicosahpentaenoic acid (EPA) (relating to brain function, vision and heart function). At the end of the advice and authorisation process, only substantiated health claims will be permitted on the EU market.

## Market and trade

### *Common Organisation of Markets*

Currently, the market for fish and fish products is regulated by Regulation (EC) No 104/2000 of 17/12/1999 which deals with the common organisation of the markets in fishery and aquaculture products.

Decisions taken on that basis are: *Guide prices*: Council Regulation (EC) No 1212/2009 of 30 November 2009 fixing the guide prices for 2010 and six ancillary Commission Regulations (EC) No 1306 to 1276/2009 of 22 December 2009 fixing the intervention parameters for 2010. Council Regulation (EC) No 1258/2010 of 20 December 2010, fixing for the 2011 fishing year the guide prices and six ancillary Commission Regulations (EU) No 120 to 125/2011 fixing the intervention parameters for 2011. *Market intervention*: In 2010 and 2011, EUR 15.4 million and EUR 14.9 million, respectively were spent for market intervention.

As part of the so called "Common Fisheries Policy (CFP) reform package" the European Commission adopted a proposal (COM(2011)416 of 13 July 2011) for a Parliament and Council Regulation on a new Market Policy to ensure that the organization of the common markets for fisheries products contributes to achieving the objectives of the new CFP. It aims to strengthen the competitiveness of the EU industry, improve the transparency of the markets, and ensure a level playing field for all products marketed in the Union.

It also includes a modernisation of the intervention regime as the current system of spending public money to destroy fish is no longer justifiable. It will be replaced by a simplified storage mechanism, which will allow producer organisations to buy up fisheries products when prices fall under a certain level, and store the products for placing on the market at a later stage. This system will foster market stability.

Producer organisations will also play a greater role in collective management, monitoring and control. Better marketing of EU fisheries and aquaculture products will help to reduce waste and provide market feedback to producers.

New marketing standards on labelling, quality and traceability will give consumers clearer information and help them support sustainable fisheries. Certain labelling information will be compulsory, for example to differentiate fisheries and aquaculture products; other claims may be supplied on a voluntary basis.

### *Trade*

#### *Trends*

In 2010, the EU trade deficit in fishery products amounted to EUR 13.8 billion (roughly the same figure as in 2008), with imports of EUR 16.6 billion and exports of EUR 2.8 billion. In 2010 Norway maintained its position as primary supplier with 22% of total imports in value terms, followed by China (9%) and Iceland (6%). Also in 2010 the United States, with 11% share, overtook Japan as first importer of EU products, followed by Switzerland (9%) and Russia (8%). For individual performances of EU Member States, Spain remained in 2010 the main importer (19%) but also exporter of fish products (20%). On the import side Spain was followed by the Sweden (12%) and Germany (11%). On the export side the Netherlands ranked second (16%), while Denmark was the third largest exporter with 14% of total exports.

### Legislation

*Trade measures in support of conservation:* in the framework of the Communication on the External Dimension of the CFP, the Commission adopted on 14 December 2011 a proposal (COM(2011)888) for a Council and Parliament Regulation which would authorise the Commission to impose a range of measures against third countries that allow unsustainable fishing. The measures foreseen in the draft regulation range from restricting imports of fish products from the concerned stock as well as associated fish species to prohibiting the conclusion of chartering agreements with economic operators from countries allowing non-sustainable fishing. The proposed framework will guarantee strict respect of international law. The Commission will assess carefully the likely environmental, trade, economic and social effects of measures and the administrative costs of their implementation. Under the proposals the countries concerned will be granted an opportunity to be heard before the measures are adopted, and to take corrective actions to avoid them.

*Free trade agreements:* the EU-Korea Free Trade Agreement entered into force on 1 July 2011. Under the agreement fishery products will face substantially reduced or zero tariffs on imports. Customs duties will be removed over a transitional period so that domestic producers can gradually adapt. The majority of customs duties on goods were removed when the Agreement entered into force. Practically all customs duties will be fully removed within the first five years of application of the FTA while longer transitional periods will be applied for a number of sensitive products. In May 2010 the European Union and Central America concluded negotiations on an Association Agreement, which includes a Free Trade Agreement. The text of the agreement has been signed in 2012 but it still needs to be ratified and put into force by all parties: the European Union, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama. Negotiations on a trade agreement between the European Union and Colombia and Peru were also concluded in the course of 2010. The text of the agreement was signed in June 2012. The Trade Agreement will be provisionally applied between the parties - provided the European Parliament's consent is granted and ratification procedures are also concluded in Colombia and Peru. Once fully implemented, the Agreement will eliminate tariffs for all fish products.

### Outlook

Even though the Common Fisheries Policy has achieved some of its objectives there is still much to be done: in spite of recent improvements, a number of fish stocks are still overfished, the economic situation of parts of the fleet remains fragile despite receiving high levels of subsidies, jobs in the fishing sector are unattractive and the situation of many coastal communities depending on fisheries is precarious. The outcome of a wide consultation of the public and stakeholders during the review period confirmed this analysis.

Against this background, the Commission has tabled an ambitious reform of the policy, with the tangible aim of creating the conditions for a better future for fish and fisheries alike, as well as the marine environment that supports them.

The Common Fisheries Policy has enormous potential to deliver the building blocks for sustainable fisheries that respect the ecosystem as well as providing high-quality, healthy fish products for European citizens, thriving coastal communities, profitable industries producing and processing fish and attractive and safer jobs.

The reform will contribute to the Europe 2020 strategy<sup>37</sup> by working towards sustainable and inclusive growth, enhanced cohesion in coastal regions and robust economic performance of the industry. By aiming to ensure that living marine resources are exploited sustainably, the reform is also a key component of the resource-efficient Europe flagship<sup>38</sup> initiative.



The CFP reform package consists of three legislative proposals (a new CFP regulation, a new Common Market Organisation and a new Financial Instrument for 2014-2020) and a number of Communications and reports. The proposals were adopted by the Commission in 2011, after which negotiations with the legislative bodies of the Union (the Council and the European Parliament) have started.

The objectives of the reform are multiple and the first principle is to ensure that fish stocks are brought up to healthy levels and maintained in healthy condition. They should be exploited at *(i) maximum sustainable yield* levels. This objective is set out in the United Nations Convention on the Law of the Seas, and was adopted at the 2002 World Summit on Sustainable Development as a target the world should reach by 2015. This objective would also enable the reformed CFP to make a better contribution to achieving Good Environmental Status in the marine environment, in line with the provisions of the Marine Strategy Framework Directive.<sup>39</sup> The objective of reaching maximum sustainable yield levels by 2015 is now clearly enshrined in the proposed Basic Regulation.

*(ii) Discarding of fish* is no longer acceptable. Discarding casts a negative image on the industry and has harmful impacts on sustainable stock exploitation, marine ecosystems, the financial viability of fisheries, and in many cases has a negative influence on the quality of scientific advice. The elimination of discards must be part of the objectives of the reformed CFP, and discarding must come to an end based on a binding timetable with clear deadlines.

The proposed reform aims to introduce a legal commitment to land all catches of commercial species, with gradual implementation, taking into account the practical and financial obstacles that stakeholders might face. The key to reducing and gradually eliminating discards is avoiding catching them in the first place. This can largely be achieved by improving fishing gear selectivity. To facilitate implementation, various actions are proposed: flexibility in the quota system, enhanced and regionalised technical measures designed with the involvement of industry, and real-time closures. The new financial instrument provides support for increased selectivity.

*(iii) Multi-annual management plans* remain the vehicle for long-term political commitment to sustainable exploitation of resources. These plans will replace the current single-stock-based approach, bringing the vast majority of stocks under multi-stock management plans.

Fisheries management must be based on *(iv) sound scientific advice* and must follow the ecosystem and precautionary approach. The Commission will continue to seek advice from scientific advisory bodies in accordance with guaranteed quality standards. Overlaps in the work of different scientific advisory bodies will be removed, to streamline and maximise synergy in the advisory process.

*(v) Science-industry partnerships* can improve the quality and availability of data and knowledge. They can also foster mutual, common understanding between operators and scientists, without compromising the independence of the latter. Such partnerships are to be encouraged.

*(vi) Complete, reliable data* are vital for policy-making, both in the preparatory and the implementing and enforcement phases of the policy. The reformed policy will establish clear, renewed obligations for Member States regarding the collection and availability of data. The Commission envisages an integrated European information system for fisheries management. This will respond effectively to the needs of users, improve the quality of data, and allow for advanced fisheries management. It will simplify rules and reporting obligations where possible, and reduce costs. Member States will need to adopt and coordinate national fisheries data collection, scientific research and innovation programmes to make the best use of the EU research framework programmes.

The ultimate goal of this reform is to ensure sustainable exploitation and, with that, economic prosperity for the fisheries sector.

### Notes

1. *Official Journal L 358, 31/12/2002 P. 0059 – 0080.*
2. RACs exist for the North Sea, North Western Waters, South Western Waters, Pelagic Baltic Sea, Long Distance, South Western Waters, Mediterranean and Black Sea
3. COM(2010)241 final, Communication from the Commission, Consultation on Fishing Opportunities for 2011, p.3.
4. COM(2011) 298, Communication from the Commission, concerning a consultation on Fishing Opportunities, p.2.
5. Regarding the Black Sea, a system of quotas for certain species (sprat and turbot) has been established since the adhesion of Bulgaria and Romania to the European Union. Furthermore, since 2010, Bulgarian and Romania have implemented national control programmes for turbot, which have allowed improving the management of the fishery. Recently (February 2012), both countries have agreed on harmonise their control programmes and define common control actions under the coordination of the EFCA, which is expected to bring as a result a level playing field on control and a development of a culture of compliance by fishermen.
6. International Commission for the Conservation of Atlantic Tunas
7. Council Regulation (EC) No 676/2007 of 11 June 2007 establishing a multiannual plan for fisheries exploiting stocks of plaice and sole in the North Sea; *OJ L 157*, 19.6.2007, p. 1.
8. Council Regulation (EC) No 1342/2008 of 18 December 2008 establishing a long-term plan for cod stocks and the fisheries exploiting those stocks and repealing Regulation (EC) No 423/2004; *OJ L 70*, 9.3.2004, p. 8.
9. Council Regulation (EC) No 43/2009 of 16 January 2009 fixing for 2009 the fishing opportunities and associated conditions for certain fish stocks and groups of fish stocks, applicable in Community waters and, for Community vessels, in waters where catch limitations are required; *OJ L 22*, 26.1.2009, p.1.
10. Council Regulation (EC) No 1098/2007 of 18 September 2007 establishing a multiannual plan for the cod stocks in the Baltic Sea and the fisheries exploiting those stocks, amending Regulation (EEC) No 2847/93 and repealing Regulation (EC) No 779/97; *OJ L 248*, 22.9.2007, p. 1.
11. [http://stecf.jrc.ec.europa.eu/c/document\\_library/get\\_file?p\\_l\\_id=53314&folderId=133326&name=DLFE-12703.pdf](http://stecf.jrc.ec.europa.eu/c/document_library/get_file?p_l_id=53314&folderId=133326&name=DLFE-12703.pdf)
12. <http://ec.europa.eu/fisheries/fleet/index.cfm?lg=en>.
13. [https://stecf.jrc.ec.europa.eu/c/document\\_library/get\\_file?p\\_l\\_id=53322&folderId=254315&name=DLFE-15301.pdf](https://stecf.jrc.ec.europa.eu/c/document_library/get_file?p_l_id=53322&folderId=254315&name=DLFE-15301.pdf) and [https://stecf.jrc.ec.europa.eu/c/document\\_library/get\\_file?p\\_l\\_id=53310&folderId=252974&name=DLFE-15303.pdf](https://stecf.jrc.ec.europa.eu/c/document_library/get_file?p_l_id=53310&folderId=252974&name=DLFE-15303.pdf).
14. Council Regulation (EC) No 2187/2005 of 21 December 2005 for the conservation of fishery resources through technical measures in the Baltic Sea, the Belts and the

- Sound, amending Regulation (EC) No 1434/98 and repealing Regulation (EC) No 88/98; *OJ L 349*, 31.12.2005, p.1.
15. Commission Regulation (EU) No 686/2010 of 28 July 2010 amending Council Regulation (EC) No 2187/2005 as regards specifications of Bacoma window and T90 trawl in fisheries carried out in the Baltic Sea, the Belts and the Sound; *OJ L 199*, 31.7.2010, p.4.
  16. Council Regulation (EC) No 811/2004 of 21.4.2004 establishing measures for the recovery of the Northern hake stock.
  17. Council Regulation (EC) No 2166/2005 of 20 December 2005 establishing measures for the recovery of the Southern hake and Norway lobster stocks in the Cantabrian Sea and Western Iberian peninsula and amending Regulation (EC) No 850/98 for the conservation of fishery resources through technical measures for the protection of juveniles of marine organisms
  18. Council Regulation (EC) No 388/2006 of 23 February 2006 establishing a multiannual plan for the sustainable exploitation of the stock of sole in the Bay of Biscay
  19. Council Regulation (EC) No 509/2007 of 7 May 2007 establishing a multi-annual plan for the sustainable exploitation of the stock of sole in the Western Channel
  20. Council Regulation (EC) No 1300/2008 of 18 December 2008 establishing a multi-annual plan for the stock of herring distributed to the west of Scotland and the fisheries exploiting that stock.
  21. Agreed harvesting rules embedded in a joint Council and Commission Statement to the Minutes of the December 2009 Fisheries Council.
  22. COM(2009)189 final — Proposal for a Council Regulation establishing a multi-annual plan for the western stock of Atlantic horse mackerel and the fisheries exploiting that stock.
  23. COM(2009)399 final - Proposal for a Council Regulation establishing a long-term plan for the anchovy stock in the Bay of Biscay and the fisheries exploiting that stock.
  24. General Fisheries Commission for the Mediterranean.
  25. First by Council Regulation (EC) No 1559/2007 of 17 December, *OJ. L 340* of 21.12.2007 and lately by Council Regulation (EC) No 302/2009 of 6 April 2009 concerning a multiannual recovery plan for bluefin tuna in the eastern Atlantic and the Mediterranean, amending Regulation (EC) No 43/2009 and repealing Regulation (EC) No 1559/2007; *OJ. L 96*; 15.04.2009.
  26. Council Regulation (EC) No 1967/2006 of 21 December 2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea, amending Regulation (EEC) N° 2847/93 and repealing Regulation (EC) N°1626/94; *OJ. L36* of 8.02.2007.
  27. Council Regulation (EC) No 1005/2008 of 29 September 2008 establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing, amending Regulations (EEC) No 2847/93, (EC) No 1936/2001 and (EC) No 601/2004 and repealing Regulations (EC) No 1093/94 and (EC) No 1447/1999; *OJ L 286*, 29.10.2008, p.1.
  28. P7\_TA(2011)0516: <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P7-TA-2011-0516+0+DOC+XML+V0//EN>.
  29. COM(2012/424).

30. COM(2009) 162 final)
31. Commission Regulation (EC) No 710/2009 of 5 August 2009 amending Regulation (EC) No 889/2008 laying down detailed rules for the implementation of Council Regulation (EC) No 834/2007.
32. Council Regulation amending Regulation (EC) No 708/2007 concerning the use of alien and locally absent species in aquaculture.
33. Spain is the largest aquaculture producer in the EU with 20% of the total EU production, followed by France (18%), United Kingdom (16%), Italy (12%) and Greece (9%).
34. In terms of value, the most important today is farming of seabream and seabass (20% of total), followed by trout and salmon (19% and 17% respectively) and mussels (12%).
35. Commission Decision of 1 September 2010 on criteria and methodological standards on good environmental status of marine waters (2010/447/EU).
36. [ec.europa.eu/food/food/biosafety/areas\\_cyprus/index\\_en.htm](http://ec.europa.eu/food/food/biosafety/areas_cyprus/index_en.htm).
37. Communication from the Commission EU 2020 A strategy for smart, sustainable and inclusive growth (COM(2010)2020 of 3 March 2010) sets out the strategy to help the European Union come out stronger from the crisis and turn the EU into a smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion. Europe 2020 sets out a vision of Europe's social market economy for the 21<sup>st</sup> century.
38. Communication from the Commission A resource-efficient Europe – Flagship initiative under the Europe 2020 Strategy, COM (2011)21 of 26 January 2011.
39. As defined under Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive).

## Annex 6.A.

Table 6.A.1. Production from Aquaculture (EU)

	2009		2010		2011	
	Tonnes	Euro	Tonnes	Euro	Tonnes	Euro
Atlantic Salmon	157 007	..	..	..	..	..
Pacific Salmon	..	..	..	..	..	..
Rainbow Trout, of which	163 786	..	..	..	..	..
Rainbow trout in sea cages	..	..	..	..	..	..
Rainbow trout in freshwater ponds	..	..	..	..	..	..
Sea Trout	2 78	..	..	..	..	..
Flatfish	..	..	..	..	..	..
Sea Bream	65	..	..	..	..	..
Sea Bass	55 513	..	..	..	..	..
Catfish	215	..	..	..	..	..
Carp	386	..	..	..	..	..
Tilapia	135	..	..	..	..	..
Eels	6 422	..	..	..	..	..
Other Fish	..	..	..	..	..	..
Fish	1186 508	..	..	..	..	..
Oyster, edible	118 131	..	..	..	..	..
Oyster, pearl	..	..	..	..	..	..
Mussel	488 072	..	..	..	..	..
Scallop	67	..	..	..	..	..
Clam	43 534	..	..	..	..	..
Shrimp and Prawn	263	..	..	..	..	..
Other Shellfish	..	..	..	..	..	..
Shellfish	979 737	..	..	..	..	..
TOTAL FISH AND SHELLFISH	2166 245	..	..	..	..	..
OTHER MARINE ANIMALS	..	..	..	..	..	..
Brown Seaweed	4	..	..	..	..	..
Red Seaweed	..	..	..	..	..	..
Green Seaweed	..	..	..	..	..	..
Other Aquatic Plants	..	..	..	..	..	..
TOTAL AQUATIC PLANTS	125	..	..	..	..	..
GRAND TOTAL	2291 245	..	..	..	..	..

I. EUROSTAT has no data for 2010, 2011

II. Problem with GRAND TOTAL: sums automatically all the production.

III. No data available for values of 2009, 2010, 2011.

Note: The species are not referred to in Latin, and that makes the task difficult. Even if the English names are the most popular, this can sometimes create confusion because it is not clear whether we are referring to the same species.

Source: EUROSTAT.

**Table 6.A.2. Fishing Fleet (EU)**

(m: meters / mètres)

	2009		2010		2011	
	Number / Nombre	Total GT	Number / Nombre	Total / GT	Number / Nombre	Total / GT
Total Vessels	84 502	84 502	83 796	83 796	..	..
Vessels with engines	..	..	..	..	..	..
Unknown	..	..	..	..	..	..
0 - 5.9 m	25 479	..	25 249	..	..	..
6 - 11.9 m	43 969	..	43 941	..	..	..
12 - 17.9 m	8 006	..	7 879	..	..	..
18 - 23.9 m	3 549	..	3 433	..	..	..
24 - 29.9 m	2 016	..	1 909	..	..	..
30 - 35.9 m	672	..	613	..	..	..
36 - 44.9 m	..	..	..	..	..	..
45 - 59.9 m	..	..	..	..	..	..
60 - 74.9 m	..	..	..	..	..	..
75 m and over	..	..	..	..	..	..
Vessels without engine	..	..	..	..	..	..

I. EUROSTAT has no data for 2011 II. Problems to address (36 - 44.9 m), (45 - 59.9 m), (60 - 74.9 m), (75 m and over); because the Eurostat data is (36-41.9m), (42 = metres). III. No vessels without engines. IV. Impossible to fill in the relation between length and gross tonnage because Eurostat doesn't make this relation.

Source: EUROSTAT.

**Table 6.A.3. Inland Fisheries (EU)**

	2009		2010		2011	
	Tonnes	Euro	Tonnes	Euro	Tonnes	Euro
Carps, barbels and other cyprids	25 983	..	..	..	..	..
Tilapia and other cichlids	135	..	..	..	..	..
Perch	9 006	..	..	..	..	..
Pikes	4 331	..	..	..	..	..
Freshwater whitefish	1 545	..	..	..	..	..
Trout	949	..	..	..	..	..
Eel	2 358	..	..	..	..	..
Shads	251	..	..	..	..	..
Sturgeon, paddlefishes	6	..	..	..	..	..
Other fish	..	..	..	..	..	..
Freshwater crustaceans	1 961	..	..	..	..	..
Freshwater molluscs	..	..	..	..	..	..
Aquatic animals	113 562	..	..	..	..	..
Aquatic plants	..	..	..	..	..	..
GRAND TOTAL	1499 746	..	..	..	..	..

I. EUROSTAT has no data for 2010, 2012. II. Problem with GRAND TOTAL: Sums automatically all the production, but is not the real one because other inland production is not included. This affects the category 'other fish' because the total amount of inland fish is not known.

III. There is no data available for 2009 for freshwater molluscs and aquatic plants.

IV. There is no data available for the values of 2009, 2010, 2011.

Source: EUROSTAT.

Table 6.A.4. TAC's, Allocation and Catches (EU)

EUROPEAN UNION				UNION EUROPENNE								
TACS, ALLOCATIONS AND CATCHES (tonnes)				TAC, ALLOCATIONS ET PRISES (tonnes)								
Species / Espèces	Stock name	TAC source	TAC source category	2010				2011				
				Quotas / Allocations		Catches / Prises		Quotas / Allocations		Catches / Prises		
				National	Foreign	National	Foreign	National	Foreign	National	Foreign	
ALB	Albacore	Yearly TACs and Quotas Regulation	..	29831,5	..	15122,1	..	..	29831,5	..	16041,3	..
ALF	Alfonsinos nei		..	328	..	317,3	..	..	325,1	..	320,3	..
ANE	European anchovy		..	30600	..	12776,7	..	..	38142	..	23255	..
ANF	Anglerfishes nei		..	61348	..	43893	..	..	63192,5	..	41988,4	..
ARU	Greater argentine		..	6489	..	2997,9	..	..	5970	..	3062,3	..
B/L	Blue ling and ling		..	2700	..	1829,4	..	..	0	..	0	..
BET	Bigeye tuna		..	31200	..	9706,6	..	..	29867	..	19881,5	..
BFT	Northern bluefin tuna		..	7087,4	..	6047	..	..	5748	..	5673,3	..
BLI	Blue ling		..	1799	..	1804,9	..	..	2642	..	2053,8	..
BOR	Boarfish		..		..	0	..	..	33000	..	31605,5	..
BSF	Black scabbardfish		..	10192	..	7716,3	..	..	10432	..	8029,6	..
BUM	Atlantic blue marlin		..	103	..	146,8	..	..	103	..	88	..
C/H	Cod & haddock		..	500	..	439	..	..	0	..	0	..
CAP	Capelin		..		..	0	..	..	56364	..	11323,6	..
CAT	Wolffishes(=Catfishes) nei		..		..	0	..	..		..	198	..
CJM	Chilean jack mackerel		..	179000	..	11147,8	..	..	40649	..	1135,7	..
COD	Atlantic cod		..	157851	..	138010,1	..	..	162387,65	..	144973,9	..
D/F	Common dab/Flounder		..	18810	..	10224,1	..	..	18434	..	9248,2	..
DGS	Picked dogfish		..	142	..	263,4	..	..	5	..	15,2	..
DWS	Deep Sea Sharks		..	85,9	..	165,4	..	..	0,3	..	56,2	..
FLX	Flatfishes nei		..	300	..	274,7	..	..		..	0	..
GFB	Greater forkbeard		..	2380	..	1620,8	..	..	2560	..	1630,1	..
GHL	Greenland halibut		..	17863	..	15656,2	..	..	17355	..	15211,3	..
HAD	Haddock		..	52239	..	52674,3	..	..	53331,1	..	50187,2	..
HAL	Atlantic halibut		..	1075	..	0	..	..	1150	..	123,9	..
HER	Atlantic herring		..	600719,7	..	449980,3	..	..	581647	..	537442,7	..
HKE	European hake		..	64404,8	..	55244,7	..	..	71857	..	60888,2	..
HKR	Red hake		..		..	0	..	..		..	119,5	..
HKW	White hake		..	3529	..	84,9	..	..	3529	..	98,3	..
I/F	Industrial fish		..	800	..	724,5	..	..	800	..	669	..
JAX	Jack and horse mackerels nei		..	263717	..	189061,2	..	..	274609	..	217713,2	..
L/W	Lemon sole/Witch flounder		..	6521	..	2515,4	..	..	6391	..	3099,6	..
LEZ	Megrimis nei		..	26548	..	17274,9	..	..	26441	..	15437,9	..
LIN	Ling		..	11266	..	8608,3	..	..	12267,7	..	9491,9	..
MAC	Atlantic mackerel		..	367014	..	336135,6	..	..	381467,1	..	354520,9	..
NEP	Norway lobster		..	73884	..	58106,5	..	..	77042	..	52774,3	..
NOP	Norway pout		..	76000	..	66923,5	..	..	4500	..	3732,5	..
ORY	Orange roughy		..		..	0	..	..	1	..	0,6	..
OTH	Other species		..	6110	..	5226,4	..	..	5350	..	4649,1	..
PCR	Tanner crabs nei		..	500	..	0	..	..	499	..	0	..
PEN	Penaeus shrimps nei		..	4108	..	943,6	..	..		..	680,9	..
PLA	Amer. plaice(=Long rough dab)		..		..	817,3	..	..		..	904,7	..
PLE	European plaice		..	81912	..	77226,6	..	..	90015,8	..	80251	..
POK	Saithe(=Pollock)		..	74253	..	52361,5	..	..	61351	..	53548,7	..
POL	Pollock		..	16211	..	5506	..	..	15887	..	6112,6	..
POR	Porbeagle		..		..	0,5	..	..		..	0	..
PRA	Northern prawn		..	23362	..	10581,5	..	..	21924	..	10418,6	..
RED	Atlantic redfishes nei		..	36347,5	..	27300,8	..	..	29443,8	..	20987,7	..
RHG	Roughhead grenadier		..		..	0	..	..		..	1154,1	..
RNG	Roundnose grenadier		..	9388	..	5885,2	..	..	9163,7	..	5958,6	..
SAL	Atlantic salmon		..	309665	..	123245	..	..	265528	..	113893	..
SAN	Sandeels(=Sandlances) nei		..	346920	..	341094,1	..	..	354379,9	..	329715	..
SBF	Southern Bluefin Tuna		..	10	..	0	..	..	10	..	0	..
SBR	Blackspot(=red) seabream		..	2131	..	1145,8	..	..	2317,6	..	887,6	..
SKA	Raja rays nei		..		..	0	..	..		..	154,8	..
SOL	Common sole		..	27509	..	24032,1	..	..	29575	..	21168,1	..
SOX	Soles nei		..		..	0	..	..	1072	..	662,5	..
SPR	European sprat		..	597177	..	478702,41	..	..	513762	..	391849,82	..
SQI	Northern shortfin squid		..		..	0	..	..		..	0,5	..
SRX	Rays, stingrays, mantas nei		..	28744	..	20888,5	..	..	27756,2	..	19637,5	..
SWO	Swordfish		..	21912,5	..	11168	..	..	17485,76	..	10544,3	..
T/B	Turbot/Brill		..	4737	..	3917,5	..	..	4642	..	3714,1	..
TOP	Patagonian toothfish		..		..	428,3	..	..		..	0	..
TUR	Turbot		..	96	..	94,66	..	..	86,4	..	81,28	..
USK	Tusk(=Cusk)		..	705	..	435,1	..	..	732,3	..	463,9	..
VFF	Fishes unsorted, unidentified		..		..	0	..	..		..	142,5	..
W/P	Whiting, Pollack		..	190	..	38,9	..	..	190	..	39,4	..
WHB	Blue whiting(=Poutassou)		..	84906,5	..	84152,2	..	..	16081	..	14456,1	..
WHG	Whiting		..	30275	..	29471,3	..	..	35608,36	..	29786,8	..
WHM	Atlantic white marlin		..	46,5	..	23,4	..	..	46,5	..	21,7	..
WIT	Witch flounder		..		..	405,2	..	..		..	541,9	..
XBC	By catches (virtual) (Regl. 1691/2004)		..	2300	..	0	..	..	2300	..	251	..
YEL	Yellowtail flounder		..		..	1094,4	..	..		..	1229,8	..





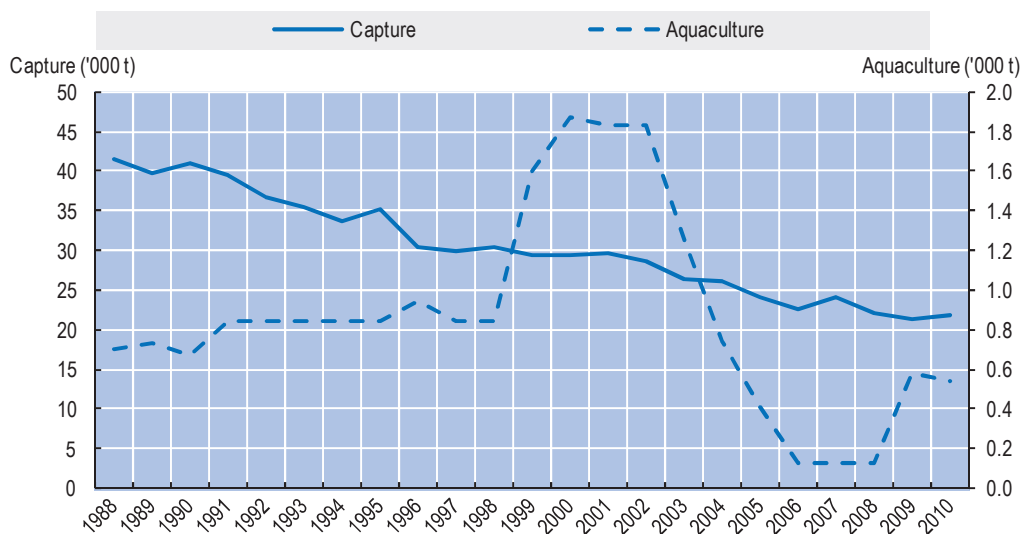
## Chapter 7

### BELGIUM

#### Summary of recent developments

- Belgium reduced significantly the capacity of its fishing fleet in recent years. The number of vessels decreased from 100 in 2008 to 89 in 2009 of which nine vessels were due to scrapping. The situation of the Belgian fisheries fleet changed significantly in 2009 due to scrapping of vessels. The number of vessels remained stable in 2010. In 2011, the Belgian fleet consisted of 86 vessels with a total capacity of 49 135 kW (-4%) and 15 326 GT (-19%).
- The total catch of fishery products by Belgian vessels in 2011 increased slightly by 2 % to 20 138 tonnes compared to 2010. Eighty-five per cent was landed in Belgian ports. The average price increased in 2011 from EUR 3.85 to 3.94 per kg, with the total value in both Belgian and foreign ports amounting to EUR 79.4 million (+14 %) in 2011.
- The Belgian fleet consists almost exclusively of demersal trawlers. In both 2010 and 2011, more than 90% of catches were of the demersal species, of which sole is economically the most important species. In 2011, landings of sole represented 47% of the value of all landings by Belgian vessels.
- After a steep decrease in the price of fuel in 2009 (EUR average of 0,41/l), 35% less than in 2008, fuel prices increased to an average EUR 0.67/l in 2011 and increased further in 2012.

Figure 7.1. Harvesting and aquaculture production



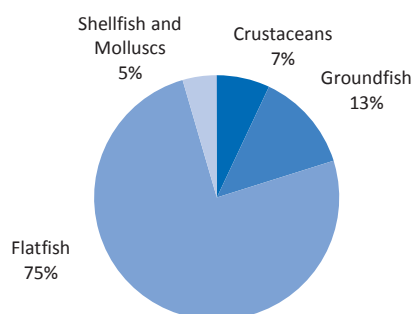
Source: FAO Fishstat database.

### Box 7.1. Key characteristics of Belgium fisheries

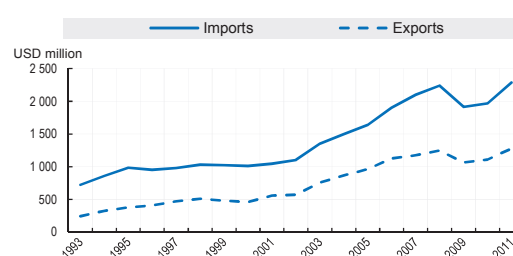
- The Belgian fleet consists almost exclusively of demersal trawlers. The most important species landed in 2010 in terms of value were flatfish (75.4%), followed by groundfish (13.1%), crustaceans, shellfish and molluscs (11.4%). Sole is economically the most important species and sole represented 50% of the value of all landings by Belgian vessels in 2011 (Panel A)
- In 2011, imports by value were 20 times higher than the total landings of the Belgian fleet (EUR 1 667 million versus EUR 79.4 million). A substantial part of landings, and of fish imports, is exported. The major export markets are the Netherlands, France, Denmark, Germany, United Kingdom and Spain. The trade value for import (EUR 1 667 million) and export in 2011 (EUR 928 million) is higher than in 2009 with imports of EUR 1 412 million and exports of EUR 783 million. (Panel B)
- In Belgium, the government financial transfers (GFTs) to the fisheries sector have been mainly used for grants for modernisation and equipment and a smaller part for general services (research). There was also a scrapping round in 2009. The GFTs in 2011 were EUR 3 819 thousand, which was EUR 6 607 thousand (43%) decrease compared to those in 2009 (EUR 10 426 thousand). (Panel C)
- The number of fishers slightly decreased to 587 in 2011. The exact number of fish farmers is not known but is in any case very small. (Panel D)

Figure 7.2. Key fisheries indicators

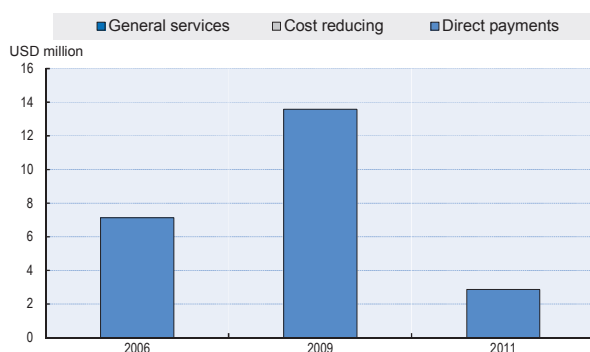
Panel A. Key species by value in 2010



Panel B. Trade evolutions



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2006	2011	% change
Number of fishers	689	735	6.7
Number of fish farmers	143	150	4.9
Total number of vessels	107	100	-6.5
Total tonnage of the fleet	20 035	19 007	-5.1

## Legal and institutional framework

The EU Common Fisheries Policy (CFP) sets out the boundaries for national policy. Since 2002, agriculture and fisheries matters in Belgium are taken at the regional government level. In practice, all matters pertaining to marine fisheries are dealt with by the Flemish authorities, while aquaculture is a matter of consultation between Flanders and Wallonia.

The formal implementation of an EEZ and the adoption of a specific law concerning the maritime environment in 1999 has resulted in a national co-ordination partnership between the federal state and the Flemish region and which is led to the creation of a coast guard (8 July 2005).

The EEZ law of 22 April 1999 co-ordinates the different existing sea fishery laws.

The Royal Decree of 14 August 1989 establishes complementary national measures for the safeguarding and the management of the fishing grounds and for the control of fishing activities. This decree was modified in December 2002 in order to limit the access to the 3 nautical miles zone to fishing vessels with a tonnage of less than 70 GT. Recreational fishery is also regulated by this decree.

From 2003 onwards, the activities of non-professional anglers are limited by fixing a maximum quantity they are allowed to fish and to land.

The Decree of the Flemish Government of 16 December 2005 implemented a new system for fishing licenses and includes temporary measures for the conservation and sustainable exploitation of fish resources. This decree, effective as of February 2006, foresees the possibility to increase motor capacity under certain conditions, up to a maximum of 1 200 kW for the large fleet segment. This decree also includes former legislation whereby Belgian vessel owners must prove they have an economic link with the Member state. This Decree was amended in July 2011 in order to introduce a “catch rate factor” (*vangstrechtfactor*) linked to the engine power of the vessel.

With the implementation of Council Regulation (EC) N°744/2008 of 24 July 2008, the opportunity was granted to shipowners to modernise their vessels with state aid to cover 60% of investment costs (main engines and fishing gear are excluded from this scheme). These investments are to be geared at improving energy-efficiency, lowering emissions and contributing to the fight against climate change.

This Regulation also provided the possibility to put in place a fleet adaptation scheme for the replacement of the main engine or fishing gear, given that the engine capacity was reduced by a minimum of 20% compared to the original vessel. Belgium chose to put this scheme in place in 2009 for the large fleet segment (>221 kW). This system was organised through decommissioning grants, whereby vessels could be decommissioned, given another function or be partially decommissioned. For this last option, maximum 40% of the capacity could be transferred to a new vessel. In total, nine vessels were accepted for the fleet adaptation scheme, seven were fully decommissioned, and two were partially decommissioned. This constituted a total removal of 8 386 kW.

## Capture fisheries

### *Structure and performance of the fleet*

**Table 7.1. General performance of the Belgian fleet in 2009-11**

	2009	2010	2011
Number of vessels	89	89	86
Average capacity (kW)	579	575	571
Average tonnage (GT)	180	178	178
Total catches (tonne)	19 171	19 764	20 138
Total value of catches (EUR Million)	68.3	76.2	79.4
Mean value of catch (EUR/kg)	3.56	3.85	3.94
Mean gas oil price (EUR/l)	0.48041	0.52	0.67

**Table 7.2. Structure of the Belgian fleet in 2009-11**

Group	Number of vessels			Average kW			Average GT		
	2009	2010	2011	2009	2010	2011	2009	2010	2011
Small fleet segment (KVS) ( $\leq 221$ kW)	47	41	40	215	216	216	78	82	82
KVS – Coastal fisheries ( $\leq 221$ kW)	22	17	16	209	211	210	56	58	56
KVS – Eurokotters ( $\leq 221$ kW)	20	20	20	221	221	221	106	106	106
KVS – Others ( $\leq 221$ kW)	5	4	4	/	216	216	/	66	66
Large fleet segment (GVS) ( $> 221$ kW)	42	39	38	988	802	813	295	239	302
GVS – Beamtrawlers ( $> 662$ kW)	35	31	31	1 061	884	877	321	324	320
GVS – Others ( $> 221$ kW)	7	8	7	619	484	530	165	148	218

Source: Uitkomsten van de Belgische zeevisserij 2009, 2010 and 2011-Publicatie van de Dienst Zeevisserij.

The most important management instruments on the input-side are vessel licences (see “Legal and institutional framework” above) and a collective system of fishing effort. On the output-side, Belgium is using a collective quota-system, which are divided on the basis of historical data between small fleet and large fleet segments.

In 2006, Belgium started a project on individual quotas on the basis of individual calculations (historical part 2004-05 versus total catch of fishing vessels still registered on 1 January 2006). Participants registered before 1 March 2006 were not submitted to collective catch limitations, except for VIII a,b. In 2006, only one vessel was interested in the individual quota system, and none were registered in 2007. It was therefore decided to discontinue this system as of 2008.

Table 7.3. Statistical results of the financial accounts for 2010-2011 (mean values per vessel in EUR)

Group	Average number of days at sea		Average total value		Average gross results		Average net profit/loss before taxes	
	2010	2011	2010	2011	2010	2011	2010	2011
Small Fleetsegment	169	165	503 797	477 421	74 928	54 155	24 721	10 430
KVS – Coastal fisheries (≤ 221 kW)	149	152	306 568	297 419	36 150	17 161	8 194	-13 792
KVS - Eurokotters (≤ 221 kW)	192	181	717 958	662 927	108 847	48 930	37 695	24 274
KVS Others (≤ 221 kW)	141	141	271 215	269 900	70 143	78 258	30 086	38 096
Large fleet segment (> 221 kW)	239	233	1 428 810	1 618 801	257 348	277 382	161 112	199 015
GVS – Beamtrawlers (> 662 kW)	255	243	1 661 952	1 797 697	303 190	308 630	194 494	227 282
GVS - Others (> 221 kW)	175	187	525 384	826 548	79 712	138 998	31 761	73 831

Source: Uitkomsten van de Belgische zeevisserij 2010 and 2011-Publicatie van de Dienst Zeevisserij.

In 2011 the average number of days at sea realised by the small fleet segment (KVS) decreased from 169 in 2010 to 165 (-2 %). The average number of days at sea realised by the large fleet segment (GVS) also decreased significantly from 239 in 2010 to 233 (-3%).

The small fleet segment (except for the eurokotters) suffer decreases in average total value but the large fleet segment increased because of the scrapping and modernisation measures applied in this segment.

Table 7.4. Statistical results of the financial accounts for 2010-2011 (mean values per vessel in EUR)

	2010	2011	2010	2011	2010	2011	2010	2011
Small fleet segment (KVS) (≤ 221 kW)	169	165	2 981	2 893	2 538	2 565	443	328
KVS – Coastal fisheries (≤ 221 kW)	149	152	2 058	1 957	1 815	1 844	243	113
KVS – Eurokotters (≤ 221 kW)	192	181	3 739	3 663	3 172	3 227	567	436
KVS – Others (≤ 221 kW)	141	141	1 924	1 914	1 426	1 359	497	555
Large fleet segment (GVS) (> 221 kW)	239	233	5 978	6 948	4 902	5 757	1 077	1 190
GVS – Beamtrawlers (> 662 kW)	255	243	6 517	7 398	5 328	6 128	1 189	1 270
GVS – Others (> 221 kW)	175	187	3 002	4 420	2 547	3 677	455	743

Source: Uitkomsten van de Belgische zeevisserij 2010 and 2011-Publicatie van de Dienst Zeevisserij.

*Results per day at sea*

- Coastal fisheries, 2011: Total value decreased while costs increased, so the gross results decreased to EUR 113/day at sea.
- Eurokotters, 2011: There was an increase in costs and a decrease in value, which led to a decrease of the gross result from EUR 567 (2010) to EUR 436/day at sea in 2011.
- GVS — Beamtrawlers, 2011: The average total value increased more than average costs. The result is an increase from EUR 1 189 (2010) to EUR 1.270/day at sea.
- GVS — Others, 2011: The average total value increased more than the average costs. The result is an increase in average gross result of EUR 743/day at sea for this category.

***Employment in the fisheries sector***

The number of persons directly employed in the fisheries sector is approximately 2 500 persons, with approximately 800 employed in the fisheries fleet. There are approximately 1 400 persons employed in the fisheries processing sector. The number of people employed in the aquaculture sector is very small.

***Management of commercial fisheries***

In addition to the EU-rules and regulations, national measures are aimed at ensuring year-round fishing activity of the national fleet. Thus, quota swaps with other EU member states increase the available quota of some species. In 2010, there were 37 quota swaps: the quota for sole increased by 31 %, those for plaice and cod increased by 28% and 10% respectively. In 2011, there were 41 quota swaps, increasing the quota for sole by 29% and for plaice by 25%. The quota for cod increased by 6%. Catch and activity limitations are imposed to ensure that the available quota lasts throughout the year. Nevertheless, fishing grounds for certain stocks needed to be closed prematurely: there was one temporary closure in 2010 and four in 2011, including commercially important stocks such as plaice (VIIId,e and VIIf,g) and rays (II,IV).

***Management of recreational fisheries***

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

The use of towed gear for non-professional shrimpfisheries is restricted to the 3 nautical mile zone, with a number of additional restrictions concerning type of gear, catch composition, authorised period and legal use of catches.

The use of static gear is strictly forbidden and angling is subject to catch limitations: in 2010 and 2011, a maximum of 20 kg of cod and seabass were allowed per person and per seatrip, of which a maximum 15 kg could be cod. Fishing activities on beaches are also strictly regulated to ensure they remain recreational.

***Monitoring and enforcement***

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

The national quota registration system Quovis was thoroughly upgraded to allow, *inter alia*, link-ups between databases via webservices.

Since 2000 the complete fleet has been equipped with VMS in line with EU regulation, allowing for a near-realtime follow-up of positions at sea. An FMC was installed on the premises of the Sea fisheries office.

In 2010, the vessels of the large fleet segment were equipped with electronic reporting systems (ERD) and a dedicated datacenter was installed. The complete fleet was equipped with software from the firm e-catch at the end of 2011.

An overview of other control activities is given in Table 7.5.

**Table 7.5. An overview of other control activities**

Controls	2010	2011
In auctions	71	75
Elsewhere	18	8
At sea (boardings)	121	99
By airplane	392 vessels	311 vessels

The fishery protection vessels of the navy and the DAB-Fleet remained 89 days at sea in 2010, during which 121 boardings with a complete inspection of fishing vessels were done. In 2011, they remained 86 days at sea with 99 boardings.

Belgium participated in a joint deployment plan with neighbouring countries under the co-ordination of the CFCA (EU control agency) four times in 2010 and once in 2011.

An aerial surveillance programme was worked out together with the authorities in charge of the application of the Bonn agreement.

In total, 30 serious infringements<sup>1</sup> on fisheries regulations were reported in 2010 and 23 in 2011.

As of 2010 the inspectorate was designated as the competent authority to enforce the catch certification obligation within the framework of IUU regulations. Operators importing fish from third countries are requested to electronically submit catch certificates to the inspectorate. These documents are screened and authorisation to present the documents to customs is then granted/refused. The inspectorate also validates catch certificates for fishing products stemming from Belgian vessels that are exported to third countries.

### ***Multilateral agreements and arrangements***

No changes in the participation status of Belgium to RFO and other multilateral and international organisations.

## **Aquaculture**

### ***Aquaculture policy***

The regional minister responsible for fisheries installed an aquaculture platform in September 2012. This platform consists of three parts: a strategic steering committee, a contact point and an aquaculture network. Within the steering committee, four working groups have been installed on vision, legislation, research and advice. The steering committee will advise the minister on the aquaculture policy.

Legislation has changed little. The EU regulation on the use of exotic species in aquaculture has been incorporated into federal legislation. The Flemish legislation will be

finalised in 2013. Marine spatial planning for the Belgian Coast zone, including possible areas where aquaculture might be possible, is being prepared.

### *Production facilities, values and volumes*

Total Belgian production decreased from 500 tonnes in 2010 to 50 tonnes in 2011 due to a significant decrease in mussel and tilapia production. The following species are bred in Belgium: North African catfish, Sturgeons nei, European eel, Sea trout, Rainbow trout, Brook trout, Northern pike, Chars nei, Crustaceans and Molluscs. In Flanders Region there are 16 aquaculture firms. There is little employment in aquaculture.

## **Fisheries and the environment**

### *Environmental policy changes*

The environmental policy in Belgium is the responsibility of the federal government “*FOD leefmilieu*,” while fisheries is the responsibility of the regional Flemish government.

### *Sustainable development initiatives*

There is today much emphasis to give support to the fleet for the transition towards more energy-friendly and environmental friendly fishing techniques and methods.

## **Government financial transfers**

**Table 7.6. Overview of government financial transfers 2010-11 associated with Fishery Policies**  
EUR 1 000

	2010			2011		
	National Contribution	EU Contribution	Total	National Contribution	EU Contribution	Total
Direct payments*	1 934	6 028	7 962	2 061	0	2 061
Marine capture	/	/	/	/	/	/
Aquaculture	57	61	118	4	0	4
Processing	/	/	/	256	256	512
Cost reducing transfers	/	/	/	/	/	/
General services	1 329	1 329	2 658	621	621	1 242
Structural adjustments	/	/	/	/	/	/
<b>TOTAL</b>	<b>3 320</b>	<b>7 418</b>	<b>10 738</b>	<b>2 942</b>	<b>877</b>	<b>3 819</b>

\*Grants for vessel modernisation and equipment.

### *Structural adjustment*

In 2009, 13 or a netto result of 11 vessels were withdrawn from the fleet, thus effectively removing 11 507 kW (-15%) and 3 410 GT (-16%) capacity from the national fleet. In 2010, two vessels (one without and one with subsidies (scrapping grant)) were withdrawn. Two vessels were added as a result of a partial decommissioning measure that was part of a fleet adaptation scheme started in 2010. The latter resulted in nine vessels scrapped, of which two were replaced by new, adapted vessels with a maximum 40% capacity. Subsidised engine replacement accounted for a decrease of 1 059 kW in 2010.

In 2011, five vessels were withdrawn (two were shipwrecked) and one added to the fleet resulting in a net decrease of 1 966 kW and 486 GT. Due to subsidised engine replacement,



with the condition of a 20% reduction in engine power, a further reduction of 937 kW was realised. Finally, a new management system of catch multipliers (where vessel owners could trade engine power for fishing rights) led to an additional decrease of 360 kW.

In 2012 Due to subsidised engine replacement, with the condition of a 20% reduction in engine power, a further reduction of 1487 kW was realised. The catch multiplier led to an additional decrease of 859 kW

### Post harvesting policies and practices

Food safety is under the responsibility of the federal Food Agency ([www.favv-afsc.fgov.be](http://www.favv-afsc.fgov.be)).

### Markets and trade

#### *Markets*

In 2011 there was an average fish consumption of 10.2 kg, of which 4.6 kg of fresh fish and molluscs and crustaceans, 0.8 kg of smoked fish, and 1.8 kg frozen fish and frozen molluscs and crustaceans. During the period 2008-11, consumption remained largely stable. At the beginning of 2009, there was a significant rise in purchases due to lower prices. Fresh water fish is a stable market with small fluctuations. The market for processed fish, molluscs and crustaceans and of preparations of fish, molluscs and crustaceans have decreased since 2008.

Salmon and cod represent 40% of the total volume of fresh fish and the percentage of fish, molluscs and crustaceans has been growing since 2008 in the total volume of meat, poultry meat and fish; it was 21.4 % in 2011.

For the sale of fish, molluscs and crustaceans, in the long term, there is a clear increase of sales by hard discount stores (Aldi, Lidl, etc.) and small supermarkets (Dis 2). In 2007, hard discount stores accounted for 26% of the market. Dis 1 (supermarkets like Carrefour and Delhaize) remains the most important market with 44.2 %, although their share is decreasing. Specialised fish mongers and public markets saw a decrease of their market share to 11.6 % and 6.9 % of total sales. For fresh seafood and preparations of fresh fish, specialised fish mongers and public markets remained more important with a market share of respectively 26.3% and 15.2% in 2009.

#### *Trade*

From the perspective of the national economy, the fishing industry in Belgium is of marginal importance. Its share in the national GDP and contribution to employment is very low, but fish trade has become increasingly important and is continuing to grow significantly during the last decade. However, in recent years there has been an increase in trade patterns, for both imports and exports.

The degree of Belgium's self-sufficiency in fisheries products is very low. In 2011, imports by value were 20 times higher than the total landings of the Belgian fleet (EUR 1 667 million versus EUR 79.4 million). Even though a large share of the local production is consumed fresh domestically, Belgium is a major fish-trading nation. A substantial part of landings, and of fish imports, is exported. This mainly concerns sole, cod, whiting and plaice but also foreign fisheries products like salmon, tuna and pangasius. The major export markets are the Netherlands, France, Denmark, Germany, United Kingdom and Spain. The trade value for import (EUR 1 667 million) and export in 2011 (EUR 928 million) is higher than in 2009 with imports of EUR 1 412 million and exports of EUR 783 million. The trade deficit (EUR 739 million) increased in comparison to 2009 (EUR 629 million).

Fresh and processed fish products account for 50 % of the import and export value and molluscs and crustaceae for 45%.

### **Outlook**

At the national level, the poor condition of many fish stocks and high fuel prices encourage the continued search for more environment-friendly and less fuel-consuming fisheries that should lead to a more sustainable and profitable fleet. This is a priority of the actual Belgian Operational Programme of the European Fisheries Fund (EFF), where support is given to decrease the number of vessels, promote modernisation in order to reduce the consumption of fuel, and to stimulate more environmental-friendly fishing techniques.

The simplification introduced to the collective quota system in 2006 continues. The system of deducting days at sea when overfishing the daily maxima is also continued.

In view of the current reform process of the Common Fisheries Policy, significant changes are to be expected from 2013 onwards. Moreover, the implementation of the Control Regulation (EC) N°1224/2009 and the implementation of the IUU regulation (EC) N°1005/2008 will have implications in the future.

### **Note**

1. Serious infringements have to be understood as infringements on the CFP for which an official report to the court was introduced (*procès verbal*) in order to have the case prosecuted.

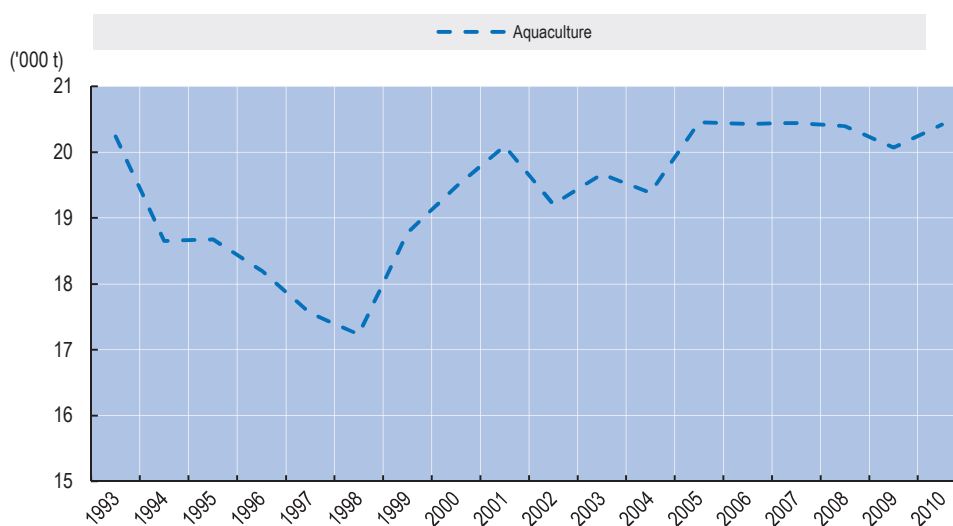
## Chapter 8

### CZECH REPUBLIC

#### Summary and recent developments

- Recreational fishing is an important activity in the Czech Republic, with 350 000 registered recreational fishers.
- Pond aquaculture is the predominant production method.
- Accession to the European Union in 2010 gave Czech fish producers access to a number of EU programmes.

Figure 8.1. Harvesting and aquaculture production



As a land-locked country, the Czech Republic does not have any marine fishing activity.

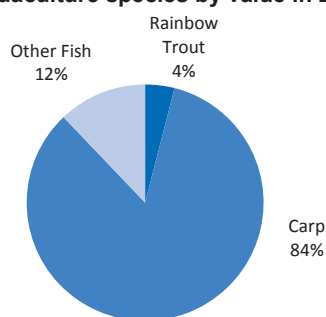
Source: FAO FishStat Database.

### Box 8.1. Key characteristics of Czech Republic fisheries

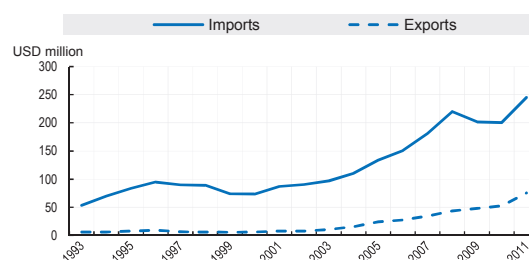
- The Czech fisheries production in 2009 originates almost exclusively from aquaculture, with carp (84%) being by far the most important species, followed by rainbow trout (4%). Carp production in 2009 was more than 17 000 tonnes. (Panel A)
- The landlocked Czech Republic has a net fish trade deficit. Fish imports are more than double exports. Imports consist mostly of marine species in fresh, frozen and processed form. In line with the national production patterns, carp is the most exported species. (Panel B)
- Since there is no marine fishery in the Czech Republic, Government Financial Transfers were provided to the Aquaculture sector. Total Government Financial Transfers in 2011 were USD 34 million, a 16% increase from USD 29 million in 2008. The majority of transfers are for the removal of pond silt. (Panel C)
- The number of fish farmers in the Czech Republic declined by 6.1% between 2006 and 2010. (Panel D)

Figure 8.2. Key fisheries indicators

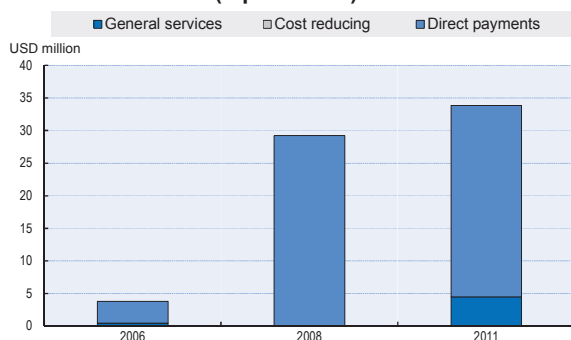
Panel A. Key aquaculture species by value in 2009



Panel B. Trade evolution



Panel C. Evolution of government financial transfers (aquaculture)



Panel D. Capacity

	2 006	2 011	% change
Number of fishers	..	..	..
Number of fish farmers	1 521	1 428	- 6
Total number of vessels	..	..	..
Total tonnage of the fleet	..	..	..

## Legal and institutional framework

There is no marine fishery in the Czech Republic. The fishing industry can be broken down into freshwater (pond) aquaculture and the management of recreational fishing grounds.

## Capture fisheries

Management in fishing grounds consists of managing river systems and maintaining fish communities in locations where recreational fishing is carried out using rods. In the Czech Republic more than 2 000 fishing reserves have been declared with an area of approximately 42 000 ha. In all, the fishing unions have 350 000 registered members engaged in recreational fishing.

## Aquaculture

The majority of productive fisheries is pond farming. Fish are also reared in special facilities (hatchery systems); this primarily concerns rearing salmonids (trout farming). Pond farming is based on fish farming in man-made water works and are situated mainly in rural areas. Productive fisheries demonstrate stable performance and are also functional in terms of market mechanisms. In the context of sustainable development, the overall balance of fish production can be considered as an optimal process with no overproduction and the associated adverse price fluctuations.

Besides fish production the fishponds provide indispensable non-productive functions in the landscape, such as water retention, flood protection, biological water purification; they provide artificial areas for bird nesting and preservation territories for game; they have a recreational function, provide eco-stabilisation and contribute to biodiversity conservation.

In the territory of the Czech Republic there are more than 24 000 fishponds and reservoirs with a total area of almost 52 000 ha, of which more than 41 000 ha of ponds in Bohemia and Moravia are used for fish farming. The theoretical volume of water in ponds can be roughly 600 million m<sup>3</sup>; the actual amount of water in ponds is around 400 million m<sup>3</sup>. The reason the actual volume of water is lower is the high degree of siltation in ponds. The amount of sediment is estimated at 200 million m<sup>3</sup>.

More than half of the total production is based on natural pond food (zooplankton, zoobentos), which has a high content of animal protein. The energy component of the diet is supplemented in the form of additional feed with unprocessed cereals. One-third of carp production is achieved on the basis of additional feed. This results in the production of fish with a high consumer quality; moreover the meat contains a number of dietetically important omega 3 acids.

## Markets and trade

In 2010 the production of market fish in the Czech Republic came to 20 420 tonnes. Of this 19 701 tonnes of fish were caught from ponds. Seven hundred and one tonnes came from special facilities (mostly trout farming) and 18 tonnes of fish were caught in dams.

9 549 tonnes of live fish were supplied to the domestic market, an annual increase of 419 tonnes. The export of live fish came to 9 138 tonnes, which represented an increase of 209 tons. 1 806 tonnes of fish in live weight were processed in 2010, i.e. 8.8% of the volume of fish harvested.

The species composition of marketed fish is relatively stable and did not change significantly compared to previous years. Carp made up 86.9% of the total volume of fish

caught, salmonids 3.6%, herbivorous fish 5.2%, tench 1.1% and carnivorous fish amounted to 1.1% of the total catch.

The domestic market continues to favour supply in the form of live fish, which represents 44 to 47% of production obtained from farming in the last three years. The export of live fish over the last three years is 45 to 47% of the total catch and documents the steady interest in the fish produced predominantly by the member bodies of professional associations. 8 to 9% of freshwater fish produced were processed into products in fish processing plants.

### Fisheries and the environment

Currently there are approximately 350 pairs of great cormorant nesting in the territory of the Czech Republic. With regard to the migratory cormorant population, which is currently a huge problem, in recent years 20 000 to 42 000 individuals have been regularly recorded in the winter period in the territory of the Czech Republic.

The great cormorant causes enormous damage to the production areas, with losses amounting to up to CZK 100 million. In open water the annual loss is close to CZK 70 million.

### Government financial transfers

With the Czech Republic's accession to the European Union the possibilities of support for the fisheries sector expanded. In 2010, it was possible to use the following support resources:

- National departmental support
- The Operational Programme Fisheries 2007-13,
- The Support and Guarantee Agricultural and Forestry Fund,
- The Ministry of Agriculture programme 129 130 *Support for the Renewal, Dredging and Reconstruction of Fishponds and the Construction of Water Reservoirs.*

Total Government Financial Transfers in 2011 were CZK 598.56 million, an increase from CZK 539.16 million in 2010. The majority of transfers are for the removal of pond silt (Table 8.1).

**Table 8.1. Government financial transfers**  
CZK millions

	2010	2011
Fish efficiency control	4.76	4.80
Consultancy	0.03	0.02
Support of non-production functions of fish	0	69.91
Support of genetic sources (fish)	3.84	3.74
Removal of pond silt	530.53	520.10
Total	539.16	598.56

Source: Czech country submission

### ***Transfer policies***

National departmental support is provided under the following headings.

- Control of fish yields.
- Special consultancy for livestock production.
- Genetic resources.
- Renewal, Dredging and Reconstruction of Fishponds and the Construction of Water Reservoirs.
- Support for the non-productive functions of ponds.

In 2011 the MoA issued a decision on granting subsidies in the framework of the seventh, eighth and tenth round of grant applications from the *Operational Programme Fisheries 2007-13*. Fishermen can draw on financial resources from the Operational Programme Fisheries 2007-13 in the context of *Priority Axis 2 – Aquaculture* for investments into aquaculture production, compensation payments for improving the aquatic environment, measures in the area of fish health and investment into processing fish and placing them on the market. Under *Axis 3 – Measures of Common Interest* support is provided to develop new markets, promotional campaigns, the introduction of the European eel and pilot projects.

The *Support and Guarantee Agricultural and Forestry Fund* provides loan guarantees and reduced interest for business entities in the area of agriculture, forestry, water management as well as industry involved with food processing. The detailed conditions are set out in the “Instructions for Providing Supports by the Support and Guarantee Agricultural and Forestry Fund”.

The Ministry of Agriculture programme 129 130 *Support for the Renewal, Dredging and Reconstruction of Fishponds and the Construction of Water Reservoirs* programme. The renewal and reconstruction of ponds and water reservoirs is focused on improving their water management and non-productive functions<sup>1</sup>. Particular emphasis is placed on strengthening retention capabilities. At the same time attention is paid to improving the safe operation of ponds and water reservoirs in association with flood situations. Dredging of the most silted ponds, to support retention, is continuing; it is also possible to support the construction of water reservoirs used to protect against floods and drought. Sub-programme 229 218 *Removing the Damage to Fishponds and Water Reservoirs after the Floods in August 2002* runs in a similar manner.

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

Some objectives for domestic consumption of fish products are as follows<sup>3</sup>

- Fish and fish products will be available to customers at a time when they are interested in them (throughout the year in most cases).
- Fish products will be offered in supermarket chains at the same time as other foodstuffs (competitive, modified in various ways with longer shelf-life).
- They will be packaged in sizes that meet customers’ requirements.
- Through processing there will be a reduced number of bones or they will be completely eliminated.
- The fish parts that some customers do not consume (when buying live fish) will be utilised.

- Fish products will be of high quality with a guaranteed hygiene level (effective methods of processing raw material).
- By expanding the diversity of products, customers will be inspired to make less traditional fish dishes.

The majority of fish processed domestically are consumed in the domestic market (Table 8.2).

**Table 8.2. Level and use of processed freshwater fish, 2001-2010**  
Tonnes

Year	Live fish intended for processing	Disposition of processed products	
		in the internal market	for export
2001	2 097	1 725	372
2002	1 610	1 373	237
2003	1 800	1 309	491
2004	1 720	1 161	559
2005	2 170	1 314	856
2006	1 920	1 474	446
2007	1 904	1 414	490
2008	1 716	1 248	468
2009	1 595	1 183	412
2010	1 806	1 361	445

Source: Czech Fish Farmers Association.

## Markets and trade

### *Markets*

In the last ten years annual production of market fish in the Czech Republic ranged between 19 200 to 20 500 tonnes, and was 20 400 tonnes in 2010. The volume of fish caught is greatly influenced by domestic and foreign market opportunities.

The average yield from fishponds in the Czech Republic in 2010 was 479.7 kg of fish per hectare. A total of 41 070 hectares of fishponds was used for fish farming, of which 36 084 ha by association members, 2 986 ha by other breeders — non-member associations — and an estimated 2 000 ha of fishponds are used by unregistered extensive producers.

The area of managed water bodies decreased slightly in 2010 as a result of damage caused by floods in 2009 and also the effect of increased dredging and repairs to fishponds.

In 2010 some important market factors were the growing competition in the market for fish, increasing environmental pressure, higher production costs and the economic impact of predation by protected piscivorous animals. The high quality of domestic fish helped competitiveness in a globalising market and the health benefits of fish made them attractive to consumers.

### *Trends in domestic consumption*

In the Czech Republic the per capita consumption of fish has stagnated at less than 6 kg for many years. Of this amount, the consumption of freshwater fish is less than 1.5 kg per person per year (when counting fish from breeding including fish caught by rod). The average annual consumption of fish per capita in the world is 16 kg. The statistical annual consumption per capita in the European Union is just 11 kg.



**Table 8.3. Market and line caught fish in flowing waters, 2008-2010**  
Tonnes live weight

Fish species	Production of market fish			Line caught fish			Total		
	2008	2009	2010	2008	2009	2010	2008	2009	2010
Common carp (Cyprinus carpio)	17 507	17 258	17 746	3 257	3 214	3 161	20 764	20 472	20 907
Tench (Tinca tinca)	284	252	215	23	24	22	307	276	237
Pike (Esox lucius)	101	94	105	166	154	122	267	248	227
Zander (Stizostedion lucioperca)	58	58	48	106	107	106	164	165	154
Trout (Salmo trutta 1. Fario 2. labrax m. fario)				26	20	18	26	20	18
Rainbow trout (Oncorhynchus mykiss)	614	526	476	57	57	57	671	583	533
Common bream (Abramis brama)				169	183	170	169	183	170
Wels catfish (Silurus glanis)	60	58	47	94	89	93	154	147	140
European eel (Anguilla anguilla)				21	21	19	21	21	19
Grayling (Thymallus thymallus)				5	5	3	5	5	3
Asp (Aspius aspius)				19	16	16	19	16	16
Grass carp (Ctenopharyngodon idella)	394	409	488	86	89	89	480	498	577
Goldfish (Carassius auratus)				24	23	20	24	23	20
Bighead carp (Aristichtys nobilis)			583						
Silver carp (Hypohthalmichthys molitrix)	586	601		11	13	12	597	614	595
European perch (Percia fluviatis)	17	18	18	17	18	14	34	36	32
Brook trout (Salvelinus fontinalis)	201	145	262	8	7	8	209	152	270
Common whitefish (Coregonus lavaretus maraena)	24	19	26				24	19	16
European chub (Leuciscus cephalus)				20	17	10	20	17	10
Other	549	633	406	55	55	50	604	688	456
<b>Total</b>	<b>20 395</b>	<b>20 071</b>	<b>20 420</b>	<b>4 164</b>	<b>4 112</b>	<b>3 990</b>	<b>24 559</b>	<b>24 183</b>	<b>24 410</b>

Source: Czech Fish Farmers Association.

*Trade*

Fish imports into the Czech Republic are more than double exports. The high value of imports is primarily due to the significant quantity of imported marine species and products made from them. On the other hand, the import of live fish is much lower than the export of this customs item. Carp is still the most exported live fish (Table 8.4).

**Table 8.4. Trade in fish, crustaceans, molluscs and other invertebrates**  
Tonnes

Year	Imports	Exports	Balance
2001	31 632	12 256	-19 376
2002	30 121	11 985	-18 136
2003	31 180	11 973	-19 207
2004	35 617	13 048	-22 569
2005	38 746	14 784	-23 962
2006	38 892	16 697	-22 195
2007	38 868	16 375	-22 493
2008	44 282	15 347	-28 935
2009	44 502	16 841	-27 661
2010	40 548	18 073	-22 475
2011	38 705	18 494	-20 211

*Note:* data concerning aquarium fish are excluded for tariff item 0301.

*Source:* Czech country submission.

*Note*

1. MoA Programme 229 210 “Renewal, Dredging and Reconstruction of Fishponds and the Construction of Water Reservoirs”, the objective of which is to improve the technical status of the fishpond fund and strengthen the water management and non-productive functions of ponds with regard to their anti-flood and landscape formation importance has finished.

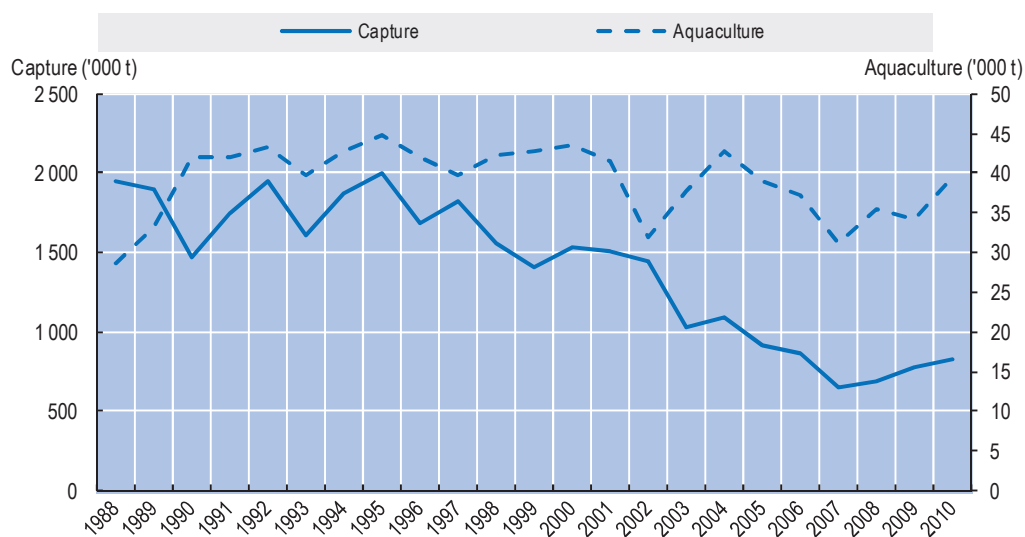
## Chapter 9

### DENMARK

#### Summary of recent developments

- In 2010, a Government committee recommended that aquaculture production be regulated according to results-based management to set limits on discharges, nitrogen in particular, and allow aquaculture firms to optimise their production within specific limits. Some of these management changes were introduced to freshwater production in 2012.
- The process to designate additional Natura 2000 sites in Danish marine waters is now complete. Some existing marine Natura 2000 sites have been extended and new areas have been designated. The sites are protected from the time of designation and fisheries will be regulated as appropriate.
- Denmark conducted trials on catch quota management with full documentation (CQM) from 2008 to 2012. In the trials, all catches of cod were counted against the quota and monitored by CCTV. The trials form the basis for the current revision of the Common Fisheries Policy and for new EU management in Skagerrak. The management entails CQM and a landing obligation, increased quotas and simplified regulations.

Figure 9.1. Harvesting and aquaculture production



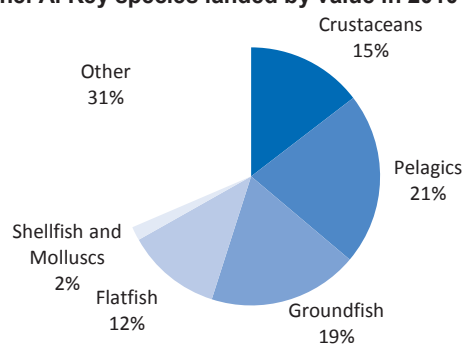
Source: FAO FishStat Database.

### Box 9.1. Key characteristics of Danish fisheries

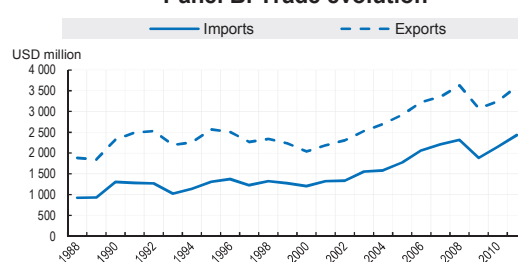
- The activities of the fishing fleet in Denmark account for 0.1% of the Gross Domestic Product, whereas the entire fisheries sector, including aquaculture, fish processing, wholesale and retail branches, accounts for 0.3% (2008). Key species continue to be cod, Norway lobster, sandeel, plaice, herring and mackerel. (Panel A)
- Exports consist of several different species, including salmon, whitefish, shrimps, herring, flatfish, fishmeal and oil. European Union countries purchased 72% of Danish exports value (2010), while exports to other parts of the world, including central and Eastern Europe and China, are increasing. Imports of significant quantities originate from a relatively limited number of countries located mainly in the Northeast Atlantic area. Over the last decade, long distance imports are becoming increasingly important and equalled 23% of total seafood imports in 2010. North American and Asian countries are the most important suppliers. (Panel B)
- National support schemes include a general measure to encourage development and innovation in the food industry sector. In addition, the government pays for management, control and research in the area of capture fisheries. Expenditures amounted to approximately DKK 437 million in 2010. (Panel C)
- The number of fishers and vessels decreased considerably in 2010 following the introduction of a new management regime. Concurrently, profits increased remarkably. (Panel D)

Figure 9.2. Key fisheries indicators

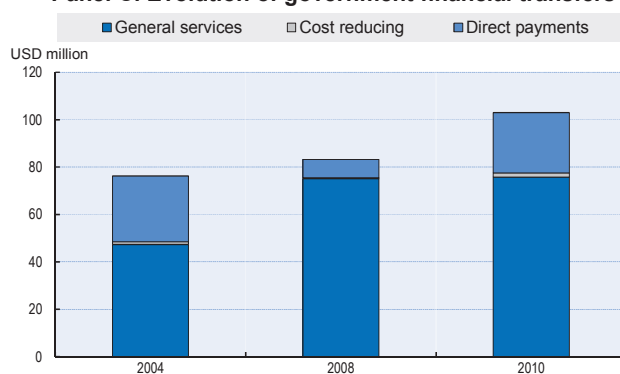
Panel A. Key species landed by value in 2010



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2 006	2 011	% change
Number of fishers	3 241	2 012	- 38
Number of fish farmers	571	430	- 25
Total number of vessels	3 344	2 819	- 16
Total tonnage of the fleet	91 533	66 000	- 28

## Legal and institutional framework

The fisheries sector in Denmark - excluding Greenland and the Faroe Islands - is managed within the framework of the EU's Common Fisheries Policy (CFP).

The authority responsible for monitoring and enforcing EU and national conservation policies is the 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 inspection at sea and landings, as well as verification of EU marketing standards.

National legislation aims at utilising fishing opportunities while ensuring that Danish quotas are not exceeded. TAC's and technical rules are determined by the European Union on the basis of scientific advice.

The 1999 Fisheries Act covers the protection of fish stocks, regulations of commercial and recreational fisheries, first hand sales, as well as implementation of environmental regulations concerning fishing. Issues regarding the environmental impacts of aquaculture are covered by the legislation on the environment.

## Capture fisheries

### *Performance*

The activities of the fishing fleet in Denmark account for 0.1% of the Gross Domestic Product, whereas the entire fisheries sector including aquaculture, fish processing, wholesale and retail branches accounts for 0.3% (2008). The economic performance of the Danish fishing fleet is shown in Table 9.1.

**Table 9.1. Economic performance of the Danish fishing fleet, 2006-10**

	2006	2007	2008	2009	2010
Number of registered vessels <sup>1</sup>	3 134	2 957	2 890	2 834	2 826
Number of commercially active vessels <sup>1</sup>	1 093	846	777	703	688
Number of employed	2 341	1 751	1 577	1 446	1 392
Total landing value (DKK Million)	3 183	2 719	2 560	2 218	3 004
<i>Average per commercially active vessel</i>					
Landing value (DKK 1 000)	2 785	3 053	3 076	2 955	4 176
Earning (DKK 1 000)	1 726	1 857	1 691	1 636	2 658
Operating profit (DKK 1 000)	620	829	609	623	1 453
Net profit (% of insurance value)	15%	20%	20%	13%	30%

1. A vessel is considered active if it has an annual catch value of more than DKK 254 545 (2010).

Source: Institute of Food and Resource Economics, *Economic situation for the Danish Fishery 2012*.

The number of commercially active vessels in the Danish fleet fell 37% over the period 2006-10. Employment also fell substantially, where the landing value after a reduction in 2007-09 increased in 2010. The economic performance for the remaining commercially active vessels peaked in 2010. New regulations have had a highly positive effect on the economic performance of the remaining vessels, although fluctuating quotas for fish have affected economic performance.

This development is due not only to normal variations in fishing quotas and prices, but also to the 2008 financial crisis and the introduction of new regulations. Individual transferable quotas were introduced for herring in 2003, and later for mackerel and species used for fishmeal and oil. Moreover, fixed quota allocations were introduced in 2007 in the remaining part of the Danish fishery, including the demersal fishery. As a result, several vessels have been retired from fishery.

Economic performance improved up to 2007-08, but fell in 2009. The Danish fishing fleet seems to have overcome the financial crisis with substantial falls in landing prices in 2009 (e.g. landing prices of cod, plaice and Norway lobster fell by 30%, 32% and 38% respectively from before the financial crisis from 2007 to 2009) but without deficits and only a slight fall in the average economic performance. The reason is considered to be the positive development following the introduction of new regulations.

## Management

Most commercial species are regulated by transferable fishing concessions (TFC). The TFC system makes a distinction between the pelagic and the demersal segments with regard to concentration of ownership and cross ownership. In the demersal segment a pool system has been established to allow fishers to lease and swap fishing rights on a daily basis to match quotas with catches. The demersal segment also includes a quota premium allowance for coastal vessels (below 17 m). A small part of the fleet consisting of less active vessels is regulated by rations. An account of the TFC system and the structural changes in the Danish fleet can be found at [www.fvm.dk/cqm\\_\(catch\\_quota\\_management\).aspx?ID=42783](http://www.fvm.dk/cqm_(catch_quota_management).aspx?ID=42783).

When TFC's were introduced some restrictions on the concentration of quota shares were required. No single fishing vessel and no single person is allowed to have a dominating position.

As of 2012, simpler rules were implemented. These include the following.

- No fishing vessel can have a share in the IOK/FKA fisheries which exceeds given limits (limits are different for the individual quotes but is usually set at 5%).
- No single person can directly or indirectly (through ownership or through vessel owning companies) have a share which exceeds given limits (limits for persons are typical equal to limits for vessels).

Some non-quota fisheries are regulated on the basis of licenses. These fisheries include brown shrimp (*Crangon crangon*) along the west coast of Jutland, and blue mussel in various Danish waters. Since 19 July 2009, licenses of blue mussel can be traded.

The European Union policy on fleet and fleet capacity has been implemented by the existing tight entry-exit system. Overall capacity continues to fall and it is expected this trend will continue because the revised TFC system makes it possible to merge fishing rights and remove overcapacity. A scheme for coastal fishing vessels allows participating vessels to receive a premium on cod and sole. To receive this premium, vessels must be less than 17 m long and a minimum of 80% of the vessels' fishing trips must be three days or less.

In 2007 the European Council adopted a framework regulation for the recovery of the stock of European eel (Council Regulation (EC) No 1100/2007 of 18 September 2007). The Regulation establishes a framework for the protection and sustainable use of eel. Each EU member state is required to establish eel management plans.

The Danish Eel Management Plan consists of two elements.

- A management plan for inland fresh waters aligned with the long-term objective of reducing anthropogenic mortalities to ensure the escape to sea of at least 40% of the silver eel biomass relative to the best estimate of escape that would have existed if no anthropogenic influence had had an impact on the stock, as described in Article 2 of the Council Regulation.
- A management plan for marine waters introducing a reduction in fishing effort by at least 50% relative to the average effort deployed from 2004 to 2006 in conformity with Article 8 of the Council Regulation.

Measures in fresh waters include:

- A licensing system for professional fisheries.
- A closed fishing season for recreational fishermen and landowners bordering freshwater shores.
- Restocking.

Measures in marine waters include the following.

- A license system for professional fishers.
- A closed fishing season for recreational fishers.
- Increase in the legal catch size for yellow eel.

In July 2012, Denmark submitted its first Status Report to the Commission in line with Article 9 of Council Regulation (EC) No. 1100/2007 of 18 September 2007 establishing measures for the recovery of the European eel stock. The Danish Status Report shows that the foreseen gradual reduction in eel fishing effort and eel catches is in line with the Eel Regulation and the Danish Eel Management Plan.

Stock assessments in 2011 show an improvement for a wide range of stocks vital for the Danish fishery. Among these are cod in the Kattegat, although this stock is still considered to be below the minimum size required to sustain itself. Therefore, Denmark and Sweden have assigned areas in the Kattegat and the northern Sound partly as temporary closed areas, partly as permanent closed areas. It has also introduced a ban against fishing gear intended for cod fishery in these same areas. The effects of these actions are currently undergoing evaluation to decide if the area covered needs to be revised.

Since 2006, Denmark has used risk-based control as a concept to control the fishing fleet catch. This means that control resources are directed to those areas and fisheries where the risk of over-fishing and illegal fishing is greatest.

The risk-based control focuses on specific fisheries, areas and campaigns. In 2011, the focus was primarily on towing gears in the Kattegat and on highgrading. The Danish AgriFish Agency updates daily a series of risk lists which identify critical vessels. Vessels are given a score between 0 and 10, depending on its ability to comply with the rules on selected issues. One new tool for fishing inspectors is a smart mobile phone that makes it possible to continuously receive information on vessels of particular interest.

### Access arrangements for foreign fleets

Denmark follows EU rules on access for fishing vessels to ports and landings of catches.

### Recreational fishing

Recreational fishery is regulated by restricting the amount and kind of gear that can be used. It is forbidden to sell fish caught in recreational fishery. National measures also include the release of fish and research financed by fees charged for recreational fishing permits.

A 2009 study on recreational fishing shows that a total of 616 000 people makes angling one of the most popular spare-time activities in Denmark. The effect on employment is the creation of around 2 50 jobs. Spending that year by Danish and foreign anglers in Denmark totalled DKK 2.85 billion.

Risk-based control and monitoring strategy in recreational fishery have focused on “hot spots” (high priority), periods and species, and are supported by a biological assessment from the National Institute of Aquatic Resources. The Danish fisheries authorities have also established an electronic reporting system to help collect and distribute information about observed irregularities.

### Fisheries and the environment

The process of designating additional Natura 2000 sites in Danish marine water is complete. Several existing marine Natura 2000 sites have been extended, e.g. in the Skagerrak area just north of Skagen, and new areas have been designated. As with the previously designated Natura 2000 sites, Natura 2000 management plans will be drawn up at the latest six years after the European Commission has approved the sites. National authorities will be obliged to adopt appropriate measures in accordance with the objectives set out in the management plans. As the sites are protected from the time of designation, the national authorities must thereafter be in compliance with the habitat directive and national fisheries legislation, and are obliged to regulate fisheries in the protected areas when appropriate. Thus the role of fisheries in protected areas will be discussed and regulated when and if such measures are necessary for the protection of particular sites. Denmark has held the first consultations with the EU Commission, ICES, the regional advisory committees and EU member states with regards to adequate protection of reef structures in the Kattegat. Specific fishery measures are in the process of being finalised.

Within the implementation process of the Marine Framework Strategy Directive, Denmark produced an initial assessment of the current environmental status of its national marine waters, a determination of what Good Environmental Status (GES) means for its marine waters, and the establishment of environmental targets and associated indicators to achieve this status. The Directive requires EU member states to take measures to achieve or maintain GES for their seas by 2020.

### Aquaculture

Approximately 700 people are directly employed in Danish aquaculture, mainly in traditional fish farming. A significant number are also employed in the supply chain-associated industries, such as smokehouses. Aquaculture production in Denmark is mainly focused on rainbow trout (*Oncorhynchus mykiss*), farmed in freshwater systems and in off-shore or land based marine aquaculture. In addition, eel is farmed in re-circulated freshwater systems. Mussels, oysters and crayfish are produced in minor quantities. Turbot fry is produced mainly for export. A variety of other species is produced in minor amounts or raised primarily for restocking.



**Table 9.2. Danish aquaculture production, 2007-11**

	2007	2008	2009	2010	2011
Production in tonnes	42 438	42 637	41 886	39 306	39 826
Number of active farms	405	406	369	337	306
Employment	547	491	443	430	...

Except for farms with no outlet to the natural environment, all Danish fish farms must be officially approved in accordance with the Danish Environmental Protection Act.

In 2010, an Aquaculture Committee put forward recommendations on the future development of the aquaculture industry. These include the following.

- That aquaculture production should be managed by nitrogen quotas.
- That nitrogen quotas should be transferable so that they went to the most efficient producers.
- That production should take into consideration the natural environmental and in particular migrating species.

The Committee sought to strengthen incentives to increase production and reduce the negative environmental impact. In general, rules for the industry should be simplified.

The outlet of pollution of nitrogen and phosphor in inland waters is the most important factor limiting growth in aquaculture. In order to limit this pollution, water purifying systems have been developed in freshwater aquaculture. Several initiatives have been launched with the aim to increase aquaculture production in general such as exploring new concepts for aquaculture production with reduced environmental impact.

From 2010 organic trout is produced in accordance with new EU rules. Technology and consultancy on aquaculture production is exported as well as fish feed for the aquaculture industry.

### Government financial transfers

All major support schemes for fisheries are part of EU schemes. The structural scheme is financed by the European Union and Danish public funds, whereas aid in the framework of the market organisation is entirely financed by the European Union. Table 9.3 shows the 2012 budget for structural aid. Danish Public aid for the fisheries sector is gradually focussing more on collective measures and innovative and green investments.

**Table 9.3. National aid and aid from the European Fisheries Fund (DKK million), 2010**

	European Union	National	Regional	Total
Modernisation of vessels and aid to young fishers	7.0	7.0	0	14.0
Aquaculture and organic aquaculture	19,0	19,0	0	38,0
Processing	7.2	7.2	0	14.4
Collective measures, pilot projects, fishing ports and fresh water programmes	124.7	65.9	58.8	249.4
Local community programmes	18.0	8.0	10.0	36.0
Technical assistance	5.8	5.8	0	11.5
Grand total	181.7	112.9	68.8	363.4

National support schemes include a general measure to encourage development and innovation in the food industry sector.

In addition, the government pays for management, control and research in the area of capture fisheries. Expenditures amounted to approximately DKK 437 million in 2010.

In 2009, a temporary decommissioning scheme was introduced as part of an energy efficiency package with a target of a 5% reduction in fuel consumption of the fleet.

The package was based on EU Regulation 744/2008 and the implementation was carried out after extensive consultation with the industry. Vessels with energy costs that were over 30% of production costs could apply for the aid. Applications for decommissioning had to be part of a restructuring programme of two or more vessels, and were selected on the basis of their expected energy saving.

Fleet capacity had been managed on the basis that any entry of capacity must be compensated by the exit of the same size. Vessels decommissioned with aid cannot be replaced and the decommissioned tonnage/power was deducted from the existing ceiling on access to the fleet.

The administration collects data on the performance of the projects and the scheme will be evaluated as part of an interim evaluation of the Danish European Fisheries Fund programme.

## Markets and trade

### *Markets*

Danish annual per capita consumption of seafood products amounts to approximately EUR 120 (2008), corresponding to a total Danish consumption of EUR 660 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, salmon, whitefish, shrimps, herring and flatfish account for three-fourth of total consumption. Seafood products are sold in several different product forms with canned, preserved and fresh being the most important. There are indications that consumption of farmed fish and imported cold water shrimp are increasing, while traditional wild-caught species fall. Fresh fish and convenience seafood products are on the increase and supply becomes more varied.

Denmark is a major exporter of fish products. In 2010, it was ranked sixth in the world according to FAO. At the same time, Denmark is a major importer, globally ranked number 13, of raw materials used for further processing and then re-exported. Danish imports and exports are shown in Table 4.

### *Trade*

Exports consist of several different species, including salmon, whitefish, shrimps, herring, flatfish, fishmeal and oil. Trade in salmon has been increasing, whereas trade in whitefish has been decreasing. EU countries purchase 72% of Danish exports value (2010), while exports to other parts of the world, including central and Eastern Europe and China, are increasing.

Imports of significant quantities originate from a relatively limited number of countries located mainly in the Northeast Atlantic area. Three-fourths originate from Nordic and EU countries. Species includes the traditional wild-caught species such as cod, herring and shrimps, while salmon over the last two decades has become very important. Over the last decade, long distance imports are becoming increasingly important and equalled 23% of total seafood imports in 2010. North American and Asian countries are the most important suppliers.

Table 9.4. Imports and exports of Danish fish products, 2010 and 2011

2010	Exports		Imports	
	Tonnes	DKK millions	Tonnes	DKK millions
Unprocessed	369 504	7 116	340 813	5 494
Semi-processed	100 934	4 392	71 443	2 430
Processed	116 588	3 863	80 747	2 425
Fish meal and oil	422 566	2 948	729 944	2 362
Total	1 009 591	18 319	1 222 947	12 711
2011	Tonnes	DKK millions	Tonnes	DKK millions
Unprocessed	328 548	7 452	330 384	5 841
Semi-processed	101 777	4 733	71 302	2 383
Processed	111 448	4 196	83 956	2 861
Fish meal and oil	419 010	3 402	747 084	2 689
Total	960 782	19 784	1 232 727	13 774

*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

Source: The Danish AgriFish Agency's Foreign Trade Register.

Concerning trade policy, please see chapter on the European Union.

## Outlook

It is expected that the TFC management will encourage the fleet to better adjust to fishing possibilities and changes in markets. Overall capacity will continue to fall and economic performance of the industry will improve. While TFC allows quotas to be matched with catches, the prospects for optimal use of all catches by introducing catch quota management and a landing obligation for all fish caught is currently being explored in the context of revising the Common Fisheries Policy and Danish management ([www.fvm.dk/yieldoffish](http://www.fvm.dk/yieldoffish)).

The European Fisheries Fund measures will be replaced by a new European Marine and Fisheries Fund. New programmes and measures are expected to be introduced from 2014.

Discussions on aquaculture reform will continue and are expected to eventually lead to further changes in management in order to improve production and economic results, and possibly introduce new ways of managing and controlling effects on the environment.



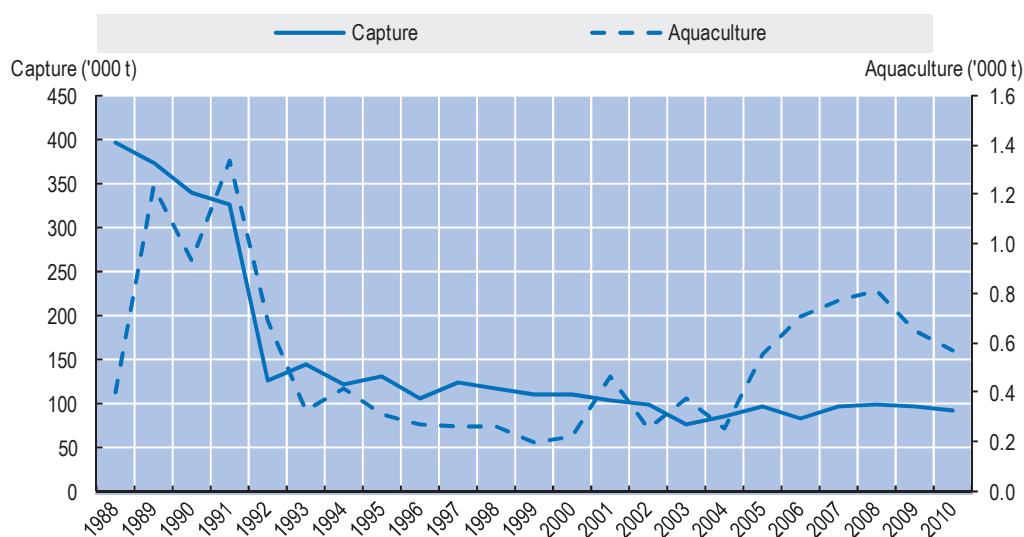
## Chapter 10

### ESTONIA

#### Summary and recent developments

- The general goals of the fisheries management system are stated in the Estonian Fisheries Strategy 2007–2013.
- The main goal is to achieve the sustainable use of resources and to increase the income of people dependent on fisheries by restructuring the sector. This would take into account the availability of resources and market developments.
- Restructuring is based on a “sectoral approach” of special measures for each fisheries sector, including:
  - The development of the fishing fleet which will take into account the need to balance available resources and increasing competitiveness of producer organisations. Public investments would thus be at a higher level of the food-chain (processing, marketing) in the pelagic sector.
  - Alternative sources of income for coastal areas would be created through, by example, greater co-operation between fishers in processing/marketing, and diversification.
  - Developing an efficient port infrastructure that takes into account the location of fish resources and available on-shore facilities.
  - Increasing aquaculture production to meet the needs of the Estonian market by using efficient and environmentally friendly technologies, such as on-shore recirculation systems.
- Setting research and development as a priority by investing in projects of common interest, including improving scientific advice, finding efficient fisheries management systems, designing more selective fishing gear, improving product quality, developing human resource training, and developing better information flows and advisory systems.

Figure 10.1. Harvesting and aquaculture production



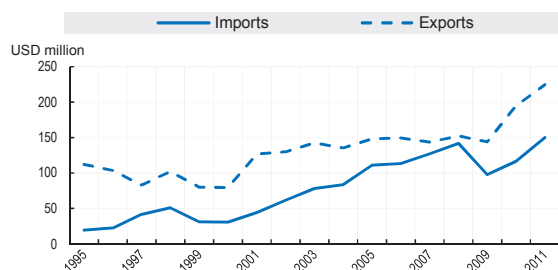
Source: FAO FishStat Database.

### Box 10.1. Key characteristics of Estonian fisheries

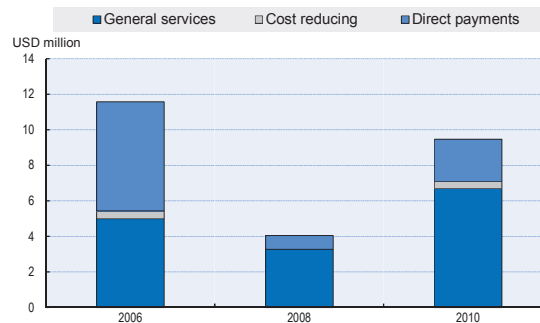
- Estonia is a net exporter of fish, measured in volume. The main export category is fresh and frozen fish, measured in volume, while canned products account for around one-fourth of total exports. The total export and import values have been rising since 2009. (Panel A)
- The total amount of financial transfers from the government in 2010 was about USD 9.49 million, which was a USD 5.43 million increase (134%) from 2008. Of which general services contributed 70.7%, followed by direct payments (25.3%) and cost reducing payments (4%). The decline between 2006 and 2008, and growth since 2008 was caused by the fact new financial period of EFF 2007-2013 had not begun and there were not so many investments made in 2008. (Panel B)
- While both the number of fishers and fish farmers decreased by 25.9% and 6.35 respectively, the number of vessels substantially increased (37.2%) between 2006 and 2010. There was an opportunity opened for smaller vessels to enter into the register due to the removal of inactive vessels from the register in 2009-2010. (Panel C)

Figure 10.2. Key fisheries indicators

Panel A. Trade evolution



Panel B. Evolution of government financial transfers



Panel C. Capacity

	2006	2011	% change
Number of fishers	4 010	2 970	-25.9
Number of fish farmers	95	89	-6.3
Total number of vessels	993	1362	37.2
Total tonnage of the fleet	20 712	..	..

## Legal and institutional framework

Administration and governance responsibility is shared by the Ministry of the Environment and the Ministry of Agriculture. The Fisheries Resources Department of the Ministry of the Environment manages and co-ordinates research, assessment, exploitation, reproduction and protection of fish resources. The Fishery Economics Department of the Ministry of Agriculture deals with the administration of the fishing activities, manages aquaculture, production, processing and marketing of fish and fish products as well as market regulation issues and the European Fisheries Fund (EFF) and other state support.

One of the main functions of the Fishery Economics Department of the Ministry of Agriculture is to implement structural policies for the fishing and fish processing industries. The basis of the Estonian fisheries law is the Fishing Act adopted in 1995. Key fisheries legislation based on this law are the Fishing Rule, Fisheries Market Act (2004) (which regulates different support measures like the EFF and state aid measures and provides market regulation), Act on Sustainable Development (1995), Water Act (1994), Pollution Charge Act (1999), Act on Protection of Marine and Freshwater Coasts, Shores and Banks, and Act on Environmental Impact Assessment (2000).

Stock assessment and advice formulation for Lake Peipsi-Lämmi-Pihkva stocks is regulated by the corresponding Estonian-Russian Intergovernmental Commission. The commission meets twice a year to settle the terms of maximum allowable catch volumes, research programmes, surveillance, and technical measures, as well as to exchange information.

## Capture fisheries

### *Performance*

In 2010, total landings of the Baltic Sea coastal and open sea, inland water bodies and Atlantic Ocean were 95 184 tonnes amounting to EUR 55.29 million by value. In 2011, total landings were 80 574 tonnes and EUR 62.65 million by value.

The main target species in Baltic Sea are Baltic herring, sprat, cod and perch. In the high seas, the main species is northern shrimp and in inland fisheries they are perch, pike-perch, pike and bream.

In 2010, the number of people employed in the harvesting sector of inland water bodies was 770 persons, 1 730 persons in marine coastal fishing, and 470 persons in marine deep-sea fishing. The number of workers in the processing sector was 1 766 and 89 in the aquaculture sector.

In 2011, the number of workers employed in the harvesting sector of inland water bodies was 576 persons, 1 529 persons in marine coastal fishing, 474 persons in marine deep-sea fishing and 1 730 persons in the processing sector. There is still no data available for employment in aquaculture sector for 2011.

There are four segments to the vessel register: 4S1 (vessels >12 m), 4S2 (boats up to 12 m), 4S3 (vessels 12-40 m) and 4S4 (boats up to 12 m).

**Table 10.1. Number of boats in each fleet segment**

	4S1	4S2	4S3	4S4
2010	53	873	6	430
2011	45	526	6	433

### *Status of fish stocks*

The year-class strength of the Gulf of Riga herring is strongly influenced by the severity of winter, which determines the water temperature and the abundance of zooplankton in spring. A series of mild winters since 1989 has been favourable for the reproduction of Gulf of Riga herring and resulted in a series of rich year classes for the period 1989–2010. The year classes were below average only in 1996, 2003, 2006, and 2010, following cold winters. Due to favourable reproduction conditions, the Spawning Stock Biomass (SSB) has been high since the beginning of the 1990s. The mean weight-at-age started to decrease in the mid-1980s and in 1997 reached the lowest values, especially in the older age groups. Afterwards the mean weight-at-age increased and since 2000 it has fluctuated without a clear trend, being still much lower than in the 1980s.

The Gulf of Riga is a semi-enclosed ecosystem of the Baltic Sea characterised by low salinity that restricts the occurrence of marine species. The predation mortality by cod is likely to be low because cod is found in the Gulf of Riga only in periods when the cod stock size is very high. The herring fishery in the Gulf of Riga is performed by Estonia and Latvia, using both trawls and trap nets. In recent years, the share of trap nets has been slightly above 30% of catches and has been stable.

Herring catches in the Gulf of Riga include the local Gulf of Riga herring and the open-sea herring, which enters the Gulf of Riga for spawning. Herring biomass is dependent on the cod stock through predator–prey interactions, and on sprat through competition. The strong increase in sprat stock size since the early 1990s in the northern areas (Subdivisions 27–29 and 32) exacerbated the inter-specific competition and the decrease in herring weight-at-age especially in these northern areas. Growth rate tends to change due to salinity variations, changes in zooplankton (prey) community, and competition with the Baltic sprat, i.e. density-dependent effect.

There has recently been a strong increase of cod in the southern Baltic Sea, whereas in the northern areas no significant increase has been noticed. The increase of cod in Subdivision 25 might have a significant effect on herring in this area, but very limited effect on the whole central Baltic herring population. Sprat SSB has declined from a historical high in the late 1990s, and in 2011 it was estimated at close to the long-term average. The fishing mortality in 2011 declined to 0.29, the lowest estimate in the past ten years. None of the recent three-year classes (2009–11) are strong; the 2009 year class is estimated to be weak, the 2010 close to average and the 2011 year class is predicted to be close to the average.

The biggest quota in distant waters is for northern shrimp (*Pandalus borealis*) mostly in NAFO 3M but also in NAFO 3L and the Svalbard area. Other species of great commercial interest are Greenland halibut, redfish *Sebastes sp.*, and rays (*Rajidae*). Among these, only shrimp stocks in NAFO 3L and 3M are in good shape.

### *Management of commercial fisheries*

The main management measures in Estonia are ITQs in open water fisheries (Baltic and Atlantic trawling) and gear usage quotas in the Baltic coastal and inland fisheries.

#### *Changes in management instruments*

Since 2008, a new technical measure has established a minimum number of gillnets (fishing permit shall be issued for the use of at least ten nets at a time) for small-scale and inland fisheries in order to avoid excess capacity. In the case of the demersal seine fishing on Lake Peipsi and trapnet fishing on Lake Peipsi, Lämmi and Pihkva, there has been a requirement to transmit certain data on fishing licences and catch reports to the Environmental Inspectorate one hour before landing since 2009.



*Conditions of access*

All fishing rights are based on the historic usage principle and are fully transferable. There are no restrictions on the use of foreign capital and foreigners can freely invest in the harvesting and processing sectors. Fishing in the economic zone is prohibited for foreign fleets.

*Management of recreational fisheries*

The basis of the recreational fisheries law is the Fishing Act and Fishing Rule. The following items are classified as recreational fishing tackle:

- spinning reels, trolling lines, pulling devices, fly hooks, bottom lines, krunda, unanchored trimmers, hand lines and more than one simple hand line;
- harpoon guns and harpoons;
- hooks;
- entangling nets;
- longlines consisting of up to 100 hooks. Permanent residents of small permanently inhabited islands are permitted to use longlines consisting of up to 300 hooks;
- dragnet;
- hoopnet; and
- dip-nets and traps.

No more than three items of fishing gear belonging to the same or different types shall be used concurrently in recreational fishing except for troll lines, dip-nets and traps, unless otherwise stated in the Fisheries Act. The following documents certify recreational fishing rights:

- a document certifying payment for recreational fishing rights; and
- the fishing card issued by the Environmental Board.

In general angling can be performed without a licence and there are no official statistics about these catches. Gillnet fishing requires a fishing card which can be acquired either at a bank or via mobile phone.

*Aboriginal fisheries*

Several arrangements exist in favour of permanent residents of small islands inhabited year-round.

*a) Recreational fishing*

- Permanent residents of small islands inhabited year-round are permitted to use longlines consisting of up to 300 hooks (others 100 hooks).
- A resident may use, on the basis of one fishing card, up to three entangling nets and one longline consisting of up to 300 hooks at sea up to the 20 m isobath, or an area with the width of 1 km on a lake surrounding the island of the location of his or her residence.

*b) Commercial fishing*

- A professional fisherman who is a resident of a small island inhabited year-round may be issued a fishing permit for the use of five or more entangling or enmeshing nets (for bodies of water where the permitted fishing opportunity for entangling or enmeshing nets is ten or more nets, a fishing permit shall be issued for the use of at least ten nets at a time).

*Monitoring and enforcement*

The European Commission provides the necessary funding to monitor the implementation of the Common Fisheries Policy (CFP). Council Regulation (EC) No. 861/2006 establishes financial measures for the implementation of the CFP and the Law of the Sea.

During 2010-11, approximately EUR 400 000 were invested in creating the Electronic Reporting System (ERS) for masters of trawling vessels (LOA > 12 m) and to provide additional options for first-time buyers and permit owners to submit coastal fishing logbooks, sales notes and takeover documents electronically. This included the creation of fat-client software for entering, storing and sending catch-related data and updating the information system to receive, store and forward information to other Member States. Although the ERS is operational, several updates are currently in the works to increase data reliability, usability and the automatisisation of report creation and data exchange with RFMOs and third countries.

The ERS was partly financed by the European Commission within the framework of financial measures for the control and enforcement of CFP rules and partly by the Environmental Investment Centre within the framework of its Environmental Programme.

*Multilateral agreements and arrangements*

Fisheries issues (including fisheries research and surveillance) on the cross-border Lake Peipsi-Pihkva are regulated by the Estonian-Russian Intergovernmental Commission, created by the Agreement on co-operation between Estonia and the Russian Federation on the conservation and use of fish resources in Lakes Peipsi, Lämmi and Pihkva.

**Aquaculture***Policy changes*

The development of the sector is outlined in the Estonian Fisheries Strategy 2007–2013. Some funds have become available for upgrading the aquaculture sector with the adoption of the Operation Programme of the European Fisheries Fund (2007-2013).

*Production facilities, values and volumes*

There are 24 commercial companies whose main or important activity is fish farming, most of them have a multiple profile of production, rearing simultaneously several species, producing at the same time fish for consumption, offering fishing tourism in put-and-take ponds and producing juveniles for the state restocking programme. In most of these farms the main species is rainbow trout, in some others mainly carp, European crayfish *Astacus astacus*, eel and two farms are specialised in growing fish for stocking purposes. There are around 100 persons employed in aquaculture sector. Extension of the production cycle and processing of aquaculture production on-the-spot could increase employment further.

**Table 10.2. Aquaculture production by species (in tonnes)**

Species	2008	2009	2010	2011
Rainbow trout	649	790	584	622
Carp	70	74	61	82
Eel	47	30	30	12
Crayfish	2	11	6	3
Other	47	66	72	24
<b>Total</b>	<b>815</b>	<b>971</b>	<b>753</b>	<b>743</b>

### Fisheries and the environment

In 2010 and 2011, the Environmental Investment Centre Environmental Programme invested in fisheries development projects and activities. Several fisheries research projects (on reproduction, estimations of spawning rivers and influences of foreign species), reproduction of fish stocks (introduction of crayfish, juvenile eel, pike, pikeperch and tench) were carried out. Support was also allocated to Estonian representatives on NAFO missions. Projects by NGOs and the Foundation Eesti Forell (Estonian Trout) for restoring the trout spawns and removing obstacles on their migration routes were in full swing. This research project aims at finding out whether the man-made environment is suitable for the trout. In 2010, EUR 1.5 million and in 2011 EUR 1.1 million were invested in this project.

Under the third axis of the EFF (common interest measures, or more specifically Protection and development of aquatic fauna and flora), it is possible to implement projects which are related to the environment, provided that the interests of professional fishermen are taken into consideration.

All projects should improve environmental conditions with the aim of contributing to the recovery of fish stocks. In 2010, the main project was improving and restoring the spawning areas of lamprey and other fish species, as well as the construction and installation of artificial spawning grounds (EUR 0.5 million). In 2011, the main activity was related to reproduction of European eel (EUR 0.3 million).

### Government financial transfers

European Community pre-accession funds assured the compliance of Estonian processing plants and aquaculture facilities with EU sanitary and hygiene regulations. Nowadays, the main source of financing of the Estonian fisheries sector is the EFF. The financing of the Operational Program in Estonia foresees the total expenditure to be EUR 84.6 million during the period 2007-13. Combined with Estonian co-financing, total public expenditure will be EUR 112.7 million. This amount is distributed among five priority axes.

- Adaptation of the fishing fleet (EUR 20.3 million).
- Aquaculture, inland fishing, processing and marketing of the fishing products (EUR 32.8 million).
- Measures of common interest (EUR 28.3 million).
- Sustainable development of fisheries areas (EUR 25.7 million).
- Technical assistance (EUR 5.6 million).

There are several classifications for financial transfers to the fisheries sector.

- *Direct payments.* In this category the most important measures are support schemes to modernise the assets of fishing enterprises (vessels, gears, harbours etc.). There are also vessel decommissioning payments in use. Most direct payments come from the EFF. Historically, there were no mechanisms to increase revenues or for market intervention in Estonia. This carry-over mechanism provides for the processing and storing of fish for human consumption until market disturbances cease. The carry-over support in 2010 was EUR 2.4 million, in 2011 EUR 1.6 million.
- *Cost-reducing transfers.* There is only one measure in use in Estonian fisheries that reduces costs for producers, i.e. fuel tax exemption. Fishermen can apply for an exemption from the fuel tax. The exemption for the fisheries sector was EUR 0.38 million in 2010 and EUR 0.37 million in 2011.
- *General services.* There is a multitude of general services support in Estonian fisheries. Such measures include research, management and enforcement expenditure, regional development grants, support to build port facilities, payments to producer organisations, expenditure for restocking of fish resources and for fisheries information collection and analysis. A rough estimates show that general services (paid from state budget and from the Environmental Investment Center) was EUR 1.5 million in 2010. The third axe of the EFF could be classified as general services which provide an additional amount of EUR 5.2 million in 2010. In 2011, the total amount of general services was EUR 3.3 million.

**Table 10.3. Government financial transfers associated with fishery policies (EUR)**

	2010	2011
Market Price Support	..	..
Direct Payments	15 311 043	12 529 098
Cost Reducing Transfers	376 312	365 284
General Services	6 695 093	3 320 591
Cost Recovery Charges	..	..

### *Social assistance*

In 2010, aid was provided to fishermen who ceased their fishing activity; this was supported by the European Fisheries Fund Operational Programme 2007-2013. The maximum grant amount per applicant is up to EUR 10 000, depending on the number of crew members. In 2010, the total amount paid to fishermen was EUR 180 000. In 2011, the total amount was EUR 90 000.

### *Structural adjustment*

Structural adjustments have been used to adjust the fishing capacity, primarily the Baltic Sea trawl fishing fleet, to fishery resources and to modernise the fishing fleet by bringing it into compliance with today's environmental and working condition, as well as safety and hygiene requirements.

In order to adjust fishing capacity, the disposal of vessels is coupled with various opportunities to alter the purpose of vessels, which also contributes to the fishermen's employment diversification. These priorities are financed under EFF priority Axis 1: Adaption of fishing fleet.

In 2010, eight trawlers were either scrapped from the fishing fleet or reassigned (segment 4S1) under measure 1.1 of the EFF. As a result, the fishing capacity decreased by 1 041.3 GT and 2 667 kW. The target set by the Operational Programme of European Fisheries Fund 2007-2013 to reduce the fishing fleet's capacity by 5% for 2010 was thus fulfilled.

## Post-harvesting policies and practices

### *Policy changes*

#### *Food safety*

All rules and regulations to ensure the safety of fisheries products for human consumption are in compliance with Community regulations. The quality of fish products is regulated by The Food Act, which is in accordance with EU Regulations 178/2002, 852/2004, 853/2004, 882/2004, 1935/2004. The Food Act establishes the basis for food processing, processors' self-control (HACCP) and the state supervision of food safety and is rather well implemented in the fisheries sector.

#### *Information and labelling*

The requirements on the minimum level of information that should accompany a product is regulated by Council Regulation (EC) No 104/2000 on the common organisation of markets for fishery and aquaculture products, and Commission regulation (EC) No 2065/2001 which provides detailed rules for the application of Council Regulation (EC) No 104/2000 as regards informing consumers about fishery and aquaculture products. Mentioned regulations set up labelling rules and specifications to fisheries products' commercial designations, method of production, and catchment area.

Based on these regulations, the Minister of Agriculture established in 2006 Regulation No. 28 "List of product names and types of fisheries products, fishery products in small quantities" for retail trade in fishery products. This requirement does not apply to a small number of fishery products.

#### *Structures*

To increase the efficiency of distribution, marketing and concentration of supply, measure 3.1 of EFF enables public investment in production, processing or marketing equipment and infrastructure, including for waste treatment. The aim is to increase the sector's sustainability and competitiveness by favouring collective action. In 2010, EUR 4.72 million was paid to joint investments between producer organisations under this measure. In 2011, the amount paid was EUR 2.40 million.

#### *Processing and handling facilities*

Vertically integrated companies in the Baltic Sea fisheries are organised into producer organisations. Through the EFF's collective action support measure, the activities of these companies are horizontally concentrated to improve their position in key markets in Ukraine and Russia, countries which demand large volumes. With the help of EFF, three new refrigerator warehouses were built (EUR 7.12 million), and investments were made in processing and marketing (EUR 1.98 million), on board of fishing vessels (EUR 0.89 million), to small-scale coastal fishery (EUR 0.30 million), and developing new markets and ad campaigns (EUR 0.44 million) in 2010. In 2011, investments were made to processing and marketing (EUR 4.45 million), investments on board of fishing vessels (EUR 0.40 million), investments to small-scale coastal fishery (EUR 0.33 million) and developing new markets and ad campaigns (EUR 0.44 million). All these investments were made to improve

preservation, processing and handling of fisheries products on board ships or in processing plants.

## Markets and trade

### *Markets*

#### *Trends in domestic consumption: Promotional efforts*

The average annual consumption of fish and fisheries products, in particular of fresh fish, decreased from 16 kg in 2003 to 11 kg (fish as a raw material) in 2010. The study was conducted by the Estonian Institute of Economic Research in 2011. In 2009-10, the consumption of other basic food items also decreased, mainly due to the economic downturn.

### *Trade*

#### *Volumes and values*

Estonia is a net exporter of fish, measured in volume. The main export category is fresh and frozen fish, measured in volume, while canned products account for around one-fourth of total exports. The total export value was EUR 152.5 million in 2011, compared to EUR 132.62 million in 2010.

The total import value was EUR 100.75 million in 2011, up from EUR 75.28 million in 2010.

**Table 10.4. Exports and imports (in tonnes)**

Year	Export		Import	
	Fresh and frozen fish	Canned products	Fresh and frozen fish	Canned products
2010	100 551	30 389	28 242	10 414
2011	94 230	24 861	33 293	8 754

#### *Policy changes*

Estonia has not implemented additional constraints on imports to those imposed by the European Union. Generally speaking, there have been no policy changes over the last years.

## Outlook

The main priority for the near future lies in improving the management of fisheries, as well as increasing transparency and control over the use of resources. As concerns fisheries management, the main task is to further balance the fishing effort with resources (especially in coastal fisheries) and expand the fishing season (if necessary) to meet the demands of markets for a more stable flow of fresh fish.

It is planned to create more transparent fisheries by making all catch data of individual fishermen fully public and available on-line. This is a necessary step to improve control and develop self-responsibility of fishers.

It is also necessary to monitor and evaluate structural developments of the fisheries sector which started in 2008. Another task is to widen and diversify markets and product range, especially in the pelagic sector, and to decrease the risks of dependency on a few unstable markets.

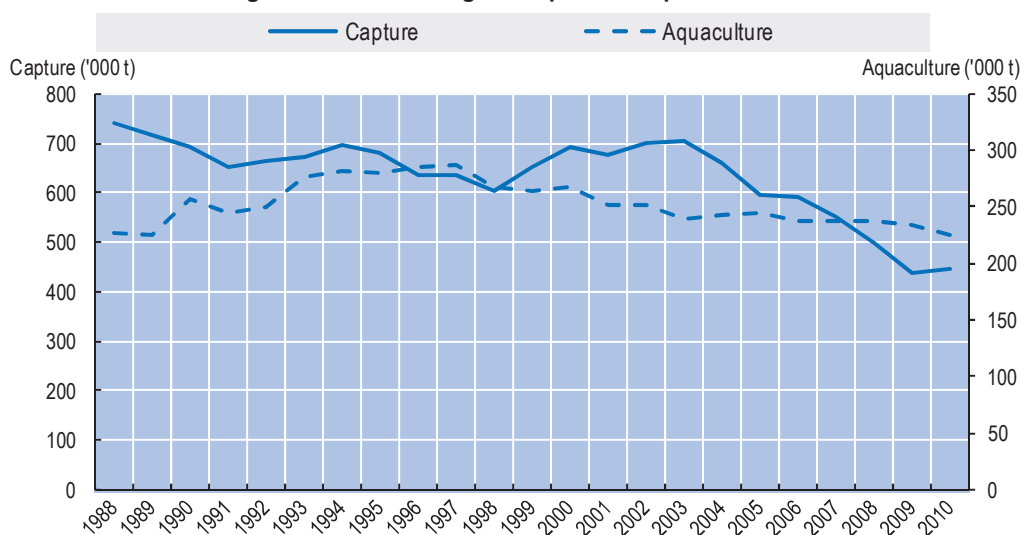
## Chapter 11

### FRANCE

#### Summary of recent developments

- The Modernisation of Agriculture and Fisheries Act (LMAP) was adopted in 2010 which modifies the existing legal and institutional framework and allows the adoption of new measures;
- Reorganisation includes administrative reorganisation as part of the General Review of Public Policies (RGPP), reform of industry bodies and the setting-up of an inter-branch agency for the industry;
- French capture fisheries landings grew in 2011 in terms of both volume and value. However, fishing enterprises still face an uncertain economic situation and the fisheries trade balance remains largely in deficit.
- With the application of Community law, the fisheries control regime has significantly improved and a National Fisheries Surveillance Centre has been set up.
- Following initiatives such as the Grenelle Environment Forum on the Sea, a number of policies have been implemented to protect the environment and biodiversity alongside actions to foster sustainable development.
- In the aquaculture sector, Regional Aquaculture Development Schemes (SRDA) have been set up (on the basis of the LMAP).
- Public subsidies have been continued within the framework of the European Fisheries Fund (EFF) and France has pursued its efforts to adjust its fleet.

Figure 11.1. Harvesting and aquaculture production



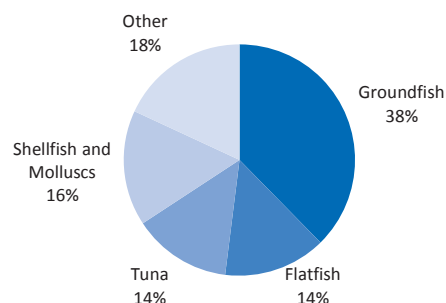
Source: FAO FishStat Database.

### Box 11.1. Key characteristics of French fisheries

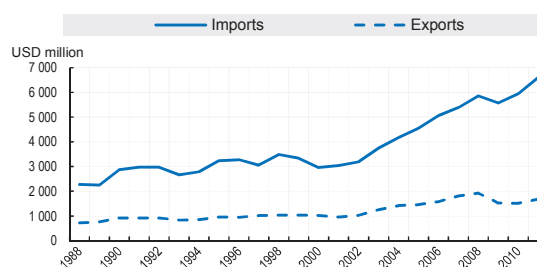
- The value of landings increased by 11% between 2010 and 2011, underpinned by a 6% increase in prices. An increased share of landings is of white fish and fin fish and cephalopods whose prices have remained high. (Panel A)
- Both exports and imports increased by 7% in value between 2010 and 2011. The gap between value of imports and exports was EUR 3.48 billion in 2011. (Panel B)
- A total of EUR 450 million is budgeted for support to the fishing and aquaculture sectors in the 2007-13 period, of which slightly more than half is from French governmental sources and the balance from the EFF. The majority of funding is allocated for structural adjustment in the industry. (Panel C)
- Fleet size and number of fishers have been reduced, in part due to continued structural adjustment efforts. Approximately one third of the French fleet is from overseas *départements*. (Panel D)

Figure 11.2 Key fisheries indicators

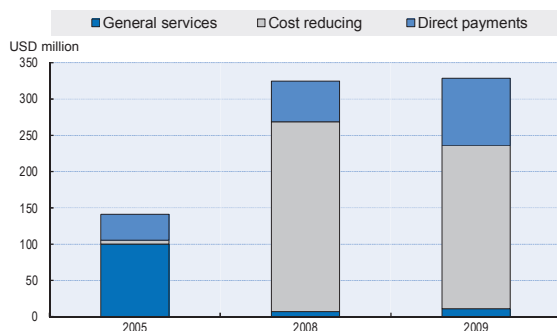
Panel A. Key species landed by value in 2009



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel C. Capacity

	2006	2011	% change
Number of fishers	36 610	19 624	-0.046
Number of fish farmers	23 899	19 995	-0.016
Total number of vessels	7 956	..	..
Total tonnage of the fleet	232 662	..	..

1. Cost recovery charges (about USD 1 million in 2009) were not included here.



## Legal and institutional framework

French government policy on marine fisheries and aquaculture falls within the ambit of the Common Fisheries Policy (CFP) (*see chapter on the European Union*). Following the “Fishing Conclave” at year-end 2009, the French government published a memorandum in February 2010 in response to the European Commission’s CFP reform Green Paper.

A number of changes were made to the legal and institutional framework for the fisheries sector between 2010 and 2012. As some of these developments have already been outlined in a previous edition of the *Review of Fisheries*, only a brief outline will be given here.

### ***Changes in the legal framework: Enactment on 27 July of Act No. 2010-874 on the Modernisation of Agriculture and Fisheries (LMAP)***

This Act makes a significant contribution to modernising the fisheries sector and replaces previous legislative provisions (Legislative Decree of 9 January 1852, amended by the Outline Act on Fisheries and Fish Farming of 18 November 1997). For example, section VII of the LMAP provides for the following.

- The setting-up of advisory bodies and a public participation procedure (establishment of a Scientific and Technical Liaison committee).
- Planning of coastal zones (setting up marine seaboard committees and Regional Aquaculture Development Schemes, plan to combat marine pollution from kepone).
- Establishing procedures for initial sales of landed fisheries products.
- Clarification of the responsibilities and powers for regulating and managing fishery resources (between central government, fishery committees and Producer Organisations).
- Reform of the industrial organisation of marine fisheries and fish farms and the organisation of the shellfish farming industry.
- Procedures for the breakdown of taxes on offshore wind farms.

### ***Institutional and governance developments***

#### *Public authorities*

Following the General Review of Public Policies (RGPP) begun in 2007, several new decentralised public bodies were set up in 2010 to assist the Directorate for Sea Fisheries and Aquaculture.

- Interregional Directorates for the Sea (DIRM), or Directorates for the Sea in overseas *départements* (DOM) (Decree No. 2010-130 of 11 February 2010). These new decentralised agencies are now responsible for all the missions carried out by the former Regional Directorates for Maritime Affairs (DRAM) in terms of marine fisheries and aquaculture regulations, but with a wider geographical remit (there are four DIRMs in metropolitan France). Furthermore, the DIRMs supervise the activities of the Regional Operational Sea Search and Rescue Centres (CROSS).
- The Delegations for the Sea and Coastal Zones (DML) within the Departmental Directorates of the Territories and the Sea (DDTM), established on 1 January 2010 to replace the former Departmental Directorates of Maritime Affairs (DDAM), are now brought together under Inter-ministerial Directorates.

At the central government level, the Directorate for Sea Fisheries and Aquaculture (DPMA) retains responsibility for drawing up fisheries and aquaculture policy and for

regulating public activities and interventions. Previously part of the Ministry of Agriculture and Fisheries, the DPMA has now been placed under the authority of the Ministry of Ecology, Sustainable Development and Energy, following the government changeover in May and June 2012. However, the Minister is aided by a Deputy Minister in charge of Transport, Sea and Fisheries, who follows policy for marine fisheries, fisheries products and aquaculture, particularly with regard to the regulation and surveillance of these activities and the financing of fisheries and aquaculture enterprises.

### *Industry bodies*

The provisions of Article 88 of the LMAP have made it possible to simplify the industrial organisation of marine fisheries and fish farming, adapt the structure in line with evolving resources and foster more coherent decision-making. The marine fisheries and fish farming sector is now built around a national committee, 14 regional committees and 12 departmental and inter-departmental committees (the former local committees have been disbanded).

Furthermore, Ordinance No. 2011-866 of 22 July 2011 adapted several provisions of the LMAP to French overseas *départements* and established the status and missions of the regional committees in the overseas *départements*. The first professional elections following the adoption of the LMAP were held on 12 January 2012 (to elect the members of the departmental and regional committees).

Article 89 of the LMAP sets out in a single and exhaustive text the powers of the National Shellfish Farming Committee (CNC) and the Regional Shellfish Farming Committees (CRC). The provisions of the LMAP as set out by Decree No. 2011-1701 of 30 November 2011 establish the organisational and operational procedures for the inter-branch agency for shellfish farming.

*France Filière Pêche* (FFP), which brings together all stakeholders in the sector (production, sales and processing, distribution), was set up in March 2010 with the aim of managing and promoting a collective French brand. In 2011, sector representatives decided to establish a private inter-branch fund to support the sustainability and competitiveness of French fisheries. FFP was selected to lead this project. It focuses on three courses of action to make the French fleet more competitive: encourage energy savings, foster sustainable fishing, and promote a collective French brand.

The LMAP provides for the creation of advisory bodies in the fisheries sector (article 82) to organise public participation in the preparation of government decisions that have a direct and significant impact on the environment (Article 90):

- The Scientific and Technical Liaison Committee for Marine Fisheries and Aquaculture: the purpose of this committee is to promote dialogue between scientific experts (biologists and socio-economists), professionals, society and government in order to foster debate.
- Public consultation and participation procedure: the LMAP sets out a procedure designed to consult and secure the participation of the public in government decisions that have a direct and significant impact on the environment. The procedure comprises two public consultation and participation mechanisms in addition to an exemption system for emergency cases and for decisions taken on the basis of the application of a ruling, plan, scheme or programme that has already been discussed during a previous public participation procedure. For both public consultation and participation mechanisms, members of the public can consult the decision and the corresponding file electronically or, if the file cannot be put online, at the place where the file is archived.

## Capture fisheries

### *Performance*

France had the fourth highest marine capture fisheries landings in the European Union, accounting for around 10% of the total. The French fleet takes three quarters of its catch in Community waters; geographically, it takes 74% in the North-East Atlantic (whose waters border the coasts of Europe), 19% in the tropical waters of the Atlantic and the Indian Ocean (primarily tuna fishing) and 7% in the Mediterranean.

After several years of decline, the quantities of fish landed by the French fleet increased by 3% compared to 2010. This increase in landings, combined with a rise in average prices and fewer market interventions (withdrawal and carryover), led to an 11% rise in the value of fish sales from French vessels.

The 6% rise in the average price of fisheries products landed and declared by French vessels is due to resource value enhancement and a change in the supply structure:

- increased share in landings of white fish and fin fish whose price has remained high;
- increase in landings of cephalopods which command a high average price;
- drop in sales of small pelagic fish, across all species, whose price remains low despite increases.

This overall good health of the French market helped make 2011 a good year for the majority of the French fleet, except for Mediterranean fisheries which are facing major shortages of small pelagic resources. Furthermore, in 2011 the French fishing fleet comprised a total of 7 250 vessels (compared to 7 305 in 2009, i.e. a reduction of 55 vessels, all categories included), which can be broken down as follows:

- 4 675 vessels in metropolitan France (compared to 4 857 in 2009) (Table 11.1), and
- 2 575 in the overseas *départements* (compared to 2 448 in 2009) (Table.11.2).

**Table 11.1. Structure of Metropolitan Fleet in 2011**

Type of fishing	Number of vessels in 2011	Number of vessels in 2009	Difference 2011-2009
Offshore fishing <sup>1</sup>	3 654	4 002	- 348
Coastal fishing <sup>2</sup>	474	487	- 13
Middle-water fishing <sup>3</sup>	283	326	- 43
Deep-sea fishing <sup>4</sup>	26	29	- 3
Aquaculture/offshore fishing	20	12	- 8

1. Offshore fishing = absence from port of 24 hours or less.

2. Coastal fishing = absence from port of between 24 and a maximum of 96 hours.

3. Middle-water fishing = absence from port of more than 96 hours, when this does not meet the definition of deep-sea fishing.

4. Deep-sea fishing = vessels of more than 1 000 gross registered tonnes (GRT) and vessels of more than 150 GRT absent from port for more than 20 days.

Table 11.2. Structure of fleet in overseas departments in 2011

Vessel length	Number of vessels in 2011	Number of vessels in 2009	Difference 2011-2009
< 10 m	2 879	2 958	- 79
10 m - 12 m	868	857	+11
12 m - 24 m	721	817	- 96
24 m - 40 m	164	176	- 12
> 40 m	43	49	- 6

In terms of employment, in 2010 the French fishing fleet employed 22 493 fishers working on board vessels (of whom 19 594 in metropolitan France and 2 899 in the overseas *départements* (Table 11.3).

Table 11.3. Employment in the French fishing fleet

Type of fishing	Number of jobs in 2010	Number of jobs in 2008	Difference 2010-2008
Offshore fishing	9 884	7 879	+2 005
Coastal fishing	2 673	2 813	- 140
Middle-water fishing	3 347	3 454	- 107
Deep-sea fishing	1 190	916	+274
Aquaculture/offshore fishing	5 399	5 091	+308

Employment in fish marketing was 4 603 jobs in 2010 (in 295 companies, including 32 fish sales/processing enterprises), down from 4 700 jobs in 305 companies, including 38 fish sales/processing enterprises in 2009. Employment in the processing sector (main activity) was 15 633 jobs in 2010 (in 305 enterprises), a slight increase from 15 590 jobs in 2009.

For several years, and despite a succession of government aid schemes, the profitability and financial position of French fisheries businesses have been greatly weakened. The worsening economic environment is the result of several factors.

- A reduction in certain fish stocks and fishing rights.
- Significant rise in operating costs for vessels, notably for fuel.
- Increased competition from products from third countries (fisheries and aquaculture) heightened by successive market liberalisation agreements.
- Sustained dispersal of French supply facing the highly concentrated retail sector which has become a dominant buyer, including for initial sales, leading to unfavourable value sharing for producers.

With fuel accounting for over 30% of their costs, vessels fishing with trawls, which form the largest part of the deep-sea fleet, are more affected than those vessels using passive gear (nets, long lines, pot fishing, etc.).

### *Status of fish stocks*

For information concerning Community fish stocks, reference should be made to statistics issued by the European Union. Improvements can be seen in the status of some stocks: consequently, the proportion of stocks impacted by overfishing fell from 94% in 2004 to 63%

in 2011 (and to 47% in 2012). The number of stocks fished at maximum sustainable yield (MSY) rose from 13 in 2011 to 20 in 2012. Larger commercial stocks of interest to other regions are monitored by the Scientific Committees of the Regional Fisheries Management Organisations (RFMO) that have jurisdiction and of whom France is a member.

Stocks are monitored at the national level include coastal stocks in metropolitan France which are mainly monitored by IFREMER (e.g. large shellfish and scallops), and stocks found in the waters of overseas *départements* or territories that are not subject to the CFP such as Antarctic toothfish in the waters of Kerguelen and Crozet islands which are monitored by the French Natural History Museum. Modelling work using the CASAL model has been carried out since 2010 on Antarctic toothfish stocks showing that the conservation targets set by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) have been complied with (using data from the resource evaluation procedure conducted in 2010). It should be noted that this fishery is awaiting approval for the Marine Stewardship Council (MSC) certification.

### ***Management of commercial fisheries***

#### *Management instruments*

Fisheries management instruments for metropolitan France and overseas *départements* fall within the ambit of the CFP (*see chapter on the European Union*).

#### *Agreements allowing access to foreign vessels*

France does not enter into bilateral fisheries agreements for its territories that are part of the European Union since such areas fall within Community jurisdiction (*see chapter on the European Union*). Nevertheless, France does retain the right to enter into agreements for its overseas territories that are not covered by the CFP. Some foreign vessels can thus gain access to French waters in these territories (e.g. Mexican vessels in the waters of Clipperton Island, Spanish vessels in the waters of scattered islands), but there were no changes to these measures in 2010-2011.

### ***Management of recreational fishing***

Following the Grenelle Forum on the Environment and the Sea, a Charter of commitments and objectives for environmentally friendly recreational marine fishing was adopted on 7 July 2010. It was co-signed by the Ministers in charge of sustainable development and fisheries and the various stakeholders concerned. This Charter addresses all types of recreational marine fishing: boat, on foot, undersea and shore. The Charter focuses on three main pillars:

- Labelling and combating undocumented labour.
- Prior notification of activity.
- Sustainable resource management (minimum size, biological recovery, catch limits).

The Charter also provides for regulatory changes and an evaluation of its enforcement and effectiveness.

As from 2011, it is mandatory to label recreational marine fisheries landings. The aim is to combat illegal sales of fisheries products. In 2012, an electronic reporting system was introduced to allow recreational marine anglers to make voluntary declarations of their catches.

### *Monitoring and enforcement*

Since 1 January 2010 the control of marine fisheries has evolved significantly due to the influence on the one hand of Community law and the establishment of the scheme to combat Illegal, Unregulated and Unreported (IUU) fishing and, on the other, the setting up of a new control system for the Common Fisheries Policy which has been in force (for the majority of its provisions) since 1 January 2012. A number of these developments were previously addressed in Book IX of the French Rural and Marine Fisheries Code.

The main developments concern the setting up of electronic reporting systems (ERS) for catches, landings, transshipments and electronic documentary requirements for sales. This forms part of a more wide-ranging Community development whose purpose is to gain a better understanding of marine fisheries control activity in Member States. This is achieved largely through the use of IT data and aims to streamline the use of control resources on the ground. At the same time, stricter obligations are being imposed on Member States to ensure that infringements are effectively prosecuted. These measures include the introduction of a penalty points system which specifically targets fishing vessels' economic activity and a national register of infringements.

The process to establish the National Fisheries Surveillance Centre (CNSP) was completed with the publication of the decree of 17 April 2012. Made available to the Directorate for Sea Fisheries and Aquaculture (DPMA), the CNSP is under the authority of the prefects responsible for fisheries policing. The CNSP's missions entail the following.

- Operational control of nautical and aerial resources at sea.
- Assisting with surveillance management for landings.
- Gathering and processing VMS data for all French vessels and all French waters.
- Gathering and processing data for catches, landings and sales for the purpose of fisheries control.
- Acting as a one-stop operational contact point for foreign fisheries surveillance centres, Regional Fisheries Management Organisations and the European Fisheries Control Agency.
- Combating IUU fishing by participating in the catch certification scheme, acting as the authority with oversight for control measures for the port State and as the one-stop operational contact point for gathering and processing observations at sea.

### *Multilateral agreements and arrangements*

For fisheries, France is currently in the process of approving and ratifying the following international instruments:

- The Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (FAO).
- The amendments to the Convention on Future Multilateral Cooperation in North-East Atlantic Fisheries (NAFO).
- The South Indian Ocean Fisheries Agreement (SIOFA).
- The Convention on the Conservation and Management of High Seas Fishery Resources in the South Pacific Ocean (SPRFMO).

At the bilateral level, on 7 June 2010 France and Mauritius signed a Framework Agreement for the joint economic, scientific and environmental management of Tromelin

Island and its surrounding marine zones. This Framework Agreement includes three sectoral agreements one of which concerns the joint management of fisheries resources. All these instruments are currently being ratified by the French parliament.

## Aquaculture

### *Policy changes*

Since 2010, a number of initiatives have been undertaken to encourage the sustainable development of aquaculture in France. The main challenge is to underpin well established production sectors such as shellfish and fresh water salmon farming on the one hand, and on the other to help remove barriers to development for the other aquaculture sectors both on land and at sea.

### *Spatial planning of marine aquaculture activities*

Regional development schemes for marine aquaculture (fish farming, shellfish farming and seaweed farming) were adopted by prefects in coastal regions of in order to identify existing production sites and potentially favourable locations for aquaculture (see Article L. 923-1-1 of the French Rural and Marine Fisheries Code, based on the LMAP of 27 July 2010);

### *Governance*

A charter was signed in 2012 for the sustainable development of French aquaculture by industry bodies, the Ministry of Ecology, the National Agency for Water and Aquatic Environments (ONEMA) and the Minister for Agriculture and Fisheries. This puts in place a framework of governance to better structure dialogue between representatives of the fish farming sector and the agencies charged with drafting and implementing policies for the management of surface waters.

Each coastal *département* now has an officer for shellfish farming who will act as a spokesperson for the sector with responsibilities for co-ordination with government agencies to ensure that producers' requirements, particularly in terms of water quality and coastal planning, are addressed as part of the roll-out of government policy.

### *Research and development*

With the support of the Minister for Agriculture and Fisheries, the industry,<sup>1</sup> the relevant technical institutes<sup>2</sup> and research and training bodies,<sup>3</sup> came together in 2012 to launch a process of co-operation on an unprecedented and long-term (nine years) scale with the creation of a Scientific Interest Group known as *Piscicultures demain*. Its aim is to initiate a momentum for innovation and progress for the sector based around three key policy thrusts.

- Making fish farming production systems more competitive within the global context of change (climate change, globalisation, limitation of access to the factors of production).
- Managing the impact of activity on the environment through the better integration of production within natural ecosystems.
- Building jointly with all stakeholders in society, and through multidisciplinary approaches, avenues of development and innovation so that fish farming is seen not only in light of its negatively perceived impact, but also as a new source of growth and sustainable food supply.

Furthermore, a national network of technical centres for shellfish farming has been set up and will be managed by the Association of French Regions.

*Production capacities, volumes and values*

Rainbow and Brown trout account for the majority of on-shore aquaculture production (Table 11.4). Offshore operations are smaller in scale and more diverse, with production of bass, sea bream and turbot being the most important (Table 11.5).

**Table 11.4. Onshore fish farming (2010)**

Species	Production (tonnes)	Value of sales (EUR millions)
<b>Rainbow trout</b>	<b>34 545.5</b>	<b>113.9</b>
<b>Brown trout</b>	<b>831.5</b>	<b>5.7</b>
Other salmonids	426.2	1.9
Sturgeon (meat)	201.7	1.7
Total onshore fish farming (reported figures)	8000	13.7
<b>TOTAL</b>	<b>44 004.9</b>	<b>136.9</b>

**Table 11.5. Offshore fish farming (2010) Species**

	Number of enterprises	Sales (tonnes)	Value of sales (EUR millions)
<b>Bass</b>	<b>19</b>	<b>2 336.8</b>	<b>17.3</b>
<b>Sea-bream</b>	<b>13</b>	<b>1 239.3</b>	<b>7.7</b>
Shadefish	6	160.4	1.0
Turbot			
Atlantic salmon	3	1 637.2	10.4
Rainbow trout (saltwater)	4	15.2	0.1
Miscellaneous saltwater fish	9	278.8	2.4
<b>TOTAL</b>	<b>32</b>	<b>5 667.7</b>	<b>38.9</b>

Occupation	Number of enterprises	Total employment (permanent + seasonal staff)	
		Number of employees	Number of FTE employees
Offshore fish farming	31	588	519
Sturgeon farming	10	115	90
Onshore salmon farming ( <i>freshwater farming including non-commercial fish farms</i> )	424	1 799	1 294
<b>TOTAL</b>	<b>465</b>	<b>2502</b>	<b>1903</b>

\* Full time equivalent.

Source: DPMA/Field: Metropolitan France, other than onshore fish farming.

*Shellfish farming*

French farmed shellfish production in 2010 amounted to 153 240 tonnes (sales to consumers), generating total turnover of EUR 490 million. This output was produced by some 3 000 enterprises, most of which are small traditional units (over 70% are one-man enterprises). These enterprises employ around 17 000 workers (9 200 full-time equivalent). The number of enterprises has been falling since 2001 and for the past few years oyster production has been in decline. Shellfish farming comprises:



- Oyster farming: 80 650 tonnes of oysters were produced in 2010, down on previous years due to the crisis over oyster deaths but still accounting for 71% of turnover from the shellfish farming sector. French oyster production was by far the highest in the European Union (over 90% of total production) and ranked fourth at the international level.
- Mussel farming: 70 340 tonnes of mussels were produced in 2010. Mussel farming is a seasonal occupation that is unable to fully satisfy demand from the French market, which therefore has to import an amount virtually equivalent to domestic production. French mussel production is nonetheless noteworthy for the development of official quality labels, which add value to products (in particular the *Mont St Michel bouchot mussels* PDO).
- Other smaller sectors added to the diversity of French production (in particular cockle and carpet shell farming) with production of 2 250 tonnes in 2010.

## Fisheries and the environment

### *Changes in environmental policy*

- The actions pursued in 2010 and 2011 primarily consisted in implementing the commitments made under the Grenelle Environment Forum on the Sea (a wide-ranging consultation conducted in 2009 which led to the adoption of 137 commitments, 20 of which relating to sustainable fisheries and aquaculture). Among the measures provided for under the Grenelle Forum, or for which provisions which had already been made in other instruments were incorporated into the Forum, the following are worthy of mention:
- Concerted Exploitation and Management Units (UEGC): UEGCs are designed to ensure the sustainability of sustainable fisheries. They oversee a new form of governance focussed on users and set out rules drawn up on a consensual and collaborative basis. These units are designed to allow fishing effort to be matched to the production capacity of fishery resources by covering the relevant ecological and economic scales. It does this through closed concessions whose exploitation is regulated by a system for allocating long-term fishing rights, combined with strict internal inspections. Market analysis is used to identify outlets that will best capitalise on fishery products produced by UEGCs. Three UEGC projects have so far emerged in: French Guyana, the Var département and the Bay of Biscay.
- Marine environment action plan: the adoption of Decree No. 2011-492 of 5 May 2011 on the marine environment action plan is the final step in the transposition into French law of Directive 2008/56/EC of 17 June 2008, known as the “Marine Strategy Framework Directive” (MSFD), (see section on the European Union).
- Protection of endangered species:
  - signature on 1 July 2011 of a Ministerial Order setting out a list of protected marine mammals and the measures applicable to their protection on the national territory.
  - implementation of the ban on fishing for porbeagle sharks off the Ile d’Yeu, further to the decisions taken by the Council of the European Union.
  - at the international level, defence by France of the addition of the porbeagle shark to Annex II of the CITES and, in the various RFMO of which it is a member, of measures aimed at the conservation and sustainable management of sharks, where such measures are based on recognised scientific opinion.

- introduction of stricter inspection measures for bluefin tuna (landing inspections, filmed caging, catch documents (BCD) which guarantee the traceability of bluefin tuna) and also the joint deployment of inspection resources by the EU Member States concerned.
- Analysis of the risks of fishing activities at Natura 2000 sites: The French Natural History Museum will develop a method for assessing the risks associated with sea fishing activities. This method, based on the application of provisions relating to marine Natura 2000 sites, fully integrates the identification of coastal and deep-sea fisheries and summary review of their activities. Collaboration between the Ministry, IFREMER (French Research Institute for Exploration of the Sea) and the Agency for Marine Protected Areas also resulted in the drafting of several hundred factsheets taking stock of sea fishery activities in these areas. *NB: in 2010, three new Natura 2000 marine sites were created (for a total of 207 full or partial marine areas).*
- Creation of new marine nature parks (MNP) and marine protected areas.
  - Creation of the Mayotte (Indian Ocean) MNP, covering the entire lagoon and EEZ around Mayotte (70 000 km<sup>2</sup>).
  - Creation in October 2010 of the Agoa marine mammal sanctuary in the territorial waters of the French Antilles;
  - Creation of the Golfe du Lion MNP, (4 000 km<sup>2</sup>).
  - Creation of the Glorioso Islands (Indian Ocean) MNP, adjacent to the Mayotte MNP (43 000 km<sup>2</sup>).
  - A number of projects, at various stages of development, are also under way in metropolitan France (Picardy estuaries and the Opal Coast, Gironde and Pertuis estuary, Arcachon basin, Gulf of Normandy/Brittany) as well as in overseas *départements* (Martinique, French Polynesia, New Caledonia and the Austral Islands).
- Knowledge, protection and exploitation of coral reefs.
  - Implementation, over the period July 2009-December 2011, of the international action plan proposed by the Franco-Samoan Secretariat as part of the International Coral Reef Initiative (ICRI) (for further details see: [www.icriforum.org/icri-secretariat/france-samoa-secretariat](http://www.icriforum.org/icri-secretariat/france-samoa-secretariat)).
  - implementation of the national action plan, decided upon as part of the French initiative on coral reefs: IFRECOR (validation in 2010 of phase 3 of the plan for the period 2011-2015) (for further details see: [www.ifrecor.org/plan-action-national-ifrecor](http://www.ifrecor.org/plan-action-national-ifrecor)).
- National strategy towards the management of migratory fish (STRANAPOMI): adopted in December 2010, this strategy applies to diadromous species such as salmon, sturgeon and eel, and consists of four strands: preserve and restore populations and habitats, renovate the governance of the management policy towards these migratory fish stocks, step up the acquisition of knowledge, monitoring and evaluation, and, lastly, develop the sharing of experience, communication and training with regard to migratory fish stock issues (for further details see: [www.developpement-durable.gouv.fr/IMG/pdf/Poissons.pdf](http://www.developpement-durable.gouv.fr/IMG/pdf/Poissons.pdf)).
- Charter for environmentally responsible recreational fishing, signed on 7 July 2010.

### ***Sustainable development initiatives***

Blue contracts were designed and put in place during the 2008 oil crisis for an initial period of two years, subsequently extended until 2013. Co-financed as a collective action under the European Fisheries Fund (EFF), this instrument encourages fishing practices that

respect the natural resource and actions that help to protect and add to knowledge of the marine environment by compensating for the resultant losses of revenue suffered by ship owners. The commitments entered into by each ship owner signing a blue contract must entail the use of fishing practices that are more restrictive than those laid down in (EU and national) regulations and that go well beyond current practices. Although implemented by ship owners and their crews, blue contracts are driven by collective bodies (producer organisations, co-operatives, *ad hoc* structures, etc.), which are tasked with putting together projects, and with supervising and enforcing measures. The measures adopted under blue contracts meet the following requirements:

- supplement and strengthen partnerships between fishers and scientists;
- help conserve the marine environment;
- improve practices with a view to increasing the sustainability of fishing; and
- empower professionals.

The decision to introduce a public ecolabel in France was taken in response to the desire by the fishing sector, in 2007, to create an ecolabel which would be readily recognisable by consumers but different to existing private labels. This decision was also in line with the commitments entered into at the Grenelle Environment Forum on the Sea. This ecolabel must comply with FAO guidelines on ecolabelling as well as new additional criteria (social and quality criteria). Four themes have been selected by the professionals, namely: “resource,” “environment,” “social” and “quality.”

A stakeholders’ committee was created composed of professionals representing the entire fishing sector (upstream to downstream) as well as representatives of government, civil society (including NGOs), consumers and independent experts, notably scientists. A framework for inspection by accredited certification bodies will also be put in place. The stakeholders’ committee will establish a benchmark setting out the criteria applicable to fisheries under four headings (resource, ecosystem, social and quality), as well as criteria regarding traceability and the maintenance of quality throughout the marketing chain.

A Plan for sustainable and responsible fishing (PPDR) was completed in 2010 and the final payments made in 2011. Some measures incorporated into the PPDR have been retained (e.g. blue contracts, fleet decommissioning plans, temporary cessations of activity).

## Government financial transfers

### *Transfer policies*

The European Fisheries Fund (EFF) has a total budget of around EUR 4.3 billion for the period covered by the 2007-13 programme, of which EUR 216 million is earmarked for France (EUR 182 million for metropolitan France plus an additional EUR 34 million for French overseas *départements*).

This provision of EUR 216 million allows support to be given to the following.

- Line of action 1: adjustment of the fishing fleet (modernisation of vessels to enable them to use more selective fishing techniques or to make them more fuel-efficient; decommissioning of certain vessels to adjust the fleet to available resources), temporary cessations of fishing activities, aid for first purchases by young fishermen, training, etc.).
- Line of action 2: development of the aquaculture sector (fish and shellfish farming) and implementation of environmental measures relating to aquaculture, as well as modernisation of the fishery and aquaculture product processing and marketing sectors.

- Line of action 3: collection actions such as the labelling of fishery or aquaculture products with quality marks, promotional campaigns, port facilities, pilot projects, actions aimed at protecting aquatic flora and fauna, blue contracts, etc..
- Line of action 4: local projects relating to the sustainable development of fishing and aquaculture areas, along the same lines as the projects pursued in rural areas by local action groups supported by the EAFRD.
- Line of action 5: technical assistance for implementation of the operational programme.

The financial support provided in France by the EFF is more than doubled by the contribution from public counterparts, in particular the State and local government authorities: in all, over the period 2007-2013, such funding amounts to over EUR 450 million in support for the fishing and aquaculture sectors to assist the latter in their efforts to modernise and adapt to the challenges they now face.

The aim of fleet decommissioning plans (FDP) is to adjust fishing capacity (reduction in the number of vessels) to the fishery resources available. These plans are designed to ensure both the profitability of fishing enterprises and conservation of the resource. The FDPs are co-financed by the EFF and, under the terms of EU regulations, are reserved for so-called “sensitive” fisheries, that is to say those subject to very strict management rules put in place under a species recovery or management plan (special fishing permit scheme or any other parameter applied to fishing capacity).

Vessels are included in an FDP on a purely voluntary basis. Decommissioning and withdrawal from the fleet consists in the scrapping of the vessel, to the exclusion of any other procedure. The premium is paid as compensation for scrapping the vessel and for abandoning the related permits and, as the case may be, quota allowances (See below: 6.3 – structural adjustment).

Under certain conditions set out in the EFF rules, vessels dependent on certain sensitive fisheries can benefit from a scheme to aid with temporary cessations of activity (sometimes also referred to as “biological closures”).

The principle is as follows:

- vessels must cease all fishing activity during a period determined beforehand, with payment of compensation for a maximum number of days’ cessation of activity;
- the daily rate of compensation for each vessel is calculated on the basis of its loss of revenue, based on the statistics for previous years and shared between the vessel owner and the fishers; and
- this aid must not result in excessive compensation payments or have a windfall effect.

Since 2007, temporary cessations of activity have been authorised for:

- vessels fishing for anchovy. The reopening of the fishery in 2010 put an end to this arrangement;
- vessels fishing for cod in the Channel-North Sea area in 2008, 2009, 2011 and 2012;
- vessels fishing for elvers in Vendée and Charente, which had been hard hit by the Xynthia windstorm. A second period of cessation of activity was authorised in 2011 following the sudden ban on exports of this species outside the European Union by CITES;
- vessels fishing for porbeagles sharks; and

- trawlers fishing in the Mediterranean, which are heavily dependent on small pelagic fish and hake.

Since 2007, EUR 26 million have been allocated to this measure, of which EUR 7 million under the EFF and EUR 19 millions in State funding.

An appropriation of EUR 18.75 million was made available in 2010 (EUR 15 million in State funding and EUR 3.75 million in EFF funding) for Blue Contracts. As of 2010, funding is no longer advanced to collective bodies in order to avoid having to pay refunds. EUR 12.5 million was earmarked in 2011 (EUR 10 million in State funding and EUR 2.5 million in EFF funding) and EUR 12.5 million for 2012.

### ***Social aid***

As part of the system of social aid to fishers laid off as a result of economic redundancies in the fish trade and fishing sectors (early retirement for fishers working in the fish trade and fishing sectors, and supplementary benefit for fishers engaged in fishing activities), EUR 0.5 million were disbursed in 2010 and EUR 0.6 million in 2011.

### ***Structural adjustments***

In all, some 500 vessels have been withdrawn from the fleet since the end of 2007 under the provisions of the EFF (*see above*). This is equivalent to almost 10% of the metropolitan fleet. From the end of 2007 to 2011, EUR 132 million (of which EUR 106 million in State funding and EUR 27 million in EFF) were allocated to FDPs, resulting in 23 vessels being withdrawn from the fleet in 2010 (22 under the “eel” FDP and 1 under the “porbeagle shark” FDP, for a total GT of 211.3 and almost EUR 1.6 million in compensation payments) and a further 59 vessels in 2011 (for a total GT of 1801.75 and almost EUR 10.8 million in compensation payments).

In addition to these FDPs, a number of fleet adjustment plans (FAPs), an EU instrument for fleet restructuring, were also implemented, which enabled ten vessels to be withdrawn from the fleet at the end of 2010 (nine in Brittany and one in Vendée, for a total GT of 504.53 and around EUR 2.5 million in compensation payments).

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

### ***Changes in policy***

Public policies in France relating to food safety, including fishery and aquaculture products, are the responsibility of the Ministry of Agriculture, Agro-food and Forestry (MAAF). The General Directorate for Food (DGAL) within the MAAF remains the administration in charge of these public policies. Devolved departments were reorganised with a view to optimising practices and the resources deployed, leading to the creation in 2010 of the Departmental Directorates in charge of protecting the population (DDecPP) through the merger of the Department Directorates for Veterinary Services (DDSV) with the Department Directorates for competition, consumption and combating fraud (DDCCRF). Scheduling of health inspections of establishments, based on risk analysis and the principles of risk ranking, has been organised since 2011 on the basis of a five-year multi-year plan.

Efforts to enhance the fisheries sector’s competitiveness and to modernise distribution and marketing were undertaken as follows.

- Harmonisation of fish auction grading practices and investment in fishing ports and wholesale fish markets to improve the conditions under which fish are landed and initially placed on sale.

- Modernisation of downstream enterprises (fish trading and processing), particularly in terms of product quality, traceability and identification.
- Supporting research and development into new processes at every stage of the industrial chain, including production and marketing, quality enhancement and the development of new products.

These policies receive EU funding (under the European Fisheries Fund programme for 2007-2013) or national funding (State and/or FranceAgriMer), including under planning contracts involving the mobilisation of funding from territorial bodies.

## Markets and trade

While domestic demand has weakened, demand from third countries continues to rise and drive prices higher. The price index for fish and shellfish has been rising more rapidly than the general consumer price index, 4.4% compared with 2.1% in 2011 and 4.9% compared with 1.5% in 2010. Accordingly, between November 2010 and November 2011, the volume of fresh fish purchases fell by 5% and that of fresh shellfish by 12%. Only processed fish and seafood products were bought in larger quantities (+1%), in particular surimi (+7%) due to the stability of the price of the latter. The average annual consumption of aquatic products in France over the period 2008-2010 amounted to 35.2 kg per inhabitant.

France has a large balance-of-trade deficit in fishery and aquaculture products. In 2010, imports by net weight amounted to 1 124 000 tonnes and exports to 295 000 tonnes (2 182 000 tonnes and 526 000 tonnes respectively by live weight). In value terms, imports amounted to around EUR 4.46 billion and exports to EUR 1.21 billion, resulting in a balance-of-trade deficit of around EUR 3.25 billion.

In 2011, imports by net weight amounted to 1 132 000 tonnes, and exports to 309 000 tonnes (2 283 000 tonnes and 526 000 tonnes respectively by live weight). In value terms, imports amounted to around EUR 4.78 billion and exports were worth EUR 1.30 billion, resulting in a balance-of-trade deficit of around EUR 3.48 billion (*source: French Customs and Excise*).

The main actor responsible for the promotion and advertising of fishery and aquaculture products in France is FranceAgriMer, the national agency for agricultural and marine products. This agency pursues its actions within the framework established by Regulation (EC) No. 2792/1000 of 17 December 1999 laying down the detailed rules and arrangements regarding Community structural assistance in the fisheries sector.

## Notes

1. Inter-branch Committee on Aquaculture Products [CIPA], French Aquaculture Federation [FFA].
2. French Union of Poultry and Aquaculture Breeders [SYSAAF], Technical Institute for Poultry Farming [ITAVI].
3. French National Institute for Agricultural Research [INRA], French Research Institute for Exploitation of the Sea [IFREMER], Centre for International Cooperation in Agronomic Research for Development [CIRAD], French Development Research Institute [IRD], Agrocampus Ouest.

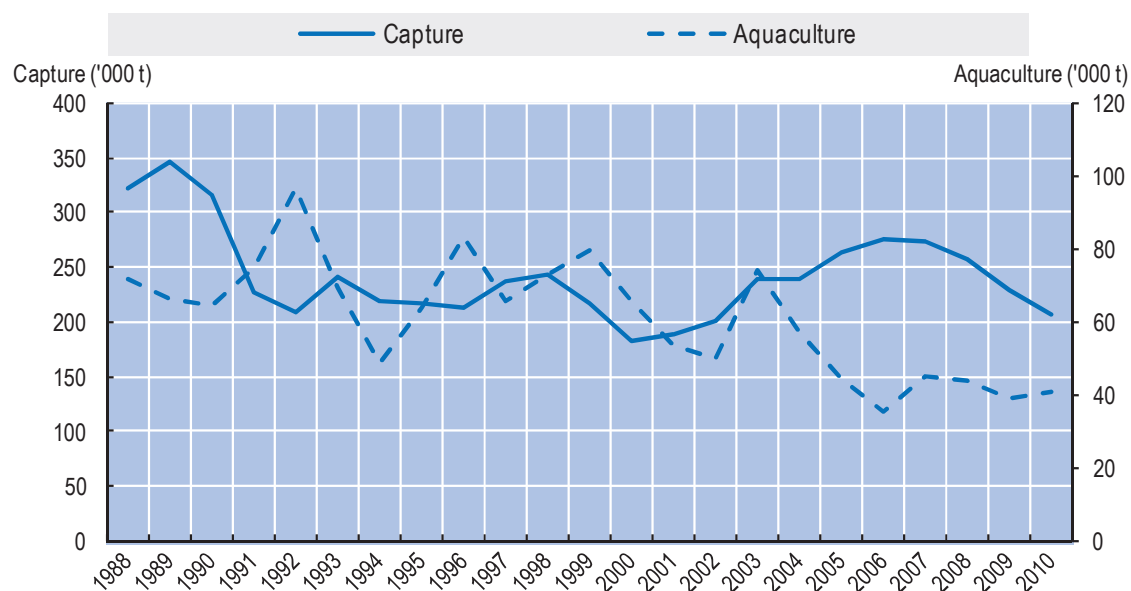
Chapter 12

GERMANY

Summary of recent developments

- Since January 2010, the German fishing fleet has decreased by almost 200 fishing vessels. There were no substantial changes in fisheries management.
- In 2010, about 44 000 tonnes of fish with a value of just under EUR 200 million were produced in German aquaculture farms. Rainbow trout was the highest-yielding species with a total of 25 000 tonnes.
- Fish consumption remained at the high 2009 level (per capita consumption of 15.3 kg).

Figure 12.1. Harvesting and aquaculture production



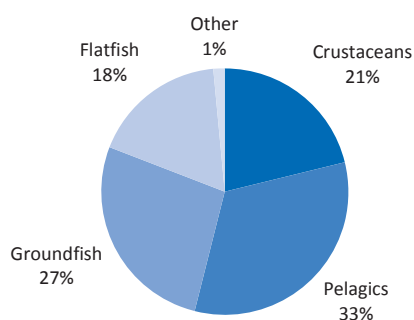
Source: FAO FishStat Database.

### Box 12.1. Key characteristics of German fisheries

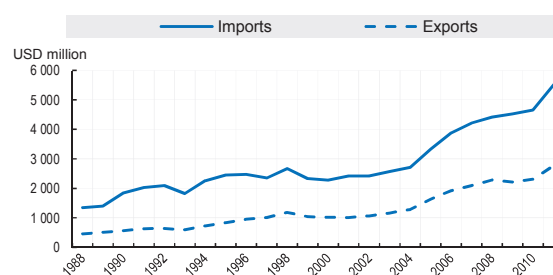
- In 2010 and 2011, the total annual landings of German fishing vessels was 179 000 tonnes (landed weight) of fish and fishery products, and proceeds increased from EUR 183.1 million to EUR 200.3 million. Principal species include herring and cod. (Panel A)
- Germany obtains its supply of fisheries products mainly via import trade. The degree of self-sufficiency reached its lowest level in 2011 at 18%. Import and export prices for fish and fishery products increased considerably in 2010/2011, with export prices increasing almost 25% since 2008. Total imports in 2011 amounted to 921 000 tonnes and exports reached 504 000 tonnes, with a corresponding value of EUR 3,5 billion and EUR 1,6 billion respectively. (Panel B)
- The European Fisheries Fund (EFF) under the Common Fisheries Policy support for Germany amounted to EUR 155 million for the period 2007-13. (Panel C)
- Over the 2002 to 2010 period, the capacity of the German fishing sector has been reduced considerably with a 48% decrease in the number of fishers and a 30% decrease in the number of vessels. (Panel D)

Figure 12.2. Key fisheries indicators

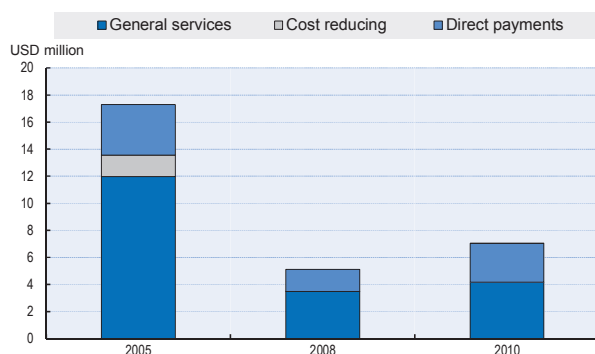
Panel A. Key species by value in 2010



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2006	2011	% change
Number of fishers	2 473	1 287	-0.048
Number of fish farmers	..	..	..
Total number of vessels	2 275	1 582	-0.030
Total tonnage of the fleet	77 924	64 835	-0.017



## Legal and institutional framework

The applicable sea fisheries legislation has been amended by means of the Act amending the Sea Fisheries Act and the Federal Maritime Responsibilities Act that came into effect on 30 December 2011.

This act establishes the necessary national provisions to implement the EC Regulations on fighting illegal fisheries (IUU Regulation) and on fisheries control (Control Regulation).

The IUU Regulation is based on a joint initiative by Germany and the European Commission. A key element of this Regulation is the new catch certificate rule which states that imports of fisheries products from Third Countries into the European Union must be accompanied by catch certificates proving the legality of the catches.

The Control Regulation reforms the European fisheries control system. The intention is to make fisheries controls more effective and cost efficient in the future, *inter alia* by using modern technologies such as the electronic logbook. Harmonised penalty provisions are to contribute towards fair competition across the European Union.

In addition to provisions on the responsibilities of federal and Land authorities, the Act also contains penalty rules and a points system for captains of fishing vessels that are similar to the Central Register of Traffic Offences. As a whole, it updates the Sea Fisheries Act and adapts it to applicable fisheries legislation.

## Capture fisheries

### *Performance*

Since 1 January 2010, Germany's fishing fleet has decreased by approximately 200 fishing vessels. These changes mostly affect vessels of small-scale coastal fisheries. The capacities and the number of vessels have by and large remained the same in the deep-sea fisheries sector and for large cutters with a length of 18 m and more. Hence, the German fishing fleet currently consists of 1 582 units with a total tonnage capacity of 64 800 GRT (gross register tonnes) and engine power of 149 500 kilowatts. Only nine of these vessels are engaged in deep-sea trawler fishing. Their structural characteristics mean they meet the preconditions required to conduct fishing activities in European Community waters as well as in third countries and international waters that are managed by regional fisheries organisations. All vessels of this fleet category process and freeze their catches at sea and thus also supply top-quality fish products from remote areas. The fishing grounds of the remaining German fishing fleet are located predominantly in the North and Baltic Sea. Many of these vessels are open vessels and smaller cutters that are mainly engaged in daylight fishing. The fleet's development is subject to the EC structural policy for fleets.

In 2010 and 2011, the total annual landings of German fishing vessels was 179 000 tonnes (landed weight) of fish and fishery products, and proceeds increased from EUR 183.1 million to EUR 200.3 million. Prices for many economically important fish species tended upward. A drop in prices for common shrimp, cod and plaice put specialised fishermen in economic difficulty. The continued increase in fuel and energy prices placed a strain on operating profits.

In 2011, deep-sea fishing vessels contributed landings totalling 89 000 tonnes towards the overall volume, of which 32 000 tonnes were unloaded in Germany and 57 000 tonnes abroad.

**Table 12.1. Structure of the German fishing fleet (as of 31/12/2011)**

Total length	Number	Engine power in kW	Tonnage in GRT
< 10 m	1 168	22 176	2 179
10 - < 12 m	92	8 504	1 039
12 - < 15 m	49	7 845	1 093
15 - < 18 m	127	24 256	4 329
18 - < 24 m	90	19 244	6 501
24 - < 40 m	37	19 644	7 682
> 40 m	19	47 880	42 012
Total	1 582	149 549	64 835

### *Management of commercial fisheries*

During the period under review, 2010/2011, there were no substantial changes in fisheries management. New fishing vessels can still only be put into service if old vessels of at least the same tonnage (GRT) and engine power (kW) are permanently concomitantly decommissioned. Modernisation measures for existing fishing vessels that lead 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 grow. It should be noted that the capacity ceiling established by the European Commission for the German fleet has not been fully utilised.

The principles of the Sea Fisheries Act were adhered to in the allocation of quotas during the reporting period, i.e. quotas were allocated subject to the efficiency and suitability of fisheries companies, their previous participation in fisheries, the efficient use of the fisheries fleet and the optimum supply of the markets with fisheries products. Depending on the vessel size, fish species and maritime area, companies were granted individual catch licences or specific groups of vessels were given permission to catch and land a specified maximum level. To a large degree, quotas were also allocated to producer organisations made up of several fisheries companies which in turn passed them on to their members as individual catch licences. Some small, artisanal family-run businesses had to cease operations due to the deterioration in the external conditions for fishing resulting among other things from a rise in operating costs (fuel) and administrative requirements (stricter occupational health and safety requirements, safety-at-sea requirements and fisheries control requirements). Fishing quotas released this way are usually taken up by larger, more cost-efficient businesses.

One particularity of the reporting period was the need to adapt the quota allocation conditions due to a decision by the Federal Administrative Court. Thus, it is now necessary to take account of the area of operation of fishing vessels as documented in the vessel safety licenses when issuing fishing permits. As a consequence, it was for some fishing vessels no longer possible to include historical catches from specific fishing areas in the future allocation of quotas as the respective vessels are now, due to safety considerations, no longer permitted to enter these fishing areas.

### *Management of recreational fisheries*

The number of active anglers in Germany is estimated to be 1.5 million. A basic precondition to acquire an angling licence, which in turn is a prerequisite for engaging in line-fishing, is to provide evidence of extensive knowledge of fishery biology, hydrology and animal welfare and water conservation. It is possible in some Länder (federal states) to acquire an angling license of strictly limited validity without recognised qualifications. As

there are no representative catch records providing universal coverage, information on the catches made by anglers is based on rough estimates. These estimates amount to approximately 10 000 tonnes (about 6.5 kg per angler). Catches may not be commercially marketed. The rules governing closed seasons and minimum sizes of the fish caught can differ between the different Länders. Moreover, there are usually restrictions in place on fishing gear and catch levels that are specific to the water body being fished in.

### ***Monitoring and enforcement***

In the course of the implementation of European Community law, fisheries vessels with a length of between 12 and 15 m were also equipped with a satellite monitoring system during the 2010/2011 reporting period to enable monitoring authorities to locate the position of the vessels at any time and in real time. About 300 vessels are currently equipped with this technology. Moreover, data is exchanged electronically at the international level with the respective coastal states. This has greatly simplified cross-country monitoring.

Another key activity was the equipping of fishing vessels with an electronic logbook. Since 1 January 2012, all vessels larger than 12 m must be equipped with this new monitoring instrument. This new technology makes it possible to quickly transfer the data required for quota monitoring, thus helping to improve fisheries control.

### **Government financial transfers**

Support through the Financial Instrument for Fisheries Guidance (FIG) structural fund for the period 2000-06 has, since 2007, been followed by support from the European Fisheries Fund (EFF) under the Common Fisheries Policy. The EFF support funds initially earmarked for Germany amounted to EUR 155 million for the period 2007-13.

Responsibility for the implementation of the support programmes lies once again with the Länder while the Federal Government only accompanies the process.

The planned funding priorities for the period 2007-13 are as follows:

- pilot schemes
- processing and marketing
- protection of aquatic fauna and flora
- aquaculture
- fisheries areas.

Based on the authorisations and payments thus far, EFF support funds in 2010 and 2011 were used primarily in the fields of pilot schemes, processing and marketing, protection of aquatic flora and fauna and aquaculture.

### **Aquaculture**

In 2010, about 44 000 tonnes of fish with a value of just under EUR 200 million were produced in German aquaculture farms. The rainbow trout was the highest-yielding species with a total of 25 000 tonnes. At the same time, average sales prices achieved by producers increased slightly.

The second most important target species in aquaculture was the carp. Fishing yields were slightly below the multi-year average with approximately 13 000 tonnes and an additional approximately 1 100 tonnes in accompanying fish. This is thought to be due to a lack of

young fish caused *inter alia* by losses due to illness and damage by cormorants. Some pond farms ceased operations due to the continued deterioration of conditions. Producer prices for carp proved stable; however, these prices are not sufficient to cover costs if the fish are sold to wholesale businesses.

Another area of aquaculture comprises the breeding of fish in installations, usually using circulating warm water. This remains of minor importance for the total volume of catches in German inland fisheries, with a production level of about 1 700 tonnes. However, this sector has for a number of years seen a constant increase in both the number of installations and the level of production. The main species produced were eels, European and African catfish, and carps for stocking.

### Post-harvesting policies and practices

Given that some fish stocks are in a critical condition, consumers in Germany are increasingly asking about the origin of fish, the production techniques, and the management of the fish. There are different guidelines for sustainable fisheries. For instance, consumers can find information on the commercial name of a fish, the fishing method and its origin on the websites of the producers of fisheries products or on the packaging of fish and fisheries products. Since 1 January 2011, the EU Control Regulation has stipulated specific minimum standards regarding the traceability of fisheries products, which in some cases go beyond requirements laid down by the Food Labelling Ordinance.

Consumers can now find updated information on fish stock conditions from all oceans via the internet portal ([www.portal-fischerei.de](http://www.portal-fischerei.de)). When completed, this portal will contain information on 130 fish stocks and more than 30 global fish species that are of relevance to the German market. The project is financed by the German fish-processing industry and retail sector, and is a result of the Round Table on Sustainable Fisheries of the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV). The aim of the website is to provide scientifically correct information in a concise and understandable way. In addition to providing a new labelling of origin system for fisheries products, it gives the trading sector and consumers basic information on purchasing fish from sustainable fisheries in a targeted manner and encourages companies to adopt a corresponding purchasing policy. The website does not evaluate products or give recommendations. It is based, among other things, on scientific recommendations of international organisations such as ICES.

The fact that consumers now ask critical questions has changed purchasing patterns in the fish-processing industry. The industry's demand for fish from certified fisheries has now risen significantly.

### Markets and trade

#### *Markets*

##### *Trends in domestic consumption*

In 2010 and 2011, fish consumption stayed at the high 2009 levels. The economic conditions in Germany in these years were marked by moderate growth. Real wages grew and there was a general rise in income due to falling unemployment. This sustained demand despite rising prices for energy and food. However, preliminary figures for 2011 indicate that above-average price increases in the sector will curb fish consumption. Per-capita consumption amounted to 15.5 kg in 2010. According to preliminary data, German citizens consumed 15.3 kg of fish and seafood in 2011. As regards the distribution of fish consumption among the various product categories, a shift occurred towards the deep-frozen segment, which accounted for over one-third of total consumption. Canned fish and

marinades make up more than one-quarter of all fishery products. Fillets and fish fingers made from Alaska pollock dominated the frozen-food segment, while demand in the canned fish and marinades segment was chiefly for herring. Fresh fish (tending downward), smoked fish, fish salads and other fisheries products were consumed less frequently. Alaska pollock was the most frequently consumed fish in Germany in the period under review. This species accounted for just under 21% of all fish consumption in 2011. Herring and salmon were second and third respectively of the most popular fish species.

The share of aquaculture fishery products grew steadily. Hence, fishery products from the “freshwater fish” (including salmon) category, which is mainly comprised of fish from aquaculture, covered 23% of the entire domestic market for fishery products in 2011. Crustaceans and molluscs, some of which are provided by aquaculture, showed a slight upward trend with a market share of around 13%.

## Trade

### *Volumes and values*

Germany still obtains its supply of fisheries products mainly via import trade. The degree of self-sufficiency reached its lowest level in 2011 at 18%. Import and export prices for fish and fishery products increased considerably in 2010/2011, with export prices increasing almost 25% since 2008.

The dominance of imports is reflected in the negative balance of trade for this economic sector.

**Table 12.2. German fish trade, 2010-11**

Year	Import		Export		Balance of trade	
	Amount in tonnes	Value in '000 EUR	Amount in tonnes	Value in '000 EUR	Amount in tonnes	Value in '000 EUR
2010	950 020	3 456 896	543 632	1 591 216	-406 388	-1 865 680
2011	921 615	3 555 067	504 330	1 623 056	-417 285	-1 932 011

The dependence on imports was particularly high for frozen white fish fillets, salmon and tuna products. Traditionally, commercial transactions have mainly been conducted with partners from third countries. 36% of deliveries originated from the Community. China was the most important single supplier of fish and fishery products, ahead of Norway, and was instrumental in ensuring that the German market was supplied with adequate quantities of fishery products, notably in the case of frozen fillets. Denmark and Poland were the most important Member States in the European Union.

## Outlook

The reform of the Common Fisheries Policy of the European Union is currently under way (Regulation on the Common Fisheries Policy, Regulation on the common market organisation in fishery and aquaculture products and the Regulation on the European maritime and fisheries fund). It remains to be seen what further developments are made in this area.



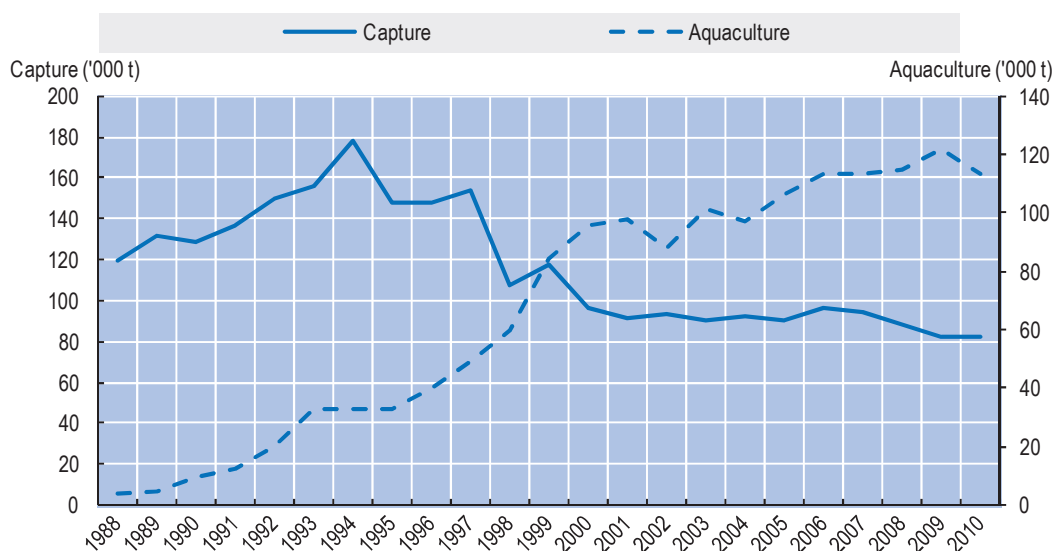
## Chapter 13

### GREECE

#### Summary of recent developments

- In 2010 the Greek aquaculture production reached 122 844 tonnes corresponding to EUR 449 million. About 83% of this production volume and about 95% of the value comes from marine finfish aquaculture. The significant aquaculture development in Greece has resulted in not only increase in the production volumes, but also the creation of a socio-economic structure that involves about 10 000 employees. In addition, mariculture is the only productive activity that has colonised previously uninhabited border areas and islands which offer less possibility for other investments.
- In 2011, a Joint Ministerial Decision was issued which approved the Specific Framework for Spatial Planning and Sustainable Development for Aquaculture. This was necessary so that a clear development framework is created both for the authorities which issue licenses and the private companies, so that they are oriented to sites which are suitable in terms of spatial planning, conflicts arising in the field are diminished as far as possible and the environment is protected.
- A major institutional change due to the EU's Regulations was the implementation of Illegal, Unreported and Unregulated (IUU) Fishing. Since March 2011, all fishery products imported from third countries have to be supplied with a specific document called Catch Certificate and if processed with a Statement.

Figure 13.1. Harvesting and aquaculture production



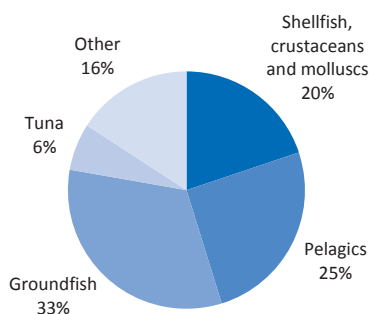
Source: FAO FishStat Database.

### Box 13.1. Key characteristics of Greek fisheries

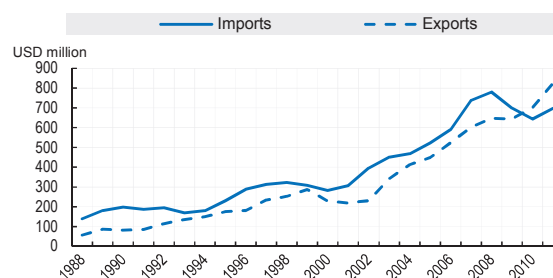
- The most important species landed in 2009 in terms of value were groundfish (32%), followed by pelagics (25%), shellfish, crustaceans and molluscs (18%) and tuna (6%). (Panel A)
  - Since 2009 there was a clear reduction in imports of fishery products and a slight increase in exports in terms of quantity and clear increase in terms of value. (Panel B)
- A total of USD 61 million was transferred to the Greek fisheries sector in 2009, a decrease of USD 6 million (8.9%), compared to USD 67 million in 2008. About 52% of the transfers in 2009 were spent on cost reducing. (Panel C)
- The Greek fishing fleet is the largest in vessel number in the European Union in 2011, due to a very high number of small vessels (about 94% are coastal vessels with an overall length less than 12 meters), but it represents only 4.6% of the Community fleet in terms of capacity. (Panel D)

Figure 13.2. Key fisheries indicators

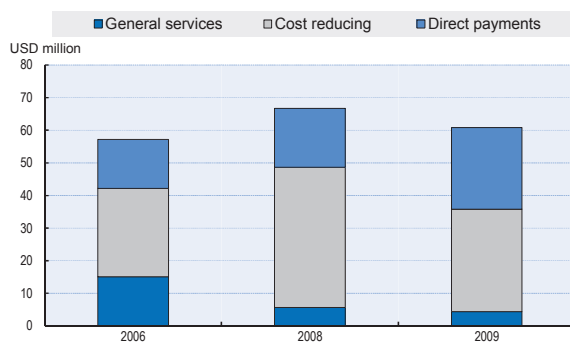
Panel A. Key species landed by value in 2009



Panel B. Trade Evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2006	2008	2009
General services	15	6	4
Cost reducing	27	43	31
Direct payments	15	18	25



## Legal and institutional framework

The Directorate General for Fisheries in the Ministry of Rural Development and Food is responsible for the implementation and enforcement of fisheries management, while the control of fisheries activities is under the responsibility of the competent authorities of the Ministry of Marine Affairs and the Aegean.

The legislative framework in force concerning marine fisheries activities lies on the provisions of legal rules under the CFP frame and the national as well. The main regulating rules are cited below.

- The basic regulation of the CFP: Council re. (EC) No 2371/2002 for the conservation and sustainable exploitation of fisheries resources.
- The control regulation: Council regulation (EC) No 1224/2009 establishing a Community control system for ensuring compliance with the rules of the CFP.
- The financing regulation: Council re (EC) No 1198/2006 on the European Fisheries Fund.
- The Mediterranean regulation: Council re (EC) No 1967/2006 concerning management measures for the sustainable exploitation of fisheries resources in the Mediterranean Sea.
- The IUU regulation: Council re (EC) No 1005/2008 establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing.
- The provisions of the national legislation on the implementation of the EU rules.

All farming of fish and shellfish in Greece requires a license from the Regional Fisheries Authorities. In 2011, a Joint Ministerial Decision was issued which approved the Specific Framework for Spatial Planning and Sustainable Development for Aquaculture. This was necessary so that a clear development framework is created both for the authorities which issue licenses and the private companies, so that they are oriented to sites which are suitable in terms of spatial planning, conflicts arising in the field are diminished as far as possible and the environment is protected.

In 2010 and 2011 the legislative framework for aquaculture was significantly improved, regarding the following:

- In 2010, a Ministerial Decision (No. 95767/2010) was issued regulating organic aquaculture, according to the Council Regulation (EC) No 834/2007 and Commission Regulation (EC) No. 710/2009.
- In 2011, Law 4014/2011 (G.O.J. No. 209 A' /21-09-2011) was issued by the Ministry of Environmental Protection and Climatic Change, concerning the environmental licenses for works and activities, which applies also to aquaculture.
- In 2011, a Ministerial Decision (No. 9232.1/1/11/2011) was issued regulating the licenses regarding the cultured marine Mediterranean species.
- In 2011, a Joint Ministerial Decision (No. 31722/2011) was issued approving the “Specific Framework for Spatial Planning and Sustainable Development for Aquaculture”.

Also in 2010:

- A circular was issued to alter limitations in obtaining hatchery licenses.
- A circular was issued concerning the conditions for licensing new aquaculture units of protected species (*Argyrosomus regius*, bluefin tuna).

- A circular was issued concerning reduction of leasing cost for marine areas used in shellfish aquaculture.

In 2011:

- A circular was issued to reduce the necessary licenses for aquaculture installations, by the unification of two of them, aiming at reducing the administrative burden.
- Three circulars were issued concerning the implementation of the EC REG 1100/2007 and the National Management Plan, concerning measures for the recovery of the European eel.

## Capture fisheries

### *Performance*

During the years 2010-11 the Marine Fisheries sub-sector followed the major objectives of the Common Fisheries Policy (CFP) and the national policy in the following way:

- Sustainable management of fisheries resources within the context of their sustainable exploitation
- Management of the fishing capacity of the fleet
- Strengthening the control and inspection of the fishing activities in fighting against illegal, unreported and unregulated fishing.
- Financial support of the fisheries sector covering some structural measures and aiming at helping fishermen to achieve sustainable fishing and coastal communities to the diversification of their economies.

Until 2007, the annual capture fisheries product was fluctuating around 95 000 tonnes. Since then, a constant decline has emerged that seems to proceed. The following table presents the quantities landed by fishing vessels equipped with engine having motor power more than 19HP.

**Table 13.1. Annual capture fisheries production**

Year	Tonnes
2002 to 2007	(av) 95 000
2008	88 881
2009	82 764
2010	71 028
2011*	70 000

\* Data for 2011 are provisional.

Source: ELSTAT, Ministry of Rural Development and Food.

### *Fishing fleet*

The Greek fishing fleet is the largest in vessel number in the European Union (16 596 vessels, on 31.12.2011, with a capacity accounting for 83 712.23GT in volume) due to a very high number of small vessels (about 94% are coastal vessels with an overall length less than 12 meters), but it represents only 4.6% of the Community fleet in terms of capacity. The fleet consists of vessels using trawl nets, surrounding nets and coastal gears.

Only 12 high sea vessels (overall length more than 25m) are fishing off shore under Community fisheries partnership agreement with third countries.

The most active vessels are bottom trawlers and purse seiners which represent only the 3.7% of the total national fishing fleet in number. Bottom trawlers (305 vessels) use nets actively towed by the main boat engine, they fish demersal species (hake, mullets, octopus, shrimps, etc) and produce about 20% of total annual catches (about 22 000 tonnes); they are widespread in the Aegean, Ionian and Cretan Seas.

Purse seiners (281 vessels) use surrounding nets, they fish small pelagic species (anchovy, sardine, boops, horse mackerel etc), their landings account for 40% of the annual production (about 45 000 tonnes) and they are spread in all the territorial waters.

The rest of the fleet (96%) concerns coastal vessels. The main coastal gears in use are gillnets, long lines and some other traditional gears (like boat seine = vintzotrata, dredges, etc.).

**Table 13.2. The fleet composition between 2010 and 2011**

	2010		2011	
	Number of vessels	Capacity (GT)	Number of vessels	Capacity (GT)
Vessels with engines	16 828	86 685.26	16 329	83 583.02
Vessels without engine	275	136 23	267	129.22
Total vessels	17 103	86 821.49	16 596	83 712.24

The total employment in the marine capture fisheries sector amounted to about 39 076 persons in 2010 and to 37 842 in 2011. Data for part-time employment are not available.

The management of the fishing fleet follows the rules of the Common Fisheries Policy in accordance with which the Member States apply measures to adjust fishing fleet capacity, in order to achieve a balance between the fishing capacity and the fishing possibilities.

### *Management and conservation of fisheries*

The fishing operation by the Greek fishing vessels is governed by the provisions of:

- The basic regulation of the Common Fisheries Policy Council re (E.C.) No. 2371/2002.
- The Mediterranean Regulation Council re (E.C.) No 1967/2006, concerning management measures for the sustainable exploitation of fisheries resources in the Mediterranean Sea.
- The control regulation Council re (EC) No 1224/2009.
- Council Regulations (EC) 520/07, 1559/07 and 302/09 concerning bluefin tuna fishing.
- The national legislation which includes regulatory measures for fishing in the Greek territorial waters, under the CFP rules and concerning some specific issues:
  - The area and time restrictions
  - The technical specifications for the fishing gears
  - The minimum size of the harvested species
  - The regime of issuing general licenses and special fishing permits
- Furthermore, international measures for the conservation and management of fish stocks are implemented according to the yearly adopted recommendations and resolutions under the Regional Fisheries Management Organizations, mainly the ICCAT and GFCM/FAO.

In particular during 2010 and 2011, the following legal rules were adopted:

- The regulative measures concerning an additional prohibition for purse-seine fishery in the Malliakos Gulf (national presidential degree 124/2011).
- In compliance to the Mediterranean regulation, from 1-6-2010, boat seine operations are prohibited within 3 nautical miles from the coast or within the 50m isobath.
- Concerning fishing of the highly migratory species, blue fin tuna (*Thunnus thynnus*), sword fish (*Xiphias gladius*) and long-finned tuna (*Thunnus alalunga*), some amendments in the Community legislation have been adopted, in full compliance with ICCAT and GFCM recommendations. The fishing of the above mentioned species is carried out with vessels possessing a part of the fishing license, with a specific fishing permit, yearly renewed.
- The specific fishing permit for blue fin tuna (*Thunnus thynnus*) is annulated after the allocated quota for the country is exhausted. Greek quota for blue fin tuna was 260,30tn (257 specific fishing permits for BFT) and 179,37tn (114 specific fishing permits for BFT) for 2010 and 2011 respectively.

With ICCAT recommendation No. 09-04, being in force for the years 2010-2011, fishing of sword fish was prohibited from 1 October until 30 November in the Mediterranean. According to national legislation, fishing, trade and retail of sword fish was already prohibited during October, November, December and January each year.

In the frame of Community legislation, the countries' ports were designated, in which catches that are coming from the use of certain fishing gears (bottom trawl, purse seine, surface longlines and dredges) are allowed to be landed and to be disposed to trade. Furthermore, the ports for the landing of blue fin tuna catches were also designated.

#### *Stock assessment*

The stock assessment is focused on the most important commercial species that constitute the target of fishing activities and is based on studies and research programmes.

The national programme for fisheries data collection under the Data Collection Framework (Council Reg. (EC) 199/2008) was not implemented for the period 2010-2011, due to financing difficulties.

Universities and Research Institutions carried out studies that refer to specific species and/or specific areas and aim at the assessment of fish stocks, the sustainable management and the use of more selective fishing gears.

In addition, activities by professional fishermen having common interest were promoted, as well as studies and exemplary experimental work, concerning the use of more selective fishing gears and the environmental protection.

#### *Access arrangements*

Fishing in national territorial waters is allowed only to vessels flying the Greek flag and having a vessel fishing license, which has been issued according to the Council regulation (EC) No. 26/2004, as amended, and Commission regulation (EC) No 404/2011.

Fishing in the international waters is allowed only to professional fishing vessels provided that they have a specific sail permission, for one year.

### ***Multilateral agreements and arrangements***

Within the framework of the fishing agreements concluded between the European Union and Third Countries, Greece took advantage of a quota of the fishing capacity that was assigned to it from the Community share, based on its historical rights. It also made use of the fishing possibilities assigned to Greece by other member states, following exchange agreements between them. This is the case of fisheries agreements of the European Union with Guinea Bissau and Mauritania for both the years 2010 and 2011.

### ***Management of recreational fisheries***

A significant number of amateur fisheries licenses are in force for recreational fisheries. The number of recreational fishing licenses reached approximately 150 000 in 2010 and has remained stable in 2011.

Recreational fisheries is regulated by the national and community legislation.

National legislation includes provisions concerning the use of specific fishing gears for recreational fisheries, maximum allowable quantities as well as time and local closures. Trade of catches is prohibited by amateurs. The regulatory framework of national legislation is stricter than the relative Community legislation.

### ***Monitoring and control***

The control of fishing activities and the enforcement of current legislation for the years 2010-2011 was performed by the competent authorities of the Ministry of Citizens Protection.

Today this responsibility has been allocated to the Ministry of Marine Affairs and the Aegean.

In case of infringement confirmation, administrative penalties are imposed (fines, temporary or permanent withdrawal of vessel and captain fishing license, confiscation of illegal gears, means and also fish catches.

The application of new technologies, the information technology networks, the new control systems adjusted to the community provisions requirements, and the continuous training of the control bodies support the effort of combating illegal fisheries.

The total number of the certified infringements, for which administrative penalties were imposed, is:

- Year 2010: 2 105 infringements, fines amount to EUR 1 389 639.
- Year 2011: 2 112 infringements, fines amount to EUR 1 464 927.

## **Aquaculture**

### ***Policy changes***

Aquaculture is a very significant sector in Greece. In 2010 the Greek aquaculture production reached 122 844 tons corresponding to EUR 449 million. About 83% of this production volume and about 95% of the value comes from marine finfish aquaculture. The proportion of shellfish products corresponds to 15%. Seabream and seabass are the main species farmed in Greece, although other Mediterranean fish species as well as bluefin tuna fattening are also gaining ground.

The significant aquaculture development in Greece has resulted in remarkable results not only regarding the production volumes of domestic fresh, cheap and high quality fish, but also the creation of a socio-economic structure that directly and indirectly involves about ten

thousands of employees, particularly in the fisheries-dependent areas of the country. In addition, mariculture is the only productive activity that has colonised previously uninhabited border areas and islands which offer less possibilities for other investments.

About 80% of the Greek aquaculture production is exported mainly to EU markets with over half of it directed to Italy, Spain, United Kingdom and Germany.

The Greek state policy for the aquaculture sector aims to increase the supply of high nutritional value products of high quality such as fish and shellfish at satisfactory prices; improve production conditions while decreasing production costs; ensure rational husbandry of inland waters; reduce fish imports and increase exports; increase the number of employment opportunities especially on small islands and in less developed regions; differentiate fishery production by adopting new technologies in the culture of aquatic species; adopt measures for environmental protection; and improve competitiveness as well as the commercial and administrative organizations of aquaculture companies by introducing new technologies and better terms in co-operation among companies.

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

In 2010, the total number of aquaculture farms both in marine and inland waters in Greece reached 1 054 units.

The number of marine pisciculture farms was 336 units. The production systems are mainly open water containment systems (floating cages) and the main species produced are gilthead seabream (70%) and seabass (30%). Other marine species like sharpnose seabream, white seabream, red porgy and common dentex are making their way into the industry.

Also, a bluefin tuna fattening farm was operative in 2010 and 2011, which in 2010 harvested 770.68 tonnes. A second bluefin tuna farm registered in ICCAT remained inactive during 2010 and 2011.

The marine aquaculture sector also includes shellfish-farms (590 in 2010), mainly located in the Northern part of Greece. Freshwater aquaculture includes 92 farms producing rainbow trout (72 farms), salmon, eel and carp.

Recent business activity, has led to remarkable investments in infrastructure, technology and knowledge, and to significant profits through exports.

In Greece also operate 72 lagoons (extensive or semi-intensive traditional aquaculture systems).

### **Government financial transfers**

During the period 2010-11, within the framework of the Operational Fisheries Programme 2007-2013, financing by European Fisheries Fund and national credits continued for the implementation of several measures and actions concerning the following.

- The adaptation of fishing effort.
- The modernisation of fishing vessels (applications of interested fishermen).
- New technologies.

In addition, projects concerning construction, extension and improvement (modernisation) of fishing ports were financed by Community credits (European Fisheries Fund) and national budget, especially in remote insular groups and in areas directly depended on fisheries.

## Markets and trade

### *Markets*

#### *Trends in domestic consumption*

Fishery products are an integral part of the traditional Mediterranean diet and continue to be highly estimated by the consumers taking over one of the top ranks in their preferences. Taking into account that it is a food item rich in animal proteins of remarkable biological value and containing polyunsaturated fats resulting, according to numerous scientific studies, in health benefits, families seek to consume fishery products more often than they used to.

Nevertheless, consumption, among others, is directly related to available income, thus, during the last years, domestic consumption has shifted to frozen products and to small pelagic species (anchovy, sardine, bogue, picarel) that are relatively cheap and easy to access.

The latest estimate of per capita consumption is around 25 kg per annum, though it may be underestimated. There is an upward turn towards frozen and farmed products, as the total consumption remains rather stable and capture fisheries keeps declining.

Until recently, consumers were rather reluctant in buying farmed products, but past campaigns funded by the European Union and the Ministry of Rural Development and Food and the established entrance of super markets in the retail channel along with the attractive prize are closing the gap between farmed and fresh products.

#### *Promotional Efforts*

During the last two years, no official, public-aid promotional campaign was implemented. However, during 2012 a campaign aimed to promote frozen fishery products was initiated. Similar campaigns were conducted during the implementation of Operational Programme for Fisheries 2000-6 (Third Community Support Framework) and were quite successful (farmed sea bass and sea bream & consumer's information).

### *Trade*

#### *Volumes and values*

Information from Ministry of Finance, DG Taxes showed that there was a clear reduction in imports of fishery products and a slight increase in exports in terms of quantity and clear increase in terms of value.

**Table 13.3. Imports and exports for fishery products, only for human consumption**

	Imports		Exports	
	Quantity (tonnes)	Value	Quantity (tonnes)	Value
2009	154 135.8	431 590.8	129 524.9	477 221.7
2010	106 832.7	382 586.1	135 087.8	539 999.4
2011*	110 000.0	370 000.0	135 000.0	550 000.0

Source: Ministry of Finance. \* Data for 2011 are provisional.

Aquaculture production slightly increased to about 123 000 tonnes in 2010. Overall, there is a reduction in fisheries products trade within the country, but we should take into account that fisheries statistics include only vessels more than 19 HP and recreational fisheries catch is overlooked.

*Policy changes*

Law 4072/2012 “Improvement of business environment... Regulation of Fisheries...”, was a national administrative measure that will contribute to better control of fisheries trade. A Special Service “Fisheries Products Control Point” located in Athens international airport was founded, and is responsible for controlling and inspecting third countries imports.

In addition to this, the Ministerial Decision concerning the official list of designated ports where landing of bluefin tuna [REG (EC) 302/2009], and catch from certain fishing gear [reg. (ec) 1967/2006], was amended.

Moreover, the issuing of two significant guiding documents was taken during 2010 and 2011, affecting fishery products trade. One of them (ref no 57/10.1.2011) was referring to implementation of EC Regulation 640/2010 concerning BCDs (Bluefin tuna Catch Documents). Part of the measures taken in order to sustainably manage bluefin tuna (*Thunnus thynnus*) a specific document (BCD) must accompany caught specimens from catch to trade. It is composed of different sections (catch, transfer, farming, trade) that each must be completed by fishermen, operators, etc., and finally be validated by state authorities (port police authorities for catch section, and fisheries departments for trade section). The other working document (9354.1/1/5.12.2011) was referring to the control system of Common Fisheries Policy and compliance with the rules.

Finally, a major institutional change due to European Union’s Regulations was the implementation of Council Regulation 1005/2008 concerning Illegal, Unreported and Unregulated (IUU) Fishing. Since March of 2011 all fishery products imported from third countries have to be supplied with a specific document called Catch Certificate and if processed with a Statement.

**Outlook**

An ongoing project (began in February 2012) concerning an information system about the recording of fishing activities is in place. It is believed that exact and accurate statistics will be one of the forthcoming results.

As for aquaculture, the main objective will be the support and further development of the aquaculture sector (including new know-how development for marine species). This will be assisted by: a) the implementation of the new “Specific Framework for Spatial Planning and Sustainable Development for Aquaculture”; and b) the simplification of licensing procedures and reducing the administrative burden.



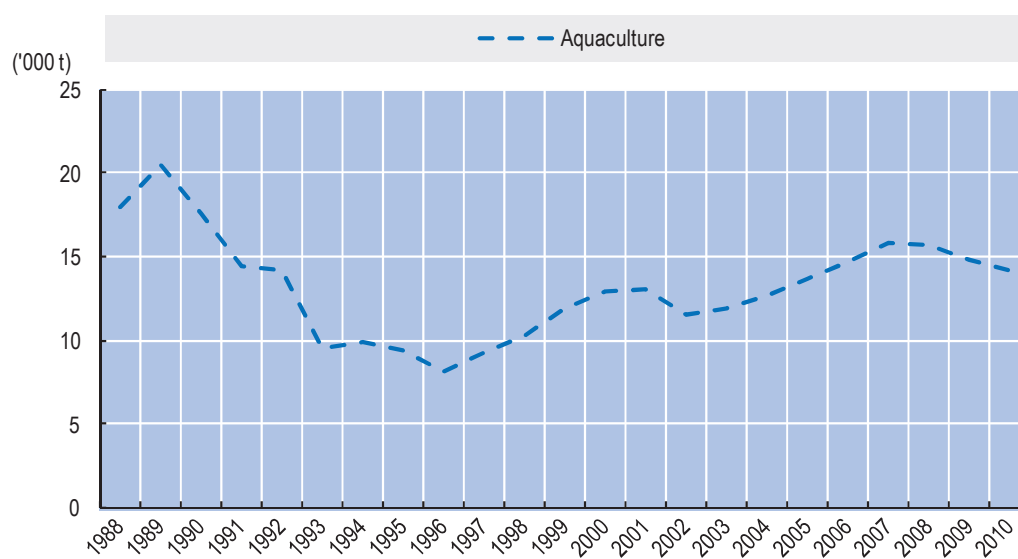
## Chapter 14

### HUNGARY

#### Summary of recent developments

- The fishery sector received EUR 47 million from 2007 to 2013 within the framework of the Fisheries Operational Programme (FOP), co-financed by the European Union and the national government. The main elements include aquaculture, inland fishery, and fish processing development.
- The FOP launched an aqua-environmental measure in 2011 to encourage environmentally conscious production methods amongst fish farmers.
- In addition to the FOP, financial support was provided in 2010 and 2011 to maintain the quality of carp genetic resources.

Figure 14.1. Aquaculture production



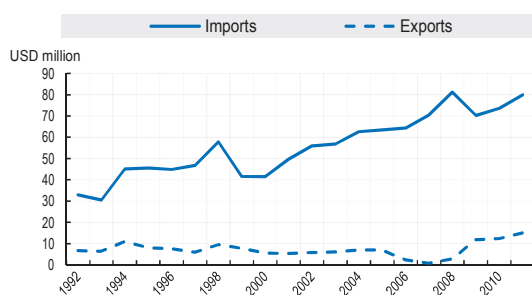
Source: FAO FishStat Database.

### Box 14.1. Key characteristics of Hungarian fisheries

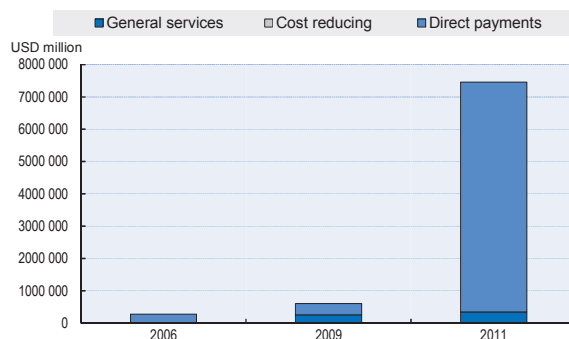
- Levels of import and exports are at historic highs. While change in imports was mostly flat between 2010 and 2011, exports increase by more than 50% over that period, though Hungary still imports (mainly sea products) almost half of domestic consumption. (Panel A)
- Hungary provides support for fisheries in the context of the European Fisheries Fund (EFF). The majority of funds are targeted to convergence objective regions with priority given to EFF axes 2.3 and 5. (Panel B)
- There are 14 companies whose main business is capture fishing. The majority of fishers do so on a part-time basis. (Panel C)

Figure 14.2. Key fisheries indicators

Panel A. Trade evolution



Panel B. Evolution of government financial transfers



Panel C. Capacity

	2006	2011	% change
Number of fishers	3 390	1 921	-0.43
Number of fish farmers	1 311	1 343	0.002
Total number of vessels	..	..	..
Total tonnage of the fleet	..	..	..

## Key characteristic of the sector

Capture fisheries are inland only, while aquaculture can be divided into pond aquaculture and intensive fish farming. There is a close link between these sub-sectors and many companies are involved in several at once.

Aquaculture accounts for 70% of total production and inland fishery for around 30%. Within aquaculture, fish pond aquaculture production is dominant (around 90%), although intensive fish farming production has increased significantly in the last ten year.

Angling is a significant activity in Hungary, accounting for over 60% of total catch in natural waters. Carp is the most popular fish species in capture fisheries and pond aquaculture, while African catfish, followed by trout, is the main species found in intensive fish farming.

## Legal and institutional framework

Hungary is a member of the European Union and implements measures that are in line with the Common Fisheries Policy. Since Hungary is a landlocked country and does not pursue any marine fishing activity, national legislation plays an important role in fisheries management. The primary legislation is the Hungarian Law on Fisheries adopted in 1997.

The Ministry of Rural Development is responsible for EU policy development and adopting national fisheries legislation. The Agricultural and Rural Development Agency collaborates with the Ministry to implement the Fisheries Operational Programme (FOP), which is co-financed by the European Fisheries Fund and the national government.

There are two producer associations; the Fishermen and Fish Producer's Association (MAHAL) and the Hungarian Aquaculture Association (MASZ). Anglers are represented by the National Federation of Hungarian Anglers (MOHOSZ).

## Capture fisheries

### *Performance*

Capture fishing takes place in the natural waters of Hungary. The area of inland waters has not changed significantly in the last decade. In 2011 the total area was 140 989 ha, although no fishing activity was reported on 3 366 ha. There are around 1 650 fishing areas in Hungary, with the three most significant being the Lake Balaton, the Danube and the Tisza rivers which accounted for 41.5% of total inland water catches in 2011. The most popular species is common carp covering more than 50% of the total catch in natural waters. The share of carps is even higher if other species (grass, silver and big head carps) are included.

There are currently 14 companies having their main activity in inland commercial fishery. The number of fishermen varies from season to season; there were 2 002 fishers in 2010, and 2 042 in 2011. A general characteristic of fishermen is that today fishing is not their primary job.

**Table 14.1. Main species harvested in inland capture fisheries, 2010-11**

Fish	2010		2011	
	Tonnes	%	Tonnes	%
Common carps	3 247.3	52.2%	3854.4	54.7%
Grass carp	337.7	5.4%	355.7	5.0%
Silver/big head carp	349.9	5.6%	455.4	6.5%
Pikeperch	157.6	2.5%	222.4	3.2%
Catfish	169.7	2.7%	179.2	2.5%
Pike	181.9	2.9%	238.1	3.4%
Eel	235.0	3.8%	25.6	0.4%
Others	1 537.1	24.9%	1 716.5	24.4%
Total	6 216.2	100.0%	7 047.3	100.0%

Source: Research Institute for Fisheries, Aquaculture and Irrigation.

### *Recreational fisheries*

Angling is considered to be recreational with no commercial purpose. In the majority of the natural waters there is both commercial and recreational fishing, although recreational fishing increased significantly in 2010, with anglers harvesting 4 404 tonnes. This is larger than the harvest of commercial fisheries in the three main natural bodies of waters (Table 14.2). In 2010, the harvest of commercial fisheries, as opposed to angling activities, was larger only in Lake Balaton. Silver and bighead carps and eel are normally harvested by commercial fishers, while common carp is mostly harvested by anglers. European eel is not a native species to Hungary and since 1992 restocking has been prohibited. The number of anglers has been stable in the last decade; in 2011, there were 369 350 registered anglers.

**Table 14.2. Proportion of harvest by anglers and capture fishers on the Danube and Tisza Rivers and Lake Balaton, 2010**

	Anglers	Capture fishers
Common carp	93.3%	6.7%
Grass carp	85.7%	14.3%
Silver/big head carp	13.0%	87.0%
Pikeperch	83.3%	16.7%
Catfish	72.0%	28.0%
Pike	88.3%	11.7%
Eel	35.0%	65.0%
Total	60.0%	40.0%

Source: Research Institute for Fisheries, Aquaculture and Irrigation.

### *Management of commercial fisheries*

The Hungarian Law on Fisheries No. 41 and the implementation Act 78/1997 (XI.4.) were adopted in 1997. These regulations concern fishing rights, official fishing and angling certificates prohibited fishing methods and equipments, and guarding activities. Protected fish species and fishery prohibition periods are regulated by Ministry Decree 73/1997 (X.28). The Law on Nature Protection No. 53 (1996) and the Law on Water-management No. 57 (1995) also have fishing-related paragraphs.

## Aquaculture

There are two main forms of aquaculture activity: pond aquaculture and intensive fish farming where flow-through and recirculation systems are used.

### *Pond aquaculture*

Pond aquaculture is maintained in such a way as to facilitate the development of the fish population at higher yields than in the natural ecosystem. This is achieved with special density management, increased water productivity, and feeding methods.

Since 1995, the area of operating fishponds has increased from 17 545 ha to 24 364 ha in 2011. This has resulted in an increase of production. In 1995, production of fish for consumption was 9 933 tonnes; in 2011, production was 14 280 tonnes. Many producers are reconstructing rather than increasing the area of fishponds in order to improve production. In 2010, 132 ha were reconstructed, and 250 ha in 2011.

Common carp is the most produced fish in pond aquaculture, while herbivorous species (grass, silver and big head carps) are important in the widely-used pond polyculture technology. Pond production plays a significant role in providing breeding stock (including protected and endangered species) for the stocking of natural waters.

The high value carnivorous species, such as pikeperch, pike and catfish, are also produced in pond aquaculture, although in smaller amounts than inland waters. While production of all carnivorous species increased from 2010 to 2011, production of pike reached its highest level due to the application of the latest research results in the field of propagation (Table 14.3).

**Table 14.3. Main species and pond aquaculture table size production**

	2010		2011	
	Tonnes	%	Tonnes	%
Common carp	9 926.9	84.9%	10 806.9	80.2%
Grass carp	437.4	3.7%	719.4	5.3%
Silver/big head carp	1 095.9	9.4%	1 613.2	12.0%
Catfish	156.3	1.3%	174.7	1.3%
Pikeperch	38.5	0.3%	46.0	0.3%
Pike	27.5	0.2%	83.1	0.6%
Tench	3.7	0.0%	7.8	0.1%
Others	12.4	0.1%	23.8	0.2%
<b>Total</b>	<b>11 698.6</b>	<b>100.0%</b>	<b>13 474.9</b>	<b>100.0%</b>

Source: Research Institute of Agricultural Economics.

### *Intensive farming*

Intensive fish farm production, where fish are kept in controlled conditions and only pelleted feed is used, dates to the 1980s. Production started to increase in 2000 and doubled to 2 000 tonnes by 2011. This increase is mostly driven by African catfish production, although sturgeon production has also increased significantly (Table 14.4).

**Table 14.4. Main species and their table size production in intensive fish farming**

	2010		2011	
	Tonnes	%	Tonnes	%
Trout	47.7	2.5%	43.8	2.2%
African catfish	1 809.8	93.4%	1913	95.3%
Sturgeon	80.6	4.2%	50.8	2.5%
Total	1 938.1	100.0%	2007.6	100.0%

Source: Research Institute of Agricultural Economics.

There were 377 companies with 441 fish farms in the aquaculture sector in 2011. The majority of fish farms are less than 50 ha and their output ranges between 5 and 100 tonnes in general. The number of companies involved in intensive farming is slowly increasing; in 2011, 14 fish farms pursued intensive fish farming activity. High start-up capital and the need for a high level of know-how are the main barriers to starting intensive fish farming.

In 2011, there were 1 343 people employed in this sector, which is higher than in the last two years, but lower than the mid-2000s. It is an objective of the fisheries development programme to maintain the level of employment in the aquaculture sector.

The latest policy and research development in the field of aquaculture are as follows.

- The combination of intensive and extensive systems.
- Effluent water treatment of intensive systems in constructed wetland.
- Multi-functional pond fish farming.
- Increased production of high value species using natural food in fish ponds.
- Production of high value species in Recirculation Aquaculture Systems (RAS).
- Using geothermal water resources for intensive aquaculture.
- Pond-in-pond system.
- Conservation of genetic resources in gene banks and breeding of common carp.
- Genetic characterisation of common carp.

Hungarian policy developments depend on the European Union. The European Commission submitted its legislative proposal on the European Maritime and Fisheries Fund (EMFF) in 2011. The EMFF will provide the financial assistance for EU fisheries and aquaculture sector starting from 2014. The main work regarding the financial period 2012-2014 will be the development of a multiannual aquaculture strategy and new fisheries operational programme for the period of 2014-20.

### Fisheries and the environment

The main Hungarian fish species are omnivorous and herbivorous species, mostly carps fed by natural food production increasingly produced by ponds and complementary feed. The complementary feed of carps is mainly grain-based and artificial feed fishmeal content is less than 5%. Because of the limited fishmeal use and valuable wetland habitats created by fish ponds, pond polyculture is considered as a sustainable way of fish production that maintains biodiversity.

Around one-third of the fishpond area (7 049 ha) in 2011 were Natura2000 sites, which means that fish farmers must respect certain rules with regard to nature conservation.

Aqua-environmental Measure, a new programme, was launched in 2011 under the FOP to encourage environmentally conscious production among fish farmers. Fish farmers voluntarily commit themselves to meeting environment friendly production requirements for a minimum of five years.

An important external environmental threat to fish production is the Great Cormorant, a fish-eating bird protected by Directive 2009/147/EC on the conservation of wild birds. The population of the Great Cormorant has significantly increased recently, causing damage and loss of income to commercial fisheries, aquaculture, and anglers.

The adverse impact of aquaculture production has been the subject of numerous research projects; for example, considerable research was conducted on wetland systems. The application of the research results are encouraged by the Fisheries Operational Programme which provides financial support for investments.

### Government financial transfers

After joining the European Union in 2004, Hungary has been providing support for the fisheries and aquaculture sector in close collaboration with and under the control of the European Commission.

The Fisheries Operational Programme is a fisheries development programme for the period 2007-13 managed by Hungary and the European Union. The programme is based on a strategy that defines priorities and development goals in the fisheries and aquaculture sector.

Total public expenditure for the 2007-13 period is EUR 47 million, with EU co-financing through the EFF was EUR 35 million. Ninety-eight per cent of the allocation is earmarked for the convergence objective regions; that is, the rural areas of Hungary except for the central region Budapest and Pest counties.

The programme focuses on the following.

- Aquaculture, aqua-environmental measures, inland fishing, processing and marketing of fishery and aquaculture products (EFF priority axis 2.) This programme finances investments in aquaculture, inland fisheries units and processing facilities. Additionally, aqua-environmental measure described above is available under this programme as well.
- Measures of common interest (EFF priority axis 3.) Measures of common interest include actions that serve the interest of the whole fisheries sector. Actions are supported that promote the link between production and research, also the marketing of fishery products is supported to increase fish consumption.
- Technical assistance (EFF priority axis 5.) This measure supports the implementation of the programme covering the administrative, information dissemination, communication and marketing expenses regarding the programme.

Besides the EFF, Hungary provides support from its national budget according to Articles 87 and 88 of the Treaty on the Functioning of the European Union and the Commission Regulation (EC) No. 875/2007 of 24 July 2007. The aim of this financial transfer is to maintain the quality of carp genetic resources. The maximum level of *de minimis* support is EUR 10 000 per beneficiary in one year.

In 2010 and 2011, support was provided for aquaculture and processing developments, technical assistance, and in the framework of *de minimis* support (Table 14.5).

**Table 14.5. Government financial transfers associated with fishery policies (EUR) 2010 and 2011**

	2010	2011
Cost-reducing transfers	5 525 799.78	5 501 727.30

Source: Ministry of Rural Development.

### Post-harvesting policies and practices

There is no dedicated national regulation in place for food safety and labelling of fishery products. General EU food safety and labelling legislation should be applied in the field of fishery products as well.

### Markets and trade

#### *Markets*

Fish consumption in Hungary is around 4 Kg per capita per year. A general objective of the sector is to increase fish consumption. The FOP consists of marketing measures, such as promotional campaigns, to promote the consumption of fish.

There is a long tradition of buying live fish, and the proportion of processed (frozen and canned) and live fish in consumers' purchases is around equal. In mid-2000, the ratio of processed fish started to increase, exceeding live fish consumption which seems to correlate to the increase of imported fish products that are mostly processed. More and more traditional Hungarian food products are available as ready-to-eat in retail chains, although the development of fish processing is still at a low level.

#### *Trade*

Hungary has a negative trade balance in fishery products. Imports have been increasing in the last decade, and reached a peak in 2008. In 2009, imports decreased, although in 2011 it reached its 2008 level again. The main imported products are sea fish fillets and canned fish products.

Exports decreased up to the mid-2000s, although since 2007 onwards there was a noticeable increase, and in 2011 exports reached its highest level. The main export product is live fish; however processed products have an increasing share in the export as well.

**Table 14.6. Hungarian trade in fish products, 2010-11**

	2010		2011	
	Quantity Tonnes	Value 1000 EUR	Quantity Tonnes	Value 1000 EUR
Import	19 730.4	53 622.5	20 684.4	58 449.4
Export	2 237.6	6 286.4	4 037.1	9 650.7

Source: Hungarian Central Statistic Office.



**Outlook**

Due to rising grain prices the traditional semi-intensive and extensive pond production technology is expected to change. Instead of cereals, farmers tend to use pellet fish feed as a complementary feed in addition to the natural production of ponds.

The very low level of fish consumption needs to be increased to create internal market for enlarged production of ponds and intensive aquaculture.

A new law regulating the capture fishery and angling activity in natural waters is under development to reduce illegal fishing and maintain freshwater fishery resources.



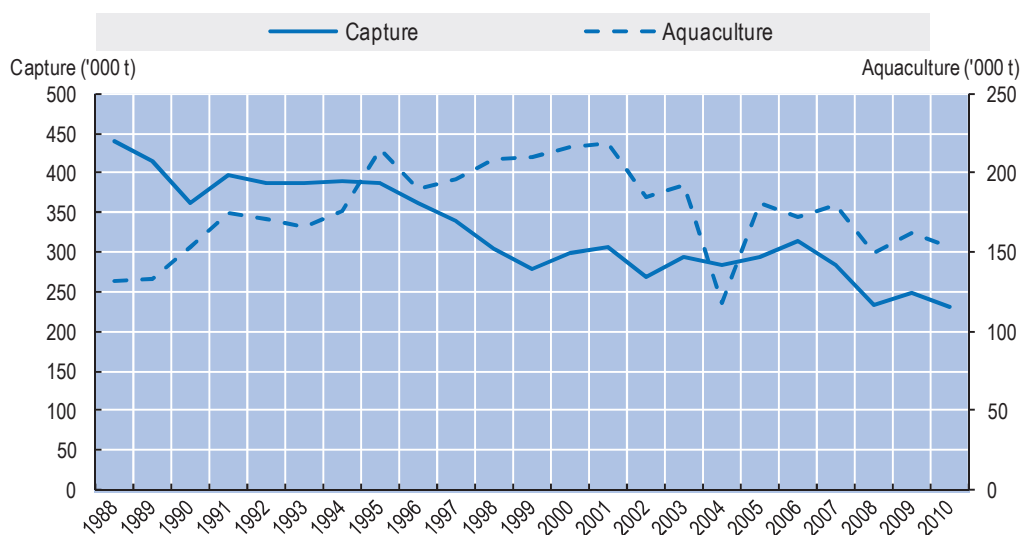
## Chapter 15

### ITALY

#### Summary of recent developments

- The production in domestic ports has continued to fall since 2009. Lower production levels are primarily related to reduction in fishing capacity. Between 2010 and 2011, average days at sea increased by 5% in spite of higher fuel costs.
- The production relative to the number of persons employed has fallen progressively since 2004. Between 2004 and 2011, landings decreased by 27% in weight and by 21% in value. Over the same period, the number of employees was reduced on average by 4.5% each year. In terms of value added, the contribution of the fishery sector to the macro-sector of agriculture, sylviculture and fisheries declined by 16%.
- In 2011, almost 33% of financial transfers was allocated to scrapping. Overall, 332 vessels of the Italian Mediterranean fleet were scrapped leading to a reduction of almost 5% both in terms of GT and kW. The buy-back programme mainly affected the Bluefin tuna fishery sector.
- Over the period 2009-11, 26 vessels of the seiner BFT fleet were scrapped, representing a reduction of 47% both in terms of gross tonnage and fishing power.

Figure 15.1. Harvesting and aquaculture production



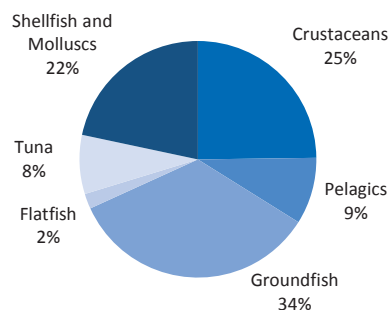
Source: FAO FishStat Database.

### Box 15.1. Key characteristics of Italian fisheries

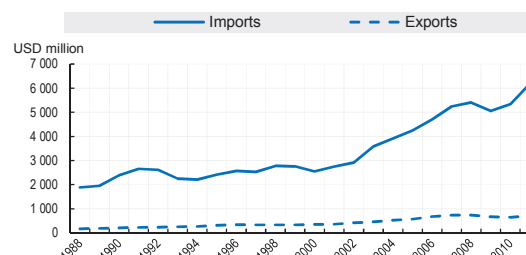
- In terms of landed value in 2010, groundfish made the greatest contribution (34%), followed by crustaceans (25%), shellfish and molluscs (22%), pelagics (9%) and Tuna (8%). Hake, anchovies, shrimp and swordfish made highest revenues. (Panel A)
- Italy has a negative trade balance in fishery products, both in terms of volume and value. Spain, Germany, Greece, France and Austria remain the most important export markets of Italian seafood products. Fresh products (mainly anchovy, sardine, mussel and trout) represent almost 70% of all export in value. Among frozen and processed products, prepared or canned tuna, frozen octopus represent the bulk of imports. Sea bass, sea beams, sole, swordfish and salmon are the main fresh products imported. (Panel B)
- In 2011, USD 241 million was transferred to Italian fisheries sector from government, which is a big increase (324%), compared to 2008. Almost 33% of financial transfers were allocated to scrapping. About 85% of government transfers were provided by the European fisheries fund (EFF). EFF aid from 1 January 2007 to 31 December 2013 has been allocated to the Central Authority for a 33% and to regions for a remaining 67%. (Panel C)
- Overall, 332 vessels of the Italian Mediterranean fleet were scrapped leading to a reduction of almost 5% both in terms of GT and kW. The buy-back programme mainly affected the Bluefin tuna fishery sector. Over the period 2009-11, 26 vessels of the seiner BFT fleet were scrapped, representing a reduction of 47% both in terms of gross tonnage and fishing power. (Panel D)

Figure 15.2. Key fisheries indicators

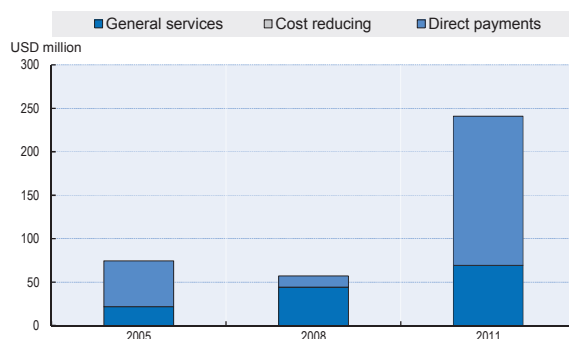
Panel A. Key species landed by value in 2010



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2005	2008	2011
General services	22	44	69
Cost reducing	0	0	0
Direct payments	53	13	172

## Legal and institutional framework

Fisheries policies are implemented within the context of the EU Common Fisheries Policy (CFP). Responsibility for fisheries in Italian waters lies with the Ministry for Food, Agriculture and Forestry and regional governments. Local authorities are entrusted with all competencies in fishery matters concerning artificial reefs, aquaculture, fishing harbour maintenance, processing, trading, and inland waters fisheries. The central administration is responsible for the national management plans (developed at GSA level), which have been implemented for specific areas and fisheries under the recently approved European Fishery Fund.

In line with the CFP, the principal management instruments are based on effort (capacity and activity) regulations together with other complementary technical measures, such as mesh size, area and time closure. The only exceptions regard the management of Bluefin tuna (*Thunnus thynnus*), which is regulated by individual quotas (IQ), and sedentary species (e.g. clams), which are regulated by a self-management approach based on Territorial User-Rights in Fisheries (TURFs).

## Capture fisheries

### *Performance*

The production of the Italian fleet in domestic ports has continued to fall progressively since 2009. Between 2010 and 2011, total production decreased by 6% in weight and by 1% in value. Lower production levels are primarily related to reduction in fishing capacity, which decreased by around 4% both in terms of gross tonnage and engine power. During the same period, average days at sea increased by 5% in spite of higher fuel costs.

The number of persons employed continues to fall progressively. In 2011, employment decreased by 1.3% compared to 2010. For the 2004-11 period, the crews engaged in Mediterranean fishing were reduced, on average, by 4.5% each year.

The Italian fleet is highly diversified with a broad range of vessel types targeting different species predominantly in the Mediterranean Sea. In 2011 it consisted of 13 064 vessels, with a reduction of 1% compared to 2010. During 2010 the full enforcement of the EU Regulation 1967/2006, which introduced restrictions to the towed nets (increasing in the minimum distance from the coast and increase in the mesh size), has in particular affected the segment of trawlers with a LOA (length overall) between 12-18 m and the small scale fisheries (for the use of the boat seine).

Table 13.1 provides a breakdown of key performance indicators for the eight main fleet segments in 2011. The bottom trawling fleet, which mainly operates with otter trawls and rapido trawls (modified beam trawls), is composed of 2 525 trawlers and forms the core of the Italian fishing fleet. Indeed, although it accounts for only 20% of vessels, it represents two-thirds of the total tonnage, 35% of the volume landed and 50% of total revenue.

Production of vessels using midwater pair trawl was 3 421 tonnes in 2011. Compared with the figures for 2010, catches and revenues decreased significantly, respectively by around 23% and 14%. In contrast, during the same period, the purse seiner fleet which also targets pelagic species reveals a satisfactory situation, with an increase of 30% in revenues and an increase of 3% in catches. The quantities landed were undoubtedly affected by the interruption of bluefin tuna fishing ordered by a Ministerial Decree. In 2010 the vessels authorised to fish for bluefin tuna observed a closed season. Over the period 2009-11, 26 vessels of the seiner BFT fleet were scrapped.

The hydraulic dredger fleet, which is largely concentrated on Italy's Adriatic coast, had slightly less than 22 000 tonnes of landings for an economic value of EUR 63 million. This sector is composed of around 700 vessels and their main target species is clams, which accounted for over 90% of their catch in 2011.

The small-scale fishing segment, which makes up the majority of the national fleet, is made up of all vessels with length overall less than 12 m that mainly use passive gear such as gillnets, longliners, pots and traps. Another characteristic is that the vessels' activity is operated and administered in a family-based, non industrial manner. During 2011, the production of small-scale fishing vessels totalled 36 620 tonnes, corresponding to EUR 296 million, with an increase both in the volume and value of around 8%. The favourable trend in the sector was the increase in the average price which, after years of being stationary, rose to more than EUR 8/kg, reaching levels similar to those of 2006. The changed composition of the catch, which saw an increase in the proportion of the most valuable fishes, in particular hake and striped mullet had a positive effect on the price.

In 2011, production by vessels with mixed passive gear totalled 8 143 tonnes with an economic value of just under EUR 63 million. Vessels in this production segment use passive gear such as gillnets, longlines, pots and other non-industrial techniques and have a length overall of more than 12 m. The most significant species in terms of volumes landed by multi-purposes vessels were swordfish, albacore, hake and Atlantic bonito. Taken together, these products accounted for almost 40% of total catches and revenue.

In 2011, the total volume of landings of the longlines fleet was 5 267 tonnes for a total economic value of EUR 39 million. Compared to the previous year, the trend for the indicators showed recovery in catches (+2%) and a marked fall in revenue (-10%). The reduction in the 2008-11 period can be attributed partly to the process of reducing the productive infrastructure (-17% in the number of vessels in the last three years) and partly to lower average productivity. By contrast, the level of activity has remained constant at an average of 130 days per vessel in 2010. In recent years, longliners have been experimenting with the use of new fishing techniques entailing efficiency improvements with direct effects on average daily productivity. In addition, the two-month close season on swordfish fishing imposed by the ICCAT is undoubtedly having a positive influence on the trend in overall swordfish catches.<sup>1</sup>

**Table 15.1. Capacity and economic indicators by fleet segments, 2010**

	Total fleet	Trawlers	Midwater Pair trawl	Purse Seine	Dredges	Small scale fishery	Multipurpose vessels	Long-lines
<b>Capacity indicators</b>								
Volume of landings (tonnes)	223 007	78 182	44 393	31 506	21 794	33 559	8 426	5 148
Value of landings (EUR million)	1 103	555	47	53	63	276	66	44
<b>Economic indicators</b>								
Fleet – number of vessels	13 223	2 636	131	292	707	8 776	493	188
Fleet - total GT ('000)	176	110	10	18	9	17	7	6
Fleet - total kW ('000)	1076	524	47	74	76	248	70	38
Average days at sea	126	150	158	96	89	121	128	129
Employment	28 982	9 075	691	1 731	1 440	14 047	1 292	707

Source: MIPAAF – IREPA.

Table 15.2. Capacity and economic indicators by fleet segments, 2011

	Total fleet	Trawlers	Midwater pair trawl	Purse Seine	Dredges	Small scale fishery	Multipurp. vessels	Long-lines
<b>Capacity indicators</b>								
Volume of landings (tonnes)	210 324	71 951	34 218	32 335	21 790	36 620	8 143	5 267
Value of landings (EUR million)	1 090	520	40	69	63	296	63	39
<b>Economic indicators</b>								
Fleet - number of vessels	13 078	2 525	132	268	706	8 764	483	186
Fleet - total GT ('000)	176	104	11	16	9	17	7	6
Fleet - total kW ('000)	1 048	499	48	67	76	251	70	36
Average days at sea	133	147	140	104	85	134	131	123
Employment	28 555	8 431	678	1 644	1 480	14 008	1 589	726

Source: MIPAAF – IREPA.

The main species caught by the Italian fishing fleet are reported in Table 15.3. In economic terms, the species that made the greatest contribution to the total revenues was hake, which accounted for a 7.9% of the national total. Anchovies, at EUR 78 million, were the species with the second highest revenues followed by white shrimp and swordfish. Compared to 2010, production of all main species strongly decreased. Only cuttlefish, striped mullet, red mullet and the group of other molluscs recorded a rising trend.

Table 15.3. Main species harvested by quantity and value, 2011

	Tonnes ('000 tonne)	%	EUR million	%
Other fish	24	11.4	168	15.4
European hake	10	5.0	86	7.9
European anchovy	46	22.0	78	7.2
Deep-water rose shrimp	10	4.8	73	6.7
Swordfish	5	2.5	61	5.6
Norway lobster	3	1.3	53	4.9
Striped venus	20	9.4	53	4.8
Blue and red shrimp	2	1.1	47	4.3
Cuttlefish	5	2.2	45	4.1
Other molluscs	8	3.7	41	3.8
Mantis squillid	5	2.6	36	3.3
Common octopus	4	1.9	28	2.6
Striped r mullet	5	2.3	27	2.5
Red mullet	2	1.1	24	2.2
Sole	1	0.6	23	2.1
Total Mediterranean production	210	100	1 090	100

Source: IREPA.

Landings by Italian vessels into foreign ports accounted for 0.56% of the Italian fisheries production in terms of quantity and for a 0.8% in terms of value. Between 2010 and 2011 production increased by 17% in weight, while revenues decreased by 8%. During the same period the oceanic trawl fleet reduced from 16 to 14 vessels. The fishery is mainly located in Mauritiana, Seychelles, Mauritius, Madagascar and the Comoros. The key species are yellowfin tuna, skipjack tuna, octopus and common shrimp.

### *Status of fish stocks*

In 2011, the Expert Working Group on Assessment of Mediterranean Sea Stock of the Scientific, Technical and Economic Committee for Fisheries of the European Community (STECF EWG 11-20) assessed the status of ten demersal stocks and three stocks of small pelagic species and their fisheries for all Mediterranean Geographical Subareas (GSAs).

The results presented in the reports of the EWG reports represent the best available estimates of current exploitation status for the demersal and small pelagic stocks in the Mediterranean. Together with the two previous meetings in 2011, 42 assessments were conducted, of which 37 assessments or reviews of assessments resulted in an estimate of the exploitation rate that was evaluated against the proposed FMSY reference point.

With regard to the nine Italian GSAs: around 50% of stock assessed are classified as being subject to overfishing, while two stocks were assessed to be sustainably exploited. The status of a remaining 44% of assessed stocks is unknown as assessments are still not concluded.

**Table 15.4. Status of fish stocks, 2011**

Common name	Scientific name	Ligurian Sea, Northern and Central Tyrrhenian Sea - GSA 9	Southern Tyrrhenian Sea - GSA 10	Sardinian seas - GSA11	Strait of Sicily - GSA 16	Central and Northern Adriatic Sea - GSA17	Southern Adriatic Sea - GSA 18	Western Ionian Sea - GSA 19
European hake	<i>Merluccius merluccius</i>	O	O	Un	O	Un	O	Un
Red mullet	<i>Mullus barbatus</i>	O	O	O	O	Un	Un	Un
Pink shrimp	<i>Parapenaeus longirostris</i>	S	O	Un	O		Un	Un
Striped red mullet	<i>Mullus surmuletus</i>	O			Un		Un	
Giant red shrimp	<i>Aristaeomorpha foliacea</i>	O	Un	O	O			Un
Blue and red shrimp	<i>Aristeus antennatus</i>	O	Un	Un	Un			
Norway lobster	<i>Nephrops norvegicus</i>	O	Un	Un	Un			
Spot-tail mantis shrimp	<i>Squilla Mantis</i>	O						
Common sole	<i>Solea solea</i>					O		
Common pandora	<i>Pagellus erythrinus</i>	O			O			
Anchovy	<i>Engraulis encrasicolus</i>	O			O	Un		
Sardine	<i>Sardina pilchardus</i>				Se	S		

O= overexploited, S= sustainable, Un= Unknown

Source: Report of the Scientific, Technical And Economic Committee For Fisheries on Assessment of Mediterranean Sea stocks (STECF-12-03).



## Aquaculture

### *Values and volumes*

Marine aquaculture produced 188 954 tonnes of fish in 2010 which is an equivalent of EUR 377 million. Between 2009 and 2010, Italian aquaculture production has increased by 5% in terms of weight and by 11% in terms of value. It accounted for a 41% of total fish food production by quantity and for a 23% by value.

The concentration lies on Mediterranean mussel, manila clam, rainbow trout, sea bass and gilthead seabream. Of relevant importance is the Italian production of mollusks. In 2010, mussels (*Mytilus galloprovincialis*) represented 50% of the total Italian production in weight and 20% in value. Clam (*Tapes philippinarum*) accounted for 21% in terms of weight and for 28% in value.

**Table 15.5. Aquaculture production**

	2009		2010 (p)	
	Tonnes	EUR million	Tonnes	EUR million
Rainbow trout in freshwater ponds	367	2	333	2
Sea trout	97	0	104	0
Sea bream	6 342	44	6 457	45
Sea bass	6 178	31	6 260	39
Catfish	81	0	81	0
Carp	488	2	479	2
Tilapia	261	1	214	1
Eels	677	7	647	7
Other fish	37 991	98	37 781	99
Oyster, edible	38	1	38	0
Mussel	89 051	51	96 297	75
Clam	38 368	100	40 261	106
Shrimp and prawn	2	0	3	0
Total	179 941	339	188 954	377

Source: UNIMAR.

## Government financial transfers

In 2011, almost 85% of Government transfers to the Italian fishing industry were provided by the European fisheries fund (EFF). EFF aid from 1 January 2007 to 31 December 2013 have been allocated to the Central Authority for a 33% and to regions for a remaining 67%. In particular, Italian regions are exclusively competent for aquaculture, processing and marketing, inland fishing (axis 2) and for Sustainable development of fisheries areas (axis 4).

### *Transfer policy*

In 2011, a 12% of the total financial transfers have been allocated to the harvesting sector for management services. Another 10% was distributed among research and enforcement services, production infrastructure expenditure and general support to fishing firms and consortia

### *Social assistance*

Income support for temporary cessation of activity represented a 20% of total financial transfers allocated in 2011 to the Italian fishing industry.

**Structural adjust**

In 2011, almost 33% of the total the total financial transfers was allocated to scrapping. Overall, 332 vessels of the Italian Mediterranean fleet were scrapped with a reduction of the size of 8 352 GT and 45 338 kW. In the same year 5 vessels of the seiner bluefin tuna fleet were scrapped, corresponding to a reduction in capacity of 2 155 GT and 7 581 kW. Over the period 2009-11, 26 vessels of the seiner BFT fleet were scrapped for a total reduction of 47% both in terms of gross tonnage and fishing power.

**Markets and trade****Markets***Trends in domestic consumption*

In 2011, consumption of fish and fish products per capita remained stable at 19.7 kg, the same level as previous years.

**Trade***Volumes and values*

Italy has a negative trade balance in fishery products, both in terms of volume and value. In 2011, total export value of seafood products increased more than 5% compared to 2010, while the quantity of exports decreased by 7%. The Italian trade deficit showed a decrease of 3% reaching EUR 3 852 million. Spain, Germany, Greece, France and Austria remain the most important markets of Italian seafood products. Fresh products (mainly anchovy, sardine, mussel and trout) represent almost 70% of all export in value.

In 2011, imports rose to 957 000 tonnes, equalling EUR 4 400 million. Among frozen and processed products, prepared or canned tuna, frozen octopus represent the bulk of imports. Sea bass, sea beams, sole, swordfish and salmon are the main fresh products imported.

**Table 15.6. Import-export trade of fishery products, 2010–11**

	Volume		Value	
	1000 t		EUR Million	
	2010	2011	2010	2011
Import	940	957	3 988	4 400
Export	135	126	520	548
Balance	-805	-831	-3 468	-3 852

Source: ISMEA.

**Note**

1. With Recommendation 09-04, which replaced the earlier Recommendation 08-03, the ICCAT confirmed a closed season in the Mediterranean Sea for any catches (deliberate and/or accidental) of swordfish from 1 October to 30 November. Moreover, retention on board, landing and/or transshipment is also strictly forbidden during the close season.

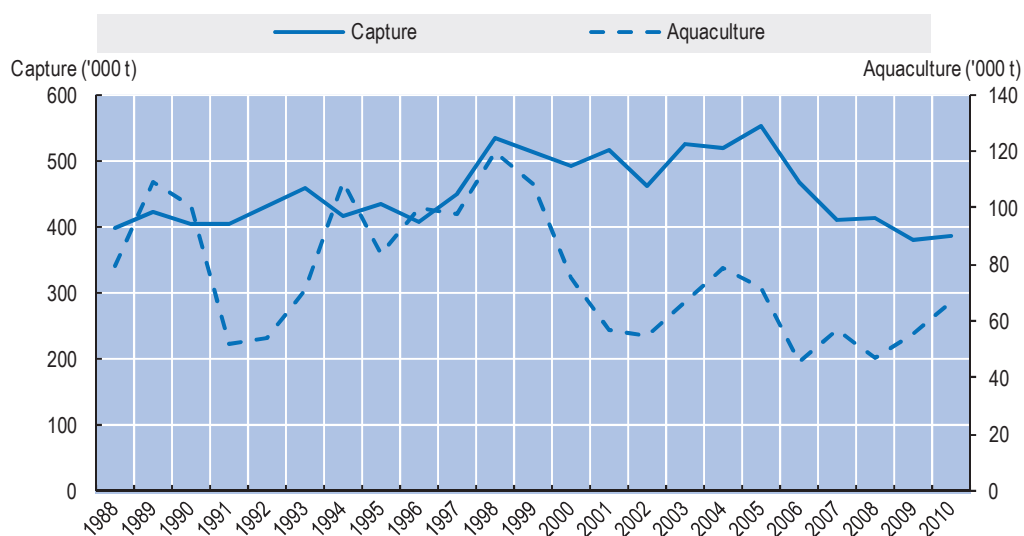
## Chapter 16

### NETHERLANDS

#### Summary of recent developments

- In the fall of 2010, the responsibility of management of capture fisheries and aquaculture switched from the ministry of Agriculture, Nature and Food Safety to the then new-formed ministry of Economic Affairs, Agriculture and Innovation.
- Despite a global trend, fish farming is declining in the Netherlands, which made the government commission two research institutes to draw up an action plan in 2010. The conclusion was that three issues needs better organization: market position, efficiency and cost savings and the capacity for innovation. Specific actions taken by the government are research into possible partnership forms and providing support for a Knowledge Network. Other action points are facilitating the acquisition of insight into markets and access to market data; supporting existing initiatives to increase production and chain co-operation; supporting initiatives and research into improvements to production under recirculation aquaculture systems technology and supporting initiatives into waste recycling and reuse.
- A new type of fishing gear for bottom fishing was allowed in 2010. It uses weak electric pulses to scare flatfish from or out of the seafloor so the fishing net no longer needs be pulled through the sand to catch the flatfish. This reduces not only the negative impact of fishing on the surface of the seafloor and thereby its impact on biodiversity but also wear of the nets and the use of fuel. The experience and data of 2010-2011 were used to prepare a request in 2012 for official recognition of this method by the European Union.

Figure 16.1. Harvesting and aquaculture production



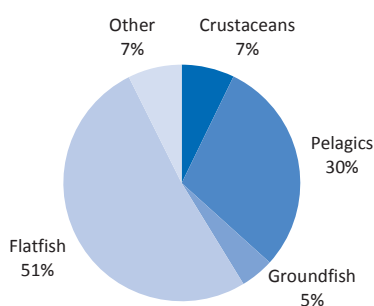
Source: FAO FishStat Database.

### Box 16.1. Key characteristics of Dutch fisheries

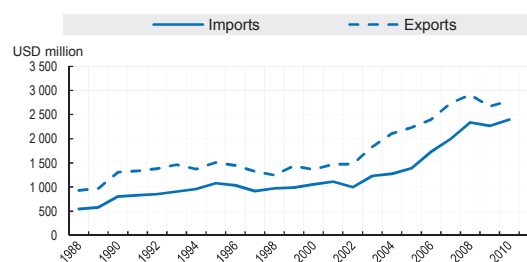
- In 2010, flatfish accounted for the highest value in terms of value of landings, followed by pelagics, crustaceans and groundfish. (Panel A)
- In 2009, the total value of fish exports was just under EUR 2 200 million. The value of exported frozen fish fell by approximately EUR 150 million to EUR 859 million, equivalent to 40% of the total export value. The value of imports was around EUR 1 800 million, a little higher than the previous year. Imports from France fell the sharpest, whilst those from Italy and Poland increased the most. (Panel B)
- In 2009, the total value of fish exports was just under EUR 2 200 million. The value of exported frozen fish fell by approximately EUR 150 million to EUR 859 million, equivalent to 40% of the total export value. The value of imports was around EUR 1 800 million, a little higher than previous year. Imports from France fell the sharpest, whilst those from Italy and Poland increased the most. (Panel C)
- In 2009, the total value of fish exports was just under EUR 2 200 million. The value of exported frozen fish fell by approximately EUR 150 million to EUR 859 million, equivalent to 40% of the total export value. The value of imports was around EUR 1 800 million, a little higher than previous year. Imports from France fell the sharpest, whilst those from Italy and Poland increased the most. (Panel D)

Figure 16.2. Key fisheries indicators

Panel A. Key species landed by value in 2010



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2006	2008	2010
General services	2	1	6
Cost reducing	0	0	0
Direct payments	17	41	6

## Legal and institutional framework

Management of capture fisheries and aquaculture is the responsibility of the state government. In the fall of 2010 this responsibility switched from the ministry of Agriculture, Nature and Food Safety to the then new-formed ministry of Economic Affairs, Agriculture and Innovation.

Policies for marine fisheries are implemented within the context of the EU Common Fisheries Policy (CFP).

In addition, the Dutch Fishery Act of 1963 (*Visserijwet 1963*) provides for regulations regarding national formulation and implementation policies for coastal fisheries, aquaculture, inland fisheries and recreational fisheries.

There are three government websites to inform fishery professionals:

- [www.rijksoverheid.nl/themas/landbouw-natuur-en-voedsel](http://www.rijksoverheid.nl/themas/landbouw-natuur-en-voedsel).
- [www.drloket.nl/onderwerpen/visserij](http://www.drloket.nl/onderwerpen/visserij).
- [www.antwoordvoorbedrijven.nl/branche/visserij](http://www.antwoordvoorbedrijven.nl/branche/visserij).

## Capture fisheries

The Netherlands has four types of capture fisheries.

- North Sea fishery is the largest and economically most important fishery sector. It mostly makes use of cutters to fish the North Sea and the Channel for sole, plaice and other fish by beam trawling.
- Sea fishery is the fishery beyond the North Sea with (freezer) trawlers (14 vessels) that catch herring, mackerel and other pelagic fish in European and West African waters and is profitable even in the Pacific Ocean.
- Coastal fishery is in the zone within 12 nautical miles of the beach. They mostly catch shrimp and mussels.
- Inland waters fishing takes place on the *IJsselmeer*, the lakes around it and on the large rivers. Eel, pike (perch) and smelt are the most caught fish.

In 2010, the fleet was composed of 730 vessels (0.9% of EU-27), of which 539 were trawlers (74%) and 191 were other vessels (26%). Their tonnage was 142 066 GT (8.4% of EU-27) with 305 955 kW (4.8% of EU-27). The active fleet, however, was smaller in 2010 than in 2008: 14 trawlers (14), 283 cutters (308) and 60 dredgers (70).

### *Performance*

Dutch fisheries caught some 450 000 tonnes of fish (mostly horse mackerel, herring and sardinella). Revenue from the Dutch fishing industry at year-end 2009 dropped steeply to EUR 386 million, a fall of 18% from 2008.

In 2009, Dutch fish auctions (supplied also by vessels sailing under foreign flags) generated a total revenue of EUR 273 million, down EUR 27 million or -9% on the previous year. The quantity of fish supplied increased, but the prices for a number of important types (especially plaice and shrimps) dropped considerably resulting in less revenue. In 2010, auctions generated a total revenue of EUR 294 million, an increase of EUR 21 million or +8.1% on the previous year.

In 2010/11, the fisheries sector employed around 20 000 people (full- and part-time). The employment level in 2010 by sector was: 2 075 in the catch sector; 5 540 in trade and processing; and 6 000 in retail.

### *Status of fish stocks*

Total allowable catches (TAC's) are fixed yearly by the European fisheries ministers. They receive advice based on the status of fish stocks from the fisheries biologists of the International Council for the Exploration of the Sea (ICES), the Scientific Technical Economical Committee on Fisheries (STECF) and the Regional Advisory Committees (RAC). The TAC is divided between EU-countries according to allocation formulas.

The most important stocks for Dutch fisheries are sole and plaice. In 2010-2011, their status improved, resulting in higher TAC's c.q. NL-quotas. The status of cod is very poor and slowly reaching the point where fishing should be stopped. The management plan for herring had a positive effect and the stock is more or less stabilised and gradually improving. The stock of mackerel and horse mackerel has declined. The 2011 quota for blue whiting was reduced by 93%.

**Table 16.1. Netherland quotas in 2009, 2010 and 2011**

Unit: tonnes

	2009	2010	2011
Sole	10 466	10 571	10 571
Plaice	20 237	22 907	26 485
Cod	2 762	3 219	2 575
Herring	31 069	29 774	36 671
Mackerel	28 905	27 405	24 002
Horse mackerel	57 415	49 123	48 719
Blue whiting	13 787	12 350	1 869

### *Management of commercial fisheries*

#### *Management instruments*

No major changes were implemented in the general management regime. The co-management system introduced in 1993 is still in operation. A very large share of the fishers in the cutter sector voluntarily joined this system, enabling them to optimise the economic use of their transferable quota (ITQ's). In 2005 government and industry agreed to extend the co-management system to control and enforcement of engine power.

#### *Access arrangements for foreign fleets*

This is arranged by and according to the agreements and rules of the European Union.

### *Management of recreational fisheries*

Recreational fisheries are regulated by restrictions on the amount and kind of gear used, closed seasons and minimum size limits for specific species. It is prohibited to sell fish caught in recreational fisheries. No major changes were introduced in the management of recreational fisheries.

### ***Monitoring and enforcement***

On 1/1/2010 a new European fishery control system entered into force stepwise. Many provisions entered into force on 1/1/2011. The details can be found on the EU website ([ec.europa.eu/fisheries](http://ec.europa.eu/fisheries)).

For the Dutch fleet, the most important provision was the provisional use of an electronic registration and reporting system (e-log). To stimulate the purchase and use of an electronic log one could ask for a subsidy with a maximum of EUR 4 500 for each vessel.

On 1/1/2010 an EU-regulation on illegal, unreported and unregulated fishery entered into force. It had many consequences for importers and traders of fishery products. For Dutch fishermen, however, the consequences were small.

In late 2009, the European Court decided in favour of the European Commission in a court case against The Netherlands on the monitoring of the maximum allowed engine power. Authorities no longer allow a 12.5% tolerance margin when measuring engine power. Once a vessel engine is sealed, the engine power will never be higher than the value laid down in the permit.

In 2010, the professional use of passive gear (set nets) in coastal waters became better regulated in order to freeze the then current usage. The main goal was to prevent monitoring and enforcement problems in the future.

### ***Multilateral agreements and arrangements***

The Netherlands has only multilateral agreements and arrangements as an EU-member. The most relevant agreements for the Netherlands are those of the European Union with the non-EU countries surrounding the North East Atlantic: Greenland, Iceland, Faeroe Islands and Norway. For the Dutch pelagic freezer trawlers, agreements between the European Union and, respectively, Morocco and Mauritania are also relevant.

## **Aquaculture**

### ***Policy changes***

Despite a global perspective, fish farming is hardly increasing in the European Union and is even declining in the Netherlands. Because of this decline in recent years, the government commissioned two research institutes to draw up an action plan in 2010. From this study the conclusion was that three issues need better organization: market position, efficiency and cost savings and the capacity for innovation. Specific actions taken by the government are research into possible partnership forms and providing support for a Knowledge Network. Other action points are facilitating the acquisition of insight into markets and access to market data; supporting existing initiatives to increase production and chain co-operation; supporting initiatives and research into improvements to production under recirculation aquaculture systems technology and supporting initiatives into waste recycling and reuse.

The government is continuing the stepwise measurements to improve the sustainability of the culture of mussels.

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

In 2010 the production volume was 66.945 tonnes with a value of EUR 80 million. Eighty per cent of production volume and about two third of the total value in aquaculture comes from mussels. Freshwater fish farming is negligible (58 enterprises in 2010) and is mainly the production of African catfish (13 enterprises) and European eel (18 enterprises).

## Fisheries and the environment

### *Environmental policy changes*

On the basis of the EU Natura 2000 scheme, the coastal zone of the North Sea has been appointed as an area that has to be protected against loss of biodiversity. And the effect of European Bird Habitat directive is that in this area the sandbanks have to be protected, because of their role in the marine ecosystem and their habitat for seashells, which some birds feed on. The result is that fishing will be forbidden or restricted in very large areas (no bottom fishing).

In 2011, government, fisheries organisations and nature protection organisations agreed to a scheme that gradually restricts fisheries and allows fishermen to develop and adopt new fishing techniques for these areas. The shrimp fisheries sector — already in crisis because of very low prices and high fuel prices — will be affected the most. Therefore, the government supports them in developing a master plan for a sustainable and profitable shrimp fishery.

The government also has a large impact on the mussel fisheries which have been forced to develop new techniques, including trying to raise mussels in the North Sea rather than in coastal waters. They also receive governmental support.

Expansion of the port of Rotterdam almost two miles into the sea, combined with natural developments in coastal water circulation, has led to changes in the pattern and depth of the seafloor of the coastal waters south of the port. This gave rise to questions about what should be considered sea and what should be considered coastal water. A 2010 regulation resolved this issue by establishing within the disputed area five new resting areas for seabirds and by restricting fishery activities. These actions are based on the EU Integrated Coastal Zone Management and the EU Natura 2000 scheme.

### *Sustainable development initiatives*

The year 2010 was the first year that a new type of fishing gear for bottom fishing was allowed. This new method uses weak electric pulses to scare flatfish from or out of the seafloor so the fishing net no longer needs to be pulled through the sand to catch the flatfish. This reduces the negative impact of fishing on the surface of the seafloor and thereby its impact on biodiversity. It also reduces wear of the nets and the use of fuel. In 2010, this method was allowed for 20 vessels, in 2011-2012 for 42 vessels. The experience and data of 2010-2011 were used to prepare a request in 2012 for official recognition of this method by the European Union.

In 2010-2011, the collection of mussel seed (spat) has been made more sustainable by increasing the use of installations (hanging nets, also known as mussel seed capture installations) for collecting the one to two centimetre mussels, instead of scraping these young mussels from the tidal flats by fishing vessels. The latter method was progressively restricted to protect biodiversity and the ecosystem.

## Government financial transfers

### *Transfer policies*

The main financial instrument for fisheries is the European Fisheries Fund (EFF). For measures geared to fishermen and fishing vessels, a total of EUR 1.5 million was deployed in 2010-2011. Of the amount attributed to aquaculture, EUR 15 million was spent. There were no specific transfers to the fish processing sector.

The Dutch Operational Programme focuses on innovation and sustainability of the harvesting and aquaculture sectors, with a marginal role for remediation of the fleet.



Technological innovation and the development of new product/market is essential for these sectors. The EFF program therefore supports pilot projects and collaborative projects that (may) lead to sustainable technologies, which (maybe) can be introduced into the market. For these measures, a total of EUR 51.5 million was spent (by EU+NL) in 2010-2011.

The Dutch have also chosen a tender system (which is not obligatory within the EFF) to clearly announce the day and time of opening and to define transparent selection criteria. The purpose of the tender system is to compare the offered projects and to select the best ones with the highest quality. By opening the tenders on a regularly basis for a limited time, only the best projects have access to public funds. A qualitative weighting of the projects is part of the tender procedure, whereby sustainability is an assessment criterion that is always applied. The Supervisory Committee can and should adjust the selection criteria for the following tender on the basis of new insights from the last tender, without having to change the Operational Programme.

### ***Structural adjustment***

There were no national policy changes in 2010-2011. There were no measures intended to facilitate reduction of fishing capacity, only the above-mentioned programme for support and promotion of technical innovations and developments that increase sustainability.

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

### ***Policy changes***

#### *Food safety*

There were no significant policy changes or practices in 2010-2011. The food safety policy is carried out in accordance with European rules. The current food safety policy is based on a series of principles established or updated at the beginning of the 2000s. These principles, applied in line with the integrated approach “From the Farm to the Fork” specifically include transparency, risk analysis and prevention, the protection of consumer interests, and the free circulation of safe and high-quality products within the internal market and with third countries. This approach involves both food products produced within the European Union and those imported from third countries.

A certain number of bodies, in particular the European Food Safety Authority and the Netherlands Food and Consumer Product Safety Authority, are responsible for helping to guarantee food safety. Research is also an important element of the food safety policy. RIKILT-Institute of Food Safety is the independent national research institute regarding food and feed safety.

#### *Information and labelling*

The obligatory information and labelling of fish and fish products is governed by European rules and underwent no significant changes in 2010-2011.

The new EU Regulation 1169/2011 on the provision of food information to consumers considerably changes existing legislation on food labelling (2000/13/EC and 90/496/EEC); the new rules will apply from 13 December 2014.

Voluntary information and labelling is mainly MSC-certification. In 2010-2011, Dutch fisheries were certified for North Sea herring (since 2006) and Atlanto-Scandian herring pelagic trawl (2010), Mackerel (since 2009), North Sea twin-rigged otter trawl plaice (since 2009), gill net sole (2009) and North Sea twin-rigged plaice (2010). There were also many requests for Dutch rod and line fishery for sea bass (2011), and Netherlands blue shell mussel

(2011). Netherlands suspended culture mussel (2011). All auctions for seafish and shrimps have been MSC-certified since 2009.

### *Structure*

There are about 600 enterprises that trade and process fish and fish products. And there are around 1 700 specialized fish sellers with at least one point of sale. There are no special governmental policies aimed at increasing the efficiency of distribution and marketing of fish and fish products. The sector organisations debate on these matters themselves and try to reach consensus on proposed actions. For actions that reduce food losses or food waste, or improve sustainability, they can request financial support when a support programme for these areas exists.

### *Processing and handling facilities*

There have been no significant changes in the structure of processing (including preservation, processing and handling onboard ships), handling and distribution industries, although all have continued to be modernised. It should be noted that the financial crises has made it more difficult to obtain bank loans in this sector for investments.

## **Markets and trade**

### *Markets*

#### *Trend in domestic consumption*

In 2009 domestic consumption was 19.6 kg per capita per year (EU-27, 23.0 kg). In the Netherlands, the three most consumed fish species are salmon, herring and pangasius.

#### *Promotional efforts*

Promotional efforts were mainly directed to supermarkets in order to increase the sale of MSC-certified fish and to slow down the increase in sales of fish from aquaculture imported into the European Union. Consumers were also informed which fish should be favoured with respect to promoting sustainability of fisheries.

### *Trade*

#### *Volumes and values*

The export value of fish and fish products fell in 2009 by more than 4%. The total value of fish exports was just under EUR 2 200 million. The value of exported frozen fish fell by approximately EUR 150 million to EUR 859 million, equivalent to 40% of the total export value. Exports to important trading countries – such as Germany, Belgium, Italy and Spain – fell, whilst exports to France and the United Kingdom rose slightly. The six most important trading countries within the European Union accounted for over 72% of the total value of exports. Outside the European Union, important trading countries were Nigeria, China, Japan and Egypt.

The value of imports was around EUR 1 800 million, a little higher than last year. Imports from countries outside the European Union rose by 6% to EUR 938 million. Imports from France fell the sharpest, whilst those from Italy and Poland increased the most. The value of imports of frozen fish, shellfish and crustaceans increased sharply, whilst those of fresh fish fell sharply.

*Policy changes*

There are no trade restrictions within the European Union and trade or tariff arrangements with non-EU countries are made by the EU. In 2010-2011, there were no changes with respect to trade regimes for fish and fisheries products between EU and non-EU countries that were of significance for trade with the Netherlands. New arrangements made in earlier years had their effects in 2010/11, e.g. the 2009-2012 agreement with Mauritania on pelagic fishery.

**Outlook**

The revision of the Common Fisheries Policy, including the regulation on the Common Market Organisation for fishery and fisheries products, and the revision of the European Maritime and Fisheries Fund will take place over 2012-13. There will be more focus on the sustainable use of our ecological capital, a bigger role for the market (less support mechanisms), and a different method for decision-making and implementation.



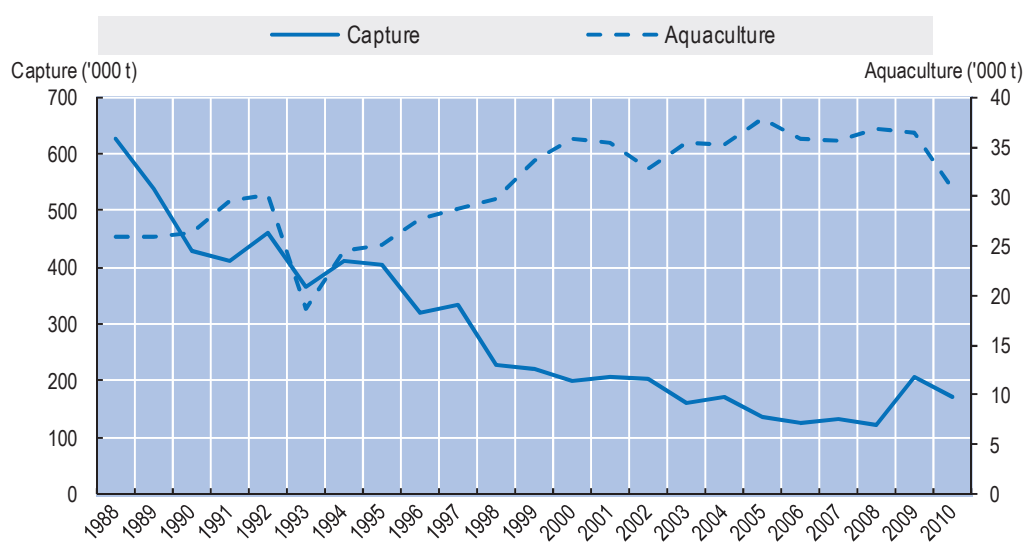
## Chapter 17

### POLAND

#### Summary of recent developments

- Poland is modernising and developing the fisheries sector under the *Operational Programme Sustainable Development of the Fisheries Sector and Coastal Fishing Areas 2007-2013*, financed by the European Fisheries Fund.
- The fish processing sector has been almost entirely privatised, and, over the past several years has become one of the most rapidly developing branches of the food processing sector.

Figure 17.1. Harvesting and aquaculture production



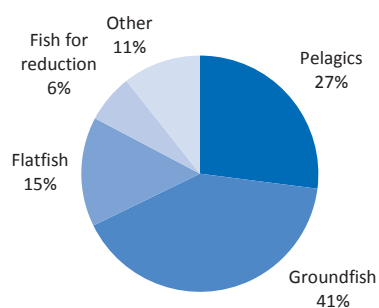
Source: FAO FishStat Database.

### Box 17.1. Key characteristics of Polish fisheries

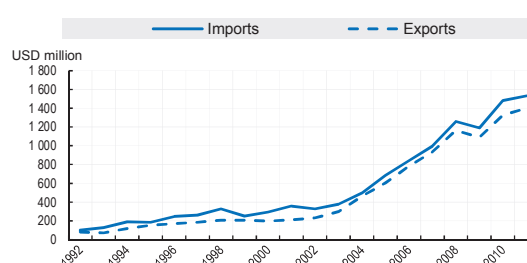
- In terms of value of catch, groundfish contributed 41% of the total value in 2007, followed by pelagic (27%), flatfish (15%), and fish for reproduction (6%). Among all the species landed cod was the most valuable species (PLN 54.4 million), followed by herring (PLN 26 million). (Panel A)
- Poland imports mainly raw fish material and semi-finished products and exports mostly finished products. While values of imports and exports are almost identical, in volume terms imports are 30% higher than exports. (Panel B)
- Government financial transfers are given in the context of the European Fisheries Fund (EFF). Transfers target adaptation and modernisation of fishing vessels, support for fish breeding and inland waters fishing, improvement of the standards of fishing ports and fish processing establishments and animation of local communities. (Panel C)
- The number of active fishers and vessels continues to decline. New vessels can be put into service only if a vessel with a comparable fishing capacity is removed from the register. (Panel D)

Figure 17.2. Key fisheries indicators

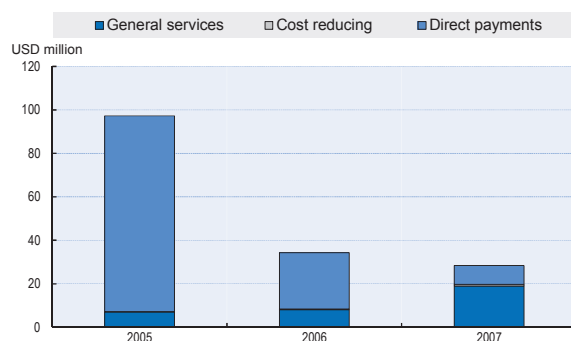
Panel A. Key species landed by value in 2007



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2005	2006	2007
General services	7	8	19
Cost reducing	0	0	1
Direct payments	90	26	9

## 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: Structural Policy; Fisheries Dependent Areas; Fish Market and Fish Processing, Sea Resources Management; Fishery Inspection and Administration; Inland Fishery; Control of the Use of Assistance Funds; Information and Promotion; Fisheries Monitoring Center located in Gdynia; Organizational and Financial; Technical Assistance and Monitoring the Use of Assistance Funds.

The Department of Fisheries directly supervises the work of the three Regional Sea Fisheries Inspectorates in Gdynia, Słupsk and Szczecin. The inspectorates supervise fisheries activities at sea and in adjacent waters and monitor landings, fishing gear and manage of fishing vessel register. Inland fisheries are supervised by the corresponding local governmental administration.

## Capture fisheries

Polish sea catches in 2011 totalled 179.9 thousand tonnes – a decrease of 32.2 thousand tonnes (17.9%) over 2009. This was the result of a decrease in Baltic Sea catches (18.5 %) and deep sea catches (16.8%).

Catches in 2011 in the Baltic and its lagoons constituted 61.6 % of total catch in comparison to 61.9% in 2009. The remainder of the catch was from deep-sea fishing grounds, the most important of which is the Atlantic Ocean.

Of the species of fish and marine animals caught by Polish fisheries in 2011, sprat was the most common and comprised 31% of the total catches (Tables 17.1 and 17.2). Other important species were herring (16%), horse-mackerel (11%), cod (6.6 %), flat fish (5%), saithe (5%) and krill (2%). These species together accounted for 89% of the total marine catches.

In 2011 an estimated 26.5 thousand people were employed in the fisheries and fish processing sector. This is a reduction of 1 500 in comparison to 2009.

The number of deep-sea fleet vessels decreased from four to three in 2011, with a GRT of 17.4 thousand (Table 17.2). At the end of 2011, there were 143 cutters active in the Polish Baltic fisheries, 18 cutters fewer than in 2009. There were 644 motor and row boats under 15 m in length, which was an increase of three boats in comparison to 2009.

Table 17.1. Deep-sea and Baltic catches, 2009-11 (tonnes)

<i>Deep-sea fishery</i>	2009	2010	2011
	Saithe	1 019	933
Cod	1 192	2 686	3 771
Redfish	515	-	-
Halibut	1 193	963	169
Horse mackerel	46 228	39 741	20 608
Mackerel	4 497	2 176	5 997
Haddock	316	705	646
Anchovy	3 441	895	8782
Sardinella	6 959	3 558	19 076
Sardines	6 777	1 635	5 313
Krill	8 304	6 911	3 044
Others	307	468	1157
<b>Total</b>	<b>80 748</b>	<b>60 671</b>	<b>69 147</b>
<i>Baltic Fishery</i>			
Sprat	84 188	58 842	56 490
Herring	22 528	22 747	29 880
Cod	11 176	12 191	11 859
Flatfish	9 656	11 228	9 725
Salmon	414	420	268
Others	3 410	4 672	2 545
<b>Total</b>	<b>131 372</b>	<b>110 100</b>	<b>110 767</b>

Source: Polish country submission.

Table 17.2. Fishing fleet, 2009-11

Number and capacity of fishing vessels	2009		2010		2011	
	Number	Thousand GT	Number	Thousand GT	Number	Thousand GT
Deep-sea trawlers	4	21,3	4	21,3	3	17,4
Cutters fleet (over 15 m long)	161	12,9	146	11,8	143	11,6
Boats fleet (under 15 m long)	641	4,1	643	4,2	644	4,3

Source: Polish country submission.

### *Status of fish stocks*

The status of the stocks where Polish fleet operates is reported yearly by the ICES Advisory Committee (*International Council for the Exploration of the Sea*). The STEFC (Scientific, Technical and Economic Committee for Fisheries) also provides advice on the status of EC fish stocks.

### *Management of commercial fisheries*

Baltic fisheries are managed in compliance with the regulations of the Council of European Union on Agriculture and Fisheries. Several measures have been put in place in order to protect fish resources, including catch limits, temporary restrictions on fishing



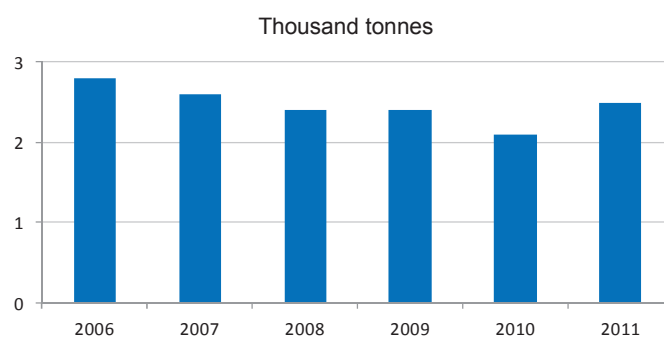
activities (closed regions, for example), establishing minimum sizes for catch and net mesh dimensions.

After fishing quotas are exchanged with other Baltic countries, the allowable catch in the Polish sea areas and its allocation 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*).

Since Poland's accession to European Union all bilateral agreements on fisheries are managed by the European Commission.

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. In 2011, approximately 2 500 tonnes of fish were obtained from inland commercial catches from lakes, rivers and dam reservoirs, about 10% of inland aquaculture production (Figure 17.3).

**Figure 17.3. Inland commercial landings, 2006-11**

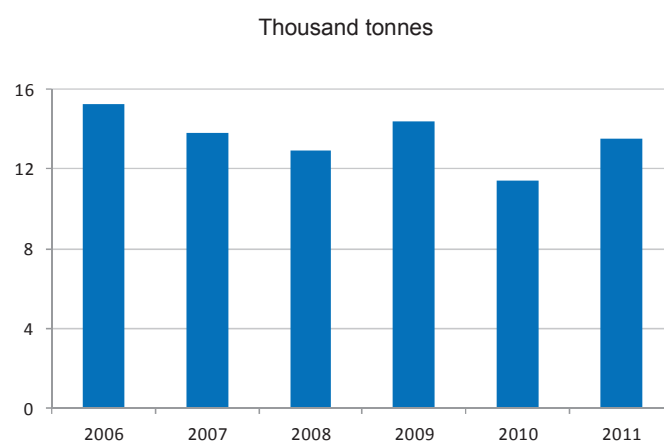


Source: Polish country submission

### *Management of recreational fisheries*

Approximately 13 500 tonnes of fish were caught by recreational fisheries in 2011 (Figure 17.4). The majority of the almost 2 million active recreational fishermen in Poland are rod fishermen.

**Figure 17.4. Recreational fisheries landings, 2006-11**



Source: Polish country submission.

## Aquaculture

Polish aquaculture is based on the production of freshwater fish throughout the country. The aquaculture sector employed an estimated 4 200 people in 2011. Ponds are supplied with surface waters, the amount and quality of which limit production at the facilities. Polish law does not make any provision for preferential water access for fish farms. Permits are required to use surface waters, which are the property of the state. The majority of Polish pond production involves two fish species, and approximately 13 500 tonnes of carp and over 12 600 tonnes of rainbow trout were produced in 2011 (Table 17.3).

**Table 17.3. Freshwater aquaculture production, 2006-2011**  
Thousand tonnes

Year	Carp	Rainbow trout	Other	Total
2006	15.6	17.1	2.6	35.2
2007	15.4	17.0	2.6	35.0
2008	15.2	16.0	2.6	34.2
2009	18.3	14.1	2.8	35.1
2010	15.4	11.1	2.7	29.2
2011	13.5	12.6	2.8	28.9

Source: Polish country submission

## Government financial transfers

Before May 2004 the fisheries sector were provided with the following types of aid:

- subsidies for purchasing deep-sea fishing licenses for trawlers;
- subsidised 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 2000-2006;
- funding for stocking of Polish sea areas and inland waters.

As of 1 May 2004, all of these except fuel excise tax exemptions were discontinued.

The maximum allowable fishing effort for the Baltic fleet is established by 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 removed from the register (without public funds applied). Total vessel length, width and motor power are used to determine comparability.

As a member of the European Union, Poland is implementing the programme of modernisation and development of the fisheries sector under Operational Programme *Sustainable Development of the Fisheries Sector and Coastal Fishing Areas 2007-2013*, financed by the European Fisheries Fund. The implementation of five Programme's priorities was assigned EUR 978.8 million, including EUR 734 million from the Community resources and EUR 244.7 million from the EU budget.

The Programme supports undertakings leading to a stable balance between marine and inland resources and the fishing capacity of the Polish fishing fleet, as well as creating a

modern and competitive fisheries sector in Poland. The aforementioned goal is to be achieved through adaptation and modernisation of fishing vessels, support for fish breeding and inland waters fishing, improvement of the standards of fishing ports and fish processing establishments and animation of local communities.

## Post-harvesting policies and practices

### *Processing and handling facilities*

At the end of 2011, 248 companies complied with EU hygienic and veterinary standards, and had permits to export to EU countries. In addition 400 plants were allowed to supply local markets.

The fish processing sector has been almost entirely privatised, and, over the past several years, it has become one of the most rapidly developing branches of the food processing sector. The majority of fish processing firms, approximately 138 (55.6 %) are located in coastal areas. Smoked, canned and marinated products are the most important processed fish products, representing 60% of production by volume (Table 17.4).

**Table 17.4. Fish processing in 2009-11 (thousand tonnes)**

Product group	2009	2010	2011
Frozen fish	15,1	15,3	12,3
Frozen fillets	8,4	10,5	8,4
Fresh fillets	24,7	26,0	23,9
Salted fish	14,2	19,6	13,8
Smoked fish	67,0	84,8	71,9
Canned fish	47,9	58,0	73,2
Marinated products	58,2	77,6	78,2
Other products	46,2	29,8	31,0
<b>Total production</b>	<b>281,5</b>	<b>321,7</b>	<b>312,8</b>

## Markets and trade

### *Markets*

#### *Trends in domestic consumption*

In 2011 Alaska pollack dominated the consumption of fish. Supplies of pollack were slightly higher than in 2009 with a per-capita consumption of 3.04 kg (Table 5). Herring was the second most common species consumed (2.15 kg/capita). Consumption of pangasus has been trending downward, with 1.97 kg/capita in 2009 compared with 1.21kg/capita in 2011.

The estimated supply of fish to the Polish market in 2011 was 462 400 tonnes (live weight equivalent), implying an average per-capita consumption of about 12.01 kg. These figures are lower than those for 2009, which were 499.5 thousand tonnes live weight and 13.07 kg/capita consumption.

**Table 17.5. Estimated average consumption of fish species in Poland in 2008–10**  
Live weight equivalent

Fish species	2009	2010	2011
Alaska pollack	3,00	2,97	3,04
Herring	2,49	2,86	2,15
Pangasus	1,97	1,48	1,21
Mackerel	0,86	0,94	0,82
Salmon	0,74	0,67	0,67
Sprats	0,71	0,61	0,63
Hake	0,39	0,49	0,51
Carp	0,52	0,48	0,44
Tunas	0,37	0,51	0,44
Cod	0,41	0,42	0,49
Tilapia	0,30	0,50	0,34
Trout	0,35	0,30	0,32
Other	0,96	1,00	0,95
<b>Total</b>	<b>13,07</b>	<b>13,05</b>	<b>12,01</b>

#### *Promotional efforts*

The promotion of fish and fish products is still limited in Poland, and advertising campaigns are provided as part of Operational Programme *Sustainable Development of the Fisheries Sector and Coastal Fishing Areas 2007-2013* or sponsored by large companies at their own cost.

#### *Trade*

##### *Volumes and values*

Imports of fish and fish product into Poland in 2011 totaled 439 900 tonnes. This is an increase of 20 100 tonnes (4.5%) in comparison with 2009. Values increased substantially, from EUR 273.7 million to EUR 1127 million (24.3%) (Table 17.6).

Imports of fish products were dominated by raw fish material and semi-processed products, such as frozen fish, fillets and fish meat, which require further processing in the country. The majority of fish (mainly raw fish material) was imported from EFTA countries. Sharp increases in imports from China were observed. Salmon, herring, cod, Alaskan Pollack and mackerel were the most frequently imported species.

In 2011 Polish exports of fish and fish products totaled 345 300 tonnes. This was 16 500 thousand tonnes (4.5%) more than in 2009. The value of the total exports increased by about 24.4%, from EUR 271.9 million to EUR 1112.4 million (Table 17.7).

Over 70% fish and fish products were exported to EU countries. Germany, France, England and Denmark were the biggest markets. Salmon, cod, herring, sprat and horse mackerel were the most exported fish species.

Table 17.6. Import of fish products by species 2009-11

Fish species	2009		2010		2011 (estimated)	
	'000 tonnes	EUR million	'000 tonnes	EUR million	'000 tonnes	EUR million
Salmon	88,6	313,3	106,1	526,0	100,9	460,4
Herring	89,3	104,8	96,9	112,6	95,5	150,2
Mackerel	33,7	37,1	37,8	41,4	34,1	48,2
Alaska pollack	35,1	61,5	32,3	55,6	36,4	62,8
Cod	27,6	54,2	32,5	58,6	27,9	64,5
Pangasus	27,9	41,5	21,4	31,6	17,0	28,1
Tuna	8,7	22,3	12,2	28,9	10,6	28,4
Saithe	9,9	20,0	9,8	22,9	9,7	26,5
Hake	7,1	13,6	8,9	18,2	8,8	19,6
Haddock	6,7	12,2	8,3	16,5	8,1	17,9
Tilapia	4,0	7,4	6,9	14,1	4,9	11,4
Shrimps	5,9	17,8	7,0	23,1	6,2	22,3
Trout	5,3	14,4	6,1	20,0	7,0	25,0
Others	70,0	132,6	79,7	160,6	72,8	161,7
<b>Total</b>	<b>419,8</b>	<b>852,9</b>	<b>465,9</b>	<b>1130,1</b>	<b>439,9</b>	<b>1127,0</b>

Table 17.7. Export of fish products by species, 2009-11

Fish species	2009		2010		2011 (estimated)	
	'000 tonnes	EUR million	'000 tonnes	EUR million	'000 tonnes	EUR million
Salmon	42,0	362,7	55,8	538,1	52,1	532,2
Herring	47,0	93,4	47,4	95,8	67,7	165,0
Horse mackerel	46,1	33,5	41,5	23,3	20,1	17,4
Spratt	60,1	21,8	38,0	23,0	36,2	24,8
Cod	15,1	65,1	17,7	78,3	15,7	78,0
Sardines, sardinella	15,7	9,1	8,1	6,4	26,0	20,8
Mackerel	7,6	8,5	7,0	6,9	10,7	16,5
Trout	4,4	33,9	4,4	35,3	5,3	45,1
Alaska pollack	4,7	11,9	4,0	10,9	5,3	14,1
Haddock	2,2	8,4	2,4	9,5	2,6	11,2
Shrimps	2,2	14,6	1,9	12,6	nd	nd
Others	81,7	177,6	97,7	204,9	100,2	98,4
<b>Total</b>	<b>328,8</b>	<b>840,5</b>	<b>325,9</b>	<b>1045,0</b>	<b>345,3</b>	<b>1 111,9</b>



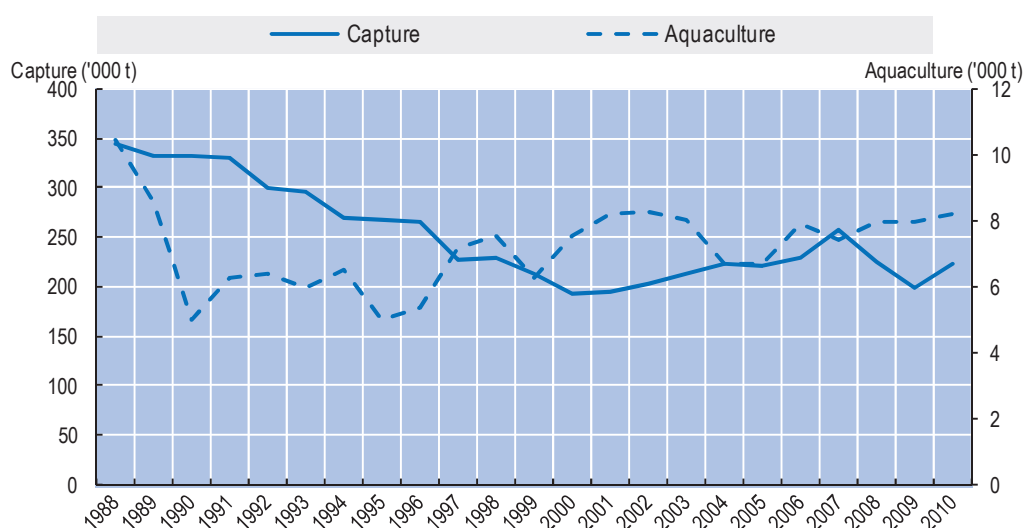
## Chapter 18

### PORTUGAL

#### Summary of recent developments

- The period under review was marked by discussions of Common Fisheries Policy reform. A number of amendments were made to the European Commission's proposal in response to the positions of various Member States regarding certain cross-cutting and substantive issues, such as managing stocks for maximum sustainable yields, a ban on discards, and transferable fishery concessions.
- Portugal continued its eco-systemic approach to fisheries management by supporting policies conducive to the preservation of biodiversity, and by promoting employment and the creation of alternative activities in coastal areas.
- In 2011, in conjunction with the Strategy for Sustainable Development of European Aquaculture, initiatives were taken to achieve sustainable aquaculture consistent with environmental balances and capable of providing sector operators and local communities with greater economic value, and of delivering enhanced quality assurance to consumers.
- Especially noteworthy, however, is the implementation of new control regulations to combat IUU fishing, as is the assurance that the rules are compliant with the Common Fisheries Policy.
- The government's actions in 2010 and 2011 focused on establishing the Operational Programme for Fisheries for 2007 to 2013 (PROMAR), which was approved by the European Commission with a view to the intervention in Portugal of the European Fisheries Fund (EFF), which constitutes the main operative instrument of the strategy outlined in the National Strategic Plan for Fisheries (PEN PESCA) covering the same period.

Figure 18.1. Harvesting and aquaculture production



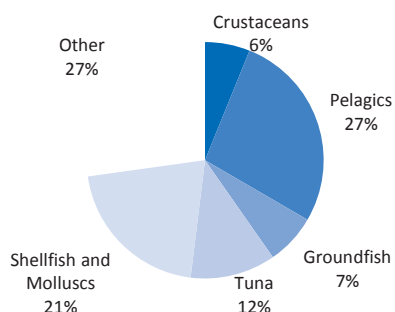
Source: FAO FishStat Database.

### Box 18.1. Key Characteristics of Portuguese fisheries

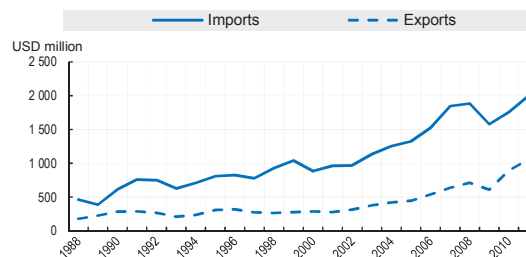
- In 2011, the national output of fishery products (excluding aquaculture production) caught in either national waters or external fishing zones amounted to around 216.4 thousand tonnes (live weight, including discards and by-catches), down by approximately 2.6% from the previous year despite larger catches from external fishing zones. Principal species include tuna, mackerel and sardines and a wide range of crustaceans. (Panel A)
- In 2011, the Portuguese trade balance in fisheries showed a deficit of more than EUR 668 million, up slightly from 2010. Frozen products accounted for the greatest volume of fishery imports in 2011 (22.2%). The proportion of dried, salted and smoked fish increased by 1.5%, having reached a total of 21.9% in 2011, of which salt cod accounted for the largest segment, at 19.2%. (Panel B)
- In connection with the Operational Programme of Fisheries funding from the European Fisheries Fund (EFF) in 2010-11 was approved for 1 125 projects the total eligible investment of which amounted to approximately EUR 127 972 million, corresponding to a national contribution of EUR 35 551 million and a contribution of EUR 92 421 million from the European Union. (Panel C)
- Over the period 2005 to 2011, the capacity in the Portuguese fishing sectors has been reduced considerably. The number of fishers decreased by 9.3% while the number of vessels was reduced by 15.8%. (Panel D)

Figure 18.2. Key fisheries indicators

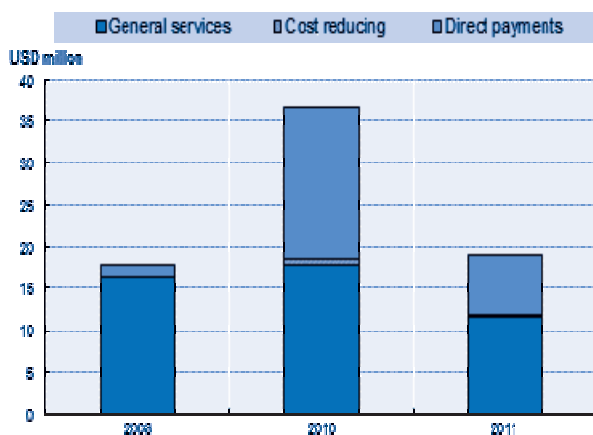
Panel A. Key species landed by value



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2008	2010	2011
General services	16	18	12
Cost reducing	0	1	0
Direct payments	1	18	7



## Institutional and legal framework

The Ministry of Agriculture, Rural Development and Fisheries is the government body responsible for determining national policy for the fisheries sector, which encompasses maritime fisheries, aquaculture and the fish processing industry.

The main government agencies involved are the General Directorate for Fisheries and Aquaculture (currently the General Directorate for Sea Policy), which co-ordinates and implements policy, and the Regional Directorates for Agriculture and Fisheries, which carry out executive functions.

The legal framework for fisheries and aquaculture was set out in Legislative Decree No. 278/87 of 7 July, as republished in Legislative Decree No. 383/98 of 27 November. The framework provisions governing fisheries were supplemented by Regulatory Decree No. 43/87 of 17 July, as republished in Regulatory Decree No. 7/2000 of 30 May and amended by Regulatory Decree No. 14/2000 of 21 September.

An important institutional change took place in 2012, after a period of analysis (2010-11): Legislative Decree No. 7/2012 of 17 January established the Ministry of Agriculture, Sea, Environment and Spatial Planning (MAMAOT) as the government agency responsible for formulating, co-ordinating and implementing policies in the realms of agriculture, agri-food, forestry, rural development, the exploitation and development of marine resources, the environment and spatial planning, with a view to contribute to sustainable development and social and territorial cohesion, and to the planning and co-ordination of interventions by national and European Union funds in these areas.

The establishment of the new Ministry led to the creation of new entities with direct responsibility in the areas of marine resource management and aquaculture.

- General Directorate for Natural Resources, Security and Maritime Services (DGRM).
- General Directorate for Sea Policy (DGPM).
- Portuguese Environment Agency (APA).
- Institute for the Conservation of Nature and Forests (ICNF).

## Harvesting sector

### *Performance*

In 2011, the national output of fishery products (excluding aquaculture production), caught in either national waters or external fishing zones, amounted to around 216.4 thousand tonnes (live weight, including discards and by-catches), down by approximately 2.6% from the previous year despite larger catches from external fishing zones.

The decrease in national production in 2011 was mostly due to a decline in catches from the autonomous regions (ARs) (down 24.6% and 4.9% in the Azores and Madeira respectively), primarily caused by a reduced output of the regions' more important species, and of tuna in particular.

In the continental region there was an increase in the volume of catches (+0.7%), due mainly to increased production of marine fishes and crustaceans. In value, the increase was more substantial (+6.8%) by virtue of species such as sardine, horse mackerel and mackerel, which account for a considerable share of total catch volume.

The marine fish catch increased slightly, by 1.6% in quantity and 8.2% in value, attributable for the most part to a greater volume of mackerel (+37.7%, probably due to

expanded availability of the resource and favourable selling prices). In contrast, sardine and tuna catches dropped in volume (by 5.0% and 24.3% respectively), which in the case of sardines resulted from the introduction of catch limits. The “Crustaceans” catch rose by 18.3% in volume but dropped by 5.5% in value, relative to the previous year.

Contributing decisively to this decrease on the national level were the reduced output of “Molluscs” (down 24.7%), due to the lesser volume of octopus catches (down 31.9%) and to smaller catches of cockle and cuttlefish, the abundance of which exhibits variability linked to environmental conditions that determine the success of reproduction.

At the national level 2011 average annual selling prices increased by 6.3% from 2010. This rise is attributable to price hikes in the continental region (+ 5.9%), the Azores AR (+ 6.1%) and the Madeira AR in respect of sardine (+ 18.6%), mackerel (+ 26.3%) and tuna (+ 16.5%). In contrast, a 21.7% drop in average “Crustacean” prices was confirmed, due mostly to lower shrimp prices.

On 31 December 2011, the registered national fishing fleet comprised 8 380 vessels, with aggregate tonnage of 101 575 GT and total engine power of 371 579 kW, which reflects a certain stability in the fleet. A comparison with 2010 reveals declines of 1.3% in the number of vessels, 0.02% in gross tonnage (GT) and 0.2 % in total engine power (kW).

At year-end 2010 and 2011 (31 December), the Portuguese fleet was structured as described in the Table 18.1.

**Table 18.1. Portuguese fleet**

GT classes	Vessels			
	2010		2011	
	Number	GT	Number	GT
<b>Total</b>	<b>8 492</b>	<b>101 601</b>	<b>8 380</b>	<b>101 575</b>
Up to 5 GT	7 192	8 532	7 077	8 437
Over 5 to 25 GT	817	9 002	819	9 021
Over 25 to 50 GT	162	5 625	162	5 617
Over 50 to 100 GT	118	8 755	120	8 918
Over 100 GT	203	69 687	202	69 582

### *Stock status*

In terms of quantity, the dominant species caught by the Portuguese fleet were small pelagic fish such as sardine. This species has a very short life cycle with variable abundance depending on environmental conditions that influence the success of reproduction and thus annual recruitment. Octopus, prawn and squid, among others, have the similar life cycles, and thus abundance also varies considerably.

Biological assessments on North-East Atlantic resources by the International Council for the Exploration of the Sea (ICES), and by other international scientific authorities, paint an unfavourable picture of the state of certain resources exploited by Portugal, notably hake and langoustine.

In 2011, the ICES listed 17 Iberian peninsula stocks, two of which (hake and sardine) were outside safe biological limits.

For the main species examined by the ICES in Portuguese waters, the situation was as follows:

Iberian hake was subject to a recovery plan established by Council Regulation (EC) No. 2166/2005, of 20 December. Despite the slight recovery of biomass due to good recruitment in recent years, the ICES still considers this stock below the limit laid down in the recovery plan.

Langoustine populations on the continental shelf were also subject to a recovery plan provided for under the above mentioned Regulation. Over the most recent years, fishing mortality levels among the main langoustine stocks (functional units 28 and 29, South and South-West of Portugal) have declined as a result of reduced fishing. Recruitment and reproductive biomass have been restored to the levels recorded in the 1980s.

Catches of anglerfish (white and black) had fallen in recent years to levels below historical maximum levels. The level of fishing is excessive relative to the maximum sustainable level. Recommendations to reduce fishing activity are intended to restore reproductive biomass, particularly that of white anglerfish.

Megrim (four-spotted megrim or sail-fluke) biomass levels have been stable since the 1990s, although the biomass of one of the species is still below the sustainable level and the reproductive biomass of the Iberian sardine has fallen below historical levels in recent years, due to moderate recruitment over the past two years.

Of the various coastal fisheries, that of Atlantic horse mackerel has one of the highest values. Its reproductive biomass was estimated at 237 000 tonnes in 2011, i.e. 10% below the historical average catch. The combined mackerel stock (South, West and North Sea components) shows a reproductive biomass greater than the precautionary level and does not therefore run the risk of an impaired capacity to reproduce. In 2010, the combined stock of blue whiting showed a high reproductive biomass, which ensured sustainable exploitation of the resource. Regarding other pelagic species, despite persistent uncertainties as to the delimitation of stocks and reference points in terms of management, the ICES acknowledges a certain stability.

Deep-water resources are significant, not only because they support traditional fisheries, but also because they are widely distributed across the Portuguese exclusive economic zone, including the archipelagic regions. The main species fished are black scabbardfish, off the Continent and in the Madeira AR, and alfonso and redfish in the Azores AR. Scientific opinion on deep-water resources takes account of the low level of productivity characteristic of most of these species, which is reflected in substantial reductions in current fishing levels to ensure that fisheries are sustainable. In the case of black scabbardfish, the species targeted in the continental longline fisheries, the ICES found the abundance indicators for the period 1996-2011 to be relatively stable.

The recent ban on catching deep-water sharks, despite the relative lack of knowledge of the size of the stock in national waters, imposed further restrictions on the fleet taking these species as by-catches while fishing for black scabbardfish.

The stock of red sea bream, a species targeted by traditional fisheries, was stable in all fishing areas exploited.

### ***Management of commercial fishing***

To complement Community legislation on resources, Portugal has adopted a series of national measures for the purpose of establishing management models designed to ensure that stocks are exploited in a way that is rational, responsible and sustainable in the long term, given socio-economic constraints.

Following an evaluation of the situation regarding fishing practices, vessels and local fishing communities it was found necessary to amend certain regulatory legislation, particularly periodic revisions of the rules governing dredge fishing in the various regions. Especially noteworthy was the introduction of a regulatory framework for sardine fishing, via Order No. 251/2010, of 4 May, and Order No. 294/2011, of 14 November, which impose limits on activity and landings by seiners. *Inter alia*, these measures include a 48-hour fishing ban at the end of the week; limits on landings; an annual limit of 180 days of fishing per vessel; and no-fishing periods or areas in order to protect juveniles.

In addition, a biological rest period was established for anglerfish, as were restrictions on professional harvesting, which for the first time included limits on the number of professionals authorised.

Having regard to Council Regulation (EC) No. 199/2008, of 25 February, and the National Data Collection Programme (PNRD), Portugal's national programme to collect primary biological, technical, environmental and socio-economic data in the fisheries sector for 2011 and 2013 was approved [Decisions of the Commission C (2011) 1096 final of 3 March 2011].

In conjunction with the work set forth in the PNRD, Portugal provided the European Commission – Joint Research Centre (JRC) – with the requested information with regard to economic data on the fleet, the fish processing industry and aquaculture.

Data on scientific assessments of fish stocks were also sent to international organisations (ICES) and to the INRBL-IPIMAR scientists and technicians who took part in the respective working groups.

### ***Management instruments***

The plan to restore stocks of hake and langoustine continued in 2010 and 2011. Monitoring of fishing practices for these species led to a revision of the measures applicable to hake fishing. Meanwhile, the practice of assigning quotas per vessel on the basis of historical catches was left in place. These measures were stipulated in Order No. 246/2010, of 3 May, repealing Order No. 187/2009, of 20 February, as amended by Order No. 120/211, of 29 March.

The adjustment plan for Greenland halibut developed by the Northwest Atlantic Fisheries Organisation (NAFO) sought to mitigate the effects of reduced activity and reduced profitability of companies affected by the NAFO recovery plan for that species.

Given the smaller size of the fleet associated with this fishery, it was felt that vessels should not be decommissioned, but that reductions should be made in other areas to ensure the viability of fishing operations.

Giving effect to the provisions of Regulation (EC) No. 57/2011, of 18 January, national fishing quotas for 2011 in the regulatory areas of NAFO and the North-East Atlantic Fisheries Commission (NEAFC), and in the waters of Norway and Svalbard, were allocated by Order No. 2827/2011, of 9 February, of the Secretary of State for Fisheries and Agriculture.

Portugal does not authorise the exploitation of Bluefin tuna, which is subject to an ICCAT recovery plan, but only as by catch. Production comes from a traditional tuna trap located on the south continental shelf.

### ***Access to resources***

The national fleet fishes mainly in Portuguese waters. However, it also operates in EU waters, notably under agreements with Spain (on trawling, long-line and seine-net fishing); under cross-border agreements; as well as on the high seas.

As a Member State of the European Union, Portugal shares the fishing rights granted under partnership agreements between the EU and third countries, including several in Africa (Cape Verde, the Comoros, Côte d’Ivoire, Gabon, Guinea-Bissau, Madagascar, Mauritania, Morocco and Mozambique), Kiribati, São Tomé e Príncipe and the Seychelles, and reciprocal fishing agreements with Norway, using the fishing quotas for cod and redfish.

In 2010 and 2011, Portugal had an Atlantic halibut quota of 1 000 tonnes in connection with the fisheries agreement with Greenland and obtained redfish quotas via quotas swaps with other European Union Member States.

The agreements with third countries renegotiated by the European Union reflect a new approach to partnership with nearby developing countries. The agreements provide for aid in setting a fisheries policy that will steadily increase their capacity to achieve sustainable fishing and thus help them achieve their development objectives.

Among the agreements used by Portugal, its tuna agreements grant access to the main migratory fish resources (tuna species). A substantial proportion of the Portuguese surface longliners operate in the EEZs of the Cape Verde Islands, the Comoros, Gabon, Guinea-Bissau, Mozambique and São Tomé e Príncipe.

Shellfish fishing by Portuguese vessels is conducted either under mixed agreements with Guinea-Bissau and Mauritania or under charter agreements or joint ventures in Mozambique.

The EU/Morocco fishing agreement is also very important for Portugal since it provides work for 14 coastal fishing vessels as well as a quota for catching small pelagic species (1 333 tonnes).

### ***Management of recreational fishing***

The legal framework for recreational fishing remained stable, as did the ban on fishing endangered species or species subject to TACs and quotas set by the European Union. Recreational fisheries must comply with the minimum-size stipulations that were set for a commercial fishing, as well as with biological rest periods.

### ***Monitoring and surveillance of fisheries***

In 2010, regulations on IUU fishing and the EU control system entered into force, with a view to preventing, discouraging and eliminating illegal, unreported and unregulated fishing as well as to ensure compliance with the rules of the Common Fisheries Policy at all stages of the value chain. A set of new procedures was established for the implementation of the new rules, at the level of either the administration or the sector’s participants.

In 2010 and 2011, Portugal took part in the NAFO/NEAFC joint development plan (JDP) for bluefin tuna and pelagic species.

Regarding the taxation of fishery activities, in particular in connection with the Integrated Supervision and Fishing Activity Control System (SIFICAP), the General Directorate for Fisheries and Aquaculture (currently the General Directorate for Natural Resources, Security and Maritime Services) in its capacity as national fisheries authority, co-ordinated, planned and carried out a series of missions on the taxation, surveillance and control of maritime fishing, aquaculture and related activities. This was done in collaboration and partnership with the Portuguese Navy, the General Directorate for Maritime Authority, the Portuguese Air Force, the National Republican Guard Coastal Control Unit and the regional authorities of Madeira and the Azores. These concerned in particular:

- In July and August 2011, a Portuguese naval vessel and national inspectors were made available to carry out a supervision and control mission in the NAFO area, which was co-

ordinated by the European Commission (DG MARE) and the European Fisheries Control Agency (EFCA) for the purpose of detection, supervision and inspection at sea, targeting IUU fishing in particular.

- Joint inspection missions were developed with the EFCA and on occasion with Canada, with national inspectors in the NEAFC and NAFA areas.
- The Control Centre (FMC-Portugal) carried out 337 424 surveillance actions with regard to vessels operating in the regulatory areas of regional fishing organisations, including ICCAT, NAFO, NEAFC, IOTC, WCPFC and CECAF.
- Control and inspection missions were carried out on six third-country vessels, following 12 prior notifications of port access/landing/transshipment of fish.
- Imports of fishery products from third countries were inspected in collaboration with national veterinary and customs authorities. 11 138 import permits were issued.

### ***Multilateral agreements and arrangements***

Under the Common Fisheries Policy, fishing activity and technical measures to manage and conserve resources continued to be monitored in 2010 and 2011, as did Portugal's participation in the work of various Regional Fisheries Management Organisations (RFMOs), such as NAFO, NEAFC, ICCAT, IOTC, and IATTC.

Generally speaking, the level of fishing activity in international waters by coastal and deep-water fleets over the reporting period remained the same as in 2008-09.

Quotas for Greenland halibut, swordfish and prawn allocated to the Portuguese fishing fleet were not significantly amended by the different RFMOs.

It is important to note that the cod fishery was reopened in 2010 in NAFO Division 3M, where it had been suspended since 1999. Since Portugal is the Member State with the largest quota – 34% of the EU quota – Portuguese vessels enjoyed a yearly average quota of 3 017 tonnes in 2010 and 2011.

The cod quota in the Norwegian EEZ and the Svalbard zone increased by roughly 845 tonnes over the two-year review period.

In the North Atlantic, the zones regulated by NAFO, the Norwegian EEZ, the Svalbard zone and the Irminger Sea (ICES XIV, XII and V), annual licensing for catching groundfish species subject to quotas was maintained through an approach of complementarity between fishing zones and the allocation of individual quotas per vessel.

Over the 2010-11 biennium, a number of quota swaps with other Member States enabled a number of Portuguese quotas to be increased, including those for haddock, coalfish and redfish (Germany), cod from Norway and Svalbard (Greece, United Kingdom, Germany), Greenland redfish (Netherlands, Germany), NAFO cod (Poland, France, Germany, Netherlands), NAFO redfish (Estonia, Poland, Germany, Netherlands, United Kingdom) and NAFA Greenland halibut (Poland, Germany, Netherlands). Portugal received additional quotas of NAFA redfish, cod and Greenland halibut through quota swaps with a number of third countries (Cuba, Canada and the Faroe Islands).

## **Aquaculture**

### ***Policy development***

Portugal pursued measures to increase and diversify the supply of fish produced through aquaculture in order to expand the sector's contribution to meeting the continuous demand for

new fishery products. Aquaculture-related scientific research remains a pillar of environmental progress, along with the qualifications and training of sector professionals.

For aquaculture to grow it requires space to base facilities, either along the coast or out at sea. The encouragement being given to offshore projects and the development of aquaculture production of certain indigenous species should be emphasised. These facilities should be particularly well-suited to aquaculture activity, which is all the more important in the case of offshore facilities given the multiplicity of conditions demanding compliance, many of which have significant implications with regard to investment, production costs and the security of facilities.

The development of facilities along the coast, in estuaries and lagoons, and out at sea is vital for the development of the activity and for simplifying and speeding up the licensing process. In addition, the reclamation and reconversion of former salt marshes for aquaculture production helps to secure the return of typical wetland birds insofar as the space for such facilities are suitable for birds.

### *Aquaculture production*

In 2010, output from aquaculture amounted to 8 013 tonnes, or EUR 46 462 000 in value terms. Relative to 2009, these figures are up slightly in volume (+0.2%) and also in value (+5.0%).

Production in salt and brackish water is continuing its upward trend and is geared mainly to species such as turbot, sea bream, sea bass and clam, in seawater, and trout, in fresh water.

The increased fish production is due primarily to the growth in production of turbot, which offset sharply lower production of sea bass and sea bream. This reduction stems from the shift away from a semi-intensive production system to an extensive production system so as better to meet production costs.

Bivalve mollusc production declined by about 13% in 2010 due to a decline in the production of mussels, cockles and oysters.

Production in brackish water and sea water facilities still predominates, accounting for approximately 88% of total aquaculture output. Fish production in brackish water and sea water accounts for roughly 40% of aggregate aquaculture production (83% of which consists of sea bream and turbot).

Bivalve molluscs account for approximately 48%, with clams being the main species. The Algarve region stands out from other areas, producing roughly 43% of the country's aquaculture output.

At the end of 2010, 1 561 fresh, salt or brackish water facilities had been licensed - an increase of 36 units over 2009, despite a roughly 9% reduction in aggregate capacity. Some 89% of these facilities were bivalve mollusc ponds, most of which are located in Ria Formosa in the Algarve. Fish production tanks accounted for only 9%, whereas floating facilities (primarily for bivalve mollusc production) accounted for 1.6% of all licensed establishments.

In terms of operating systems, freshwater aquaculture production is exclusively intensive. In brackish and sea water, 46% of total output stems from extensive production, which is used above all to produce bivalve molluscs; 39% of production is intensive and 15% semi-intensive.

## Fisheries and the environment

As far as development of the fisheries sector is concerned, projects designed to support the strategy pursued run counter to a wide range of EU environmental objectives, particularly the protection of biodiversity, sustainable use of resources and the fight against environmental degradation through information and awareness-raising policies.

Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 – a marine strategy framework directive – is the environmental pillar of the Integrated Maritime Policy and calls for the creation and implementation of measures aimed at preserving a sound marine environment up to 2020.

At the end of 2011, the government took part in the Directive's implementation, for the purpose of preparing an initial assessment report on the state of the environment (until 15 July 2012).

Pursuant to PROMAR 2007-2013, Order No. 4/2010, of 4 January, amending Order No. 424-F/2008, of 13 January, which approves the rules governing the system of support for on-board investment, provides *inter alia* for investment to increase energy efficiency and selectivity.

Aquaculture investment projects were also assessed on the basis of their level of compliance with environmental rules, and in particular improvements in waste water purification, the use of alternative energy sources and innovative technologies and certification methods.

Under the Operational Programme for Fisheries (PROMAR) 2007-2013, Order No. 1 174/2010, of 16 November, repealing Order No. 424-C/2008, of 13 June, as amended by Order No. 619/2009, of 8 June, on support for investment in processing, marketing and aquaculture, comprises investments aiming to make positive impacts on the environment.

As part of the national plan to collect data for the Common Fisheries Policy, several points need to be examined, particularly the ecosystem-based approach to fisheries and the interactions between fisheries, aquaculture and the environment. It is necessary to assess not only the impact of fishing and aquaculture on the environment but also the constraints imposed by marine ecosystems on economic activity.

## Government financial transfers

### *Funding policy*

In connection with the Operational Programme of Fisheries – PROMAR – funding from the European Fisheries Fund (EFF) in 2010-11 was approved for 1 125 projects the total eligible investment of which amounted to approximately EUR 127 972, corresponding to a national contribution of EUR 35 551 million and a contribution of EUR 92 421 million from the European Union.

### *Social aid*

In 2010, by virtue of Order No. 988/2010, of 28 September, Order No. 424-E/2008, of 13 June, was republished with a view to boosting the percentage of young persons working in the fisheries sector by providing financial aid so that young fishers can acquire vessels. As of year-end 2011, two applications from young fishers to acquire fishing boats had been approved.



With regard to non-renewable compensation for fishers whose contracts of employment were terminated following the definitive decommissioning of their vessels, 122 applicants were granted support in 2010-11.

### ***Structural adjustment***

Practical implementation of the measures/actions laid down in the Operational Programme for the Fisheries Industry 2007-13 (PROMAR), alongside others intended to promote further rationalisation of fisheries and marine environment management, is essential to the strategy adopted by the fisheries sector, whose ultimate objective is to guarantee the future of the sector and its economic and social cohesion.

Responding to the need to adapt the fishing effort and due to rising fuel prices, two Fleet Adaptation Schemes (FASs) were carried out: one involving hake and langoustine; the other covering external resources, comprising support for final decommissioning, on-board and selectivity investment and socio-economic compensation measures.

Pursuant to Order No. 823/2010, of 30 August 2010, the regulatory framework of PROMAR was strengthened by a support scheme for coastal fisheries, in order to improve operating conditions, vessels selectivity and energy efficiency, while at the same time acknowledging the contribution of this sub-segment of the fleet to the economic and social cohesion of fishing communities.

## **Post-harvesting policies**

### ***Policy developments***

#### ***Food safety***

With reference to Article 42 of Regulation (EC) No. 882/2004, the National Pluriannual Integrated Inspection Plan (PNCPI) 2009-11, drawn up by the Ministry of Agriculture, Rural Development and Fisheries (MADRP) and the Ministry of Economy and Innovation (MEI), covered the entire official national control structure. Official control of fisheries and aquaculture products continued.

Pursuant to Regulations (EC) No. D54/2004 and No. 882/2004, of 29 April, inspections were carried out on factory/freezer vessels that had not been inspected in the previous three years.

From a food safety standpoint, bivalve molluscs' protection zones were overseen through evaluation of contamination levels in the marine environment.

#### ***Structures***

Private initiatives by certain producers' organisations involved the development of direct marketing channels, while bolstering transport and packaging logistics as well as on the branding of processed products.

#### ***Processing and handling facilities***

The number of businesses that process fisheries and aquaculture products, on the continent or in the autonomous regions, decreased from 211 in 2008 to 191 in 2009.

About 15% of these companies produce preserved or semi-preserved products, 60% prepared and preserved fresh and frozen fish; 22% make dried and salted products; and 3% engage in other activities. This breakdown is much the same as in the previous years. Facilities for preparing and conserving fresh and frozen fish do in fact predominate, followed

by those for producing dried and salted products. In terms of the geographical distribution of companies, the North and Centre regions are still predominant with regard to corporate headquarters and job concentration.

In 2010, processed products from fisheries and aquaculture increased by approximately 6%, corresponding to 225 000 tonnes, attributable, above all, to the 11% increase in frozen products as compared to 2009, corresponding to 104 000 tonnes (EUR 346.8 million). In 2010, preserved fish, accounted for the total production of 42 000 tonnes (turnover of EUR 177 million), while production of dried and salted products (cod) totalled 60 000 tonnes (EUR 241.6 million in sales value).

The aggregate sales value of processed products from fisheries and aquaculture amounted to EUR 765 million, up by 8% over the previous year.

PROMAR structural aid for 2007-13 financed major capital investment projects, to set up new facilities or to modernise existing ones. In 2010-11, investment projects under the heading “Aquaculture, processing and marketing of products from fisheries and aquaculture” received EUR 54 655 million, most of which was for four facilities to prepare and preserve fresh and refrigerated fish.

As to processing and conservation on board fishing vessels, licences were extended to 79 factory ships to prepare, freeze and package catches on board.

## Markets and trade

### *Markets*

With 54 kg per capita per year in live weight Portugal continues to be the EU country with the highest annual per capita fish consumption.

Within the framework of the PROMAR support scheme for the development of new markets and promotional campaigns, it is worth drawing attention to projects to promote fish and aquaculture products and to the participation of processing organisations/operators in trade shows that help disseminate and promote products, with special mention of the European Seafood Exposition in Brussels.

### *Trade*

In 2011, the Portuguese trade balance in fisheries showed a deficit of more than EUR 668 million, up slightly from 2010 insofar as the increase in imports exceeded that of exports.

Despite a reduction in the proportion of frozen products relative to 2010 (down 0.7%), these still accounted for the greatest volume of fishery imports in 2011 (22.2%). The proportion of dried, salted and smoked fish increased by 1.5%, having reached a total of 21.9% in 2011, of which salt cod accounted for the largest segment, at 19.2%.

The sub-sector of fish preserves is the only one recording a surplus of approximately EUR 60 million in the Portuguese fisheries balance of payments, corresponding to an improvement of roughly EUR 16 million relative to 2010.

With respect to exports, “live, fresh, refrigerated and frozen molluscs” and “fish preparations and preserves” are the most representative products whose value increased in 2011/2010, by 19.0% and 20.7%, respectively. The value of exports of “fresh or refrigerated fish” (15.8%) and “frozen fish” (12.8%) was also considerable. In contrast, in 2011 the value of “dried, salted and smoked fish” was down on the previous year.

The main recipients of Portuguese fish products were: Spain, for fresh, refrigerated and frozen products; Brazil, for dried, salted and smoked products; and France and the United Kingdom, for fish preparations and preserves.

### ***Policy development***

Council Regulation (EU) No. 1258/2010, of 20 December, sets the guide prices for fisheries products for the 2011 fishing year to determine price levels for intervention on the market.

Certain species of national importance, recorded variations, relative to the 2010 fishing year, including sardines (down 1%), whole and gutted albacore (up 3% and down 2%, respectively) and whole hake (down 2%). The prices of whole Atlantic mackerel and whole Spanish mackerel also increased. The price of whole cuttlefish did not change, and neither did the prices of dogfish and anglerfish. The producer prices of tuna supplied to industry fell by 4%, to EUR 1 200 per tonne.

Cod continues to rank first among Portuguese imports of fishery products and is used primarily to supply the processing industry. Council Regulation (EC) No. 1062/2009, of 26 October 2009, opening autonomous Community tariff quotas for certain fishery products for the period 2010 to 2012, enabled the continuation of an annual duty-free quota of 80 000 tonnes of refrigerated or frozen cod, which reduced to 5 000 tonnes, the amount of unprocessed salt cod destined for the processing industry.

Portugal succeeded in obtaining an increase from 10 000 to 15 000 tonnes in its tuna fillets quota of 6% customs duty and a new 10 000 tonnes duty-free quotas for frozen Alaskan coalfish, destined for processing.

### **Outlook**

As part of its effort to exploit resources sustainably and responsibly with a view to restoring stocks and stabilising fisheries output, sectoral policy will be pursued along the following broad objectives.

- Base the fishery sector's competitiveness on innovation and research, without compromising the sustainability of resources.
- Step up scientific research to improve the management of resources and the marine environment.
- Expand aquaculture in compliance with the Strategic Plan approved by the European Commission.
- Promote value added for the products of fisheries and aquaculture, bolstering innovation, quality and the diversification of processed products.
- Strengthen the role of producers' organisations, while promoting their involvement in market planning, innovation, concentration of supply, labelling and certification.
- Undertake fishing control and surveillance actions in accordance with the new Community control scheme provided for by Council Regulation (EC) No. 1224/2009 of 20 November 2009.
- Develop coastal regions dependent on fisheries and promote social and economic cohesion of fishing communities, particularly through Coastal Action Groups.



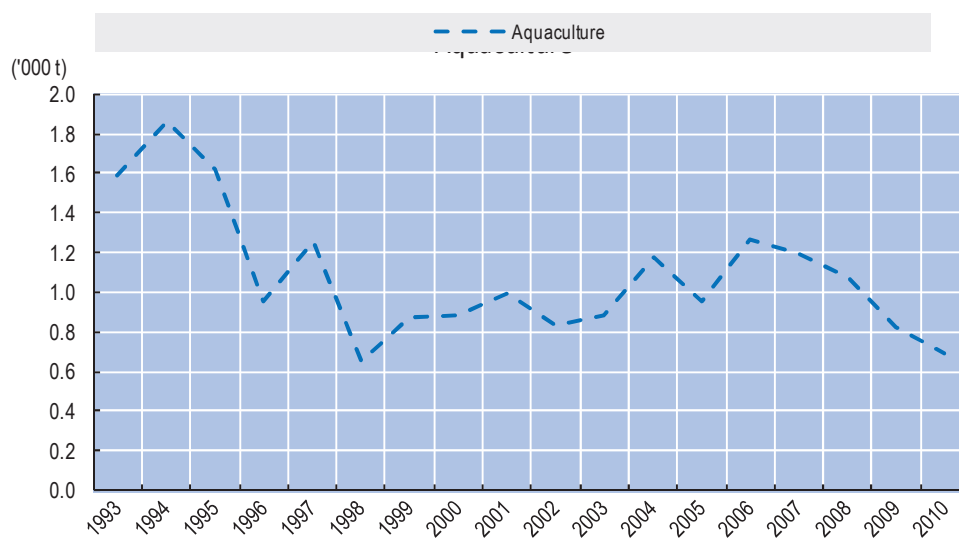
## Chapter 19

### SLOVAK REPUBLIC

#### Summary of recent developments

- Slovakia has no commercial capture fisheries and its fisheries sector consists of aquaculture and fish processing.
- Total aquaculture production in 2011 was 814.7 tonnes. This is higher than in 2010 (687.7 tonnes) and comparable to 2009 (823.1 tonnes). In terms of volume, production has been stable. Rainbow trout contributes about 60%, while the share of carp is approximately 20%.
- Anglers caught 1 761 tonnes of fish in 2009, decreased slightly to 1 608 tonnes in 2010, and increased to 1 935 tonnes in 2011.

Figure 19.1 Harvesting and aquaculture production

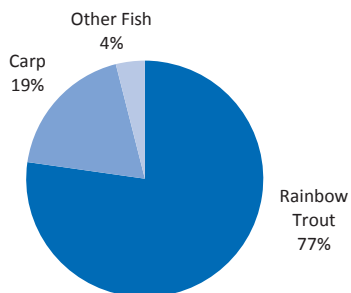
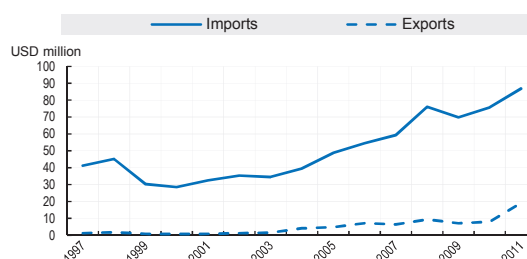


Slovakia, as an inland country, does not practice marine fishing. The fisheries sector consists of freshwater aquaculture.

Source: FAO Fish Stat database.

**Box 19.1. Key characteristics of Slovakian fisheries**

- Since the Slovak Republic does not have commercial capture fisheries, the diagram shows key species in aquaculture in terms of value. By value, the most important species in 2008 were rainbow trout (77%), followed by carp (19%). (Panel A)
- Overall, both imports and exports in fish and fish products have been increasing since 2000. However, trade in fish and fish products has been showing a deficit since 1997. In 2011, Slovakia's exports (USD 87 million) were significantly less than its imports (USD 19 million), and both these trends are increasing. (Panel B)
- Up to 2008, the number of fish farmers varied due to the large fluctuations in the number of part-time workers from year-to-year (the seasonal workforce increased rapidly due to the change in data collection methods). At present, it is relatively stable with 871 part-time workers in 2009, 673 in 2010 and 702 in 2011. The number of full-time workers has been relatively stable, ranging from 237 in 2009 to 227 in 2011 (222 in 2010). (Panel C)

**Figure 19.2 Key fisheries indicators****Panel A. Key aquaculture species landed by value in 2008****Panel B. Trade evolution****Panel C. Capacity**

	2006	2011	% change
Number of fishers	..	..	..
Number of fish farmers	1108	929	-16.2
Total number of vessels	..	..	..
Total tonnage of the fleet	..	..	..

## Legal and institutional framework

In addition to the EU Common Fisheries Policy (CFP), the basic legal instruments dealing with the fishery and related sectors in Slovakia include Act 194/1998 on breeding of agricultural animals, Act No. 139/2002 on fishery, Act No. 9/2007 on veterinary care, and Act No. 364/2004 on water. A revision of the Food Codex of the Slovak Republic governing fishery products was published on 22 May 2009. The Ministerial Decree of the Ministry of Agriculture and Ministry of Health, issued on 25 August 2008 under Act No. 1903/2008, implements 100 chapters that cover the regulation of fishery and amended articles on the labelling provisions in the fishery, definitions and requirements relating to handling and the transport of live fish and their placement on market.

Protected predators (especially cormorant) cause increasingly more damage to fish farmers. The majority of fish farms are not sufficiently equipped against these predators. Compensation for damage to aquaculture is provided by Act No. 543/2002 Coll. on nature and landscape protection. In reality, the recovery from such damage is complicated as the Act does not provide compensation for damages to enterprises operating on rented land.

Aquaculture and fish processing are managed by the Ministry of Agriculture and Rural Development, while recreational fisheries (and water management) are within the competencies of the Ministry of Environment.

## Capture fisheries

Slovakia, as an inland country, does not practice marine fishing nor keeps a register of fishing vessels. Nor does it have suitable waters for commercial inland fishing at its disposal. The fisheries sector in Slovakia consists of freshwater aquaculture and fish processing.

## Recreational fishing

In 2011, organisations authorised by the Ministry of Environment, in accordance with the Act on fishery, placed almost 1 371 tonnes of spawn material of lowland fish species (carp, crucian carp, bighead carp, grass carp, pike, pike-perch and European catfish) in water courses and 3 878 550 pieces of spawn of salmonoid fish (4.55 million pieces in 2008). According to data of the Slovak Fishing Association (SFA), 116 563 anglers fished 1 935.6 tonnes of fish in 2011 (and increase from 99 843 recreational anglers fishing 1 655.7 tonnes in 2008).

## Aquaculture

Aquaculture in Slovakia can be grouped into two categories (fields): fish pond management and production of salmonoids (*Salmo trutta morpha fario*, *Oncorhynchus mykiss*). According to the Statistical Office of the Slovak Republic, there are 499 fish ponds (a decrease compared to 2008) used for aquaculture, covering an area of 2 219.1 ha (an increase compared to 2008). In addition, there are 59 small -water reservoirs covering 500 hectares dedicated to lowland species. In 2011, the production from fish ponds was 219 tonnes excluding fish fries. Similarly, the production of salmonoids (trout, brook trout, grayling, Danube salmon) in special fish farming facilities (5 944 m<sup>3</sup> of cages) reached 588 tonnes. A large part of fish production in aquaculture is used as spawning material to restock fish species in Slovak waters and this production is not included in official statistics. Regular annual restocking is necessary to maintain an ecological balance and the biodiversity of native fish species. The current number of fish farmers is 81 and they are mainly small-scale producers (66 in 2009). Only 12 are big producers (over 100 tonnes per year).

Total aquaculture production (farming) in 2011 was 814.7 tonnes (687.7 tonnes in 2010, 823 tonnes in 2009), which means a decrease in production in 2007-08. Total catches (including recreational fisheries) were 2 584 185 kg in 2009, 2 295 931 kg in 2010 and 2 750 365 kg in 2011.

The sector is supported by the European Fisheries Fund 2007-2013 and the priorities are set in the Fisheries Operational Programme of the Slovak Republic 2007-2013. The main priorities are the modernisation and reconstruction of existing facilities, and are not directed to increasing production.

**Table 19.1. Aquaculture production (farming)**

	2006	2007	2008	2009	2010	2011
Carp in kg	413 638	273 239	251 561	153 951	117 292	187 819
Rainbow trout in kg	784 191	878 768	771 258	635 554	545 495	569 919

Source: Statistical Office of the Slovak Republic.

The number of fish farmers in Slovakia varies depending on part-time workers, which fluctuated largely from year to year till 2008 (the seasonal workforce increased rapidly due to the change in data collection methods). Now remains relatively stable with 871 workers in 2009, 673 in 2010 and 702 in 2011. The number of full-time workers has been relatively stable, ranging from 237 in 2009 to 227 in 2011 (222 in 2010).

**Table 19.2. Employment in aquaculture sector**

	2008	2009	2010	2011
Part-time workers		871	673	702
Full-time workers		237	222	227
Total	952	1 108	895	929

Source: Statistical Office of the Slovak Republic

### Government financial transfers

Slovakia has provided GFTs to the aquaculture sector, as well as marketing and processing sector. The GFTs have been funded by the European Fisheries Fund 2007-2013.

### Markets and trade

In Slovakia, 11 processing plants have been approved for fisheries and aquaculture products. The decrease (from 21 in 2003) was caused by the difficulties to meet the requirements of EU norms at the time of accession to the European Union. The annual capacity of the processing plants for freshwater fish is 999 tonnes. However, the actual processed volumes do not exceed 303 tonnes. The capacity for sea fish processing is approximately 18 500 tonnes but the processed volumes around 4 000 tonnes. Fish processing is the most troubled part of the sector and has caused a decrease in the number of employees, 726 (434 women) in 2011 and was 1 017 in 2002 (a decrease of 28.6%).

Fish consumption in Slovakia is stable. In 2011, it was 4.8 kg/capita/year, of which less than a kilogram came from freshwater fish (in 2008, the consumption was 4.9 kg/capita/year, 4.6 kg/capita/year in 2009, 5.1 kg/capita/year in 2010). Since domestic aquaculture production can cover only around 40% of freshwater fish consumption, the major part is met by imports.



The production of salmonoids fish meets the domestic requirement and exports 50% of its production. The production of lowland fish species does not cover domestic demand.

The import of live freshwater fish in 2011 was 1 080 tonnes (80% from Czech Republic, 14% from Hungary) and 13 689.5 tonnes of sea fish (total imports of 15 299 599 kg in 2010, 13 058 741 kg in 2009). Slovakia's exports were significantly less than its imports but are increasing, reaching 3 692 tonnes in 2011 (127 tonnes in 2010, 899 tons in 2009).



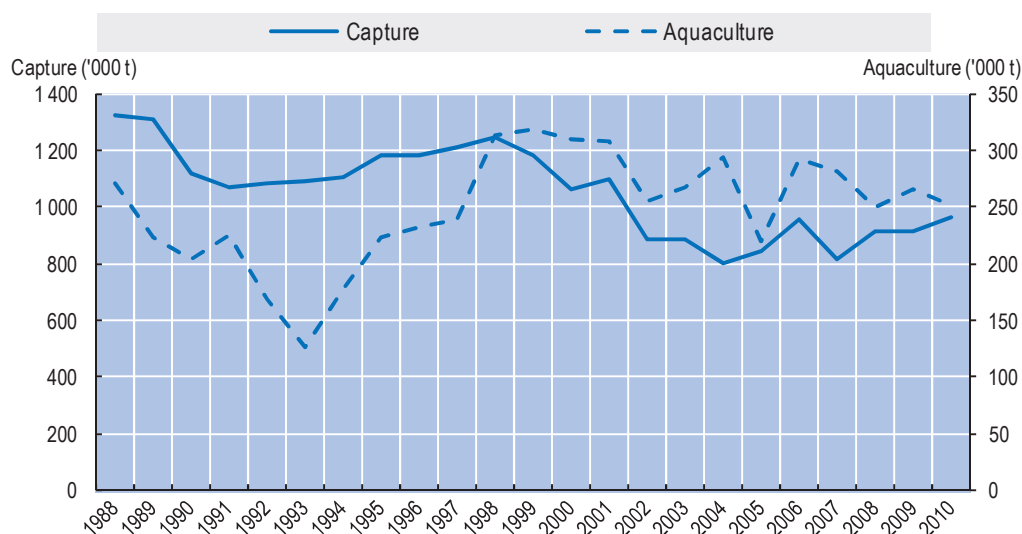
## Chapter 20

### SPAIN

#### Summary of recent developments

- In December 2011, the Ministry of the Environment, Rural and Marine Affairs was restructured into a new Ministry of Agriculture, Food, and Environment. The General Secretariat of Fisheries, which reports to the Ministry, is the central government administration in charge of marine fisheries.
- All Spanish fishing vessels over 15m in overall length, together with those operating in international waters or the waters of third countries, must carry on-board satellite monitoring systems. In 2011, Spain's Fisheries Monitoring Centre handled 8 749 341 reports: 2 540 Spanish vessels and 436 foreign vessels.
- Since 31 December 2008, the number of vessels has fallen by 611 units, or 40 097 GT. In 2010 and 2011, support for the permanent withdrawal of fishing vessels benefited 223 vessels. As of 31 December 2011, the Spanish fishing fleet comprised 9 788 motor vessels and 717 small vessels.
- The Marine Natura Network is being implemented by the Ministry. It started with the approval of measures aimed to protect the marine area *El Cachucho* by declaring it a Marine Protected Area (MPA), as required under the EU Habitats Directive and the OSPAR Convention. *El Cachucho* is a seamount of great ecological value 65 km off the Asturian coast, comprising an area of 235 000 ha, and a Site of Community Importance (SCI) within the framework of the Natura 2000 Network. The first SCIs declared in the Macaronesian bioregion (Canary Islands) are in the process of being converted to Special Areas of Conservation (SACs), six years after their declaration as SCIs.
- Work on marine reserves over the last ten years has led to a knowledge platform on marine reserves and the enhancement for marine resources (fisheries) and biodiversity ([www.mgrama.gob.es](http://www.mgrama.gob.es)). A knowledge platform on the rural and marine environment is also being developed to improve knowledge transfer from researchers to the agri-food industry.
- The consumption of fishery products by Spanish households in 2011 was 1 230 200 tonnes, which represented 4,06% of the total amount of food household consumption. The annual household consumption per person was 27.3 kg. Total annual fish product consumption per person is approximately 36.6 kg.

Figure 20.1. Harvesting and aquaculture production



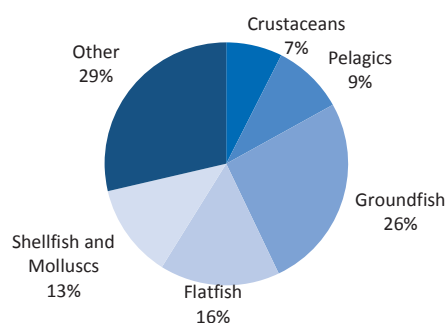
Source: FAO FishStat Database.

### Box 20.1. Key characteristics of Slovakian fisheries

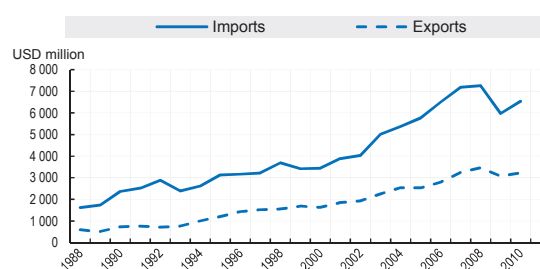
- Spanish landings were 768 006 tonnes in 2010, an increase of 5% over 2009. Aquaculture production is about one quarter that of capture production by volume. (Panel A)
- Imports in 2010 partially recovered after a significant decline in 2009, increasing by almost 10% to USD 6 541 million. Exports increased by 5% over the same period to USD 3 227 million. (Panel B)
- Support declined by 62% between 2010 and 2011, to EUR 79 million. Of that amount 53% was disbursed via the European Fisheries Fund (EFF) and the rest via the Financial Instrument for Fisheries Guidance (FIFG). (Panel C)
- Since 2009, the number of fishing vessels has fallen by 611 units, or 40 097 GT. Between 2009 and 2010 the number of fishers increased by 5%, reversing years of declines before 2009. (Panel D)

Figure 20.2. Key fisheries indicators

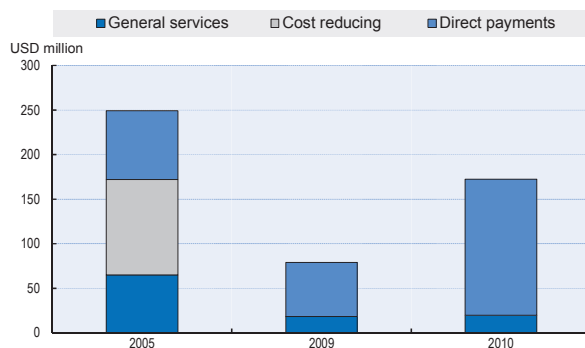
#### Panel A. Key species landed by value in 2010



#### Panel B. Trade evolution



#### Panel C. Evolution of government financial transfers



#### Panel D. Capacity

	2005	2009	2010
General services	65	18	20
Cost reducing	107	0	0
Direct payments	77	61	153

## Legal and institutional framework

### *EU jurisdiction*

As a member of the European Union, the management and conservation of sea fishery resources in Spain are subject to EU regulations. Domestic policy in these fields therefore complies with the requirements of the Common Fisheries Policy (CFP), under Regulation (EC) No 2371/2002, currently under review.

### *Spanish jurisdiction*

The Spanish Constitution gives the central government sole jurisdiction over fishing in exterior waters “subject to the powers that may be delegated to the Autonomous Communities regarding the management of the fisheries sector.” Responsibility for fishing in exterior waters has been delegated to the ten coastal Autonomous Communities. The central government has full jurisdiction in matters relating to sea fishing, and hence the relevant legislation and its implementation. With regard to the development of the fishing industry and commercial activity, however, the central government establishes only “basic legislation”, i.e. the fundamental principles governing such activities; the regulatory framework in these areas is established by Act 3/2001, of 26 March 2001, of State Maritime Fisheries on territorial sea fisheries. The Autonomous Communities can adopt provisions that complement legislation in these two areas and proceed to implement them. Autonomous Communities have sole jurisdiction over “fishing in *internal* waters, the harvesting of shellfish, and aquaculture”.

The General Secretariat of Fisheries, which reports to the Ministry, is the central government administration responsible for marine fisheries and aquaculture. Responsibility for fisheries and oceanography research lies with the Spanish Institute of Oceanography (IEO), which reports to the Ministry of Science and Innovation.

The following regulations have been approved during the Review period.

- Law 41/2010, on Protection of Marine Environment. This law establishes the legal regime governing the adoption of the necessary measures to achieve or maintain good environmental status.
- Royal Decree 347/2011, to regulate recreational fishing in external waters, understanding this practice as non-commercial fishing activities exploiting living aquatic resources for recreational purposes, prohibiting the sale or transaction of obtained catches.

The following regulations are under approval process: a Royal Decree to create the National Register of Serious Infractions, and measures to apply a new system for serious infringements.

## Capture fisheries

### *Manpower, structure and development of the fleet*

As of 31 December 2011, the Spanish sea fishing fleet comprised 9 788 motor vessels with an overall tonnage of 398 419 GT, of which 72,69% are under 12 m in overall length, and 717 small non-motorised vessels. Since 31 December 2008, the number of vessels has fallen by 611 units, or 40 097 GT.

### *Management of commercial fisheries*

For management purposes, Spanish sea fishing is divided into four distinct groups depending on the zone of activity, i.e. fishing in territorial waters, fishing in Community

waters, fishing in third country waters, and fishing in international waters whether regulated by multilateral organisations or not.

Territorial waters are divided into four main areas, regarding fisheries management purposes. The main initiatives launched over the period 2010-11 were as follows.

- For the Mediterranean Sea, the *Comprehensive Management Plan for the Conservation of Fishery Resources in the Mediterranean* adopted in January 2006 is continued by Ministerial Order ARM/143/2010, of 1 February 2010, within the framework of Council Regulation (EC) No 1967/2006. The principle aim is to reduce the fishing effort, as well as to establish other measures such as closed areas, authorised distances and depths for trawling, protected habitats, prohibited gears, or volume of daily landings for some species in force until 31 December 2012. The regulation of purse seine in the Mediterranean Sea was also reviewed by Order ARM/2529/2011 of 21 September.
- In the Gulf of Cadiz, plans for the conservation and sustainable management of trawler and purse-seine fisheries were adopted in 2010, as was in for previous years. They focus mainly on reducing fishing effort (limiting days and hours at sea; maximum daily catches for sardine and anchovy in purse seine) and biological no-fishing periods.
- In the Cantabrian and Northwest Area, the ten-year Hake and Norway Lobster Recovery Plan drawn up in 2005 by the European Union (Council Regulation, CE 2166/2005) is based on annual 10% reductions in fishing effort for hake, in addition to special control measures. As for Norway lobster, there is a closed area to the west of Las Rías Bajas (south-west Galicia). This plan affected 212 vessels in 2010 and 214 in 2011. Several Ministerial Orders were approved during the referred period with the aim to better implement community law within Spanish waters. These orders related to the management of fishing effort for the vessels included in the recovery plan for hake and lobster, as well as the management of TACs and quotas for several species (mackerel, blue whiting, megrims, Norway lobster, horse mackerel and anglerfish). In 2011, a management plan for trawl fisheries in this fishing area was also approved by Ministerial Order ARM/3158/2011 of 10 November.
- For the Canary Fisheries Area, there was no change in fishing regulations.
- Other management measures within national waters have covered the issuing of red coral fishing licenses for exterior waters in authorised areas under national rules, and the co-ordination of the European Eel management plans in Spain established according to Council Regulation (CE) 1100/2007.

Fishing activities have been developed according to CFP rules in EU waters. The anchovy fishery in the Gulf of Biscay was re-opened in 2010, after being closed in 2006 due to the biological collapse of this stock. The new TAC approved for Spain was based on scientific investigations regarding the recovery of the stock. An agreement on recovery of this stock between France and Spain has been signed and at the EU level a future long term management plan for the anchovy is envisaged.

During 2010 and 2011, producer organisation rules have been extended three times regarding hake and megrim.

All Spanish vessels operating in international waters must obtain a temporary licence from the General Secretary of Fisheries authorising them to carry out their activities. When a vessel has obtained a licence to fish in a zone regulated by a regional fisheries management organisation (RFMO), it must observe the resource management/conservation measures and the monitoring/inspection measures stipulated by that RFMO. In some cases, licensing is subject to compliance with additional restrictions imposed by the European Union or the

Spanish authorities. The objective is to adapt the fleet to available resources and to ensure responsible fishing.

Fleets operating in certain international zones are required to carry scientific observers on board. These arrangements are planned and controlled by the Spanish Institute of Oceanography (IEO) with the aim to monitor fisheries, assess stock status and obtain other biological and environmental data. As well, RFMOs require the mandatory presence on board of international observers in many cases.<sup>1</sup>

Fishing in third countries under bilateral fisheries agreements is developed in accordance with the respective agreement's protocols and under the laws of the third country. Vessels operating under the bilateral agreement must have the corresponding licence issued by the coastal State. The European Commission is always the counter-party in fisheries agreements made with third countries.

### ***Management of recreational fisheries***

Recreational fisheries have developed in tandem with the growth of tourism in Spain. It is regulated by the central government for exterior waters, while Autonomous Communities are responsible for interior waters. Under the current legal framework for recreational fisheries, authorisations are issued by Autonomous Communities and a National Register of authorised vessels has been created. A list of authorised species, fishing methods, catch limits, general conditions for recreational fisheries and competitions, prohibited practices, specific authorisations for some species and catch declarations are all specified under regulations. Marketing of recreational catches continues to be prohibited.

A catch declaration by fishermen is compulsory for species under specific measures (Annex II of RD 347/2011). As part of the EU Data Collection Framework, catches for some species are collected in certain regions (salmon, sea bass, eel and sharks in Atlantic Sea – BFT, eel and sharks in Mediterranean), allowing pilot projects assessing the impact of these fisheries to be developed.

### ***Research***

Researchers from the Spanish Oceanographic Institute (IEO) are regular participants in different international working groups that assess the stock status of valuable species, including hake, angler fish, megrim, sardine, mackerel, horse mackerel, cod, Greenland halibut, cephalopods, crustaceans, tuna and tuna-like species.

In addition, experimental fisheries pilot schemes proposed by the General Secretariat for fish are monitored. The impact of fisheries on the ecosystem has been studied, including incidental catches of turtles, cetaceans and sea birds, as are the impact of reserves, marine protected areas and artificial reefs.

In 2010-11, scientific research was carried out on commercial vessels for many major stocks (Table 20.1). Oceanographic programmes were carried out on Spanish and foreign research vessels. Oceanographic researchers participated as observers in several international scientific research programmes.

**Table 20.1. Main areas and stocks fished by Spain in 20010/2011**

Area	Stocks
North East Atlantic (EU Waters)	Hake, anglerfish, megrim, nephrops, blue waiting, anchovy, sardine, mackerel and Atlantic horse mackerel
North East Atlantic (Non EU waters)	Cod, redfish, deepwater prawn
North West Atlantic Ocean	Cod, Greenland halibut, American plaice, yellowtail flounder, redfish, deepwater prawn, plaice.
Mediterranean Sea	Hake, mullet, prawn and anchovy
North-west africa and the canary islands	Cephalopods, hake, prawn, sardine and sparidae
Highly migratory species in the Atlantic Ocean, Mediterranean Sea, Indian Ocean, and Pacific	Bluefin tuna, albacore, bigeye tuna, skipjack, tuna like species and swordfish
South East Atlantic	Deepwater and demersal species
South West Indian Ocean	Crustaceans on the continental slope
South West Atlantic Ocean	Cephalopods and hake

### **Monitoring and enforcement**

Monitoring and inspection of fishing on the high seas is regulated by the Sea Fisheries Act (Act 3/2001, of 26 March 2001), a central government responsibility. Monitoring and inspection is carried out by fisheries inspectors at sea and on land. The Fisheries Inspection services reporting to the Autonomous Communities co-operate with inspectors from the central government to carry out port inspections, monitoring and surveillance of fisheries activities, action against illegal fishing, and the marketing of fish subject to minimum size requirements.

Fisheries authorities, the Spanish Navy and the *Guardia Civil* co-operate to carry out monitoring and inspections. This increases the effectiveness and number of naval inspection units in the various national and international fishing grounds where the Spanish fishing fleet operates. Total inspections increased from 16 180 in 2010 to 17 853 in 2011, while the number of offences found decreased to 1 911 from 1 939 (Table 20.2).

**Table 20.2. Number of inspections and offences 2010-11**

Resources	2010		2011	
	Inspections	Offences	Inspections	Offences
Land	5 371	955	4 834	887
Sea	2 712	703	3 125	883
Air	8 097*	281	9 894*	141
Total	16 180	1 939	17 853	1 911

\* Air surveillance of fishing vessels.

The leading initiatives in terms of monitoring, inspection and surveillance conducted over the past two years included campaigns focusing on albacore tuna, Mediterranean bluefin tuna, inspection campaigns in NAFO and NEAFC waters, and the ICCAT Port Inspection Scheme.

In 2011, Spain's Fisheries Monitoring Centre handled 9 972 246 satellite location monitoring reports from 2 180 Spanish and 970 foreign vessels (compared with 8 749 341 similar reports in 2007, from 2 540 Spanish and 436 foreign vessels). EU regulations require



each Member State to set up a satellite monitoring system for fishing vessels over 15 metres in overall length.

Inspection on compliance of regulated minimum sizes and labelling of fish transported by road (PACIAP) is implemented in collaboration with the Directorate General of Police and Civil Guard and the Autonomous Communities under the Framework Agreement (1997). The objective is to reduce or prevent illegal trade in fishery products. This inspection has been in place for the past 14 years. More than 400 inspections of fish transported on roads of fish are conducted each year, in addition to inspections at sea.

## **Aquaculture**

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

Marine aquaculture production totalled 253 786 tonnes, with the following species being the most important: mussels (189 090 tonnes), seabream (20 358 tonnes), seabass (11 491 tonnes) and turbot (6 806 tonnes). Inland water aquaculture production amounted to 17 981 tonnes, dominated by rainbow trout production (16 911 tonnes).

### ***Policy changes***

At national level the Advisory Committee on Marine Aquaculture organised in 2011 the second forum on National Plans, with the aim to transfer the latest results and information. A National Plan is an action or project to promote and develop aquaculture in Spain and is made in conjunction with the Regional Communities. The subjects of these projects are those that are important to the industry, such as environment, health, culture systems and diversification.

These plans are disseminated by the Advisory Committee on Marine Aquaculture, who published the “Guide for sanitary management of aquaculture” in 2011. Another guide on environmental impact of the activity is under development. Three guides have been published as part of a series on Sustainable Development of Mediterranean Aquaculture, under a co-operation agreement signed in 2006 by the General Secretariat for the Sea. Also two new guides have been published under the co-operation agreement with IUCN Centre for Mediterranean Cooperation: “Inland aquaculture and environment” and “Diversification in aquaculture: a tool for sustainability”.

The International Action Plan for Spanish Aquaculture 2010-11 was developed to promote the internationalisation of Spanish aquaculture enterprises. This plan envisages the development of specific actions to enhance co-operation and development of the sector through corporative and institutional co-operation.

The Spanish Aquaculture Foundation (FOESA), created in 2008, seeks to increase synergy between enterprises and researchers in aquaculture. This foundation also works for the sustainable development of aquaculture and serves as a contact point in co-operation projects in Latin America.

## **Fisheries and the environment**

### ***Exogenous environmental threats to aquatic ecosystems***

IEO researchers monitor marine contamination on an ongoing basis via a network of locations throughout Spanish waters, and also study red tides to check the safety of sea fishery products.

## ***Environmental policy changes***

### *Marine reserves of value to fishing*

During the period 2010-11, the Ministry for Environment and Marine and Rural Affairs has continued managing the ten Marine Reserves currently existing in external waters. Five of them are run entirely by central government: Masía Blanca (Catalonia), the Columbretes Islands (Valencia), Cabo de Gata-Níjar (Andalusia), the Island of Alborán (Andalusia) and the Island of Palma (Canary Islands), while the management of the other five is shared with regional governments: the Island of Tabarca (Valencia), Cabo de Palos-Hormigas Islands (Murcia), the Island of Graciosa (Canary Islands), Punta de la Restinga-Mar de las Calmas (Canary Islands) and Cala Ratjada-Llevant de Mallorca (Balearic Islands). Annual expenditure on these ten reserves amounts to approximately EUR 3 million per year, most of which goes to surveillance but including monitoring studies, infrastructure and awareness campaigns.

Studies and evaluations of previous declarations of reserves have been carried out in two areas: Palamós and Cabo Tiñoso. Further actions were cancelled due to budgets reductions. One specific follow up study started on October 2010 investigating the consequences of the volcano eruption near the marine reserve of “Punta de la Restinga - Mar de las Calmas” in the southwest part of El Hierro island (Canary Islands).

Follow up studies in the network of the ten marine reserves carried out by the Spanish Secretariat for Fisheries and by the Spanish Institute of Oceanography show recovery of fisheries resources, healthy marine habitats but also evidence of global impacts such as extension of some alloctonous invasive species and global change as infections on Mediterranean coral related to temperature rise in superficial waters.

### *Marine Protected Areas*

Spain is conducting an important project, called INDEMARES, that focuses on analysing marine deep habitats and species in Spanish open waters. Ten zones were studied in the period 2010-11: five in the Atlantic and five in the Mediterranean. This project was funded by the EU Commission. The results will lead to the creation of at least ten marine protected areas.

Spain fosters the development of international Marine Protected Areas (MPA) in co-operation with neighbouring countries. It also promotes Areas Beyond National Jurisdiction (ABNJ) for the protection of coastal MPA.

## **Government financial transfers**

For the period 2007-13, support for the fisheries sector in the European Union is funded via the new European Fisheries Fund (EFF), under Regulations (EC) 1198/2006 and 744/2008, the latter provides for specific action to promote adaptation of the fishing fleet in response to recent increases in fuel prices.

Support in 2010 amounted to EUR 207 million, and declined to EUR 79 million in 2011. Of the 2010 amount, EUR 108.7 million was distributed via the new European Fisheries Fund (EFF), and the rest via the Financial Instrument for Fisheries Guidance (FIFG). In 2011, EUR 42 million was disbursed via the European Fisheries Fund (EFF) and the rest via the Financial Instrument for Fisheries Guidance (FIFG). The decline in overall support levels is a result of the present economic crisis in Spain. In 2010 and 2011, payments for decommissioning were awarded to a total of 223 fishing vessels, reducing the overall fleet tonnage by 26 320 GRT.

## Post-harvesting policies and practices

### *Policy changes*

In accordance with the basic market regulations [Reg. (EC) No. 104/2000], producer organisations presented 29 new operational programmes in 2010 and 28 in 2011 to promote rational and sustainable resource use and the use of market-oriented production to optimise catches. The Royal Decree (RD 1822/2009) regulates the first sale of fishing products. It applies to fishing products obtained in fishing operations, live, refrigerated, and frozen, not including aquaculture products and seafood products.

### *Food quality and food safety*

The General Secretariat for Fisheries developed in 2010-11 a Plan of Action for the Quality of Fishery Products, aimed at the improving quality throughout the production chain, processing and marketing of fishery products and aquaculture. It proposes specific actions focused on issues such as quality, food safety, traceability, environmental aspects, etc, namely a Congress of the quality of the fishery products, seminars and development and publication of guides.

At the international level, with the training ship for co-operation “Intermares”, the Plan of Action has provided technical assistance on food safety to countries exporting fish to the European Union, notably developing countries in Africa and Latin America to improve inspection and monitoring of fish at the source in accordance with EU requirements on food safety and traceability. The initiatives developed in 2010 and 2011 benefited El Salvador, Panamá, Mauritania, Guinea-Bissau, Belize, Mozambique, Morocco, Philippines and OIRSA Organization for Central America.

Furthermore, the General Secretariat for Fisheries released the following publications during the period 2010-11.

- Standard UNE 195001:2009. Best Hygienic Practices Guidelines, for primary production at sea. (Less than 48 hours fishing trips).
- Standard UNE 195003:2010. Inflatable life rafts for fishing vessels shorter than 7.5 m, fishing within three miles from the coast.
- Standard UNE 173201:2010. Packing Guide, for Fresh Products, from extractive fishing.

### *Diversification*

At present, the sustainability of resources and the future CFP, integrated in a maritime policy demand a diversification of present and future fishing activity. New lines of business focused on tourism, environment and marketing are being put in place by the fisheries and aquaculture sectors to revitalise the economies of coastal areas dependent on the fishing industry. Through the Spanish Strategic Plan of Fisheries and Aquaculture Diversification common strategies and approaches will be established in this area.

Women play an important role in the Spanish fisheries sector. There are a number of women's associations dedicated to different groups such as shellfish gatherers and artisanal net makers. The General Secretariat for Fisheries supports and promotes the integration of women in fishing activity through the Spanish Women's Network.

## Markets and trade

### *Markets*

Total of Spanish household consumption of fishery products was 1 230 200 tonnes in 2011, a 1.9% decrease from previous year, representing 4.06 % of total household food consumption. Per capita consumption was 26.81 kg, a decrease of 0.2% from the previous year. Fresh fish represent 44.14% of the total, crustaceans and molluscs were 28.64% and frozen fish 12.20%.

A study on the socioeconomic profile of household consumption of fishery products shows that families with children purchase fewer fish products than those composed only of adults. The study also found that consumption per capita by middle- and high-income families is greater than the national average at 30.3 kg.

Promotional programmes under FROM (fund for the regulation and organisation of the market in fish and marine culture products) for financial years 2010 and 2011 maintained the same policy of previous years; that is, generic campaigns to promote the responsible consumption of fishery products, consumer information via labelling, and encouragement for young children to eat fishery products. There were also specific campaigns focussed on traditionally-caught albacore tuna, marine aquaculture, farmed trout, mussels, canned fish, frozen fishery products, bluefish and to disseminate knowledge on the recovery plan for bluefin tuna. FROM maintains a presence at both domestic and international fishery exhibitions and fairs.

### *Trade*

In 2011, the Spanish trade deficit in fishery products was EUR 2 400 million, with imports of EUR 5 200 million and exports totalling EUR 2 800 million. Third countries supply 70,2% of imports, the main suppliers being China, Argentina, Morocco, Ecuador, Chile, Vietnam and Namibia. The balance is supplied by EU countries. 74% of exports are destined for the EU market.

## Outlook

The recent ministerial restructuring creating the Ministry of Agriculture, Food and Environment, Spain, will further consolidate efforts to establish fisheries as a responsible economic activity, consistent with a marine ecosystem-based approach. After this reorganisation, combined with the new structure within the Secretariat General for Fisheries, one of the main objectives in the near future will be to promote the adjustment of the fishery sector to the next changes in the fisheries regulations, especially within the context of the Common Fishery Policy reform, and Common Market Policy of Fishery and Aquaculture products.

In this sense, a working group on control has been created, and specific working groups for each of the national fishing areas are envisaged, with the aim of adjusting the fishing capacity to the fishing opportunities, for the sustainable exploitation of fishery resources. Spain will continue to reinforce measures against illegal, undeclared and unregulated fishing.

Integrated maritime policy makes it necessary to diversify fishing activity. The process of diversification will be promoted, encouraging the actions already undertaken, as support for the economic development of the primary productive sector.

It will be a challenge to implement the Natura 2000 Marine Network while at the same time maintaining support for national marine reserves, the Barcelona Convention ASPIM areas, the Convention for the Protection of the marine Environment of the North-East Atlantic

(OSPAR), as well as fostering the protection of big deep zones and ABNJ. In this period Spain has put in place the enforcement of Spanish Law on the Protection for the Sea.

**Note**

1. This includes NAFO, CCAMLR, IATTC, SEAFO, SPFRMO and ICCAT.



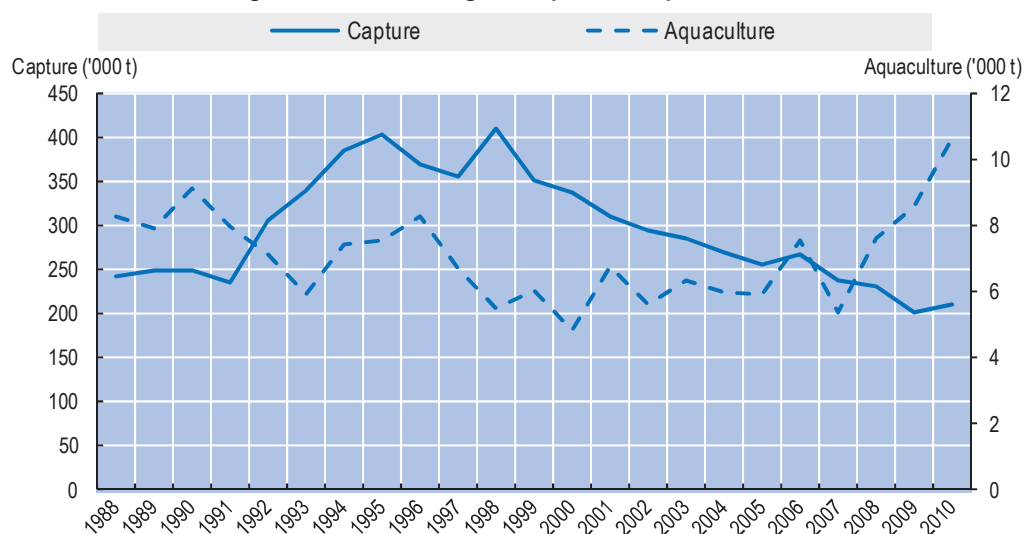
## Chapter 21.

### SWEDEN

#### Summary of recent developments

- On 1 July 2011, a new organisational structure for the Swedish fisheries and aquaculture authorities was established. The major part of the responsibility for the implementation of fisheries and aquaculture policy was moved to the Swedish Agency for Marine and Water Management and the Swedish Board of Agriculture. The Swedish Board of Fisheries, which was responsible for implementing the Swedish fisheries policy until then, was closed down.
- In 2010-11, four areas in the sea closed for fisheries were established with the aim to protect and rebuild fish stocks and to evaluate closed areas as a management tool.
- In 2011, it was decided that in 2012 60% of the Swedish salmon quota would be allocated to fisheries with traps. The aim is to redirect the salmon fishery from the sea to the coast in order to protect salmon stocks in poor status.
- In 2011, it was also decided that the eel fishery in the west coast would be closed from 1 January 2012 as a part of the Swedish eel recovery plan.
- In 2011, Sweden was exempted from the EU maximum levels of dioxine in fish from the Baltic Sea and Lakes Vänern and Vättern to be sold on the Swedish market.

Figure 21.1. Harvesting and aquaculture production



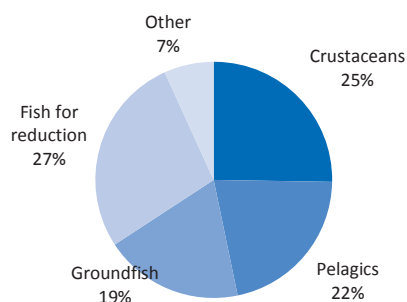
Source: FAO FishStat Database.

### Box 21.1. Key characteristics of Swedish fisheries

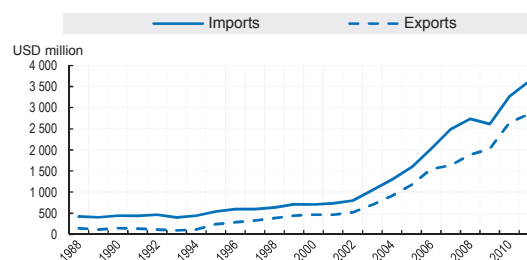
- In 2011, landings in the marine fisheries amounted to 169 000 tonnes. The most important species in marine fisheries with respect to volume were sprat, herring and cod. By value the most important species were herring and sprat, cod, northern prawn and Norwegian lobster. The total value of landings in 2011 was EUR 111 million.
- In 2011, fish, crustaceans and mollusks accounted for 24% of the total import value and 34% of the export value of agricultural products and food (including fish and fish products). The large volumes of trade in fish are explained by the re-export of Norwegian salmon. In 2011, the increase in import value leveled out, while import volumes continued to increase by 6%. The value of Swedish exports of these products decreased by approximately 1% in 2011.
- The sum of transfers is estimated to have been EUR 82 million in 2010 and EUR 63 million, fuel tax exemptions not included, in 2011.
- In 2010, the number of vessels in marine fisheries was 1 417 vessels, although only 1 055 were active. In 2011, there were 1 359 active and inactive vessels. (Panel D)

Figure 21.2. Key fisheries indicators

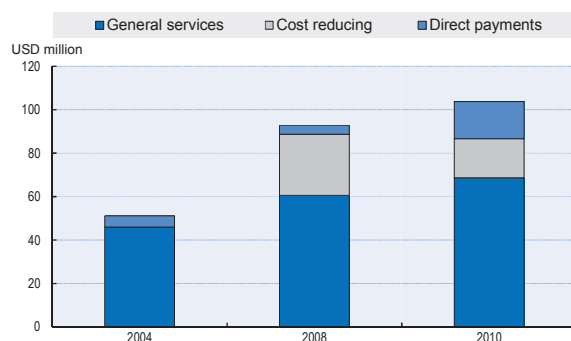
Panel A. Key species landed by value in 2010



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2006	2011	% change
Number of fishers	1 902	1 641	-13.7
Number of fish farmers	501	399	-20.4
Total number of vessels	1 589	1 415	-11.0
Total tonnage of the fleet	44 105	38 626	-12.4

## Legal and institutional framework

The general principles governing national fisheries policy are established by an Act of Parliament which authorises the government to issue legal acts to supplement EU legislation



and regulate fishing outside the scope of the EU Common Fisheries Policy (CFP). The government has delegated part of this authorisation to the Swedish Board of Fisheries (SBF) which was responsible for the implementation of fisheries policies until 30 June 2011. Since 1 July 2011, this responsibility is shared between the Swedish Agency for Marine and Water Management (SwAM) and the Swedish Board of Agriculture.

SwAM is a new government agency that began operations 1 July 2011. SwAM represents the government nationally and internationally in tasks concerning the management of fish resources. SwAM has the main responsibility for the regulation and supervision of fisheries in the sea, in the five major lakes (Vänern, Vättern, Hjälmaren, Mälaren and Storsjön), and for diadromous fish stocks in inland waters. SwAM is also responsible for collecting information about the fish stocks and fisheries within the CFP data collection framework.

The Swedish Board of Agriculture is responsible for the implementation of fisheries policy that deal with the promotion of the fishing industry, aquaculture, and recreational fishing, including management of the European Fisheries Fund. It is also responsible for the control and monitoring of markets, trade, consumers and food, disease control, and fodder. The National Food Agency is responsible for food safety and labeling. The Swedish Coast Guard carries out fisheries supervision at sea.

Fisheries and aquaculture management measures are a mix of instruments directly regulated within the CFP and national supplementary measures. Regarding foreign access and foreign investments, the rules of the CFP are applied.

## Capture fisheries

In 2011, landings in marine fisheries amounted to 169 000 tonnes with a corresponding value of EUR 111 million. The most important species in the marine fisheries regarding weight were sprat, herring and cod. The most important species in terms of value were herring and sprat, cod, northern prawn and Norwegian lobster. The landings for inland fisheries weighted 1 500 tonnes with a value of EUR 9 million in 2011. The most economically valuable species in inland water fisheries were pike-perch, crayfish and vendace (vendace roe).

**Table 21.1. Landings 2010 and 2011 in marine and inland water fisheries, weight and value**

	Landings in the marine fisheries			Landings in the inland waters fisheries		
	Thousand tonnes	SEK million	EUR million	Thousand tonnes	SEK million	EUR million
2010	204	952	100	1	82	9
2011	169	998	111	1	85	9

Source: Statistics Sweden.

In 2010, the number of vessels in the marine fisheries was 1 417, including both active and inactive vessels. In 2011, there were 1 359 active and inactive vessels (Table 21.2). In 2010, the number of active vessels was 1 055 (Table 21.3).

**Table 21.2. Number of vessels and fleet capacity in tonnage and engine power, 2010 and 2011**

	Number of vessels, active and inactive	Tonnage, GT	Engine power, kW
2010	1 417	38.6	196.6
2011	1 359	32.9	178.2

Source: Statistics Sweden.

In 2010, the value of landings in the marine fisheries was EUR 103 million. The economic profit was EUR 3 million. Many vessel segments had a negative economic profit. Vessel segments with a positive economic profit were the demersal trawlers 12 to 24 meters and the pelagic trawlers (Table 21.3).

**Table 21.3. Economic performance of the Swedish marine fisheries, 2010**

Vessel segment <sup>a</sup>	Number of active vessels	Tonnage GT	Engine power, kW	Landing weight, 1000 tonnes	Landing value, EUR 1 000 <sup>b,e</sup>	GVA <sup>c</sup> EUR 1000	Economic profit <sup>d</sup> EUR 1 000
DFN, 12-18m	20	520	3 539	1 172	6 575	693	-340
DTS, 10-12m	72	812	11 050	1 244	17 865	2 485	-427
DTS, 12-18m	92	3 384	22 309	7 541	17 236	7 705	2 067
DTS, 18-24m	49	5 229	18 454	15 522	14 852	9 977	4 365
DTS, 24-40m	31	6 581	19 748	10 799	78	7 861	-1 284
PG, 0-10 m	625	1 919	32 410	2 676	4 818	4 038	-8 902
PG 10-12 m	142	1 614	19 101	2 923	226	2 943	-2 194
TM, 24-40 m	12	4 854	14 429	61 270	14 176	14 326	5 643
TM, >40m	12	8 090	23 383	101 310	27 475	22 649	4 057
Total	1 055	33 003	164 423	204 457	103 301	72 677	2 985

a. DFN = Drift and/or fixed netters, DTS = demersal trawlers and/or demersal seiners, PG = passive gears, only for vessels < 12m, TM = Pelagic trawlers.

b. 1EUR = 9,5413 SEK.

c. GVA = Gross value added.

d. Economic profit is defined as income from landings minus crew costs, unpaid labour value, energy costs, repair costs, other variable costs, non-variable costs, depreciation costs and opportunity costs of capital.

e. Due to different methods of calculation of landing value, the total landing value in this table (103 million euro) differs from the value in table 1 (100 million euro).

Source: EU data collection framework.

Swedish fisheries is mainly regulated by the CFP, the Swedish Fisheries Act, the Fisheries Ordinance and, since 1 July 2011, HVMFS, which is a compendium of regulations issued by SwAM (before 1 July 2010 FIFS as issued by the SBF). The key fisheries management measures in use are presented in Table 21.4.

Employment in the fisheries sector as a whole is decreasing. The total employment in all sectors was about 3 800 in 2010 (Table 21.5).

Table 21.4. Key fisheries management measures

Input controls and supporting technical measures (regulation of fishing effort)	Output controls and supporting technical measures (regulation of catch)
Fishing licenses for commercial fisheries	TAC:s
Vessel permits for commercial fisheries	Minimum sizes of fish to be landed
Special permits for some species in the commercial fisheries	Maximum sizes of fish to be landed in recreational fisheries
KW-days system in Kattegat and Skagerrak for commercial fishing vessels >10m with active gears (not using a selection grid)	By-catch regulations
Territorial use rights (TURF's) in inland waters and in large parts of the near-shore areas (up to 300 m from land)	Individual transferable quotas for the pelagic fishery
Restrictions in number of gears to use	Individual non-transferable quotas for trawlers targeting cod in the Baltic sea
Mesh size	
Exclusion of specific gear types in specific areas and periods	
Areas and/or periods closed for fishing	
Fuel tax exemption for commercial fishing vessels	
Subsidies through the European Fisheries Fund	

Source: Swedish Agency for Marine and Water Management.

Table 21.5. Number of persons employed in the fisheries sector 2010

Sector	Number of persons
Marine fishery (persons with a commercial fishing license)	1 457
Inland water fishery (persons with a commercial fishing license)	184
Aquaculture	399
Fish processing sector	1 807
Total	3 847

Source: Swedish Agency for Marine and Water Management and Swedish Board of Agriculture.

### *Status of fish stocks*

The major part of the Swedish fishery is conducted in the waters surrounding Sweden. To the west of Sweden — in the North Sea, the Skagerrak and the Kattegat — progress of improving stocks has been better than elsewhere in European waters. In the Baltic Sea, most of stocks are fished at fishing mortality or below maximum sustainable yield levels.

### *Management of commercial fisheries*

Quotas and technical restrictions are applied to most fisheries. These relate to, for example, fishing technique, geographical areas and gear. Management has moved towards a longer-term perspective by introducing recovery and management plans. Most of commercial fish stocks are managed within multiannual plans, which have gradually contributed to a decrease of the fishing mortality.

*Management instruments*

Since April 2011, permits for the introduction of new vessels with passive gears targeting cod are allowed if this promotes small-scale coastal fisheries or regional development. Also in 2011, a system of yearly quotas was introduced for trawlers targeting cod in the Baltic Sea.

In 2011, SwAM decided on new regulations for the Swedish fishing of salmon in the Baltic Sea. The Swedish quota was divided so that 60% was allocated to fisheries with traps and 40% was allocated to fisheries with other gear. The aim is to reduce the catch of salmon stocks that are in a poor status by redirecting the fishery from the sea to the river mouths and towards reared salmon.

In 2011, additional regulations were implemented to reduce the fishing mortality of eel. The most important change was that that eel fishery on the west coast of Sweden was to be closed as of 1 January 2012.

In 2010-11, four area closures for fishing complemented with stricter fishing rules in the nearby areas were implemented. The aim is to protect and strengthen fish stocks in these areas and to evaluate area closures as a management tool.

*Access arrangements for foreign fleets*

Regarding foreign access and foreign investment, the rules of the CFP are applied.

***Management of recreational fisheries***

Recreational fishing is defined in Sweden as all fishing that takes place without a commercial fishing license. Since April 2011, selling fish that is caught in the sea without a commercial fishing license, vessel permit or special permit is not allowed.

Fishing is permitted with hand-held gear in private and public waters in the archipelago and in the major lakes: Mälaren, Hjälmaren, Vänern, Vättern and Storsjön. Anyone can use a fishing pole, spinning rod or similar tool with a line and a maximum of ten hooks in these waters. In other waters, the fisher must ask for the consent of the owner. Swedish citizens and permanent foreign residents of Sweden are also allowed to fish with mobile gears, such as nets and cages, in public waters. Only six gears can be used at the same time. The maximum length of the nets is 180 meters. When fishing for lobster, 14 cages are allowed.

In 2010, total recreational fisheries catch in the sea amounted to nearly 9 200 tonnes, of which 3 400 tonnes were released (Table 21.6). In inland waters, total catches were about 11 400 tonnes of which 5 900 tonnes were released (Table 21.7).

Since 2010 people angling in the Baltic Sea (with the exception of Bothnian Bay) are allowed to keep only three pikes, 40 – 75 cm, per angler per day. Pike below or above this length span must be released.

The implementation of the four closed areas for fishing in the sea in 2010-11 also affects recreational fishers, as fishing with nets and angling are forbidden in parts of the areas.

In 2011, the SBF introduced vessel permits for marine fishers fishing in private waters as a business operation, but who do not have a professional fishing license. The aim is to allow these fishers to continue to sell their fish despite the general prohibition for others than professional fishers to sell fish from the sea.

**Table 21.6. Recreational fisheries catches in the sea, 2010**

Catches in the sea 2010, tonnes		
Perch	800	300
Pike	700	700
Pike-perch	200	100
Mackerel	1 100	200
Sea trout	200	100
Salmon	100	100
Whitefish	300	0
Herring	600	100
Flat fish	300	100
Lobster	100	100
Crab	300	200
Other cod fish	100	300
Other species	700	600
<b>Total</b>	<b>5 800</b>	<b>3 400</b>

Source: Statistics Sweden, preliminary figures.

**Table 21.7. Recreational fisheries catches in inland waters, 2010**

Catches in inland waters 2010, tonnes		
Species	Kept	Released
Grayling	100	200
Perch	1 500	1 000
Pike	1 200	2 700
Pike-perch	500	900
Char	300	100
Trout	400	200
Salmon	<100	100
Whitefish	100	<100
Crayfish	400	200
Roach	200	300
Salmon trout	500	100
Other species	100	100
<b>Total</b>	<b>5 500</b>	<b>5 900</b>

Source: Statistics Sweden, preliminary figures.

### *Aboriginal fisheries*

The Sami population living on reindeer breeding in the northern part of Sweden have special fishing rights in specific areas.

### *Monitoring and enforcement*

In connection with the introduction of the electronic logbook within the European Union, the SBF set up a support desk to answer questions and to provide technical support to vessels on a 24-hour basis. This function is part of the FMC 24 hours availability.

In 2010, a cost benefit analysis of different controls using the COBECOS model was started.

The capacity and the capability of maritime surveillance, including fisheries control, have increased. Since 2010, the Swedish Coast Guard has three large fully operational, multi-purpose surveillance vessels with a length exceeding 80 meters. The Swedish Coast Guard executes their surveillance mission in the NEAFC Regulatory Area during JDP campaigns using airplanes of type Dash 8-Q300. These surveillance operations were formerly conducted using fisheries patrol vessels.

## **Aquaculture**

There were no policy changes in Sweden in 2010 and 2011 that have had any impact on aquaculture development.

### *Production facilities, values and volumes*

The increase in fish production is a result of Finnish and Norwegian aquaculture venture capital invested in new and established Swedish fish farms. The decrease in blue mussel farms production is a result of the liquidation of five companies (Table 21.8 and 21.9).

The number of staff employed in Swedish aquaculture was estimated to be 399 and the total number of working hours was 414 000. There is no information available on how many employees each company has.

**Table 21.8. Total production in 2010, main species**

	Quantity, tonnes	Value, million SEK	Value, million EUR
Rainbow trout	8 468	225	23.6
Arctic Char	1 449	59.8	6.3
Blue Mussels	1 382	15	1.6
Brown trout	221	15.4	1.6

Source: Statistics Sweden.

**Table 21.9. Number of production units 2009 and 2010**

Species produced	2009	2010
Rainbow trout	77	80
Arctic char	14	15
Blue Mussels	17	12

Source: Statistics Sweden.

## Fisheries and the environment

### *Environmental policy changes*

The Swedish Parliament has adopted 16 environmental quality objectives, describing what state and quality of the country's environment are sustainable in the long term. The basis for assessing progress towards the environmental quality objectives is that either the quality of the environment which they express, or the basic conditions for attaining that quality, should be achieved by 2020. As an overall objective of environmental policy, a “generational goal” has also been set. This defines the direction of policy in this area and is intended to guide environmental efforts at every level in society. Milestone targets, finally, define steps along the way to the generational goal and the environmental quality objectives. The most relevant objectives for fisheries are “A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos,” “Flourishing Lakes and Streams” and “A Rich Diversity of Plant and Animal Life”.

All of the changes in fisheries regulations mentioned above had the aim, at least partially, to address environmental problems related to fisheries. Since 2007, there has been a government grant for measures that improves or protects the marine and -inland water environment. In 2011, EUR 13 million (SEK 116 million) were used in projects aiming at improving biodiversity and fisheries in marine and inland waters (liming projects not included). In 2011, EUR 0.8 million (SEK 14 million) of public funding (EU and national) were used for measures intended to protect and develop aquatic fauna and flora within the European Fisheries Fund.

Formalin is no longer in use in Swedish aquaculture and there is no equivalent substitute on the market. The National Veterinary Institute estimates that this action will increase the frequency of endemic diseases in aquaculture.

In the spring of 2010, a national strategy for alien species was accepted by the Government and incorporated in the bill for the environmental objectives.

## Government financial transfers

### *Transfer policies*

As a member of the European Union, Sweden provides support to the fisheries and aquaculture sectors with the assistance of the European Fisheries Fund (EFF). The operational programme support is financed by the European Fisheries Fund and the Government (or other public institutions). The administration of the programme is shared between the Swedish Board of Agriculture and the County Administrative Boards. The Swedish Board of Agriculture and the county administrations have the mandate to grant aid, but within different fields of support. The amount of public and private financing 2010-11 is presented in Table 21.10.

In Table 21.11 estimated government financial transfers associated with fishery policies are listed. The sum of transfers is estimated to have been EUR 82 million in 2010 and EUR 63 million, fuel tax exemptions not included, in 2011.

**Table 21.10. Public financing within the EFF 2010 and 2011**

	2010		2011	
	Public financing (EU and national), Million SEK	Public financing (EU and national), Million EUR	Public financing (EU and national), Million SEK	Public financing (EU and national), Million EUR
<i>Priority axis 1</i>				
Permanent cessation of fishing activities	92.8	9.7	3.7	0.4
Investment on board fishing vessels and selectivity	-0.5	-0.1	1.3	0.1
Small scale coastal fishing	0.3	0	-	-
Socioeconomic compensation for the management of the fishing fleet	4.6	0.5	2.0	0.2
<i>Priority axis 2</i>				
Aquaculture	8.2	0.9	13.3	1.5
Inland fishing	0.3	0	0.4	0
Processing and marketing	14.7	1.5	9.4	1
<i>Priority axis 3</i>				
Collective actions	8.3	0.9	9.9	.1
Protection and development of the aquatic fauna and flora	14.5	1.5	14.4	1.6
Fishing ports, landing sites and shelter	17.3	1.8	7.0	0.8
development of new markets and promotional campaigns	6.6	0.7	3.8	0.4
Pilot projects	10.2	1.1	15.6	1.7
Modification for reassignment of fishing vessels	8.5	0.9	-	-
<b>TOTAL</b>	<b>185.8</b>	<b>19.5</b>	<b>80.9</b>	<b>9</b>

Source: Swedish Board of Agriculture.

Table 21.11. Government financial transfers associated with fishery policies\*

	2010		2011	
	SEK million	EUR million	SEK million	EUR million
Direct payments	147	16	45	5
Cost reducing transfers	129	14	-**	-**
General services	501	52	518	57

\*Direct payments include payments to the sector made within the EFF (Priority axis three, measures of common interest not included except for modification for reassignment of fishing vessels) and unemployment insurance. Cost reducing transfers include the fuel tax exemptions for registered fishing vessels. General services includes an estimation of research costs, costs for management, enforcement and control at the national level and public expenditure within the EFF Priority axis three, except for EFF protection and development of the aquatic fauna and flora and modification for reassignment of fishing vessels. Market price support due to the EU trade restrictions and the EU price intervention system are not included in the table.

\*\* Fuel tax exemptions are not included in the 2011 figure, as the data is not yet available.

Source: Swedish Board of Agriculture, Swedish Agency for Marine and Water Management, Swedish Coast Guard and Swedish Commercial Employees' Union.

### *Social assistance*

The labour union of commerce is the labour union which most fishers belong to. The membership involves unemployment insurance as is the case with other unions. However, the membership offers the possibility for unemployment insurance during times when weather conditions create a unworkable environment, due to breakdown or temporary stop of fishing activities.

### *Structural adjustment*

In order to achieve a sustainable balance between the fishing fleet and the available resources an adjustment of the fleet is necessary. Under the “Operative Program for Fishing in Sweden, 2007-2013” two measures have been taken in order to reduce the fishing fleet capacity. These are the “permanent cessation of fishing activities” as well as the “temporary cessation of fishing activities.” The two measures mentioned above have now been closed.

## **Post-harvesting and practices**

### *Food safety*

In 2011, the European Union decided to give Sweden a permanent exemption from the maximum levels of dioxins in fish. The decision entered into force 1 January 2012. Species that are allowed to be sold in Sweden due to the exemption are wild-caught herring larger than 17 cm, salmon, char, trout and river lamprey fished in the Baltic Sea and in Lakes Vänern and Vättern.

### *Information and labeling*

The market for eco-labeled Swedish or imported fisheries products is developing rapidly in Sweden. In recent years, a number of Swedish fisheries have been certified by private certifying organisations such as KRAV and the Marine Stewardship Council (MSC). In 2011, the eastern Baltic cod fishery received a MSC- certification.

Another labelling system, called NARFISKAT, focusing on traceability, was introduced into the Swedish market in 2008 on the initiative of the fishing industry. The aim is to meet consumer demands for information on the origin of the fish products. The main criteria for NARFISKAT are that the fish is caught locally, defined as the seas around Sweden or in



inland waters; that the fish is caught and sold legally; and that the fish products are fully traceable from the fishing vessel to retailer.

In 2010, Kalix vendace roe (Kalixlöjrom) was classified as protected designation of origin by the European Union.

## Markets and trade

### Markets

#### *Trends in domestic consumption*

Unfortunately there are no statistics on consumption of fresh fish in Sweden. However statistics reveal a rising trend in consumption of frozen fish fillets as well as for canned and preserved mollusks and crustaceans (Table 21.12).

**Table 21.12. Domestic consumption of frozen, canned and preserved fish, mollusks and crustaceans, 2005-10**

	2005	2006	2007	2008	2009	2010 prel.
Frozen fish fillets						
1 000 tonnes	25.9	26.7	34.1	34.6	35.9	34.3
Kg per capita	2.9	2.9	3.7	3.8	3.9	3.7
Canned and preserved fish						
1 000 tonnes	86.6	92.2	98.5	87.3	86.9	84
Kg per capita	9.6	10.2	10.8	9.5	9.3	9
Canned and preserved mollusks and crustaceans						
1 000 tonnes	18.6	17.6	18.3	18.3	19.3	20.7
Kg per capita	2.1	1.9	2.0	2.0	2.1	2.2

Source: Swedish Board of Agriculture.

#### *Promotional efforts*

Under European Fisheries Fund (EFF) Sweden has granted support to marketing of products from fisheries and aquaculture as well as promotional campaigns. Svensk Fisk is an association carrying out activities with a view to better inform Swedish consumers about certification and how to prepare fish. Svensk Fisk is financed by support from EFF (50%) and by the national budget (50%).

Fish and fish products have also been eligible to support from “Food from Sweden”. This project is given 15 million SEK per year from the national budget and additional financing is required from the agri food companies receiving support. Support is given to export enhancing activities such as participation at marketing fairs and market research.

### Trade

In 2011 fish, crustaceans and mollusks accounted for 24% of the total import value and 34% of the export value of agricultural products and food (incl. fish and fish products). The large volumes of trade in fish are explained by re-export of Norwegian salmon. In 2011 the increase in import value leveled out while import volumes continued to increase by 6%. In fact the value of Swedish exports of these products decreased by approximately 1% in 2011 (Tables 21.13 and 21.14).

Table 21.13. Sweden's import of fish, mollusks and crustaceans

	2010			2011		
	Tonnes	Million SEK	Million EUR	Tonnes	Million SEK	Million EUR
Fish, mollusks and crustaceans	551	23 478	2 460	585	23 523	2 604
of which canned and preserved products	57	2 289	240	57	2 282	252

Source: Statistics Sweden.

Table 21.14. Sweden's export of fish, molluscs and crustaceans

	2010			2011		
	Tonnes	Million SEK	Million EUR	Tonnes	Million SEK	Million EUR
Fish, molluscs and crustaceans	577	19 067	1 998	570	18 749	2 075
of which canned and preserved products	29	1 167	122	28	1 170	130

Source: Statistics Sweden.

### Policy changes

Two of Sweden's bilateral agreements concerning imports of fishery products were cancelled in 2010 – the agreements with Myanmar and Azerbaijan. The agreements were cancelled because changes in of horizontal EU import rules for fishery products made bilateral agreements superfluous.

In addition to changes in EU legislation two national regulations from the National Food Agency in related to trade in fish products have come into force during 2010 and 2011. Administrative routines have been made clearer in the regulation on levy for export approval. Moreover, a regulation on exports to the European Union and exports to third countries of certain wild fish caught in the Baltic Sea area complements the Commission Regulation 1881/2006.

### Outlook

Achieving sustainable fisheries is a priority for the Swedish government. The new CFP is expected to be important for the development of Swedish fisheries and fish stocks. The new European Maritime and Fisheries Fund for the period 2014-20 are likely to be a strong support for the CFP. Also, the implementation of the EU Marine Strategy Framework Directive in 2012 may affect the development, as it includes environmental targets for fish stocks.

Sweden, Denmark and Norway signed an agreement on 23 November 2011 regarding a discard ban in Skagerrak. The agreement is an effort to reduce the pressure on fishing stocks. It will also contribute to knowledge regarding what is actually caught and therefore constitutes the basis for future decisions regarding measures to be taken in order to reach sustainability. The agreement will enter into force 1 January 2013.

In 2013, a new management plan for salmon will be decided at the EU-level.

In 2012, the closed area for fishing in Kattegat, implemented by the Swedish and Danish governments in 2009, has been evaluated. The evaluation shows that the area closures and gear restrictions in the area has had a positive effect on the Kattegat cod stock. At the end of 2012 a decision will be made on whether the closure is to be continued or if changes in the regulations are to be made.

Starting 1 January 2013, use of drifting lines in the Swedish salmon fishery in the Baltic Sea will no longer be allowed and the whole Swedish salmon quota will be allocated to the fishery with traps.



## Chapter 22.

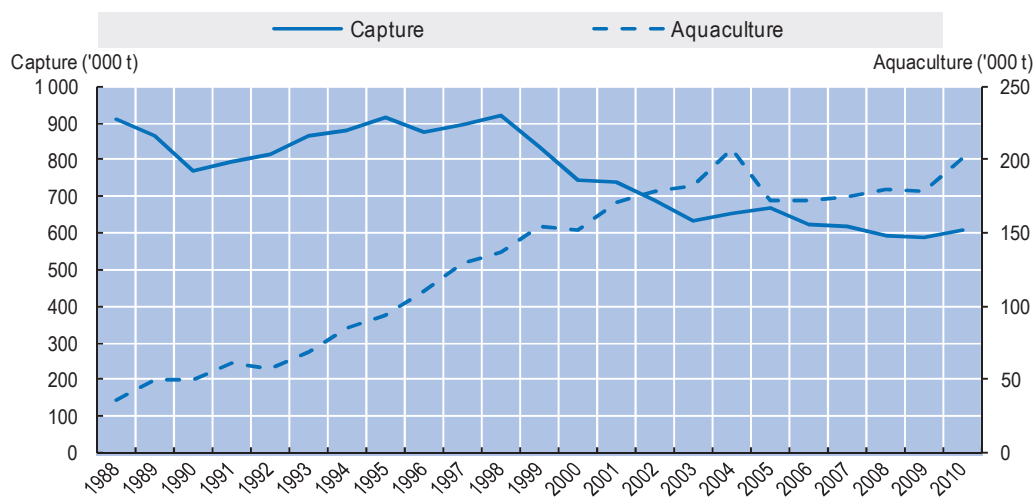
### UNITED KINGDOM

#### Summary of recent developments

- Out of 15 indicator fin-fish stocks in UK waters, the proportion of stocks at full reproductive capacity and being harvested sustainably has risen from around 10% in the early 1990s to 45% in 2011.<sup>1</sup> These trends are likely to be due to a combination of EU controls on total allowable catches (TACs) and effort and the decommissioning of vessels in the United Kingdom and some other countries.
- UK fisheries policies seek to achieve a sustainable fishing sector managed effectively as an integral part of coherent policies for the marine environment. These aims are being articulated in the United Kingdom's robust and significant contribution to the negotiations for the Common Fisheries Policy (CFP) reform by 2013 and calling for: Economic liberalisation of EU fisheries, Integration of fisheries policy and devolved decision-making.
- For inshore fisheries, in particular, the question of how to extract social and environmental benefit in the context of economic liberalisation will be fundamental. Our aim is for all elements of the fleet, big and small, to be economically viable and operating without long-term subsidy. The Marine and Coastal Access Act became law in November 2009. This groundbreaking piece of legislation will greatly improve the way the United Kingdom uses its marine resources and maximises the benefits it gets from them.
- The Marine and Coastal Access Act, enacted in 2009, will greatly improve the way the United Kingdom uses its marine resources and maximises the benefits it gets from them. Through the Act UK Administrations are now in the process of introducing new systems for marine planning and licensing within the policy framework provided by a UK Marine Policy Statement adopted by all UK administrations in March 2011. England's first marine plans and a National Marine Plan for Scotland will be published for consultation in 2013.

1. Verified by the International Council for the Exploration of the Sea (ICES).

Figure 22.1. Harvesting and aquaculture production



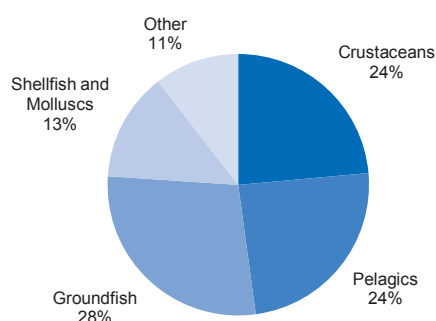
Source: FAO FishStat Database.

### Box 22.1. Key characteristics of British fisheries

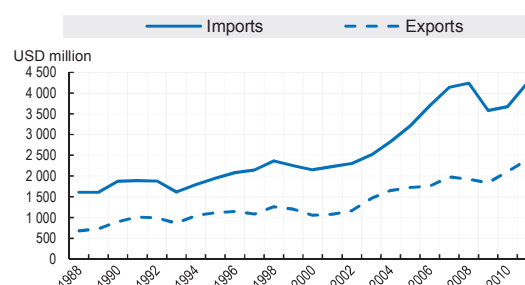
- In 2010, groundfish accounted for 28% by value of all landings by United Kingdom (UK) vessels, followed by pelagics (24%), crustaceans (24%) and shellfish and molluscs (13%). (Panel A)
- The United Kingdom remains a net importer of fish and fish products. The value of both imports and exports have increased since 2009 and peaked in 2011. In 2011, the value of both imports and exports increased as a result of price driven growth. The value of UK seafood imports increased by 15.6% to USD 4 247 million, whilst the volume grew by 4.5% to 718 000 tonnes. The value of UK seafood exports grew by 13.7% to USD 2 395 million, while the volume fell 15% to 435 000 tonnes. (Panel B)
- The European Fisheries Fund (EFF) is the main funding source for government financial transfers (GFTs). The programme runs from 2007 to 2013 and is expected to be replaced by the new European Maritime and Fisheries Fund (EMFF) from 1 January 2014 until 2020. In 2010, total amount of USD 16.63 million was transferred to fisheries sector from UK government, which is an 81.6% decrease compared with the GFTs in 2005. (Panel C)
- In 2010, there were 12 703 fishers in capture fisheries, which is a 1% decrease since 2005. Total number of registered vessels and total tonnage of the fleet also decreased respectively by 3.9% and 4.9% since 2005. (Panel D)

Figure 22.2. Key fisheries indicators

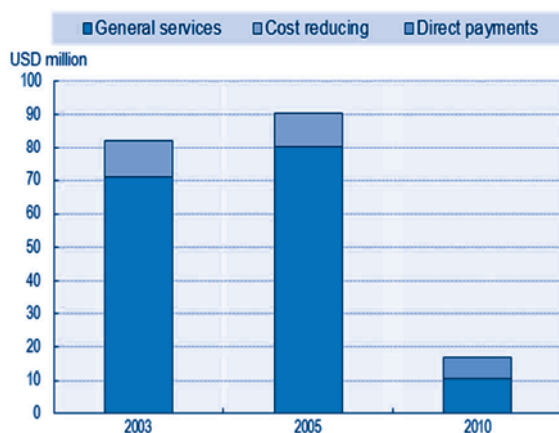
Panel A. Key species landed by value in 2010



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2006	2011	% change
Number of fishers	12 831	12 703	-1.0
Number of fish farmers	..	..	..
Total number of vessels	6 738	6 477	-3.9
Total tonnage of the fleet	218 166	207 425	-4.9

## Legal and institutional framework

Fisheries management in the European Union is a Community competence and as such managed through the EU Common Fisheries Policy (Council Regulation (EC) No 2371/2002) and associated legislation. Responsibility for fisheries in the United Kingdom lies with the Secretary of State for Environment, Food and Rural Affairs, Scottish Ministers, Minister of the Welsh Assembly Government and Northern Ireland Executive Ministers. The principal powers governing the regulation of fisheries are set out in the Sea Fish (Conservation) Acts 1967 and 1992; the Sea Fisheries Act 1968; the Fishery Limits Act 1976; the Fisheries Act 1981; the Sea Fisheries (Shellfish) Act 1967 and the Fisheries Act 1966. Responsibility for these functions in relation to Scotland, Wales and Northern Ireland were transferred to the Scottish Government, Welsh Assembly and the Department for Agriculture and Rural Development of Northern Ireland, respectively, by virtue of the Scotland Act 1998, the Government of Wales Act 1998 and the National Assembly for Wales (Transfer of Functions) Order 1999 and the Northern Ireland Act 1998.

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 United Kingdom or companies incorporated within the European Union with a place of business in the United Kingdom. As a condition of registration all fishing vessels must be managed, controlled and directed from the United Kingdom. A restrictive licensing scheme operates and no new licences are issued by the UK authorities. Anyone who wishes to fish for profit, must acquire a licence from an existing fishing vessel. Owners of all vessels fishing against the United Kingdom's quotas have to maintain a genuine economic link with the United Kingdom. This may be achieved through landing quota catches into the United Kingdom, employing crew resident in the United Kingdom or other measures sufficient to ensure that a satisfactory economic link is achieved.

In the United Kingdom over 95% of quotas in EU waters are allocated through Producer Organisations (POs) ("the sector"). The remaining quota is divided between the "non-sector" (vessels over 10 m in overall length but not members of a PO) and the under 10 m fleet.

### *Employment, structure and performance of the fleet*

In 2011, an estimated 12 405 people were employed in the fish catching sector, 298 less than in 2010. Of these, 10 040 (81%) were employed as full-time fishers. The proportion of full-time fishers has changed little over ten years; in 2001 there were 14 958 people employed in the sector, of which 81% were full-time.

At the end of 2011, there were 6 444 registered vessels in the UK fishing fleet (including the Isle of Man and Channel Islands), only 33 fewer than at the same time in 2010. The gross tonnage of the fleet fell by just 3% to 202 048 tonnes in 2011. There were 5 056 vessels of 10m or less in length in 2011 (approximately the same as in 2010) and the number of vessels over 10m in length went down by 3% to 1 388.

### *Landings*

The volume of total landings by UK vessels in domestic ports increased from 395 000 tonnes (live weight) in 2009 to 411 000 tonnes in 2010, and the value of landings increased by 6% from GBP 520 million in 2009 to GBP 549 million in 2010. Profitability remained poor in many sectors (particularly the white fish fleet) as a result of high fuel prices and falling quotas.

In 2010, demersal species accounted for 37% by value of all landings by the UK fleet into domestic ports, pelagic fish 18% and shellfish 45%. The species referred to below accounted for almost three quarters by value of all landings by UK vessels into the United Kingdom:

- Of the flatfish, sole and megrim are the two key species. Landings of sole by UK vessels into UK ports fell by 11% in 2010 to 1 700 tonnes, with a value of GBP 14 million. The quantity of megrim landed into the United Kingdom fell by 8% to 3 600 tonnes and was worth GBP 10.1 million. In 2010, 2 900 tonnes of plaice were landed with a value of GBP 3.3 million.
- Of the groundfish, haddock and monkfish are the two key species. The quantity of haddock landed fell by 9% to 31 700 tonnes in 2010 with a value of GBP 36.2 million. The quantity of monkfish landed into the United Kingdom fell by 9% to 11 700 tonnes and was worth GBP 38.5 million. In 2010, 14 700 tonnes of cod were landed with a value of GBP 28.6 million.
- Mackerel and herring are the two key pelagic species. The quantity of mackerel landed in 2010 was 99 900 tonnes, 62% of all landings by the UK fleet into domestic ports. Mackerel landings were worth GBP 82 million. The amount of herring landed increased for the first time in four years, up by 11% on 2009 levels to 35 600 tonnes, with a value of GBP 10.3 million.
- Nephrops and crabs are the two key crustacean species. Landings of nephrops fell by 10% to 38 200 tonnes in 2010 with a value of GBP 95.3 million, still the highest of any species and 17% of the value of all landings by the UK fleet into the United Kingdom. The quantity of crabs landed into the United Kingdom increased by 8% to 26 600 tonnes worth GBP 35.2 million.
- Scallops are the key mollusc species. In 2010, landings of scallops increased by 27% to 43 000 tonnes, with a value of GBP 54.5 million.

Landings by UK vessels into foreign ports increased by 5% to 196 000 tonnes in 2010 with a value of GBP 170 million.

Between 2009 and 2010 landings by foreign vessels into domestic ports stayed roughly the same 111 000 tonnes although the value of these landings increased by 12% to GBP 104.2 million.

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

The percentage of fin-fish stocks around the United Kingdom at full reproductive capacity and harvested sustainably is used as an indicator of the state of fish stocks of interest to the United Kingdom.

This sustainability indicator is based on a consistent set of 15 stocks since 1991 and on a consistent set of 14 stocks between 1982 and 1990. The 15 stocks represent a wide range of different stocks and fisheries, including demersal groundfish (cod, haddock, saithe), flatfish (sole, plaice), and pelagic (mackerel, herring). Many of these stocks are extremely valuable or have high conservation profile. The indicator is applicable only to these stocks, and does not include any elasmobranch species (sharks and skates).

In 2011, 45% of the 15 indicator fish stocks around the United Kingdom were at full reproductive capacity and were being harvested sustainably. Since 2000, 25-45% of the indicator stocks around the United Kingdom have been at full reproductive capacity and being harvested sustainably, compared to 5 – 30% in the years from 1990 to 1999.

The proportion of the 15 stocks being harvested sustainably increased from around 10% in the 1990s to 25-45% during 2000 – 2007, and to 65-70% since 2008. The proportion with



full reproductive capacity increased from 45% in 1999 to 70% in 2010 and 2011 (all figures are rounded to the nearest 5%).

Although the proportion of stocks being harvested sustainably is increasing, fishing mortality in many stocks remains above values that may be considered as providing the maximum long-term yields or economic returns under the prevailing environmental conditions that affect stock productivity.

### *Management of commercial fisheries*

During 2011 and 2012 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.

In February 2008, the Scottish Government established a Conservation Credits Scheme which rewards fishermen who sign up to measures, which have an appreciable impact on the conservations of cod stocks, including a one net rule and the use of a Square Mesh Panel and other gear changes aimed at reducing catches of cod. The scheme also expands the innovative Real Time Closures scheme on which Scotland led last autumn, protecting spawning aggregations and high concentrations of cod in the North Sea. In return for the respect of these conditions, vessels receive additional days at sea. In 2009, similar schemes aimed at rewarding cod avoidance behaviour were extended in other parts of the United Kingdom and the Real Time Closure mechanism was expanded to the southern parts of the North Sea and the West of Scotland, with all UK vessels respecting closed areas.

In 2009, the government, through the European Union, and in conjunction with Norway and the Faeroes Islands, implemented a system of Real Time Closures in the North Sea specifically aimed at protecting juvenile aggregations of cod, haddock, whiting and saithe. Where catches of juvenile fish are above defined levels, time limited closed areas are implemented and all EU, Norwegian and Faroese vessels using demersal trawl and similar gears are required to avoid the areas until reopened.

In 2012 the United Kingdom is taking steps to reduce cod by-catch in North Sea, Irish Sea and West of Scotland. In the North Sea new fishing gears are being introduced to the TR2 Nephrops fishery to reduce cod catches on Nephrops grounds by these vessels. In the Irish Sea a range of new gears are being developed with the goal of radically reducing cod catches in the Nephrops fishery. In the West of Scotland measures are being introduced to incentivise TR1 fishing for haddock to the south of 59 degrees latitude as cod is more abundant to the north.

From 2010-2012 the United Kingdom has undertaken trials of fully documented catch quotas in the North Sea cod and Western Channel fisheries. As part of the scheme fishing vessels are provided with additional quota to better reflect what they actually catch. No discarding of catch quota species is allowed and all fish caught count against a vessel's quota allocation. Fishermen have to stop fishing once their quota limit is reached and CCTV is used to monitor catches and demonstrate compliance. Vessels in the scheme have significantly reduced their levels of discards. In 2012, participating English vessels discarded only 0.3% of their catch. Catches of non-marketable fish of all species are also very low demonstrating that the selectivity measures being adopted are effective. The United Kingdom has extended its catch quota trials in 2013 to allow the principles to be tested in other important mixed fisheries and alternative sectors of the UK fleet.

### *Management instruments*

Recently a UK industry-led group has been set-up to make recommendations to the UK Fisheries Administrations on allocation of days at sea for vessels over 15m in length targeting scallops (a non-quota species), to ensure compliance with the EU effort regime for scalloping in Western Waters.

In relation to domestic arrangements in the United Kingdom, Defra has set up a voluntary pilot scheme to test an alternative regional/local management approach to managing quota. The pilot will generate invaluable information on the effectiveness of local collective management of annual quota allocations by groups of fishermen and on what benefits co-operation over sales and marketing can bring to individual fishermen. This work will be used to establish a final reform package for the management of the inshore fleet in England. As fisheries management is a devolved issue, Defra will be working closely with colleagues in the Devolved Administrations to ensure that changes will not affect the fishing opportunities in Scotland, Northern Ireland and Wales.

### *Management of recreational fisheries*

In the UK recreational fishing is defined as fishing activity not for profit. It is illegal for a recreational fisherman to sell anything he catches- in order to do this a commercial fishing license is required. There are currently no daily catch limits for recreational fishermen in the United Kingdom, although, there is mandatory catch and release for eels.

There have been no major changes to rules regulating access to resources, gear restrictions or catch limits in the United Kingdom between 2010 and 2012.

The United Kingdom is currently conducting a survey of recreational sea angling to help meet its obligations under the Data Collection Framework and Article 55 of the Control Regulation. The Control Regulation requires Member States to set up a sampling regime to monitor the catches by recreational fishing vessels of stocks subject to recovery plans (cod, hake and certain sole and plaice stocks). Where the catches identified by this sampling regime are deemed by scientists to be having a significant impact, the Control Regulation provides that the Council may introduce additional management measures to control recreational activity, including but not limited to a licensing regime and a requirement for recreational fishermen to record their catches in logbooks.

### *Monitoring and enforcement*

UK Fisheries Departments continue to give high priority to fisheries control and enforcement through an integrated programme of aerial, surface and port surveillance. The United Kingdom also works collaboratively with its European partners in carrying out joint deployment plans (JDP) to ensure compliance with fisheries legislation in the North Sea, Irish Sea and Western waters.

## **Aquaculture**

### *Policy changes*

Investment by public bodies in aquaculture overlaps with expenditure on fish health research to protect the environment and investment to develop the rural economy in general. Government and academic research bodies and the aquaculture sector jointly sponsor research to promote the sustainable development of the aquaculture sector, the maintenance of high fish health and welfare status of farmed and wild fish stocks, and the evaluation of alternative species for cultivation. Wild lobster populations are supported through hatcheries in Cornwall, Orkney and Shetland based round collecting gravid females from fishers.

### *Production facilities*

Aquaculture production in the United Kingdom is concentrated on Atlantic salmon, rainbow trout and mollusc shellfish, such as mussels and Pacific Oysters. There is limited production of other species, such as carp, brown trout, turbot, halibut, cod and Arctic char. There is growing use of longline mussel culture in coastal waters around Scotland, and planned developments in England and Wales though to date only one or two operations have been established. There are also emerging species such as tilapia, bass and bream. With the exception of some new fish farms based on re-circulation, technology and production facilities have changed little since 1997. Consolidation of businesses and increased automation have led to decreasing employment and increased productivity.

The relative importance of the aquaculture sector varies around the United Kingdom. For example, nearly all of the UK farmed salmon is produced in Scotland and the majority of farmed mussels are produced in Wales. In 2010 there were approximately 500 active fish and shellfish farming businesses in the UK operating on about 1 250 sites, directly employing over 3 100 people with a total industry turnover of almost EUR 600m. Total finfish production was 170 000 tonnes in 2010, dominated by farmed salmon (154,000 tonnes) and rainbow trout (13 600 tonnes). There is limited production of other species on a niche or emerging basis, such as tilapia, sea bass, halibut, and turbot, totalling less than 1 000 tonnes. Other species, eg various carp, are produced more for recreational (restocking) or ornamental markets, and table use is mainly by ethnic communities. Farmed shellfish production was around 32 000 tonnes in 2010. Mussels are the largest production (96% of tonnage and 91% of value). Oyster production was reduced by disease.

### *Production volume and values*

The table below summarizes information on the scale of aquaculture in the United Kingdom taken from the production surveys which are annual censuses. Economic information is recorded by the UK Office for National Statistics in their business register (ABI, which is a sample survey), including key economic indicators for the aquaculture industry compared to the other fisheries sectors. The number of enterprises is considerably smaller than the number of sites and reflects an industry that includes large international concerns down to individual artisanal and part-time activity. This is reflected in the sampling errors associated with the ABI economic data.

**Table 22.1. The UK aquaculture sector in 2010**

	Number of aquaculture sites active in 2010		Tonnes produced (fish and shellfish)		Number of employed (full time equivalent)	
	Number	%	Tonnes	%	Number	%
England and Wales	383	31%	22 200	11%	1 165	37%
Scotland	767	61%	167 000	83%	1 845	58%
Northern Ireland	100	8%	12 200	6%	1 450	5%
Total	1 250	100%	201 400	100%	3 155	100%

All fish, shellfish and crustacean businesses and freshwater fisheries (stocked and cropped waters apart from rivers and canals) are legally required to register with the Fish Health Inspectorate for their region (i.e. England and Wales, Scotland, Northern Ireland). The list of registered businesses is now publicly available on websites for each region.

Farm gate prices for table fish in 2010 were estimated GBP 2 860/tonne for salmon (converting to EUR 3 400), GBP 2 400/tonne for rainbow trout (EUR 2 800) and

GBP 5 000/tonne for brown trout (EUR 5 860). Live fish for restocking are more valuable, for example, we estimate carp as averaging GBP 13 000/tonne (EUR 15 250) but larger specimen of carp will command much higher prices.

### Fisheries and the environment

The principal legislation governing protection of the marine environment is now contained in the Marine and Coastal Access 2009 (MCAA). The provisions on marine licensing consolidate and replace some previous statutory controls, including licences under Part 2 of the Food and Environment Protection Act 1985 and consents under section 34 of the Coast Protection Act 1949. The main features of marine licensing are:

- the definition of licensable activities; these include deposits (e.g. disposal of dredged material), removals (e.g. extraction of sand and gravel), dredging (e.g. navigational dredging of ports and berths), construction (e.g. harbour works) and incineration (banned under international law);
- the exemption of certain activities from the requirement for a licence (done partly within the Act but mostly through an Order);
- a new appeals system; and
- enforcement provisions including civil sanctions.

Apart from a number of powers that are retained by the Secretary of State, most licensing functions in England, including enforcement, have been delegated by Order to the MMO. Generally speaking the devolved administrations have responsibility for licensing in their (inshore) waters.

Since 1999, the only type of waste that is routinely considered for disposal at sea round the coast of the United Kingdom is material dredged from ports and harbours and small quantities of fish waste. 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.

The discharge of radioactive waste to the marine environment is also strictly controlled by national legislation. Sites are regularly inspected and authorisations reviewed to ensure that discharges are kept as low as is reasonably achievable.

The Marine and Coastal Access Act 2009 introduced a new mechanism for designating Marine Conservation Zones (MCZs) to protect features of national importance and interest. Work is underway to create an ecologically coherent network of marine protected areas in UK waters. The network will consist of MCZs, European marine sites, Sites of Special Scientific Interest with a marine component, and Ramsar sites. The network is planned to be substantially complete by the end of 2013.

Defra's delivery partners, Natural England and JNCC, have been tasked with making recommendations on where the new MCZ sites should be located. They have set up four regional projects around the English coastline that are looking at local and national data and working with local stakeholders to find suitable sites. Unlike other existing Marine Protected Areas, MCZs will be taking socio-economics into consideration. The projects were due to report to the delivery partners in Summer 2012, with recommendations put to Defra Ministers

in Autumn 2012. This will be followed by a public consultation, with a view to introducing the sites in 2013.

With regards to meeting commitments under the Habitats and Wild Birds Directives the United Kingdom put forward 15 new European Marine Sites (Special Areas of Conservation and Special Protection Areas) on 20 August for designation to the European Commission. Further sites are planned to be put forward to complete the SAC network in UK waters by 2013.

There are currently 94 SACs with marine components, covering 3.4% of the UK sea area. The United Kingdom also has 107 SPAs with marine components – three of these are entirely marine – Bae Caerfyrddin/ Carmarthen Bay SPA (Wales), the Outer Thames Estuary and Liverpool Bay/Bae Lerpwl SPAs (joint England/Wales).

Under Article 6(2) of the Habitats Directive there is a commitment to protect European Marine Sites from potentially damaging activities, e.g. fishing. Under the regulations transposing the Directive, competent authorities are responsible for ensuring these commitments are met.

As part of the implementation of the Marine and Coastal Access Act 2009, the UK Government, Scottish Government, Welsh Government and the Northern Ireland Executive adopted a UK Marine Policy Statement in March 2011. This sets out the sectoral/activity policy objectives of the administrations, including those for fisheries, in order to achieve the United Kingdom's vision of clean, healthy, safe, productive and biologically diverse oceans and seas and contribute to the achievement of sustainable development. UK Administrations are currently at varying stages in the preparation of Marine Plans which will interpret and present the policies in the Marine Policy Statement at a sub-national level. In England, the Marine Management Organisation is currently preparing the first two plans, on behalf of the Secretary of State, for the East Inshore and the East Offshore marine plan areas. These are due to go to public consultation in spring 2013. Marine Plans for the whole of the English marine area will be in place by 2022. The approach in Scotland is to prepare a single National Marine Plan for the inshore and offshore area followed by a series of regional plans for the inshore area. The Scottish National Marine Plan is due to go to public consultation in 2013. The Northern Ireland Executive is taking a similar approach to Scotland and plan to consult on a National Marine Plan in January 2014. The Welsh Government is currently considering their way forward following a consultation on their approach.

Together the Marine Policy Statement and Marine Plans will create the framework for consistent, sustainable and evidence-based decision-making to enable sustainable development of the UK marine area. As part of the marine planning process the United Kingdom are consulting other Member States at an early stage and have held a series of workshops and bilaterals with neighbouring countries. In addition, the Marine Management Organisation and Scotland are producing a Sustainability Appraisal for each marine plan which will include a Strategic Environment Assessment to ensure that environmental and socio-economic impacts are assessed.

Following a public consultation in July 2006, the United Kingdom introduced measures to protect tope, a vulnerable European continental-shelf and coastal shark species. The Tope (Prohibition of Fishing) Order 2008 (SI 2008/691) prohibits fishing for tope other than by rod and line (catch and release) and sets a 45 kg per day tope by-catch limit in commercial fisheries targeting other species. Fisheries data indicates a high level of compliance within both the recreational angling sector and commercial fisheries. A stakeholder review of the legislation carried out in 2010 indicated strong stakeholder support for the legislation to remain in place.

In 2009 the United Kingdom ceased issuing special fishing permits under Council Regulation (EC) no. 1185/2003 which allowed the removal of shark fins from carcasses at sea. This means that all UK flagged fishing vessels, wherever they fish and wherever they land their catch, must ensure that all sharks landed have their fins naturally attached to the carcass. This decision was taken to aid enforcement and compliance monitoring and minimise the potential for illegal finning activity to occur i.e. the disposal of carcasses and retention of fins. Furthermore, by easing species identification improved scientific data on catch compositions can be collected, underpinning stock assessments and informing decisions on management measures. In 2011/2012, the United Kingdom lobbied the European Union to strengthen Regulation 1185/2003 which would ensure all EU vessels land sharks with fins naturally attached.

The United Kingdom is committed to avoiding the bycatch of cetaceans (dolphins and porpoises) and fulfilling our obligations under EC Regulation 812/2004, which lays down measures for assessing the incidental catches of cetaceans in defined fisheries and implementing mitigation measures (through the use of acoustic deterrent devices or “pingers”) to reduce such catches. Recent work on mitigation has focused on the use of one specific type of acoustic deterrent device (“DDD”). From 2009 – 2011 this pinger was trialled in collaboration with the over-12m gill and tangle net fleet in the Western Channel and Celtic Sea and proved highly effective in minimising porpoise bycatch by over 90% in nets of up to 4 km in length.

The United Kingdom also banned pelagic pair trawling for bass by UK vessels within 12 nautical miles of the south-west coast of England, with the aim of reducing high levels of dolphin bycatch. We have been trialling a variant of the DDD pinger in the UK component (outside 12NM) of the winter mid-water pair trawl fishery for bass in the Western English Channel with considerable reductions in common dolphin bycatch over the past few years.

The European Commission will be reviewing Regulation 812/2004, during which we will urge the Commission to improve regional flexibility for implementation to better enable Member States to tackle cetacean bycatch in fisheries where a problem has been identified.

The Marine Strategy Framework Directive, which came into force on 15 July 2008, requires all member states to achieve Good Environmental Status in their marine waters by 2020. In implementing this Directive the United Kingdom will need to consider whether additional fisheries management measures are necessary in order to deliver Good Environmental Status in UK waters.

## **Government financial transfers**

### ***Social assistance: Government financial support***

The European Fisheries Fund (EFF) is the European Union’s financial instrument for the fisheries sector. The programme runs from 2007 to 2013 and helps the sector attain the objectives defined as part of the Common Fisheries Policy. Projects are co-financed by the EFF must promote sustainable fisheries and aquaculture. On 2 December 2011, the Commission published their proposals for the new European Maritime and Fisheries Fund (EMFF) that will replace the existing European Fisheries Fund (EFF) from 1 January 2014. Currently, negotiations are underway on the successor scheme – covering the period 2014-20. Under the EMFF there will continue to be a requirement for some level of co-financing by the UK Government.

### ***Social assistance: Assistance for the fishing industry***

The EFF is a driver of development, designed to be the financial component of the CFP. As a public support instrument, it contributes to the financing of projects initiated by

businesses, public authorities or representative bodies in all the economic activities that make up the fisheries sector: catches, ports, farming, processing, marketing, heritage etc. The EFF contributes to the overarching aim of fisheries management in the United Kingdom – fisheries industry that is sustainable, profitable, well managed, internationally competitive and helps support thriving, diverse and sustainable local communities, managed effectively as an integral part of coherent policies for the marine and freshwater environment. The fund promotes the sustainable exploitation of fisheries resources and aims to balance the needs and capacity of the fleet with resource availability. Funds are directed to projects that increase competitiveness of the industry, promoting environmentally friendly fishing and production methods, provide adequate support to people employed in the sector; foster the sustainable development of fisheries areas and support sustainable growth and diversification in the aquaculture and fisheries processing sectors.

The EMFF will continue to provide financial assistance to the fishing industry, as well as supporting fishing communities undertaking local community led initiatives. The priority for the EMFF will be to deliver the reformed Common Fisheries Policy.

#### ***Social assistance: Assistance for aquaculture***

In 2009/10, Defra invested approximately GBP 1.6 million on fifteen projects related to aquatic animal health, to assist in maintaining high fish health status of farmed and wild fish stocks.

#### ***Structural adjustment***

Work is currently being undertaken to look at the issue of latent and over capacity within the inshore fleet in England. The industry will be consulted on any proposed changes over the course of the next 18 months.

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

#### ***Policy changes***

##### *Food safety*

There were no significant policy changes in this area.

#### ***Information and labelling***

##### *Information*

On 1 January 2010, EU Regulation (EC) No 1005/2008 establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing came into force. The Regulation introduces a catch certificate scheme that requires imports of fishery products to the European Union, to be certified and validated by third country (non EU) authorities. The Regulation provides protection for the EU market against imports of IUU fishery products, as uncertified goods will not be authorised for import. It is anticipated that this will have wider benefits to the sustainability of global fish stocks by preventing those who fish illegally from selling their fish onto the lucrative EU market, thereby increasing the incentive to fish legally.

##### ***Labelling***

Statutory labelling for example on food safety, nutritional information and country of origin is subject to EU and domestic legislation. Consumer interest in information on the sustainability and provenance of fish and seafood has grown in part due to increased media interest and a higher marketing profile through retailers aligned with greater prominence of on-pack sustainability marks (such as the Marine Stewardship Council's scheme) and guides

on “fish to avoid.” The UK fishing industry has responded through increasing numbers of fisheries seeking assessment through accreditation schemes.

The Commission published a set of proposals on the reform of the Common Market Organisation in July 2011, as part of the wider reform of the Common Fisheries Policy (CFP). The reforms aim to upgrade market incentives to support sustainable production practices, improve the market position of EU production enhancing the market potential of EU products and supporting better governance, reduction of administrative burdens and simplification of the legal framework. The Commission wants to modernise the marketing regime for fishery and aquaculture products to bring it up to date with the modern world, whilst simplifying and streamlining the regulatory burdens.

On the 12 June 2012, the Council agreed a position, supporting the Commission’s proposals, which outlined the objectives for Producer Organisations (POs) and their need to be clear, address the requirements of the CFP, be measurable and be achievable. In particular, it set out the role for POs in handling unwanted catches. It also set out requirements for mandatory and voluntary consumer labelling of fisheries and aquaculture products, with the aim to improve the information provided to consumers so that they are able to make an informed choice about sustainable products. This information is in line with requirements under the Food Information Regulations, and the Control Regulations.

The United Kingdom is applying new EU Regulations that require extended information to be made available to buyers of fishery products and to consumers. Supply chain information that has to be made available includes the identification number of the aquaculture unit or fishing vessel, the date of catch or production, the geographical area of production and whether previously frozen and, if frozen and unprocessed, the date of freezing. Consumer labelling requires the commercial designation, scientific name, geographical area and production method.

On 1 July 2012 Regulation 16/2012 came into force this requires information on date of catch/production and date of freezing if different to be made available with frozen fish and products. The date of freezing is any after a stage of processing to irreversibly change its state.

On 14 December 2011 the Food Information to Consumers Regulation 1169/2011 came into force. Its scope is all food supplied to the consumer but there are a few specifics on fish. There is a requirement to state first date of freezing on unprocessed product. Added water must be declared in the name of the food. Food that has been frozen and thawed for sale must be labelled as defrosted in the name of the food.

The European Food Safety Authority gave its opinions on the health claims that had been submitted for approval under the Nutrition and Health Claims Regulation. There were 222 positive opinions given and will be included in a Regulation to approve for use.

### ***Processing, handling and distribution***

The total supply of fish available for domestic use increased by 8% in 2008 to 762 000 tonnes.

### ***Processing and handling facilities and structures***

Overall, the size of the UK processing industry has continued to contract and is characterised by a small number of large scale processors and a large number of small processors. In 2010 the number of people employed within the fish processing industry was approximately 14 000 with around 400 processing plants. A small number of large secondary and mixed processors provide a large share of the industry employment. There has been a shift in the structure of the industry with fewer processing demersal species exclusively with



an increase in mixed species processing. The key processing regions in the United Kingdom are Humberside and Grampian. In addition to fish supplied by the UK fleet, imports make up a significant proportion of the raw material supplied to the industry. Important supply markets include Iceland, Norway and the Faroe Islands.

In recent times, the industry has been characterised as having a small number of large multi-unit businesses, and a large number (or long tail) of small single unit businesses and this latest research continues to support that. However, the evidence suggests this polarisation has been tempered somewhat, with the 2010 results suggesting the industry is less fragmented than in recent years.

The decline in processing units over the last two years can be seen in both smaller and larger processing units with the mid-sized processing units (26-50 full time employment — FTEs) remaining relatively stable. The most marked decline in processing units has been amongst small units, particularly those employing between 1 and 10 FTEs – representing a 26% reduction in units over the last two years.

**Table 22.2. UK seafood processing industry population: FTEs and processing units**

Seafood processors	1995	2000	2004	2008	2010
Number of UK FTE jobs	19 659	22 256	18 180	14 660	14 331
Number of processing units	719	541	573	479	384
Average FTEs per unit	27	41	32	31	37

### *Trends in the UK seafood processing industry*

At least part of the reduction in units is the result of industry dynamics in which businesses are changing their practices, moving away from processing activity towards seafood trading, retail or specialising as importers or exporters. Other processors may have had seafood as part of their overall food business and decided to reduce this activity or withdraw from seafood altogether. In addition some processors that previously handled seafood as a core business are now focussed on salmon as the principle species. (*Source: Seafish*)

## **Markets and trade**

### *Markets*

#### *Trends in domestic consumption*

Under EU support arrangements, if a member of a 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. This function looks to be continued in the reformed CMO, however, financial support would only be available to temporarily remove items from the market and store them for later release for human consumption. The Rural Payments Agency reported that in 2011 there were 11 fish withdrawal claim transactions paid with a value of GBP 75 200 and indicative figures for 2012 show that six transactions were paid amounting to GDP 110 627. The main species for both 2011 and 2012 were megrim and plaice.

The National Statistics publication, Family Food in 2010 reports a significant downward trend in household purchases of fish, which fell 8.8% between 2007 and 2010 to 151 grams per person per week. Purchases of white fish fell 11% on 2009, 16% since 2007. This is the largest individual category accounting for 14% of all fish purchases. Sales of salmon remained fairly constant (+6.2%) since 2007 and consistently make up around 8% of total fish purchases. Purchases of herring and other blue fish fell -30% on 2007. Whilst purchases have

fallen, expenditure on fish has remained almost unchanged. Expenditure has increased by 1%, from GBP 1.16 per person per week in 2007 to GBP 1.17 in 2010. In comparison, the expenditure on takeaway fish fell 7.5% over the same period to GBP 0.17 per person per week.<sup>1</sup>

### *Promotional efforts*

Just over half of English and Welsh fish discards are discarded for reasons relating to weak or absent markets. A significant amount of work has been undertaken in the United Kingdom to help fishermen avoid the capture of unwanted species, however, the mixed nature of our fisheries means that inevitably some catches of fish remain unavoidable. Many of these fish have weak or absent markets - so work was commissioned in 2011 to understand how the seafood industry could encourage consumption and better use of commonly under-utilised, sustainable species that are often discarded. The research project called *Fishing for the Markets* made recommendations on how the United Kingdom might address the market side of the discard problem<sup>2</sup>. Defra have also commissioned an activity based research project which will pilot and evaluate the creation of a Community Supported Fishery (CSF), linking fishermen to local consumers and acting as a specific mechanism to create a market for under-utilised or discarded fish species. This project will report later in 2013.

Seafish, through the consumer campaign “Fish is the Dish,” has been targeting mums with an online campaign to encourage the consumption of seafood. The campaign is designed to challenge the common misconception that fish and seafood are difficult to cook by sharing easy recipes, offering honest advice and supporting online provision with regional cookery events. The campaign’s secondary messages of sustainability and responsible sourcing are also key to all activities. This campaign is targeted only at UK audiences.

### *Trade*

#### *Policy changes and volumes and values*

Total imports of fish and fish preparations rose from 552 000 tonnes to 781 000 tonnes (an increase of 41%) between 1999 and 2008. In value terms, total imports rose in 2008 to GBP 2 207 million, an 11% increase on 2007. In 2008, total exports of fish and fish preparations amounted to 416 000 tonnes product weight, a decrease of 11% on 2007. Although in terms of value, total exports were GBP 1 010 million in 2008 compared with GBP 982 million in 2007.

In 2012, the volume of UK imports grew whilst value remained flat. The value of UK seafood imports increased by 0.5% to GBP 2 561 million, whilst the volume grew by 4.5% to 751 000 tonnes. The value of UK seafood exports fell by 7.4% to GBP 1 349 million while the volume grew 7.8% to 469 000 tonnes.

### **Outlook**

In the short term the UK fishing industry will continue to remain under pressure due to rising costs, low returns and increasing competitive pressures.

Effective reforms of domestic, EU and international fisheries management frameworks are necessary to allow for long-term sustainable fisheries, supporting a viable fishing industry and providing secure, healthy food supplies.

### *Notes*

1. [www.defra.gov.uk/statistics/files/defra-stats-foodfarm-food-familyfood-2010-120328.pdf](http://www.defra.gov.uk/statistics/files/defra-stats-foodfarm-food-familyfood-2010-120328.pdf).
2. A full report is available at [www.fishingforthemarkets.com](http://www.fishingforthemarkets.com).

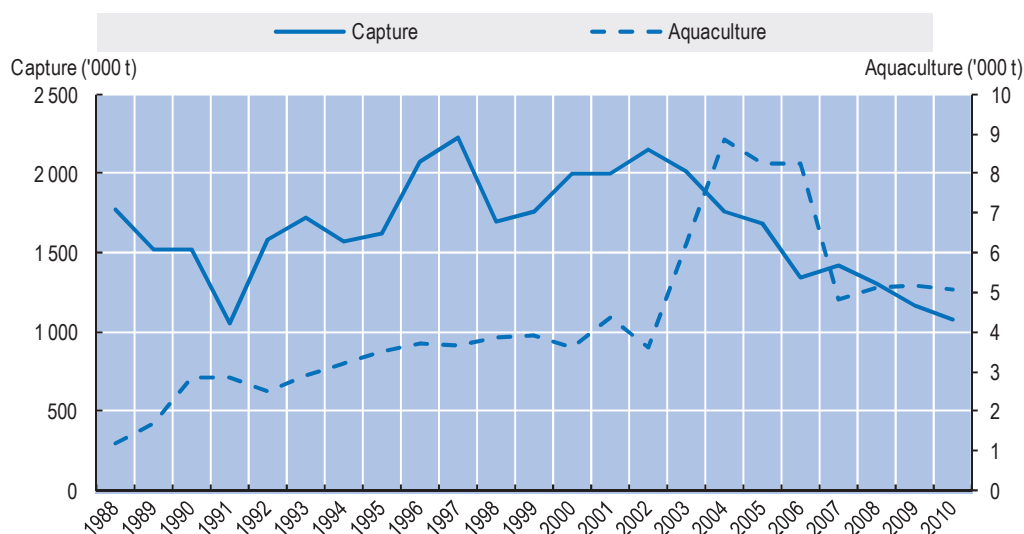
## Chapter 23

### ICELAND

#### Summary of recent developments

- In 2011, around 5 200 individuals were employed in the fisheries sector, or 3.1% of the estimated workforce. The percentage is higher outside the capital, and the sector is male dominated with around 6% female and 94% male ratio. The fisheries sector accounted for 6.9% of GDP in 2011 and the fish processing sector accounted for 3.6% of GDP.
- The total first-hand value of the Icelandic catch in 2011 amounted to IKR 154 billion (current prices), a steady increase from IKR 115 billion in 2009. Over 95% of fish is exported, either in unprocessed or processed form, and high fish product prices on the world market are reflected in landing prices. When it comes to value, the groundfish catches is significantly higher than for pelagic ones. The value of groundfish landings is around 70% of the total and the pelagic landings around 30%, even if the total volume of pelagic landings exceeds groundfish catch volume.
- There has been a longstanding debate in Iceland about the fisheries management system. A review was undertaken and has resulted in three legislative proposals, one in 2011 and two in 2012. In addition, there a legislative proposal on fishing fees was approved in spring 2012.

Figure 23.1. Harvesting and aquaculture production



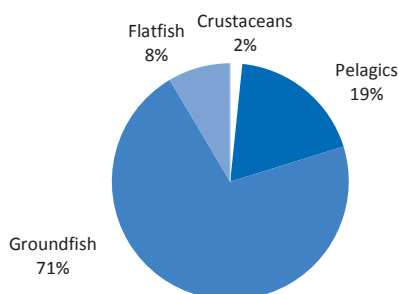
Source: FAO FishStat Database.

### Box 23.1. Key characteristics of Icelandic fishing

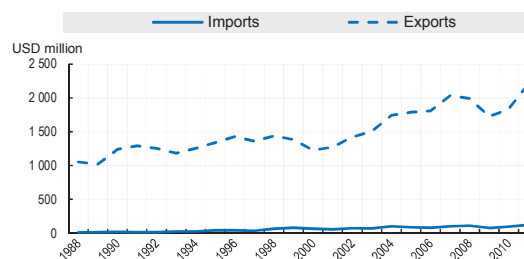
- In landings value, the share of groundfish is 71% as opposed to a 19% share of pelagics. When it comes to volume this is reversed, with pelagics having the largest share. While most of groundfish is sold fresh, frozen or salted a large share of pelagics landing was used for fish meal or oil processing. (Panel A)
- The Icelandic economy is heavily dependent on fisheries exports and in 2011 these exports amounted to 40% of exports of goods, and around 26% of exports of goods and services. It is estimated that over 95% of the fish production is exported. The main export markets are the EEA area with over 70% of total export value. The single most valuable species in the total fisheries product export value in 2011 is cod, which amounted to IKR 77 billion or 30% of the total. (Panel B)
- The value of government financial transfers to the Icelandic fisheries sector in 2009 decreased 34.7% compared to 2008. General services contributed 71% of government financial transfers in 2009. The capture fisheries sector and the processing and post-harvesting sector do not receive any direct financial transfers. As for fuel subsidies, effective from 2010, the fishing sector is subject to a carbon tax and is only allowed concessions from a road levy imposed for vehicles using the road system. A special income tax concession for crew members is being faced out. (Panel C)
- There is more than a 30% decrease in the number of fishers and vessels between 2000 and 2009. There is no direct control of capacity nor government sponsored decommissioning schemes or fuel subsidies, but it is considered that the fisheries management system has contributed to controlling capacity. (Panel D)

Figure 23.2. Key fisheries indicators

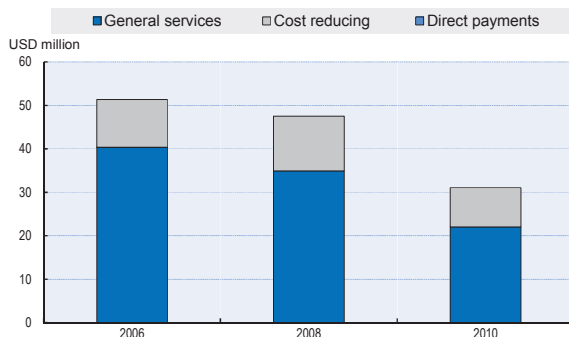
Panel A. Key species landed by value in 2009



Panel B. Trade



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2006	2008	2010
General services	40	35	22
Cost reducing	11	13	9
Direct payments	0	0	0

1. Cost recovery charges (about USD 0.008 million in 2009) were not included here.

## Legal and institutional framework

The Ministry of Fisheries and Agriculture has the responsibility of sustainably managing ocean fisheries and aquaculture, as well as the fisheries related to health and safety issues and the fish trade. In September 2012, the Ministry of Fisheries and Agriculture was merged with the Ministry of Industry, Energy and Tourism and a part of the Ministry of Economic Affairs into a single Ministry of Industries and Innovation (MII). With the establishment of this new ministry, state supervision and involvement in industry and innovation are brought together and co-ordinated in one place.

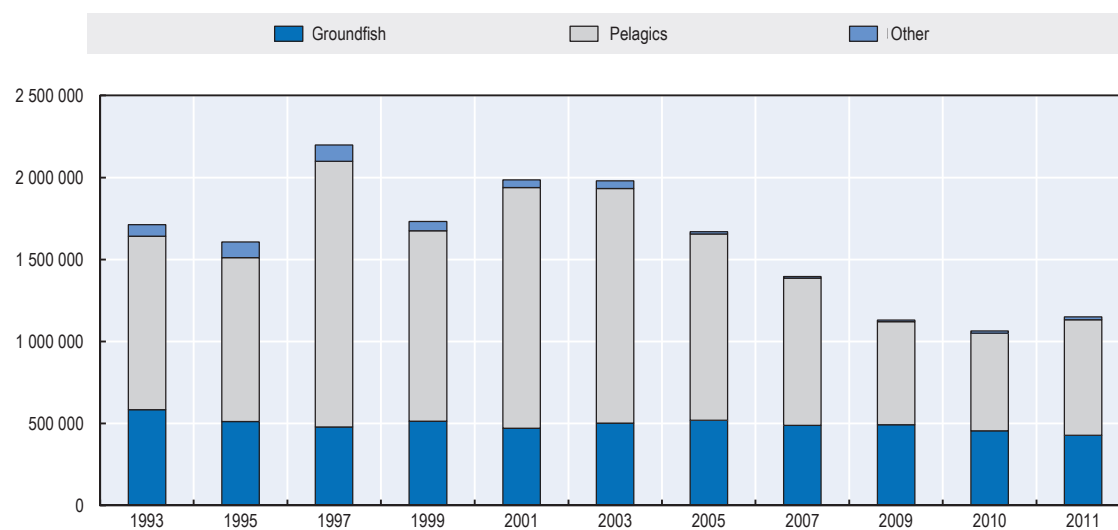
The Directorate of Fisheries is responsible for the implementation of the fisheries management system and monitors issues in collaboration with the Icelandic Coast Guard.

The Marine Research Institute is the scientific advisory body of the Ministry regarding the sustainable management of resources.

## Capture fisheries

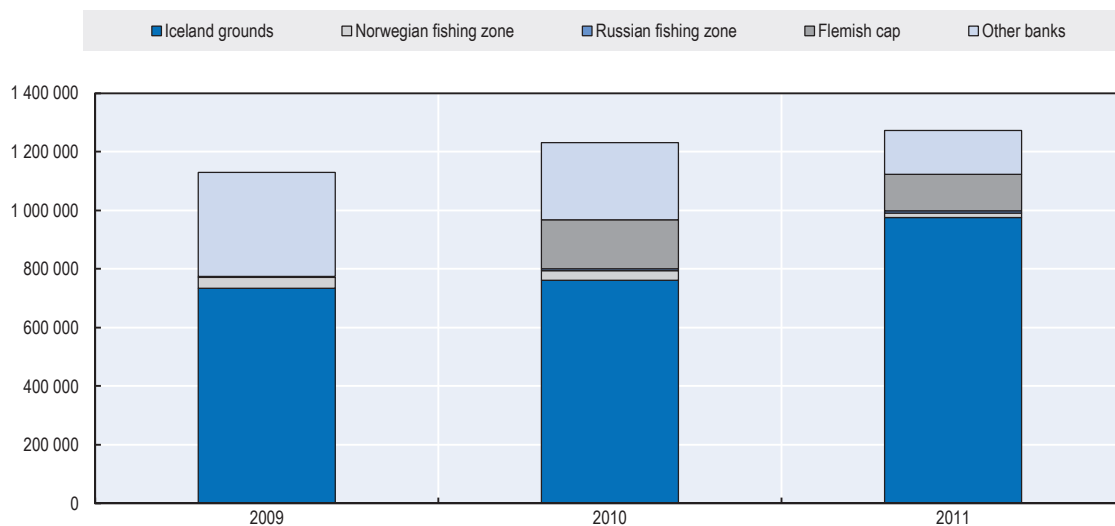
Icelandic catches from all fishing banks in 2011 was 1 149 thousand tonnes. Groundfish catches remained fairly stable, usually between 450-500 000 tonnes. Cod contributed to around 40% of the groundfish volume and there has been some increase in the cod quotas in recent years as the cod stock shows results of rebuilding plans; other groundfish catches have decreased slightly. Pelagic catches can vary considerably, mostly because of the large variations in the capelin stock. The capelin catches have been low in past years, but showed recovery in 2011 and 2012. Most of catches are from Icelandic fishing banks, i.e. inside the Icelandic EEZ (Figures 23.3 and 23.4).

**Figure 23.3. Icelandic catches 1993-2011**  
Tonnes



Source: Statistics Iceland 2012.

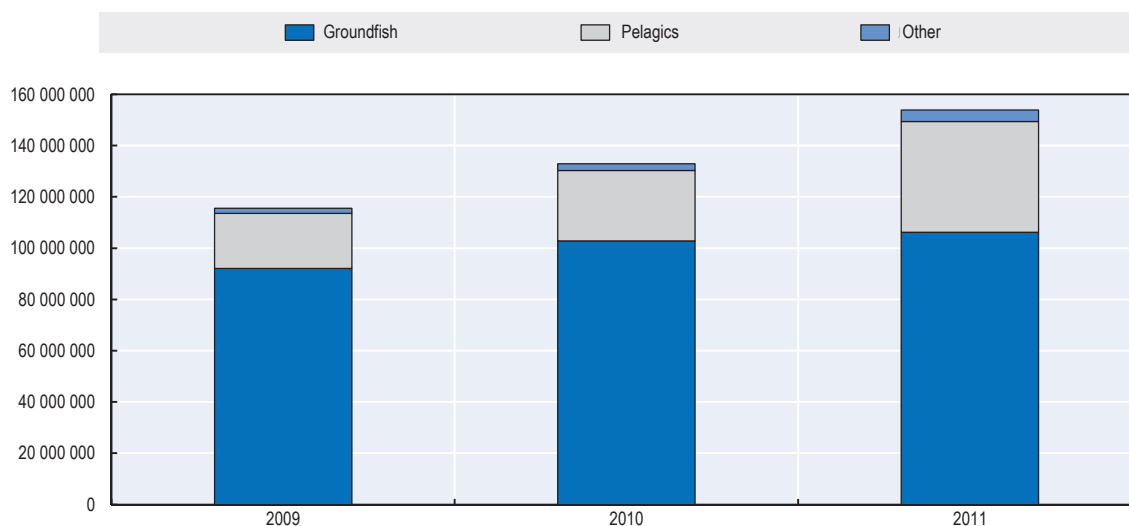
**Figure 23.4. Icelandic catches 2009-2011 by fishing area**  
Tonnes



Source: Statistics Iceland 2012.

The total first-hand value of the Icelandic catch in 2011 amounted to IKR 154 billion (current prices), a steady increase from IKR 115 billion in 2009. Over 95% of the fish is exported, either in unprocessed or processed form and high fish product prices on the world market are reflected in landings prices. When it comes to value, groundfish catches overshadow the larger volume of the pelagic ones. The value of groundfish landings is around 70% of the total and the pelagic landings around 30%, even if the total volume of pelagic landings exceeds the groundfish catch volume. This reflects the uses of the groundfish species in processing. The groundfish catch is mostly sold fresh, frozen or salted, but a large share of the pelagic catch is used for fish meal or fish oil processing.

**Figure 23.5. Value of landings 2009-2011**  
ISK billions

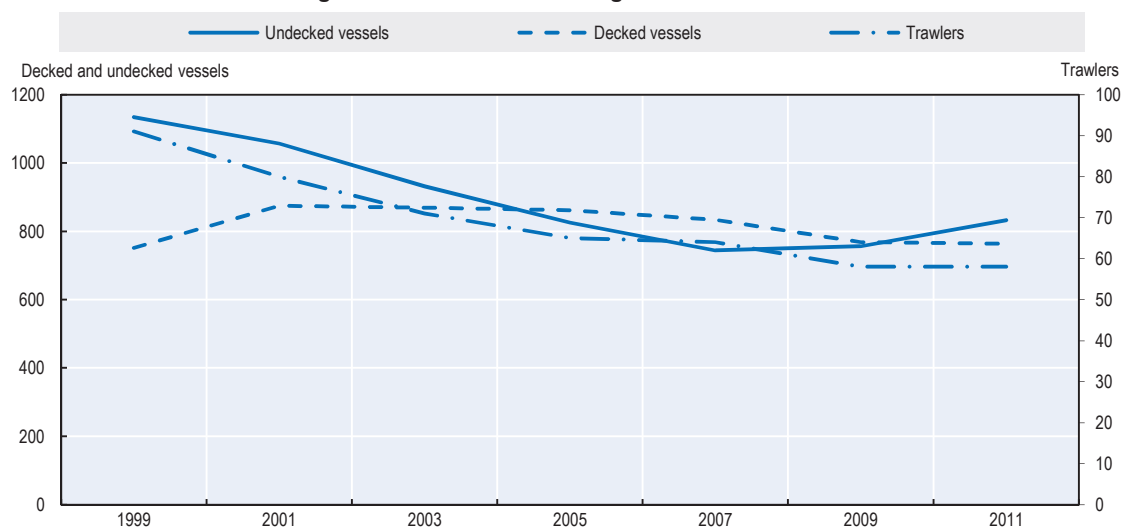


Source: Statistics Iceland 2012.

### Performance

Official statistics divide the fleet into three main: trawlers, which mainly target groundfish; decked vessels, in a wide range of sizes including large multigear vessels that target small pelagics and undecked small but technologically advanced vessels of up to 10 GT. The fleet has been gradually decreasing in number and GT, although a slight increase in the small boat section could indicate that more vessels are entering the coastal fisheries. There are no government sponsored decommissioning schemes or fuel subsidies, but it is considered that the fisheries management system has contributed to controlling capacity.

**Figure 23.6. Number of fishing vessels 1999-2011**



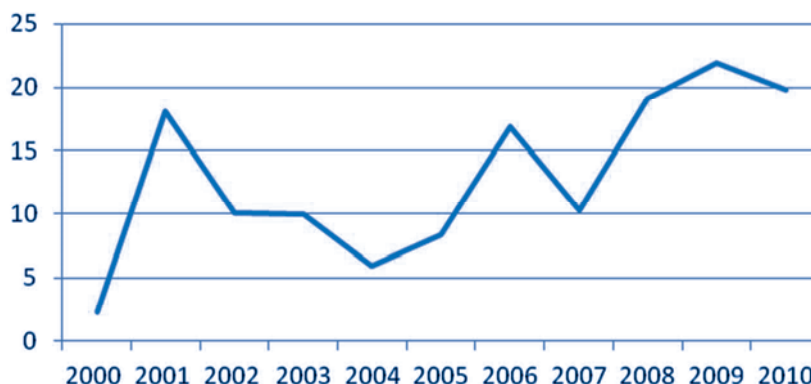
Source: Statistics Iceland 2012.

In 2011, around 5 200 individuals were employed in the fisheries sector, or 3.1% of the estimated workforce. The percentage is higher outside the capital, and the sector is male dominated with around 6% female and 94% male ratio. The fisheries sector accounted for 6.9% of GDP in 2011 and the fish processing sector accounted for 3.6% of GDP.

**Investment in the fishing industry:** Direct foreign investment in companies engaged in fishing within the Icelandic territorial waters is restricted. Under certain conditions indirect foreign investment is allowed. The same applies for 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.

**Financial performance:** The combined net profits from fishing and fish processing as a percentage of revenue were 20% in 2010. From 2007, the two sectors have benefitted from the devaluation of the Icelandic krona, even though foreign currency loans have increased because of that same devaluation. The pelagic fisheries and processing industry showed profits of 31% in 2010 reflecting the high prices on the world market for fish meal and oil.

**Figure 23.7. Net profit in fishing and processing using annuity approach (imputed cost of capital) and 6% rate of return**



Source: Statistics Iceland.

### *Status of fish stocks*

The Icelandic Marine Research Institute issues an annual report on the state of marine stocks for the fishing year and prospects for the coming quota year. This includes information about the state of specific stocks, development of fisheries, stock size, and recommended maximum catch levels which take into account their estimated productivity and conservation issues where necessary.<sup>1</sup> Several highlights of the report are described below.

The harvest rate for cod has decreased in recent years from 35-40% to about 20%. Both the fishable and spawning stocks of cod have grown over the last few years and the spawning stock is now more than twice as large as it was for most of the last decade. These effects are seen as increased CPUE and more economic use of allowed quotas.

There is a more pessimistic prediction for the haddock stock in Icelandic waters, which has been very abundant in recent years but is declining rapidly. Due to this trend, the stock is predicted to decrease and therefore the recommended catches for the next years. The Marine Research Institute of Iceland working on the scientific evaluation of harvest rules for saithe and haddock.

During the last decade there has been much uncertainty about the status of some of the most important pelagic species in Icelandic waters. Following a good season of capelin fishing during the winter of 2011-12, the status of the next season's catch is not clear. However, it seems likely that increased ocean temperature in the northern ocean has weakened the capelin stock since 2000. There is no indication that the warming of Icelandic waters is decreasing and there is no doubt that this has had an important effect on the increasing mackerel migrations of recent years. In 2011, the influence of warm water was unusually strong to the west of Iceland and the mackerel migration that year reflected this. It will be interesting to follow the development of the state of the ocean around Iceland in the coming months, considering that fluctuations in seawater temperature and currents have a decisive effect on the size and movement of pelagic species. Furthermore, it is important to note that the Icelandic summer-spawning herring stock is rebounding. The infection that has plagued the stock for the last four years is abating.

In light of the extremely poor status of the halibut stock, the Ministry of Fisheries and Agriculture convened a committee with the task of examining conservation methods for this stock. Following the conclusions of the committee, the Ministry of Fisheries and Agriculture instituted a management policy that banned direct targeting of halibut through the use of hawk



weights and required that all living halibut be released, no matter what the gear used. This policy came into effect on 1 January, 2010.

### ***Management of commercial fisheries***

The Fisheries Management Act of 1990 is the main framework of the present fisheries management system, although it has undergone a series of subsequent adjustments. The Act provides for a system of individual transferable quotas (ITQs) in all commercially important stocks that are allocated to individual fishing vessels. The fishing year begins on 1 September and concludes 31 August of the following year. 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. Thus, the annual vessel catch quota is denominated in volume terms. Both the permanent quota-shares and the annual catch quotas are transferable, subject to certain restrictions, and perfectly divisible. This means that any fraction of a given quota may be transferred. Some 98% of the catch landed is subject to TACs.

In addition to the ITQ system, Icelandic fisheries management includes many other management measures, such as area restrictions and fishing gear restrictions. Extensive area management includes closed areas to conserve important vulnerable habitats as well as provisions for temporary closures to protect spawning fish and real time closures such as instant short term closures to protect juveniles.

***Coastal fisheries:*** With the stated aim of, amongst others, reinforcing regional settlement, a coastal fisheries option was initiated within the fisheries management system in 2008. The coastal fisheries are open for the summer months of May-June and have a common pool quota. The total pool quota is allocated for each month per four geographical regions. The vessels that can apply for a coastal license are small vessels using hand lines only and they are not allowed to fish in other parts of the management system during the coastal operational season. In 2011, around 760 boats fished 7 420 tonnes, mostly cod.

***Discard ban:*** According to the Icelandic Fisheries Act, discards are prohibited and there are several measures in force to support the effective implementation of this ban. Vessels can lease quotas for species or catches after landing, limited “conversion” between species is allowed, and a certain part of total catches — undersized fish or over quota — can be landed; 80% of the landed value goes into a special fund for research and development.

### ***Monitoring and enforcement***

The Directorate of Fisheries is the enforcement agency of the Icelandic fisheries. Iceland has a very extensive enforcement regime, in particular regarding port control and the weighing of all catches. All catches by Icelandic vessels must be weighed and recorded at the port of landing by the local port authorities. The ports of landing send information on a daily basis directly to the central database of the Directorate of Fisheries, which means it always has up-to-date figures on catches and can conduct its management and surveillance of fisheries promptly and effectively. This information is publicly available on the web, thus ensuring transparency. The Directorate is currently working on an electronic logbook system for the Icelandic fleet.

### ***Multilateral agreements and arrangements***

Iceland is a member of NEAFC, NAFO, ICCAT and NAMMCO. In addition, there are bilateral agreements with Norway, Russia and the Faeroe Islands. In 2009, Iceland signed the FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing and is in the process of ratifying the Agreement.

## Aquaculture

Aquaculture in Iceland has been a small scale industry. In the 1990s, Icelandic scientists and farmers worked on developing aquaculture species such as halibut, turbot, abalone and cod. Today, the main increase in volume has occurred in production of Arctic char, cod and salmon. The current production is around 5 000 tonnes a year and is expected to double by 2015. The most important farmed species is Arctic char, a typical Arctic fish that is a well suited to Icelandic culture. In 2010, there were around 25 registered fish farms in Iceland. Some experimental mussel farms have started operation.

There are potential local advantages for the aquaculture industry in Iceland which include access to unpolluted seas and water. Geothermal water for heating is exploited in hatcheries and hydro electric power is utilised for pumping and other farm usages. Renewable hydro power and geothermal water make farming of warm-water species possible, for example turbot, but it also means that fish farming in Iceland emits a carbon footprint.

## Government financial transfers

The capture fisheries sector and the processing and post-harvesting sector do not receive any direct financial transfers, such as through decommissioning schemes. As for fuel subsidies, effective from 2010, the fishing sector is subject to a carbon tax and is only allowed concessions from a road levy imposed for vehicles using the road system. A special income tax concession for crew members is being faced out. The Ministry of Fisheries and Agriculture has organised and financed short training courses for foreign fish processing workers, amounting to around IKR 8-10 million per year.

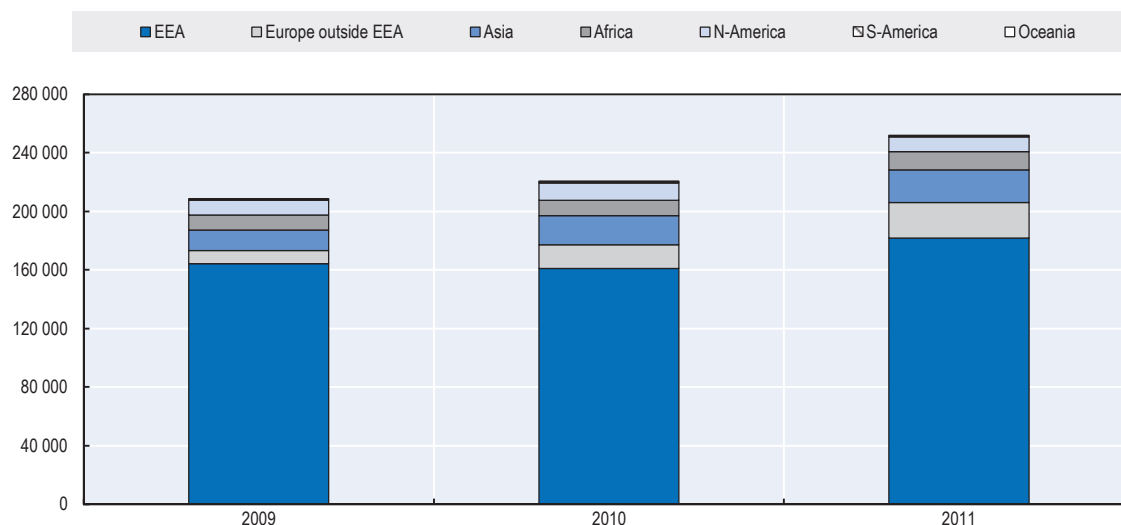
## Post-harvesting policies and practices

An “Icelandic responsible fisheries” labeling scheme has been in preparation for some time. The certification programme complies with the strictest international standards. It is based on the FAO Code of Conduct for Responsible Fisheries and FAO Guidelines for the Eco-labeling of Fish and Fishery Products. These documents have been translated into a straightforward assessment specification by the Icelandic Technical Committee and incorporated into an ISO 65-based certification programme. Global Trust Certification Ltd. independently manages the certification and assessment methodology that is used to assess and certify Icelandic fisheries against the Icelandic specification. The Icelandic Specification and Certification methodology is accredited by an IAF Accreditation Body (a member of the International Accreditation Forum) to the international standard for certification EN45011 / ISO 65. Cod, the first certified species in the programme, became effective in 2010.

## Markets and trade

The Icelandic economy is heavily dependent on fisheries exports and in 2011 these exports amounted to 40% of exports of goods, and around 26% of exports of goods and services. It is estimated that over 95% of the fish production is exported. The main export markets are the EEA area with over 70% of total export value. The EEA market has been growing in the past decades and can be attributed to increased exports to individual countries, but also to the growing number of countries joining the EEA. The total fisheries product export value in 2011 was IKR 252 billion. Thereof, the single most valuable species is cod, which amounted to IKR 77 billion or 30% of the total.

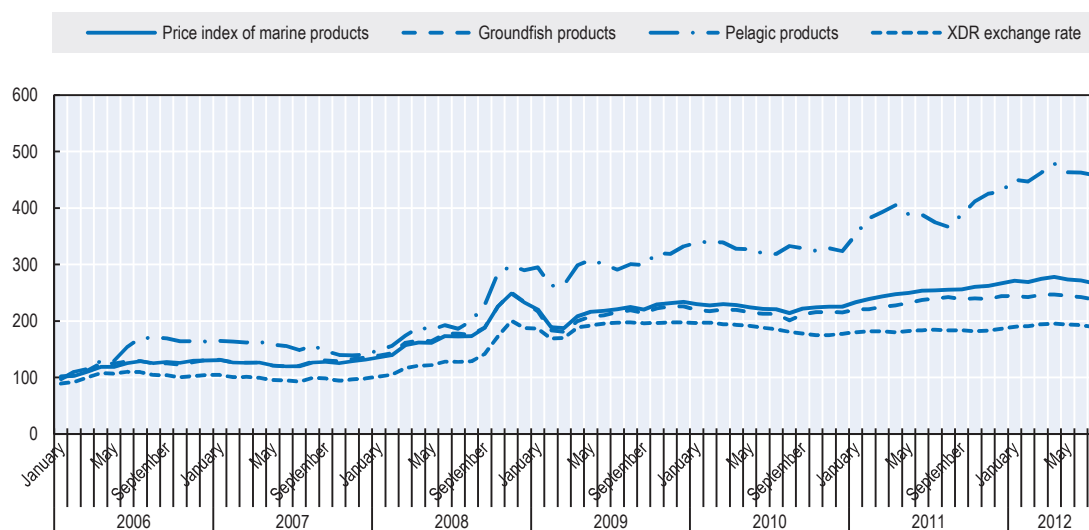
**Figure 23.8. Icelandic fisheries exports by market area 2009-2011**  
ISK billion



Source: Statistics Iceland.

**PPI – Fish Products:** Statistics Iceland compiles and publishes a Producer Price Index with a sub-index for fish products. The producer price index is an output price index for domestic production and measures the price that a producer receives for sold production, the factory gate price. The purchaser is typically a wholesaler, retailer or a producer using the output as an input into its own production. The index does not cover services. The producer price index is based on transaction data extracted directly from the respondents' business software. Over 90 000 distinct prices and quantities are collected electronically every month. Statistics Iceland prefers electronic data collection to traditional methods due to its high data accuracy and its ability to eliminate substitution bias. The PPI for fish products has been increasing in recent years, reflecting high prices on the world market, especially for fish meal.

**Figure 23.9. Price index of marine products 2006-2012**



Source: Statistics Iceland 2012.

## Outlook

There has been a longstanding debate in Iceland over the fisheries management system. This should be viewed in the context of the fisheries economic importance to the country. The system has been relatively successful in securing the biological and financial aspects, and the current debate revolves around social issues. The implications for regional settlement and the division of the resource rent from fisheries are at the forefront. In the government coalition platform ([eng.forsaetisraduneyti.is/news-and-articles/nr/3706](http://eng.forsaetisraduneyti.is/news-and-articles/nr/3706)), it is stated that the fisheries management legislation shall be reviewed with the aim of: “...reinforcing regional settlement”; “resolving the conflicts among Icelanders on ownership and utilisation of the marine resources.” The review of this system resulted in three legislative proposals, one in 2011 and two in 2012. In addition, a legislative proposal on Fishing Fees was approved in spring 2012.

The main changes in calculations of fishing fees were approved in 2012. There are now two types of fee, firstly: a basic fee for each cod-equivalent kg to be paid by all and an annual fishing fee linked to the estimated yearly rent from the fishery. The special fee is divided between the performances of groundfish fishing and pelagic fishing. It will include the rent on both fishing and processing, although levied only on fishing. It is estimated that these changes will more than double the tax revenues from the fee.

## Note

1. The report issued in June 2012 is accessible in English at: [www.hafro.is/undir\\_eng.php?ID=26&REF=4](http://www.hafro.is/undir_eng.php?ID=26&REF=4).

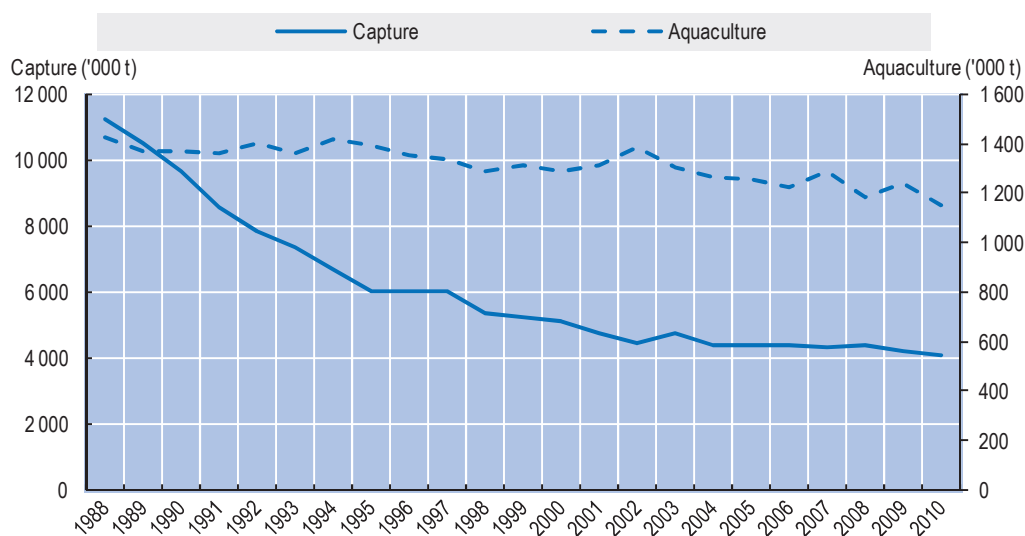
## Chapter 24

### JAPAN

#### Summary of recent developments

- With some exceptions, Japan's fishery production has been on the decline over the past decade. The year 2011 was exceptional as a result of the earthquake and subsequent tsunami which occurred in the north-eastern part of Japan, and which had substantial negative impacts on the fisheries and related sectors.
- The number of both fisheries workers and fishing vessels is on the decline. The stock status of 40% of major fish species around Japan is low. Domestic demand of fish for human consumption, while still strong, has decreased slightly. Japan's import of fish products remains high, although decreasing in volume.
- Central and prefecture governments in Japan employ multiple layers of management schemes and procedures to manage marine capture fisheries, including establishing total allowable catch (TAC) and total allowable effort (TAE) systems. In order to restore depleted fish stocks, "resource recovery plans" are being developed and implemented in co-operation with stakeholders.
- Current legislation promotes the pursuit of environmentally sustainable aquaculture by fishers' co-operatives. Various public and private initiatives continue to recover and maintain the sound natural environment on which fishery resources depend. The basic master plan of Japan's fishery policy was renewed in March 2012 and forms the basis for implementing comprehensive and effective policy packages.

Figure 24.1. Harvesting and aquaculture production



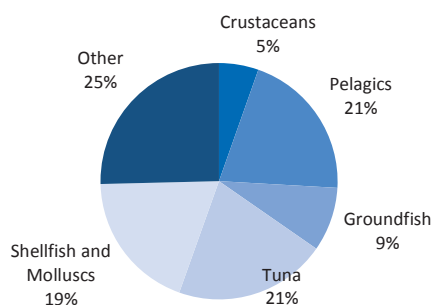
Source: FAO FishStat Database.

### Box 24.1. Key characteristics of Japanese fisheries

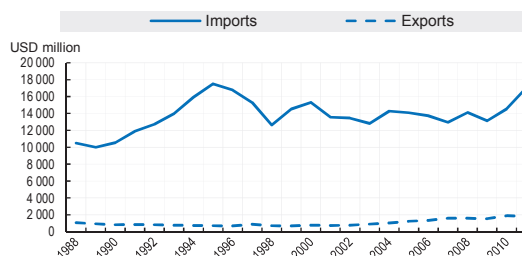
- Total volume from capture fisheries declined 10% between 2010 and 2011, to 4 731 thousand tonnes. (Panel A)
- Japan is a significant net importer of fisheries products, though until recently the level of imports has been trending lower. Exports recorded their strongest rate of growth between 2010 and 2011, both in value and volume terms. (Panel B)
- The majority of transfers are for public infrastructure, and general services dominate total transfers. Total support has been declining as a result of general budgetary restraint. (Panel C)
- The number of fishers shows a long term trend towards fewer fishers, and the average age of fishers is increasing. The size of the fishing fleet has also declined considerably from its peak in the 1980s. (Panel D)

Figure 24.2. Key fisheries indicators

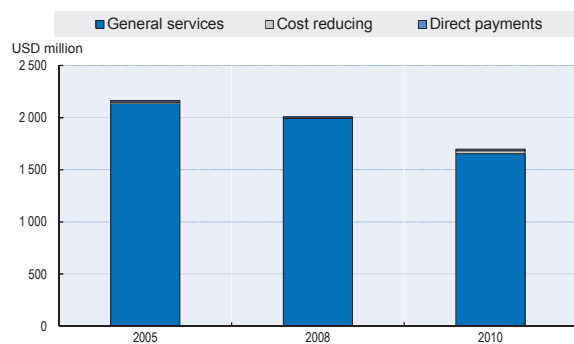
Panel A. Key species landed by value in 2010



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2005	2008	2010
General services	2 140	1 992	1 656
Cost reducing	11	3	28
Direct payments	15	14	14

## Legal and institutional framework

Reflecting the changing socio-economic environment of the fishery and related sectors, the Basic Law on Fisheries Policy was enacted in 2001 to act as an overall policy framework for fisheries. It has two basic concepts: 1) securing a stable supply of fishery products to Japanese nationals, and 2) the sound development of the fisheries industries through appropriate conservation and management of marine living resources.

In accordance with the provisions of the Basic Law on Fisheries Policy, “the Basic Plan of [Japanese] Fishery” was developed to embody the basic concepts and principles of the Basic Law. The Basic Plan includes, in particular, fundamental policy statements for the fishery, target self-sufficiency rates of fish and fish products, and a comprehensive policy package for government and various stakeholders to pursue policy objectives set out in the basic law.

In March 2012, the Government of Japan reviewed and renewed this plan to take into account the current situation in the Japanese fishery and food supply, such as structural change of fishing and related industries and the deteriorated status of fisheries resources. This revised plan promotes further refinement and implementation of Japan’s policy on fisheries in a changing domestic and international environment.

In addition to the Basic law on Fisheries policy, the principal laws for fisheries management in Japan 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 and administered in keeping with the concept of the “Basic Law on Fisheries Policy”. In accordance with this legislation, Japan manages its fisheries through various measures including control of fishing effort and catch regulations. Central and prefectural governments limit the number of licenses issued for each fishing type and restrict fishing periods, methods and gears.

## Capture fisheries

The volume of fisheries production (including marine fisheries, inland-water fisheries, and aquaculture) has decreased since 1989. Production amounted to 5 265 thousand tonnes in 2010, and decreased to 4 731 thousand tonnes in 2011 (a fall of 10.1%). There are several reasons for this decrease, including regime change of Japanese sardine stocks to those of other species, deterioration of stocks and reduction of fishing effort. In the short or medium term, a decreasing trend has been observed in particular for distant water fishing and inland water fishing. On the other hand, production of offshore fishing, coastal fishing, and marine aquaculture has been relatively constant. The value of fisheries production in 2010 was JPY 1 454 billion, little changed from JPY 1 445 billion in 2009.

The number of Japanese fishermen has been decreasing, with 177 870 fishers active in 2011.<sup>1</sup> Male fishers 65 years of age or older accounted for 35.3% of the total male fishing workforces in 2011, which is 17.1 percentage points higher than that of 19 years ago. The working population in the Japanese fishing sector has become remarkably older in the past decades.

The number of Japanese fishing vessels has been steadily decreasing since 1980. There were 276 074 registered fishing vessels in 2010, a decline of 30% from the 401 350 registered in 1980. A significant reduction in fishing capacity has been observed in larger fishing vessels. The registered number of vessels of 10 tonnes or more has been reduced by nearly half over the same period, from 20 587 in 1980 to 11 634 in 2008.

The number of working fishing vessels actively engage in fishing operation is significantly less than that of registered fishing vessels. In 2008, the total number of working

vessels was 185 465. Of these, 175 723 vessels are less than 10 tonnes or vessels without engines. The number of working fishing vessels which have a size between 10 and 20 tonnes was 8 446 in 2008. 1 296 vessels sized 20 tonnes or more were reported that year.<sup>2</sup>

### *Status of fish stocks*

Japan has been intensifying monitoring of the resource status of major fish stocks around Japan for the past 20 years. Taking account of historical fluctuations, stocks are classified into one of three categories (high, middle, low) in terms of their relative abundance. In 2010, the resource levels of 15 stocks, including Pacific cod, Yellowtail, Blue mackerel, were classified as high. 33 fish stocks including Sardine, Pacific herring, Atka mackerel were classified as low. The remaining 37 stocks, including Japanese jack mackerel and Pacific saury, were classified as being in the middle level.

In accordance with the Basic Plan, a framework for a “Resource Recovery Plan” was established. These plans are a means to implement the necessary measures for rebuilding resources in a comprehensive and planned manner. Under the framework, either national or prefecture governments formulate specific resource recovery plans according to the nature of the stock or fishery in question. The plan will be developed and implemented in co-operation with stakeholders including affected fishermen. In order to implement the plan, various measures such as the reduction of fishing effort (e.g. decrease in the number of boats, suspension of operations, modification of fishing gear), active resource enhancement (e.g. release of fry), and preservation and rehabilitation of the environment of fishing grounds (e.g. maintain of sea grass beds or tidal flats) are employed.

As of March 2012, 50 plans for specific fish species and 16 comprehensive plans for specific areas and fishing methods have already been developed or are under development, either by central or prefecture governments. The total number of plans has been increasing over years and the area covered under such plans has increased significantly across Japan.

### *Management of commercial fisheries*

A TAC system was established in 1996 to limit the catch of several important species (e.g. saury, jack mackerel, sardine). This system assigns catch allocations to each fishery or prefectural government, not to individual fisherman. The seven fish species that are subject to the TAC system covers 1 278 thousand tonnes, amounting to about 34% of total harvest in Japan in 2011. In addition, a TAE system was established in 2003 to manage total allowable fishing efforts upon certain species whose stock status is deteriorated and subject to “Resource Recovery Plans” developed in accordance with the “Law Concerning Conservation and Management of Marine Living Resources”.

These fishery management systems are applicable for Japanese fishing mainly in its exclusive economic zones (EEZs). Foreign fishing vessels are typically prohibited from operating in the Japanese EEZ except under specific bilateral intergovernmental fisheries agreements. As a flag state, fishing operations by Japanese fishing vessels in high seas and EEZs of foreign states are also regulated by Japanese fishery legislation such as “The Fisheries Law”.

### *Multilateral agreements and arrangements*

Japan has been actively participating in international fora dealing with fishery issues. Among these are the United Nations (UN), Food and Agriculture Organization (FAO), and Organization for Economic Co-operation and Development (OECD). Japan is a member of many Regional Fisheries Management Organizations (RFMOs) such as International Commission for the Conservation of Atlantic Tunas (ICCAT), Inter-American Tropical Tuna Commission (IATTC), Commission for Conservation of Southern Bluefin Tuna (CCSBT),



and Indian Ocean Tuna Commission (IOTC). After having joined the Western and Central Pacific Fisheries Commission (WCPFC) in July 2005, Japan is a member of all the tuna RFMOs.

## Aquaculture

### *Production facilities, values and volumes*

The amount of aquaculture production has been relatively stable over the past ten years, with an annual output between 0.9 and 1.4 million metric tonnes each year. In 2011 the quantity of aquaculture production was 901 thousand tonnes, down from 1 151 thousand tonnes in 2010. Production has been significantly impacted by the earthquake, so the 2011 figure is preliminary. Aquaculture production accounted for 21% of the total quantity of fisheries production in 2011.

In 2010, the value of marine aquaculture was JPY 461 billion, an increase of JPY 58 billion from 2008. In value terms, aquaculture was 32% of the total for fisheries in 2010.

## Fisheries and the environment

There was no significant policy change on fisheries and environment in Japan in the reporting period. In 2010, the 10<sup>th</sup> Conference of the Parties of the Convention on Biological Diversity was held in Nagoya city of Japan.

## Government financial transfers

The government of Japan expended JPY 206 billion and JPY 152 billion in the fiscal years 2010 and 2011, respectively (Table 1). Compared with previous years, Total transfers have been gradually decreasing as part of overall reductions in expenditures in the Japanese budget.

### *Direct payments*

Under the national fishing fleet reduction programme, began in 1981, two vessels were scrapped in the period 2009-10.

An interest subsidy is the major cost-reducing transfer in Japan. This programme is designed to assist structural adjustment of small- and mid-size enterprises under certain conditions. Support for renewal of small fishing boats and equipment is provided to improve worker's safety at sea on family-owned coastal boats. Because Japan restricts the number of fishing vessels as well as the size of each vessel through the licensing scheme of the government, this programme should not contribute to increased fishing capacity. The number of the coastal fishing boats, as well as production from the coastal fishery has been steadily decreasing despite eligibility for this subsidy. Support is coordinated with national and regional fishery resource management, to avoid any adverse impacts on resource conservation.

### *General services*

General services account for nearly half of government financial transfers, of which construction of public infrastructure is the most significant. This includes fishing ports, breakwaters, public wharves, navigation routes, coastal community roads, community water supply, sewerage systems, and park facilities around ports. Expenditures on public infrastructure account for 57% of all government financial transfers to fisheries and coastal communities.

As of 2010 there are 2 914 fishing ports in Japan, mainly located in geographically-disadvantaged areas. Coastal communities are constantly threatened by natural disasters such as typhoons and tsunamis. In many cases, public services such as sewerage systems in most of these areas remain underdeveloped, causing inconvenience to the public and risk to the natural environment. The objective provision of port services is to improve maritime transportation safety and to enhance standards of living in regional communities, and is not specifically aimed at fishing industries.

Transfers for general services, other than those for coastal infrastructure, are made for a wide variety of purposes. Some examples are:

- The cost of monitoring, surveillance, and control of fisheries operations. This includes the construction of government patrol vessels.
- Domestic educational and information dissemination services related to fisheries.
- Research and development including operational costs of National Institute of Fisheries Research, and the National Fisheries University.

**Table 24.1. Financial support of marine capture fisheries in 2009 and 2010 (million JPY)**

	2009	2010
<b>Marine capture fisheries</b>	201 427	148 967
Direct payments	1 648	1 208
Payment for fleet reduction	1 648	1 208
Payments for temporary cessation of fishing operation		
Cost reducing transfers	284	2 447
Support for introduction of vessels and gear	284	2 447
Programme not specified		
General services	199 495	145 313
Resource management costs, including		
- support for strengthening community-based fisheries management		
- surveillance and enforcement		
- support for the improvement of national and prefecture Fish		
Farming centres/ release of seedlings		
Support for fisheries facilities and infrastructure, enhancement		
of fishery communities environment, including		
- Support for construction of fishing ports		
- Support for establishing artificial reefs		
Research and development of fishery technologies		
Research on deep-sea marine living resources		
Promotion of international fisheries co-operations		
Cost Recovery Charges	0	0
<b>Aquaculture</b>	1 135	943
Direct payments	0	0
Cost Reducing Transfers	0	181
General Services	1 135	762
Advancement		
Prevention of epidemics		
Cost Recovery Charges	0	0

**Table 24.1. Financial support of marine capture fisheries in 2009 and 2010 (million JPY) (cont.)**

<b>Marketing and processing</b>	2 961	1 634
Direct payments	0	0
Cost Reducing Transfers	0	0
Support for management of processing enterprises		
General services	2 961	1 634
Research and development of fishery technologies		
Advancement of distribution, processing and consumption		
Cost recovery charges	0	0
<b>Grand total</b>	205 523	151 544

### Post-harvesting policies and practices

The traditional and principal marketing distribution pattern for fish and fish products in Japan is as follows: after landing, prices are set by trading at the wholesale market in producing areas (e.g. Kamaishi wholesale market in Iwate Prefecture) according to the destinations, and the fish is supplied to retailers through the wholesale market in consuming areas (e.g. Tsukiji wholesale market in Tokyo). Final retail sales for consumers are made through large supermarkets or traditional fish mongers.

In recent years, the share of the large supermarkets in retail sales of fish is increasing. According to a survey by conducted in 2009, 66% of consumers used large supermarkets as a place to purchase fishery products. This is a remarkable increase compared with the figure of 49% in 1993. Convenient location and price competitiveness of the supermarkets are the main reasons for this general trend. Consequently, the share of traditional fish mongers (or small fish retailers) decreased to 15% by 2003. While updated figures are not available as the survey has not been repeated, it seems likely that this general tendency towards supermarkets continues.

The channels through which fish and fish products are distributed and purchased are diversifying both internationally and domestically. Direct purchases from domestic producers and international trade of fish by retailers (e.g. supermarket and restaurant chains) have increased in order for them to pursue scale economies. In addition, final consumers are exploring alternative opportunities to purchase fresh fish and fish products at a reasonable price directly from fishermen's cooperatives through ad-hoc markets or via the internet. This means that more fish and fish products are being distributed outside the conventional channels of wholesale markets.

The number of fish-processing enterprises was 8 621 in 2010 and the number of these enterprises is declining. Small-scale enterprises employing less than 30 people represent 86% of the total number of processors.

### Markets and trade

#### *Domestic consumption*

In Japan, the demand of fishery products for human consumption has been decreasing. Total demand was 6 922 and 6 812 thousand tonnes in 2009 and 2010, respectively. Consumption, which was 8 768 thousand tonnes in 1996, had decreased 22.3% by 2010. Changing lifestyles and consumer preferences are behind this trend, particularly for the younger generations. In a general sense, however, Japanese consumers maintain strong interests for fish and fish products, and in particular fresh fish from domestic markets.

The demand for fishery products for non-human consumption peaked in 1988 at 4 577 thousand tonnes. It has been decreasing since that time due to lower sardine production, which resulted in a shift of aquaculture feed to compound feeds. The demand was 2 055 thousand tonnes in 2010, an unusually large decrease of 8% from the previous year.

### *Trade*

Japanese imports of fish and fishery products, once sharply increasing, have been decreasing recently. In 2010 trade was 2.72 million tonnes, and 2.69 million metric tonnes in 2011. The value of trade in 2010 and 2011 was 1 371 billion and JPY 1 455 billion respectively. In 2011, “shrimp and prawn” had the largest traded value among imported fishery products, followed by “tuna and tuna-like species”, “salmon and trout” and “preparation of shrimp and prawn”. Currently, China is the largest source for Japanese imports of fish and fishery products.

Export of fish and fish products is significantly smaller than imports. In 2011, exports were 0.42 million metric tonnes, up from 0.14 million in 1998. The value of the exports was JPY 174 billion, in 2011, an increase of JPY 22 billion relative to 1998. The increase both in quantity and value in current year is unprecedented compared with those of past years.

### **Outlook**

Japanese fisheries are faced with a situation with falling fisheries production partly due to decreasing numbers and further ageing of fishers. Taking account of other socio-economic factors surrounding fishing and related industries (e.g. high labour costs), that are not always favourable for primary industries in developed nations, Japan’s fishery appears to be at a turning point.

At the same time, there are reasons for optimism. Increased efforts in the recovery of fishery resources and conservation of natural environment are showing results. Fishing operations are becoming more cost- energy- and labour- efficient and are adding value to their products. These facts suggest that fisheries will continue to be a viable economic activity in Japan. Government action to achieve sustainable fisheries will not only activate coastal communities but also contribute to the welfare of Japan as a whole.

### *Notes*

1. Because of a change in calculation method and the data difficulties in the area affected by the earthquake, this figure cannot be directly compared with that of the previous year (202 880).
2. Note that the figures in this paragraph, taken from original statistics, were corrected in June 2008.

## Chapter 25

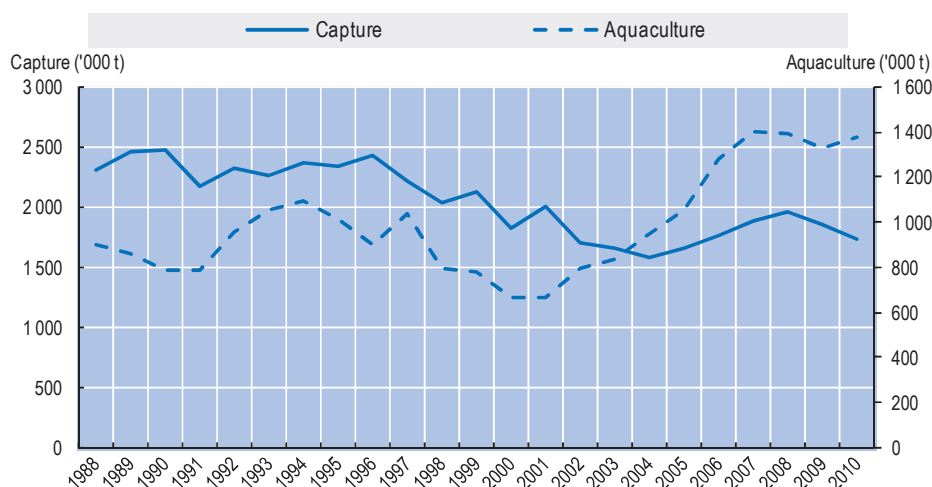
### KOREA

#### Summary of recent developments

- In 2011, Korea's total fisheries<sup>1</sup> production stood at 3.256 million tonnes, a 145 000 tonnes increase from 2010. Total catches from the coastal and offshore fisheries increased by 9.0% (102 000 tonnes) due to the increase in catches of anchovy, squid and mackerel, while total catches in distant water fisheries decreased by 13.7% (81 000 tonnes) due to a decrease in tuna catches in the Pacific. Inland fisheries production showed a slight increase year-on-year. Aquaculture production rose by 9.1% (123 000 tonnes) thanks to an increase in seaweed production.
- The total value of fisheries production in 2011 rose by 8.7%, from KRW 7.4257 trillion in 2010. The value of coastal and offshore fisheries saw a 13.6% increase, and that of distant water fisheries, despite the decline in catches, increased by 7.5% thanks to the rise of fish prices. The value of inland fisheries increased by 13.1%, but that of aquaculture suffered a 1.7% decrease as the production of highly valued fish species declined.
- The consumption of fish and fish products per person increased by 3%, from 49.8 kg in 2010 to 51.3 kg in 2011. As for trade, the total value of the exports has been increasing since 2009 and that of the imports has been also increasing since 2006.

1. The fisheries covered in this chapter include commercial marine and inland fisheries as well as aquaculture. Korea's marine fisheries take place both in coastal and offshore waters, including Korea's EEZ and distant waters (high seas/ EEZs of other countries) and aquaculture takes place in inshore waters and inland freshwaters.

Figure 25.1. Harvesting and aquaculture production



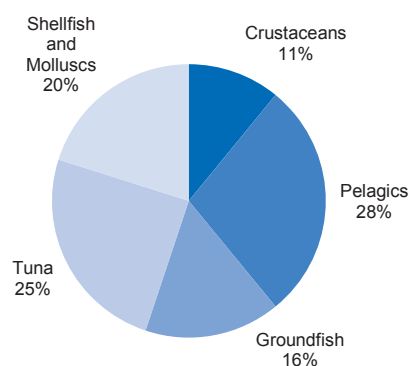
Source: FAO FishStat Database.

### Box 25.1 Key characteristics of Korean fisheries

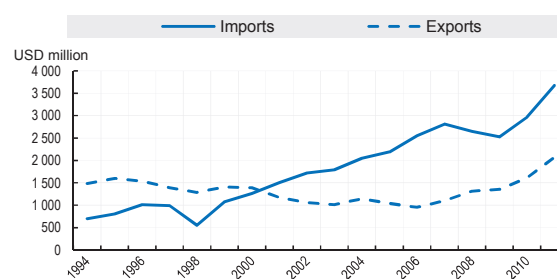
- The most important species landed in 2010 in terms of value were pelagics (28%), followed by shellfish and molluscs (25%), tuna (16%) and crustaceans (11%). (Panel A)
- The total export value of fish and fish products has demonstrated a steady increase since 2009. The main export destinations were Japan, China, the United States and Thailand. Total import value of fish and fish products has shown a steady increase since 2006. Korea mainly imported from China, Russia and Viet Nam, and major import items included shrimp, octopus, pollack, croaker and squid. (Panel B)
- A total of USD 403 million was transferred to the Korea's fisheries sector in 2010, a decrease of USD 391 million (49.2%), compared to USD 794 million in 2008. About 70% of the transfers in 2010 were spent on general services. (Panel C)
- All four indicators related to capacity decreased between 2005 and 2010. It is notable that while the number of fishers and fish farmers decreased by 10.7% and 30.9%, both capture fisheries and aquaculture production increased by 4.9% and 30.2% respectively during the same time period. (Panel D)

Figure 25.2. Key fisheries indicators

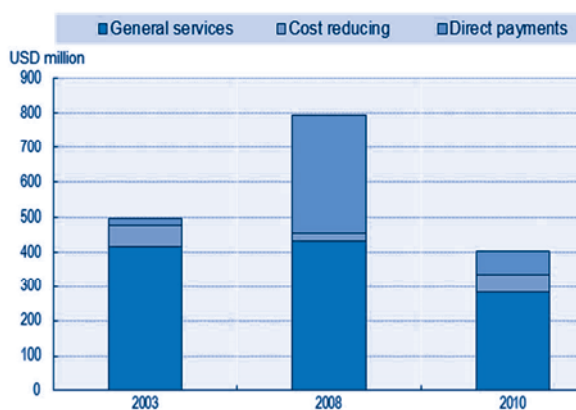
Panel A. Key species landed by value in 2010



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2006	2011	% change
Number of fishers	92 527	82 677	-10.6
Number of fish farmers	46 688	32 280	-30.9
Total number of vessels	90 735	76 974	-15.2
Total tonnage of the fleet	700 810	600 622	-14.3

## Legal and institutional framework

The *Fisheries Act* of Korea (1953), which is the basic legal framework for Korea's fisheries, contains the provisions on the management, control, restrictions, regulation and limitations of fisheries, including licenses, authorisation, notifications, enforcement and penalties.

Some of the major legal instruments for fisheries include the *Fishery Resources Management Act*, which governs the management (conservation, utilisation and development) of fisheries resources; the *Inland Water Fisheries Act* for the management of fisheries and aquaculture in inland waters; the *Distant Water Fisheries Development Act* for the management of high seas fisheries and the promotion of international fisheries co-operation and the distant water fishing industry; the *Aqua Farm Management Act* for the effective and efficient operation of aquaculture and pollution mitigation. Other laws and regulations include the *Aquatic Animal and Plant Disease Control Act*, and the *Agricultural and Fishery Products Quality Management Act*.

A key tool for fisheries management is the Total Allowable Catch (TAC) system. It was first introduced in 1999 to manage and control the harvest from the EEZ of Korea to be consistent with the *UN Convention on the Law of the Sea*, which took effect in 1994. As of 2011, Korea's TAC system covers 11 species, such as mackerels, jack mackerel, squid, red snow crab and blue crab, with a total TAC of 425 000 tonnes. Under this system, individual vessel quotas are allocated by respective fishers co-operatives.

**Table 25.1. TAC by major species (thousand tonnes)**

	2009	2010	2011
<b>Total</b>	<b>407</b>	<b>417</b>	<b>425</b>
Mackerels	159	169	160
Squid	185	180	188
Red snow crab	29	31	32
Jack mackerel	18	20	21
Blue crab	7	8	13
Other: (six species including sailfin sandfish, pen shell, etc.)	9	9	11

Community-based fisheries management (CBFM) was introduced in 2001. Fishers are the partners and initiators of management actions for their fisheries, in addition to the already-established rules and regulations for the sustainability of their local fisheries.

Under the CBFM, fishers' groups take voluntary management measures for their own fisheries, and actively participate in the decision-making process for dispute settlement; income generation, fishing ground and resource management, and stock enhancement in the framework of relevant fisheries laws and regulations. An increasing number of fishers' groups are joining the CBFM.

The Korea Fisheries Resources Agency (FIRA), a government-funded body dedicated to fisheries stock enhancement, was established in 2011. The main areas it overlooks include artificial reefs, fry release, marine ranches and marine forests. FIRA also deals with research

and development programmes and projects related to stock enhancement, relevant technologies, feasibility studies and ecology surveys.

**Table 25.2. Production and value by fisheries**  
1 000 tonnes/ KRW100 million

	2010		2011		Year-on-year variations	
	Production	Value	Production	Value	Production	Value
<b>Total</b>	<b>3 111</b>	<b>74 257</b>	<b>3 256</b>	<b>80 728</b>	<b>145</b>	<b>6 471</b>
EEZ	1 133	39 117	1 235	44 441	102	5 324
Distant water	592	13 645	511	14 670	81	1 025
Inland	31	3 338	32	3 775	1	437
Aquaculture	1 355	18 157	1 478	17 842	123	315

## Capture fisheries

### *The status of capture fisheries*

Overall, the current status of fisheries resources, estimated through factoring in the trend in marine harvest and CPUEs, has remained stable although showing a slight upward trend. However, the status of some stocks, including ground fish stocks, remains low or decreasing due to high fishing pressures on those stocks. Overall, fisheries resources are projected to increase with the expansion of the TAC system and CBFM, stock enhancement and vessel decommissioning.

In 2011, the total catches from the coastal and offshore fisheries was 1.235 million tonnes, a 9% increase year-on-year. Major species included anchovy, squid and mackerels, which combined made up 50% of the total coastal and offshore catches. Most of this harvest was sold and consumed within the domestic markets. Around 79% of landed products were sold fresh, 16% live, and 5% frozen or chilled. As for the fleet size of coastal and offshore fisheries, the number of vessels was 76 800 with an average gross tonnage of five tonnes.

**Table 25.3. Production and value by major coastal and offshore fisheries species**  
1 000 tonnes/ KRW 100 million

	2010		2011		Year-on-year variation	
	Production	Value	Production	Value	Production	Value
<b>Total</b>	<b>1 133</b>	<b>39 117</b>	<b>1 235</b>	<b>44 441</b>	<b>102</b>	<b>5 324</b>
Anchovy	250	3 904	293	4 298	43	394
Squid	159	5 678	172	6 936	13	1 258
Mackerels	100	1 753	151	3 035	51	1 282
Yellow croaker	32	1 607	59	3 116	27	1 509
Jack mackerel	19	250	42	365	23	115
Hairtail	59	3 009	33	2 942	26	67
Other	514	22 916	485	23 749	29	833



### ***Korea-Japan, Korea-China Fisheries Agreements***

After the proclamation of the Exclusive Economic Zone in 1996, Korea signed an agreement with Japan and China in 1999 and 2001, respectively, for the fisheries in adjacent waters. Under the agreements, Korea has mutual fishing access arrangements with Japan and China, the terms and conditions, such as the number of vessels, species, catch limits and seasons, being determined on an annual basis through bilateral negotiations.

### ***Distant water fisheries***

As of 2011, 359 Korean-flagged vessels are authorised to fish outside the EEZ of Korea. The operations take place on high seas under regulations of regional fisheries management organisations (RFMOs) and of the EEZs of coastal states. Korea is a member of all five tuna RFMOs: the Western and Central Pacific Fisheries Commission (WCPFC); the International Commission for the Conservation of Atlantic Tuna (ICCAT); the Commission for the Conservation of Southern Bluefin Tuna (CCSBT); the Inter-American Tropical Tuna Commission (IATTC); and the Indian Ocean Tuna Commission (IOTC). Korea is also a Contracting Party to other regional/international fisheries organisations including the South Pacific Regional Fisheries Management Organization (SPRFMO), the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) and the International Whaling Commission (IWC). Korea is under the process of joining the Southeast Atlantic Fisheries Organization (SEAFO) and Southern Indian Ocean Fisheries Agreement (SIOFA). As for bilateral fishing access agreements or arrangements, Korea signed agreements with Tuvalu, the Solomon Islands and Kiribati (1980), Russia (1991) and Papua New Guinea (1992).

In 2011, total production from distant water fisheries was 511 000 tonnes, a 14% (81 000) decrease from the previous year and which was mainly attributed to the decline in tuna catches, especially in the Pacific. The main species caught include tuna (skipjack, yellowfin and bigeye, etc.), squid and pollack, which combined was more than 70% of the total distant water fisheries production.

### ***Inland fisheries***

The 2011 total production from inland fisheries was 32 000 tonnes, a 3% (1 000 tonnes) increase from the year before, and among which 10 000 tonnes came from capture fisheries. Major inland fisheries species included carps and mullets. Inland aquaculture production in 2011 was 22 000 tonnes, a 5% (1 000 tonnes) increase year-on-year. Major species in the fisheries included eel, catfish, trout and leather carp.

### ***Recreational fishing***

In 2011, the *Recreational Fishing Management and Development Act* was enacted with the objective to prevent overfishing, environmental problems due to recreational fishing, and to promote the safety of recreational fishers. The Act contains provisions on prohibited species, sizes and gear; the conditions for authorisations and notifications for recreational fishing operators and relevant safety regulations.

### ***Monitoring and enforcement***

The Ministry for Food, Agriculture, Forestry and Fisheries (MIFAFF), Korea Coast Guard and local governments, both separately and jointly, are responsible for the control and enforcement measures against illegal fishing activities. MIFAFF has developed comprehensive measures and plans and co-ordinates enforcement against illegal fishing in the EEZ. The Korea Coast Guard mainly deals with fishing activities by non-nationals in Korea's EEZ, and local governments take charge of fishing safety and illegal fishing in waters under

their jurisdiction. As of 2011, there were 34 national surveillance vessels, 70 local surveillance vessels, 292 Korea Coast Guard patrol vessels, 17 patrol helicopters and 4 patrol planes in operation to monitor, control and patrol against illegal fishing activities.

## Aquaculture

### *Policy changes for sustainable aquaculture*

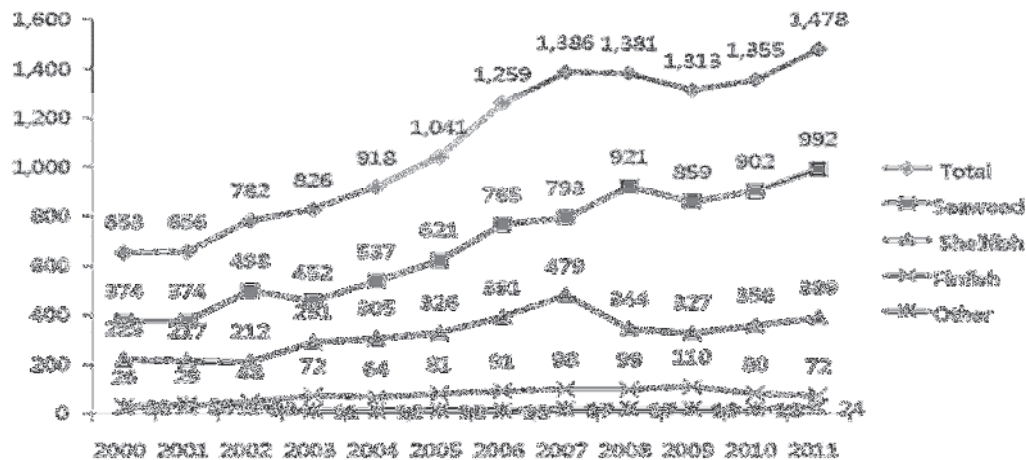
Korea revises or establishes basic plans for sustainable aquaculture in every five years. The aim is to shift from the old paradigm for aquaculture, where production increase was the major area of focus, to a new paradigm of green growth in aquaculture, and thus find the right balance between the ecosystem and industry.

As part of this drive, since 2004 the government has been providing environment-friendly extrude pellets to aqua farmers who are forgoing natural feeds and moisture pellets, and investing in research and development for alternative feeds. In 2010, Korea revised the Fisheries Act to develop off-shore aquaculture as an alternative to inshore aquaculture.

### *Aquaculture production*

For the last decade, Korea's total aquaculture production has shown a continuous increase, which has been attributed to increased seaweed production. Shellfish and finfish production have remained stable or have decreased. Aquaculture production in 2011 was 1.478 million tonnes, a 9% (123 000 tonnes) increase from the previous year.

**Figure 25.1. The recent ten-year trend in aquaculture production at landing**  
1 000 tonnes



The share of seaweed in total aquaculture production is about 67%, or 992 000 tonnes, a 10% (90 000 tonnes) increase in 2011 year-on-year. Major seaweed aquaculture items are brown seaweed, laver and kelp, of which 30% of brown seaweeds go to feed-farmed abalone.

Shellfish made up 26% of total aquaculture production, or 389 000 tonnes, a 9% (33 000 tonnes) increase in 2011 compared to the previous year. Major shellfish aquaculture items are oyster, mussel and manila clam. Finfish made up around 5% of the total share, or 72 000 tonnes, a 10% increase from the year before. Major finfish aquaculture items included flounder, Korea rock fish, mullets, and sea bream. Other species, which include sea squirts and shrimp, made up around 2%.

## Government financial transfers

### *Transfer policies*

It is estimated that government financial transfers to the fishing industry in 2011 was KRW 475.8 billion,<sup>1</sup> a decrease of KRW 99.8 billion from KRW 575.6 billion in 2010. Among the total estimates, KRW 378.8 billion, KRW 16.9 billion, KRW 80 billion were transferred to marine capture fisheries, aquaculture and distribution/processing, respectively. A large share of the 2011 government financial transfers went to fisheries infrastructure such as fishing ports and wharfs (KRW 152.2 billion, 32%).

**Table 25.4. Korean Government financial transfers to commercial fisheries in 2011**  
KRW 1 million

	Total	Marine fisheries	Aquaculture	Distribution/processing
<b>Total</b>	<b>475 823</b>	<b>378 834</b>	<b>16 900</b>	<b>80 089</b>
Direct payments	37 214	37 214	-	-
Cost reducing transfers	131 658	51 569	-	80 089
General services	306 951	290 051	16 900	-

## Post-harvesting policies and practices

### *Policy changes*

#### *Food safety and labelling schemes*

In 2003, the “Ministerial Directive for Hazard Analysis and Critical Control Points from the Entire Farming Operations to Pre-sales Operations in Aquaculture” was established as the legal basis to achieve harmonisation with the HACCP, an international standard for preventive approaches to food safety. The Directive aims to promote the safety of products harvested from aqua farms. In 2005, a traceability system for fish and fish products was introduced on a trial basis, which made it possible to track the product from the vessel/farm to the table, thereby enabling the consumers to make informed decisions on seafood they eat. As of 2011, the system has been expanded to cover 16 items including the flatfish, sea bream, manila clam, abalone, laver and brown seaweed. The government is also making various efforts to improve the quality and safety of fish and fish products that go on the table of consumers by, for example, expanding the coverage of quality certification in accordance with the *Agricultural and Fishery Products Quality Management Act* and consistency with international standards.

#### *Processing and handling facilities*

The increase in income and health concerns is driving up per-capita fish consumption every year. With an ever-greater demand for ready-to-eat food products, the supply of processed fish products is increasing as well. In 2011, processed fish production was 1.87 million tonnes, a 19.9% (310 000 tonnes) increase from 1.56 million tonnes in 2010. The government is encouraging local processing and handling facilities that produce local fisheries specialties to meet consumers’ growing appetite for more diverse, easy-to-prepare and higher-end products.

## Markets and trade

### *Market*

In 2011, the total volume of fish and fish products sold on domestic markets was 5.918 million tonnes in terms of quantity, more than a half of which (3.256 million tonnes) was domestically produced and the rest (2.059 million tonnes) were imported. As for consumption, almost three-quarters (3.813 million tonnes) of production were consumed domestically, and the rest (1.466 million tonnes) was exported.

### *Fisheries trade*

#### *Exports*

Total fisheries exports in 2011 were valued at USD 2 298 million<sup>2</sup>, an increase of 28.4% from 2010. Exports in terms of value have constantly increased, peaking in 2011. This is mainly attributed to the increase in prices of tuna and squid, and the volume of seaweed exports (laver, brown seaweed, kelp) as well as that of molluscs (oyster and abalone).

Major exporting markets in terms of export value include Japan, China, the United States and Thailand. Exports to Japan made up 43% of Korea's total fisheries exports. Exports to China made up 20% of total exports, an increase from the previous year.

#### *Imports*

Total fisheries imports in 2011 was USD 3 971 million<sup>3</sup>, a 22.8% increase from the previous year. Korea mainly imported from China, Russia and Viet Nam, and major import items included the shrimp, octopus, pollack, croaker and squid.

## Outlook

In recent years, the Korean fishing industry has experienced significant changes and faced various challenges. These included a decrease in fishing populations; a dwindling in the size of industry and government financial transfers; and an increase in oil prices. Despite these difficulties, such factors as the growing demand for fisheries products and the higher value of fish and consequent income increase for fishing household will drive the growth of the fisheries sector.

Korea's coastal and offshore fisheries are the pillars of the coastal communities and they contribute to the balanced development of Korea and serve as the major supplier of fisheries products for domestic consumers. Distant water fisheries are taking up an important part in Korea's fisheries exports, and aquaculture is contributing to income generation for aqua farmers through highly valued fish production.

The Korean government will continue to push its policy drive towards the expansion of the TAC system and community-based fisheries management (CBFM), stock enhancement, strengthening seafood safety, and securing a stable supply of high quality fisheries products and promoting fisheries trade.

Korea will fulfil its responsibilities as a responsible fishing nation by enhancing compliance with conservation and management measures adopted by RFMOs and other relevant international organisations and by extending co-operation with their Members.

*Notes*

1. This figure includes the GFT to marine capture fisheries, aquaculture and processing sector whereas the GFT in the summary part only includes the GFT to marine capture fisheries.
2. This figure differs from the data used in the Trade evolution figure as it includes more items, such as prepared edible seaweeds (HS code 2106: USD 121 million), live fish (HS code 0301: USD 78 million) and eggs for hatching or eggs (HS code 0511: USD 11.3 million) which are important for Korea.
3. This figure differs from the data used in the Trade evolution figure as it includes more items, such as live fish (HS code 0301: USD 265 million), eggs for hatching or eggs (HS code 0511: USD 12.7 million) and soft-shelled turtle (HS code 0106: USD 4.8 million) which are important for Korea.



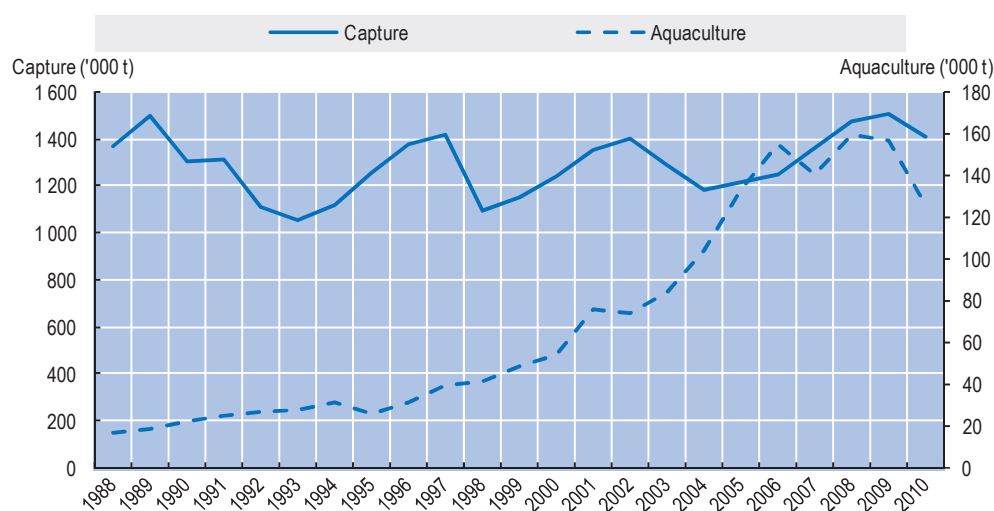
## Chapter 26

### MEXICO

#### Summary of recent developments

- Mexican fisheries encompass a number of activities in the Pacific and Atlantic Oceans, and its extensive brackish and fresh water bodies. It includes capture, culture, transformation and commercialisation activities. Fisheries are very important to the national economy and a vital source of nutrition for Mexicans. It is also an important source of foreign currency. At the community level, fisheries activities provide essential income for certain parts of the population and are a driving force for regional economic development.
- Mexico has around 11 592 km of shoreline with 3 million square km of Exclusive Economic Zone (EEZ) over 2.9 million hectares of inland waters, including 1.6 million of coastal lagoons. It also has a privileged location with the influence of important marine currents that provide a large biodiversity in marine, brackish and fresh waters.
- In recent years, Mexico has implemented an economic strategy to integrate both national and international markets. At the international level, Mexico has a great opportunity to expand its economic activity in areas such as exports of new fishery products and different aquaculture species. This opportunity could also contribute to the development of an open economy capable of successfully facing international competition and improving supplies for the domestic market.
- The Mexican Government has a long term vision to encourage the national development, competitiveness and the strategic planning for fisheries and which is articulated through the National Development Plan, the Sectorial Program of Farming and Fishing of the SAGARPA, and the National Sector Program of Fisheries and Aquaculture. There is a particular focus on improving the competitiveness of the fisheries sector. This could be achieved through natural resource sustainability, updating the regulatory framework to protect the sector's interests abroad, the integration of productive chains, the continued support for innovative projects throughout the country, and encouraging regional development by promoting small-scale projects within the rural sector.

Figure 26.1. Harvesting and aquaculture production



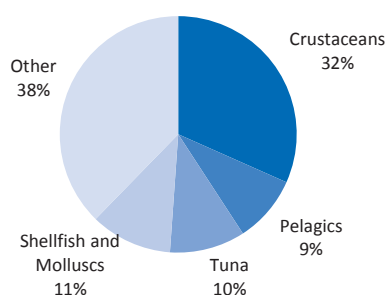
Source: FAO FishStat Database.

### Box 26.1. Key characteristics of Mexican fisheries

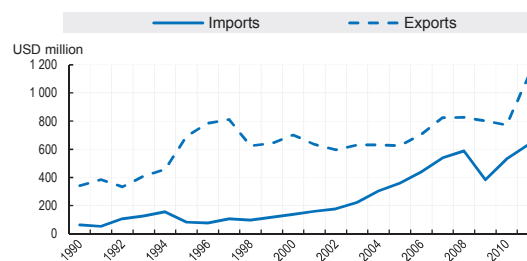
- In 2009, the national production volume reached to 1 768 thousand tonnes, 1.3% up from 2008, continuing the upward trend since 2005. The national production in recent years has remained constant with a slight upward trend mainly because of growth in aquaculture production. Major species include shrimp, clams, crab and tuna. (Panel A)
- In 2010, exports reported by the Ministry of Finance amounted to 286 tonnes worth MXN 9.6 billion, while imports were of 87 tonnes worth MXN 3.6 billion. As a result, a positive trade balance of MXN 6 billion was achieved. The main destinations of Mexican fish products exports included the United States, Hong Kong and Spain. Exports included species such as shrimp, tuna, lobster, octopus and sardine. (Panel B)
- A total of USD 89 million was transferred to the fisheries sector in 2006. This represents a decrease of USD 25.2 million or (22.1%), compared to that of 2004. Cost-reducing transfers made up about 90% of all transfers in 2006. (Panel C)
- Considerable adjustment has taken place recently with a 13% decrease in the number of fishers and an 8% reduction in the number of vessels. (Panel D)

Figure 26.2. Key fisheries indicators

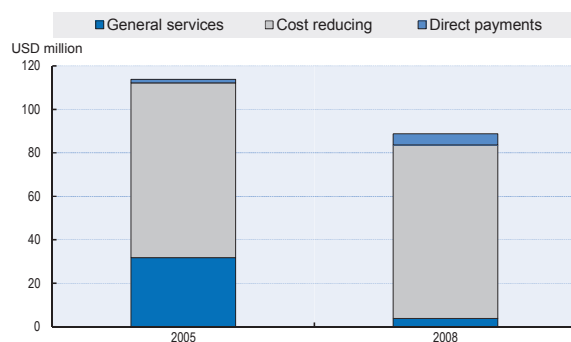
Panel A. Key species landed by value in 2010



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2005	2011	% change
Number of fishers	255 527	222 744	-12.8
Number of fish farmers	23 522	48 687	107.0
Total number of vessels	3 464	3 181	-8.2
Total tonnage of the fleet	228 705	215 943	-5.6



## Legal and institutional framework

The National Commission for Aquaculture and Fisheries (CONAPESCA) is a decentralised federal body in charge of the management of Mexican fisheries and aquaculture resources. This responsibility is shared with state governments and municipalities.

The main legal instruments are the Political Constitution of the United States of Mexico, the General Law on Sustainable Fisheries and Aquaculture, the Organic Law of the Federal Public Administration, the Regulation of the SAGARPA, the Creation Decree of CONAPESCA (published on the Official Gazette on 5 June 2001), the Operation Rules of the SAGARPA programmes (published on the Official Gazette on 30 December 2011), the Official Mexican Standards (NOM), the National Fishery Chart, and the National Aquaculture Chart.

All Mexican fisheries activities involving live marine, brackish and fresh resources exploitation for commercial, sport, self-consumption, research, and aquaculture uses are regulated under Article 27 of The Political Constitution of the United States of Mexico, and through the General Law on Sustainable Fisheries and Aquaculture and its Regulations published on the Official Gazette on 24 June 2007. This Law provides the legal framework to better ensure the sustainable conservation, use and management of fishery resources. It sets up a co-ordination framework between institutions establishing the management of fisheries and aquaculture between the federation, states and municipalities.

The General Law on Sustainable Fisheries and Aquaculture established the fisheries and aquaculture sector as a priority for the development of Mexico, including the protection of the aquatic flora and fauna and based on the basis of a sustainable long term vision. Also, this Law recognises aquaculture as an alternative and means to stop overexploitation of certain fish stocks. Aquaculture represents an opportunity to create an important economic opportunity and nutritional source for the population. Furthermore, the Law regulates Sport Fishing, an important economic activity that generates jobs and foreign currency income within the tourism sector.

The General Law on Sustainable Fisheries and Aquaculture also considers the comprehensive development of the fisheries and aquaculture sector and the establishment of the Mexican Fund for Fishing and Aquaculture Development (PROMAR) as an instrument to promote the sustainable development of aquaculture and fishery resources.

The General Law on Sustainable Fisheries provides that capture fisheries and aquaculture in federal jurisdictional waters are managed through permits and concessions. Permits are issued for a period of two to five years and concessions to capture fisheries species of five up to 20 years and 50 years for aquaculture.

The General Law on Sustainable Fisheries and Aquaculture does not authorise licenses for foreign vessels to perform fishing operations within Mexico's EEZ, except for foreign vessel requesting concessions or permits for species surplus, granted by the National Fisheries Institute (INAPESCA) and CONAPESCA. Foreign participation can only be conducted through joint venture enterprises, legally registered under Mexican legislation.

The National Fishery Chart is a binding instrument in the decision making process, that contains important indicators about fisheries status, species availability, authorised fishing gears and conservation issues, which is a vital source of information to make decisions regarding fisheries management and conservation.

Producers are subject to comply with fishing regulations contained in the Official Mexican Standards (NOMs). Those standards establish the terms and conditions for fishing and aquaculture in the country, including objective species, protected species, fishing seasons,

authorised capture systems and its characteristics (methods and equipment), operation conditions, minimum catch sizes and verification processes.

At present, there are 45 Official Mexican Standards: 16 for marine species, 22 for continental waters, 4 specific for Sport Fishing, Satellite Vessel Monitoring Systems (VMS), the use of Turtle Excluder Devices (TED'S) and guidelines for establishing fishing bans and three more concerning sanitary issues such as requirements for species imports, quarantine regulations and screening of shrimp diseases, which currently are under the supervision of the National Service for Sanitation, Safety and Food Quality (SENASICA).

Complementing the Official Mexican Standards are several fishing ban agreements for some of the most important marine species such as shrimp, tuna, oyster, octopus, sea bass, and lobster, and for some freshwater species on continental waters. In the last few years, specific regulations have been implemented for the use of catch quotas in some fisheries like shrimp in Sinaloa and corvina in Sonora.

Another management tool used consists of limiting the fishing effort applied on a specific fishery according to the number of permits issued or the total number of fishing boats. Subsequently, CONAPESCA conducts an administrative reduction of the permits or it may remove a specific number of boats through a specific payment (fleet retirement programme).

## Capture fisheries

### *Performance*

According to FAO figures Mexico is ranked 17 among the world's largest fishing nations representing (2009) 1.0% of the world's total production. In 2009, the national production volume reached to 1 768 thousand tonnes, 1.3% up from 2008, continuing the upward trend since 2005. The national production in recent years has remained constant with a slight upward trend mainly because of the growth in aquaculture production.

### *Status of fish stocks*

Minor pelagic species (sardine, mackerel and anchovy): Used at their maximum sustainable level. This fishery is mainly concentrated in Baja California, Baja California Sur, Sonora and Sinaloa. The capture trend is highly variable, due to ENSO oceanographic conditions (El Niño Southern Oscillation). The fishery as a whole shows an upward trend. In 2010, the fishing of minor pelagic species ranked first with a volume of 543 058 tonnes, representing 36.8% of the total national production.

The fishery is managed through commercial permits for minor pelagic or specific species (sardine, mackerel and anchovy) with authorised fishing gears and specific zones. Mexico is working towards implementing actions to reduce or reallocate the fishing effort, apply a precautionary approach and improve added value through processing.

Shrimp: the most important fishing zone is concentrated in the states around the California Gulf at the Pacific Ocean (Baja California, Baja California Sur, Sonora and Sinaloa), with a second zone in the Gulf of Mexico located in the states of Tamaulipas and Campeche. The fishery as a whole is considered utilised at its maximum sustainable level. Currently, a decrease in the fishing effort is implemented through a Voluntary Retirement of Fishing Vessels Program. A programme is also in place to improve the use of Turtle Excluder Devices. The shrimp fishery has the most complete management and research scheme.

In 2010, shrimp ranked second in total volume, with a reported production of 167 015 thousand tonnes and ranked first in total value with an estimated of MXN 6 744 121 thousand of which 60.2% came from aquaculture and 39.7% from fishing. This species has shown a positive trend of steady growth in aquaculture while capture fishing has remained stable.

**Tuna Fish:** The main capture zone is located in the Eastern Pacific Ocean with the main landings sites in Sinaloa, Colima, Chiapas and Baja California. In Mexico, the tuna fishery is the third largest fishery with a total volume of 130 800 tonnes (8%), but it's the second fishery on total value with a 7.3% or MXN 1 246 296 thousand and include six species: yellowfin tuna, pacific bluefin tuna, albacore, bigeye tuna, skipjack and eastern pacific bonito. In 2010, the Mexican tuna fleet operated 83 vessels with 69 using enclosing nets, 13 operating rods and one with hooks. Additionally, there are 15 concessions for small tuna farming operations mainly based on growing juvenile bluefin tuna with an average production of 2 000 tonnes.

Almost all species are exploited up to its Maximum Sustainable Use and only the skipjack tuna have growth possibilities. There is an official fishing ban agreement for yellowfin tuna and bigeye in areas under regulation by the Inter-American Tropical Tuna Commission (IATTC), including federal jurisdiction areas as well as Mexico's Exclusive Economic Zone (EEZ).

**Oyster:** This fishery is exploited at its Maximum Sustainable Level. It is an artisanal fishery with a fishing ban agreement designed to protect the two main recruitment periods. The Mexican government is trying to maintain the current fishing effort through the limitation of permits for oyster fishing.

**Clams:** This is a multi-specific fishery with seven species mainly in the California Gulf including: scallop, clam, geoduck, lion-paw scallop, ark clam, Venus clam and pen shell scallop and one fishery in the Gulf of Mexico catching rangia or cocktail clam. The fishery as a whole is exploited at its Maximum Sustainable Level, with signs of deterioration in some areas and only geoduck maintain some additional catch potential. Fishery management in Baja California Sur is based on specific catch quotas and the current approach is focussed on banning any increase in the fishery effort.

**Shark:** In 2010, this fishery ranked 14<sup>th</sup> in national total volume with 21 612 tonnes and 3<sup>rd</sup> on national total value with MXN 2.7 million. The most important capture zone is the Pacific Ocean, nearby the California Gulf with an overall catch of about 89% (19 245 tonnes) of the national total volume while the Gulf of Mexico accounts for the remaining 11% (2 367 tonnes). The fishery is exploited at its Maximum Sustainable Level and since 1993 no new permits has been issued. A seasonal fishing ban agreement is currently being developed by CONAPESCA.

**Crab:** In 2010, crab fishing was ranked 13rd in national total volume with 22 817 tonnes and 14th on national total value with MXN 267 714 thousand. Fishing takes place mainly in costal lagoons, estuaries and marine shoreline on both littorals with the main landings reported in Sinaloa (5 984 tonnes) and Sonora (4 016 tonnes) in the Pacific Ocean and Tamaulipas (4 478 tonnes), Veracruz (3 512 tonnes) and Campeche (2 088 tonnes) in the Gulf of Mexico. In the states surrounding the Gulf of California and in those in the Gulf of Mexico the fishery is exploited at its Maximum Sustainable Level and only those states in the Pacific outside the Gulf of California maintain some catching potential.

## ***Management of commercial fisheries***

### *Management instruments*

Commercial fishing in Mexico's Economic Exclusive Zone and Marine and Continental Jurisdictional Waters is organised through fishery management programmes, fishery management plans and permits and concessions.

The use of permits and concessions help regulate fishing effort. All holders must comply with the Official Mexican Standards (NOMs) and respect fishing bans. There are several

additional measures that ensure a limited catch for specific fisheries issued in the form of technical measures related to minimum capture sizes, mesh sizes, etc.

During the past two years, several measures have been issued relating to the reduction of fishing effort, the prohibition of fishing practices that pose an environmental risk, the implementation of catch quotas for certain species, the definition of specific protected areas, the inclusion of new species with seasonal fishing bans, upgraded regulations on fishing gears and incidental capture limits and implementation of specific requirements established within the framework of Regional Fisheries Management Organizations in which Mexico participates.

An extensive management programme for artisanal fishing in marine and continental waters was promoted with the objective of identifying real fishing effort which also helps improve inspection and surveillance actions to combat illegal fishing. To achieve this, all permits (individual) and concessions (for groups or co-operatives) were reviewed and all fishing boats were registered while all fishers received a new photo-identification card. This programme was used as a base to implement a catch quota system for artisanal shrimp fishery in Sinaloa and the South of Sonora for the 2009-10 and 2010-11 fishing seasons.

Regarding Official Mexican Standards (NOM) and Regulatory Agreements between 2010 and 2011, fourteen documents were issued.

#### **2010**

- One Official Mexican Standard NOM-045-PESC-2007 for stone crab fishing in Campeche.
- Six Fishing Ban Agreements: shrimp species in the Gulf of Mexico, shrimp species in the Pacific Ocean (2), freshwater species on continental waters, tuna species in the Pacific Ocean and octopus in the Gulf of Mexico and the Caribbean Sea.

#### **2011**

- An amendment of the Official Mexican Standard NOM-002-PESC-1993 for all shrimp species fishing in Mexico (for public comments only).
- Seven Fishing Ban Agreements: shrimp species in the Gulf of Mexico, shrimp species in the Pacific Ocean (2), freshwater species at the Fernando Hiriart Balderrama Dam (Zimapán), tuna species in the Pacific Ocean, oyster and sea cucumber and three sea cucumber species in Campeche, Yucatán and Quintana Roo.

The Voluntary Retirement of Fishing Vessels Program withdrew 92 vessels and 33 shrimpers in 2010 and 2011, with a total investment of MXN 162.5 million.

Within the framework of the Inter American Tropical Tuna Commission (IATTC) and based on the scientific report presented at the 81<sup>st</sup> Reunion of the Population's Working Group of the IATTC carried out from 27 September to 1 October 2010, the experts recognised that an excessive fishing effort could lead to a reduction in total catches. To avoid this situation, Mexico acknowledged and promoted the following fishing ban periods for tuna in the Eastern Pacific Ocean (OPO):

- From 18 November 2010 until 18 January 2011.
- From 18 November 2011 until 18 January 2012.

#### *Access arrangements for foreign fleets*

The Mexico and Cuba Fishing Agreement is the only bilateral agreement currently in force. Since July 1976, Cuban vessels have been authorised to operate in the EEZ of the Gulf

of Mexico and the Caribbean to capture sea bass, red snapper, sierra, and associated species. Since 1976, the number of permits authorising Cuban vessels to fish in Mexico's EEZ has decreased as a result of a reduced surplus species and the consolidation of Mexican vessels.

Between 2010 and 2011, six permits per year were granted with an annual quota of 595 tonnes. During this period, besides the implementation of mechanisms aimed at verifying Cuban vessels' operation (such as national scientist observers on board for sampling, capture statistics records, fishing logs, capture reports, arrival announcements per fishing trip, and others), there was an improvement regarding Cuban vessels with permits that have been integrated to the Vessel Monitoring Program in Mexico.

### *Management of recreational fisheries*

The National Commission for Aquaculture and Fisheries is responsible of the assessment, administration and management of recreational fisheries and the implementation of specific regulations and surveillance methods according to the General Law on Sustainable Fisheries and Aquaculture.

The most important regulations including maximum capture limits, minimum capture size, authorised fishing gears and obligations of sport fishermen are established in the Official Mexican Standard NOM-017-PESC-1994.

Sport Fishing in Mexico is an important tourism and sport related activity. More than 50% of the world's records registered by the International Game Fish Association (IGFA) were obtained in Mexico. Currently, Mexico offers more than 50 marine and fresh water locations for Sport Fishing purposes. Sport fishing activities generate around 30 000 direct jobs with 16 000 fishing vessels registered exclusively for this activity and receive some 18 000 foreign sport fishing vessels.

In 2010, 152 813 sport fishing permits were issued 94.5% in the Pacific Coast, 2.9% in the Gulf of Mexico and 2.6% in inland states (freshwater species), the total value of these permits was MXN 2.9 million and additionally 101 882 permits were issued at the San Diego International Office of CONAPESCA. Sport fishing permits can be obtained by the fishers through CONAPESCA web site.

Sport fishing can be performed with a valid permit and using authorised fishing gears, in the case of sport fishing for marine species there is a preserved range within 50 miles from the shoreline. There are several highly migratory marine species that can be fished along the Mexican coasts and they are reserved exclusively for sport fishing, six of these species belong to the groups called "billfishes" including blue marlin, black marlin, striped marlin, short needle fish, sail fish and sword fish with another three important species being dolphinfish, tarpon and rooster fish. For sport fishing on freshwater bodies, the most important species is the largemouth bass.

The National Program for Sport Fishing 2008-12 implemented by CONAPESCA provides for the following.

- Promotion of Mexican Sport Fishing Tournaments through national and international partnerships.
- Sustainable Administration of Mexican Sport Fishing through specific biological research projects with several institutions and the search of new potential species for sport fishing.
- Incorporation of a new legal framework to promote the further development of Sport Fishing in Mexico.

### ***Aboriginal fisheries***

Seri and Cucapa communities have lived from quite some time at the Sonora shoreline and on Tiburon Island and San Esteban Island, in the Gulf of California.

Periodically and depending on fishing cycles, these communities tend to move through different fishing camps distributed along a shoreline extension of approximately 100 kilometres. The Cucapa's territory is of approximately 210 000 hectares.

With their proximity to the ocean, many of their ancient rites are linked to marine animals, their songs and ancient stories are about the bottom of the ocean, marine turtles, sharks, and their heroes and warriors. Marine turtle meat is a fundamental part for their rites.

With respect to these rites and traditions and since the Political Constitution of the United States of Mexico establishes that the government should promote indigenous traditions, a special authorisation to catch a specific number of marine turtles (between two to four marine turtles are granted each year) is provided to these communities after a written request is delivered to local authorities. In order to certify the correct fulfilment of this authorisation, inspectors from the Environmental Protection Federal Attorney (PROFEPA) report the number and species of the captured organisms.

### ***Monitoring and enforcement***

CONAPESCA maintains a National Fishing Registry. Registration is mandatory for individuals, co-operatives and companies involved in commercial fishing activities for which they hold permits or concessions.

Inspection and Surveillance are under the authority of the National Commission for Aquaculture and Fisheries. The General Law on Sustainable Fisheries and Aquaculture and appropriate Regulations are implemented by State committees of Inspection and Surveillance which act as planning, execution and assessment bodies according to the Comprehensive Program of Inspection and Surveillance to combat illegal fishing. However, there are other laws which also have a direct impact upon fishery activities such as the Navigation Law, the Ports Act, the Ecology Balance and Environment Protection General Law, and the Constitution itself, among others.

Mexico has reinforced monitoring, control and surveillance, through the following actions.

- Greater control of permits and concessions granting.
- Selecting and updating the National Fishing Registry's vessel records.
- Strengthening verification of the origin of fish products.
- Increasing operations with regard to Inspection and Surveillance in national waters, implemented by CONAPESCA and the Mexico Navy Secretary.
- Implementing a Vessel Monitoring System for fishing vessels. A total of 2 042 devices (VMS) have been installed.
- Continuity of the Observer Program: 100% of the tuna and shark fishing fleet in the Pacific Ocean take on board a scientist as an observer. Also, tuna fishing vessels with long line net in the Gulf of Mexico have an observer on board.
- Fishing Guide, i.e. an auxiliary tool related to inspection and surveillance, in order to prevent the transportation of products from illegal fishing operations.

- Increasing participation at International and Regional Organizations by promoting regulations to strengthen MCS such as the International Monitoring, Controlling and Surveillance Network, FAO (IUU Plan), IATTC, ICCAT, among others.
- Bilateral agreement between Mexico and Cuba regarding the use of VMS devices by Cuban vessels holding fishing permits granted by the Mexican Government. Currently, 2 042 VMS devices has been installed on fishing vessels, of which 6 are used by Cuban fishing vessels.
- Currently, the General Direction of Inspection and Surveillance of CONAPESCA, in order to prevent, deter and combat illegal fishing, is promoting a culture of natural resources sustainability and training national inspectors following the principles of honesty and legality.
- On 23 June 2008, the NOM-062-PESC-2005 was included in Official Mexican Standards to use Monitoring Satellite Systems in Fishing Vessels.

### *Multilateral agreements and arrangements*

Mexico is a contracting and active Party to the United Nations Convention on the Law of the Sea (UNCLOS), the Agreement on the International Program for the Protection and Conservation of Dolphins and the 1993 FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (Compliance Agreement), fully implementing article VI of the latter which facilitates the control of vessels operating in the high seas. Although Mexico is not a party to the United Nations Fish Stocks Agreement (UNFSA), its policies and regulations are consistent with the primary objectives of that agreement and actively participates in the meetings of the Parties including the Review Conference mandated by Article 36, held in 2010.

Mexico is a member of the following organisations: The Food and Agriculture Organization of the United Nations (FAO); the Fisheries Working Group of the Asia-Pacific Economic Cooperation mechanism (APEC), the Latin American Fisheries Development Organization (OLDEPESCA), the Fisheries Committee of the Organisation for Economic Cooperation and Development (OECD), Consultant and Information Services Center for Fishery Products Marketing in Latin America and the Caribbean (INFOPEPESCA), Inter-American Tropical Tuna Commission (IATTC), the International Commission for the Conservation of Atlantic Tunas (ICCAT), among others.

## **Aquaculture**

### *Policy changes*

Aquaculture development remains a top priority for Mexico. Modifications within the legal framework have been aimed at supporting aquaculture activities. In Mexico, aquaculture represents an important way to increase food supply. It helps contribute to food security, foreign trade, regional development and the reduction of fishing pressure upon natural fishery resources, either on marine (shrimp) or freshwater (tilapia) species.

In 2010, national aquaculture production was 270 717 tonnes where shrimp represented the most important species with a total volume of 104 612 tonnes (38.6%) and a total value of MXN 4 billion (64.2%). Other important species include tilapia or mojarra with 76 986 tonnes (28.4%) and a total value of MXN 1 billion, oyster with 47 611 tonnes (17.6%) for a total value of MXN 1.7 million, carp with 24 231 tonnes (8.9%) for a total value of MXN 2.9 million and trout with 6 919 tonnes (2.5%) for a total value of MXN 3.3 million.

Total aquaculture production in 2010 was down 5%, mainly due to the virus-related problems presented on shrimp culture in Sonora. It is expected that aquaculture will regain its growth trend of before 2010 with the support of a more stable shrimp production and increasing production of tilapia or oyster.

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

In 2011, CONAPESCA managed 29 Fish Hatcheries in 22 states with a production of 19.5 million fingerlings. The main species produced were Catfish (610 945), Carps (3.3 million), Largemouth Bass (107 901), Tilapia (13.8 million), Rainbow Trout (1.3 million) and other native fish species (215 000).

These hatcheries were distributed in all 31 states, benefitting 1 079 families in 257 municipalities with aquaculture potential and in support of projects under the Commission such as Agriculture-Aquaculture Integration, Agriculture and production Reconversion and for the Lake and Reservoir Restocking.

Of the fingerling production, 10.3 million was sold to farmers who paid MXN 2.7 million to the Treasury Department; the rest was used to restock lakes and public water reservoirs.

In addition to fingerling production, Government hatcheries contribute to the professional development providing more than 205 technical assistance events and the attendance of more than 400 people to 28 training courses held at their facilities and organised 250 guided visits for 4 000 people.

In order to keep the facilities in acceptable operational conditions, CONAPESCA invested MXN 1.07 million to provide state of the art equipment to the hatcheries and MXN 10.5 million on labour capital.

## **Fisheries and the environment**

### ***Environmental policy changes***

In order to reduce by-catch and discards of non-targeted species, the National Fisheries Institute has, through Experimental Fishing Programs, been investigating new highly selective fishing gears.

In 2011, an amendment to the Official Mexican Standard NOM-002-PESC-1993 for the fishing of all shrimp species in Mexico was published for public comments. The main updates involve: 1) mesh size reduction for shrimp trawlers, 2) mandatory use of Fish Excluder Devices and 3) establishment of non-fishing protected zones in coastal areas.

The National Plan of Development 2007-2012 establishes the national objectives, strategies and priorities to achieve environmental sustainability including an efficient and rational administration of natural resources, improved competitiveness and economic and social development.

Based on this National Plan of Development and Mexico's Vision 2030, the Mexican Government has developed through SAGARPA, the Sectorial Program of Fishing and Aquaculture for 2007-12. The main objective of this programme is to increase national development, improve national competitiveness and improve transparency of the fishing sector, and to:

- Increase human development of all Mexican citizens living in rural and coastal areas.
- Provide the internal market with fishing and aquaculture products of high quality.



- Increase the net income of fish and aquaculture producers through an increase in added value in the marketing of their products in the global market.
- Reduce negative impacts on the ecosystem, through actions that preserve a sustainable balance and use of water, land and species biodiversity.
- Manage a sustainable rural development, with actions co-ordinated with the rural communities.
- Assessment and monitoring programmes with execution indicators for goals and the benefit of the population.

## Post-harvesting policies and practices

### *Policy changes*

#### *Food safety*

The promotion of strict hygiene and sanitary practices is carried out by the National Service of Sanity and Quality of Agro-alimentary Products (*SENASICA*), which is a decentralised federal body of SAGARPA. CONAPESCA, in co-ordination with the National Institute of Capacity Development of the Rural Sector (INCA RURAL), developed:

- Regional Strategic Project for the development of trout in the states of Michoacán and Mexico.
- Regional Strategic Project for good practices in squid in Yucatán and shrimp in Sinaloa.

These projects contribute to better practices and increase the quality of seafood products.

#### *Information and labelling*

As a marketing strategy, activities towards acknowledging national fisheries products origin, qualities, and brands, are being conducted.

#### *Structures*

The Value Networks Strengthening and Construction Program has been implemented with the purpose of consolidating fishery and aquaculture processing units so they can become more competitive and organise into value networks, improving their organisation, and productivity.

The strategies of this programme are:

- To establish Product Systems Committees at the state, regional and national level, acting as a planning, communication, and permanent mechanism to agree upon issues concerning all economic members that are part of productive chains.
- To provide resources and guidelines needed to implement Master Programs in each Product System Committee with the goal that every person making decisions have a strategic plan that determines necessary actions to increase competition in the short, medium and long term.
- To link, assist, guide, direct and propose alternatives for the Product Systems Committee.

Through the creation of 73 System Product State Committees, CONAPESCA has driven the organisation of the fisheries and aquaculture sector. Those Committees include 1 Regional and 11 National, and they bring together 3 000 economic traders in 19 productive chains, with

a presence in 24 states. These organisational figures represent approximately 77% of the national fish and seafood production and 74% of its market value.

Similarly, through the Productive Liaison Program, a total of MXN 97 million have been channelled for the implementation of 1 284 strategic actions. Those actions were established by the Product Systems Committees during their Annual Work Programs. The operation has generated concrete results, including:

- Establishment and implementation of seven integrated companies.
- Construction of four collection centres.
- Modernisation of 50 vessels.
- Operation of two “paraфинancieras” (Financial services provided by non-financial entities), with lines of credit of MXN 110 million.
- Creation of five collective brands.
- Certification of sardine fishery.
- The development of four value-added products from sardine and four from squid.
- Openings of two CSP outlets from Tilapia-Michoacán to meet their regional market.
- Good manufacturing practices Certification of 15 farms.

Additionally, the System Product Committees have been characterised for performing various operations with a consolidated method.

## Markets and trade

### *Trends in domestic consumption*

The domestic market for fish products is mainly frozen and fresh fish which makes up more than 80% of the direct consumption. In 2009 seafood consumption was:

- Apparent consumption: 1 436 687 tonnes.
- Per capita consumption: 12.8 kg.
- Direct human consumption 10.6 kg.
- Indirect Human Consumption 2.2 kg.
- Availability: 1 080 896 tonnes.

Consumption in urban areas was higher than in rural areas. Far from coastal areas, the consumption of these products is low and with a strong seasonality. This is due to distance between consumption centres and production, poor infrastructure, and consumers’ lack of knowledge concerning fish species.

Currently, the market infrastructure for storage and distribution of fish in Mexico is very limited. There are only two wholesale markets, which are located in Mexico City and Jalisco and concentrated (70% of the fishery and aquaculture production is marketed through two centres: *el Mercado de la Viga* in Mexico City and *el Mercado de Zapopan* in Jalisco). They are working beyond their capacity and cannot meet international quality standards.

In 2011 a Logistics Study was conducted and the result of the study identified two priority issues:

- A profound diagnosis of the distribution channels of fishery products from their capture to the end consumer.
- Based on the analysis of distribution channels the study suggests improvements and business opportunities that facilitate better displacement of fishery products in a more efficient manner. This in turn would manage the supply of the distribution centres.

At the end of 2011, a project aligned to these collection centres called *Desarrollo de Proveeduría de la Región Noroeste* was set up. This project aims at fostering the development of the fish and seafood supply chain and it is focused on seafood quality and safety. It includes improving the infrastructure facilities process, production units, equipment, transportation, collection centres, as well as having adequate training to enable certification of product quality.

### **Promotional efforts**

Promotion campaigns are carried out in co-operation with the private sector. They aim at improving the dietary habits through increasing the consumption of fish and aquaculture products. The campaigns show fishery products selection and quality. Mexico is also seeking to link activities with other institutions working on nutritional aspects of food.

Since 2004, National Product System Committees have been working with species such as tilapia, catfish, giant squid and oyster. Products representatives are involved in the definition of strategies and promotional campaigns which are carried out every year.

Over MXN 9.7 million were channelled to carry out the promotion of events such as Pescamar, Baja Seafood and the International Forum on Fisheries and Aquaculture. These events were attended by over 30 000 visitors, around 3 000 of whom were producers and 538 members of the System Product Committees.

Moreover, in co-ordination with ASERCA, through the COMEPESCA, and the System Product Offshore Shrimp Committee, MXN 16.8 million were channelled to carry out promotional campaigns for the consumption of fish and seafood in Mexico. The promotion measures will be implemented through national and international targets that range from primary school children to specialised buyers in aquaculture and fish products.

### **Trade**

#### *Volumes and values*

In 2010, exports reported by the Ministry of Finance amounted to 286 tonnes worth MXN 9.6 billion, while imports were of 87 tonnes worth MXN 3.6 billion.

As a result, a positive trade balance of MXN 6 billion was achieved. In 2010, the main destinations of Mexican fish products exports (in particular as shrimp, tuna, lobster, octopus and sardines) in volume and value were as follows.

**Table 26.1. Main destinations of Mexican fish products exports in volume and value**

Country	Volume	Value
United States	30.96%	56.01%
Hong Kong	1.63%	9.86%
Spain	12.05%	9.32%
Japan	9.26%	4.75%
Italy	2.38%	3.54%
Others	43.70%	16.49%

### *Policy changes*

For the Mexican fishery sector, the free trade agreements have had an important impact as new gradual tariff reduction programmes have been agreed and implemented. Thus, compatibility with standards and systems for quality certification will be possible, among other matters.

The Mexican government has been looking for specific objectives pertaining to the fishery sector's interest matters, both through existing agreements and through those being negotiated, as follows.

- Tariff and non-tariff barriers: removal of import obstacles;
- Quotas and permits: to eliminate prohibitions and quantitative restrictions (quotas, shares) to fishery products imports.
- Standard techniques, sanitary and phyto-sanitary; avoiding adopting standards restricting fishery trade; establishing mechanisms to make compatible its elaboration and implementation base through the adoption of international standards accepted by the parties. Achieving mutual recognition to verification and sanitary certification systems.
- Safeguard: to avoid the adoption of deceitful measures such as discriminatory protection.
- Rules of Origin: To ensure FTA (TLC) benefits will be used by capture products and/or manufactured by legally established industries or about to be established, with flag and registration in jurisdictional waters of any party country, and
- Dispute settlement: establishing timely and precise mechanisms of consulting and settlement of trade differences and/or interpretation of all and each one of the free trade agreements.

### **Outlook**

- Strengthening the competitive position of value.
- Increasing national per capita consumption and conducting promotional or advertising campaigns.
- Training aimed at strengthening human resource capacities (producers and technicians) to assure better implementation practices in production and processes; management, financing, and commercial skills improvement.
- To increase resources allocated to Rural Aquaculture National Program with the aim of achieving a greater coverage.
- To encourage savings in order to consolidate guaranty funds, which in turn will allow the financing of future projects.
- The recovery of lagoon systems will contribute to improving the biochemistry conditions of water quality, and will help increase productivity with direct and indirect incomes for fishery and aquaculture activities. In addition, it will create exclusive values for environmental management to reduce greenhouse gas emissions and address global warming.
- Infrastructure improvements that contribute to aquaculture and fishery development as a result of recovery activities will develop sustainable development and competitiveness in rural communities.

- CONAPESCA have developed for the long-term development of the fishery and aquaculture industry the “Strategic Projects of CONAPESCA” with the aim to create more and better jobs, to reduce poverty, and to promote competitiveness and sustainable development in Mexico.
- In order to finance long-term infrastructure and production projects, active co-ordination between CONAPESCA, FIRA and Rural Financial is to be established to increase competitiveness and support strategic projects.
- One of the most important projects is PROMAR, considered in the General Law on Sustainable Fisheries and Aquaculture, which is a fund that guarantees the financial operations and supports the services of fishing projects.
- In order to strengthen CONAPESCA and respond more effectively, the Regional Offices of Fisheries and Aquaculture (ORPAS) were integrated on 1 January 2012. The main objective of the ORPAS is to execute the general policy of monitoring and enforcement in aquaculture and fisheries, as well as oversee the proper implementation of the CONAPESCA programmes, and encourage the promotion of activities in the sector. Likewise, the administrative units of CONAPESCA, in co-ordination with the Information Service and Agricultural Statistic Service (SIAP), will promote the elaboration of statistical and geographic tables.



## Chapter 27

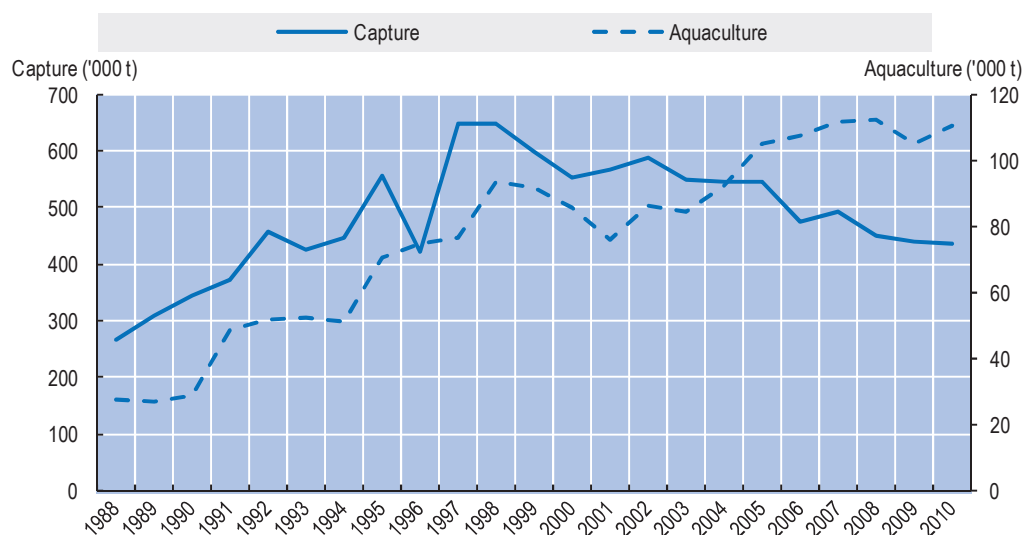
### NEW ZEALAND

#### Summary of recent developments

- The New Zealand seafood industry sustainably harvests about 600 000 tonnes from wild fisheries and aquaculture each year. The value of this harvest ranges from NZD 1.2 to 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.
- The Ministry for Primary Industries<sup>1</sup> is responsible for managing New Zealand's fisheries. Consistent with the Government's main priority of "growing New Zealand's economy", the overall goal for the Ministry for Primary Industries is detailed in Our Strategy 2030 with the vision of "growing and protecting New Zealand".
- Fisheries policy and management achievements from 2010 and 2011 included: Implementing Fisheries 2030; developing partnerships between the New Zealand Government and commercial, recreational and customary interests; enacting legislation supporting sustainable aquaculture development and progressing the Crown's settlement obligations to Maori in the aquaculture sector under the Treaty of Waitangi; adopting an Aquaculture Strategy and five-year action plan; developing an objectives-based approach to fisheries management through "fisheries plans"; developing an International Fisheries Strategy; ratifying the South Pacific Regional Fisheries Management Organisation convention and signing the FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unregulated and Unreported Fishing; and Strengthening the New Zealand Government's monitoring and surveillance capability.

1. The Ministry for Primary Industries was formed in 30 April 2012, it brings together the responsibilities of the Ministry of Agriculture and Forestry, New Zealand Food Safety Authority, and the Ministry of Fisheries

Figure 27.1. Harvesting and aquaculture production



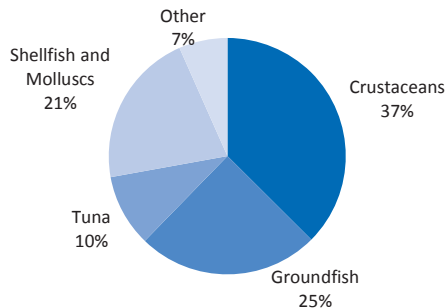
Source: FAO FishStat Database.

**Box 27.1. Key characteristics of New Zealand fisheries**

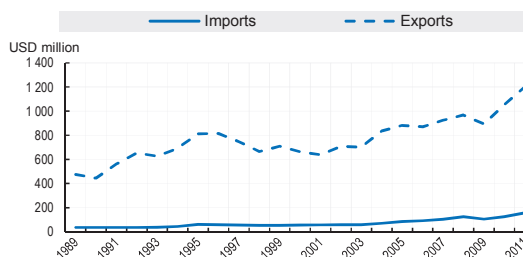
- Capture fisheries production is about four times that from aquaculture. Capture production has been trending lower, though this rate of decline has been decreasing. Crustaceans and groundfish account for half of landings by value. (Panel A)
- Capture fisheries production is about four times that from aquaculture. Capture production has been trending lower, though this rate of decline has been decreasing. Crustaceans and groundfish account for half of landings by value. (Panel B)
- Capture fisheries production is about four times that from aquaculture. Capture production has been trending lower, though this rate of decline has been decreasing. Crustaceans and groundfish account for half of landings by value. (Panel C)
- The number of workers in the marine fisheries sector increased by 2% between 2010 and 2011. The number of vessels decreased by less than 1% over the same period. (Panel D)

**Figure 27.2. Key fisheries indicators**

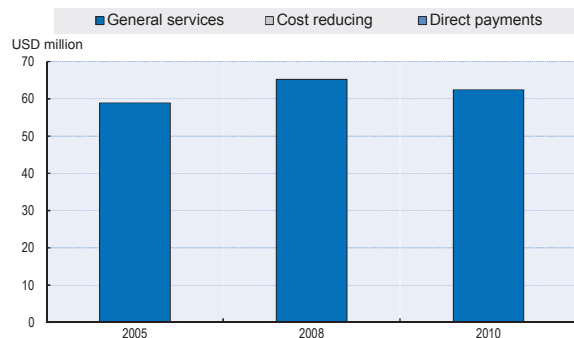
**Panel A. Key species landed by value in 2010**



**Panel B. Trade evolution**



**Panel C. Evolution of government financial transfers**



**Panel D. Capacity**

	2006	2011	% change
Number of fishers	1 416	1 740	22.9
Number of fish farmers	648	650	0.3
Total number of vessels	1 654	1 401	-15.3
Total tonnage of the fleet	172 644	117 919	-31.7

1. Cost recovery charges (about USD 25 million in 2010) were not included.



## Legal and institutional framework

The Fisheries Act 1996 (the Act) provides the framework for fisheries management in New Zealand. The purpose of the Act is to provide for the utilisation of New Zealand's fisheries resources while ensuring they are maintained at a sustainable level and that any adverse effects on the environment are avoided, remedied, or mitigated.

The Act and the subordinate legislation (fisheries regulations) adopted under the Act provide for the fishing interests of all fishing groups - commercial, recreational, and customary Maori. The Act is administered primarily by the Ministry for Primary Industries. Key decisions are made by the Minister for Primary Industries and the Chief Executive of the Ministry for Primary Industries.

### *Commercial fisheries*

Commercial fisheries in New Zealand are managed through a Quota Management System (QMS) based on Individual Transferable Quotas (ITQs). The total quantity of fish that can be taken for each QMS fishery is known as the Total Allowable Catch (TAC). From the TAC an allowance is made to provide for recreational fishing, customary Maori uses and other sources of fishing-related mortality. The remainder is available to the commercial sector as the Total Allowable Commercial Catch (TACC). This is the total quantity of each fish stock that the commercial fishing industry can catch during that year.

Within the commercial catch limit, access is determined on an annual basis by ownership of Annual Catch Entitlement (ACE) and the possession of a fishing permit. ACE is generated in proportion to the amount of quota owned by a person at the start of each fishing year. The quota owner may choose to fish the ACE they receive or on-sell the ACE.

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. There are no aggregation limits on the ownership of ACE.

Foreign ownership of quota or ACE is not allowed unless a specific exemption is granted by the Minister for Primary Industries and the Overseas Investment Commission. To receive the exemption, a foreign company must demonstrate that New Zealand will benefit from the ownership. If New Zealand ceases to benefit, the ownership or interest in quota or ACE can be taken away from foreign companies without any compensation being offered.

Commercial fishing vessels must be registered under the Fisheries Act 1996. Vessel numbers are not restricted. New Zealand is transitioning out of the use of foreign flagged fishing vessels within New Zealand fishing waters. By 2016 all vessels operating within the EEZ will need to be New Zealand flagged.

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.

### *Non-commercial fisheries*

The basic legal right underpinning recreational fishing is an access right to go fishing for personal use. Recreational interests are recognised in the Fisheries Act 1996, which establishes an allowance for recreational fishing within the TAC. Restrictions on recreational fishers such as daily bag limits, method restrictions, size limits and seasonal closures are imposed in regulations. Recreational catch cannot be sold and there are no reporting requirements for recreational fishing.

The Crown has an obligation to recognise Maori customary non-commercial fishing rights and management practices and is also obliged to consult with *tangata whenua* about policies to help recognise, use and management practices of Maori in the exercise of non-commercial fishing rights.

The Fisheries Act provides all the customary (commercial and non-commercial) fisheries management tools and processes that are available to Maori in recognition of customary rights. Customary fishing regulations recognise and provide for customary food gathering by Maori. Customary fishing must be authorised and the catch cannot be sold.

## Capture fisheries

### Performance

The New Zealand seafood industry sustainably harvests about 600 000 tonnes from wild fisheries and aquaculture each year. The value of this harvest ranges from NZD 1.2 to 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.

There are about 130 species fished commercially in the New Zealand exclusive economic zone. Sixty-six per cent of fish caught in our wild fisheries is taken in deepwater fisheries – the major species being squid, hoki, ling, hake, oreo dories, orange roughy, and southern blue whiting. Important inshore and shellfish species include spiny rock lobster, paua, and snapper. The main recreational species are snapper, blue cod, kahawai, kingfish, rock lobster, paua and scallops. Top species (excluding aquaculture) landed by weight in fishing year 2010-11 are hoki, squid and mackerel.

Within the fishing industry, exports provide approximately 90% of earnings. In 2010, 256 593 tonnes of fish was exported, earning NZD 1.42 billion. In 2011, 254 543 tonnes of fish was exported, earning NZD 1.35 billion. The top five export earners accounted for nearly half of total export value (Table 27.1).

**Table 27.1. Top five export earners and the revenue generated for 2010 and 2011**

Fishery*	2010		2011	
	Tonnes	Export value NZD (millions)	Tonnes	Export value NZD (millions)
Rock lobster	2 823	229	2 682	220
Hoki	47 473	173	51 193	184
Squid	28 969	87	31 886	105
Abalone/ Paua	1 133	63	897	57
Tuna (all)	13 396	38	18 037	56

\* Note that mussels have been removed because they are not generally a "capture" fishery. The export figures for mussels are included in the aquaculture section.

Processing accounts for the majority of total employment in the fisheries sector (Table 27.2). Aquaculture employs about one third as many people as marine capture fishing, accounting for less than 10% of total sector employment.

**Table 27.2. Top five export earners and the revenue generated for 2010 and 2011**

<b>Sector</b>	<b>Employee count* 2010</b>	<b>Employee count 2011</b>
Marine fishing	1 740	1 780
Seafood processing	5 720	5 540
Marine aquaculture	650	670
<b>Total</b>	<b>8 110</b>	<b>7 990</b>

*Source:* Statistics NZ Linked Employer-Employee Data (LEED). In 2004, Statistics New Zealand changed their employment measure from FTEs to Employee Count (EC). The nature of the EC measure means that it can result in an undercount of total employment because it excludes non-employee working proprietors. These working proprietors play a significant role in the seafood industry, particularly for catch activity

### *Status of fish stocks*

As at 1 October 2011 there were 98 species and 633 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. In 2011, there was sufficient information to report on the status of 164 of these stocks or sub-stocks, of which the status in relation to soft limits was known for 127. Of these stocks, 108 were considered above the soft limit set out in the Act. The 19 stocks known to be below the soft limit were southern bluefin tuna (a highly migratory species over which New Zealand has limited influence), three stocks of black cardinal fish, five stocks of bluenose, six stocks or sub-stocks of orange roughy, and one stock or sub-stock each of rock lobster, scallop, snapper and rig. In all cases where fisheries are below the soft or hard limit, corrective management action has been, or is being, put in place to rebuild the stocks. For example, fisheries on three previously-collapsed orange roughy stocks were closed to maximise the rate of rebuilding. Two of these have since been re-opened.<sup>1</sup>

### *Management of commercial fisheries*

#### *Management instruments*

The Ministry is implementing an objectives-based approach to fisheries management using “National Fisheries Plans”. Five national-scope plans will cover all of New Zealand’s deepwater, highly migratory, and inshore (shellfish, freshwater and finfish) stocks.

The fisheries plans aim to describe how New Zealanders can get best value from their fisheries within environmental limits and standards set by the Government.

National Fisheries Plans for the deepwater and highly migratory stocks have been signed off by the Minister and are guiding current management of those fisheries. Three National Fisheries Plans for inshore fisheries (shellfish, freshwater and finfish stocks) are still drafts, expected to be finalised in 2013. However, they are currently being used at a high level to guide management and final edits will consider the success of current implementation.

#### *Standards*

The Ministry for Primary Industries is developing a number of standards and organisational procedures to support fisheries plans and ongoing fisheries management. Standards set minimum performance levels required to ensure fisheries outcomes are met. To date the Minister has approved the Harvest Strategy, Deemed Value, and QMS introduction standards.

### *Management of recreational fisheries*

Approximately 20% of New Zealanders fish recreationally. Recreational fishers catch approximately 40 different types of fish species, with snapper, kahawai, kingfish, blue cod, rock lobster, and scallops being key targets.

Recreational fishers have open access rights to the fishery — anyone can go fishing as a recreational fisher. There is no licence requirement. Although there are some allocation provisions for species in some areas, the fishery does not have hard constraints on total catch. The fishery is managed through various “input controls” (size limits, daily limits, area closures) depending on the area and species.

### *Aboriginal fisheries*

*Tangata whenua* and the Crown are in partnership grounded in the Treaty of Waitangi. In 1992, the Crown and Iwi negotiated a comprehensive settlement of all commercial fisheries and aquaculture rights and obligations. These agreements culminated in the *Treaty of Waitangi Fisheries Claims Settlement Act 1992* and the *Maori Commercial Aquaculture Claims Settlement Act 2004*. In addition to these commercial rights, the settlement provided for the detailed expression of rights which were to be further articulated, such as in the development of policies and regulations to provide for customary non-commercial fishing.

#### *Customary non commercial fishing*

The Kaimoana Customary Fishing Regulations 1998 and the Fisheries (South Island Customary Fishing) Regulations 1998 let *tangata wheuna* manage their non-commercial fishing in a way that best fits their local practices, without having a major effect on the fishing rights of others. To use the customary fishing regulations, Iwi and Hapū groups must decide who has *tangata whenua* status over a fishery. This can be shared by a number of groups. Groups choose people to act as guardians for the area (Tangata Kaitiaki in the North and Chatham Islands, Tangata Tiaki in the South and Stewart Islands). Guardians can issue anyone a permit to catch fish in their area for customary use. They must report these catches to the Ministry for Primary Industries so the government can allow for customary use when it sets next year’s catch limits.

*Tangata whenua* can ask for special management areas — *mātaitai* reserves and *taiāpure*-local fisheries — to cover some of their traditional fishing grounds. Within *mātaitai* reserves, guardians can bring in changes to the rules for customary and recreational fishing. They can also say whether some types of commercial fishing should continue in the reserve. There are currently 29 *mātaitai* reserves and eight *taiāpure* reserves in place. Other fishing method restrictions and closures for customary purposes are also available under the Fisheries Act.

The Crown and Waikato-Tainui have entered into a co-governance relationship over the Waikato River, with the overarching purpose of restoring and protecting the health and wellbeing of the Waikato River for future generations.

As part of the co-governance arrangements, fisheries regulations allow Waikato River iwi to manage their customary fishing, through the issuing of authorisations, and to develop and propose bylaws to the Minister for Primary Industries that may restrict or prohibit fishing on the Waikato River.<sup>2</sup>

Forum Fisheries Plans (FFP) are the main vehicle for the input and participation of *tangata whenua* in management decisions. These plans also add to the ability of *tangata whenua* to influence the management of fish stocks that they target at a local level. FFP may be used to signal a desire to make use of customary tools if they are the most appropriate means of meeting *tangata whenua* objectives.

### *Aquaculture interests*

At the time of the aquaculture reforms a settlement was negotiated with Maori for grievances regarding commercial aquaculture interests since 1992.<sup>3</sup> Under the *Maori Commercial Aquaculture Settlement Act 2004*, Maori have the rights to 20% of marine farming space created since September 1992.

The Maori Commercial Aquaculture Claims Settlement (Regional Agreements) Amendment Act 2010 passed into law in March 2010. The amendment gives effect to a Deed of Settlement between the Crown and specific Iwi for an early settlement of the Crown's pre-commencement space obligations in the South Island and Coromandel region. A payment of NZD 100 million was paid to a Trustee for allocation to those Iwi. The Deed of Settlement also provides for the Crown and South Island Iwi to agree the values for permit decisions made after the signing of the Agreement in Principle, the precursor to the Deed of Settlement. A further payment of NZD 1.145 million has been made for these post agreement in principle decisions. The amended Act will also give effect to future agreements the Crown may enter into with remaining iwi for an early settlement of the Crown's pre-commencement space obligations in their regions.

### ***Monitoring and enforcement***

The Ministry for Primary Industries implements a sliding scale approach to achieving compliance in Fisheries. Frontline officers start with assisting low risk fishers by way of education and warnings; directing medium risk, opportunistic offenders via infringement action; and the high risk, criminally intent being dealt with by way of prosecution which carries a possible custodial sentence.

### ***Multilateral agreements and arrangements***

During 2010–2012, New Zealand participated in the following multilateral initiatives.

- FAO Technical Consultations on Flag State Performance
- The Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unregulated and Unreported fishing
- UNGA Oceans and Sustainable Fisheries resolutions
- FAO Committee on Fisheries
- FAO Sub-Committee on Fish Trade

New Zealand is a member of the following RFMOs: 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. New Zealand signed the South Pacific Regional Fisheries Management Organisation (SPRFMO) Convention on 1 February 2010 and subsequently ratified the SPRFMO Convention into New Zealand law.

The Ministry for Primary Industries has been working on a capacity development programme (funded by the International Development Group of the Ministry of Foreign Affairs and Trade) that aims to maximise the economic and developmental benefits from the sustainable management and utilisation of Pacific fisheries resources. Key activities and services delivered in the period 2010–2012 include: the development of a draft regional fisheries plan for *Te Vaka Moana* countries (Cook Islands, Niue, Samoa, Tokelau, Tonga and New Zealand), planning and delivery of a compliance planning and operational workshop for the Cook Islands, planning and delivery of a two week fisheries workshop for Tokelau that included organisational governance, fisheries management, and monitoring, control and

surveillance components. For the remainder of 2012 key activities and services include: characterisation of Pacific Partner needs to develop a New Zealand assistance strategy, a fisheries management workshop with Niue, engagement and attachments of senior managers from the Solomon Island Ministry of Fisheries and Marine Resources, needs assessment and strategic direction agreed with Tongan officials regarding monitoring, control and surveillance. Ministry for Primary Industries staff also have an ongoing mentoring role with the Tokelauan fisheries officials who attended the fisheries workshop.

The Ministry for Primary Industries has also signed the *Te Vaka Moana* Arrangement with fisheries agencies from Niue, Tokelau, the Cook Islands, Samoa and Tonga. *Te Vaka Moana* is a fisheries co-operation arrangement that recognises and furthers the shared interests of the Parties, including through capacity development assistance.

## Aquaculture

The New Zealand Government has identified aquaculture as an important sector for economic growth, and a work programme has been developed to support sustainable aquaculture development and the industry's goal of reaching NZD 1 billion in annual revenue by 2025.

### Policy changes

In 2011 a package of aquaculture reforms came into effect with the aim of fostering environmentally sustainable aquaculture in New Zealand<sup>4</sup>. An Aquaculture Strategy and Five-year Action Plan was adopted in 2012.<sup>5</sup> The strategy and action plan establishes a whole-of-government pathway to enable the aquaculture sector to grow.

This strategy and action plan aligns with both the aquaculture industry's strategy and the Ministry for Primary Industries' 2030 Strategy, setting out how the government can support the sector's growth ambitions. It also complements existing government environmental and economic initiatives and upholds the Crown's obligations under the Treaty of Waitangi.

Aquaculture in New Zealand is primarily based on three species: green lipped mussels (Greenshell™ mussels); king salmon; and pacific oysters. Aquaculture exports grew in 2011, with increases in mussel exports outweighing declines in salmon and oysters (Table 27.3).

**Table 27.3. Aquaculture export figures for the years 2010 and 2011**

Species	2010		2011	
	Export weight (Tonnes)*	Export value NZD (millions)	Export weight (Tonnes)	Export value NZD (millions)
Greenshell™ mussels	34 134	172	38 097	226
King salmon	7 017	86	5 166	63
Pacific oysters	2 240	17	1 768	18
Total aquaculture	43 391	275	45 031	307

\* This is the actual weight of the product exported. These figures are therefore lower than the equivalent greenweight figure.

## 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.

In 1975 New Zealand established its first marine reserve - one of the world's first "no take" marine reserves. There are currently 34 marine reserves in New Zealand ranging in size from 0.93 km<sup>2</sup> to 7,480 km<sup>2</sup>. They cover a total area of 12 790 km<sup>2</sup> and are located all around New Zealand's coast. New Zealand has now protected 32% of its EEZ. In total, this includes—28% of underwater topographic features (including seamounts); 52% of seamounts (underwater mountains over 1 000 metres in height); and 88% of active hydrothermal vents.

### *Environmental policy changes*

*Fisheries 2030* is a Cabinet endorsed shared direction and strategy to improve the environmental and economic performance of the fisheries sector.<sup>6</sup> It seeks to achieve improved economic benefit through smarter use of fisheries resources, and provides for increased non-commercial benefits, while protecting the health of the fishery and the marine environment. The goal is to have New Zealanders maximising benefits from the use of fisheries within environmental limits.

In January 2006, the New Zealand Government released the Marine Protected Areas Policy 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 MPA policy outlines a range of management tools that may be used to protect marine habitats and ecosystems along with Network Design and Planning Principles to aid in the selection of potential MPA sites.

For MPA planning purposes the New Zealand Territorial Sea has been divided into 14 bioregions. The MPA Policy envisages that MPA planning will be undertaken by regional forums consisting of stakeholders with an interest in the marine environment in each of these bioregions. Thus far, two regional forums have been convened and completed their planning processes. New MPAs based on recommendations from these forums are being advanced through legislative processes.

In November 2007 the New Zealand Government implemented a proposal by the fishing industry to close 30%, or 1.2 million square kilometres, of New Zealand's exclusive economic zone, and some areas beyond the EEZ, to bottom trawling and dredging.

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 NPOA–Seabirds sets out a strategic framework to reduce seabird bycatch to sustainable levels. A number of regulatory and non-regulatory best practice mitigation measures currently apply in New Zealand trawl, pelagic longline and demersal longline fisheries. New Zealand also has an ongoing monitoring and research programme and a risk assessment framework for identifying at-risk seabird species and the fisheries in which they are caught.<sup>7</sup>

Specific measures are in place to manage the effects of fishing on a number of marine mammal species. These include the following.

- A bycatch limit for New Zealand sea lions in the southern squid fishery.
- An industry code of practice designed to reduce bycatch of marine mammals in all New Zealand deepwater fisheries.

- Method restrictions in some inshore areas to reduced bycatch of Hector's and Maui's dolphins.

The Ministry for Primary Industries and the Department of Conservation have jointly developed a Threat Management Plan (TMP) to manage human-induced threats to Hector's and Maui's dolphins to better manage the impact of fishing on the dolphins. The new rules place restrictions on set net and trawl fishing in inshore waters around the South Island and the west coast of the North Island and includes Marine Mammal Sanctuaries, in which rules regulating non-fishing activities (tourism and mining) apply. The Ministry for Primary Industries continues to monitor the effectiveness of these measures through fishery-independent data collection by observers and will review the TMP in 2013 if necessary.

## Government financial support

### *Transfer policies*

The New Zealand Government provides transfers for general services, the costs of which are recovered from the commercial fishing industry under the principles defined in the Fisheries Act 1996. Since October 1994 the New Zealand Government has recovered the costs associated with fisheries management services and conservation services carried out for the benefit of the commercial sector (Table 27.4).<sup>8</sup>

**Table 27.4. Government financial transfers associated with fishery policies**

(NZD million)

Nature of transfer	2009/2010	2010/2011
Market Price Support	-	-
Direct payments	0	0
Cost reducing transfers	0	0
General services	86.7	88.3
Cost recovery charges	-26.0	-32.7

There is an annual consultation process between the Ministry for Primary Industries 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. The levies charged to participants include costs for: management of fisheries both in and outside the quota system, recovery of enforcement and research costs related to aquaculture, the Department of Conservation in researching the effects on protected species of bycatch and measures to mitigate the adverse effects of commercial fishing on protected species.

### *Social assistance*

New Zealand does not have a social policy with regards to the fisheries sector. Fishers are, like all other members of society, entitled to standard social security provisions.

### *Structural adjustment*

When TACs are reduced for sustainability reasons, the necessary adjustment and rationalisation required is conducted by fishers and requires no Government involvement or financial assistance.



## Post-harvesting policies and practices

### *Policy changes*

#### *Food safety*

Food safety of fish and fish products is predominantly regulated under the Animal Products Act 1999, administered by the Ministry for Primary Industries. All fish exports (about 90% of New Zealand's commercial catch) are regulated by the Animal Products Act. Moreover, because fish sold in the New Zealand market is generally processed through exporting premises, most fish for domestic consumption is also covered by the Animal Products Act.

In general, fish primary processors are required to operate under registered Risk Management Programmes approved by the Ministry for Primary Industries and are subject to regular performance based audit. However, exemptions allow some primary processors for the domestic market to operate under the Food Act 1981, by either complying with the Food Hygiene Regulations 1974 or implementing an approved Food Safety Programme (FSP). Secondary fish processors are not required to operate under a Risk Management Programme unless they are exporting product and need an official assurance. Some processors may choose to operate under a registered risk management programme, especially when carrying out primary and secondary processing in the same premises. Other secondary processors are covered by the Food Act provisions. The Ministry for Primary Industries is responsible for administering both the Animal Products Act and the Food Act. Day-to-day management of matters relating to FSPs under the Food Act is largely the responsibility of officers in Public Health Units attached to local Health Boards. The regular audit of FSPs is undertaken by independent auditors approved by Ministry for Primary Industries. Territorial authorities register premises under the Food Hygiene Regulations and monitor compliance.

New Zealand regulates food safety and truth in labelling. Truth in labelling is regulated under the Joint Australia–New Zealand Food Standards Code and the Fair Trading Act 1986. The government does not intervene to regulate matters which are perceived to be commercial risk for processors – such as managing post-harvest loss or waste. The safe disposal of waste from processing is governed at the local level by territorial local authorities under the Resource Management Act. The requirement for fish processors to produce safe food under approved and audited Risk Management or Food Safety Programmes have the spin-off of reducing post-harvest losses and wastage.

#### *Information and labelling*

Pre-packaged fish products, in common with all other pre-packaged food products for retail sale or catering purposes, are required to display certain prescribed information. The labelling requirements are common to New Zealand and Australia and are set by the Food Standards Australia and New Zealand. The Ministry for Primary Industries is responsible for enforcing these standards in New Zealand. The requirements came fully into force from December 2002. New Zealand does not require country of origin labelling.

## Markets and trade

### *Markets*

Seafood is New Zealand's seventh largest export good. 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 1.21 billion in 2010 and NZD 1.22 billion in 2011.

### ***Trends in domestic consumption***

The New Zealand domestic market, which is 30% import dependent, consumes less than 10% by value of fish landed or produced in New Zealand. Access to the market is unrestricted, with imports of species unavailable in the domestic fishery, such as shrimps and prawns, or packaged products, such as canned fish. Per capita consumption is relatively stable and growth is largely a function of general population trends.

### ***Promotional efforts***

The New Zealand Seafood Industry Council (SeaFIC) provides overarching representation of the New Zealand fishing industry. SeaFIC promotes the interests of all sectors of the fishing industry by providing economic information and advice, coordination of industry resources, and enhancement of the industry's profile in the community. Promotion of seafood products in domestic and export markets is largely the responsibility of seafood producers.

A characteristic of industry change over the past few years has been the continued emergence of Commercial Stakeholder Organisations (CSOs). CSOs are companies set up to manage matters of relevance to rights owners in particular fisheries. Currently, most commercial fisheries in New Zealand are represented by a CSO. Improved engagement of CSOs has allowed for greater integration of stakeholder views in the management of New Zealand's fisheries resource.

### ***Trade***

Approximately 90% of New Zealand's seafood production is exported; meaning economic return to New Zealand from the sector is heavily dependent on the nature of world markets. Improved access to high value markets will improve the value New Zealand obtains from seafood production.

The key direct export markets for New Zealand's fish products are China (20%), Australia (18%), the European Union (13%), United States (10.5%) followed closely by the Hong Kong and Japan.

### ***Policy changes***

#### ***WTO trade negotiations on fish/fish products and fisheries subsidies***

New Zealand remains committed to the WTO negotiations under the Doha Development Agenda to strengthen disciplines on subsidies in the fisheries sector, including through the prohibition of certain forms of fisheries subsidies that contribute to overcapacity and overfishing, and to the improvement of seafood market access through the lowering of tariffs and removal of import quotas. Such improvements to the seafood trading environment are likely to reduce pressures on global fisheries and improve the return New Zealand obtains from its seafood exports.

#### ***Free trade agreement (FTA) negotiations***

Since 2008 New Zealand has completed the following FTA which have entered into force: ASEAN and Australia (AANZFTA), Malaysia, and Hong Kong. The New Zealand-Australia Closer Economic Relations Investment Protocol has concluded and will enter into force when both New Zealand and Australia have completed domestic implementation processes. The New Zealand – Gulf Cooperation Council FTA negotiations have concluded but it has not yet been signed.

New Zealand is currently involved in negotiating FTAs with Korea, India, Russia Belarus and Kazakhstan (RBK), and, as part of the expansion of the Trans-Pacific Strategic Economic Partnership Agreement (TPP, previously known as "P4"), with Australia, Brunei Darussalam,

Chile, Malaysia, Peru, Singapore, the United States and Viet Nam. New Zealand is negotiating an Investment Protocol with Hong Kong. In addition, negotiations have begun between the New Zealand Commerce and Industry Office in Taipei and the Taipei Economic and Cultural Office in Wellington on an economic co-operation agreement between New Zealand and Chinese Taipei.

## Outlook

The QMS remains the preferred system for managing New Zealand's fisheries. Improvements have been made to the QMS and the development and implementation of fisheries plans is directed at improving the opportunities for those who utilise fisheries resources to contribute to, and participate in the management of the resource.

The addition of seven new patrol vessels and improved use of information and intelligence is helping New Zealand develop a clearer picture of how well fishers comply with fisheries legislation and enable better targeting of resources to any problem areas.

Internationally, New Zealand continues to focus on strengthening Regional Fisheries Management Organisations and other international fisheries bodies.

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 will lead the industry to further adapt and evolve its operations to maximise economic return. In the short term, export earnings are expected to remain relatively stable.

New Zealand will 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). Priorities for 2012/13 are the following.

- Ensuring sustainability and regulatory measures are based on robust information and analysis.
- Monitoring performance for the Fisheries 2030 outcomes.
- Implementing the aquaculture strategy and the five year action plan.
- Developing National Fisheries Plans.
- Implementing outcomes of the foreign charter vessel review.
- Continuing co-operation and capacity building work with South Pacific countries to improve governance over fisheries.

## Notes

1. More information on the status of New Zealand's fish stocks can be found at: <http://fs.fish.govt.nz/Page.aspx?pk=16>.
2. See <http://www.legislation.govt.nz/regulation/public/2011/0294/7.0/whole.html#DLM3931000>
3. 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.
4. For more details see [www.fish.govt.nz/en-nz/Aquaculture+Reform/default.htm](http://www.fish.govt.nz/en-nz/Aquaculture+Reform/default.htm)
5. See [www.aquaculture.govt.nz/files/nz\\_aquaculture\\_strategy/AQUAStrat5yrplan2012.pdf](http://www.aquaculture.govt.nz/files/nz_aquaculture_strategy/AQUAStrat5yrplan2012.pdf) for more details.

6. Fisheries 2030 can be accessed at: [www.fish.govt.nz/NR/ronlyres/4DD60325-CADD-4E5C-92BF-A6E17C202A54/0/fisheries2030report.pdf](http://www.fish.govt.nz/NR/ronlyres/4DD60325-CADD-4E5C-92BF-A6E17C202A54/0/fisheries2030report.pdf).
7. A copy of the current NPOA can be found on the Ministry of Fisheries' website at <http://www.fish.govt.nz/en-nz/Environmental/Seabirds.htm>
8. At this point in time only commercial users of the resource, the most significant contributors to management costs, pay cost-recovery levies.

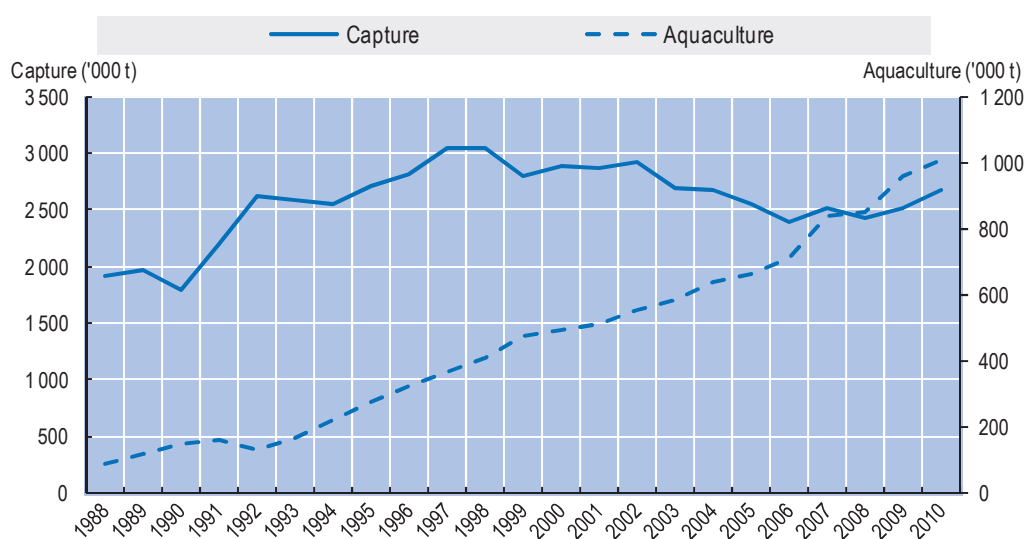
## Chapter 28

### NORWAY

#### Summary of recent developments

- In 2011, landings of fish by Norwegian registered vessels totaled 2.4 million tonnes, with a total first-hand value of NOK 16.1 billion. This implies a decrease in catch from the 2010-level of 2.8 million tonnes. The first-hand value increased from the 2010-level of NOK 13.3 billion. The overall value of Norwegian seafood exports in 2011 was NOK 53.4 billion, a slight decrease from NOK 53.8 billion in 2010. Of this, exports of caught fish accounted for NOK 22.4 billion whereas farmed fish accounted for NOK 31 billion.
- The state of the most important commercial fish stocks in Norwegian fisheries is good. The structural quota system (SQS), which was endorsed by Parliament in 2007, continues with small adjustments.
- Norway has continued efforts to combat IUU-fishing and organised crime related to fisheries at the national and international levels. Norway has prioritised efforts on issues related to discards and by-catch of marine resources and the protection of vulnerable marine ecosystems (VMEs).
- Aquaculture production of Atlantic salmon and rainbow trout increased from 994 115 tonnes in 2010 to 1 118 341 tonnes in 2011. The first-hand value of these species amounted to NOK 30.2 billion in 2010 and NOK 28.8 billion in 2011. Farming of other marine species is modest. Farmed cod is the third most important species, although production decreased from 2010 to 2011.
- In 2009, the Norwegian Government launched their *Strategy for an Environmentally Sustainable Norwegian Aquaculture Industry*. The Strategy identifies and discusses the industry's environmental challenges, sets a number of goals to ensure an environmentally sustainable aquaculture industry, and explains how to reach those goals. The strategy is the basis of policy changes made over the past two years.

Figure 28.1. Harvesting and aquaculture production



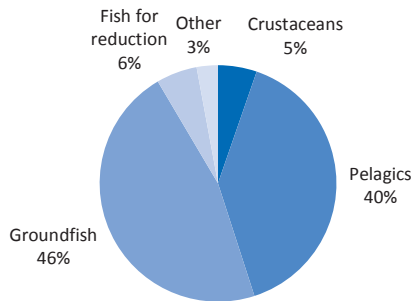
Source: FAO FishStat Database.

**Box 28.1. Key characteristics of Norwegian fisheries**

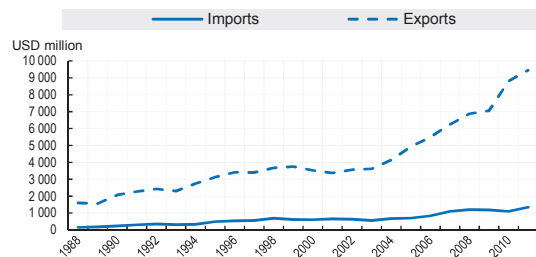
- In 2011, ground fish accounted for the largest share (46%) of Norwegian landings in terms of value, followed by pelagics (40%). Catches of ground fish species increased from 2010 to 2011, while catches of pelagics decreased in the same period. (Panel A)
- Norwegian seafood exports peaked in 2010 with an export value of NOK 53.8 billion. In 2011, the value of exports was slightly lower, NOK 53.4 billion, mainly due to falling prices of salmon in the second half of 2011. The quantity of seafood exports declined slightly from 2.7 million tonnes in 2010 to 2.4 million tonnes in 2011. As in previous years, the most important export market for Norwegian salmon was the European Union, which shows a downward trend. Approximately 95% of the production of seafood is exported. (Panel B)
- A total of USD 291 million was transferred<sup>1</sup> to the Norwegian fisheries sector in 2010, a decrease of USD 18 million (7.6%), compared to USD 270 million in 2008. About 75% of transfers in 2010 were spent on general services. (Panel C)
- While the number of commercial fishermen and vessels decreased by 10.8% and 18.3% respectively the number of fish farmers increased by 30.9% between 2006 and 2010. The Structural Quota system is assumed to be the main reason for the reduction in the number of larger coastal and offshore vessels. (Panel D)

**Figure 28.2. Key fisheries indicators**

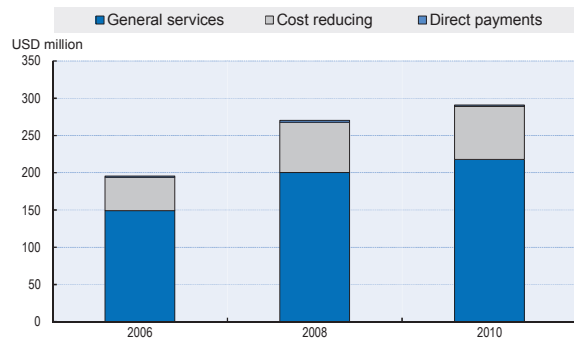
**Panel A. Key species landed by value in 2011**



**Panel B. Trade evolution**



**Panel C. Evolution of government financial transfers**



**Panel D. Capacity**

	2006	2011	% change
Number of fishers	14 568	12 993	-10.8
Number of fish farmers	4 222	5 527	30.9
Total number of vessels	7 722	6 310	-18.3
Total tonnage of the fleet	368 944	366 127	-0.8

1. Cost recovery charges (about USD 8.8 million in 2010) were not included here.

## Legal and institutional frameworks

The *Norwegian Ministry of Fisheries and Coastal Affairs* is responsible for the management of fisheries and aquaculture in Norway. In addition, the Ministry is responsible for seafood safety and fish health, trade policy, market access, infrastructures for sea transport and emergency preparedness for pollution incidents.

The primary legal resource is the *Participation Act* of 26 March 1999 relating to participation in fisheries and the *Marine Resources Act* of 6 June 2008 concerning the management of wild living marine resources. Most commercial fisheries are regulated by TACs which are allocated to various vessels groups on the basis of fixed allocations.

The main legislation for the aquaculture industry is the *Aquaculture Act* of 17 June 2006, replacing the *Fish Farming Act* of 1985 and the *Sea-Ranching Act* of 2001. The *Aquaculture Act* has a strong environmental profile, while also promoting profitability and competitiveness in the aquaculture industry. Aquaculture activities are regulated by the *Food Law*. The *Food Law's* purpose is to promote food safety, animal health and animal welfare. In addition, Norwegian aquaculture is governed by a number of regulations, which set out rules regarding license requirements, fish health and fish welfare as well as technological standards for fish farms.

The *Directorate of Fisheries* is an advisory and executive body for the Ministry on matters concerning fisheries and aquaculture administration. Its principal tasks are regulation, guidance, inspection, monitoring of resources and control. The *Institute of Marine Research* advises the Ministry and carries out central tasks in the investigation and monitoring of fish stocks and marine mammals, the marine and coastal environment and work on aquaculture and sea ranching.

## Capture fisheries

### Landings

Preliminary figures indicate that the total Norwegian landings decreased from about 2.8 million metric tonnes in 2010 to 2.4 million tonnes in 2011. The total first-hand value increased from NOK 13.3 billion in 2010 to NOK 16.1 billion in 2011. In 2009 the total first-hand value was NOK 11.3 billion. Value figures for seaweed are not presented for 2009 and 2010 due to few observations. The relative share of the landed value by the Norwegian fishing fleet is presented in Table 28.1.

**Table 28.1. The percentage share of landed value by the Norwegian fishing fleet, 2008-2011**

	2008	2009	2010	2011
Ground fish species	53.1	51.1	50.7	49.7
Pelagic fish	39.7	41.9	43.7	44.6
Shellfish	6.9	7.0	5.6	5.6
Seaweed	0.3	:	:	0.2
Total	100.0	100.0	100.0	100.0

The total catch of ground fish species increased by 6% from 2010 to 2011, while the total first-hand value increased by 18% in the same period. The total catches of pelagic species decreased by 24% from 2010 to 2011. Despite the reduced quantity the total first-hand value increased by 23% in the same period.

### *Employment and fleet structure*

The total number of commercial fishermen in Norway decreased from 12 993 in 2010 to 12 791 in 2011. The reduction consisted of 90 full-time fishermen and 112 part-time fishermen.

The number of fishing vessels registered in the *Register of Norwegian Fishing Vessels* decreased from 6 310 vessels in 2010 to 6 250 vessels in 2011. The *Structural Quota system* (SQS - c.f. 3.6.2) is assumed to be the main explanation for the reduction in the number of larger coastal and offshore vessels.

The number of fishing vessels in operation has been stable around 5 400 vessels the last three years. The number of vessels which makes up the population of the annual profitability survey of the fishing fleet has been relatively stable at a level of 1 700 vessels in the period 2005-10, but fell to just over 1 500 vessels in 2011.

The average age of the fishing fleet is high and was estimated to 26.2 years in 2010 and 26.4 years in 2011. 64 and 73 new vessels were built in 2010 and 2011 respectively. Most of these vessels were less than 15 m long.

### *Performance of the fleet*

The annual profitability study of Norwegian fishing vessels indicated that the profitability of the fishing fleet as a whole was good in 2010. Of a total of 13 vessel groups, 11 vessel groups showed a positive operating profit. The total operating revenues for the fishing fleet in the population were estimated to NOK 12.7 billion, while the total operating expenses were estimated to NOK 10.6 billion. Compared to the total catch value of NOK 13.3 billion, this indicates that the population of the annual profitability survey, catch more than 93% of the total catch value. This resulted in a total operating profit of NOK 2.1 billion in 2010.

The total first-hand value was higher in 2011 than in 2010. Fuel and lubrication oil costs continued to increase in 2011. The sharp increase in total first-hand value will probably result in increased operational profits in 2011, particularly in the pelagic sector. It is, however, difficult to provide the final results for 2011 due to lack of data. A general overview of the profitability of the Norwegian fishing fleet is provided in Table 28.2.

**Table 28.2. Performance of the Norwegian fishing fleet, 2008, 2009 and 2010**

	2008	2009	2010
Registered vessels	6 785	6 506	6 310
Population <sup>1)</sup>	1 716	1 776	1 731
Total operating revenues (Million NOK)	10 948	10 977	12 703
Total operating expenses (Million NOK)	9 575	9 518	10 614
Total operating profit (Million NOK) <sup>2)</sup>	1 373	1 459	2 089
Operating margin <sup>3)</sup>	12.5%	13.3%	16.4%

1. The population consists of vessels which have an income from fishing above a specific minimum level (relative to length categories). Before 2009, there were also criteria related to how many months the vessels had landed fish and that the vessels were more than 8 meters.
2. Total operating profits is the economic result of the activities of the firm; defined as total operating revenues over total operating expenses.
3. Operating margin expresses how much is earned on every NOK 100 in sale. Operating margin is given as (Operating profit/Operating revenues) \* 100.

### *Status of fish stocks*

Table 28.3 gives the latest assessments (Spring 2012) prepared by the *ICES Advisory Committee* (ACOM) regarding the most important commercial fish stocks in waters under



Norwegian fisheries jurisdiction. The table gives information on the stock situation, spawning stock biomass (SSB) and spawning stock reference points ( $B_{pa}$ ), actual fishing mortality and fishing mortality reference points ( $F_{pa}$ ), proposed by ACOM. The status of these stocks is considered good.

**Table 28.3. Status for the most important species in Norwegian fisheries**

Species	Spawning stock biomass (1000 tonnes)		Spawning stock reference point ( $B_{pa}$ ) (1000 tonnes)	Estimated fishing mortality		Fishing mortality reference point ( $F_{pa}$ )
	2010	2011		2010	2011	
<b>Ground fish species</b>						
Northeast Arctic cod	1 365	1 857	460	0.23	0.26	0.40
Cod in the North Sea and Skagerrak	52	56	150	0.58	0.57	0.65
Northeast Arctic haddock	350	445	80	0.26	0.39	0.47
Haddock in the North Sea and Skagerrak	183	205	140	0.23	0.30	0.70
Northeast Arctic saithe	383	351	220	0.37	0.35	0.35
Saithe in the North Sea and Skagerrak	248	217	200	0.29	0.28	0.40
<b>Pelagic species</b>						
Norwegian spring spawning herring	9 176	7 900	5 000	0.16	-	0.15
Herring in the North Sea and Skagerrak	2 005	2 343	1 300	0.08	0.09	0.25
Mackerel	2 992	2 908	2 300	0.26	-	0.23
Barents Sea capelin <sup>1</sup>	2 051	2 115	<sup>2</sup>	<sup>2</sup>	<sup>2</sup>	<sup>2</sup>
Blue whiting	3 043	2 370	2 250	0.18	-	0.32

1. Maturing biomass.

2. Due to its special population dynamics, i.e. it dies after spawning, precautionary reference points for the SSB and fishing mortality are not relevant for capelin.

### Access

Consultations on bilateral fishing arrangements for 2009, 2010 and 2011 were held together with Russia, the European Union, Iceland, the Faroe Islands and Greenland. The objectives of these fisheries negotiations are to agree on total allowable catches (TACs) 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 on capelin, a coastal state agreement on blue whiting with Iceland, Faroe Islands and the European Union and a coastal state agreement on Norwegian spring spawning herring with Russia, European Union, Faroe Island and Iceland. The coastal states, Norway, the European Union, the Faroe Islands and Iceland, did not reach an agreement on mackerel for 2010, 2011 nor 2012. However, *ad hoc* regulations on the management of mackerel have been established in NEAFC for these years. Consultations will continue in 2012 with the aim to reach an agreement by 2013.

### Management of commercial fisheries

#### *Management instruments to regulate the fisheries*

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 overall Norwegian fish quotas are allocated to different vessel groups,

and the quotas are then distributed between the vessels holding the necessary licenses (offshore fleet) or annual permits (coastal fleet) to participate in the groups. Each vessel is regulated with *Individual Vessel Quotas (IVQs)* set at a level where the vessel is guaranteed its quota, or at a level which implies moderate competition between vessels in the group.

Approximately 95% of the landed value of fish is regulated through annual TACs (*output control*). The Norwegian *input control system* relates to vessels which are allowed to join the various commercial fisheries and to persons who are allowed to own fishing vessels. In addition to the input and output control system, a series of technical regulations are established.

Table 28.4 list TACs and national quotas in 2010 and 2011 for some of the most important species in Norwegian fisheries, agreed upon by Norway and other parties, and specified on economic zone/area and on agreement.

**Table 28.4. TACs and national quotas in 2010 and 2011 for some of the important species in the Norwegian fisheries**

Species	The economic zone/area	Agreement between Norway and	TAC (1 000 tonnes)		National quota (1 000 tonnes)	
			2010	2011	2010	2011
Cod	North of N62°N <sup>1, 8</sup>	Russia	628 000	724 000	282 729	337 269
	North Sea	European Union	35 229	30 063	5 607	4 729
	Skagerrak	European Union	5 033	4 295	163	139
Haddock	North of N62°N <sup>2, 8</sup>	Russia	243 000	303 000	122 859	155 470
	North Sea	European Union	35 794	34 057	7 366	6 618
	Skagerrak	European Union	2 201	2 095	93	88
Saithe	North of N62°N <sup>8, 9</sup>		204 000	173 000	182 950	151 950
	North Sea	European Union	107 044	93 318	55 733	48 596
Herring	North of N62°N <sup>3, 8, 9</sup>	<sup>4</sup>	1 483 000	988 000	894 630	586 197
	North Sea West of 4°W	European Union	164 300	200 000	46 440	57 154
	Skagerrak	Sweden, Denmark	33 855	30 000	4 515	4 001
Capelin	North of N62°N	Russia	360 000	380 000	245 000	275 000
	Iceland, Jan Mayen and Greenland <sup>5</sup>	Iceland, Greenland	150 000	390 000	28 431	48 611
Mackerel	North Sea, North of 62°N and west of 4°W <sup>8, 9</sup>	European Union	-	-	180 424	183 069
Blue whiting	International waters	<sup>6</sup>	540 000	40 100	191 540	9 687
Redfish	Greenland	European Union	-	-	1 500	-
Shrimp	Skagerrak	Sweden, Denmark	-	-	4 567	3 882
	Greenland	European Union	-	-	3 100	3 100
	NAFO	NAFO	-	-	992 <sup>7</sup>	-

1. Norwegian coastal cod included.

2. Norwegian coastal haddock included

3. Norwegian spring spawning herring

4. Due to a coast stat agreement between EU, Norway, Iceland, Faeroe Islands and Russia.

5. Quotas for the 2009/2010- and 2010/2011-seasons

6. Due to agreement between EU, Norway, Faeroe Islands and Iceland.

7. "Days at Sea"

8. Quotas for research and education purposes are included

9. Quotas for bait are included.

The national quota of minke whale was set at 1 286 animals in 2010 and 2011. Eighteen and 19 vessels participated in the hunt in 2010 and 2011, respectively.

The quotas for harp seal in the Barents Sea were set at 7 000 in 2010, 2011 and 2012. In the areas around Jan Mayen the quotas for harp seal were 42 400 in 2010, 42 400 in 2011 and 25 000 in 2012. In addition, there are quotas on coastal seal for recreational hunting only. One and four vessels participated in the commercial hunt for seals in 2010 and 2011, respectively.

#### *Regulatory instruments for capacity adjustment*

In June 2007, the Norwegian Parliament approved with the continuation of the Structural Quota System (SQS) for the coastal and offshore fleets, although with modifications. SQS is a system for merging quotas from one or more vessels into one vessel, with a scrapping requirement for the vessel that give up its license/permit (which is referred to as the structural quota). The SQS for the coastal fleet was extended to include vessels between 11 and 15 meters, and a time limitation of 20 years on the structural quotas was re-introduced (25 years for quotas already allocated). It was further decided to terminate the decommissioning scheme in 2008 (however, it was prolonged to 2009), and to evaluate the introduction of structural quota for the vessels between 11 and 15 meters

In 2009, The Ministry of Fisheries and Coastal Affairs conducted an evaluation of the introduction of the structural quotas for coastal vessels between 11 and 15 meters. The evaluation concluded that this system has been more effective than the decommissioning scheme in reducing harvest capacity in the fishing fleet and there was little geographical redistribution of fishing permits.

#### *Management of recreational fisheries*

Recreational fisheries (sports fisheries) at sea are regulated by the Marine Resource Act. The Act gives authorities the ability to regulate both sports fisheries by foreign tourists and recreational fisheries by Norwegian citizens.

In the autumn of 2010, the Ministry of Fisheries and Coastal Affairs appointed a Working Group on Sea Angling Tourism. This decision was based on concerns about certain local fish stocks and the need for more knowledge concerning total outtake due to the sea angling tourism industry. The main objective of the working group was to present different measures for regulation of economic activity based on sea angling. The report from the working group was finalised in 2011. The Ministry has conducted a written hearing of the report and will follow up and evaluate the measures for implementation in the near future.

#### *Aboriginal fisheries*

Norwegian fisheries authorities acknowledge its international obligations to maintain a traditional Sami fishery, which is mainly carried out in the coastal areas in the northern part of Norway. In February 2008 a committee with the mandate to consider the rights of Sami people to fish resources off the coast of the northernmost county, Finnmark, delivered an *Official Norwegian Report* on this issue.

The follow-up of this report has been successful. After an extensive public hearing and a series of consultations with *Sámediggi* (*the Sami Parliament*), the Ministry of Fisheries and Coastal Affairs and *Sámediggi* agreed on a set of measures to strengthen the local fisheries and management in the northernmost areas of Norway. The agreement includes the establishment of a right to fish, on certain terms, for people that reside in Finnmark and Sámi areas in the counties of Troms and Nordland, and an increased participation in decision-making through the establishment of a local fjord fishing advisory board.

On 11 June 2012, a majority of the Norwegian Parliament adopted the proposed amendments into a legal framework. The Government is currently implementing the measures related to the establishment of the local fjord fishing advisory board.

### ***Monitoring and enforcement***

In order to manage the different fisheries properly, an extensive system to control the fishing activity and the fishing fleet has been established. The control and enforcement system in Norway has three cornerstones: the Coast Guard, the Directorate of Fisheries, and the sale organisations.

Fighting IUU-fishing has been high on the Norwegian Government's agenda for several years, and Norway has taken an active and broad approach to handling these challenges on both the national and international levels.

The Norwegian national advisory group against organised IUU-fishing (FFA) was established in 2009. The purpose of this project is to establish a closer co-operation between different Governmental agencies in the work against illegal, unregistered and unreported fishing. The project is a co-operation between the Ministry of Fisheries and Coastal Affairs, Ministry of Defense, Ministry of Justice and the Ministry of Finance. These ministries, in addition to the Higher Prosecuting Authority, are represented in steering committee of the project.

The project is a network of professional analysts from the Directorate of Fisheries, Norwegian Coast Guard, Police, Taxation Department, Customs Department and the Norwegian Coastal Administration. To reflect the expanding challenges caused by illegal activities in the fishing industry, the Norwegian Government have strengthened the project by employing an additional person in the FFA-secretariat.

### ***Multilateral agreements and arrangements***

Norway participates actively in regional fisheries management organisations (NEAFC, NAFO, ICCAT, CCAMLR, SEAFO, and NAMMCO) and in other global forums which are involved with issues related to marine management, including the UN, FAO, OECD, IWC, IUCN and CBD.

Norway actively promotes the work of developing global binding instruments to combat IUU-fishing (Illegal, Unreported and Unregulated fishing) and reduce discards and by-catch of marine resources. The Agreement on port state measures to prevent, deter and eliminate IUU-fishing was approved by the FAO conference at its thirty-sixth session on 22 November 2009. This is a major step to reduce IUU-fishing globally. In February 2011 the *Committee of Fisheries* in FAO endorsed the international guidelines on by-catch management and reduction of discards. In November 2011 Norway, Sweden and Denmark signed a joint Ministerial Declaration on the introduction of a ban of discards of fish in the Skagerrak Sea.

The need to protect vulnerable deep-sea habitats and species has gained increased attention in recent years. Norway has emphasised the importance of implementing measures to protect vulnerable marine ecosystems in the high seas in several RFMOs, in particular NEAFC. The adoption of such measures is an element in the implementation of the UN fisheries resolution 61/105 and 64/72 and the FAO guidelines on deep-sea fishing.

Another important aspect for Norway is to work for the international recognition of illegal fishing as transnational organised crime. Norway is of the opinion that there exist clear links between different types of transnational organised crime and organised IUU-fishing. Several studies and reports have pointed out such connections. Norway has raised this issue in several international meetings, and has i.a. been a contributor both economically and substantially to

the foundation of an ad hoc fisheries crime working group in Interpol. The permanent fisheries crime working group is going to be formally established in February 2013.

*The United Nations Office on Drugs and Crime (UNODC)* has been, with economic support from Norway, working on a study on transnational organised crime in the fishing industry. The report was finalised in 2011. One of the main conclusions was the severity of the abuse of fishers trafficked for the purpose of forced labour on board fishing vessels. The report also found that marine living resources have become a high profit/ low risk target for criminals, and that there are several aspects of the fishing industry that makes it especially vulnerable to transnational organised crime, such as corruption, smuggling of migrants, illicit traffic in drugs and weapons and acts of terrorism .

Norway is also concerned about the illicit flow of money from the proceeds of illegal fishing through the use of tax havens. Furthermore, as OECD several times has pointed out, Norway also wants to focus on the link between flags of convenience and tax havens in order to achieve greater transparency relating to ownership and control of fishing vessels. These issues have been raised in the *Task Force on Financial Integrity and Economic Development* during the conference in September 2010 and 2011, and also in the *OECD Task Force on tax crime and other crimes*.

## Aquaculture

### *Policy changes*

The Norwegian Government's *strategy for an environmentally sustainable Norwegian aquaculture industry* was presented in April 2009 and is the foundation for policy changes made during the past two years. The strategy identifies five major areas where aquaculture may have negative impact on the surrounding environment. The strategy presents the status, measures taken, goals to be achieved and new measures for each of the five areas: (1) genetic interaction and escapes; (2) pollution and discharges; (3) disease, including parasites; (4) area utilisation; and (5) feed and feed resources.

The political platform of the Norwegian Government states that it will facilitate further growth in aquaculture, provided it is environmentally sustainable. Escapes and sea lice are considered the main short term challenges and given highest priority. A number of the most important questions, for instance the level for acceptable environmental footprint of salmon farming, will be discussed in an upcoming White Paper about the Norwegian seafood industry.

The Norwegian government has taken many steps to prevent the escape of farmed fish. One measure is the revision and strengthening of the technical standard for aquaculture installations (NS 9415). A similar standard for land-based production facilities is under development. In addition, a recent measure was put in place to limit the number of fish in each net pen to 200 000 individuals. By posing requirements for the standard of net pens, i.e. reducing the probability of escape, as well as limiting the size of each net pen, i.e. reducing the consequence if an entire net pen should collapse, these measures in combination effectively reduce the risk of escapes.

Sea lice is one of the most prevalent environmental challenges facing salmon farming in Norway today. The number of lice per farmed fish is currently low and does not represent a direct health or welfare problem for the farmed fish. However, given the amount of farmed fish in Norwegian fjords and thereby the high number of hosts for salmon lice, the lice population in Norwegian fish farms could in some areas represent a potential threat for wild salmonids. As lice mainly is considered a problem for the wild salmonids, the Government's strategy is to shift the focus from considering the sea lice threshold in fish farms only, to also

take the sea lice infestations on wild salmonids into account. Consequently, the regulation of sea lice has become significantly stricter during recent years.

The production growth in Norwegian salmon farming means there is an increasing demand for fish feed. Although fish feed producers today have developed feed consisting of more than 70% vegetable substitutes, the salmon is a carnivorous fish and therefore dependent on a protein rich diet. An important contribution to secure sufficient raw material in the short term, is to combat IUU-fishing and discards, and to improve the utilisation of the entire fish.

The Aquaculture Act of 2005 is currently under review, and several changes are due in July 2013, subject to a public consultation process and the approval by the Parliament. In short, the Ministry proposes the following changes:

In order to separate wild and escaped farmed salmon, and to find the responsible farmer after escape incidents, the Ministry proposes to give a legal basis to introduce mandatory tagging of aquaculture animals. Furthermore, the Ministry proposes to give a legal basis to introduce mandatory use of sterile fish. The use of sterile fish will reduce the consequences of escape incidents in salmon farming, as it prohibits farmed salmon from spawning with wild salmon. However, as the use of both sterile fish and mandatory tagging raises questions concerning animal welfare, an actual introduction of these requirements is therefore unlikely in the short term.

In order to finance the removal of escaped aquaculture animals (salmon), the Ministry proposes to establish a pool, financed by the entire salmon aquaculture industry, which will cover the cost to remove escaped farmed fish from a representative numbers of rivers.

Moreover, several adjustments are proposed regarding the penal provisions of the law, among them a revised system for administrative sanctioning. The new system introduces a regime of control liability. In the new system, only companies can be given administrative fines. Private individuals may still be subject to prosecution, but this requires gross negligence on the individual's behalf.

The supervisory authority will, according to the proposal, be given a legal basis to exchange information with other supervisory authorities and instruct the aquaculture industry to provide information electronically.

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

Norwegian sea-farms are predominantly open cage systems. A license for farming of salmon and trout normally covers two or three locations. The purpose of giving the license holder more than one location is to reduce the risks of disease and local environmental pollution. As of 2011, there were 1 067 licenses for farming of salmon and rainbow trout, 1 012 of which were active.

Approximately 5 800 persons were registered as directly employed in the aquaculture sector in 2011. When including spin-off effects, studies show that the industry contributed approximately 21 100 man-years in 2010.

In 2011, for the first time ever, Norwegian production of Atlantic salmon surpassed 1 million tonnes. In addition, Norwegian fish farmers produced approx. 58 000 tonnes worth of rainbow trout, 15 000 tonnes of cod, 2 800 tonnes of halibut, 1 900 tonnes of shellfish, 300 tonnes of Arctic char, as well as smaller quantities of turbot and other marine species. Farmed fish represents close to 60% of the total export value of fish and fish products in Norway.

The profitability of farming of Atlantic salmon and rainbow trout depends on the development in output prices as well as production costs. From 2008 to 2010 there was a significant increase in the profitability due to higher prices. However, annual reports from the

Norwegian Directorate of Fisheries show that production costs on average have been on the rise since 2005 after remaining stable since the mid-1990s. Rising production costs are in large part due to rising prices of feed. Historically, the Norwegian fish farming industry has displayed considerable increases in productivity. In 1995 production per man-year was only 152 418 kg while production per man-year in 2010 was estimated to 368 801 kg. More details are available on the Norwegian *Directorate of Fisheries* website ([www.fiskeridir.no](http://www.fiskeridir.no)).

## 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 and coexistence with other activities, both along the coast and within Norway's EEZ.

The introduction of ecosystem based management plans is an important part of this. In 2006 the government submitted a White paper to the Norwegian Parliament about a new, integrated management plan for the Barents Sea and the areas off the archipelago of Lofoten (revised in 2011). In 2009 the government submitted a White paper about an integrated management plan for the Norwegian Sea. It is expected to finalise an integrated management plan for the North Sea within 2013.

These management plans balance the various interests for use of the area with an aim to secure a sustainable harvest of the marine living resources, secure biodiversity and conservation of vulnerable habitats, secure safe shipping activities and allow for the exploitation of the oil and gas resources of the area.

Today, most fisheries are managed on species by species basis. Consistent with the Marine Resources Act, Norwegian authorities aim at a stepwise approach to ecosystem management, which takes into account, both the interactions between species, and between species and the surrounding physical environment.

The protection of vulnerable marine ecosystems (VMEs) has in recent years become an important topic in international environmental organisations (c.f. 3.8). The Ministry has implemented a number of restrictive measures to protect fish stocks, biodiversity and benthic habitat from adverse influence from harvest activities. Many of these measures are in our view, fully adequate to meet the MPA-standards set by IUCN. Gear restrictions, by-catch limitations, temporary closure of areas and prohibitions against bottom trawling are examples of such effective measures pursuant to the Marine Resources Act. Taking these measures into account, Norway has a network of suitable protected areas, balancing the use and conservation of habitats and resources in a sustainable way.

The emphasis on environmental sustainability is also reflected in the management of the aquaculture industry. As mentioned above, in 2009 the Norwegian Government launched a *Strategy for an Environmentally Sustainable Norwegian Aquaculture Industry*. The strategy was devised in co-operation with the industry and is an important tool for the Government and the industry in defining indicators for environmental sustainability. Aquaculture must be sustainably operated to ensure that future generations can benefit from marine resources.

## Government financial transfers

### *The General Agreement*

The *General Agreement* between the Norwegian Government and *The Norwegian Fishermen's Association* was signed in 1964. The purpose of the *General Agreement* was to ensure that through government financial support, fishermen would reach same income levels as the average industrial worker.

The Norwegian Government terminated The *General Agreement* from 1 January 2005. Some of the elements of the Agreement has however been prolonged, including an income support scheme, transportation support and support to the sealing industry. The most important schemes are further described below.

### *Income support*

The minimum wage scheme for fishermen was established to support fishermen when the income from the fishing activity is insufficient, due to reasons beyond the fisher's influence, such as long periods of bad weather, extraordinary ice conditions, etc. The weekly pay depends on how much a person entitled to support has received over this scheme during the past three years compared to a maximum payable amount. Recipients of funds from this scheme are basically fishermen on smaller vessels with low activity levels.

In 2011 NOK 2.8 million was paid out through this scheme, while the amount in 2010 was NOK 9.8 million. The amount in 2010 was considerable higher than in 2011 due to some temporary changes in the scheme following the financial crisis in 2008 and 2009.

### *Transportation support*

The transportation support scheme is established to reduce cost disadvantages caused by geographical or structural conditions. The support is important in order 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 2010 and 2011 NOK 33 million was allocated for both years.

### *Support to the sealing industry*

Support to the Norwegian sealing industry is given in order to improve the profitability of the industry. According to the Norwegian interpretation of an ecosystem-based management regime, sealing is considered a necessity. Hence, a profitable industry is an essential basis for rational and sustainable harvesting of marine mammals, and support is given as an incentive for sealers to catch the current quota.

In 2011, four vessels participated in the Norwegian sealing, receiving NOK 7.5 million in support. In addition NOK 3 million was allocated to the landing facilities.

### *General services*

The total cost of fisheries management as per cent of the catch value has decreased the last few years from about 10% in 2009, down to approximately 8.3% in 2010 and 7.3% in 2011. This is mainly due to increased catch values and stable costs of general services. The cost of general services related to the catching sector is presented in Table 28.5.

**Table 28.5. General services: The catching sector (thousand NOK)**

	2009	2010	2011
Ministry of Fisheries	36 070	35 481	37 067
Membership in international organisations	6 698	10 628	9 378
Institute of Marine Research	239 119	255 531	263 390
Operations of research vessels	111 842	125 855	126 164
Directorate of Fisheries	282 039	251 386	280 824
Coast Guard	522 151	472 361	498 888
Total	1 161 849	1 111 5761	1 178 644



## Post-harvesting policies and practices

### *Food safety and quality*

Food safety and food quality are areas of great importance. A comprehensive and coordinated strategy is necessary to meet the consumers' increasing expectations and demands. Norway has adopted the "EU hygiene package" with regulations concerning food safety issues. Norway also contributes to food safety in the EEA area by checks at its outer border through Border Inspection Posts (BIP), and in the EU border control regime for fish and fishery products originating from countries outside the EEA-area.

The *Norwegian Food Safety Authority* controls producers and processors along the entire food chain. The Norwegian fish industry is responsible for seafood safety and quality, as well as fish health and welfare and has implemented procedures based on the HACCP Principles. Commercial standards are developed and supervised by the seafood industry.

In relation to countries outside the EEA emphasis has been put on obtaining bilateral agreements with food safety and quality control authorities in countries representing important markets. One reason for this is an increasing demand for sanitary certificates for the export of fish and fish products to emerging markets.

### *Information and labeling*

Information and labelling must ensure adequate information and not be misleading. Norway focuses on the development of international quality standards and conformity assessment systems. It is important to ensure that technical regulations and standards, including packaging and labeling requirements, do not create unnecessary obstacles to international trade.

### *Traceability*

According to the Norwegian Food Law, food businesses are responsible for tracking and tracing their products one step forward and one step back. Traceability records are vital when withdrawing unsafe food from the market and to provide consumers with precise information. Traceability can also be used for marketing purposes, to document claims on certain product qualities. Norway finds international common standards for the traceability of seafood important to facilitate traceability along the entire food chain.

## Markets and trade

### *Markets*

#### *Trends in domestic consumption*

Growing sales of consumer-packed ready-to-eat products of seafood, and especially salmon and trout, has been the predominant trend in Norwegian grocery stores and supermarkets in recent years. Growing sales of seafood is mainly due to product innovations as well as increased promotional efforts from the Norwegian Seafood Council (NSC). According to figures from FAO, domestic consumption of fish and fish products in Norway in 2009 was 21.5 kg per capita (approximately 51.4 kg round weight).

#### *Promotion*

The NSC is financed by Norwegian seafood exporters and aims to develop markets for Norwegian seafood home and abroad through generic marketing. The NSC is organised as a holding company and is 100% owned by the Norwegian Ministry of Fisheries and Coastal

Affairs. The NSC operates under the Fish Export Act of 1990 and the Fish Export Regulation of 1991. The NSC budget for 2012 is NOK 414 million.

The NSC's activities encompass marketing and PR as well as gathering information about important markets for seafood, market access and provision of response if situations of emergency occur in the market. The council has its main office in Tromsø, in addition to subsidiaries in 12 countries (Sweden, France, Germany, Spain, Portugal, Italy, Brazil, Japan, Singapore, China, the United States and Russia).

## **Trade**

### *Volumes and values*

Norwegian seafood exports reached its highest level in 2010 with an export value totaling NOK 53.8 billion. In 2011, the value of exports was slightly lower, NOK 53.4 billion, in large part due to falling prices of salmon in the second half of 2011. The quantity of seafood exports declined slightly from 2.7 million tonnes in 2010 to 2.4 million tonnes in 2011 (product weight). As in previous years, the most important export market for Norwegian salmon was the European Union, destination for 58% of all seafood exports from Norway. The European share of Norway's total seafood exports is however displaying a downward trend, as exports to Asia and especially Eastern Europe are growing rapidly. Approximately 95% of the production of seafood is exported.

### *Trade policy*

A rule-based multilateral trade regime within the framework of WTO is important to maintain and to develop further. As tariff barriers are reduced globally, non-tariff barriers as for example veterinary measures have increased. WTO is therefore highly important for the Norwegian seafood industry. Through the co-operation in EFTA, Norway has concluded 24 free trade agreements including 33 trading partners. EFTA is presently negotiating with India, the customs union between Russia, Kazakhstan and Belarus, Indonesia, Viet Nam and countries in Central-America. Seafood trade between Norway and the European Union is regulated by Protocol 9 of the EEA agreement.

### *Policy changes*

Anti-dumping measures have been targeted at Norwegian seafood in the past, both in the European Union and in the United States. However, in January 2012, the last of the anti-dumping measures was lifted when the United States removed the 60% duty on fresh whole salmon from Norway. This means that for the first time since 1991, no such measures are taken against Norwegian seafood.

## **Outlook**

### ***Fisheries and environment***

Norway will continue to provide for a sustainable and economically profitable management of the living marine resources. Special importance shall be given to a precautionary and ecosystem based approach that accounts for habitats and biodiversity when managing marine resources. In this regard Norway will continue to work for the conservation of vulnerable deep sea habitats on a national and international level (cf. 3.8 and 5).

When developing measures to protect marine ecosystem, knowledge about sea floor structures and bottom habitats in Norwegian waters is important. Currently this knowledge is limited. Norway will therefore continue an ongoing research programme, MAREANO, which

is aimed at developing a systematic mapping of the sea floor, biological structures and bottom biology.

Integrated management plans are important political instruments in areas where different activities like petroleum exploration and exploitation, necessary transport corridors for ship traffic, offshore windmills and all kinds of bio-prospecting compete with traditional fisheries. All activities must be regulated and coordinated, and balance must be struck between the various interest involved. The integrated management plan for the North Sea is expected to be finalised in 2013.

### ***The traditional fishing industry***

Parts of the Norwegian fish handling industry have struggled in recent years in the aftermath of the global financial crisis, particularly the cod sector. However, an improved stock situation for most of the important commercial fish stocks bodes well for the upcoming years.

The marked based capacity reducing instruments (*Structural quota system*) will continue to provide for efficiency and profitability and make the fleet robust to handle increased fuel prices and keep up with general productivity growth and increased competition. The authorities must on a regular basis assess whether the instruments available provide for these objectives, or if there is a need for adjustment.

### ***Markets***

Approximately 95% of all seafood produced in Norway is exported with European Union as the most important market. In spite of the economic downturn in Europe, exports of salmon and trout from Norway have remained strong. Exports to Eastern-Europe and Asia are growing.

Exports of whitefish and pelagic fish have also held up well. It is however difficult to predict the future prospects for the whitefish market. Exports are dependent on demand in a handful of important markets, i.e. Spain, Portugal and Italy, which are all hit hard by the financial crisis. In addition, the Barents Sea cod quota will reach record levels in 2013, which may influence prices.

After peaking in mid-2011, prices of salmon declined dramatically in the second half of 2011. Since then, prices have returned to a more historically normal level. In 2012, price increases of fish feed and fish oil, and particularly vegetable oil, have led to higher prices of fish feed and thereby higher production costs. Feed costs now account for up to 55% of total costs for the typical salmon farmer. The salmon farming industry therefore depends on fish feed producers to find new ways to supplement the diet of the farmed salmon.

### ***Aquaculture***

The Norwegian Government's stance is that production growth in the aquaculture industry should be environmentally sustainable. Environmental concerns related to sea lice and escaped fish are important challenges which need to be solved. The Norwegian government is currently evaluating whether to allow an increase in the production capacity in the salmon and trout farming industry. A decision on the matter will likely be announced within the end of 2012.



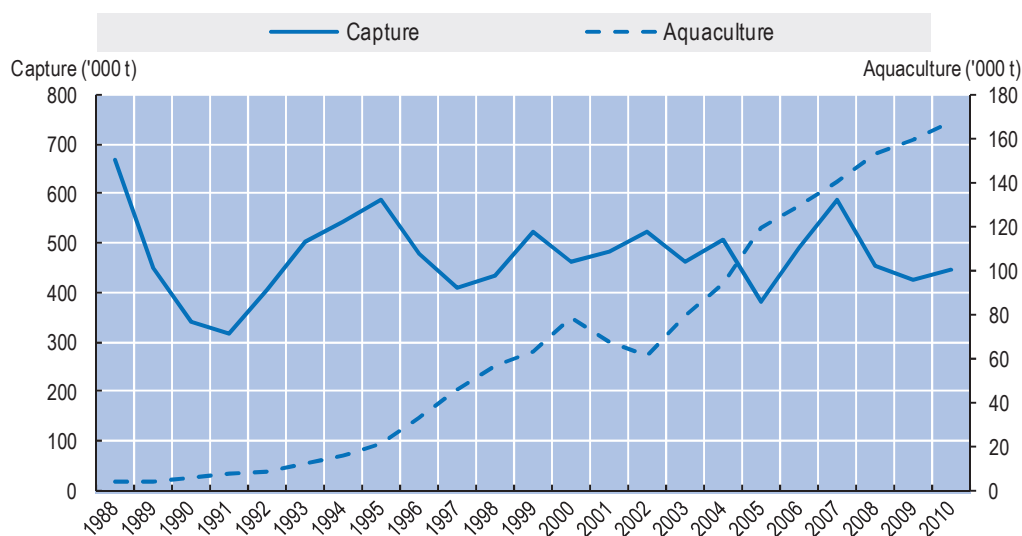
## Chapter 29

### TURKEY

#### Summary of recent developments

- In 2010, total fishery production in Turkey was 653 080 tonnes, a 4.8% increase compared to 2009, comprising marine fisheries 68% (445 680 tonnes), aquaculture 26% (167 141 tonnes), and inland fisheries 6% (40 259 tonnes). Of this total, 505 059 tonnes was for domestic consumption and 168 073 tonnes for fish meal and oil factories.
- The Ministry of Food, Agriculture and Livestock (MoFAL) has imposed the application of EU regulation on IUU N°1005 since 1 January 2010, making obligatory the declaration of landings and fish sales. Sales documentation for exports must include this information before provincial inspectors will issue the necessary papers. Traceability of products is now systematic and all records are kept in the Fisheries Information System.
- As income level increases, the pattern of retail sales is changing rapidly towards supermarket shopping, although this is still possible for only about one-fifth of the population. But as per capita incomes increase and multiple retailers (large companies) invest, the share of supermarkets and hyper markets will continue to increase while the total number of traditional grocers declines.

Figure 29.1. Harvesting and aquaculture production



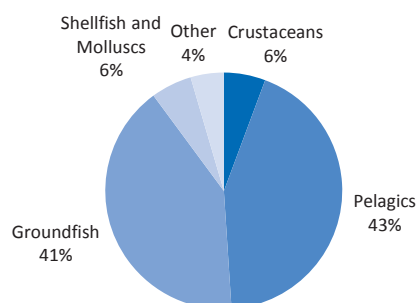
Source: FAO FishStat Database.

### Box 29.1. Key characteristics of Turkish fisheries

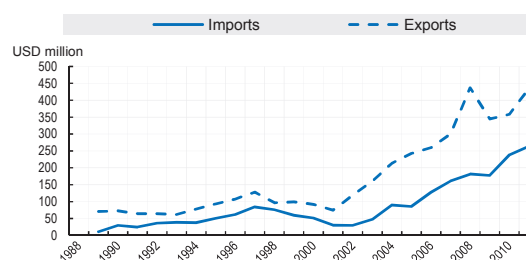
- The most important species landed in 2010 in terms of value were pelagics (43%), followed by groundfish (41%), crustaceans (6%), and shellfish and molluscs (6%). (Panel A)
- In 2010, the value of imports and exports of fish and fish products was USD 238 million and USD 358 million respectively. While the main species imported are mackerel, pilchard, anchovy, tuna and salmon group, the main species exported are sea bream, sea bass, trout, tuna, bivalves and molluscs. (Panel B)
- Note: Trade definition comprises HS1988/92 codes 302 to 307, 121220 (seaweeds human cons.), 1504 (fish fats), 1604 (fish preparations), 1605 (crustaceans), 230120 (fish flours).
- In 2010, a total of USD 180 million was transferred to the fisheries sector by the Turkish government, which is a 10.2% decrease compared to 2008. General services accounted for 52.5% of the total and cost reducing transfers accounted for the rest. (Panel C)
- There was a 45.2% decrease in the number of Turkish fishermen between 2005 and 2010. The number of fish farmers increased by 11.6% during the same time period. No license has been issued for a marine vessel since 2002 in order to reduce catch stress on stocks and to maintain sustainable fisheries. (Panel D)

Figure 29.2 Key fisheries indicators

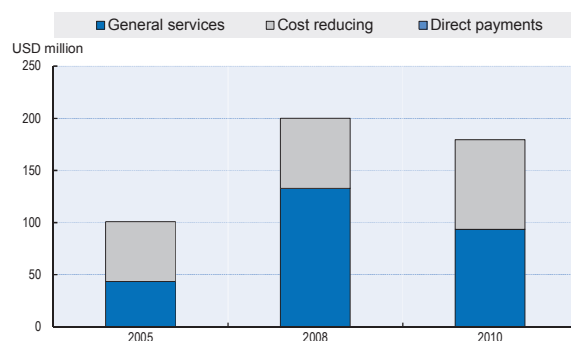
Panel A. Key species landed by value in 2010



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2005	2010	% change
Number of fishers	98 787	54 172	-45.2
Number of fish farmers	5 914	6 600	11.6
Total number of vessels	18 836	17 440	-7.4
Total tonnage of the fleet	195 165	185 807	-4.8

## Legal and institutional framework

All fisheries and aquaculture activities are based on Fisheries Law No. 1380 of 1971. With this law, and its related regulations, definitions were codified to regulate fisheries. Law No. 3288 of 1986 amended the Fisheries Law No. 1380 of 1971. According to Laws 1380 and 3288, and the Continental Waters Law No. 2674 of 1982, foreigners are not allowed to participate in commercial fishing activities.

In accordance with the Fisheries Law, commercial fisheries and sport fishing notifications are published annually in the Official Gazette. These notifications specify which species for which fishing is restricted, permitted mesh sizes, protected areas, species size and gear restrictions, fishing methods, and fishing seasons by species. The main laws and regulations related to fisheries and aquaculture are:

- Law No. 1380 of 1971, as amended by Law No. 3288 of 1986, on Fisheries.
- Law No. 2674 of 1982 on Continental Water.
- Law No. 1163 on Cooperatives.
- Law No. 3285 on Animal Health and Sanitation.
- Law No. 2872 on Environment.
- Law No. 5200 on Producer Unions.
- Implementing Regulation on Fisheries, No. 22223.
- Implementing Regulation on Aquaculture, No. 25507.
- Decree Law No. 560 with the same effect as Law, concerning production, consumption and inspection of foodstuff.

The Ministry of Food, Agriculture and Livestock (MoFAL) is the primary public organisation responsible for the management, organisation, protection, development and technical support of the fishery and aquaculture sector. It is composed of four General Directorates (GD).

- The aquaculture activities and the fishing activities and monitoring are under the responsibility of the GD of Fisheries and Aquaculture,
- The GD of Food and Control animal health, quality control and marketing chain executes,
- The GD of Agricultural Researches and Policies is responsible for fisheries researches,
- The GD of Agricultural Reform provides support for fisheries organisations (unions and co-operatives).

The other public sector institutions related to fisheries which support MoFAL are as follows.

- Prime Minister's Office, in particular the Under-Secretariat of Foreign Trade.
- Ministry of Development.
- Under-Secretariat of Customs.
- Ministry of Finance (DG Incomes).
- Ministry of Interior Affairs (Coastguard and Gendarmerie).

- Ministry of the Environment and Urban Planning (DG of Cultural and Natural Heritage, DG of Environmental Impact Assessment, DG of Environmental Management).
- Ministry of Water and Forestry (DG of Public Waterworks Administration).
- Ministry of Health (Institute of Public Health dealing with hygiene and the sanitary of fish and fish products).
- Municipalities (Quality control and conservation in the local open markets).
- Agricultural Bank (Credits).
- Turkish Standards Institute (TSE).
- Turkish Statistical Institute (TURKSTAT).

The State Planning Organisation prepares long-term development plans and annual programmes conforming to the targets of the sector as determined by the government and co-ordinates the activities of ministries and public institutions concerning economic, social and cultural policies to ensure efficient implementation. It also advises the government with regard to fishery policy issues.

Fisheries production data are gathered and evaluated by the State Statistics Institute in collaboration with the MoFAL. The institute uses a complete technique for large scale fishermen and sub-sampling for small scale fishermen.

The Under Secretariat of Foreign Trade of the Prime Ministry is the other public organisation which regulates fish exports and imports regime.

The Agricultural Bank of Republic of Turkey and Under Secretariat of the Treasury operate credit and incentive schemes to support the fisheries and aquaculture sectors.

The Scientific and Technical Research Council also plays an important role in organising and subsidising research activities.

The Export Promotion Centre of Turkey, which is the only public organisation in this field, acts as an intermediary in establishing business contacts between foreign importers and Turkish exporters to develop and promote Turkish fisheries exports.

Furthermore, there are 16 producer organisations (four marine and 12 inland) and all belong to the Central Producer Organisation based in Ankara. There is also a Fish Farmer Association, an Aquaculture Association, a Fish Promotion Association, and a Fisheries Foundation.

## Capture fisheries

### *Performance*

Turkey is a peninsula with a coastal line of 8 333 km and 177 714 km of rivers; the marine and inland water sources are approximately 26 million ha. There are 247 known species in the Black Sea, 200 in the Sea of Marmara, 300 in the Aegean Sea, and 500 in the Mediterranean. However, only a few species are of commercial interest and represent almost 60% of total Turkish production.

Turkey produces approximately 0.6% of the total world fishery production. Out of 225 countries, Turkey is ranked 30<sup>th</sup> in marine fisheries and 24<sup>th</sup> in aquaculture production. Official figures indicate that total fishery production in 2010 was 653 080 tonnes (Table 27.1), and was comprised of 68% of marine fisheries (445 680 tonnes), 26% of aquaculture (167 141 tonnes), and 6% of inland fisheries (40 259 tonnes).



**Table 29.1. Fishery and aquaculture production in Turkey in the past decade (tonnes)**

Year	Capture fishery production		Aquaculture production	Total fisheries production
	Marine	Inland		
2005	380 381	46 115	118 277	544 773
2006	488 966	44 082	128 943	661 991
2007	589 129	43 321	139 873	772 323
2008	453 113	41 011	152 186	646 310
2009	425 275	39 187	158 729	623 191
2010	445 680	40 259	167 141	653 080

The main species caught in Turkish seas are Anchovy, Sprat, sardine, Horse mackerel, Whiting, and Bonito. The most important species in inland capture are Common carp, Chub pearl and Sand smelt.

MoFAL has decided to stop licensing of fishing vessels in 2002. As the result of this decision, capture fish production is between 300 000 and 400 000 tonnes per year.

The inland capture fishery has been stayed almost the same quantities in total production but its value has been stabilising in recent years. The most important species in inland capture are Common carp, Pearl mullet and Sand smelt which account for about 70% of the inland capture production.

Although the production of fish caught in Turkish seas varies from year to year, nearly 57% of fish production comes from anchovy. Annual and seasonal anchovy production varies considerably. Sprat catch is the second with approximately 14% of the total fish production, followed by pilchard with 7%, horse mackerel, whiting, atlantic bonito and others.

The marine production differs according to the seas. The Black Sea is ranked at the first place in the total production because of the anchovy captured and followed by Marmara, Aegean and Mediterranean. More than 75% of production comes from the Black Sea.

According to the 2010 data, 64.0% of marine capture fishery production comes from the Eastern Black Sea Region and 12.0% from the Western Black Sea Region, followed by the Marmara Sea (9.1%), the Aegean (8.8%) and the Mediterranean (6.1%). While the fishery products obtained in inland waters by fishing done in rivers, dam reservoirs and natural lakes were 6 377 tonnes in 1967, they increased to 40 259 tonnes in 2010.

### ***Management***

National policy towards the fisheries and aquaculture sector has traditionally focused on stimulating production and has included both fisheries and aquaculture management and development measures. These management measures have focused on the control of fishing effort via restrictions on gear and equipment and the enforcement of fishing seasons. Law No. 1380 of 1971, as amended by Laws 3288 of 1986 and 4950 of 2003, is the framework law for all fisheries and aquaculture and related activities. The law provides the basis for the regulations and notifications, issued under the authority of the Minister, which are used to regulate the fisheries. Article 1 of the Law gives the scope of the Act — “protection, production and inspection of fishery products” — and Article 2 gives the definitions, including the fishery products, which are amplified by other regulations.

The Turkish Implementing Regulation on Fisheries, 1995, is the fundamental regulatory instrument for marine and inland fisheries. The regulation covers the following.

- Fishing license issue and formats.

- Provisions on production areas.
- Prohibition on explosives and hazardous substances.
- Fishing gear.
- Prohibitions, limitations and liabilities.
- Fishery product hygiene.
- Inspection and control.

The main mechanism for the regulation of fisheries is by way of Notifications which are issued half-yearly after consultations. Notifications are published and announced in the Official Gazette and they set the rules and general principles for technical measures. Technical measures by notifications include: gear restrictions and prohibitions; control measures for fishing areas; the establishment and extent of protected areas; seasonal limitations; species size limits; and capture prohibitions for species.

The Fisheries Information System (FIS) is comprised of a combination of resources organised to collect, process, transmit, and disseminate fisheries relevant data. The system is composed of modules that introduce and extract data to/from a centralised database. The different components that make up the FIS are catch information, sales notes, vessel monitoring system, fishery port offices, and fisheries coastal structures.

MoFAL put into force EU regulation on IUU N°1005 on 1 January 2010 and landing and fish sales declarations have since been applied. Provincial inspectors issue the necessary documents for catch exports based on this information. This also allows for the traceability of the product. All records are kept in the Fisheries Information System.

### ***Landing sites***

There are a total of 367 fisheries coastal structures, including 28 big fishing ports, 182 small fishing ports, 152 harbour launches and five commercial ports. Forty-seven per cent of fisheries coastal structures is located in the Black Sea, 24% in the Marmara Sea, 23% in the Aegean, 5% in the Mediterranean, and 1% in inland waters. In addition, the Ministry of Food Agriculture and Livestock has completed the construction of 41 fishing ports.

Fishermen must have both a fishing and a vessel license. Licenses are issued by the provincial directorates of the Ministry. No license has been issued for a marine vessel since 2002 in order to reduce catch stress on stocks and to maintain sustainable fisheries. There are 16 650 licensed fishing vessels in Turkey.

The fishing gears used in catching are long lines, set long lines, shrimp trawlers, mid-water trawler, trawler and purseseiner. Catch permissions for trawlers and purseseiner are necessary for vessels longer than 12 m. Eighty-five per cent of the fisheries fleet consists of vessels smaller than 10 m. Fleet records are kept in an internet-based vessel register system for the whole country.

### ***Multilateral agreements and arrangements***

Multilateral agreements and arrangements on fisheries that Turkey is involved include the following.

- Food and Agriculture Organization of the United Nations (FAO), Committee on Fisheries (COFI).
- Organisation for Economic Co-operation and Development (OECD), Committee for Fisheries.

- European Inland Fisheries and Aquaculture Advisory Commission (EIFAAC).
- General Fisheries Commission for the Mediterranean (GFCM).
- International Organization for Development of Fisheries in Eastern and Central Europe (EUROFISH).
- International Commission for the Conservation of Atlantic Tunas (ICCAT).
- The Central Asia Regional Programme for Fisheries and Aquaculture Development (FishDev-CA).
- Central Asian and Caucasus Regional Fisheries and Aquaculture Commission (CACFish).
- Japan International Cooperation Agency (JICA).
- The Commission on the Protection of the Black Sea Against Pollution.
- Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic Area (ACCOBAMS).
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

## Aquaculture

### *Production facilities, values and volumes*

Aquaculture in Turkey is a relatively young industry. It started with rainbow trout culture in the early 1970s with little further development in terms of sea farming until 1985 when sea bream and sea bass culture started in the Aegean Sea.

Turkish aquaculture has limited species diversity. At present, only rainbow trout, sea bass and sea bream are cultured commercially. It is possible to find many initiatives in Turkey on tuna culture, which started to accelerate and become widespread among European countries after 2000.

At present, there are 1 935 fish farms with 313 799 tonnes total capacity. More than half (56%) of this capacity is held by freshwater farms (1 587 farms with 160 933 tonnes capacity) and the rest by marine farms (348 marine farms with 152 866 tonnes capacity). Most marine cage farms are situated on offshore sites. There are 20 marine hatcheries producing 330 million fry annually.

A typical characteristic of aquaculture in Turkey is that it is mostly based (96.57%) on intensive and semi-intensive systems of carnivorous fish species production. Rainbow trout ranks the first (51%) followed by sea bass (29%), and sea bream (18%).

Major species cultured in marine waters are, sea bass (31%), sea bream (17%), rainbow trout (2%) and new Mediterranean species (2%). Sea bass and bream production has increased, whereas shellfish production is stable around 1500-2000 tonnes/year. There are 13 tuna-fattening farms (seven companies).

In recent years, fish production through aquaculture has increased. Competition between fishermen dealing with aquaculture in trout, sea bass and sea bream production has led the sector to seek new fish species. The culture of fish species has been practiced in recent years to diversify aquaculture production in Turkey since the market of the main three species, sea bass, sea bream and trout, has become more competitive. Black Sea turbot is one of the species with high market value and therefore has great potential not only for aquaculture, but also for the market.

There are 23 feed plants nationwide and seven of them produce only fish feed. The majority produce extruded feed and have a total annual production capacity of 160 000 mt.

Unfortunately, the socio-economic impact of aquaculture is mostly ignored and there are no reliable figures. It is estimated also that working conditions are very difficult, particularly for aquaculture engineers, technicians and workers employed at production sites and hatcheries.

### ***Management***

Article 13 of the Law states that those who wish to farm aquatic species for commercial purposes are obliged to apply to MoFAL and inform the Ministry on the location, characteristics and management of the facilities, as well as submit the enterprise's project and plans. Permission is issued by MoFAL if there are no adverse effects in terms of public health, the national economy, navigation or science, and technology. The provisions of the last paragraph of Article 4 of the Fisheries Law 1380 are also applicable to production units established in the sea and inland waters.

According to Article 13 of the Fisheries Law, the procedures and principles related to aquaculture are determined by the Aquaculture Regulation issued in 2004. This regulation was amended three times by order of 2007, 2009 and 2010. It covers and sets out rules for the following issues.

- Site selection for inland and marine farms.
- Application and evaluation procedures for fish farming licenses.
- Approving the projects and issuing licenses.
- Improving production capacity, species etc., cancellation (closing down farms), site changes and sales.
- Other aquaculture activities (tuna fattening, organic farming, integrated production systems).
- Importing brood fish, egg and fry.
- Compulsory technical staff employment.
- Fish health management.
- Environmental impacts and protection.
- Monitoring and control of farming activities.

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

Fresh and chilled fish have been the main products for export and consumption since the 1970s. Frozen and processed fish was the second phase of development of the fish processing sector. As exports of fresh product increased, Turkish processors extended their range by introducing frozen products. The main market is the European Union, Italy in particular.

Fish meal and oil factories extend back to the early 1970s, with investment in several plants to use the large potential catches of anchovy on the eastern and middle Black Sea coast to provide an alternative to the consumption fresh fish or the salting of the pelagic catches.

Fish canning is a traditional activity around the Marmara Sea, with the main products being sardines and bonito. This processing sector declined in importance but was

reinvigorated in the 1990s through the import of tuna for canning. Canned tuna, bonito, anchovy, sardines, mackerel are the main species on the local market.

Fish processing plants are concentrated in the Marmara Sea and Aegean regions, close to both the main catching areas and consumers. There are 160 licensed fish processing plants nationwide, of which currently 101 are approved to export to the European Union.

Fish processing plants must be registered according to the national Fishery Law No 1380 and relevant regulations. Those that export to the European Union must be approved by MoFAL.

### ***Food safety***

A Fishery Products Quality Control System has been implemented under the Ministry of Food Agriculture and Livestock. The system is updated regularly to accommodate national and international changes.

## **Markets and trade**

### ***Markets***

Marine fish landings can be broadly categorised by their distribution through the following marketing channels.

- Fish shipped directly to a fish market for an auction.
- Fish sold directly on a boat to a local or distant commission agent.
- Fish shipped directly to a processing plant.
- Fish shipped to a cold store in the name of the boat.

Along with socio-economic improvements and urbanisation, incomes and consumption habits have changed leading to increased seafood consumption. It is expected that the current annual fish consumption in Turkey of 8.19 kg per person will increase to 10.3 kg by 2013.<sup>1</sup> Although it is surrounded by seas, fish consumption in Turkey is only half of the world average and one-third of the average in the European Union.

Seafood consumption differs between the regions. Seventy per cent of production is consumed in the Black Sea region. The eastern and south-eastern Anatolian regions consume 2.04% of total production. Coastal areas have higher consumption and a greater variety of choice. In inland areas, including central and south-eastern Anatolia, both the level of consumption and the variety of fish consumed are decreasing.

According to MoFAL, an analysis based on income distribution and socio-economic classes indicate that 98.5% of Turkish families surveyed consume fish at least once a year. Anchovy, rainbow trout and whiting are widely consumed and together with horse mackerel they are typical for the Turkish seafood market and can be regarded as a “national” species. Anchovy is the most popular fresh fish. Throughout Turkey the common way of consuming fish is whole and fresh because cooled/frozen storage and processing of fisheries products are not common practices.

There is a growing demand for processed fisheries products as an alternative to fresh fish. As cooling technology advances, caught wild fish is consumed in both coastal areas and inland. However, with higher incomes and purchasing power, and the growth of supermarket shopping, it can be anticipated that the trend will be towards the consumption of fish fillets and added value products, and that supermarkets will retain their fresh fish counter.

The pattern of retail sales is changing rapidly in Turkey, although only about one-fifth of the population enjoys the income levels and life styles that lead to supermarket shopping. During recent years large companies have been putting more effort into the domestic market and some retailers have even set up their own fish market chains. As per capita incomes increase and multiple retailers (large companies) invest, the share of supermarkets and hypermarkets will continue to increase, while the total number of retail outlets such as the traditional grocer declines.

There are 2 957 retail fishery product markets and 12 wholesale markets in Turkey. Works on the development of physical, technical, hygiene and sanitary conditions of markets continued. There are differences in fish market for retail distribution in Turkey by regions. The biggest share is Marmara (893, 32%), Black Sea (592, 21%), and Aegean (491, 18%), Central Anatolia (401, 15%) and Mediterranean (398, 14%).

### *Trade*

Export and import values and amounts have been increasing with years. Although the volumes of both exports and imports of fishery products are similar, the value of exports is much greater than import value. This shows the value-added of exports.

Imports are of high value-added products (e.g. smoked salmon) and frozen fish products for human consumption and frozen fish for use as feed in tuna ranches. The main source of imported fish is Norway, followed by the Netherlands.

In terms of volume, the greatest volume of exports goes to Italy, followed by Greece; exports are largely sea bass and sea bream. The most valuable market, however, is Japan due to sales of blue fin tuna.

In 2010, the value of fisheries (fishery and aquaculture) imports and exports were USD 238 million and USD 358 million respectively.

### *Note*

1. Yildiz, O. Packaging of aquaculture products on the Turkish market. EUROFISH workshop “Packaging in the fish industry-hygiene, traceability and value addition” Turkey 2007.

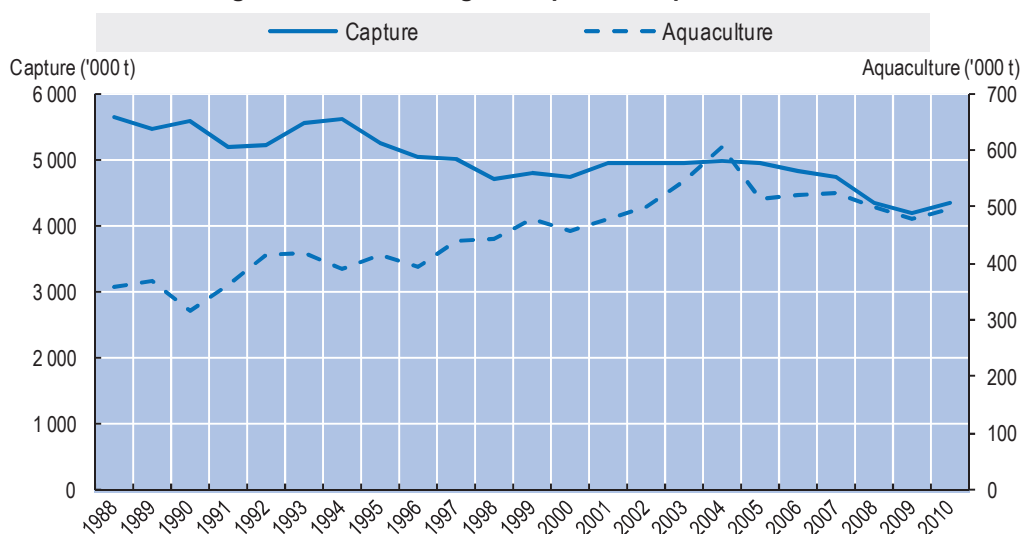
## Chapter 30

### UNITED STATES

#### Summary of recent developments

- The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) provides a legal framework for addressing a wide variety of marine stewardship issues. The law mandates an end to overfishing, promotes market-based management, strengthens the role of science, improves data on recreational fisheries, and includes new measures to combat illegal, unreported and unregulated (IUU) fishing and to reduce bycatch in global fisheries.
- The United States issues an annual report on the status of stocks, and continues to conduct assessments on a larger number of stocks and stock complexes. For 2011, NOAA’s National Marine Fisheries Service (NMFS) reported on the status of 537 individual stocks and stock complexes, and determined that 14% of stocks and stock complexes with known overfishing determinations were subject to overfishing and 21% of stocks and stock complexes with known stock condition continued to be overfished. Both the overfishing and overfished numbers had improved since the previous report.
- The Magnuson-Stevens Act includes two new mandates which have been implemented over the last few years: annual catch limits (ACL) and accountability measures (AM). ACLs must be set at a level that overfishing does not occur in the fishery and must incorporate uncertainty into the ACL. AMs are corrective actions which are triggered when an ACL is exceeded. AMs may be in-season actions (reductions in effort or closures) or post-season measures taken in the following year to "payback" the overage. ACLs and AMs are now in place and effective for the 2012 fishing year in all federally managed fisheries.
- Commercial landings (edible and industrial) by US fishermen at ports in the 50 states totalled 4.6 million metric tonnes valued at USD 5.3 billion in 2011 – a 23% increase in volume and a 17% increase in value, respectively, compared with 2010. Alaskan pollock, menhaden, Pacific salmon, flatfish, cod, and hakes are the six most important species in terms of volume, while crabs, salmon, scallops, shrimp, and lobster are highest in terms of gross value.

Figure 30.1. Harvesting and aquaculture production



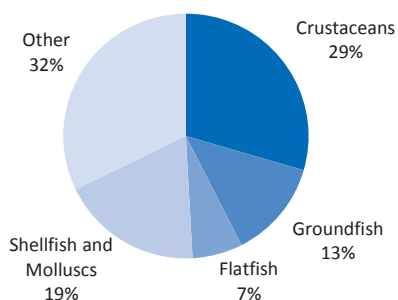
Source: FAO FishStat Database.

### Box 30.1. Key characteristics of US fisheries

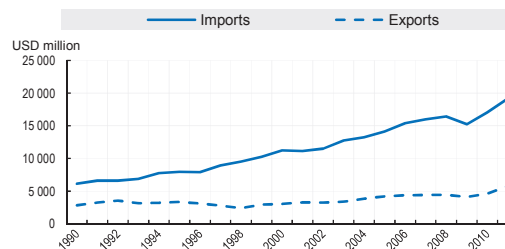
- Commercial landings (edible and industrial) by US fishermen at ports in the 50 states totalled 4.6 million metric tonnes valued at USD 5.3 billion in 2011 – a 23% increase in volume and a 17% increase in value, respectively, compared with 2010. (Panel A)
- Alaskan pollock, menhaden, Pacific salmon, flatfish, cod, and hakes are the six most important species in terms of volume, while crabs, salmon, scallops, shrimp, and lobster remained highest in terms of gross value. (Panel A)
- US imports of edible fishery products in 2011 were valued at USD 16.6 billion, USD 1.8 billion less than in 2010. The quantity of edible imports was 5.3 billion pounds, 108.0 million pounds more than the quantity imported in 2010. (Panel B)
- US exports of edible fishery products were 3.3 billion pounds valued at USD 5.4 billion, an increase of 530.4 million pounds and USD 1.1 billion when compared with 2010. (Panel B)
- In 2010, USD 1 901 million was transferred to fisheries sector from government, which is an 8.8 % decrease, compared to 2008 (USD 2 084 million). About 95% of the transfers in 2010 were spent on general services. (Panel C)

Figure 30.2. Key fisheries indicators

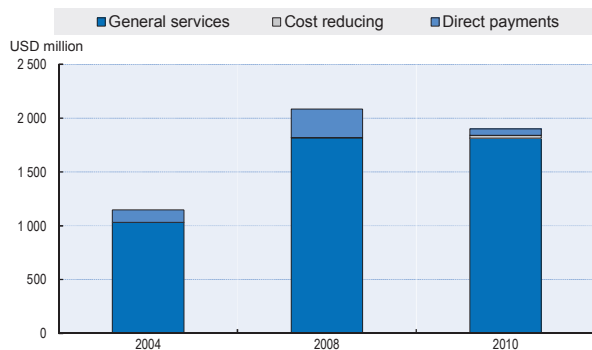
Panel A. Key species landed by value in 2011



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2004	2008	2010
General services	1 031	1 819	1 813
Cost reducing	3	2	28
Direct payments	114	264	60



## Legal and institutional framework

### *Magnuson-Stevens Fishery Conservation and Management Act*

The primary legal authority for fisheries management in the US Exclusive Economic Zone (EEZ) is the Magnuson-Stevens Fishery Conservation and Management Act. 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 Magnuson-Stevens Act was extensively amended in October 1996 with the passage of the Sustainable Fisheries Act (SFA). Some of the key provisions of the SFA required that 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 programme. In December 2006, Congress again reauthorised the Magnuson-Stevens Act, placing heavy emphasis on ending overfishing, strengthening the role of science, establishing the rules for market-based management, creating a national registry of recreational fishing data, and providing new tools to combat IUU fishing and the bycatch of protected marine mammals in global fisheries under legislative authority of the High Seas Driftnet Fishing Moratorium Protection Act (Moratorium Protection Act).

Under the Moratorium Protection Act, as amended by the reauthorised Magnuson-Stevens Act, the Secretary of the US Department of Commerce is required to produce a biennial report to the US Congress that lists countries the United States has identified as having vessels engaged in IUU fishing and/or bycatch of PLMRs. The Moratorium Protection Act was recently amended in January 2011 by the Shark Conservation Act, which authorises the identification of a nation if its vessels have been engaged in fishing activities in waters beyond any national jurisdiction that target or incidentally catch sharks and the nation has not adopted a regulatory programme comparable to the United States to provide for the conservation of sharks, taking into account different conditions. The Moratorium Protection Act requires the Secretary of Commerce to certify whether nations identified in the biennial report have taken appropriate corrective action to address IUU fishing; adopted regulatory programmes for bycatch of PLMRs or management of sharks comparable with US programmes, taking into account different conditions; and established management plans for PLMRs or sharks that will assist in the collection of species-specific data collection. The absence of sufficient steps by identified nations to address the problems of IUU fishing, bycatch of PLMRs, and/or shark catch for which they were identified may lead to prohibitions on the importation of certain fisheries products from such nations into the United States and the denial of port privileges into the United States. The first biennial report was issued in January 2009 and identified six nations for having vessels engaged in IUU fishing. All six nations received a positive certification for taking appropriate corrective action to address the IUU fishing activities for which the nation was identified. The United States is currently engaged in consultations with the six nations that were identified in the January 2011 Report to Congress to encourage such nations to take the necessary steps towards reaching a positive certification. Certification decisions for the nations identified in the January 2011 report will be published in the January 2013 Report to Congress.

The Moratorium Protection Act also calls on the United States to promote improved monitoring, control, and surveillance for international fisheries; improve the effectiveness of Regional Fishery Management Organizations (RFMOs) through the adoption of IUU vessel

lists, stronger port state controls, and market-related measures; and build capacity in other countries to ensure sustainable fisheries and regulatory enforcement.

NMFS is currently developing a proposed rule that would establish procedures for the identification of nations whose vessels are engaged in shark fishing on the high seas if that nation does not have a regulatory programme for the conservation of sharks comparable to that of the United States. The proposed rule would also establish procedures to certify whether the necessary actions are being taken by the identified nations. In addition, the rule proposes to expand the definition of IUU fishing and clarify how the identification and certification procedures to address IUU fishing are being implemented.

### *Other legal authorities*

In the United States, the states have the inherent power to impose restrictions necessary for the general welfare of the public, including regulations for fishing in state waters (typically, three nautical miles from the baseline). NMFS regulates fishing in the US EEZ, which typically ranges from 3 to 200 nautical miles from shore. The US Fish and Wildlife Service, within the US Department of the Interior, is involved in managing fisheries on federal lands, providing technical assistance on Native American reservations, and participating in other fisheries-related activities. In addition, the Federal Government negotiates international agreements related to fisheries. There is considerable co-ordination between federal agencies and between federal and state agencies responsible for fisheries conservation and management. For example, under the Atlantic Striped Bass Conservation Act (ASBCA) and the Atlantic Coastal Fisheries Cooperative Management Act (ACA), NMFS develops regulations in the EEZ for species managed by the Atlantic States Marine Fisheries Commission, which comprises 15 Atlantic Coast states. As another example, under the Anadromous Fish Conservation Act, the Secretaries of the Interior and Commerce are authorised to enter into cooperative agreements with the states and other non-federal interests for conservation, development, and enhancement of anadromous fish, including those in the Great Lakes, and to contribute funds to carry out such agreements.

## **Capture fisheries**

### *Performance*

#### *Landings*

Commercial landings (edible and industrial) by US fishermen at ports in the 50 states totalled 4.6 million metric tonnes valued at USD 5.3 billion in 2011, a 23% increase in volume and a 17% increase in value, respectively, compared with 2010. Alaskan pollock, menhaden, Pacific salmon, flatfish, cod, and hakes are the six most important species in terms of volume, while crabs, salmon, scallops, shrimp, and lobster remained highest in terms of gross value.

Commercial landings by US fishermen at ports outside the 50 states provided an additional 450.8 million pounds (204 500 metric tonnes) valued at USD 325.6 million. This was a decrease of 7%, or 32.0 million pounds (14 524 metric tonnes) in quantity and an increase of USD 51.3 million (19%) in value compared with 2010. Most of these landings consisted of tuna landed in American Samoa and other foreign ports.

At-sea processed fishery products (Pacific groundfish that are processed at-sea aboard US vessels), on a round (live) weight basis, exceeded 1.3 million metric tonnes in 2011 and comprised 28% of the total domestic landings. Comprehensive information on landing port or percentage of catch transferred to transport ships for delivery to foreign ports is unavailable, although Dutch Harbor, Alaska, is the primary port for groundfish harvested in the Bering Sea.

**Table 30.1. US commercial fishing landings (2002-11)**

Year	Metric tonnes (thousands)	Pounds (millions)	Revenue (USD millions)
2002	4 262	9 397	3 092
2003	4 312	9 507	3 347
2004	4 392	9 683	3 756
2005	4 403	9 707	3 942
2006	4 301	9 483	4 024
2007	4 223	9 309	4 192
2008	3 776	8 325	4 383
2009	3 643	8 031	3 891
2010	3 734	8 231	4 520
2011	4 577	10 090	5 303

#### *Fleet structure, employment, and economic performance*

Based on US Coast Guard and NMFS federal permit databases, it is estimated that there are 25 000 to 27 000 commercial fishing vessels licensed to operate in the US EEZ, and that this number has not changed significantly in recent years. NMFS is currently developing a national permit database that will enable the agency to readily quantify the total number of federally permitted craft.

According to the United States Bureau of Labor Statistics, in 2010 there were 58 964 workers employed in 3 188 wholesale and processing plants. Processors employed 36 469 workers at 844 plants while wholesalers employed 22 495 workers at 2 344 plants. In 2011, the commercial marine fishing industry contributed USD 43.9 billion (in value added) to the US Gross National Product. However, the 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). In a Congressionally mandated report (April 2008), NMFS acknowledged that high levels of excess harvesting capacity were found in one-third to one-half of the assessed federally managed fisheries and fleet sectors, likely contributing to poor economic profitability.<sup>2</sup>

#### *Status of stocks*

The Magnuson-Stevens Act requires that the Secretary of Commerce report annually to Congress and the Regional Fishery Management Councils on the status of US fisheries.<sup>3</sup> Status determinations are generally made during a formal review of a scientific stock assessment using the best available scientific information. The Councils are required to develop programmes to end overfishing and rebuild overfished stocks generally in a time period not to exceed ten years, except where conditions dictate otherwise. In this context, “overfished” refers to a stock size that is too small, while “overfishing” refers to a rate of removal that is too high.

NMFS continues to increase the number of assessed stocks (here “stocks” includes both stocks and stock complexes). In 2011, NMFS reported on the status of 537 individual stocks and stock complexes, and made “overfishing” and “overfished” determinations for 202 stocks and stock complexes. The status of many of these 537 stocks and stock complexes is unknown. This latest review shows that 14% of stocks/stock complexes with known overfishing determinations continue to be subject to overfishing, while 21% with known overfished determinations are still overfished. Both of these rates represent modest reductions

from the previous report, and, as a result, NMFS can report that the national fisheries management programme is moving in the right direction.

NMFS introduced the fish stock sustainability index (FSSI) in 2005. The FSSI is a performance measure for the sustainability of 230 US fish stocks selected for their importance to commercial and recreational fisheries. The FSSI will increase as unknown stocks are assessed, overfishing is ended and stock size increases to the level that produces MSY. The FSSI is calculated by assigning a score for each fish stock based on the following five criteria.

**Table 30.2. Criteria for fish stock sustainability index**

Criteria	Points awarded
"Overfished" status is known	0.5
"Overfishing" status is known	0.5
Overfishing is not occurring	1.0
Biomass is above "overfished" level	1.0
Biomass is at or above level that produces MSY	1.0

The maximum score each stock may receive is 4. The value of the FSSI is the sum of all 230 individual stock scores. The maximum total FSSI score is 920, achieved if all 230 stocks were to each receive a score of 4. The most recent FSSI score, for the first quarter of 2012, is 598.5. This total score has been increasing steadily since the FSSI rating system was adopted. The FSSI stock status updates are posted quarterly at [www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm#07](http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm#07).

## Management of commercial fisheries

### *Management tools*

The United States employs a wide range of management instruments, including total allowable catch (TAC) levels, 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 programmes using a variety of these tools to manage catch, but a growing number of federally managed fisheries employ some form of exclusive harvest quotas, including individual fishing quotas, fishing cooperatives, and community quotas. For more information on fisheries management tools, see the structural adjustment section of this report.

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. An example of devolution from federal to state authorities is West Coast Dungeness crab, which has been turned over to the states of California, Oregon, and Washington under section 306 of the Magnuson-Stevens Act. Similarly, stone crab in the Gulf of Mexico has been turned over to the state of Florida. In addition, the growing interest in fishing cooperatives and sector allocations can be viewed as examples of devolution, since, in both cases, the user group would exercise certain authorities that otherwise would be provided for in a federally approved fishery management plan. Fishing cooperatives exist in several Alaska and Pacific Northwest fisheries, and sector allocation programmes have been implemented in the Northeast Multispecies fishery management plan.

The Magnuson-Stevens Act mandates annual catch limits (ACL) and accountability measures (AM) to end and prevent overfishing in all US fisheries. These measures are required for all stocks, with exceptions for stocks with annual life cycles or those managed

under international agreements to which the United States is a party. ACLs must be set at a level that overfishing does not occur in the fishery and must incorporate uncertainty into the ACL. AMs are corrective actions which are triggered when an ACL is exceeded. AMs may be in-season actions (reductions in effort or closures) or post-season measures taken in the following year to “payback” the overage. ACLs and AMs are now in place and effective for the 2012 fishing year in all federally managed fisheries.

### *Access arrangements*

Foreign investments in US fishing vessels and the companies that own them, are regulated by flagging, ownership, and cabotage requirements that were amended in the American Fisheries Act of 1998. Generally, fishing vessels operating in waters under US jurisdiction must have a US Coast Guard certificate of documentation with a fishery endorsement, be built in the United States, and are subject to a 75% US ownership requirement. However, there are some exceptions to these rules for specific fisheries. Foreign ownership of quota shares in three current ITQ fisheries is prohibited under the FMPs. Foreign investments in other sectors of US domestic fisheries (e.g. processing, trading, marketing, and aquaculture) are not currently subject to analogous restrictions.

No major changes have occurred during the review period with respect to foreign access arrangements to US fishery resources or US access to fisheries outside the US EEZ. 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 authorised foreign vessels). However, no species were available for joint ventures processing in 2008 or 2009. No US fishers have operated outside US waters under this specific type of bilateral fisheries access arrangement for more than a decade.

The United States and Canada also have a treaty establishing the opportunity to establish a reciprocal access regime for vessels fishing for albacore tuna in the exclusive economic zone (EEZ) of the two nations. The *Treaty Between the Government of the United States of America and the Government of Canada on Pacific Coast Albacore Tuna Vessels and Port Privileges* entered into force in 1982, with substantial amendments to the Treaty and its annexes occurring in 2002 and 2008. Previous regimes set out the number of and amount of time each nation’s vessels could fish in the EEZ of the other nation. The previous regime expired in 2011 and discussions are on-going for a future regime. The Treaty also allows the boats of each nation access to the ports of the other for the purposes of landing, transshipping or selling their catches.

US access to foreign fisheries also 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-flagged 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 five 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 to the Pacific Island Parties. In recent years, the number of US vessels licensed under the Treaty has fluctuated, reaching a low of 11 vessels operating in the central and western Pacific in 2006. Since 2007, however, this trend has been reversed through a concerted effort by the US industry to revitalise the US fleet. As a result, 36 vessels are licensed to fish during the current 2010-2011 licensing period. We expect the US industry will be using all or close to all the available licenses within the next two years.

### *Economic impact of commercial fisheries*

In 2010, the commercial and recreational marine fisheries generated USD 183 billion in sales impacts, contributed USD 79 billion to GNP, and supported 1.5 million jobs in the fishing sectors and across the broader.

The last published version of this report *Fisheries Economics of the United States, 2008* includes descriptive statistics on commercial fish landings, revenue, and price trends; recreational fishing effort, catch, and participation rates; and employer and non-employer establishments, annual payroll, and annual receipt information for fishing-related industries such as seafood retailers and ship and boat building.<sup>4</sup>

### **Management of recreational fisheries**

Recreational fishing in the US EEZ is defined as “fishing for sport or pleasure.” With a few notable exceptions (e.g. sale of tunas by those holding federal Atlantic HMS chart/headboat permits), 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 Atlantic highly migratory species, recreational fishing regulations for fisheries occurring in the US EEZ are, in most cases, set by regional fishery management councils. For species under federal regulation, state and federal governments work together with fishermen, scientists, and the public through a system of regional fishery management councils and interstate commissions to develop appropriate regulations. The Magnuson-Stevens Act requires NOAA to maintain a “national saltwater angler registry” of recreational fishermen fishing in federal waters or anywhere for anadromous species. Most fishermen are automatically enrolled in the National Saltwater Angler Registry when they obtain a state saltwater fishing license or permit. Fishermen in Hawaii, Puerto Rico, and the US Virgin Islands currently register directly with NMFS. Information from this registry is being used as part of a comprehensive data collection and reporting programme known as the Marine Recreational Information Programme to generate estimates of recreational fishing catch and effort. Management tools employed in federally managed recreational fisheries include, among others: daily catch or trip limits, size limits, gear restrictions, seasonal restrictions, and time/area closures.

In 2011, 12 million people made 63 million marine recreational fishing trips to the Atlantic, Gulf, and Pacific coasts. The estimated total marine recreational catch was 327 million fish. Approximately 61% of the marine recreational catch was released alive. (Additional years, species specific, and region specific data are available online at [www.st.nmfs.noaa.gov/st1/recreational/queries/index.html](http://www.st.nmfs.noaa.gov/st1/recreational/queries/index.html))

### *Economic impact of recreational fisheries*

In 2009, the most recent year for which economic data is available, there were approximately 11 million recreational anglers across the United States who took 74 million saltwater fishing trips. These anglers spent USD 4.5 billion on fishing trips and USD 15 billion on durable fishing-related equipment. These expenditures contributed USD 50 billion in sales impacts to the US economy and supported 327 000 full and part-time jobs. (Fisheries Economics of the United States, 2009: [www.st.nmfs.noaa.gov/st5/publication/fisheries\\_economics\\_2009.html](http://www.st.nmfs.noaa.gov/st5/publication/fisheries_economics_2009.html))

The top five coastal recreational fishing states in terms of trip and durable good expenditures in 2009 were: Florida (USD 7.9 billion), Texas (USD 2.8 billion), California (USD 2 billion), North Carolina (USD 1.8 billion), and Louisiana (USD 1.8 billion).

(Fisheries Economics of the United States., 2009: [www.st.nmfs.noaa.gov/st5/publication/fisheries\\_economics\\_2009.html](http://www.st.nmfs.noaa.gov/st5/publication/fisheries_economics_2009.html))

### ***Fishery rights of federally recognised tribes***

The US government has a trust responsibility to federally recognised entities, including tribes, nations, villages, pueblos. 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. As an example, federally recognised tribes on the Pacific Coast generally are treated as co-managers of fisheries resources. The Magnuson-Stevens Act grants them a seat on the Pacific Fishery Management Council, which develops conservation and management measures for federal fisheries off the coasts of California, Oregon, and Washington. As another example, in Alaska, the Western Alaska Community Development Quota (CDQ) Programme provides a unique harvesting privilege to 65 rural communities (of which indigenous people comprise 81%<sup>5</sup> of the population) on the Bering Sea coast of Alaska. The CDQ Programme currently allocates a portion of the annual quota of several species, with an estimated value of about USD 65 million per year<sup>6</sup>, to six non-profit corporations that represent the eligible western Alaska communities. Native people in Hawaii and the Western Pacific region are not federally recognised governmental entities. However, the Magnuson-Stevens Act authorises a Western Pacific Community Development Programme and Western Pacific Community Demonstration Project Programme to provide access to fisheries for these groups and to promote traditional indigenous fishing practices. In addition, both the Endangered Species Act and Marine Mammal Protection Act expressly provide for Native Alaskan subsistence activities.

### ***Monitoring and enforcement***

NOAA Fisheries Office of Law Enforcement (OLE) is responsible for the enforcement of more than 35 federal statutes. OLE's jurisdiction spans more than 3 million square miles of open ocean, more than 85 000 miles of US coastline, the country's 13 National Marine Sanctuaries and its Marine National Monuments. OLE is also responsible for enforcing US treaties and international law governing the high seas and international trade. OLE works closely with the US Coast Guard and our State enforcement partners to monitor fishing activities within the US EEZ using sea and air patrols, vessel monitoring systems, and other surveillance tools. The US Coast Guard (USCG), under the Department of Homeland Security, is charged with the primary responsibility for the at-sea enforcement of the nation's marine resource laws, while OLE is primarily focused on dockside enforcement and investigations of both criminal and civil violations.

As a major market state, importing over 80% of its seafood annually, the United States has an obligation to avoid the importation of illegal seafood product. Many of the fisheries products with the highest value, and thus most likely to be harvested and traded illegally, such as bluefin tuna, Patagonian toothfish, and bigeye tuna, are controlled via international catch documentation schemes, which NOAA implements and enforces. These catch documentation schemes monitor international trade, identify the origin of imports, and determine if the imports were caught in a manner consistent with relevant international conservation measures. Further, NOAA is working to integrate its trade monitoring programmes into the International Trade Data System (ITDS), which is a government-wide system, maintained by Customs and Border Protection, for the electronic collection, use, and dissemination of trade data necessary for federal agencies to perform their missions.

Ongoing investigative work has revealed the existence of complex schemes to harvest, process, sell, import, and export fish and seafood products illegally. There has also been a significant increase in the identification of ongoing international violations as revealed by

investigations that have identified numerous multinational/international schemes to smuggle both wild-caught and aquaculture seafood products into the United States.

OLE, in collaboration with partners including the International Monitoring, Control and Surveillance Network, is actively engaged in capacity building efforts to bolster the ability of developing nations to combat IUU fishing and meet their international obligations with respect to fisheries enforcement. In 2001, the United States joined other countries to establish a mechanism for fisheries law enforcement professionals to share information and experiences as they monitor the increasingly complex harvesting and marketing of fish around the world. NOAA has served as the host for the Network since its inception. NOAA is working closely with other Network partners to co-ordinate the Third International Monitoring, Control, and Surveillance Network workshop in Mozambique in 2010. Successful workshops were held in Malaysia in 2005 and Norway in 2008.

### ***Multilateral, regional and bilateral agreements and arrangements***

NMFS and its partner agencies within the federal government work with a variety of domestic and international partners to promote ecosystem-based fisheries management, control fishing capacity, combat IUU fishing, strengthen regional fisheries management organisations, secure equitable access for US fishers to shared living marine resources, reduce bycatch, increase assistance to developing states, and ensure food security. To achieve these goals the United States participates in regional fisheries management organizations (RFMOs), multilateral and bilateral environmental agreements/forums, and free trade negotiations. In addition, the US conducts workshops on living marine resource conservation, management, and enforcement issues and builds partnerships to improve marine conservation.

Over the reporting period, the United States participated in the multilateral negotiation to establish the Trans-Pacific Partnership among a number of Asia Pacific Economic Cooperation forum Members.

## **Aquaculture**

### ***Policy changes***

The National Oceanic and Atmospheric Administration (NOAA) is developing a new aquaculture policy that will address all forms of marine aquaculture. NOAA announced its intent to develop the policy in September 2009 and that process is on-going in 2010. Aquaculture development is also being considered in the context of broader Administration initiatives relating to coastal and marine spatial planning and overall US ocean policy. Priority initiatives such as an alternate feeds initiative with the US Department of Agriculture are continuing during these policy reviews.

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

Estimated production numbers and values are not yet available for 2008. New figures available for 2007 show a 12 000 metric ton increase in production and a USD 30 000 decrease in value from 2006 (Table 30.3). According to the US Department of Agriculture National Agricultural Statistics Service, there were 4 309 farms in 2005. This is an increase of 281 farms since the first national census of aquaculture, which reported 4 028 farms during the 1998 crop year.



**Table 30.3. Estimated US Aquaculture Production (1997-2007)**

Year	Metric tonnes (Thousand)	Value ('000 USD)
1997	348	910
1998	358	939
1999	382	987
2000	373	973
2001	371	935
2002	393	882
2003	422	972
2004	408	1 068
2005	376	1 118
2006	362	1 234
2007	374	1 204

Source: NMFS. Fisheries of the United States.

## Fisheries and the environment

### *Environmental policy changes*

Protection or management of living marine resources is derived primarily from three federal statutes: the reauthorised Magnuson-Stevens Fishery Conservation and Management Act, the Endangered Species Act (ESA), and the Marine Mammal Protection Act (MMPA). It is the policy of the US Department of Commerce to apply the requirements of the National Environmental Policy Act (NEPA) to any conservation or management actions NMFS conducts under these three statutes. NEPA provides a mechanism under which the requirements of these three conservation statutes, and others as appropriate, are integrated into the federal decision-making process. To improve the quality and timeliness of NEPA assessments of commercial fisheries plans, section 304 of the reauthorised Magnuson-Stevens Act calls for revising and updating NMFS procedures for compliance with NEPA.

## Government financial transfers

### *Social assistance*

The United States does not have an official fisheries sector social assistance programme. However, the United States continues to address impacts on fishing communities in various ways.

One example is National Standard 8 under the Magnuson-Stevens Act, which states that “conservation and management measures shall take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimise adverse social and economic impacts on such communities.” Under this standard, NMFS is defining fishing communities and profiling these communities to enable improved social impact analyses for all federally-managed fisheries. NMFS is also developing social indicators for characterizing fishing community resiliency and vulnerability.

Disaster assistance, under provisions in the Interjurisdictional Fisheries Act (IFA) and the MSFMCA, provides another example of social assistance. The IFA provides that the Department of Commerce can provide disaster assistance to states determined by the Secretary of Commerce to have been affected by a commercial fishery failure or serious

disruption affecting future production due to a fishery resource disaster. Such disasters may arise from either natural or undetermined causes. Funds as appropriated may be used for any purpose the Secretary determines appropriate to restore an affected fishery or to prevent future failures. In addition, the IFA enables the Secretary to provide assistance to persons engaged in commercial fisheries, for measures to alleviate harm incurred as a direct result of a fishery resource disaster.

In addition, some individual states have social assistance programmes. For example, in Alaska, the Fishermen's Fund programme provides for the treatment and care of Alaska licensed commercial fishermen who have been injured while fishing onshore or offshore in Alaska. Benefits from the Fund are financed from revenue received from each resident and non-resident commercial fisherman's license and permit fee.

### ***Structural adjustment***

The United States does not have a statutory structural adjustment programme *per se*, but has implemented specific programmes that address some of the same objectives as structural adjustment (reduction of fishing capacity). Measures to address capacity fall in three broad categories: (1) limited entry and other permit programmes; (2) exclusive quota programmes, including limited access privilege programmes (LAPPs, a new term included in the reauthorised Magnuson-Stevens Act), individual fishing quotas (IFQs), community development quotas (CDQs), and cooperatives; and (3) buybacks.

NMFS has the authority, under the Magnuson-Stevens Act, to conduct a fishing capacity reduction programme if necessary to prevent or end overfishing, rebuild stocks of fish, or achieve measurable and significant improvements in the conservation and management of the fishery. The Act, allows NMFS to obtain funding from public, private, industry, and/or non-profit sources. Assistance may not be provided for a fishing capacity reduction programme unless adequate conservation and management measures are in place for that fishery. From 1994 to 2012, the United States implemented 11 permit and vessel buybacks with total costs slightly less than USD 313 million, the largest of which occurred in the Bering Sea and Aleutian Islands (BSAI) non-pollock groundfish fishery, Pacific groundfish fishery, and the BSAI crab fishery. With the exception of the BSAI crab fishery, all vessel/permit buybacks to date have involved some public funding. Aggregate public costs have amounted to almost USD 70 million, or approximately 22% of total buyback costs.

In the last two years, two complex catch share programmes have been implemented. The Northeast Multispecies Sector Programme, implemented in May 2010, includes 20 stocks such as haddock, cod, and flounder. The first year report on the programme shows that groundfish revenues decreased in 2010 compared to 2009. But overall revenues to groundfish vessels, including revenues from non-groundfish species, increased. Despite lower catch limits required to end overfishing and rebuild stocks, the groundfish industry obtained more value from fewer fish landed and less fishing effort expended. Implemented in January 2011, the Pacific Trawl Rationalization programme includes over 90 species such as Petrale sole, Pacific whiting, and Pacific cod. Preliminary results after the first year of the programme indicate a strong performance by the fishery in 2011. For example, revenues per vessel improved substantially. These positive economic trends for fishermen are even more remarkable because they are accompanied by a vast reduction of discarded catch. On average about 99% of what's caught is now being retained, an extremely positive result for fishery management and conservation.

**Table 30.4. Fishing capacity reduction programmes (Buybacks)**

(USD million)

Programme	Year	Buyback amount	Appropriation	Industry loan
Northeast Multispecies	1995	1.89	1.89	
Washington Salmon	1995	3.88	3.88	
Northeast Multispecies	1996	22.50	22.50	
Washington Salmon	1996	5.08	5.08	
Texas Shrimp	1997	1.40	1.40	
BSAI Pollock	1998	90.00	15.00	75.00
Northeast Multispecies	2002	10.00	10.00	
Pacific Coast Groundfish	2003	45.70	10.00	35.70
BSAI Crab	2004	97.40		97.40
BSAI Non-Pollock Groundfish	2007	35.00		35.00
SE AK Purse Seine Salmon	2012	13.13		13.13
<b>TOTAL</b>		<b>325.98</b>	<b>69.75</b>	<b>256.23</b>

<b>Authorised industry funded buybacks (not completed)</b>	
Programme	Amount
BSAI Non-Pollock Groundfish	39
Northeast Multispecies	45
New England lobster	50
SE Alaska purse seine salmon	10
GOM reef fish	35
<b>TOTAL</b>	<b>179</b>

The [NOAA Catch Share Policy](#), effective 4 November 2010, provides guidance and direction on Catch Share Programmes as a fishery management tool to build and maintain sustainable and prosperous US fisheries and healthy ocean ecosystems. The policy was developed using input from each Regional Fishery Management Council (Councils), commercial and recreational stakeholders, environmental groups and thousands of public comments. Catch shares are not required by the Policy or appropriate for every fishery. Nine guiding principles are the foundation of the Policy and they are: 1) Identify specific management goals, 2) Ensure fair and equitable allocations, 3) Promote flexibility and access via transferability, 4) Acknowledge distinctions among sectors (e.g. commercial, recreational, tribal), 5) Define duration of Programme, 6) Promote fishing community sustainability, 7) Consider royalty provisions, 8) Implement cost recovery, and 9) Track performance and conduct periodic reviews.

NOAA Fisheries Service provides technical and administrative support to Councils and stakeholders wishing to consider, design and/or implement a catch share programme for their fishery. Key policy areas NOAA Fisheries Service is focusing on in the coming years include data confidentiality, evaluation of catch share programmes using ecological, social, and economic performance indicators, and fishing community-related topics, among others. In addition, several catch share programmes are in development within the Councils and expected to be implemented in the coming years.

## Post-harvesting policies and practices

### *Seafood Inspection*

Seafood inspection in the United States is handled by an extensive framework of federal and state agencies. The Food and Drug Administration, under the Department of Health and Human Services, has the primary authority and responsibility for the safety, wholesomeness, and proper labelling of the seafood supply in the United States. The US Department of Commerce, through NMFS, operates a fee-for-service Federal Seafood Inspection Programme (described in the Agricultural Marketing Act as amended), which provides inspection and certification services to requesting parties also with regard to food safety, wholesomeness, and proper labelling with additional effort on food quality concerns. Both agencies have the authority to provide export certification of seafood from the United States. Imports of seafood are primarily under the jurisdiction of the Food and Drug Administration.

## Markets and trade

### *Markets: trends in domestic consumption*

US per capita consumption of edible fishery products was 15 pounds (6.8 kg) of edible meat per person in 2011, 1.6 pounds (0.7 kg) lower than the 2004 record per capita consumption of 16.6 pounds (7.5 kg). The majority of seafood consumed in the United States is in either fresh or frozen forms, followed by canned products consisting mostly of tuna (Table 28.5). US consumers spent an estimated USD 85.9 billion for fishery products in 2011. The 2011 total includes USD 57.7 billion in expenditures at food service establishments (restaurants, carry-outs, caterers, etc.); USD 27.6 billion in retail sales for home consumption; and USD 625 million for industrial fish products.

NMFS launched FishWatch (<http://www.fishwatch.gov>) primarily as a consumer education tool, to identify the status of fishery stocks and to explain the complex management and science requirements involved with building and maintaining sustainable fisheries. FishWatch provides consumers with relevant, factual data to assist in decisions about sustainable seafood. The website's data is derived from a variety of NOAA sources, including stock assessments, fisheries surveys, fisheries management plans and amendments, environmental analyses, and co-operative research. These sources were selected to ensure that the information on FishWatch is the most timely and accurate available on US fisheries. While the main objective of the site is to educate seafood consumers about domestically harvested seafood species, the utility of the site has had a far greater reach. Information on the site is utilised by third party sustainable seafood education and advocacy campaigns; by industry to support US wild-caught seafood in both domestic and foreign marketplaces; and by culinary professionals. FishWatch has also served as an example for international organizations, such as the Asian Fisheries Society, as they are in development of a similar programme, FishWatch-AsiaPacific.

**Table 30.5. US Per Capita Consumption (1989–2011)**

(Pounds, edible meat)

Year	Fresh and frozen	Fillets and Steaks	Shrimp	Canned	Cured	Total
1989	10.2	3.1	2.3	5.1	0.3	15.6
1990	9.6	3.1	2.2	5.1	0.3	15.0
1991	9.7	3.0	2.4	4.9	0.3	14.9
1992	9.9	2.9	2.5	4.6	0.3	14.8
1993	10.2	2.9	2.5	4.5	0.3	15.0
1994	10.4	3.1	2.6	4.5	0.3	15.2
1995	10.0	2.9	2.5	4.7	0.3	15.0
1996	10.0	3.0	2.5	4.5	0.3	14.8
1997	9.9	3.0	2.7	4.4	0.3	14.6
1998	10.2	3.2	2.8	4.4	0.3	14.9
1999	10.4	3.2	3.0	4.7	0.3	15.4
2000	10.2	3.3	3.2	4.7	0.3	15.2
2001	10.3	3.4	3.4	4.2	0.3	14.8
2002	11.0	4.1	3.7	4.3	0.3	15.6
2003	11.4	4.3	4.0	4.6	0.3	16.3
2004	11.8	4.6	4.2	4.5	0.3	16.6
2005	11.6	5.0	4.1	4.3	0.3	16.2
2006	12.3	5.2	4.4	3.9	0.3	16.5
2007	12.1	5.0	4.1	3.9	0.3	16.3
2008	11.8	4.8	4.1	3.9	0.3	16.0
2009	12.0	4.6	4.1	3.7	0.3	16.0
2010	11.6	5.0	4.0	3.9	0.3	15.8
2011	10.9	5.0	4.2	3.8	0.3	15.0

Source: Fisheries of the United States 2011. Markets: Promotion of Sustainable Seafood.

### *Trade: Volumes and values*

#### *Imports*

US imports of edible fishery products in 2011 were valued at USD 16.6 billion, USD 1.8 billion less than in 2010. The quantity of edible imports was 5.3 billion pounds, 108.0 million pounds more than the quantity imported in 2010. Edible imports consisted of 4.4 billion pounds of fresh and frozen products valued at USD 14.4 billion, 751.9 million pounds of canned products valued at USD 1.8 billion, 90.4 million pounds of cured products valued at USD 276.6 million, 6.5 million pounds of caviar and roe products valued at USD 33.5 million, and 49.9 million pounds of other products valued at USD 115.3 million. The quantity of shrimp imported in 2011 was 1.3 billion pounds, 36.4 million pounds more than the quantity imported in 2010. Valued at USD 5.2 billion, shrimp imports accounted for 31.0% of the value of total edible imports. Imports of fresh and frozen salmon, including fillets, were 504.5 million pounds valued at USD 1.9 billion in 2011. Imports of fresh and frozen tuna were 303.1 million pounds, 123.2 million pounds less than the 426.3 million pounds imported in 2010. Imports of canned tuna were 413.0 million pounds, a 29.4 million pound decrease over 2010. Imports of fresh and frozen fillets and steaks amounted to 1.4 billion pounds, increasing 44.4 million pounds from 2010. Regular and minced block imports were 136.8 million pounds, an increase of 6.1 million pounds from 2010. Imports of non-edible fishery products were valued at USD 14.2 billion, an increase of USD 1.6 billion compared

with 2010. The total value of edible and non-edible fishery imports was USD 30.8 billion in 2011, USD 3.4 billion more than in 2010.

### *Exports*

US exports of edible fishery products were 3.3 billion pounds valued at USD 5.4 billion, an increase of 530.4 million pounds and USD 1.1 billion when compared with 2010. Fresh and frozen exports were 2.9 billion pounds valued at USD 4.6 billion, an increase of 491.9 million pounds and an increase of USD 871.0 million compared with 2010. In terms of individual items, fresh and frozen exports consisted principally of: 368.1 million pounds of salmon valued at USD 621.6 million, 322.1 million pounds of surimi valued at USD 344.4 million and 92.1 million pounds of lobsters valued at USD 520.0 million. Canned items were 158.2 million pounds valued at USD 290.4 million. Salmon was the major canned item exported, with 112.0 million pounds valued at USD 224.5 million. Cured items were 7.0 million pounds valued at USD 20.4 million. Caviar and roe exports were 108.0 million pounds valued at USD 451.5 million. Exports of non-edible products were valued at USD 20.6 billion, an increase of USD 2.6 billion when compared with 2010. Exports of fish meal amounted to 195.2 million pounds valued at USD 106.1 million. The total value of edible and non-edible exports was USD 26.0 billion, an increase of USD 3.7 billion compared with 2010.

### *Trade: Policy changes*

The US trade policy for fish and fisheries products is driven by a number of underlying precepts. The United States recognises that, without sustainable fisheries, there can be no long-term, commercially viable trade in seafood. Therefore, the concepts of conservation and sustainability are at the core of US trade policy. Additionally, the United States takes the position that tariffs and quantitative restrictions on trade are, for the most part, ineffective substitutes for good management. As a country with relatively low tariffs on fish and fish products, the United States supports liberalizing 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 Organization. The United States engages its trade partners bilaterally, regionally, and multilaterally.

The United States brought into force three bilateral free trade agreements in 2012 with Panama, Colombia and Korea and has actively engaged in negotiations with Trans-Pacific Partnership Parties.

## **Outlook: Policy shifts on the horizon**

### *International Trade Data System (ITDS)*

The US International Trade Data System (ITDS) will become operational in 2013. This system will facilitate the submission of data to US Customs for import authorisations through a “single window” electronic system. The United States Customs agency, in co-operation with other federal regulatory agencies such as NOAA, screens and controls the import and export of all products crossing US borders, including fish. Currently much of the information submitted to authorise seafood imports is still processed using paper forms. Most paper forms pertaining to fisheries imports are generated to meet the monitoring and reporting requirements of the United States in support of Regional Fisheries Management Organizations (RFMO). NOAA currently utilises at least fourteen RFMO proscribed forms to capture data pertaining to the importation of tuna, swordfish and toothfish. Though ITDS will not eliminate RFMO obligations for industry to provide harvest and trade information on paper forms, it will collect much of the data electronically at the time of US import. This will accomplish two general objectives. It will provide an immediate and automated screening of

products for compliance with legal and regulatory submission requirements and be used to identify problems or deficiencies prior to import authorization. It will also collect extensive and detailed data pertaining to imports establishing an extensive searchable data base for use in creating timely reports and research. The system will eventually include US export data as well.

### *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.
2. Report to Congress on Excess Harvesting Capacity in US Fisheries, 28 April 2008.
3. Status of US Fisheries Stocks Reports from 1997 to 2007 are available online at <http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm>.
4. *Fisheries Economics of the United States, 2006* is available online at: <http://www.st.nmfs.noaa.gov/st5/index.html>.
5. <http://www.census.gov/2010census/popmap/ipmtext.php?fl=02>.
6. Average CDQ royalty revenue was calculated for the 2007 through 2011 fishing years (i.e. Since the Magnuson-Stevens Fishery Conservation and Management Act was reauthorised on 12 January 2007). Estimates were obtained from publicly available data at <http://www.wacda.org/pages/about-us.php>.





**PART III.**  
**NON-MEMBER ECONOMIES**



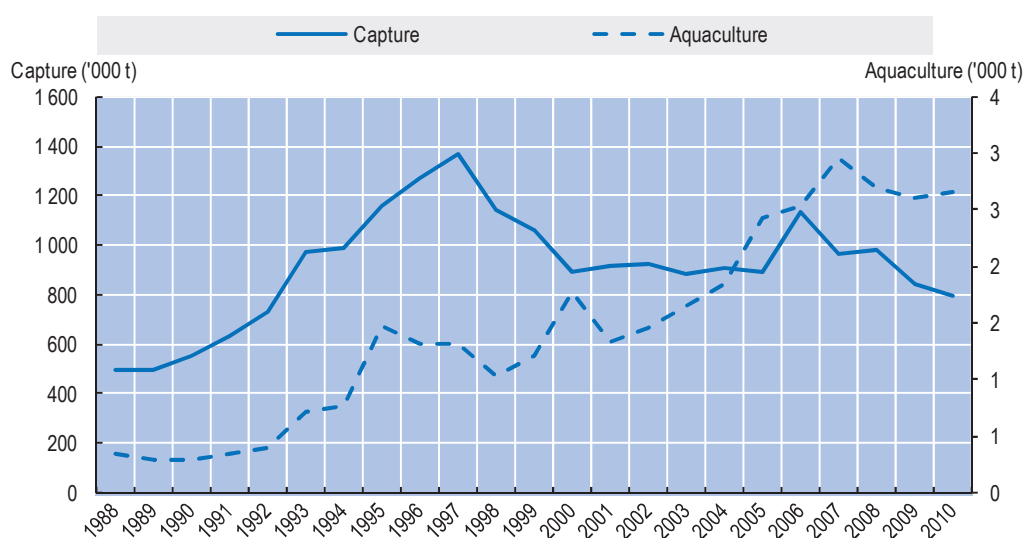
## Chapter 31

### ARGENTINA

#### Summary of recent developments

- There was a slight declining trend in total landings from 2009 to 2011, from 776 000 to 733 000 tonnes.
- The Individual Transferable Quotas (ITQ) system established in 2008 is fully operational.
- Argentina has three National Plans of Action: National Plan of Action to Prevent Deter and Eliminate Illegal, Unreported and Unregulated fishing, National Plan of Action for the Management and Conservation of Sharks (sharks, rays and skates) and the National Plan of Action for Reducing the Interaction of Seabirds with Fisheries in the Republic of Argentina. A workshop for monitoring the implementation of The National Plan of Action for the Management and Conservation of Sharks (sharks and skates) took place in 2011. The “National Plan of Action for Reducing the Interaction of Sea Mammals with Fisheries in the Republic of Argentina” is currently under preparation.
- There is an MSC certification for the scallops, Argentine anchovy and longtail hake fisheries (approved in May 2012).
- The general fisheries information system has been optimised and modernised. It has enabled better integration and cross-linking of fishing activity information, such as catches (catch reports), landings (landing official documents), processing (conversion factors), VMS, fishing gears, selectivity devices, characteristic of vessels, and permits.
- In 2011, fishing product exports reached 471 000 tonnes and USD 1 490 million, with growth of 3% and 12.72% respectively compared to 2010. The value in 2011 was the highest of the last decade. Exports are relatively stable in terms of volume, but the tendency is clearly growing in terms of value. The high levels of shrimp capture largely account for these outcomes.

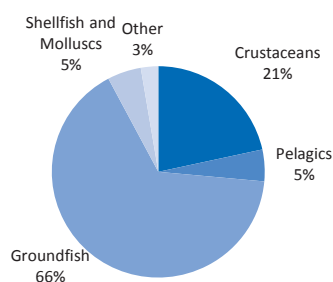
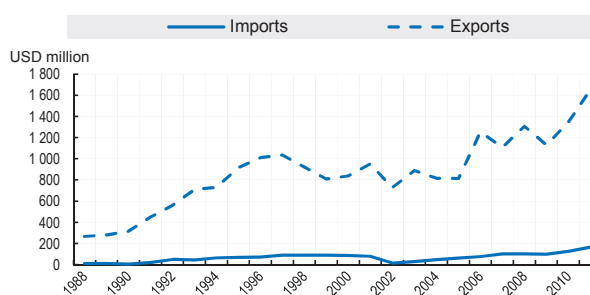
Figure 31.1. Harvesting and aquaculture production



Source: FAO Fishstat database.

**Box 31.1. Key characteristics of Argentinean fisheries**

- Ground fish accounted for the largest share (66%) of Argentinean landings by value in 2010, followed by crustaceans (21%), shellfish and molluscs (5%) and pelagics (5%). (Panel A)
- Argentinean fish exports have been increasing since 2009 and 2011 marked the highest recorded value of the last decade. Exports were relatively stable in terms of volume, but the tendency is clearly increasing in terms of value. Exports of shrimps, hake and squid products have been the most significant. (Panel B)
- Fish imports have also been increasing since 2009 while the value has been less than one tenth of fish exports. In 2011, prepared or preserved fish were the main imported products, accounting for 63% of total import volume, fresh or chilled fish, excluding fillets, for 16%, and prepared or preserved seafood for 6%. (Panel B)
- In 2011, the total number of vessels slightly increased (3.3%) from 2005, of which 603 vessels were the marine fishing vessels. Total employment in marine fisheries (fishing and processing) was 23 044 people in 2010 and 22 583 in 2011. About 10 000 people work in inland fisheries. (Panel C)

**Figure 31.2. Key fisheries indicators****Panel A. Key species landed by value in 2009****Panel B. Trade evolution****Panel C. Capacity**

	2006	2011	% change
Number of fishers	16 561	15 842	-4.3
Number of fish farmers	..	1 050	..
Total number of vessels	964	996	3.3
Total tonnage of the fleet	188 729	179 790	-4.7

## Legal and institutional framework

Fishing activity is regulated by Law 24922 — Fisheries Federal System (1998). ([www.infoleg.gov.ar](http://www.infoleg.gov.ar)). At the national level, the Undersecretariat of Fisheries and Aquaculture, dependent on the Agriculture, Livestock and Fisheries Ministry ([www.minagri.gob.ar](http://www.minagri.gob.ar)), is responsible for fisheries administration. Each of the five maritime coastal provinces has its own fisheries administration authority. According to the Law, living resources in inland and coastal waters adjacent to the coasts — up to twelve miles measured from the baselines stated in the corresponding national law — are under the jurisdiction of the five maritime coastal provinces. Provinces have jurisdiction over the resources in terms of exploration, exploitation, management and preservation within the federal framework. Marine living resources found in the waters of the Argentinean Exclusive Economic Zone and the Argentinean continental shelf from the twelve nautical miles on are the exclusive jurisdiction of the State.

The Federal Fisheries Council (CFP) was created by this law as the superior authority. It is comprised of ten members: a representative of each of the maritime coastal provinces and five representatives at the national level, including from the foreign affairs and environment units. The chairman is the Undersecretary of Fisheries and Aquaculture ([www.cfp.gov.ar](http://www.cfp.gov.ar)). The CFP, among other functions, is responsible for establishing the national fisheries and the research policies, for planning the national fisheries development, for setting annual catch quotas for vessel, species, fishing areas and type of fleet, and setting total allowable catch (TAC) for each species (it is stated for all the species distribution area, irrespective of the jurisdiction) according to the maximum sustainable yield, in accordance with data provided by the National Institute for Research and Development of Fisheries (INIDEP).

Commissions to analyse and monitor the industry have been created and these work as advisors (hake, southern blue whiting, Patagonian toothfish, squid, shrimp, scallop, anchovy — Patagonian stock —, longtail hake, southern king crab). The public sector, the private sector related to the corresponding species fishery, and the INIDEP take part in these commissions.

The Republic of Argentina and the Oriental Republic of Uruguay share a fishing zone that is managed by the Technical Mixed Commission of the Argentinean-Uruguayan Maritime Front ([www.ctmfm.org](http://www.ctmfm.org)).

With respect to aquaculture, each province, according to Section 124 of the 1994 National Constitution is the owner of its natural resources and the competent authorities regulate this sector.

With regard to inland fisheries, there is no specific law at the national level. The Commission for Inland Fisheries and Aquaculture (CPCyA), within the Agricultural Federal Council (CFA), was created to harmonise management policies related to the watershed and co-ordinating the different interests of the provincial managements. Small-scale artisanal fisheries are very important as a source of employment for coastal populations, and as fish providers to coastal communities and other areas to which seafood products are not distributed. Subsistence fishing contributes significantly to the survival of the coastal population with low incomes.

## Capture fisheries

### *Performance*

Total landings from 2009 to 2011 showed a slightly declining trend from 776 000 to 733 000 tonnes with an average of 758 000 tonnes. Only five species are responsible for around 70% of total annual catches (hake, squid, shrimp, southern blue whiting and longtail hake). Hake is under restrictive measures since the crisis that started at the end of the 1990s and landings have been stabilised at 280 000 tonnes per year.

Landings of shrimp have been increasing since 2006. In 2010-11, landings were the highest in the last eight years.

Landings of squid have not recovered (250 000 tonnes in 2008).

Inland fisheries in Argentina consist primarily of *sábalo*. In the last several years, landings were 20 000 tonnes/year, mainly in the Paraná River in the provinces of Santa Fe and Entre Ríos. Both provinces maintain catch statistics. In addition to *sábalos*, the other species fished are boga, armado, yellow catfish, catfish, manguruyú, large fresh-water catfish (surubí), dorado, pacú, patí, rays, armado, chanco, river salmon, manduví, pira para, piraña, whose landings at the global level do not surpass 20% of the value corresponding to *sábalos*.

About 90% of the landings species are exported. Landings of squid and hake have been low in the last years, coupled with a drop in prices, and sales income *vis-a-vis* the high production costs (manpower, oil, stowage, paper) place the firms in a difficult position. The high level of landings of shrimp has resulted in low prices. The competitiveness of aquaculture products (*pangasius*, *vanamei*) contributed to worsening the situation amidst the international crisis and retracted demand.

*Sábalo* is mainly exported. In the last several years exports of *sábalo* were 15 000 tonnes.

### *Landings by port*

More than 50% of marine species landings continue to be concentrated in Mar del Plata port. With the exception of Ushuaia, whose share has clearly decreased, other ports have maintained their ranking. The impact of the international crisis and the increase of domestic costs — especially manpower, oil and stowage — affected the southern ports in particular (Puerto Madryn and Deseado).

### *Fleet*

In 2011, the maritime fishing fleet was composed of 603 vessels, 393 of which had only provincial licenses, 226 both national and provincial licences, and the others having only national licences.

Total employment in marine fisheries (fishing and processing) was comprised of 23 044 people in 2010 and 22 583 in 2011. About 10 000 people work in inland fisheries.

*Status of fish stocks***Table 31.1. The status of Argentinean fish stocks**

Patagonian toothfish	The spawning biomass of 2011 increased slightly above the targeted spawning biomass: 30% of virgin spawning biomass. Fewer vessels have been allowed to catch targeted species and ITQs have been assessed so that the stocks exploitation appeared to be in a better situation.
Longtail hake	In the period 2009-2010, there were no changes in the stock of longtail hake. The spawning biomass was closed to the limit reference point. The spawning biomass trend has shown fluctuations that have had an impact on captures.
Southern blue whiting	The total biomass and the spawning biomass have shown a decreasing tendency, reaching levels significantly lower to those estimated at the beginning of the fishery.
Argentine hake North 41°S	The total biomass and the spawning biomass have increased in 2010, 3% and 10% respectively, but their values are under the biological references limit and objective (130 000 t and 200 000 tonnes respectively).
Argentine hake South 41°S	The spawning biomass did not attain the biological references points (limit and objective of 400 000 tonnes and 500 000 tonnes respectively).
Whitemouth croaker	Capture values must not be increased and the management of this species must be carefully checked due to the fact that there are too many juveniles in landings.
Shrimp	The available biomass that can be fished by coastal and offshore fleets has remained stable in the last five years (2007-2011). The landings in 2011 were an historical record. Explanatory models for the mortality and exploitation rates have been developed. These models helped in the search for possible biological reference points to be used in the implementation of a management plan. Permanent or provisionally closed areas have been applied to three jurisdictions (two provincial and one national). This, together with a decrease of the fishing pressure during the spawning season, has helped maintain a stable exploitation state.
Squid	There are two management units (north and south of the 44°S) and four stocks (SSP, SDV, SBNP and ADP) that are evaluated annually. Evaluations are done in real time, with weekly updates during the fishing season (January-August). The available biomass to be caught increased in 2012 with respect to 2011 in the southern area; in the northern area, the available biomass has reached an historical low level.
Scallop	Fishing was restricted in the northern sector during 2010-2011 given that recruitments were detected at the seabed. No changes have been observed in the total and commercial biomass in several unit management areas of the southern areas; in other units, decreases have been observed.

In relation with inland fisheries, according to available reports published in the last five years, the present situation of the target stocks is quite good. Exploitation levels can be qualified as moderate if compared to other rivers in the world.

*Management of commercial fisheries***Table 31.2. Management instruments**

Output controls and supporting technical measures	Input controls and supporting technical measures
TACs	Since 1998, no new licenses are granted at the national level.
ITQs (hake, longtail hake, southern blue whiting, scallops and Patagonian toothfish)	Replacement of vessels. Only in the cases when the fleet capacity is not increased.
Catch authorisations (species without ITQs system applied)	It is compulsory to use selective fishing gear for shrimp and hake (protection of juveniles).
	Vessels size limitation for fishing in specific fisheries and zones.
	Restrictions on fishing gear and fishing areas for some fisheries.
	Limitation of fishing days for some fleets in some fisheries.
	Limitation on the time of day when the catch is made depending on the type of fishing gear and the target species.
	Fishing seasons limits.
	Limitation of maximum allowable landings of by-catch (chondrichthves).
	Compulsory by-catch mitigation measures in longline fisheries (birds).

**By fishery**

Patagonian toothfish	ITQs Surimi fleet: Annual maximum of incidental catch (1% of the TAC).
Longtail hake	ITQs.
Southern blue whiting	ITQs
Hake North 41° S	Limitation on the number of fishing trips (boats with authorisation to catch hake) and capture per boat. Compulsory use of selective devices (protection of juveniles).
Hake South of 41° S	ITQs Compulsory use of selective devices (trawlers). Enlargement of the closed area (protection of juveniles).
Whitemouth croaker	TAC Closed area in the Argentinean-Uruguayan Common Fisheries Zone (cartilaginous and bony fishes) from December to February Closure area (protection of juveniles) in Buenos Aires province. Closed spawning area and restrictive effort (south of Buenos Aires Province).
Chondrichthyes	Closed areas and restricted effort (protection of juveniles and spawning area). Landing limits (sharks and rays) equivalent to 40% of the total catch per trip. When the percentage of sharks in a landing exceeds the limit, the vessel shall move to another area of operation. Obligation to return to the sea sharks of more than 160 cm (non commercial fishing). TAC for rays and narrownose smooth-hound (Argentinean-Uruguayan Common Zone).



**Table 31.2. Management instruments** (*continued*)

Shrimp	Permanent closed area (North of Gulf of San Jorge). Control of the fishing effort especially at the beginning and end of the fishing season (juveniles' protection and spawning areas). Compulsory use of selective devices (total fleet).
Squid	The fishery management is based on the opening and closing of the different management units.
Patagonian Scallop	TAC by management unit. Annual catch authorisation by vessel. Spawning areas protection (all the management units). Fishing prohibition in areas where more than 50% of the specimens are not of commercial size.

Other measures include restrictions with regard to the minimum size of catches. Additionally, permanently closed areas have been enlarged or modified in accordance with the state of the resource.

To fight illegal, unreported and unregulated (IUU) fishing, a surveillance system of catches has been developed — in addition to the obligations stated by the buyer countries — that affects not only fishing products for export, but also products for the domestic market.

In 2011, a workshop took place on the monitoring the implementation of The National Plan of Action for the Management and Conservation of Sharks (sharks and skates). The trade of fins obtained while the rest of the animal is discarded is prohibited in the EEZ as well as in the Argentinean-Uruguayan Common Fisheries Zone. The use of “bicheros” is prohibited. It is compulsory to discard living sharks of more than 1.60m. In the Argentine EEZ, only a by-catch of up to 40% of skates/sharks per fishing trip is authorised. Once this allowance is met, the vessel must move to another fishing area.

Common measures are used in the Argentinean-Uruguayan Common Fisheries Zone such as total allowable catch for some species, closed areas restrictions for some fishing gear, prohibition of fishing gear for some species, catch assignments, temporary closed areas, and restricted effort areas for some vessels.

As a member of the Commission for the Conservation of Antarctic Marine Living Resources (CCMLAR), Argentina applies its measures — incorporated in national legislation — to vessels authorised to operate within the Convention area.

According to the agreements of the Inland Waters and Aquaculture Commission, the Ministry of Agriculture, Livestock and Fisheries sets the annual catch assignments for exports, which are assessed by the provincial authorities within the corresponding territories. Catch quotas and export assignments have been assessed for sábalo exports. Precautionary catch quotas and export assignments are also assessed for other commercial species, especially boga, tararira and surubí. Exports of these three species are discouraged.

There have been closures to access to inland fisheries based on CFA agreements, particularly in the subwatershed of Paraguay-Paraná Rivers and there have been no new authorisations for cold storage plants. Another tool used by the provinces is to limit the granting of fishing licenses.

Within the provinces there are regulations on authorised fishing gear and minimum sizes of capture for all commercial species. There also are seasonal closures and, in some cases, individual catch assignments per species.

There are regulations to protect artisanal inland fisheries by limiting the number of licenses and by avoiding the industrialisation of the activity.

Research projects (inland waters) include the following.

- Surveys in the upper region of the Paraná (Chaco and Corrientes - Undersecretariat of Fisheries and Aquaculture).
- “Evaluation of ichthyc resources of low river Uruguay and the inner Río de la Plata” (CARP-CARU-SSPyA-DINARA).
- “Conservation of ichthyc fauna and of the resources of the river Uruguay” (CARU-SSPyA-DINARA).
- “Sábalo Project in the lower Paraná Basin.”
- “Piraguazú in upper Paraná River and lower Paraguay River (FAO).

### ***Access***

There are no arrangements concerning access of foreign vessels to Argentine fisheries. Foreign investment is allowed under the establishment of national enterprises (these are called local enterprises with foreign capital).

### ***Management of recreational fisheries***

Recreational fishing, associated with tourism, is increasing in economic importance. Each province has specific regulations for this activity in which it is established how many fish per species can be fished per fisher, the minimum size of catch per species, and permitted fishing gear.

### ***Monitoring and enforcement***

The general marine fisheries information system has been optimised and modernised to enable more and better integration and cross-linking of fishing activity information, such as catches (catch reports), landings (landing official documents), processing (conversion factors), VMS, fishing gears, selectivity devices, characteristic of vessels, permits, etc. The use of video cameras onboard with continuous recording in the whole commercial fleet is mandatory.

Boarding fishing vessels for surveillance purposes on the high seas has been intensified in collaboration of the Prefectura Naval Argentina to verify *in-situ* the operations, gears and selective devices control of fishing vessels.

Data loading (catch reports and landing official documents) has been streamlined via a restricted website. It enables rapid availability of data necessary for cross-linking.

A new high-definition mapping structure has been implemented to increase the accuracy of the analysis of fishing vessels position in the EEZ.

### ***Multilateral agreements and arrangements***

- Member of CCAMLAR.
- Treaty of Rio de la Plata and its Maritime Front (Argentina and Uruguay). Administrative Commission for the Rio de la Plata (CARP) and Binational Technical Commission for the Maritime Front.
- The River Uruguay Executive Commission (CARU) (Argentina y Uruguay). Mixed Argentinean-Paraguayan Commission of the Paraná River (COMIP).
- CONVEMAR.

- Agreement to promote compliance with international conservation and management measures by fishing vessels on the high seas.
- Code of Conduct for responsible fishing.
- Agreement on the Conservation of Albatrosses and Petrels.

## Aquaculture

Aquaculture production remains low with almost 1 050 farms, most of which are small- or medium-sized. The cultured species are mainly trout (42.16 %) and pacú (37.91 %).

The national government has put into action a National Plan of Animal Health, initially aimed at salmonid fishes, having declared the high basin of the Limay River up to Alicura dam, where most trout producers are located, free of diseases of obligatory declaration to the World Organization for Animal Health (OIE) by the National Agrifood Health and Quality Service (SENASA). It is also working on a classification of zones for bivalve mollusc culture, together with SENASA and the provinces involved in this type of production.

The national government has ordered the evaluation of aquaculture potential in seven provinces and the same is envisaged for the remaining provinces. In addition, a FAO/Ministry of Agriculture, Livestock and Fishing project to develop alternative diets with fish silage inclusion for small producers was completed. The Ministry of Agriculture also works to develop technologies for existing native and exotic species and promotes the theoretical-practice qualification.

At present, two aquaculture clusters are in place: the Aquaculture NEA Cluster in the northeast, with a “Competitive Improvement Plan” (includes the provinces of Misiones, Formosa, Corrientes and Chaco) and the Arco Iris Aquaculture Cluster in Neuquén province.

## Fisheries and the environment

In accordance with the Federal Fisheries Council statement, the Undersecretariat of Fisheries and Aquaculture established a total and permanent area closure for fishing in national jurisdiction waters, within the Banco Burdwood, in the area located in the coordinates 54° 30 S and 60° 30 W, 54° 30 S and 59° 30 W, 54° 15 S and 60° 30 W, 54° 15 S and 59° 30 W.

In 2008, the CFP adopted the National Plan for Reducing the Interaction of Seabirds with Fisheries in the Republic of Argentina ([www.minagri.gob.ar](http://www.minagri.gob.ar)). Argentina is a full member of the Agreement on the Conservation of Albatrosses and Petrels (ACAP). The “National Plan of Action for Reducing the Interaction of Sea Mammals with Fisheries in the Republic of Argentina” is currently being prepared.

There is an MSC certification for the scallop fisheries, Argentine anchovy and longtail hake fisheries (approved in May 2012).

Fisheries Management and Conservation of the Biodiversity of the Fluvial Wetlands in the rivers Paraná and Paraguay, Argentina will be carried out with budgetary support from the United Nations Development Program (UNDP-GEF; Project FMAM).

The Undersecretary of Fisheries and Aquaculture is a member of the Consortium of the System of Coastal-Marine Protected Areas (ISCMPA) developed for the conservation and sustainable use of Argentina’s coastal marine biodiversity, financed by the a PNUD-GEF ([www.thegef.org/gef/project\\_detail?projID=3910](http://www.thegef.org/gef/project_detail?projID=3910)). There are 43 Coastal Marine Protected Areas along the coasts of the five maritime provinces.

## Post-harvesting policies and practices

The National Agrifood Health and Quality Service (SENASA) is the governing sanitary organism whose main objective is the control and certification of products and sub-products of animal origin, as well as their inputs. It carries out tasks of prevention, eradication and testing of animal diseases, including those that can be transmitted to humans. It registers, authorises and controls vessels, processing plants, transport and trade of aquaculture and fishing products. In addition, it verifies transport, imports and exports of products, sub-products and derived products of fishing or farming origin.

The application of HACCP programmes, hazard analysis and critical control points is required only for processing plants that export to destinations where this is mandatory.

The National Institute of Food, the National Institute of Medicines, Food and Technology (ANMAT) carries out surveillance of food and develops recommendations. Other tasks are the early identification of non-compliance with the Argentinean Food Code (based on the Codex Alimentarius), discards of contaminated products, the modification of bad processing and handling practices in the industry, and the prevention and control of food borne diseases and the control of product label information.

The Codex Alimentarius regulations are enforced.

The Undersecretariat of Fisheries and Aquaculture and the National Institute of Statistics and Censuses (INDEC) are preparing a fisheries census (processing plants, vessels and fishermen) which will update data at the national and provincial levels.

## Markets and trade

In 2011, exports of fishing products reached 471 000 t and USD 1 490 million, representing a growth of 3% and 12.72% respectively compared with 2010. The value in 2011 was the highest of the last decade. Exports are relatively stable in terms of volume, but the tendency is clearly growing in terms of value. Main destinations of exports of fishing products are Spain, Brazil, China, Italy and the United States.

Exports of shrimps, hake and squid products are the most significant. Exports of hake are stable in volume, while prices are increasing.

The availability of squid remains low. Giving the world importance of the Argentine squid fishery, prices have increased. Higher prices do not compensate, however, for the low catches and it has been impossible to regain profitability in this sector.

The situation of the shrimp fishery is the opposite. In 2011, landings were the highest of the last decade, while prices continued to fall. In addition to the market situation (Spain is the main market), companies faced competition from products derived from aquaculture that affected prices even more than increased catch volumes. As a consequence of lower incomes, there are more difficulties due to high costs (fishing and industry subsectors).

In 2010, imports reached 41 000 tonnes for a value of USD 125 million; in 2011, the values were 46 000 tonnes and USD 160 million. Compared to 2009, the increase was 44% and 63% respectively in volume and value. Main sources of imports of fishing products are from Chile, Ecuador, Thailand, Brazil and Spain.

In 2011, prepared or preserved fish were the main imported products, accounting for 63% of the total volume; fresh or chilled fish, excluding fillets, for 16%, and prepared or preserved seafood for 6%.

Imported food products of animal origin (fish included) must fulfil the provisions contained in two documents: the Decree 4238/68 (Regulation on inspection of products, by-products and animal derivatives) and Law 18284/69 (Argentine Food Code).

For authorisations to export to Argentina, the applicable standard is SENASA Resolution 816/2002 “Standard on auditing procedure to countries exporting goods to Argentina of animal, plant and products.” These include explicit requirements regarding visits to third countries, evaluations at plant level, and inspection systems.

HACCP programmes, hazard analysis and critical control points are not required for audits of exported products with the exception of those products destined for countries where this is mandatory.

Argentina is a member of MERCOSUR. There are no import tariffs for members. For imports from non-MERCOSUR countries, the tariffs applicable to main products are: 10% (Chapter 3), 16% (Chapter 16), 6% (position 23.01), 10% (position 15.04, except cod fats and oils, 4%). There are preferential tariffs arrangements under ALADI.

## Overview

The main objectives of the fisheries administration are as follows.

- To improve resources and marine ecosystems research, particularly those associated with the seabed of the extensive continental shelf beyond 200 miles.
- To continue to modernise the overall national fisheries information system in order to implement a system of inspection, surveillance and monitoring of fishing activities along the entire chain.
- To implement a system of fisheries through international accreditation organisations. The final goal is the certification of good practices for all Argentinean fisheries.
- To continue to comply with the Code of Conduct for Responsible Fishing (FAO).
- To increase efforts aimed at opening new markets, taking into account the difficulties experienced by traditional markets.



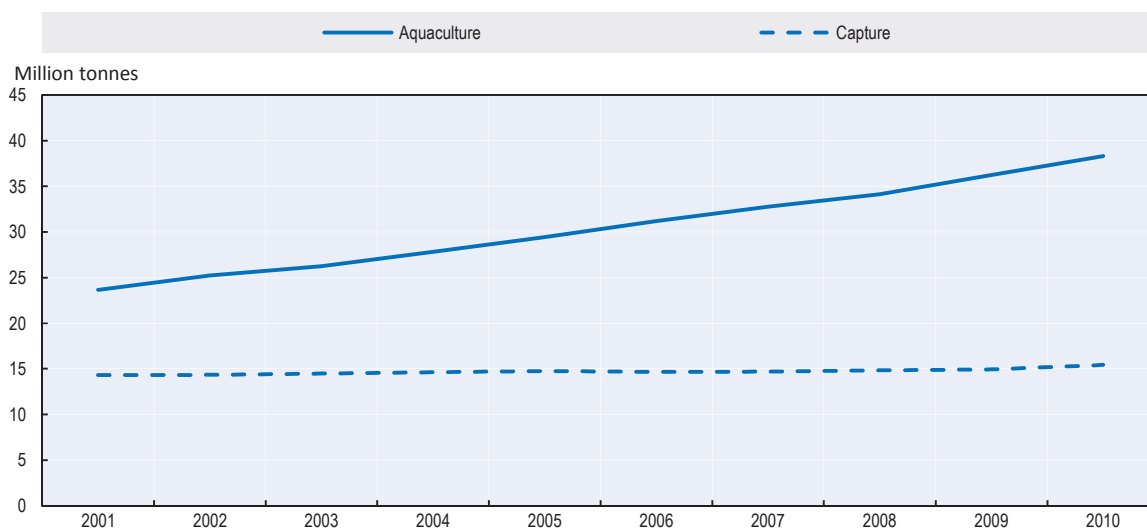
## Chapter 32

### CHINA

#### Summary of recent developments in China

- The Chinese fishery is maturing and plays an important role in the food sector. Both volume and value of total fisheries output have risen steadily, increasing 4.1% and 10.6% respectively over the 11<sup>th</sup> Five-year Plan (2006-10).
- Rising demand for fish products have driven growth and profits in aquaculture, and investment and innovation have boosted productivity. However, a balanced policy emphasis between marine fishing (especially distant fishing) and aquaculture has been maintained, despite the steady reduction in the share of marine catch to total fisheries output.
- During the 11<sup>th</sup> Five-year Plan (2006-10), as part of the effort to enhance the sustainable fisheries and rebuild fish stock, restocking projects for different fish species in different waters was encouraged and sustained by government financial support. Other stock enhancement programmes are also used. These include more conservation areas, construction of artificial reefs and marine ranches, more efficient environment monitoring systems, seasonal closures, and reduction of the fishing capacity.
- Government support for fisheries industry comes in many forms. Considerable government investment has gone into improving fisheries infrastructure, promotion of technological innovations, guarantees of improved profitability and income for fishers and sustainable fisheries development, for example.
- International co-operation is a priority. As the biggest fishing and aquaculture nation in the world, China strives to fulfil its obligations as a responsible fisheries power. Bi- and multi-lateral agreements have been signed to seek co-operation and mutual development. China is a member of several different fisheries organisations and committees, and is actively involved in international and regional fisheries management.
- Fisheries administrative sectors have a growing role in overall governance of Chinese fisheries. Moving beyond their traditional role, they are actively involved in the enforcement of regulations in aquatic products safety and healthy aquaculture, guarantee of fishers' rights, collection of reliable fisheries data, construction of an efficient governance network, quick response to natural disasters, safeguarding national sovereignty and marine-time rights and more.

Figure 32.1. Harvesting and aquaculture production

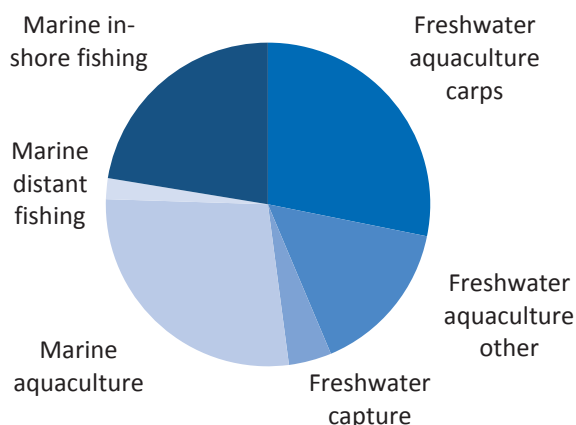


Source: FAO FishStat Database.

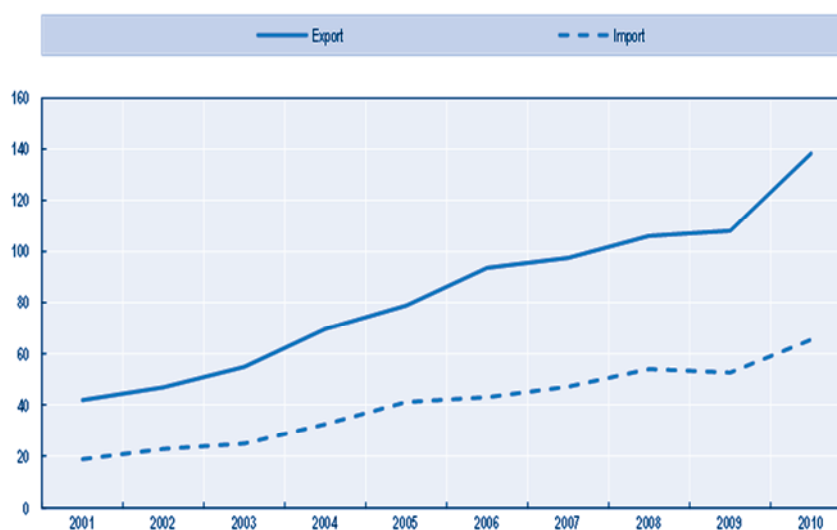
### Box 32.1. Key Characteristics of Chinese Fisheries

- Total fisheries output in 2010 amounted to 53.73 million tonnes, of which about 71.3% originated from aquaculture. Carp was by far the most important species for freshwater aquaculture and shellfishes for marine aquaculture. With “aquaculture-oriented” fisheries policy the keystone of Chinese policy since the 1980s, marine catches have stagnated. There has been a downward trend of marine fishing with a “zero growth” policy since 1999, although there a slight but exceptional growth in recent years due to the development of distant fishing. (Panel A)
- China is a major exporter of aquatic products in the world, ranked the top in volume since 1989 and the top in value since 2002 according to FAO. Exports were USD 13.828 billion in value and 3.3388 million tonnes in volume in 2010, with Japan, the United States, EU countries, and Korea being the major importers. Leading export items are prawn, shellfish, tilapia, eel and large yellow croaker. (Panel B)
- With strong demand at domestic markets, China is expected to be the top importer of aquatic products in the near future. Imports were USD 6.5 billion in value and 3.8218 million tonnes in volume in 2010, with Russia, Peru and the United States being the most important exporters. (Panel B)

**Panel A. Aqua-products by volume in 2010**



**Panel B. Trade evolution in value, 2001-2010 (USD 100 million)**





## Legal and institutional framework

The fisheries industry in China is largely regulated by the Fisheries Law which entered into force in 1986, and which was updated in 2000 and 2004. This law provides the legal framework for the aquaculture and fishing industries and for enhancement and conservation of fisheries resources. In addition, other specific laws, rules, regulations, international treaties, and administrative acts are put in place to regulate Chinese fisheries, thus the legal system is very detailed. For example, the Water Law (enacted in 1988, amended in 2002) regulates the development, utilisation, saving, protecting, allocating and management of water. Rules for Packaging and Labelling of Agricultural Products (put in place in 2006) set out standards for products' package, label, profile, etc. Regulations for Fishing Access (enacted in 2002, amended in 2002 and 2007) elaborates how individuals and organisations obtain fishing license and how relevant government departments manage this process. UNCLOS serves as the international reference for regulating marine fisheries. Reflecting the fact that China has a vast variety of local features, local authorities are allowed to enact specific strategies for localised fisheries governance. A comprehensive legal system and effective enforcement is seen as the key to a responsible and prosperous fisheries industry.

The Chinese fisheries industry operates in a hierarchical jurisdictional context involving the participation of fisheries administration departments at the national, provincial, autonomous regional, and municipal levels. In provinces and autonomous regions, counties and cities also play a role.

The Bureau of Fisheries within the Ministry of Agriculture is the main administrative body governing fisheries. The Bureau is responsible for a strategic vision for the sector, and formulates policies and programmes to help the sector develop. Its role is to guide fisheries economic reform, to implement and monitor fisheries laws, regulations and international fisheries agreements, to enhance fisheries governance, to facilitate sustainable fisheries development, to promote fisheries education and research, to maintain national fisheries interests and rights, etc.

Other fisheries agencies also play a role in governing fisheries. The Fisheries Law Enforcement Command of China shares the same director with the Bureau of Fisheries and co-ordinates fisheries law enforcement. The Fisheries Management Bureau for each regional sea (Yellow Sea and Bohai Sea; East China Sea; South China Sea) is responsible for regional fisheries law enforcement. By the end of 2010 there were 2 896 fisheries law enforcement agencies with 35 093 enforcement staff throughout the country. The Bureau of Fishing Vessel Inspection is responsible for the legal and technical inspection of vessels. Fisheries administrations in the provinces, autonomous regions, municipalities and counties have more or less the same missions as the Bureau of Fisheries in their respective geographical regions. They monitor and enforce the national fisheries and aquaculture regulations in their regions, and can establish local regulations to address regionalised problems, provided that they do not contravene those adopted by the Bureau. A fisheries governance network consisting of different fisheries agencies at different levels throughout the country conducts administrative matters, such as law enforcement, resource management and environment monitoring.

Other important organisations and institutes include:

- the Chinese Academy of Fishery Science,
- the National Centre for Fisheries Technology Extension,<sup>1</sup>
- the China Fisheries Society,
- the China Fisheries Association,
- the China Fisheries Products Marketing and Processing Association, and

- the China Fishery Mutual Insurance Association.

Most of these exist as extensions of government sectors.

Non-governmental organisations (NGOs) also play an important role in Chinese fisheries. Chinese fisheries NGOs help fishers and related industry workers communicate with government agents: with supervision and guide from government, NGOs are involved in fisheries management within the organization. NGOs are supposed to enhance the self-education/training, self-discipline, and self-management within the organisation, thus to create a responsible industry. NGOs also help operators along the fisheries value chain to improve quality and access new markets.

### ***Policy reform***

The initial years after the reforms of the late 1970s were dominated by a supply-driven paradigm focussed on production. The contributions are undeniable: China has been the largest fish producer since 1989, fishers' income greatly enhanced and markets both home and abroad substantially expanded. However, since the 1990s this focus has shifted, with more priority given to sustainable fisheries development, environment protection, fisheries production efficiency, aquaculture for high-value and high-quality fish, development of secondary and tertiary fisheries industries, and more.

Increased awareness of the need for improved fisheries resources conservation in the 1980s led to the development of an “aquaculture-oriented” fisheries policy, boosting China as the only country whose aquaculture production is greater than capture, and produces almost 70% of world aquaculture output. However, the rapid expansion of aquaculture has come with some growing pains such as pollution and disease outbreaks. The government has responded by setting up regulations and introducing technological innovations to strengthen sustainability and responsibility in aquaculture. Ecological, safe and efficient aquaculture is the goal for future development.

With few exceptions, marine capture production has trended downward since 1999. In some cases this is a result of depleted fish resources, but more commonly it is a result of government policy. In 1999, the government put forward a plan of “zero growth” in the marine fishing output, followed by “negative growth” in 2000 to reserve its downward trend. Various measures are taken to realise the purpose, such as decommissioning schemes, restrictions on total catch volume and/or species, etc. Marine aquaculture serves as a remedy for the loss from marine fishing.

### **Capture fisheries**

With aquaculture being the focus for fisheries development, the priority for capture fisheries has moved to effective enforcement of controls on vessel numbers and tonnage, curbing IUU fishing, structural adjustment and energy efficiency for vessels. Freshwater landings in 2010 were 2.29 million tonnes, representing a slight increase from 2009, while 2010 marine landings were 13.15 million tonnes, the record peak for the last ten years, and the result of years of effort in restoring fish stocks (Figure 32.1). The record level of marine landings is also attributed to the development of distant fishing, with 1.17 million tonnes in volume and RMB 11.92 billion in value, an increase of 14.2% and 32% respectively compared to 2009. With the entry of Chinese vessels in the Antarctic krill fisheries as well as new fishing grounds at East Africa (e.g. Madagascar, Mozambique), distant-water fishing has entered into a new stage of development, which is in line with the 2008 government policy to “support and enhance distant fisheries”.

Figures 32.2, 32.3 and 32.4 summarise the composition of catch species.

Figure 32.1. Capture production (million tonnes), 2001-10

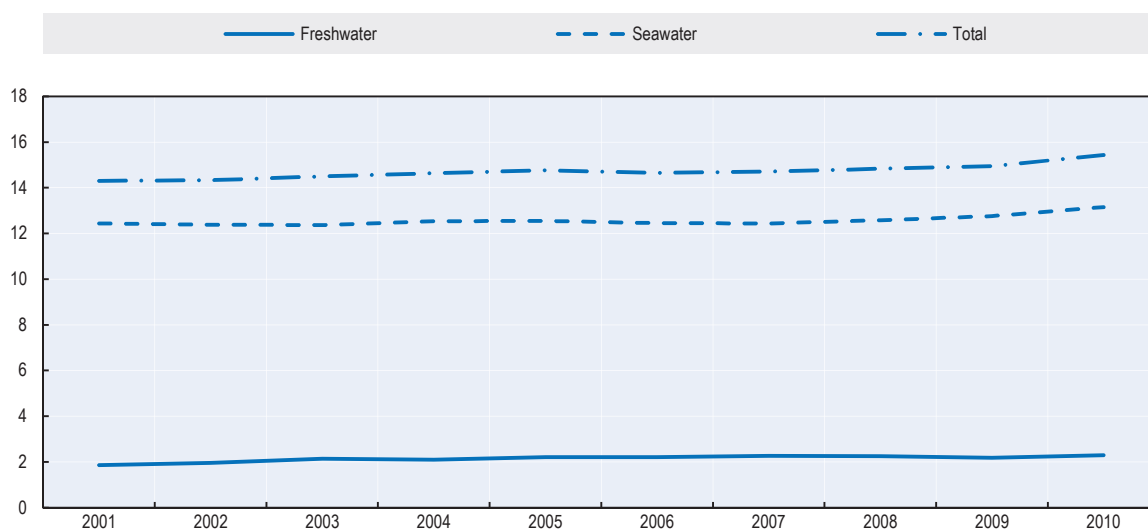


Figure 32.2. Composition of catch species (10 000 tonnes), 2009-10

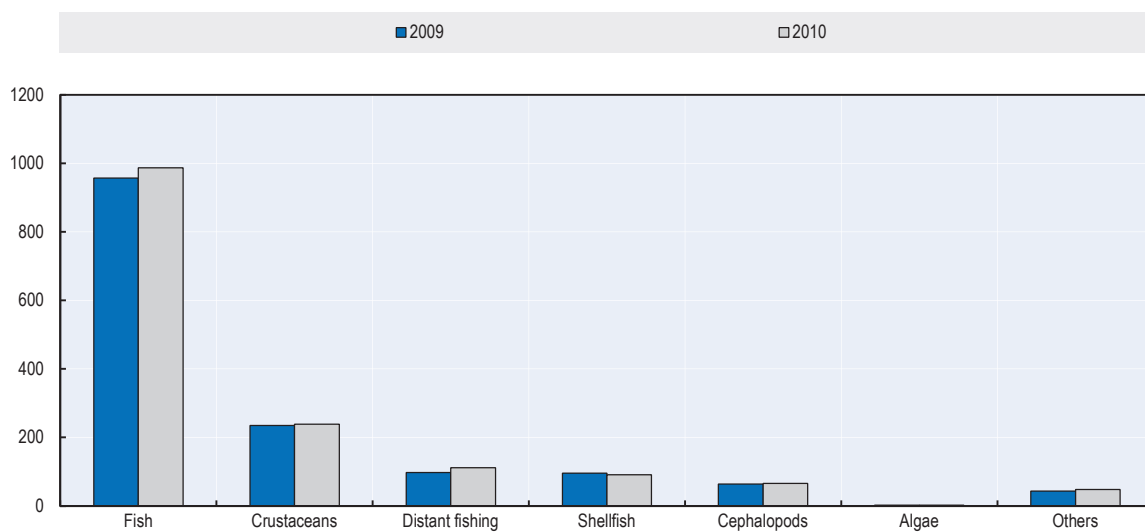


Figure 32.3. Composition of freshwater catch species (10 000 tonnes), 2009-10

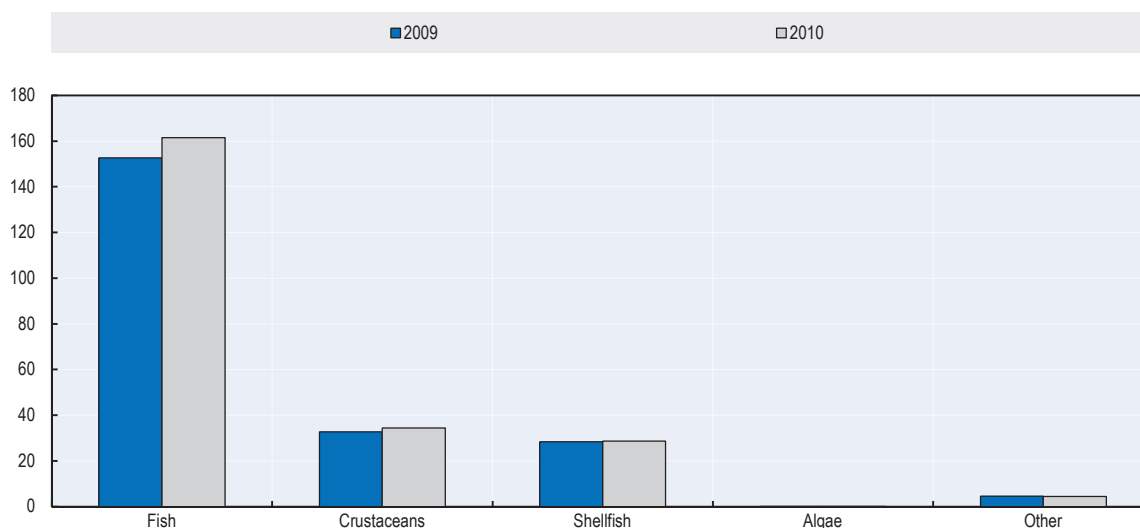
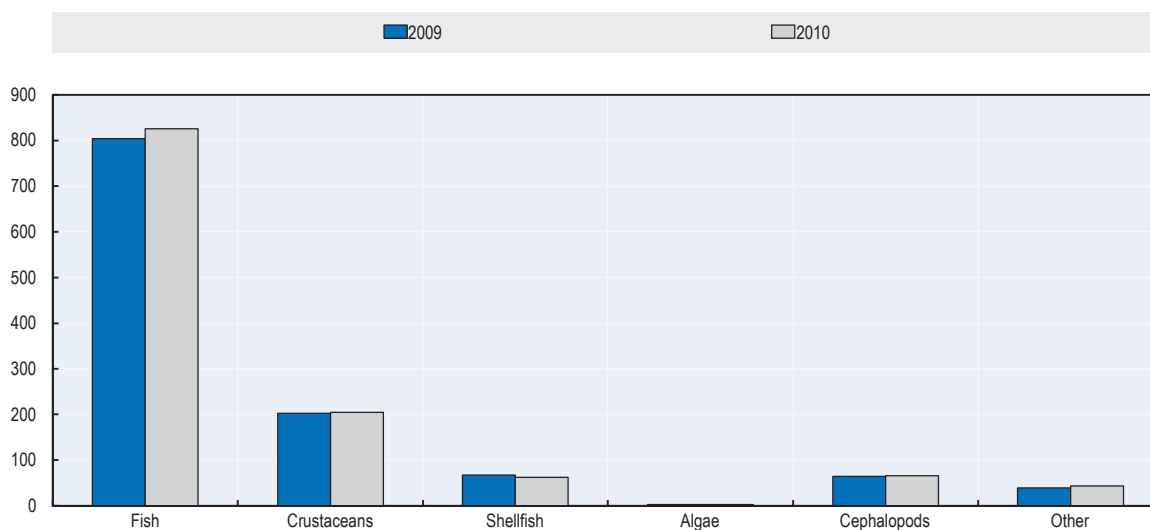


Figure 32.4. Composition of marine catch species (in-shore fishing) (10 000 tonnes), 2009-10



Source: Ministry of Agriculture (2011), *China Fisheries Yearbook 2011*, China Agriculture Press.

### *Management of commercial fisheries*

The benefits of improved fisheries management are beginning to be felt in China. In 2003 the Ministry of Agriculture released its policy on dual-control over both marine vessel numbers and tonnage, targeting a drop to 192 000 vessels with tonnage of 11 426 000 kw by the end of 2010, which was achieved as planned. No increase in marine vessel numbers or tonnage is expected during the 12<sup>th</sup> Five-year Plan (2011-15). Seasonal fishing closures are in effect in all marine waters and major fresh waters. By the end of 2010, there were 210 nature reserves for aquatic life and 220 national conservation areas for aqua-germplasm resources where aquaculture, release of artificial seedlings, and introduction of exotic species are forbidden to protect the certain local species. Measures to sustain fisheries are encouraged and

supported by the government, such as enhancement and release, construction of marine ranches and artificial reefs. However, Chinese fisheries still suffer from the lack of a rigid output control system, the absence of an efficient quota allocation system and weaknesses in the statistical system. The Fisheries Law, in combination with the establishment of fisheries regulations adapted to specific areas using international best practices is seen as the way forward.

### *Management instruments*

Principal fisheries management instruments used in China are input control, output control, technical regulations and economic measures.

The key component of input control is entry access; vessels are required to have a fishing license to access certain waters. Restrictions are imposed about fishing grounds and times, number and types of gears, target species, etc. Licence requirements are part of a “dual-control” approach targeting vessel numbers as well as tonnage.

Output control interacts to some degree with input control. With licensed fishing (“one-vessel-one-license” policy in China), TAC is translated into individual quota (IQ) in Chinese fisheries legislation. Output controls are a measure to achieve the “zero growth” and the later “negative growth” policies for marine fishing.

A wide range of technical measures are used. These include seasonal and area closures, water reserves, mesh size limitation, allowed species and sizes and ratio of captured juvenile. For example, a summer moratorium has been introduced to all marine waters since 1999. In addition, destructive fishing methods such as purse seine and trawling are prohibited. These measures are intended to help fisheries resources recover by protecting spawning grounds, spawning fish, and juveniles, and by controlling total catch volume.

A “beneficiary pays” principle is used to develop fees for enhancement and conservation of fisheries resources. This principle argues that whoever benefits should contribute to the costs either in fresh waters or in marine waters. Fees collected are used to recover and enhance fisheries resources.

### *Access arrangements for foreign fleets*

Foreign vessels are not allowed to operate in waters under Chinese jurisdiction except those operating under bilateral fisheries agreement as well as those authorised by Chinese government. In 2010, the Sino-Japanese Fisheries Agreement, Sino-South Korean Fisheries Agreement, and Sino-Viet Nam Fisheries Agreement of Northern Gulf, fishing vessels could get access to foreign fishing grounds with specific requirements (if clarified in advance) fulfilled on quota, target species, vessel type, vessel number, vessel tonnage, etc. Moreover, in 2010, 1 989 authorised Chinese vessels obtained access to EEZs of 35 countries, high seas at Pacific, Atlantic and Indian Ocean, and Antarctic waters.

### *Management of recreational fishing*

The size and number of lakes and rivers and long coast lines in China offers many opportunities for recreational fishing. Policies are in place to encourage restructuring of fisheries sectors, and there are a large number of fisher “retirees” resulting from decommissioning schemes. However, recreational fishing management have some weaknesses: there is no clear blueprint, nor relevant regulation, and many recreational fishers are not well trained. More can be done to guarantee a responsible recreational fishing sector, beginning with the introduction of a legislative system and increased government investment. A comprehensive governance system that coordinates across different departments, such as tourism, transportation, sanitary concerns, vessel inspection, taxation and ports would be

helpful. Distinct geographical features or resource availability in different areas should be taken into account.

### ***Multilateral agreements and arrangements***

China is a member or active participant in a number of international and regional fisheries management organisations. To fulfil its obligations as a responsible fisheries power, China is actively involved in the implementation of multilateral and bilateral fisheries agreements, policy making and fisheries governance at both the regional and international level.

In 2010, China participated in many multilateral negotiations and conferences. China took part in the negotiation of fisheries subsidies rules with WTO, and played an active role in negotiating the sustainable fisheries at conferences held by FAO, APEC, IMO, UNGA, APFIC, etc. China continued to strengthen its cooperative marine relationships in the Pacific, Antarctic and Indian Ocean regions by attending negotiations of high sea fisheries resources with SPRFMO, ICCAT, WCPEC, IOTC, etc. China also took active part in conferences with CCAMLR. The conferences had more or less the same theme: how to sustain fisheries development. Some 2 010 international exchange and co-operation highlights are as follows.

- Conference with UNGA reflected on issues concerning responsible fisheries, combating IUU, recovery and management of fisheries resources, efficient detection, surveillance and enforcement, and their connection with sensible fisheries policy making.
- Just as Chinese exports require a catch certificate to gain access to the EU market, the Chinese government imposed the same requirement on imports with a view to combating IUU products.
- China became a member country of the IATTC and attended a conference in Guatemala as a new member country in 2010.
- China signed the Convention on the Conservation and Management of Fisheries Resources on the South Pacific High Seas.

Bilateral co-operation was also fruitful in 2010. Fisheries joint commission conferences were held with Japan, Korea, Viet Nam, Argentina and Norway, where further opportunities for co-operation were discussed. Some details about bilateral co-operation are as follows.

- Fisheries co-operation with Argentina was incorporated into the governmental co-operation framework, where extensive cooperative areas would be explored in marine capture, aquatic products process, aquaculture, scientific research, and exchange of fisheries governance experiences.
- A bilateral agreement with Chile allowed Chinese exports with “certificate of legal sourcing” to access their market.
- An MOU was signed with Russia to formalise co-operative enforcement arrangements with respect to IUU fishing.
- China and Japan agreed to strengthen co-operation concerning the management of tuna resources.
- The first Conference of Sino-Norwegian Fisheries Committee on Fisheries was held in Beijing, where the two parties exchanged ideas about joint research possibilities in rebuilding fisheries resources, aquatic products trade, combat IUU fishing, scientific investigation on Antarctic krill resources and more.
- A catch certification system was launched to fulfil EU regulatory requirements to document that marine aquatic products being exported did not originate from IUU fishing.

## Aquaculture

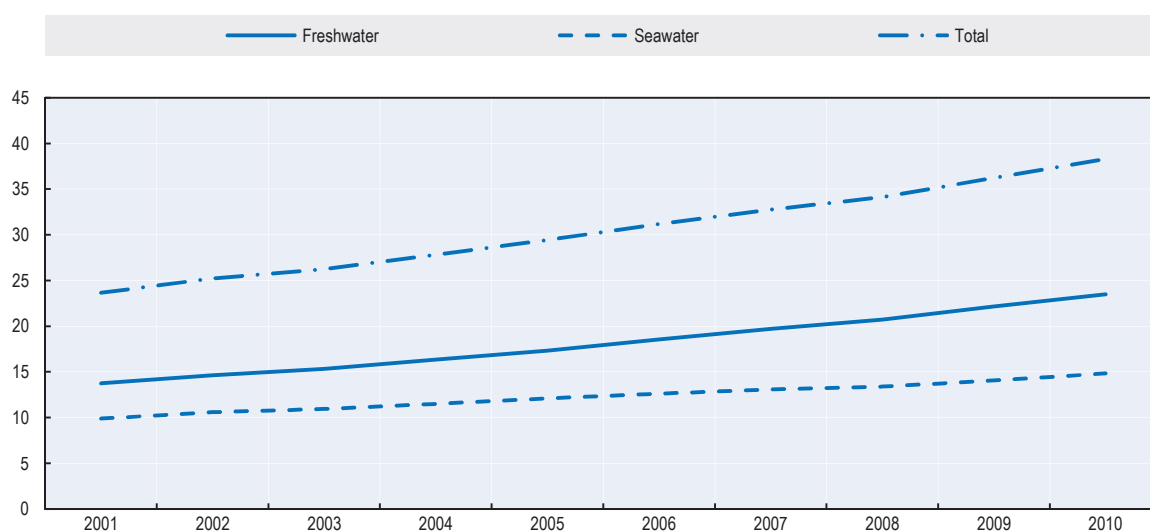
### *Policy changes*

The focus for Chinese aquaculture has been on the expansion of farming areas and increasing output. Now the focus has shifted to the structure adjustment of farmed species and enhancement of quality. There is a strong research emphasis on the culture of aquatic species with high quality, good nutritional value, and high economic value. In addition, scientific research has been directed at technological innovation to increase efficiency through intensification and industrialisation. Great importance is also attached to the environment issues associated with aquaculture. There is reason to believe that Chinese aquaculture industry is not necessarily developing at the cost of the environment.

### *Production facilities, values and volumes*

In 2010, strong domestic and international demand kept prices rising and helped offset the losses caused by natural disasters and rising production costs. Aquaculture production reached 38.29 million tonnes, an increase of 5.72% compared to 2009, with 14.82 million tonnes from marine aquaculture and 23.47 million tonnes from freshwater aquaculture, an increase of 5.49% and 5.87% respectively (Figure 32.5). The production value in 2010 was RMB 479.1 billion, an increase of RMB 63 billion from 2009.

**Figure.32.5. Aquaculture production (million tonnes), 2001-10**



Source: Ministry of Agriculture (2011), *China Fisheries Yearbook 2011*, China Agriculture Press.

Carp are the dominant species. Grass carp, silver carp, common carp, bighead carp and crucian carp are the most common fish on Chinese dinner tables, accounting for about 73% for total freshwater production in 2010 (Figure 32.6 and 32.7). Tilapia is the second most important species, with production responding to increasing demand from international markets. Marine culture species are dominated by shellfish, while fish, prawn and crab are produced in small quantities (Table 32.1). However, industry cluster areas for culture of flatfish and large yellow croaker are being developed in some coastal provinces, and it is expected that marine fish production will increase in the future.

Figure 32.6. Composition of aquaculture species (million tonnes), 2009-10

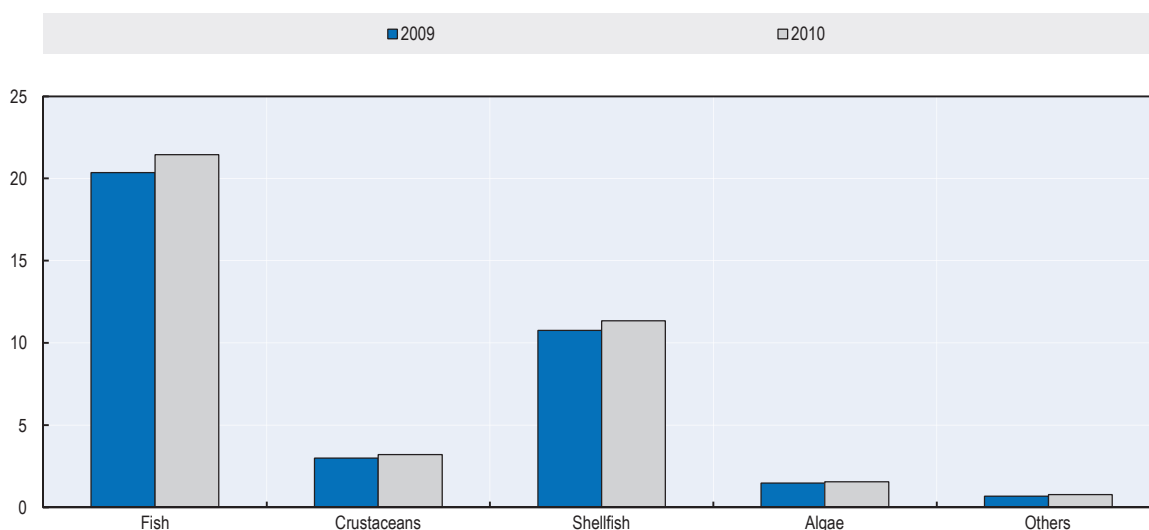


Figure 32.7. Composition of freshwater aquaculture species 2010

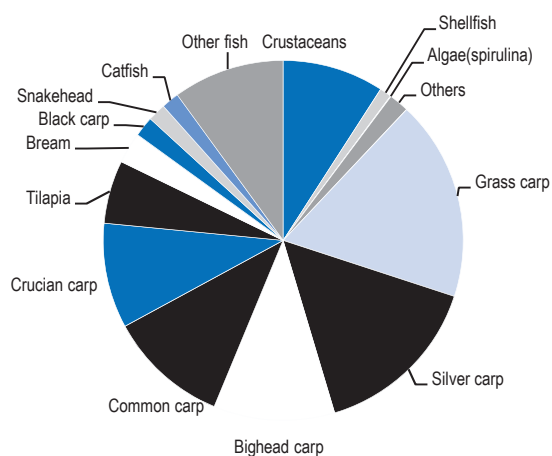




Table 32.1. Composition of marine aquaculture species (10 000 tonnes), 2009-10

	2009	2010		2009	2010
<b>Fish</b>	<b>76.79</b>	<b>80.82</b>	<b>Shellfish</b>	<b>1053.05</b>	<b>1108.23</b>
Sea bass	10.2	10.6	Oyster	350.38	364.28
Flounder	8.67	8.5	Abalone	4.24	5.65
Large yellow croaker	6.6	8.58	Snail	20.38	20.78
Cobia	2.91	3.64	Arca	27.67	31.04
Yellowtail snapper	1.94	1.68	Mussel	63.74	70.22
Sea bream	4.03	4.5	Pen shell	1.54	3.1
American red snapper	4.91	5.22	Scallop	127.68	140.75
Puffer fish	1.89	1.71	Clam	319.25	353.9
Grouper	4.42	4.94	Razor clam	68.38	71.44
Plaice	1.15	0.54	Other	69.79	47.07
Other fish	30.08	30.91	<b>Algae</b>	<b>145.65</b>	<b>154.13</b>
<b>Crustaceans</b>	<b>101.69</b>	<b>106.11</b>	Kelp	82.8	88.36
Prawns	79.65	83.3	Wakame	13.24	10.91
<i>Whiteleg shrimp</i>	58.08	60.83	Nori	10.75	10.72
<i>Giant tiger shrimp</i>	6.02	5.66	Sea moss	12.54	11.47
<i>Chinese shrimp</i>	4.44	4.53	Eucheuma	0.66	0.64
<i>Kuruma prawn</i>	5.04	5.48	Gelidium	0.012	0.012
<i>Other prawns</i>	6.07	6.8	Sargassum fusiforme	0.79	0.78
Crabs	22.05	22.81	Green moss	0.11	0.11
<i>Swimming crab</i>	9.58	9.11	Other algae	24.748	31.128
<i>Mud crab</i>	11.59	11.58	<b>Others</b>	<b>28.04</b>	<b>33.01</b>
<i>Other crabs</i>	0.88	2.12	<b>Total</b>	<b>1405.22</b>	<b>1482.3</b>

Source: Ministry of Agriculture (2011), *China Fisheries Yearbook 2011*, China Agriculture Press.

## Fisheries and the environment

Environment issues are attracting more and more attention, and a high priority is given to environment concerns in the policy-making process. Meanwhile, much research has been done regarding how to conduct fisheries in a more environment-friendly manner.

In China, artificial releases are now a regular practice to restore fish stocks, maintain biodiversity and reduce the danger of eutrophication and swamping in the long run. In 2010, a total investment of RMB 710 million was dedicated to enhancement and release projects. A total of 28.94 billion seedlings were released, 12.89 billion for marine fish species, 16.04 billion for freshwater species and 19.13 million for rare and endangered species. A national plan was established by the Ministry of Agriculture in 2010, regarding locations, quantities and species for enhancement and release.

Ecological and healthful aquaculture is encouraged. Sustainability, environmental protection as well as enhancement and recovery of aquatic ecosystem are all attainable, as are aquatic products of high quality. Healthful aquaculture efficiently recycles various resources

within the system. To facilitate healthful aquaculture, much research has been done on the assessment of the influence of aquaculture on, for example, waters, control of water quality, quality feed, disease control, and biodiversity maintenance.

Besides seasonal closures, more conservation areas are being reserved for different purposes: to protect a subset of the population, to conserve water ecosystems, to protect spawning fish, to conserve spawning grounds and habitats, etc. In 2010, 60 national conservation areas were added for aqua-germplasm resources.

The National Monitoring Centre for Fisheries Ecological Environment offers regular training courses to those who are involved in inspecting fishery pollution accidents. The aim is to prevent and control fisheries pollution accidents.

The Ministry of Agriculture also engages in environmental impact assessment of planned engineering projects concerning offshore oil, port and waterway, bridges, water conservancy and hydropower, etc. The goal is to ensure that those projects do not produce negative impacts on ecosystem and the conservation of aquatic biological resources.

### **Government financial transfers**

The Chinese Government is actively involved in sponsoring and encouraging fisheries development. Total government financial transfers to the fisheries sector increased by 25.8% to RMB 1.544 billion in 2010. The fund was almost entirely attributed to infrastructure construction (RMB 968 million, an increase of 39.3% from 2009) and special investment projects (RMB 576 million, an increase of 8.3% from 2009).

The fund for infrastructure construction focuses particularly on the following.

- Construction of fields for cultivating stock and/or fine breed and centres for genetic breeding.
- Construction of stations for epidemic disease control and monitoring centres for aquatic animals.
- Construction of fishing ports as well as construction and modernisation of patrol boats.
- Establishment of reserves for aquatic wild animals.
- Capacity building for fisheries administrative agents.

The fund for special investment projects focuses particularly on the following.

- Sustainable development of fish stocks (e.g. marine ranch, artificial release, etc.).
- Accident relief
- Subsidies for fishers (e.g. job transfer, retraining of fisher “retirees”, decommissioning programs)
- Fuel subsidies
- Fisheries management

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

Due to the persistent preference for live or fresh fish in domestic markets, the proportion of fish processed into semi-finished or finished products is relatively low, with about 35% of output going for further processing, of which only 16.6% is freshwater fish. However, the processing industry is expecting to grow as demand for convenience food grows among

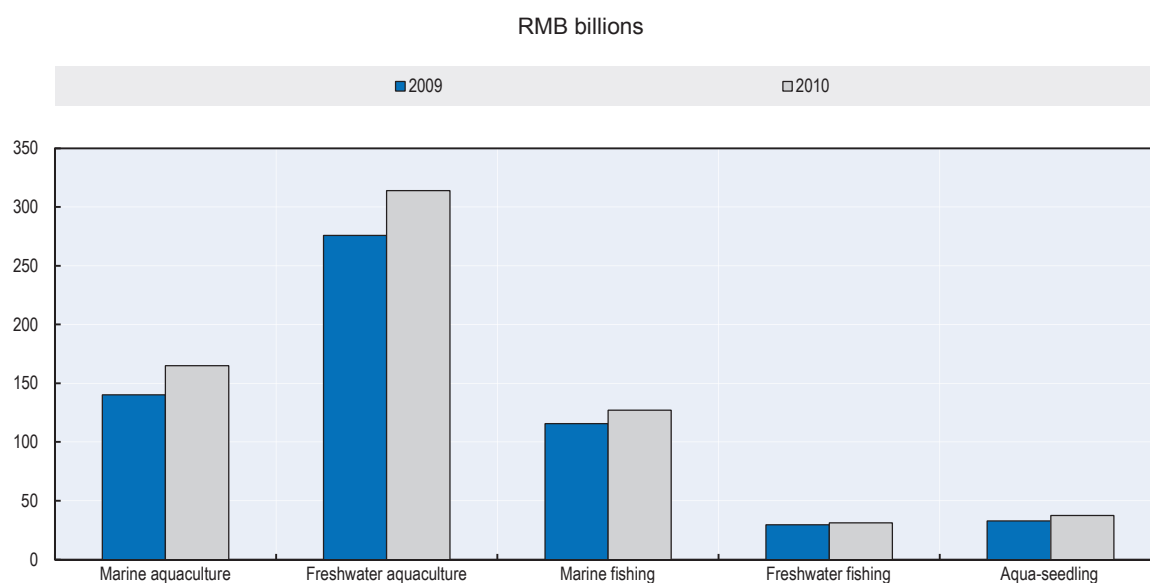
younger consumers. Markets for canned products, surimi, seaweed products and seafood snacks are expected to grow.

Although freezing and chilling are still the main processing activities for aquatic products, technological innovation in processing industry is expected to increase the utilisation of, for example, aquatic products (e.g. main products as well as by-products), production of convenient food, dietary supplements (e.g. fish oil), biochemical drugs.

## Markets and trade

Total fisheries output in 2010 amounted to 53.73 million tonnes, of which about 71.3% originating from aquaculture (Figure 32.8). Carp are by far the most important species for freshwater aquaculture and shellfishes for marine aquaculture.

**Figure 32.8. Fisheries output value, 2009-10**



Source: Ministry of Agriculture (2011), *China Fisheries Yearbook 2011*, China Agriculture Press.

### Markets

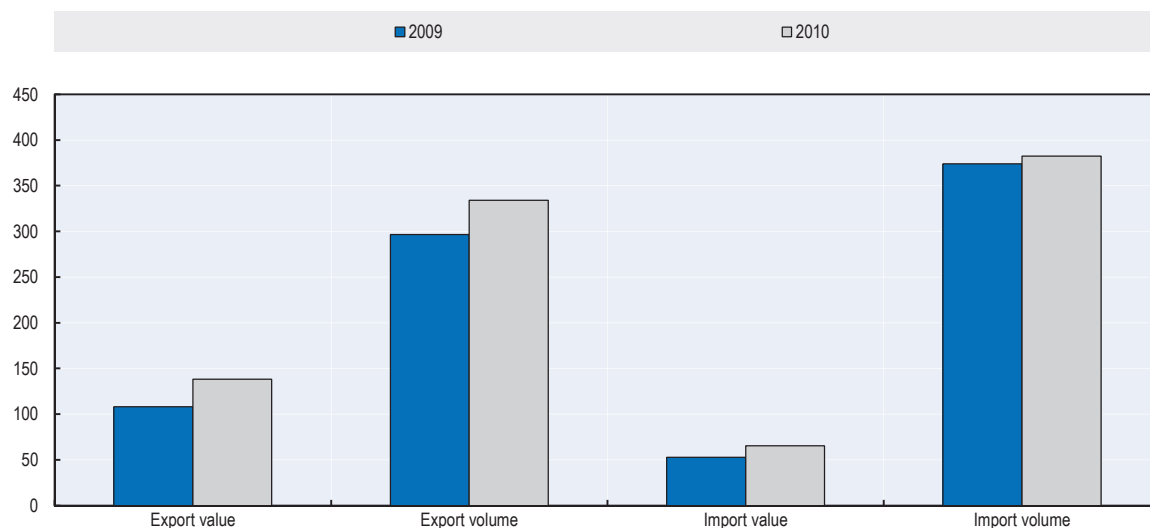
Increased total supply coming from the continuing growth in aquaculture production, affordable prices and demand for healthy protein are boosting per capita food fish consumption in China. Per capita fish consumption is expected to grow strongly, given inland people's access to freshwater and marine aquatic products facilitated by modern logistics, improved living standards and demand for high quality protein. Per capita output of aquatic products in 2010 was 40.2 kg, a moderate increase from the 38.4 kg in 2009. Marine fish saw stronger price growth than freshwater, mainly due to its premium reputation, especially wild marine catches.

### Trade

Exports of aquatic products were USD 13.83 billion in value and 3.34 million tonnes in volume in 2010, an increase of 12.6% and 28.09% from 2009 respectively (Figure 32.9). Imports of aquatic products were USD 6.5 billion in value and 3.8218 million tonnes in volume, an increase of 2.18% and 24.16% from 2009 respectively.

**Figure 32.9. Trade in aquatic products, 2009-10**

USD 100 millions, 10 000 tonnes



Source: Ministry of Agriculture (2011), *China Fisheries Yearbook 2011*, China Agriculture Press.

Among about 170 export destinations, Japan, the United States, EU countries, and Korea are the most important (Table 32.2). However, Chinese Taipei, as well as Central and South America, Africa and Oceania regions are growing in importance.

**Table 32.2. Exports by destination 2010**

Importers	Volume	Change in volume	Value	Change in value
	Tonnes '000	%	USD million	%
Japan	627.6	9.3	3 232	20.62
United States	560.4	11.7	2 602	26.2
EU countries	550.7	11.51	2 086	18.09
South Korea	449.1	6.4	1 334	31.57
ASEAN countries	365.5	3.2	1 031	33.68
Hong Kong	150.9	19.6	976	32.38
Chinese Taipei	98.6	22.2	631	64.04
Russia	84.4	11.3	392	33.71
Others	451.6		1 544	
<b>Total</b>	<b>3 338.8</b>		<b>13 828</b>	

Source: Ministry of Agriculture (2011), *China Fisheries Yearbook 2011*, China Agriculture Press.

Leading export items are prawn, shellfish, tilapia, eel and large yellow croaker (Table 32.3). Aquaculture development is the most dynamic contributor to the large Chinese exports.

Table 32.3. Leading export aquatic products in general trade, 2010

Items	Share in general trade value	Volume	Change in volume	Value	Change in value
	%	Tonnes '000	%	USD millions	%
Prawn	16.3	216.1	15.2	1536	24.6
Shellfish	12.3	260.7	18.6	1158	39.2
Tilapia	10.7	322.8	24.63	1006	41.61
Eel	8.4	45.2	5.9	790	49
Large yellow croaker	2.2	50.1	5.1	207	43
<b>Total</b>	<b>49.9</b>	<b>895</b>		<b>4700</b>	

Source: Ministry of Agriculture (2011), *China Fisheries Yearbook 2011*, China Agriculture Press.

Russia, Peru and the United States were the major exporters (Table 32.4). With the growing demand for healthier and higher-quality protein in fish, the Chinese domestic market is estimated to import more aquatic products.

Table 32.4. Imports by source 2010

Exporters	Share in import value	Volume	Change in volume	Value	Change in value
	%	Tonnes '000	%	USD millions	%
Russia	27.84	910.2	19.87	1361	9.42
Peru	15.92	715.3	-16.5	1090	38.78
United States	9.96	426.7	10.9	850	27.53
ASEAN countries	9.47	384.8	36.15	594	55.87
Chile	7.71	205.2	-49.9	417	-19.59
Norway	5.76	188.2	26.86	413	45.85
Japan	4.24	151.3	25.55	319	44.86
Others		840.1		1492	
<b>Total</b>		<b>3821.8</b>		<b>6536</b>	

Source: Ministry of Agriculture (2011), *China Fisheries Yearbook 2011*, China Agriculture Press.

## Outlook

The Ministry of Agriculture released the 12<sup>th</sup> Five-year Plan for Chinese Fishery in 2011. The document summarises the achievements China has made during the 11<sup>th</sup> Five-year (2006-10) and gives a framework for Chinese fishery development in the 12<sup>th</sup> Five-year (2011-15).

The principles for the 12<sup>th</sup> Five-year development are as follows.

- Balanced priority to supply guarantee and quality enhancement.
- Balanced priority to production development and ecosystem conservation.
- Balanced priority to industry development and fishers' professional development.

- Balanced priority to structural optimisation of fisheries sectors and enhancement of foundations (infrastructure construction, support from science and technology, fisheries public service system).
- Balanced priority to domestic and international markets.
- To incorporate fisheries development into the overall blueprint of national development.  
The objectives for the 12<sup>th</sup> Five-year development are as follows.
- Enhanced ability to guarantee production safety in fishery.
- Enhanced ability to produce products of high quality.
- Enhanced fisheries economies (fishery GDP and production value) and optimised structure for fisheries sectors (e.g. encouraging the secondary and tertiary fisheries industries, increasing share of processed aquatic products, etc.).
- Enhanced livelihood security for fishers.
- Enhanced ability to restore and conserve aquatic biological resources.
- Enhanced application of science and technology to fisheries sectors.
- Enhanced governance and law enforcement in fishery.
- Enhanced competitiveness of Chinese exports at international markets and development of marine distant fishing.

Concrete and expected figure indicators for the future five-year development are provided in Table 32.5. Note that [ ] indicates the five-year accumulative total.

Table 32.5. Expected outcomes of the five year plan, 2010-2015

	Details	2010	2015	Average annual growth (%)
<b>Production safety</b>	Number of above-first-class fishing ports	111	200	12.5
	Proportion of fishing vessels with access to the nearest shelter from wind and fishing moratorium (%)	33	70	[37]
	Mortality from production accidents on vessels	319	300	-1.2
<b>Fisheries economic structure</b>	Gross output value of fisheries economy (RMB 1 000 billion)	1.29	2.10	10.2
	Value-added of fisheries economy (RMB 100 million)	5904	9900	10.9
	Fishery output value (RMB 1 000 billion)	0.67	1	8.3
	Value-added of fisheries (RMB 100 million)	0.38	0.64	11.0
	Proportion of output value for fisheries secondary and tertiary industries (%)	47	53	[6]
	Proportion of processed aquatic products (%)	35	40	[5]
<b>Supply of aquatic products</b>	Output of aquatic products (10 000 tonnes)	5373	≥6000	≥2.2
	Proportion of aquaculture output (%)	71	75	[4]
	Area of transformed low-yielding ponds (10 000 mu)	1000	2000	14.9
	Pass rate for sampling inspection at origins (%)	97.9	>98	[0.1]
<b>Livelihood security of fishers</b>	Average per capita net income for fishers (RMB)	8963	13170	8
	Number of fishers receiving training (10 000 person-time)	300	[2000]	
	Number of fishers receiving fishery insurance subsidies from central financial projects (10 000)	2.1	180	143.6
<b>Conservation of aquatic biological resources</b>	Seed number for enhancement and release (100 million)	289.4	[1500]	
	Area of marine ranches (10 000 hectares)	236	500	16.2
	Number of national nature reserves for aquatic life	16	23	7.5
	Number of national conservation areas for germplasm resources	220	300	6.4
<b>Support from Science and technology</b>	Contribution rate of science and technology (%)	55	58	[3]
	Coverage rate of fine stock breed (%)	55	60	[5]
	Rate of genetic improvement (%)	25	35	[10]
<b>Fisheries governance</b>	Rate for release of county-level water and intertidal area planning (%)	39	100	[61]
	Coverage rate for aquaculture license issuance (%)	68	100	[32]
<b>Export-oriented fishery</b>	Export value for aquatic products (USD 100 million)	138.28	180	5.4
	Fishing volume (10 000 tonnes)	110	130	3.4
	Number of fishing vessels	1991	2300	2.9

Source: Ministry of Agriculture (2011), *China Fisheries Yearbook 2011*, China Agriculture Press.

### Note

1. Fisheries technology extension agencies exist at all levels, with a total of 12 794 agencies as of the end of 2010.





## Chapter 33

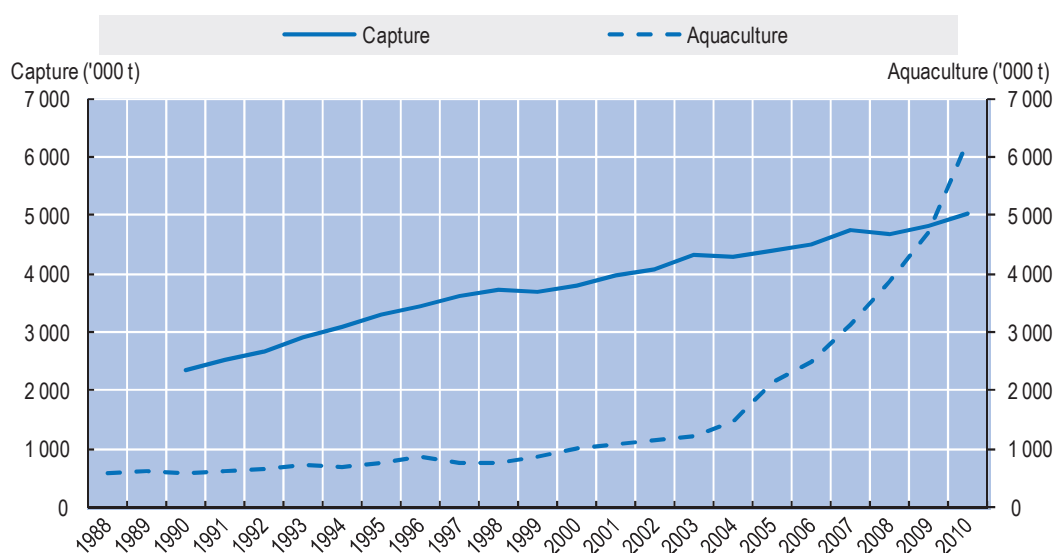
### INDONESIA

#### Summary of recent developments

- With 17 504 islands and a coastline of 104 000 km<sup>1</sup> Indonesia is the largest archipelagic country in the world. Its Exclusive Economic Zone covers 2 981 211 km<sup>2</sup> and inland waters cover 5 400 km<sup>2</sup>.
- With a 2011 production of 12 385 850 metric tonnes (t), Indonesia is the world's second largest producer of fisheries products. Production is comprised of 5 061 680 tonnes of marine capture fisheries (41%), 347 420 tonnes of inland capture fisheries (3%), 2 671 723 tonnes of cultured finfish and other aquatic animals (22%), and 4 305 027 tonnes of cultured seaweed and algae (34%). The total gate value of fisheries products amounted to USD 14.1 billion (data from 2010, USD 1 = IDR 9 090). Indonesia also has the world's second highest number of fishers (2 730 510) and aquaculture farmers (3 351 448, data of 2010), as well as the world's second highest number of powered (394 630) and non-powered (162 510) fishing vessels.
- A detailed description of the Indonesia fisheries sector and the Ministry of Marine Affairs and Fisheries can be found in *Indonesian Fisheries Book 2011* and *Marine and Fisheries in Figures 2011* ([www.kkp.go.id](http://www.kkp.go.id)).

1. Unless indicated otherwise, all statistics on Indonesian fisheries in this paper are from MMAF (2011a-f).

Figure 33.1. Harvesting and aquaculture production



Source: FAO FishStat Database (Indonesian Ministry of Marine Affairs and Fisheries exists from 2004 onwards).

**Box 33.1. Key characteristics of Indonesian fisheries**

- In 2011, total marine catch amounted to 5 061 680 tonnes, and, by far, shrimp and lobster are Indonesia's most valuable fisheries (USD 6 555 million), followed by various species of small tuna and small pelagics. In volume, small pelagics and skipjack tuna are the most important ones.
- In 2011, export volume of fishery products from Indonesia was 1 093 284 tonnes in 2011, which represents a 7% increase compared to 2007. The total value of exported fishery products was USD 3.2 billion in 2011, compared to USD 2.2 billion in 2007. The most important export products in 2011 were shrimp, large and small tuna species, and crab. The United States, Japan and China were the main destinations. Import of fisheries products increased considerably from 162 472 tonnes with a value of USD 104 million in 2001 to 450 000 tonnes with a value of USD 498 million in 2011. (Panel A)
- While the total number of fishers decreased by 10% between 2004 and 2009 the total number of vessels increased by 7.5% at the same time period. Looking into the vessel size composition the number of small vessels (<5 GT) has been decreasing, whereas the number of mid-sized vessels and that of large vessels (>200 GT) have been increasing. (Panel B)

**Figure 33.2. Key fisheries indicators****Panel A. Trade evolution****Panel B. Capacity**

	2006	2011	% change
Number of fishers	15 549	22 977	47.8
Number of fish farmers	..	..	..
Total number of vessels	657	625	-4.9
Total tonnage of the fleet	188 729	189 652	0.5

## Legal and institutional framework

The Ministry of Marine Affairs and Fisheries, along with its counterparts the fisheries services at the provincial and district levels (*Dinas Kelautan dan Perikanan*), are the main government agencies responsible for the administration and management of capture and culture fisheries. The district- and provincial level fisheries services are part of local governments and, as such, their budget and operations are controlled by local parliaments. A considerable part of their budget, however, comes from national sources.

The Ministry of Marine Affairs and Fisheries consists of the Secretariat-General, the Inspectorate-General, five Directorates-General (Capture Fisheries; Aquaculture, Marine, Coastal, and Small Islands; Fisheries Products Processing & Marketing; Marine and Fisheries Resources Surveillance) and three agencies (Research and Development, Human Resources Development, and Fish Quarantine and Inspection). Embedded within these units are various Directorates, Centres, and Technical Implementation Units. Most of Indonesia's large fishing harbours, with the notable exception of Benoa in Bali, are managed as Technical Implementation Units under the DG of Capture Fisheries.

The main laws regulating fisheries are Law 31 of 2004 and its amendment Law 45 of 2009. These laws provide a legal basis for a wide range of fishery management measures in marine, brackish, and public inland waters (rivers, lakes, etc.). The Coastal Zone Management Law (27/2007) aims to regulate use of the coastal zone (both land and water) and it covers coastal municipalities (*kecamatan*) as well as marine waters up to 12 nautical miles from the coastline.

Various articles of Fisheries Laws 31/2004 and 49/2009, and the Coastal Zone Management Laws have articles on protected areas and protected species. In addition, large parts of marine protected areas in Indonesia have been established through Conservation Law 5/1990, and most protected areas established under Law 5/1990 are managed by agencies under the Ministry of Forestry.

The Fisheries Laws (31/2004, 49/2009) provide the legal underpinning of a wide variety of management measures, including effort control (licensing), quota, gear restrictions (including, for example, mesh size restrictions and gears that are banned outright). The national policy for capture fisheries is to achieve a catch amounting to 80% of the estimated Maximum Sustainable Yield (MSY). The official estimate for MSY, which dates from the 1990s, is 6.4 million tonnes per year, and therefore the official policy is to achieve a total catch of 5.12 million tonnes per year. According to official statistics, this level has never been reached and therefore control of catch volume through TACs or otherwise has not been a priority.

Because control of catch volume through TACs has never been a priority, Indonesia does not have a system for allocation of quota. Foreign ownership of quota or allocation of quota to foreign fishing companies is prohibited, and no vessel owned or operated by a foreign entity may engage in fishing or fish processing.

## Capture fisheries

### *Performance*

In 2011, total marine catch amounted to 5 061 680 tonnes, and total catch from public inland waters amounted to 347 420 tonnes. By far, shrimp and lobster are Indonesia's most valuable fisheries, followed by various species of small tuna and small pelagics. In volume, small pelagics and skipjack tuna are the most important. Informal estimates of IUU fishing in Indonesian waters (reportedly by vessels from other countries in Southeast Asia) amount to 1.9 million tonnes.

In 2011, Indonesia's marine fishing fleet comprised 162 510 boats without engine, 232 390 boats with outboard engine, and 162 240 boats with inboard engine. Since 2007, the number of boats without an engine has been decreasing at an average rate of 9.4% per year, whereas the number of boats with outboard engines has been increasing at an average rate of 6.3% per year. The number of boats with inboard engines remained stable, but there were important shifts in the size composition of the inboard-powered fleet: the number of small vessels (<5 GT) decreased 2.4% per year, whereas the number of mid-sized vessels increased between 1.4 and 54% per year. The number of large vessels (>200 GT) has been decreasing with 2.4% per year to 370 in 2011. The fishing fleet for inland public waters comprises 148 233 non-powered boats, 35 020 boats with outboard engines, and 2 184 boats with inboard engines.

**Table 33.1. Volume (t) and value (million USD) of marine capture fisheries in Indonesia, 2010**

	Volume in 2010 (t)	Tonnes
Total marine capture fisheries in 2010		5 039 446
(1) scads		351 216
(2) Skipjack tuna		329 949
(3) Combination of Fringescale/Deepbody/Goldstripe sardinella, and Bali sardinella		327 204
(4) Short-bodied mackerel		276 110
(5) Combination of Bullet tuna, Frigate tuna and Eastern little tuna		277 619
(6) Combination of all "udang" categories (shrimps and lobster)		227 326
(7) Trevallies (mostly small trevally species, e.g. <i>Selar spp</i> )		179 940
(8) anchovies		175 726
(9) Narrow-barred spanish mackerel		140 277
(10) Yellowfin tuna		130 422
(11) Red snappers		123 827
Total top 11		2 539 616
	<b>Value in 2010 (USD, 1 USD =IDR 9090, using the average rate for 2010)</b>	<b>USD (millions)</b>
Total marine capture fisheries in 2010		6 555
(1) Combination of all "udang" categories (shrimps and lobster)		711
(2) Short-bodied mackerel		373
(3) Skipjack tuna		356
(4) Combination of Bullet tuna, Frigate tuna, and Eastern little tuna		289
(5) scad		276
(6) Narrow-barred spanish mackerel		261
(7) barramundi		250
(8) Red snappers		241
(9) anchovies		238
(10) Yellowfin tuna		212
(11) Trevallies (mostly small trevally species, e.g. <i>Selar spp</i> )		208
(12) Combination of Fringescale/Deepbody/Goldstripe sardinella and Bali sardinella		196
(13) Common squids		179
Total top 13		3 789

1. The most recent year that detailed information by species is available. Species category names are as stated in the official MMAF publication. Species categories starting with "Combination of..." combine two or more species categories from the source publication.

Source: MMAF (2010c).

### *Status of fish stocks*

Generally speaking, Indonesia's fish stocks and aquatic habitats are in good condition. There is, however, only little room for further expansion of the fishing fleet, since most stocks are fully exploited or over-exploited, especially in the Western Fishery Management Areas. Hence, further increases in production will only be possible after recovery of fish stocks through rationalisation of the fishing fleet.

Indonesia's most valuable capture fishery, the shrimp fishery, is over-exploited in all Fishery Management Areas, except in WPP 718 (Aru Bay, Arafura Sea, and the Eastern parts of the Timor Sea). Demersal fisheries are also mostly fully exploited or over-exploited, especially in the Western Fishery Management Areas. There appears to be some opportunity for further expansion of the fisheries for small pelagics, especially in the Eastern Fishery Management Areas. Bigeye tuna and Southern bluefin tuna are over-exploited in all Fishery Management Areas, whereas yellowfin tuna is fully exploited. Of all fisheries for large tuna species, only the fishery for skipjack tuna remains somewhat under-exploited.

**Table 33.2. Status of fisheries resources by major species category and by Fishery Management Area (WPP)<sup>1</sup>**

WPP	Shrimp			Demersal			Small pelagic			Large tuna species			Squid		
	U	F	O	U	F	O	U	F	O	U	F	O	U	F	O
<b>Indian Ocean</b>															
571	0	0	1	0	5	3	1	3	2	1	0	0	-	-	-
572	0	0	1	1	5	2	0	0	2	1	1	1			
573	0	0	1	0	1	2	1	0	1	1	2	2	1	0	0
<b>Pacific Ocean</b>															
711	0	0	1	0	1	1	0	4	0	-	-	-	1	0	0
712	0	0	1	2	2	2	0	0	4	-	-	-	-	-	-
713	0	0	1	2	0	0	0	0	1	1	1	1	-	-	-
714	-	-	-	0	1	0	1	1	0	1	1	1	1	0	0
715	0	0	1	0	2	0	1	2	0	1	1	1	-	-	-
716	-	-	-	4	0	0	2	0	0	1	1	1	-	-	-
717	0	0	1	1	0	0	1	0	0	1	0	2	-	-	-
718	0	1	0	0	1	7	1	0	0	-	-	-	-	-	-
	0%	11%	89%	22%	40%	38%	29%	36%	36%	33%	29%	38%	100%	0%	0%

1. The WPPs are numbered from West to East. Status is coded as follows: U = under-exploited, F for fully exploited, O = over-exploited. The number indicates the number of fisheries assessed. For example, in WPP 571 there are zero under-exploited, five fully exploited, and three over-exploited demersal fisheries.

Source: Indonesia National Committee on Assessment of Fisheries Resources not published.

### *Management of commercial fisheries*

Indonesia's fisheries legislation allows for implementation of a wide variety of fishery management instruments. The main instrument currently in operation is licensing of fishing vessels, which is mandatory for all fishing vessels >5 GT (fishing vessels < 5 GT only require registration at the local *Dinas Kelautan dan Perikanan*). Responsibilities for issuance of fishing licenses (*Surat Izin Penangkapan Ikan, SIPI*) are as follows:

- National level (Ministry of Marine Affairs and Fisheries) - fishing vessels > 30 GT

- Provincial level (provincial DKP) – fishing vessels > 10 GT and < 30 GT
- District level (district DKP) – fishing vessels > 5 GT and < 10 GT.

Since 2010, a temporary halt to the issuing of new fishing licenses for various gears has been in effect (Decree from the Directorate-General of Capture Fisheries No. 8 of 2010). The following gears are subject to this regulation: purse seines for vessels > 200 GT, trawl nets for finfish fisheries of the Arafura Sea, trawl nets for shrimp fisheries, gillnets in offshore waters of the Arafura Sea, and fish aggregating devices (*rumpon*).

Indonesia's geographic units for capture fishery management are the Fishery Management Areas, of which there are eleven. In principle, each Fishery Management Area must have a separate management plan, and each fishery within Fishery Management Areas (or part thereof) must have its own Fishery Management Plan (*Rencana Pengelolaan Perikanan*). These plans are currently in development.

Besides the aforementioned licensing system and Fishery Management Areas, Indonesia also applies a zoning system for allocation of management responsibility to administrative levels (Law 32/2004 and Government Regulation 38/2007):

- National level (Ministry of Marine Affairs and Fisheries) – marine waters > 12 nm from the shoreline;
- Provincial level (provincial DKP) – marine waters between 4 and 12 nm from the shoreline; and
- District level (district DKP) – marine waters up to 4 nm from the shoreline.

This zoning system has, among others, implications for the management of Marine Protected Areas.

Various gear restrictions apply to Indonesia's EEZ. Trawl nets (*pukat ikan*) must fulfil design specifications outlined in Ministerial Regulation 11 of 2009, and pair-trawling is prohibited. Furthermore, trawl nets are only allowed in parts of WPP 711, 716, 717, 718, and 572.

Use of explosives and poisons is prohibited by law.

### ***Management of recreational fisheries***

Indonesia has a substantial community of recreational fishers, varying from big-game fishers on offshore waters to culture-based fisheries in fishing ponds.

According to MMAF Regulation 15 of 2005, recreational fishing is not allowed on spawning grounds and in fisheries conservation areas. Recreational fisheries (in legal terms referred to as a particular kind of “fish capture for non-commercial purposes” or “*penangkapan ikan yang bukan untuk tujuan komersial*”) must comply with fishing regulations on gear restrictions and protected species regulations. In general, fish capture for non-commercial purposes is subject to a permit from the Ministry, but if non-commercial fishing takes place for recreation or tourism, and if the total catch per trip is lower than 100 kg, then such a permit is not necessary. Foreign institutions and government agencies are not allowed to catch fish for non-commercial purposes in Indonesia's EEZ.

### ***Traditional fishery management systems***

Fisheries Laws 31 of 2004 and 45 of 2009 acknowledge the importance of traditional fisheries management systems (often referred to as “local wisdom”), which are based on unwritten agreements among coastal people in rural areas. Such systems include “*sasi*”, which is found in the Moluccas and Papua in the easternmost provinces of Indonesia, “*mana-e*,”

which is found in North Sulawesi, “*awig-awig*”, which is found on the islands of Bali and Lombok, and “*panglima laot*”, which is found in Aceh (North Sumatera). “*Sasi*” usually focuses on fisheries for lobster, Trochus shell or mother-of-pearl (*lola*), sea cucumber (*teripang*), or clams (*kima*). Usually, a “*sasi*” area is closed to fishing for one or two years, after which it is opened for a period of one or two weeks. Other traditional management systems include agreements on prohibited gears and fishing practices, enforced by a traditional enforcement system.

Indonesia also features traditional or informal management systems in aquaculture. For example, pearl farms often make informal arrangements with villages to lease part of their fishing grounds. In Bali, plots of submerged land for seaweed culture are subject to an informal administration and management system.

### ***Monitoring and enforcement***

Various enforcement organisations collaborate to enforce fisheries laws. These include the Indonesian Navy, the Indonesian National Police (including the Water and Air Police or *Polisi Air dan Udara*), the Directorate-General of Marine and Fisheries Resources Surveillance and Controlling, as well as the province- and district-level Fisheries Services (*Dinas Kelautan dan Perikanan*). The latter also rely on a network of community-based surveillance groups, known as POKMASWAS. The function of POKMASWAS is to report any violations of fisheries regulations to law enforcement agencies.

The Ministry of Marine Affairs and Fisheries has its own fleet for patrols and surveillance, comprising 25 decked patrol vessels and 64 speedboats as of 2011. In addition, district- and province-level fisheries agencies have small speedboats for patrols and surveillance.

Indonesia has been operating a Vessel Monitoring System (VMS) since 2002. All Indonesian-flagged vessels over 60 GT, including fishing vessels that operate on the high seas, are required by law to install and operate a transmitter of a satellite-based VMS (Minister of Marine Affairs and Fisheries Regulation No. 5/2007 Concerning the Implementation of Fishing Vessel Monitoring System). In addition, the Ministry of Marine Affairs and Fisheries operates an off-line VMS for vessels between 30 and 60 GT. This system uploads position data from the fishing vessel upon its return to harbour, instead of providing real-time positions of the fishing vessel.

By law, every vessel with a fishing license (*Surat Izin Penangkapan Ikan*) must maintain a log book which contains data on location, fishing practices, and catch for each trip. The format and other requirements for this log book are described in MMAF Regulation 18 of 2010.

Through its membership of the regional fisheries organisation IOTC, Indonesia is obliged to implement an on-board observer programme. A ministerial regulation about on-board observers is in preparation, and Indonesia already has a small cadre of on-board observers. Indonesia plans to expand its cadre of on-board observers over the coming years.

Besides the regular courts where fisheries-related issues can be resolved, Indonesia also has a network of Fisheries Courts (*Pengadilan Perikanan*), which handled 138 cases in 2010 and 66 cases in 2011. As of May 2012, Indonesia has 57 *ad hoc* Fisheries Court judges (MMAF 2012).

Indonesia is an active partner in multilateral initiatives to promote responsible fisheries and to abate illegal, unreported, and unregulated (IUU) fishing. For example, the Ministry of Marine Affairs and Fisheries Regulation No. 14 of 2011 Concerning Fishing Business incorporates principles from the FAO Code of Conduct for Responsible Fisheries, the FAO Compliance Agreement, and the FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing.

### ***Multilateral agreements and arrangements***

Indonesia co-operates with the Food and Agricultural Organization (FAO), the Asia-Pacific Fishery Commission, and the UN (particularly with respect to implementation of the UN Convention on the Law of the Sea), and on World Trade Organization discussions on fisheries subsidies.

Since 2007, Indonesia has been a member of the Indian Ocean Tuna Commission (IOTC), and since 2008 Indonesia has been a member of the Commission for the Conservation of Southern Bluefin Tuna (CCSBT). Furthermore, Indonesia is a Cooperating Non-Member of the Western and Central Pacific Fisheries Commission (WCPFC).

Indonesia participates in the following regional initiatives and institutions: South East Asia Fisheries Development Centre (SEAFDEC), the Arafura and Timor Seas Forum (ATSEF), the Network of Aquaculture Centres in Asia-Pacific (NACA), ASEAN Working Group on Fisheries, and the Regional Plan of Action to Promote Responsible Fishing Practices including Combating IUU Fishing in the Region.

Indonesia is one of the initiators of the Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF), which is a multi-lateral partnership of Indonesia, Philippines, Malaysia, Papua New Guinea, Solomon Islands, and Timor Leste. CTI-CFF aims to address the urgent threats to coastal and marine resources in the Coral Triangle.

Indonesia has bilateral agreements on fisheries with at least 11 countries. Details on bilateral co-operation can be found in MMAF (2011b).

### **Aquaculture**

In 2010, Indonesia's aquaculture production amounted to 6 976 924 tonnes with a total value of USD 6 967 million (USD 1 = IDR 9 090). In 2011, total aquaculture production was 6 976 750 tonnes. In contrast to capture fisheries, freshwater species comprise a large part of the production.

Indonesia is the world's second largest producer of seaweed for carrageenan production (FAO, 2012b). Most of the seaweed is exported as dried product, and about 15-20% is used for domestic consumption (MMAF, 2011b). Seaweed culture in Indonesia has dramatically increased by 249% from 2007 to 2011. Other notable increases in culture production are milk fish *Chanos chanos*, tilapia, catfish (*Clarias* spp), and pangas catfish (Indonesian name: "patin") *Pangasius pangasius*. Shrimp, which remains the most valuable cultured product, increased by 4.5% per year over the period 2007-2011 to 414 014 tonnes in 2011.



**Table 33.3. Volume (t) of aquaculture production in Indonesia in 2011**

Name	Volume (t)
(1) Seaweed	4 305 027
(2) Milkfish <i>Chanos chanos</i>	585 242
(3) Tilapia (combination of two species categories with Indonesian names <i>Nila</i> and <i>Mujair</i> )	481 440
(4) Shrimp	414 014
(5) Catfish <i>Clarias spp.</i> (Indonesian name: <i>Lele</i> )	340 674
(6) Common carp <i>Cyprinus carpio</i> (Indonesian name: <i>Ikan mas</i> )	316 082
(7) Panga catfish <i>Pangasius pangasius</i> (Indonesian name: <i>Patin</i> )	144 538
(8) Giant gouramy	59 401
(9) Groupers	12 561
(10) Seaperch <i>Lates calcarifer</i>	3 464
(11) All other species	314 306
<b>Total</b>	<b>6 976 750</b>

Source: MMAF (2011b).

**Table 33.4. Value, in millions of USD (1 USD=9 090 IDR) of cultured production by major species groups in Indonesia in 2010**

Name	Value (million USD)
(1) Shrimp	1 845.9
(2) Seaweed	1 292.6
(3) Tilapia (combination of two species categories with Indonesian names <i>Nila</i> and <i>Mujair</i> )	1 078.2
(4) Common carp <i>Cyprinus carpio</i> (Indonesian name: <i>Ikan mas</i> )	637.5
(5) Milkfish <i>Chanos chanos</i>	538.2
(6) Panga catfish <i>Pangasius pangasius</i> (Indonesian name: <i>Patin</i> )	405.2
(7) Catfish <i>Clarias spp.</i> (Indonesian name: <i>Lele</i> )	302.7
(8) Groupers	249.2
(9) Giant gouramy	181.3
(10) Seaperch <i>Lates calcarifer</i>	20.2

Source: MMAF (2011d).

## Fisheries and the environment

According to a recent assessment (Burke et al., 2012), nearly 95% of Indonesia's coral reefs are threatened by a combination of factors: overfishing and destructive fishing, watershed-based pollution (e.g. pollution from run-off in deforested areas), coastal development, and marine-based pollution. Overfishing and destructive fishing is by far the most important threat, affecting more than 90% of reefs. More than 35% of reefs are at “high” or “very high” risk. When the influence of recent thermal stress and coral bleaching is combined with the aforementioned local threats, the area of reefs at “high” or “very high” risk increases to more than 45%.

Indonesia has a 15.4 million ha network of Marine Protected Areas, which aim to protect biodiversity and to sustain capture fisheries. This network comprises ten protected areas covering 5.5 million ha established by the Ministry of Marine Affairs and Fisheries, 56 protected areas covering 5.2 million ha established by local governments, and 32 protected areas covering 4.7 million ha initiated by the Indonesia Ministry of Forestry (status as of 2012, unpublished data from the Ministry of Marine Affairs and Fisheries). There are also hundreds of small, community-managed protected areas. Indonesia plans to expand this network to 20 million ha by 2020.

The Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (see above) is a major regional initiative to protect coastal habitats with high biodiversity, including coral reefs, mangroves, and seagrass beds.

### **Government financial transfers**

Government financial transfers in Indonesia comprise fuel subsidies, support for construction of infrastructure (e.g. factories, cold storage, fishing harbors) and governmental support for rural development (e.g. *Pengembangan Usaha Mina Perdesaan*, PUMP). According to a recent study (Ghofar, Schorr and Halim, 2008), total subsidies for the capture fisheries sector amount to USD 140 million per year, excluding fuel subsidies. The total value of fuel subsidies is difficult to quantify, but is likely to be hundreds of millions of USD per year.

### **Post-harvest policies and practices**

The total volume of fisheries products processed in Indonesia increased from 3.17 million tonnes in 2006 to 4.90 million tonnes in 2011. The number of establishments for fish processing (Fish Processing Unit, FPU) was approximately 60 117 units in 2010, most of which are very small (53 054 micro FPU with a capacity of < 100 kg per day, 5 313 small FPU with a capacity of 100 to 1 000 kg per day, 1 628 medium-sized FPU with a capacity of 1 000-3 000 kg per day, and 122 large FPU with a capacity of > 3 000 kg per day). In 2011, this number increased to 63 828 FPU, which together employed 1 340 644 workers.

### **Markets and trade**

Domestic consumption increased by an average rate of 8.7% per year, from 4.9 million tonnes in 2004 to 8.9 million tonnes in 2011. Fish consumption per capita increased from 22.6 kg in 2004 to 31.6 kg in 2011.

Export volume of fishery products from Indonesia was 1 093 284 tonnes in 2011, which represents a 7% increase compared to 2007. The total value of exported fishery products was USD 3.2 billion in 2011, compared to USD 2.2 billion in 2007. The most important export products in 2011 were shrimp (USD 1 200 million), large and small tuna species (USD 452 million), and crab (USD 240 million, mostly comprising blue swimming crab).

**Table 33.5. Volume and value of exports of fisheries products from Indonesia by country of destination in 2010, by decreasing value**

Country	Most important items	Volume (t)	Value (million USD)
Total		1 103 576	2 863.8
(1) United States	Frozen shrimp and prawn (USD 308 million); shrimp and prawn, packed, not in airtight containers (USD 129 million); frozen fillets of freshwater fish (USD 119 million)	127 792	869.9
(2) Japan	Frozen shrimp and prawn (USD 329 million), various marine fish (fresh) (USD 125 million, including tuna worth USD 93 million)	126 514	691.7
(3) China	Seaweed and algae (USD 72 million), various marine fish (fresh) (44 million),	213 055	150.4
(4) Hong Kong, China	Various live food fish (USD 34 million), pearls (USD 11 million), frozen shrimp and prawn (USD 11 million)	26 978	118.8
(5) Thailand	Various marine fish (fresh) (USD 65 million <sup>o</sup> )	193 723	98.7
(6) Singapore	Various marine fish (fresh) (USD 35 million)	44 750	80.1
(7) Viet Nam	Various marine fish (frozen) (USD 18 million), algae and seaweeds (USD 10 million), shrimps and prawns (frozen) (USD 9 million)	56 750	71.3
(8) United Kingdom	Frozen shrimps and prawns (USD 40 million); shrimp and prawn, packed, not in airtight containers (USD 13 million)	11 401	70.7
(9) Saudi Arabia	Fish sauce and paste (USD 38 million), tunas in airtight containers (USD 21 million)	14 827	66.4
(10) Malaysia	Various marine fish (fresh) (USD 27 million)	53 353	60.9
All other countries		234 433	584.9

Source: MMAF (2011e).

Import of fisheries products into Indonesia increased considerably from 162 472 tonnes with a value of USD 104 million in 2001 to 450 000 tonnes with a value of USD 498 million in 2011. In 2010, the most recent year for which detailed data are available, the most important import item was frozen mackerel, with a volume of 98 566 tonnes and a value of USD 72 million. Volume and value of fish meal imports, which used to be one of the most important import commodities before 2001, decreased from 98 139 tonnes and USD 50 million in 2001 to 65 000 tonnes and USD 45 million in 2011.

**Table 33.6. Volume and value of imports of fisheries products into Indonesia by country of origin in 2010, by decreasing value**

Country	Most important items	Volume (t)	Value (million USD)
Total		369 282	391.8
(1) China	Frozen mackerel (USD 54 million)	116 009	91.4
(2) Thailand	Dried and salted fish stomach (USD 18 million)	41 892	40.7
(3) United States	Fish meal (USD 28 million)	46 675	38.6
(4) Malaysia	Fish sauce and paste (USD 10 million)	27 403	34.6
(5) Peru	Meal from fisheries products, unfit for human consumption (USD 24.9 million)	16 695	25.8
(6) Viet Nam	Dried and salted fish stomach (USD 8.7 million)	17 749	23.2
(7) Korea	Meal from fisheries products, unfit for human consumption (USD 14.3 million)	21 214	17.2
(8) Australia	Fish meal (USD 8.9 million)	9 372	11.8
(9) Chinese Taipei	Frozen albacore (USD 3.5 million)	10 167	9.7
(10) India	Frozen shrimps and prawns (USD 2.5 million) and frozen mackerel (USD 2.4 million)	6 620	8.4
(11) Canada	Frozen crabs (USD 7.0 million)	1 640	8.0
All other countries		53 846	82.4

Source: MMAF (2011f).

## Outlook

Over the remainder of the 2010-14 strategic planning period, the Ministry of Marine Affairs and Fisheries and local fisheries agencies will focus on developing a “Blue Economy” through tight integration of upstream and downstream production processes. Indonesia will focus on getting optimal sustainable value from its aquatic ecosystems by effective governance for recovery and maintenance of ecosystems and fish stocks, and by improving post-harvest practices along supply chains. Sustainability and quality improvement programmes will result in higher profitability of the fisheries sector, increased food security, and increased competitiveness of Indonesian fisheries products on international markets. The Ministry of Marine Affairs and Fisheries will implement this suite of programmes with the motto “Industrialisation for a Blue Economy – Innovation in Governance and Use.”

Through planned interventions it is expected that Indonesia will continue to be a leading exporter of fishery products, and that Indonesia will continue to be able to meet its own food security needs. Social harmony in coastal communities will be maintained and production in the aquaculture sector will continue to grow through marine cage culture, land-based fish ponds, and seaweed production. The value of exports is expected to increase as Indonesia industries strive to produce higher grade products that meet international market demand. The marine fishery sector is destined to become better managed throughout fisheries production chains, with a special emphasis on recovery of ecosystems and fish stocks required to achieve maximum sustainable economic yield.

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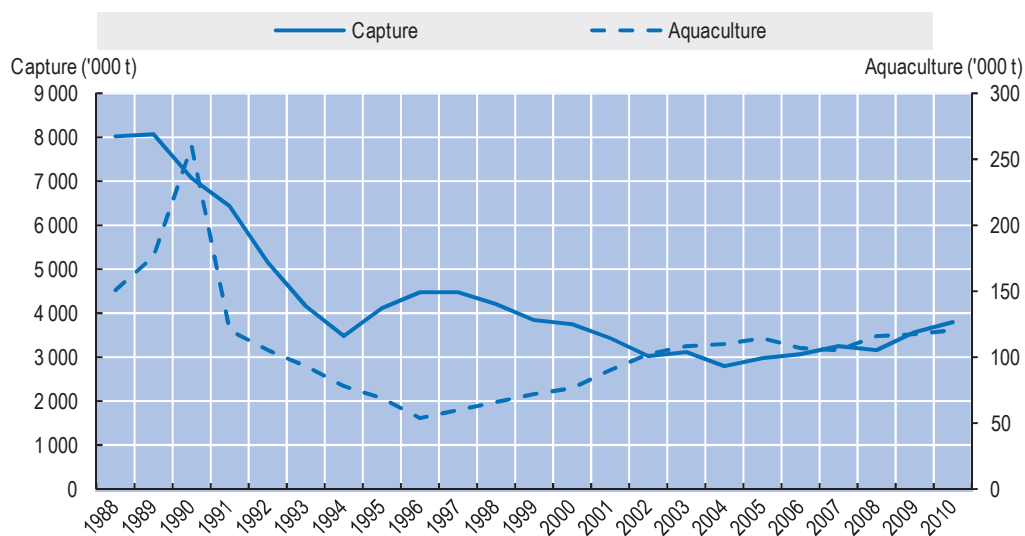
## Chapter 34

### RUSSIAN FEDERATION

#### Summary of recent developments

- The fisheries industry in 2011 ranked as second sector in terms of GDP growth (13.2%), which is three times higher than the national average growth rate (4.3%). The volume of landings in 2010 was 1 215.1 thousand tonnes, and 1 375.8 thousand tonnes in 2011. The Far East and north fisheries regions are the most important fishing areas in the Russian Federation. More than 90% of all living aquatic resources were caught in these areas.
- People can engage free of charge in recreational fisheries on water bodies and the sale of such catch is not prohibited.

Figure 34.1. Harvesting and aquaculture production



Source: FAO FishStat database.

## Capture fisheries

### *Performance*

During 2011, the fisheries industry ranked second among the main branches of the Russian economy in terms of growth of the gross domestic product (GDP) and gross value added, after the agriculture, hunting and forestry sector which recorded an increase of 16.1%. The fishing industry recorded an increase of 13.2%, three times higher than the national average growth rate (4.3%).

The financial result of fishing industry organisations was RUB 14.4 billion in 2011, an increase of 29.2% with respect to 2010.

The fishing industry is fourth among the major sectors of the economy in terms of financial results. The share of profitable fishing industry organisations increased by 1.6% to 78.5% in comparison to 2010.

The turnover of the fishing industry was RUB 128.7 billion in 2011, 12.3% more than in 2010.

In 2011, the volume of fish production, processed and preserved, was 3.567 million tonnes (an increase of 3.2% compared to 2010).

The volume of landings in the Russian Federation, according to the industry monitoring system, in 2010 was 1 215.1 thousand tonnes, and in 2011 it was 1 375.8 thousand tonnes.

**Table 34.1. Data on fishing vessels with main engine capacity of more than 55 kw**

Vessel type	Number of vessels as of 1 January 2010	Number of vessels as of 1 January 2010
Catching vessels	2 023	1 922
Factory ships	23	21
Transport vessels, refrigerated vessels	256	249
Research vessels, training ships, fisheries patrol vessels and rescue ships	57	58
Total	2 359	2 320

### *Status of fish stocks in 2010-2011*

The fisheries industry of the Russian Federation showed positive growth during 2010-11. The Far East and the North fisheries regions are the most important fishing areas in the Russian Federation, with more than 90% of all living aquatic resources caught in these areas.

The analysis of scientific data show that the increased catches in 2010-11 compared to the previous decade is not directly related to the change in the state of aquatic bio-resources. The increase of some aquatic resources was compensated by decreases of other resources. For example, the walleye pollock stocks increased in the Far East in 2010; there was also a significant increase in the biomass of cod and capelin in the Barents Sea. At the same time, the walleye pollock in the Bering Sea did not develop into dense clusters in 2010, resulting in a decrease of yields compared to 2007 and 2008.

In 2010-11, Pacific salmon stocks were at high levels, with a catch of 500 000 tonnes. The total salmon catch in 2011 (504 700 tonnes) was less than the record high in 2009 (542 300 tonnes) due to the lower catches of pink salmon (421 600 tonnes) and chum salmon (389 500 tonnes). The chum salmon catch in 2011 (75 600 tonnes) was less than in 2010 (90 500 tonnes).



tonnes). The catch of sockeye salmon - the most valuable species of Pacific salmon - in 2011 was slightly higher than in 2010 (33 600 vs. 30 900 tonnes).

There was a positive trend in 2010-11 towards rebuilding the stocks of some species of crab in western Kamchatka, and of the opilio snow crab in Russian waters of the sea between Japan and Korea. The fishing ban on this latter species on the East Sakhalin coast, first introduced by Rosrybolovstvo in 2002-2004, continued.

The ban of herring fishing in the Bering Sea Karaginskii has shown positive results. The stock has recovered and more than 100 000 tonnes are now caught annually.

In 2010, in the Far East seas, a catch of 3 188 600 tonnes of fish (including salmon) was foreseen, although in reality the catch was 2 548 300 tonnes. As in previous years, Walleye pollock, Pacific herring, Pacific saury, cod, flounder and greenling, saffron cod, three species of halibut, and six species of salmon were the most important targeted species. In 2011, the total catch of flounder decreased slightly, from 71.7 tonnes to 70.3 tonnes.

Stocks of Pacific saury were at a very high level in 2010-11. The projected catch was set at 200 000 tonnes for the South Kuril area in 2010-11. The total Pacific saury catch within the Russian EEZ was about 30% of the projected catch. This decrease is not associated with a decrease in the stock but rather with hydrological and climatic factors which did not allow to catch the projected volume.

The cod fishery in the Barents Sea in 2010-11 was at a high level, with more than 2.6 million tonnes. The spawning stock biomass is estimated at over 1.1 million tonnes, more than the average for the last ten years (560 000 tonnes). A further increase in the stock of cod in the near future is expected because many new generations are coming into the commercial stock. Domestic catch of cod in 2010 was 267 000 tonnes.

In 2007, the stock of haddock increased due to high recruitment. In 2010, 111 400 tonnes of haddock were caught.

In 2010, the stock of king crab in the Barents Sea increased. TAC for red king crab in the Barents Sea was fully used (4 000 tonnes). The average weight of crab, 3 kg in 2010-11, did not decrease compared to 2009. In general, the resources of Russian fishery in 2010-11 did not change significantly from previous years.

### **Changes in ecological policy: Initiative for sustainable development**

The following policy developments for the conservation and management of living aquatic resources took place in 2010-11.

A new methodology was developed and implemented to define the procedures for calculating damage caused to water biological resources as a result of violations of the law on fisheries and the conservation of marine biological resources, as well as from natural disasters, anomalies of natural phenomena, and emergency situations that are either natural or man-made.

The Russian Federation has carried out a remediation method to compensate for damage. It is implemented via the artificial reproduction of aquatic biological resources to rebuild stocks, fisheries reclamation of water bodies to restore the disturbed state of breeding, wintering, feeding, migration routes of marine biological resources, or acclimatisation of aquatic biological resources to rebuild stocks of individual species affected.

The Russian Federation has improved the procedures to establish fishery conservation areas, with by introducing bans or restrictions on the most dangerous activities to aquatic biological resources. This applies primarily to activities of a mass character with a high

impact on unique and important features for the reproduction and conservation of valuable species and valuable water resources.

Ways to implement ecological requirements and principles of the WTO related to the use of integrated product policy, taking into account the ecological safety of fishing and traceability of product realisation, are being considered. In particular, there is a focus on reducing excessive consumption of natural resources and introducing higher ecological standards.

Activities to intensify ecological certification and appropriate labelling are underway, including the development of public databases offering information on the state of fishery resources and the results of fisheries management.

Sustainable development can only be based on the precautionary approach, combined with a competent social and investment policy. Therefore, significant attention is being given to the development of programmes that provide employment in coastal communities in fisheries and aquaculture so as to provide support for the city-state fishery enterprises. The Russian Federation is actively applying the precautionary approach in determining the volume of total allowable catches and developing regulatory measures that reduce discards of non-target age groups and bycatch.

The Russian Federation is finalising the development of legislation on aquaculture, which will harmonise the standards and requirements of all documents of the Customs Union and WTO standards.

A system of inter-agency co-operation has been developed for the integration of information flows at the state environmental monitoring (state ecological monitoring).

### ***Management of commercial fisheries***

Federal Law N°166, paragraph 3 (20 December 2004), “On fisheries and conservation of marine biological resources” (hereinafter Law on Fisheries) regulates the provision of the right to catch aquatic resources for legal entities and individual entrepreneurs.

A number of management decisions have been developed and implemented in order to comply with the provisions of the Law on Fisheries. These steps are directed towards the creation of conditions for a stable and flexible control system of the fisheries industry of the Russian Federation, including the allocation of catch quotas of aquatic resources between legal entities and individual entrepreneurs.

In August 2008, the Russian Government established the principle of the rule of equity allocation of catch quotas on aquatic resources among users of living aquatic resources in the ten-year period of the agreement on assignment of quota shares. These rules allow fishermen to plan their business activities over the period required to update fixed assets and the repayment of long-term bank credits.

The principle of distributing quotas among users is very important for the implementation of tasks related to ensuring the rational use of existing stocks of marine biological resources, to increase the use of total allowable catches and the profitability of the fishing fleet, to release inefficient users from this sector, and to conserve marine biological resources.

### ***Management of recreational fisheries***

Recreational fisheries are regulated by the Law on Fisheries.

People can engage in recreational fisheries free of charge on water bodies (Part 1 of Article 24 of the Law on Fisheries), unless otherwise provided by the Law on Fisheries.

Recreational fisheries restrictions can be set by the appropriate Law on Fisheries for the conservation of living aquatic resources and their management.

A catch limit for recreational fisheries is not available, and the sale of such catch is not prohibited.

Recreational fisheries on fishing grounds in 2010 can be carried out only with the consent of the users of the fishing grounds.

In 2010, about 12 000 tonnes of catch quotas for water bio-resources were approved for recreational fisheries, while the recommended amount of water biological resources, which are not subject to a TAC, was about 14 800 tonnes. In 2011, the corresponding volumes amounted to 10 200 tonnes of catch quotas for water bio-resources and 13 400 tonnes.

The Federal Law N° 420-FZ (28 December 2010) modified the Law on Fisheries with respect to the management of recreational fisheries. It is now obligatory to obtain a permit for recreational fisheries (as of January 2011) on the fishing grounds for both legal entities and individuals.

Catches of aquatic biological resources on the fishing grounds, provided for by the organisation of recreational fisheries, increased from 2 400 tonnes in 2010 to 5 000 tonnes in 2011.

According to expert estimates, 15 to 25 million Russians are involved in recreational fisheries. According to the regional offices of Rosrybolovstva of data obtained from the diaries of the Fisheries Inspector, the total catch in 2010 and 2011 was more than 40 000 tonnes.

Article 6, paragraph 2 of the Law on Fisheries provides for the access to water bio-resources for life support for indigenous peoples of the North (IPN), Siberia and the Far East of the Russian Federation.

Federal law allows IPN to undertake traditional fishing for free on fishing grounds especially defined for these purposes. IPN can catch aquatic resources without permits. In recent years fishing which can be characterised as commercial fishing has been increasingly carried out under the guise of traditional fisheries, often by citizens not related to the IPN. At present, Article 26 of the Constitution states that all citizens of the Russian Federation have the right to classify themselves under any ethnic community, including the IPN.

### ***Multilateral agreements and arrangements***

Rosrybolovstvo ensures the participation of the Russian Federation in nine international organisations in the field of fisheries: the International Council for the Exploration of the Sea (ICES); Northwest Atlantic Fisheries Organization (NAFO); the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR); the International Commission for the Conservation of Atlantic Tunas (ICCAT); the North Pacific Anadromous Fish Commission (NPAFC); the North Pacific Marine Science Organization (PICES); North East Atlantic Fisheries Commission (NEAFC); and South Pacific Regional Fisheries Management Organisation (SPRFMO).

In addition, Rosrybolovstvo performs activities by the Federal Government (21 March 2011 No. 456-p) to organise and co-ordinate the participation of the Russian Federation as an observer on the work of the Commission on Marine Mammals of the North Atlantic (NAMMCO).

The Russian Federation is a member of the Commission on Aquatic Bioresources of the Caspian Sea.

## Aquaculture

Russian law does not have a single legal act regulating fisheries (aquaculture), which presently constitutes a legal void.

The adoption of the federal law “On Aquaculture” will allow for an integrated approach to the management of aquaculture. Adoption of the law will help:

- Develop the economy of the Russian Federation on the basis of the establishment of aquaculture.
- Increase the catches of living aquatic resources by increasing aquaculture reproduction and on-growth aquaculture.
- Receive and sell production with the global trends of the transition from hunting to the cultivation of aquatic organisms.
- Resolve issues of ownership of aquaculture facilities taking place in waters of commercial fishing importance.
- Solve questions of granting water bodies rights for cultivation of aquaculture.
- Enable the most efficient use of Russian Federation water resources.

In 2010, aquaculture production in the Russian Federation amounted to 140 000 tonnes, and in 2011, 116 000 tonnes.

## Fisheries and the environment

Article 3 of the Federal Law “On Environmental Protection” states that one of the principles of environmental protection when making decisions of a planned economic activity is a mandatory assessment of its effect on the environment, the banning of activities which have unpredictable effects on the environment or can cause degradation of natural ecosystems, changes and (or) the destruction of the gene pool of plants, animals and other organisms, depletion of natural resources, and other negative environmental impacts.

Materials justifying TAC of living aquatic resources are developed by research institutions and annually passed on to Rosrybolovstvo ecological experts. The Commission estimates potential effects of fisheries and aquaculture on the environment.

Article 77 of the Federal law states that legal entities and individuals who cause damage to the environment by pollution, destruction, waste of natural resources, the depletion and destruction of natural ecosystems, natural landscapes and other violations of law in the field of environmental protection are obliged to compensate in full.

Rosrybolovstvo organises events on the artificial reproduction of living aquatic resources by releasing juveniles and larvae of marine biological resources into the waters of commercial fishing importance. About 10–11 billion juveniles and larvae of marine biological resources are released annually to restore the damage caused by fishing activities.

**Table 34.2. Main indicators on the implementation of fisheries control and conservation of marine biological resources in inland waters, 2010-2011**

Year	Number of protocols on administrative violations	Penalties (RUB '000)	Amount of damage caused (RUB '000)
2010	152 965	196 343	79 751
2011	139 446	221 947	79 165

### Government financial transfers

Rosrybolovstvo provides subsidies for fisheries organisations and individual entrepreneurs from the federal budget.

The cost of subsidies for the year is stipulated in the budget. Subsidies are provided to compensate part of the expenses of fisheries organisations and individual entrepreneurs incur to pay interest on investment loans received from Russian credit institutions (RUB 389.8 million in 2010 and in RUB 275.3 million in 2011). The availability of a subsidy was key in the decision to involve credit, according to the fisheries industry organisations. Subsidies for investment projects allow organisations to take credit on better terms.

### Post harvesting policies and practices

#### *Fish processing*

In terms of the growth rate of production, the fish processing sector has shifted from eleventh place in 2010 to sixth in 2011; volume increased from 2.7% to 3.3%.

In 2011, the highest growth rate was recorded in the production of fish fillets by 22.8% to 81 900 tonnes; livers, caviar and milt by 21% to 54 800 tonnes; canned goods by 20.4%; salted and marinated fish (except herring) by 4.4% to 2 272 tonnes.

The greatest decreases noted are for the production of canned fish in oil, by 11.1% to 179 million cans; preserves from gutted fish in various fillings by 9.4% to 114 million cans; salted herring 5% up to 50 600 tonnes; fish food products by 3.8% to 70 200 thousand tonnes.

Salmon caviar production increased by 17.5% to 12 700 tonnes.

Amendments to the sanitary rules and regulations with respect to the glazing of fish, introduced in October 2010, contributed to the production increase of fillet. This measure was aimed primarily at protecting consumers from poor quality fish and seafood. Amendments to sanitary rules have reduced imports from South-East Asia of poor quality pangasius fillet, tilapia and pollock. Imports of fillets decreased in 2011 to 2010 by 9.9% or by 13 200 tonnes to 120 700 tonnes.

In 2011, wholesale trade of canned and preserved products increased by 3.5%, and retail sales decreased by 5.5%.

In 2011, the volume of processing of commodity-foods increased by 7.5% in comparison with 2010. This increase has great promise and will increase as modernisation of production methods continues.

Increased demand for fish and fish products due to population growth are the determining factors for the development of the fish-processing industry. Proximity to the fish markets of

the Asia-Pacific region, Europe and America also promotes the development of the fish processing industry.

### **Markets and trade**

According to Rosstat, the supply of fish, fish products and seafood exports in 2011 amounted to 1 750 800 tonnes, 6.2% higher than in 2010.

The volume of imports of fishery products in 2011 amounted to 917 100 tonnes, 7.7% lower than the level of 2010.

According to expert estimates, the consumption of fish and fish products in 2011 amounted to 21.2 kg per person per year, the same as in 2010.

### **Outlook**

The following tasks need to be undertaken.

- Improve legislation in the field of fisheries and conservation of marine biological resources on:
  - Fixing the share of industrial and coastal quotas (catch) of aquatic biological resources on an historical basis for the period after 2018 for a period of twenty years; and
  - The introduction of a “single industrial production quota (catch) of aquatic biological resources” without allocating the coastal area, while ensuring an historical principle of distribution of shares.
- Increase the effectiveness of Russian catch in areas of international treaties in the field of fisheries.
- Carry out joint control and supervision of fishing of marine biological resources in frontier waters under international agreements.
- Improve the system of safe navigation of the fishing fleet and the safety conditions at sea.

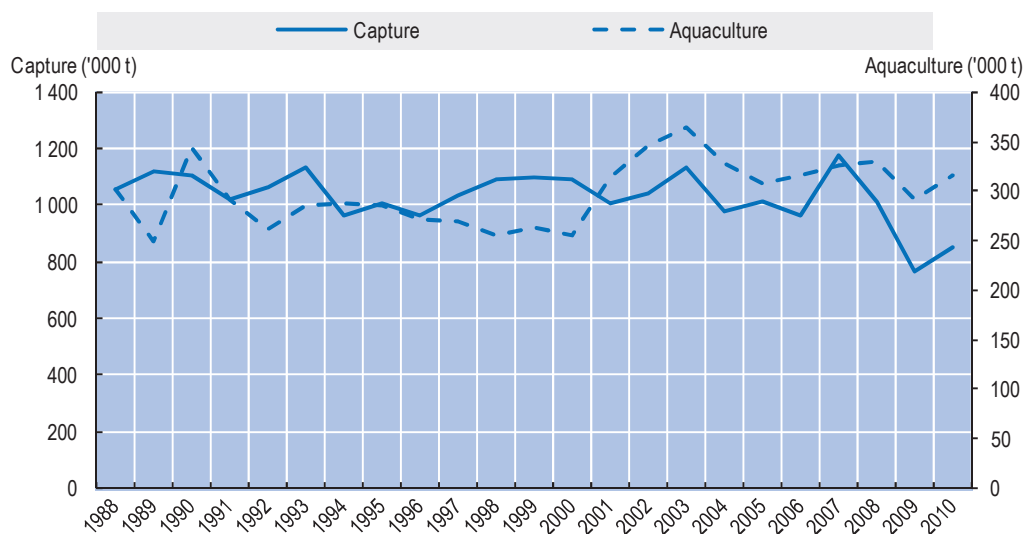
## Chapter 35

### CHINESE TAIPEI

#### Summary of recent developments

- The fishery industry of Chinese Taipei is highly diversified including both large-scale deep sea commercial fishery and a community-based coastal and offshore fishery.
- The current objective of fishery policy is to provide an environment in which the industry can develop in a sustainable and high quality manner, while ensuring food security and safety.
- As a major producer, Chinese Taipei seeks to ensure that its fisheries are managed responsibly to ensure the sustainability of fisheries.
- Major policy initiatives include the prohibition of fisheries where resources are depleted, the introduction of TAC on selective stocks, the installation of Vessel Monitoring System (VMS) on all deep sea fishing vessels, the promotion of sustainable aquaculture, and the traceability of fisheries products.

Figure 35.1. Harvesting and aquaculture production



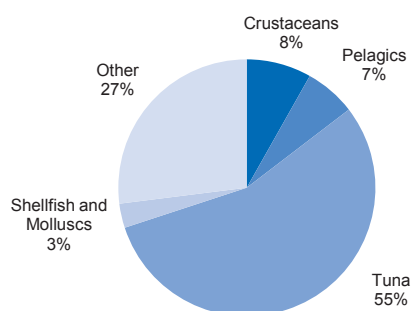
Source: FAO FishStat Database.

### Box 35.1. Key characteristics of Chinese Taipei fisheries

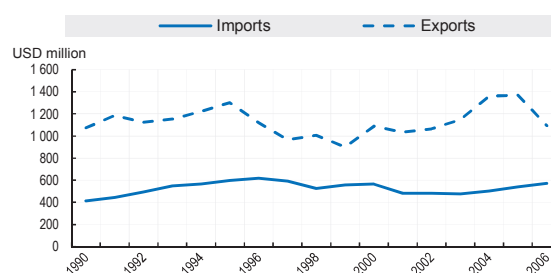
- In terms of composition of the value of landings, tuna has the highest value of landings in 2010, followed by crustaceans, pelagics and shellfish and molluscs. (Panel A)
- In terms of composition of the value of landings, tuna has the highest value of landings in 2010, followed by crustaceans, pelagics and shellfish and molluscs. (Panel B)
- Marine capture fisheries accounts for more than 90% of all government financial transfers. Since 2005 about 50% of government financial transfers to marine capture fisheries have decreased. General services have still been the greatest portion among them. (Panel C)
- The three-year fleet size reduction programme between 2005 and 2007 and subsequent efforts led to the reduction of the total number of vessels and total tonnage of the fleet in Chinese Taipei. Especially the total number of large-scale tuna longliners larger than 100 GRTs in Chinese Taipei reduced from 614 to 419 by 2011. (Panel D)

Figure 35.2. Key fisheries indicators

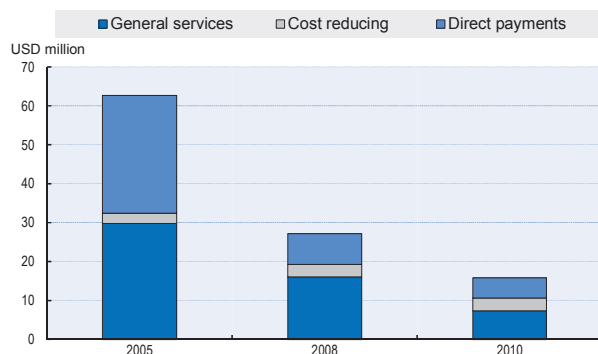
Panel A. Key species landed by value in 2010



Panel B. Trade evolution



Panel C. Evolution of government financial transfers



Panel D. Capacity

	2 006	2 011	% change
Number of fishers	245 113	247 007	1
Number of fish farmers	108 982	81 733	- 25
Total number of vessels	26 216	23 557	- 10
Total tonnage of the fleet	766 385	685 130	- 11



## Legal and institutional framework

The *Fisheries Act* constitutes the legal basis of Chinese Taipei's fishery management. Since promulgated in 1929, this Act has been amended seven times, and several recent regulations have been or are in the process of being enacted to reflect new management thinking, in particular with respect to combating IUU fishing.

The Council of Agriculture of the Executive Yuan is the central fisheries policy-making body under which the Fisheries Agency is the highest fisheries administrative agency. The Director-General is responsible for the day-to-day business of the agency and he is assisted by two deputy Director-Generals and a Chief Secretary. The Fisheries Agency is composed of the following: Planning Division, Fisheries Regulation Division, Deep Sea Fisheries Division, Aquaculture and Fisheries Facilities Division, Secretariat, Accounting Office, Civil Service Ethics Office, Personnel Office, Deep Sea Fishery Research and Development Center, Northern Region Office, and the Chinese Taipei Area Fishery Radio Station. The Agency is responsible for implementing fisheries policies and providing extension services to the industry.

Chinese Taipei participates in a number of international and Regional Fisheries Management Organizations (RFMOs) in various capacities, ranging from full membership to observer, including WCPFC, ISC, IATTC, CCSBT, SPRFMO, NPFC, ICCAT, and OECD. In addition, Chinese Taipei is a member economy of APEC and takes an active part in the Ocean and Fisheries Working Group.

Chinese Taipei is implementing a series of policies to address issues such as responsible fisheries, overcapacity in fisheries, prevention of IUU fishing, and integrated coastal management. These policies include the following.

- A compulsory fleet size reduction programme has been carried out since 2005. In 2005 and 2006, 59 and 101 large-scale tuna longline vessels were scrapped or sunk respectively. A further reduction of 23 large-scale tuna longline vessels was carried out in 2007. This three-year fleet size reduction programme and subsequent efforts led to a reduction in the total number of large-scale tuna longliners larger than 100 GRTs in Chinese Taipei, from 614 to 419 in 2011. This surpassed the original objective to reduce large-scale tuna longliners by 20% as proposed by the FAO IPOA on capacity.
- In line with international management and conservation measures, the building of foreign-flagged fishing vessels in Chinese Taipei is subject to the *Regulations on Permission for the Export of Fishing Vessels* promulgated and entered into force on 29 June 2005. The Regulations stipulate that old fishing vessels must be scrapped before a permit for new constructions of tuna fishing vessels are issued. In compliance with international regulations, a 2007 amendment stipulated that both governments must consult and agree before ship building companies can undertake contracts with foreign companies for the export of fishing vessels. This is to ensure that effective management controls are in place in the importing country before adding new capacity.
- To conserve shark resources, Chinese Taipei has long required fishing vessels to retain on board shark carcasses and fins, with fins not exceeding 5% in weight of the carcass. In addition, in 2012 the *Regulations on the Disposal of the Fins of the Shark Catches of Fishing Vessels* required that shark fins remain naturally attached. Considering the size and the operating area of the concerned fishing vessels, the measure was designed to be implemented on a phased basis. The 2012 *Regulations on the Import of Shark Fins* strengthens controls over shark fin imports. As of 1 June 2012, in addition to the usual formalities, importers of shark fins are required to provide copies of the fishing license and ship tonnage registration certificate of the vessel which harvested the shark fins for

import, and to document transactions. This is to ensure that imported fins are harvested from fishing vessels registered with RFMOs.

- To conserve and manage Pacific bluefin tuna, Chinese Taipei complies with the measures adopted by WCPFC on this species. The following measures have been implemented to strengthen data collecting system for the Pacific bluefin tuna fisheries and to ensure that vessels fishing for Pacific bluefin tuna in the area north of 20 degrees north do not exceed the 2002-04 levels. Measures taken also include: (1) limiting the number of vessels; (2) Bluefin tuna shall be tagged and catch information shall be reported by the captain to fishery authorities; and (3) The captain shall submit relevant documents in the Catch Documentation Scheme (CDS) before the catch can be landed or sold.
- Chinese Taipei has complied with relevant regulations stipulated by RFMOs to implement effective measures to combat IUU fishing, including:
  - Establishing authorised fishing vessel lists.
  - Requiring fishing vessels to report their catches.
  - Implementing management measures on trans-shipment in port or at sea.
  - Requiring fishing vessels to implement Vessel Monitoring System (VMS).
  - Implementing the Regional Observer Program (ROP).
  - Dispatching patrol vessels to conduct boarding and inspection in the high seas.
  - Implementing Statistical Document and Catch Document Schemes.
  - Implementing measures to reduce incidental catches.
  - Allocating fishing quota and delineating fishing areas.
  - Port state measures.
- Chinese Taipei has continued to enlarge the coverage of its Marine Protected Areas (MPAs) in order to effectively protect marine biodiversity and conserve fisheries resources occurring in its coastal waters. Since the end of 2011, MPAs cover for 46.15% of territorial waters, well above international norms.

### Capture fisheries

Deep sea fisheries operate beyond the 200 nautical mile exclusive economic zone of Chinese Taipei. The major fishing methods used include tuna longlining, tuna purse seining, trawling, squid jigging and torch-light saury fishing. In 2011, annual production was over 800 000 metric tonnes, accounting for more than 60% of the overall fisheries production. Tuna longlining can be categorised into super freezer tuna longlining and conventional tuna longlining. This is pursued in all the major oceans of the world. The tuna purse seine fishery is concentrated in the Central and Western Pacific Ocean. Squid jigging mainly operates in the Southwestern Atlantic Ocean, the Northern Pacific Ocean and the Eastern Pacific Ocean, depending on the season. The area of operation for trawlers became more restricted following the extension of 200 nautical mile exclusive economic zones (EEZs), and presently trawlers mainly operate in the waters of Indonesia as part of joint ventures. Some of the squid jiggers proceed to the Northern Pacific Ocean to pursue torch-light saury fishing on a part-time basis after the squid fishing season is over. Most tuna longliners and purse seiners use foreign ports as a base to replenish supplies, for repairs and for transshipment. Seventy-three foreign ports were approved as base ports for fishing activities up to 2011.

Coastal and offshore fisheries operate within the internal waters, territorial waters and exclusive economic zone of Chinese Taipei. Major fisheries include trawling, longlining, torch-light fishing, mackerel purse-seine fishing, and set-net fishing. Annual production in 2011 was approximately 166 000 metric tonnes with a value of TWD 13.7 billion. In order to promote sustainable development of coastal and offshore fisheries resources, many measures are focussed on the conservation of resources and restoration of ecology. This includes vessel buybacks, fishing closures, establishment of closed areas, conservation areas and protected habitats. In addition, stock enhancement programmes such as releasing of fish seeds to improve the productivity of fishing grounds and stocking of resources have been carried out.

### **Aquaculture**

Aquaculture in Chinese Taipei is pursued as fresh water farming, brackish water farming, and mariculture. With a total acreage of about 55 000 hectares, aquaculture has an annual production of over 300 000 metric tonnes, with a value over TWD 40 billion. Development of aquaculture will continue to focus on the rational use of land and water resources and upgrading of the quality of products. The acreage of fish ponds will be reduced as specialised aquaculture areas are defined and infrastructure on water supply is constructed. Marine cage farming will be part of the development of sea parks, incorporating multi-faceted development of recreational fishing and amateur fish farming.

The current policy focus is on promoting environmentally-friendly aquaculture. The government will continue to assist fish farmers to meet certification criteria when introducing organic aquaculture and recycling of pond water.

### **Fisheries and the environment**

Chinese Taipei will continue to promote the sustainability of its distant water fisheries and implement management systems in line with international trends towards more responsible fisheries. Multilateral collaborations are seen as an important means to ensure the sustainability of marine resources in the high seas. Chinese Taipei is concerned about maintaining its status within the international fisheries community and the rights of fishers, whilst managing economic benefits to the industry and complying with the principles of marine ecology conservation.

In accordance with the requirements of both international and domestic fisheries management systems, as well as to protect the needs of deep-sea, coastal and offshore marine resources, a Vessel Monitoring System (VMS) is used to monitor the locations and movements of vessels at sea. This greatly improves the efficiency of dynamic resource management.

To achieve reasonable utilisation of fishery resources and to reduce the impact on coastal and offshore fisheries, efforts to adjust the fishing industry's operational structure and scale have been implemented. A vessel buyback programme is part of this strategy to help achieve sustainability for coastal and offshore fisheries. Compensation is also given to participants who take part in fishing moratoria to help reduce fishing effort and reduce some of the pressure on marine resources.

Monitoring and control systems are being reinforced in specific segments of the fishery, such as coral, flying fish caviar and anchovy fisheries. Such systems include the use of observers boarding vessels at sea to carry out inspections, observers going to sea with vessels to observe and monitor catches, and investigation officers at ports who measure the amount of catch and check logbooks.

Conservation and management of artificial reefs will be expanded in order to help protect these important marine habitats. Regular dredging operations are carried out in harbour

passages and in bay areas. This will revitalise the function and environment of harbours, ease the difficulties fishers may encounter when going to sea, and create an industry that fulfils both functional and recreational purposes.

### Government financial transfers

The majority of government financial transfers are devoted to marine capture fisheries as part of the annual expenditure of the Fisheries Agency (Table 35.1). The annual expenditure of the Fisheries Agency peaked in 2004, especially for Fishing Vessels Marine Insurance Reward and International Cooperation. General services are the largest category of government financial transfer, outweighing the sum of cost reducing transfers, direct payments and cost recovery charges by a very large margin. This result reflects the policy that GFTs should be decoupled from production volume or input factors. Under marine capture fisheries, General administration, Reward for Closing Fishery Season and Fishing Vessels Marine Insurance Reward are the largest items.

**Table 35.1. Government financial transfers expenditure by sub-sector associated with fishery policies (TWD)**

Year	2009	2010	2011
<b>Fishery administration annual administration expenditure</b>			
<b>Marine Capture Fisheries</b>	766 046 981	502 233 000	899 222 592
<i>Direct payments</i>	186 290 416	165 695 000	294 152 242
Fishing Vessels Reduction Programme	..	..	..
Fishing Vessels Buy-back Programme	..	..	95 188 164
Reward for Closing Fishery Season	186 290 416	165 695 000	198 964 078
<i>Cost reducing transfers</i>	87 413 263	103 655 000	137 846 695
Fishing Vessels Marine Insurance Reward	87 413 263	103 655 000	137 846 695
<i>General services</i>	492 343 302	232 883 000	467 223 655
Scientific research	66 717 212	80 896 000	24 744 867
International Co-operation	1 835 138	1 629 000	30 520 000
General administration	320 159 862	36 779 000	315 443 692
Deep Sea Fishery Development Center	44 289 752	49 639 000	36 445 480
Fishery Broadcasting Station	59 341 338	63 940 000	60 069 616
<i>Cost recovery charges</i>	..	..	..
<b>Aquaculture</b>	46 620 868	55 666 000	31 120 000
<i>Direct payments</i>	1 000 000	4 377 000	0
Extension of re-use of pond water used in aquaculture	1 000 000	4 377 000	0
<i>Cost reducing transfers</i>	..	..	..
<i>General services</i>	45 620 868	51 289 000	31 120 000
Scientific research	45 620 868	51 289 000	31 120 000
<i>Cost recovery charges</i>	..	..	..
<b>Marketing and processing</b>	17 422 582	22 941 000	29 899 523
<i>Direct payments</i>	..	..	..
<i>Cost reducing transfers</i>	..	..	..
<i>General services</i>	17 422 582	22 941 000	29 899 523
Scientific research	7 485 232	10 397 000	4 270 000
Management and information technology	9 937 350	12 544 000	25 629 523
<i>Cost recovery charges</i>	0	0	0
Fish Products Market Stabilization Fund	0	0	0
<b>Grand Total</b>	<b>830 090 431</b>	<b>580 840 000</b>	<b>960 242 115</b>

Source: Fisheries Agency, *Annual Financial Report 2009-2011*.

When accounting for the GFT by sub-sector, it is clear that the majority of government financial transfers are devoted to marine capture fisheries, accounting for 93.65% of the total (Table 35.2).

**Table 35.2. Government financial transfers expenditure associated with fishery policies in ratio**

Year	2009	2010	2011
<b>Grand total</b>	<b>830 090 431</b>	<b>580 840 000</b>	<b>960 242 115</b>
Marine capture fisheries	92.28%	86.47%	93.65%
Aquaculture	5.62%	9.58%	3.24%
Marketing and processing	2.10%	3.95%	3.11%

Source: Fisheries Agency, *Annual Financial Report 2009-11*.

### Post harvesting policies and practices

Chinese Taipei's fish processing industry demands excellent quality and an ample supply of raw materials as a basic requirement. This, in addition to demand in foreign markets, has led to the development of a variety of processed sea products. Producing frozen roasted eel for export is a prominent feature and traditional frozen food products, such as fish ravioli, shrimp ravioli, fish steaks, squid balls, etc., are at a mature stage of development. With years of development, productions of cured and canned food have already entered into an era of full automation and are of high quality. Demand for seafood snacks, such as shredded dried squid, tuna candy, and kelp candy is high and these products are popular with consumers. The development of items such as eel calcium, eel oil essence, clam essence and collagen from fish skins have raised new opportunities to transform fish offal and by-products into new products. There are plans to strengthen the role of fish markets and direct sales centres in the distribution of fish. Automated systems for the auction of fish and fish products are foreseen as a means to establish a fair, transparent, efficient and service-orientated marketing and distribution system.

### Markets and trade

#### Markets

Chinese Taipei is one of the major fish and fish products exporters in the global trade system, with deep sea fishery and aquaculture being the major sources. Major export markets are Japan, Thailand, and the United States (Table 35.3). These three markets account for over 50% of Chinese Taipei's total fishery products export in value.

**Table 35.3. Major Export Markets, 2011\***

	Quantity (MT)	Quantity in %	Value ('000 TWD)	Value in %
<b>Total</b>	<b>610 912 425</b>	<b>100.00%</b>	<b>54 304 751</b>	<b>100.00%</b>
Japan	61 900 818	10%	17 178 538	32%
Thailand	190 757 338	31%	6 659 261	12%
United States	41 629 968	7%	4 697 948	9%
China	25 833 956	4%	4 155 774	8%
Indonesia	18 994 384	3%	4 142 543	8%

\* Preliminary statistics.

Source: *Fisheries Statistical Yearbook Chinese Taipei*, Kinmen and Matsu Area, 2011.

After accession to the World Trade Organization, and to improve the competitiveness of Chinese Taipei's fishing industry, market promotion of fishery products will play a more prominent role in the development of the fishing industry. Premium quality fishery products with export potential have been selected with a focus on export opportunities in Japan, the United States, Korea, and the European Union. Assistance has been provided to fishers and fisheries associations to participate in international food and sea products expositions and exhibitions and for overseas marketing and promotion campaigns. Extensive fisheries trade information will be gathered to help identify export opportunities. Those organisations with marketing capability will be institutionally strengthened or integrated, and an international label for sea products will be developed.

There were 49 fish wholesale domestic markets in 2011, including 14 fish markets in consumption areas and 35 fish markets in production areas (Table 35.4). In 2011, wholesale fish market transactions amounted to 435 998 tonnes with a total value of TWD 26 576 million, showing a decrease in volume of 7 194 tonnes and an increase in value of TWD 1 157 million compared with 2010.

**Table 35.4. Chinese Taipei regional wholesale fish markets by grade (2011)\***

Market grades by trading volume	Volume of market (MT)	Productive area fish markets	Consumptive area fish markets	Total
Superior	65 000 and over	2	-	2
1	64 999-20 000	1	1	2
2	19 999-10 000	0	2	2
3	9 999-4 000	6	6	12
4	3 999-2 000	5	2	7
5	Below 2 000	21	3	24
Total	49	35	14	49

\* Preliminary statistics.

Source: *Fisheries Statistical Yearbook Chinese Taipei, Kinmen and Matsu Area, 2011.*

### **Promotional efforts**

Chinese Taipei helps aquaculture processing plants to apply for the logo of Premium Agricultural Product Certification (Certified Agricultural Standard – CAS) and has introduced the Hazard Analysis Critical Control Point (HACCP) system. In addition, the implementation of product certification and inspection institutions are being enhanced in order to gradually build a product traceability system.

In order to improve the quality of aquaculture products and ensure they meet international health and hygiene standards, aquaculture farms are encouraged to implement better self-governance and management systems, such as the product traceability system. By introducing source controls, self-governance and management, and the principle of responsibility for hygienic conditions of production, the quality and marketability of products will be improved and global competitiveness increased.

In order to help diversify the fisheries economy and make use of local cultural resources, 206 vessels now operate recreational activities such as whale and dolphin watching, sea angling, and tours of charming fishing harbours.

## Outlook

Recognising the important role of the fishery industry in the economy and its dependence on a healthy environment, a series of policies have been put in place to secure the sustainable development of this sector. In addition to the economic perspective, sustainability in fisheries is also approached from the perspective of ecology, and food and work safety.

From an ecological perspective, the overall theme of the new set of policies to ensure sustainability is to implement policies developed specifically for deep sea, offshore and coastal, and aquaculture fisheries.

- For deep sea fisheries, the focus is on the management of fishing capacity and responsible fishing. As mentioned, policy actions include strengthening monitoring and control of longline vessels through satellite-based vessel monitoring system (VMS), reduction of fleet size, and inspection programmes on international management measures at foreign base ports.
- With regard to offshore and coastal fisheries, the main focus is to restore the marine ecosystem. Actions taken include implementation of the TAC on selected stocks and prohibitions on harvesting restricted species. The Coast Management Act is expected to further contribute to safeguarding the marine ecosystem.
- With respect to aquaculture, assistance will be provided to develop new technologies to enable fish farming while protecting the environment. Such programmes as pond water recycling and organic aquaculture certification are already in place, and further policy tools are forthcoming.

To meet the demand for safe and good quality proteins, food safety is considered a priority and will be promoted at both the production and processing phases. During the production phase, the concept of organic aquaculture is promoted and education on prudent application of medication continues. At the processing phase, the traceability of fishery products is strongly promoted. This, along with the introduction of HACCP, is to ensure that fishery products are safe for consumption.

Finally, the government will continue to implement various projects in collaboration with international fishery organisations to ensure the sustainable development of Chinese Taipei fisheries. The government will also maintain a fleet of advanced distant water fishery vessels in accordance with international regulations. Efforts will continue to promote the conservation of coastal and offshore ecosystems, encourage the sustainable use of marine resources, and help reduce the impact of aquaculture on the environment. This will ultimately contribute to higher profits and improved welfare for fishermen and the general public. The government strives to achieve a healthy fishery with superior hygiene and safety qualities, a technologically advanced fishery, as well recreational opportunities.





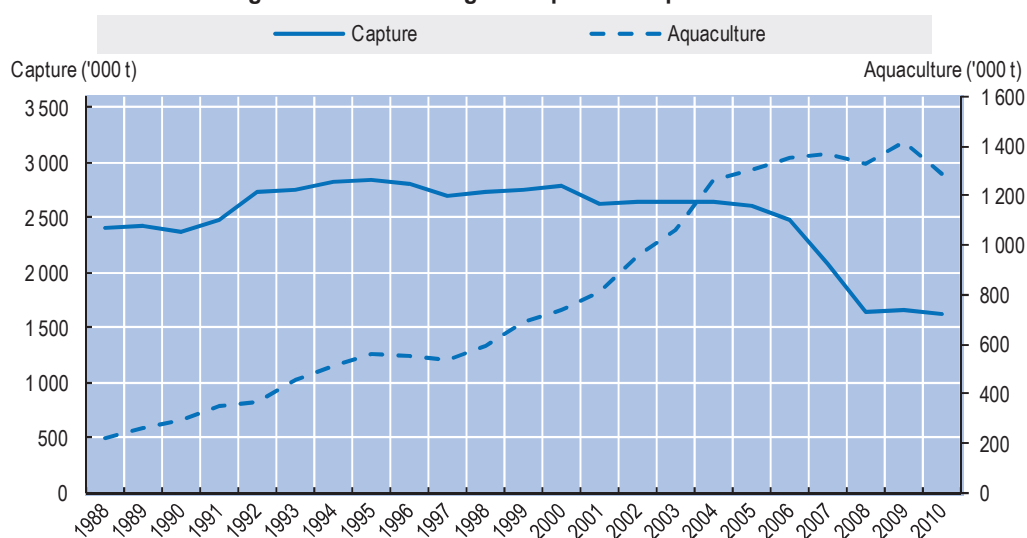
## Chapter 36

### THAILAND

#### Summary of recent developments

- Thailand is a contracting party to the UNCLOS as of 14 June 2011. In addition, on the principle of the duty to co-operate, Thailand has been a member of the Indian Ocean Tuna Commission (IOTC) since 1997 and a co-operating non-member of the Western and Central Pacific Fisheries Commission (WCPFC) since 2011.
- In 2011, 10 out of 22 coastal provinces had successfully expanded their conservation zones (up to 5 400 metres from shore) with the participation of all stakeholders.
- Starting in 2010, the Department of Fisheries has carried out public consultations to modify existing closed areas and seasons in the upper Gulf of Thailand.
- The Department of Fisheries has initiated a pilot monitoring of marine capture fisheries in the Thai waters through the voluntary installation of Vessel Monitoring System (VMS) in 2010. Thailand also uses a catch certification system to monitor legally operated fishing activities and combat IUU fishing.
- The Master Plan for Aquaculture 2012-2016 aims to achieve steady income for farmers, food safety, food security, sustainability, environmentally friendly development and availability for domestic consumption and export.
- The Department of Fisheries has formulated the strategy for ornamental fish 2013-2016 with the goal of being a center for production and trade of high-quality ornamental fish by 2016.

Figure 36.1. Harvesting and aquaculture production



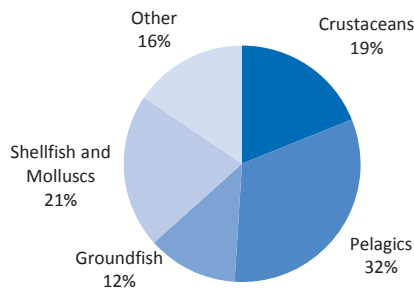
Source: FAO Fishstat database.

**Box 36.1. Key characteristics of Thai fisheries**

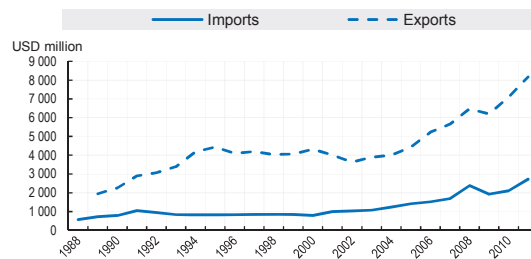
- Landings totalled 1 810 600 metric tonnes in 2010, with almost 90% coming from marine fisheries. Of which, the most important species landed in 2010, in terms of value, were pelagics (32%), followed by shellfish and molluscs (21%), crustaceans (19 %) and groundfish (12 %). (Panel A)
- Imports of raw material increased between 2010 and 2011 by 5.13% and 22.65% in terms of volume and value. Over the same period exports increased by 10% in value while declining by 4% in volume. (Panel B)
- The majority of government financial transfers are targeted to aquaculture produces. The majority of transfers are in the form of disaster relief payments (in the general services category), with management services making up the balance. (Panel C)
- The total number of fishing vessels registered in 2010 was 15 381 vessels, which is a 22.5% increase compared to 2006. (Panel D)

**Figure 36.2. Key fisheries indicators**

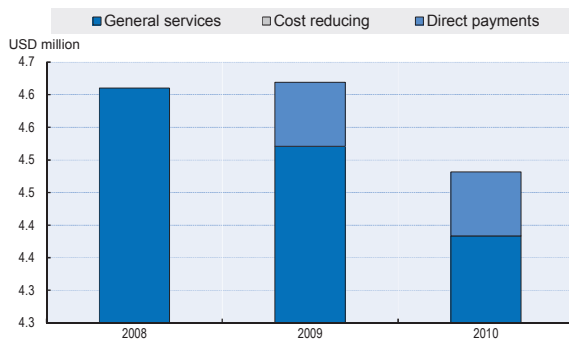
**Panel A. Key species landed by value in 2010**



**Panel B. Trade evolution**



**Panel C. Evolution of government financial transfers**



**Panel D. Capacity**

	2 006	2 011	% change
Number of fishers	80 538	..	..
Number of fish farmers	62 598	..	..
Total number of vessels	12 552	15 381	22.5
Total tonnage of the fleet	407 589	414 930	1.8

## Legal and institutional framework

The Department of Fisheries is the principal government agency responsible for the development and management of fisheries and aquaculture in Thailand. With regard to institutional arrangement at the provincial and district level, a provincial fishery officer works with district fishery officers to oversee fisheries and aquaculture activities in each province. At the sub-district level local communities participate in managing and conserving natural living resources and the environment in their localities.

On 15 May 2011, Thailand ratified the 1982 United Nations Convention on the Law of the Sea (UNCLOS) and is now a contracting party as of 14 June 2011. In addition, on the principle of the duty to cooperate, at present Thailand has been a member of the Indian Ocean Tuna Commission (IOTC) since 1997 and a co-operating non-member of the Western and Central Pacific Fisheries Commission (WCPFC) since 2011.

The Fisheries Act of 1947, revised in 1953 and 1985, is the principal legislative instrument governing fisheries and cultivation of aquatic animals in Thailand. A number of regulations and notifications had been adopted in each year for management and conservation of freshwater and marine fisheries. The key legislations relating to fisheries and aquaculture other than the Fisheries Act of 1947 include the Act Governing the Right to Fish in Thai waters (1939); the Act Organizing the Activities of the Fish Market (1953); the Wildlife Reservation and Protection Act (1992); and the Enhancement and Conservation of National Environmental Quality Act (1992). Thailand is currently in the process of revising the Fisheries Act, with an emphasis on complete control over the whole food chain of fish and fishery products.

In 2009, the Thai cabinet approved the Master Plan of Marine Fisheries Management of Thailand (2009-2018) submitted by the Ministry of Agriculture and Cooperatives (MOAC). The Department of Fisheries (DoF) was assigned as the main agency to facilitate the achievement of the plan by working in concert with other state agencies such as Ministries of Natural Resources and Environment, Transportation, Interior, Education, Social development and Human security, Foreign affairs, Commerce, Industry, Finance, Military, Royal Thai Police and Royal Thai Navy. The Master Plan was structured under the vision of “Sustainable fisheries development based on the sufficiency economy that places the people at the centre”. The master plan has three key missions. First, to restore fishery resources and ensure social economic, resource and ecosystem sustainability; secondly, to develop human resources, organisation and knowledge base for managing fishery resources and the marine environment; and third, to promote responsible fisheries, including networking at all social levels. These have led to five operational strategies:

- Improving marine fishery management and community participation.
- Improving the structure and effectiveness of fishery organisations.
- Developing and promoting sustainable exploitation of marine natural resources.
- Restoration and development of fishery resources to maintain biodiversity and the marine environment.
- Promotion and development of the off-shore fishery.

## Capture fisheries

### *Performance*

In 2010, the quantity of marine and inland fish unloaded at major ports was 1 810 600 metric tonnes with a value of THB 55 084 million. Marine fishery production accounted for

1 601 320 metric tonnes valued of THB 45 506 million, of which 65.7% was caught in the Gulf of Thailand while 34.3% from Andaman Sea.

Pelagic and demersal species dominate production. The main species harvested were anchovies, Indo-Pacific mackerel, sardines, threadfin breams, bigeye, squid, banana shrimp and blue swimming crab.

The total number of fishing vessel registered in 2010 was 15 381 vessels, 5 934 of which were of less than 12 metres in length, 4 976 vessels of 12-18 metres, 4 254 vessels of 18-24 metres, and 217 vessels of greater than 24 metres in length.

### *Status of fish stocks*

Poor fishing practices have resulted in widespread deterioration of marine habitats and many fish stocks are over-fished. Demersal fishes such as threadfin breams, lizardfish, and bigeye, have been harvested at levels above MSY. Current levels of fishing efforts will have to be reduced if these species are to recover. Stocks of crustaceans such as large-sized shrimp and oriental flathead lobster and cephalopods such as squid and soft cuttlefish are in decline.

Pelagic fish stocks have also suffered from over-fishing. Highly efficient gears and non-selective fishing methods, rapidly expanded fishing efforts, and targeting the broodstocks particularly during the spawning season all contribute to the current state of economic over-fishing. Assessments of each pelagic fish stock clearly show that many are fully exploited such as Indo-Pacific mackerel, bigeye scad, sardinellas and anchovy while round scad stocks were depleted.

### *Management of commercial fisheries*

The Department of Fisheries has continued to implement the following management measures:

- Seasonal closed areas in the Gulf of Thailand and Andaman Sea.
- Conservation zones.
- Fishing gear restrictions.
- Fishing gear licensing.

Trawl and push nets targeting demersal fishes and other bottom dwelling organisms damage the sea floor and are not selective in their catch. This practice damages the sea floor and habitats needed by fish populations. To address this, the Department of Fisheries has pushed through public hearings for the extension of the exclusion zone for trawl and push nets from 3 000 metres to 5 400 metres. These conservation zones will protect the nursery grounds of many important fish stocks. In 2011, 10 out of 22 coastal provinces had successfully expanded their conservation zones.

The typical management instruments for pelagic fish stock are closed areas and closed seasons. Stock assessment and life-cycle research of Indo-Pacific mackerel - an important pelagic species - showed positive results leading to the implementation of a seasonal closed area in the Gulf of Thailand. The Department of Fisheries has regularly monitored the stock in order to review this management measure. Longitudinal studies show the northward movement of small-sized Indo-Pacific mackerel to the nursery ground in the upper part of the Gulf of Thailand. High competition for fisheries resources between commercial and small scale fishing has led to confrontations between these resource users. This has led to public consultations to modify existing closed area and season in the upper Gulf of Thailand. This process empowers people and communities to actively participate in management,

maintenance, conservation and exploitation of natural resources. All proposed management measure must undergo public consultation before implementation.

### ***Monitoring and enforcement***

The Fisheries Administration and Management Bureau of the Department of Fisheries is responsible for Monitoring, Control and Surveillance (MCS) of fishing activities both inland and marine. Through its Marine Fisheries Management Section, patrols have been conducted regularly and effectively within the 12-24 nautical miles from shore band. Furthermore, some patrols are used for surveillance of violations of the Fisheries Act in seasonally closed areas in the Gulf of Thailand and in the Andaman Sea. During the year, another important action is to confront illegal fishing by foreign vessels which generally occurs between 40 and 50 kilometres from shore. The number of fishing vessels arrested has been increasing. Recent controls and arrests of foreign fishing vessels have been conducted in joint action with the Navy.

Combating IUU fishing is important for sustainability of fisheries. A catch certification system has been applied to monitor legal fishing activities. All fishing vessels have to be registered and have a license to operate fishing gear when they go out to fish. Fishing logbooks are provided to record fishing ground, date of fishing operation, catches by species and landing port. It is used by the authority to inspect their fishing operation. The traceability of these catches is done through the Marine Catch Purchasing Document (MCPD) that specifies what and how much of fishery production is sold to the buyer(s). This MCPD is conserved from the intermediate buyer up until to the processing plant. Data from the fishing logbooks is recorded in a central database. Catch certification is issued at the final stage when the processor requests and submits all MCPDs from catch to processing to final fishery products.

In 2010 a demonstration programme monitoring marine capture fisheries has been implemented in the Thai waters through the voluntary installation of Vessel Monitoring Systems (VMS). One hundred fishing vessels including trawlers and purse seiners have had VMS unites installed and monitored via AIS signal. VMS installation is currently required for all Thai fishing vessels authorised to fish in the high seas including vessels fishing for tuna in the Indian Ocean. For fishing vessels from Thailand operating in foreign waters under fisheries cooperative arrangements, they are automatically required to equip with VMS as a necessary condition for such arrangements.

### **Aquaculture**

As over-exploitation has limited commercial fisheries, aquaculture has played a pivotal role in supplying protein for the Thai consumers and for export. Development and management of marine and freshwater aquaculture has become part of the national agenda. The Department of Fisheries is the principal government agency responsible for aquaculture planning and implementation. It has developed a culture system in fisheries production- from farm to table.

Aquaculture has been effectively developed in Thailand in response to emerging demands and challenges, in particular food security, food safety, environmental sustainability, economic growth and international agreements. With a view to maintaining this balance and to ensure sustainable development in aquaculture, a number of initiatives have been implemented. These include aquatic farms and hatcheries registration, farms and hatcheries certification program (*Good Aquaculture Practice* and *Code of Conduct*), antibiotic residue inspection in fish/shrimp/feed and traceability via Fry Movement Document (FMD) and Movement Document (MD).

### ***Policy changes***

In order to extend Thailand's reputation as a producer of safe and high-quality aquaculture products in a sustainable manner, the Thai Agricultural Standard (TAS 7401-2009) on Good Aquaculture Practices (GAP) for Marine Shrimp Farms has been widely applied on shrimp farming. This is consistent with the FAO Guidelines on Aquaculture Certification and was issued on a voluntary basis in accordance with the Ministerial Notification of Agriculture and Cooperatives on 29 September 2009.

GAP stipulates criteria to protect animal health and welfare, and requires that all aquaculture operations must be conducted in a manner that assures health and welfare of farmed aquatic animals by minimising stress, reducing risks of aquatic animal disease, and maintaining a healthy culture environment throughout all phases of the production cycle. The criteria on food safety require that farms implement appropriate national or international standards and regulations including those defined by FAO/WHO Codex Alimentarius. The criteria on environmental integrity focus on environmental responsibility in aquaculture practices. Finally, GAP also includes criteria on socio-economic aspects, requiring that aquaculture operators act in a socially responsible manner, complying with national rules and regulations and taking into account the International Labor Organization (ILO) Convention on Labor Rights, and ensuring that the operation does not jeopardise the livelihoods of aquaculture workers and local communities.

The Department of Fisheries was designated by the National Fisheries Policy Committee to craft the Master Plan for Aquaculture 2012-2016 aiming to achieve steady income contribution for farmers, food safety, food security, sustainability, environmentally friendly development and availability for domestic consumption and export. It specifies priority areas in innovative research, effective technology, quality and safety, environmentally friendly development, prospective zoning, participation of farmers and other stakeholders as well as networking.

Ornamental fish offers good growth potential as global trade value continues to grow at the rate of 2.8% per year. Ornamental fish production has several advantages - in space required for culture, low investment costs, high and rapid returns, and foreign exchange earnings. A strategy for ornamental fish was implemented that aims for Thailand to be a centre for producing and trading of high-quality ornamental fish by 2016. This programme is expected to increase exports by more than 5%.

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

The Department of Fisheries conducts monitoring and inspection programs for farm and hatchery operation (Water quality, diseases, antibiotics and chemicals) and for raw material use (Antibiotic contamination, use of prohibited chemicals). To control the locations used for shrimp culture, physical characteristics of the coastal areas are used as follows:

- Surrounding coastal areas for shrimp with salt or high salinity covering 23 provinces, namely Bangkok, Samut Songkhram, Samut Sakhon, Chanthaburi, Chachoengsao, Chonburi, Pattaya, Rayong, Hua Hin, Pattaya, Krabi, Pattaya, Phuket, New York, Narathiwat, Pattani, Phuket, Phatthalung, Phuket, Ranong, Songkhla, Satun, and Surat Thani. Total area registered with the Department of Fisheries is 56 682 hectares.
- Inland areas for white shrimp *Litopenaeus vannamei* with low salinity. Areas are strictly controlled to avoid the effects of salinity on the environment. Areas may be considered only when soil salinity less than 2 ds/m and if the area of the pond at the working level is appropriate for farming of shrimp. The potential areas are in Nakhonnayok, Nakhon Pathom, Suphan Buri, Bangkok and Ratchaburi provinces. Total area registered with the Department of Fisheries is 6 826 hectares.

Aquaculture production both in quantity and area is dominated by shrimp production (Table 36.1). However, area for shrimp farming has declined between 2009 and 2011 while it has grown for other aquaculture products (Table 36.2).

**Table 36.1. Production from Coastal Aquaculture in 2010**

	Production	Number of operating units	Area
	Tonnes		Hectares
<b>Shrimp</b>	559 644	23 333	127 277
<b>Marine fish</b>			
Pond	17 415	1 466	2 997
Cage	14 419	9 810	198
<b>Shellfish</b>			
Blood cockle	40 979	2 167	25 821
Green Mussel	123 879	2 261	6 885
Oyster	10 757	1 355	1 928

*Note:* Shrimp includes black tiger prawn, banana shrimp, white shrimp, school prawn and other shrimp

*Source:* Thai country submission.

**Table 36.2. Aquaculture production facilities, 2009-11**

	2009		2010		2011 (estimate)	
	Number of farms	Hectares	Number of farms	Hectares	Number of farms	Hectares
Coastal aquaculture	43 583	173 619	40 392	165 106	41 255	166 101
<i>Shrimp</i>	25 131	132 027	23 333	127 277	22 747	122 654
<i>Marine fish</i>	11 765	2 131	11 276	3 196	11 435	3 336
<i>Shellfish</i>	6 687	39 460	5 783	34 634	7 073	40 111
Freshwater aquaculture	550 631	413 024	532 487	403 084	449 910	283 661
<b>Total</b>	<b>594 214</b>	<b>586 643</b>	<b>572 879</b>	<b>568 190</b>	<b>491 165</b>	<b>449 762</b>

*Source:* Thai country submission.

## Fisheries and the environment

The government of Thailand recognises the impacts of fisheries and aquaculture on the environment. Measures to protect natural resources are routinely stipulated in the National Economic and Social Development Plan. Improving fishery law, controlling the number of fishing vessel and restoration of sea natural habitats were elaborated in Sixth Plan (1987-1991).

The issue of fishmeal production and using trash fish to feed farmed fish is being addressed. Thailand is both a major fishmeal producer and consumer, so reducing using of trash fish or by-catch fish species for fishmeal production destined for aquaculture is challenging. In 2009 total fresh fish used to produce fishmeal was 1.3 million tons, of which

36 % were trash fish. Meanwhile, other fishes accounted for 7.7%, possibly including smaller marketable fish.

### *Environmental policy changes*

An integrated Thai sea restoration was one of the measures identified in the Ninth Plan (2002-2006). It covered conservation, restoration, implementation of coastal and marine natural resources and artisanal fisheries. In addition, damaging fishing gears were prohibited, in particular push nets. In the tenth plan (2007-2011), the key measures were promoting public participation in natural resources management, developing biodiversity values, the local technical knowledge base and balancing community and natural resources. The current national plan (the Eleventh Plan, 2012-2016) still pays strong attention to restoration of natural resources such as coral reefs, mangrove forest, sea weed and sea grass beds as well as sustainability of natural resources use and fishery.

The Department of Fisheries also set a notification for prevention of environmental impact from operation of aquaculture facilities that requires shrimp farms sized more than 8 ha (50 rai) to construct water treatment facilities and a sludge dumping pond. This is to prevent shrimp farming operations from causing eutrophication.

In 2011, The Department of Fisheries implemented an FAO-funded project “Aquaculture Information Management System in Thailand: AIMS”. The project’s objectives were to use AIMS to support sustainable aquaculture development. The project gathered all available information related to aquaculture to identify potential risks using monitoring and surveillance information as well as carrying capacity models for finfish, shrimp and bivalve culture. Secondary data such as climate, hydrology, monitored environmental data and disease surveillance data were also incorporated in the analysis. The project resulted in planning recommendations based on the carrying capacity of each area or production system.

### *Sustainable development initiatives*

Thailand is the largest producer of Asian sea bass, which are mainly fed with small market fish. Over the last two decades, the use of artificial feed for Asian sea bass has been promoted without much success. In the last three years farmers have become increasingly interested in using commercial feed. Higher prices for fresh fish and improved availability of commercial feed are the main causes. In parallel, the Department of Fisheries supported research to reduce dietary fishmeal using alternatives, for example plant proteins and animal meals. These data are available for all aquatic feed factories to adopt for their feed formulas. Furthermore, factories themselves research methods for reducing dietary fishmeal in response to increasing fishmeal prices. As a result, the amount of fishmeal in fish or shrimp feed has been reduced dramatically.

The conservation and management framework for by-catch such as shark and turtle is considered an important management issue for sustainable fisheries. Sharks have low growth rate and long maturation times, long gestation periods and produce small numbers of offspring. Furthermore, shark is widely used for its fin, flesh, skin and other products. In Thailand, no specific types of fishing gear directly target shark species. Thus, sharks are mainly caught as by-catch. The Department of Fisheries emphasise that conservation and management of shark need to be implemented on a regular and long term basis in accordance with the International Plan of Action for the Conservation and Management of Shark (IPOA-shark). A National Plan of Action for the Conservation and Management of Shark (NPOA-shark) has been implemented to ensure shark sustainability. Various other activities have been implemented including setting-up a database system on shark biology, fishery, landing and marketing utilisation. In addition, monitoring and controlling of shark fisheries has been



carried out continuously and systematically. The NPOA-shark is in being revised to improve its effectiveness.

### **Government financial transfers**

Government Financial Transfers (GFTs) in Thailand in 2011 was THB 1 302 million baht (USD 42.7 million), 87.3% of which were allocated to aquaculture and 22.7% to the marine capture sector. GFTs to aquaculture included disaster relief payments of THB 774.6 million (USD 25.4 million) and management, research and enforcement services totalling THB 340.5 million (USD 11.2 million). GFTs to marine capture fisheries included disaster relief payments of THB 23.8 million (USD 0.8 million), enforcement services of THB 105.9 million (USD 3.5 million), management services of THB 41.8 million (USD 1.4 million) and research services of THB 15.2 million (USD 0.5 million).

#### ***Transfer policies***

During 2007-11, the total amount of government financial transfer to aquaculture increased by 51% per year, of which direct payments for disaster relief increased by a factor of two and general service increased by 1.6% per year. Transfers to the marine capture sector increased by 6.5% per year, and comprised expenditures for general services and disaster relief.

#### ***Policy changes***

##### *Food safety*

The National Food Committee headed by the Ministry of Public Health and Ministry of Agriculture and Cooperatives has recently established a Strategy Framework for Food Management in Thailand. The strategies emphasise development of food management systems throughout the food chain as well as commodity standards that meet international requirements. Good Agricultural Practice (GAP), Good Manufacturing Practice (GMP) and Hazard Analysis and Critical Control Point (HACCP) are promoted particularly for small and medium enterprises. Research and development on prevention and control of plant and animal (livestock and fisheries) diseases are encouraged. Capacity building for risk analysis for import control and pro-active approach for export is foreseen.

##### *Information and labelling*

Regulatory labelling, under the authority of the Thai Food and Drug Administration (FDA), generally emphasises declaration of information on manufacturer, type and quantity of product contained inside the package. Nutrition labelling is required for some food with nutrition claims or in particular food as declared by the Thai FDA. Eco-labelling is still voluntary in Thailand and mostly practiced for exported fishery products as required by the importing countries. Guidelines on Eco-labelling for the canned tuna industry were developed in 2009 by the Southeast Asian Fisheries Development Center (SEAFDEC) and the Department of Fisheries for further use by the tuna industry in ASEAN and SEAFDEC member countries. The guideline emphasises responsible tuna fishing, environmentally friendly fishing operation and traceability. Canned tuna processing desiring to be certified shall comply with local and national laws and environmental regulations, as well as with international food safety and eco-friendly regulations.

## Markets and trade

### *Markets*

In the domestic market fish is regarded as a cheap protein sources for people, particularly in rural areas, the Department of Fisheries has put its strong effort to increase fish as well as other aquatic animal productions to supply our people and make its reasonable price that people can afford. Moreover, improved strains of fish have been developed through new genetic technology to reduce the cost in production, improve their growth rate and flesh quality to meet consumer requirement.

### *Promotional efforts*

Improvements have been encouraged in fish and shrimp production processes to meet international standards and importer requirements with regard to food safety, environment friendly, socio-economic aspect, animal health and welfare so that fish and fisheries products from Thailand are accepted in the world market. The Department of Fisheries in collaboration with the Department of Export Promotion also promote fish and fisheries products in international seafood expositions and trade shows in various parts of the world. Meanwhile in its role as competent authority, the Department of Fisheries controls, monitors, and certifies producers, processing plants and fisheries products for export as required.

### *Trade*

A number of Free Trade Agreements (FTA) have been concluded and implemented with various partners: Thailand-Australia, Thailand-New Zealand, Thailand-Japan, Thailand-India (Early Harvest), Thailand-Peru (Early Harvest), ASEAN FTA, ASEAN-China, ASEAN-Japan, ASEAN-Korea, ASEAN-India, ASEAN-Australia-New Zealand. Tariffs for imported products varies among these FTAs. However, in general it is set at 5% and in some cases a 30% tariff applies for certain products such as live fish.

Import control for food products is authorised under Food Act B.E. 2522 (1979), regulated by Ministry of Public Health. Food manufacturers in exporting countries are required to operate under GMP at a minimum. Health certificates or test reports may be required for specific commodities. The Ministry of Agriculture and Cooperatives (MOAC) has jurisdiction over plant and animal quarantines. Imports of plant and animals including aquatic animals are subject to specific disease control measures such as requirements for aquatic animal health certificates or import restrictions for specific aquatic animal species from particular countries or zones. For imported fishery raw materials for further processing and re-export to certain countries, specific requirements are applied. For example, if the European Union is the final destination, raw materials shall come from EU approved processing plants or harvesting areas of the exporting countries.

### *Volumes and values*

Exports of fish and fisheries products to international markets totalled THB 259 864 million, a 9.69% increase from the previous year. At the same time, the volume of exported fish and fisheries products decreased by 4.05% from 2 058 354 tons in 2010 to 1 974 965 tons in 2011 due to reduced exports to major markets such as the United States, European Union and China. Thailand is a net importer of fish and fisheries products. In 2011, imports of raw material increased by 5.13% and 22.65% in terms of volume and value in respectively. The main imported product is frozen tuna for canning.

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