North Atlantic Seafood Market Report

April 2013
Dear reader,

Íslandsbanki offers comprehensive financial services to individuals, households, companies and professional investors. The bank has assembled a dedicated team of experienced professionals with a deep understanding of the seafood sector, which has been an important part of the Bank’s operations since establishment. Indeed, Íslandsbanki and its predecessors have worked closely with the seafood industry for over a century. Íslandsbanki’s international strategy is centred on the bank’s core strength in seafood and energy. The geographic focus is the North Atlantic region.

In addition to providing banking services to the seafood industry, the bank has issued reports on the sector since 2003. Through these reports, we attempt to provide insights into key issues affecting the industry. It is once again our great pleasure to present this Íslandsbanki Industry Report, this time focusing on the North Atlantic Ocean. As before, the object of our Seafood Industry Report is to give a comprehensive and analytical overview of a region or a country. The following pages are an introduction to the seafood industry in the North Atlantic with a special focus on Iceland, Norway, Faroe Islands, Greenland, Canada and US. We invite you to read on.

Íslandsbanki’s Seafood Team

Key Highlights

The North Atlantic Seafood Market

- Fishing in the North Atlantic represents about 11% of total global landings
- Atlantic herring is the most caught species in the North Atlantic, followed by Atlantic cod and Atlantic mackerel
- Norway is the largest fishing nation in the North Atlantic, representing about 23% of total landings
- All of the six focus countries (Iceland, Norway, Faroe Islands, Greenland, Canada and US) have quota systems, although the methodologies differ from country to country
- Salmon and cod are the most valuable export species for the focus countries
- Aquaculture accounted for 41.3% of fish production in the world in 2011, a 6.2% increase over 2010

Íslandsbanki employs a group of experts who focus on the seafood industry. The group is part of the corporate banking unit and handles relationships and services for domestic and foreign seafood companies, as well as the publication of analyses and reports.

Over the years, many of the largest and leading seafood companies in Iceland and abroad have been customers of the bank. At present, about 26% of the bank’s corporate loan portfolio relates to the seafood industry.

Fig. 01. Íslandsbanki’s Loan Portfolio, by Industry

Íslandsbanki’s international strategy is centred on the bank’s core strengths in seafood and energy. The geographic focus is the North Atlantic region. In addition to providing banking services to the seafood industry, the bank has issued reports on the sector since 2003. Through these reports, we attempt to provide insights into key issues affecting the industry. It is once again our great pleasure to present this Íslandsbanki Industry Report, this time focusing on the North Atlantic Ocean. As before, the object of our Seafood Industry Report is to give a comprehensive and analytical overview of a region or a country. The following pages are an introduction to the seafood industry in the North Atlantic with a special focus on Iceland, Norway, Faroe Islands, Greenland, Canada and US. We invite you to read on.

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The Atlantic Ocean is the second largest of the world’s five oceans. It lies between Africa, Europe, the Arctic Ocean, the Americas and the Southern Ocean. It is rich in natural resources, including crude oil, natural gas and seafood, which have contributed significantly to the development of surrounding countries. This is especially true in the North Atlantic where fishing is rooted in the culture of many countries. This region hosts some of the world’s richest fishing resources, especially in the waters covering the continental shelves. The major fish stocks are cod, haddock, hake, herring, and mackerel.

This report will focus on six North Atlantic nations, referred to as ‘focus countries’ throughout the report: Iceland, Norway, the Faroe Islands, Greenland, Canada and the US. These nations are all large seafood producers and share strong cultural and historical ties. The countries all have large coastlines and the ocean has played an important role in the development of their economies.

In 2011, total global landings were about 83.5 million metric tonnes (MT), a 6.7% increase from 2010. Total landings in the North Atlantic were 10.3 MT or about 12% of total global landings. Pelagic fish accounted for the largest proportion of landings, as can be seen in figure 02.

Fishing in the northern Atlantic has fallen by over 25% since 2001. This decline was due in part to the decline in the blue whiting catch, along with the collapse of the capelin stock.

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Fishing in the northern Atlantic has fallen by over 25% since 2001. This decline was due in part to the decline in the blue whiting catch, along with the collapse of the capelin stock.
In 2011, total landings in the North Atlantic decreased by 800,000 MT or about 7.2% compared to 2010.

The six major species accounted for just over 50% of the total catch in the North Atlantic in 2011. The Atlantic herring accounted for about 20% of the total catch, followed by the Atlantic cod and the Atlantic mackerel, with 8.7% and 8.1% of total landings respectively.

It should be kept in mind that the figures below do not reflect the value of each species. The largest species by volume are not necessarily the most valuable.

For the past decade, Norway has been the clear leader in the North Atlantic region, representing about 23% of the total catch. Iceland and the US are the second and third largest, catching about 10% of all fish in the North Atlantic.

As seen in figure 06, the total catch for Norway and Iceland has declined substantially from their peak in 2002. Norway has however been showing signs of recovery since 2008, while Iceland’s volume has continued to decline, ending with a total catch equal to the US of about 1,100,000 MT in 2011. The reason for Iceland’s decline can primarily be traced back to fluctuations in some of the largest Icelandic fishing stocks, such as capelin, blue whiting and cod along with other groundfish species.

### Landings by Species

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### Sources

- Fig. 04: Historical Landings in the North Atlantic, Top 6 Species from 2000 to 2011
- Fig. 05: Total Landings for the 6 Major Fish Species in the North Atlantic from 2000 to 2011
- Fig. 06: Total Catch in the North Atlantic, by Focus Countries and Volume
- Fig. 07: Total Catch in the North Atlantic in 2011

Source: Statistics Iceland and FAO
Quota Systems

The focus countries have developed six distinct types of fisheries management systems. The systems operate under conditions that differ significantly from nation to nation, especially in terms of the countries’ economic dependence on fishery resources, their socio-cultural approaches to fisheries, and their marine ecosystems.

Iceland: The Minister of Industry and Innovation determines the TAC for each species, based on the scientific advice from the Icelandic Marine Research Institute. The TAC is normally 20% of the total biomass, without ever exceeding the Maximum Sustainable Yield.* The maximum total quota for each company is 12% for all species combined and there is also a different limit for each species. Iceland has a uniform and fairly complete ITQ system applying to all vessels.

Norway: The Norwegian management system is in the form of a "regulatory chain," which is an annual, interactive process based on incremental changes. The regulatory chain incorporates stages such as gathering research data which, for example, explores the marine environment and resources, quota negotiations with other states, as well as allocating quotas to the various vessel groups.

Faroe Islands: A fisheries management system based on individual transferable quotas, with various restrictions on transferability, was introduced in 1996. The quotas are not given in metric tonnes of individual species but as fishing days for various groups of fishing vessels in the Faroese fisheries zone.

Greenland: Fishing is administrated through quotas and licenses regulating the total allowable catch (TAC) for Greenlandic waters as decided by the Government of Greenland based on the biological advice of Greenlandic and international fisheries organizations. A distinction is made between coastal fishing and ocean fishing. Permanent licenses are used for shrimp. These licenses can be traded between ship owners, with limits of 10% (coastal fishing) and 33% (off shore fishing) of the total quota for each company. The distribution of quotas for most other species is determined by the Greenlandic government through temporary one-year licenses that cannot be traded between ship owners.

Canada: The Department of Fisheries and Oceans (DFO) determines the TAC for each species, based on the scientific advice from the Canadian Science Advisory Secretariat and input from the Regional Advisory Process. The assessment criteria include acoustic surveys, bottom trawl surveys, gillnetter telephone surveys, and historic catch volumes. As a general rule, the TAC is normally 20% of the total biomass, without ever exceeding the Maximum Sustainable Yield.*

US: The US has eight Regional Fishery Management Councils which serve as the front line of fisheries management, where region specific management measures (such as fishing seasons, quotas, and closed areas) are initiated, developed, and ultimately adopted in a fully transparent and public process. The US has Ecosystem based fisheries and it implements a fishery management plan for all fish species caught in US waters. Some plans are for single species fisheries while others cover species and even multispecies complexes, sometimes providing separate management strategies by species, gear type, area etc.

Sources: Nordic Council, OECD, Ministry of Fisheries and Natural Resources Faroe Islands, Statistics Greenland and Ministry of Fisheries and Natural Resources Iceland. Sources: Nordic Council, OECD, Fisheries and Oceans Canada, Department and Ministry of Fisheries and Coastal Affairs Norway.
Export Comparison

As shown in table 01 the seafood industry plays different roles in each of the focus countries' economies. Marine products represent a large proportion of total export value in Greenland and The Faroe Islands, while in the US the share is much lower. Norway is the largest export country of these six focus countries. However, the share of fish and seafood in Norway’s total export value is only 5.9%. The fishing sector in Norway is the second largest export sector after oil and gas.

In all of the focus countries, the number of jobs in the seafood sector has decreased during the last 10 years. The main causes for that fall are mechanisation and optimisation of the nation’s vessels fleets.

Table 01. The North Atlantic Fisheries in Short Term

<table>
<thead>
<tr>
<th></th>
<th>Employed in the Fishing Industry</th>
<th>Fisheries Share of National GDP</th>
<th>Fish and Seafood of Total Export Value</th>
<th>Total Fish and Seafood Export (MT)</th>
<th>Total Fish and Seafood Export (Million EUR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iceland</td>
<td>9,100</td>
<td>7.7%</td>
<td>34.0%</td>
<td>672,247</td>
<td>1,559</td>
</tr>
<tr>
<td>Norway</td>
<td>12,791</td>
<td>1.5%</td>
<td>5.9%</td>
<td>2,277,740</td>
<td>6,684</td>
</tr>
<tr>
<td>Faroe Islands</td>
<td>3,842</td>
<td>35.0%</td>
<td>85.0%</td>
<td>325,092</td>
<td>618</td>
</tr>
<tr>
<td>Greenland</td>
<td>1,381</td>
<td>NA</td>
<td>90.0%</td>
<td>109,788</td>
<td>316</td>
</tr>
<tr>
<td>Canada</td>
<td>81,000</td>
<td>0.0%</td>
<td>0.3%</td>
<td>1,479,683</td>
<td>3,900</td>
</tr>
<tr>
<td>US**</td>
<td>1,233,204</td>
<td>2.5%*</td>
<td>34.0%</td>
<td>609,335</td>
<td>2,977</td>
</tr>
</tbody>
</table>

*Numbers from 2011  
**Atlantic region's GDP  
Numbers from 2009  

Sources: Statistics Iceland, Fisheries and Oceans Canada, Statistics Norway, Directorate of Fisheries Norway, Fishery Statistics Division US, Statistics Greenland and Statistics Faroe Islands

Export Value by Destination

The three main markets for the six focus countries can be seen in the table below:

Greenland exports 97% of its total fish and seafood products to Denmark. Greenland is able to export a large proportion of its fish and seafood products because of its small population and large amount of total landings. In Iceland, cod is the most valuable species, with the UK and Spain as the main markets. The UK is also a strong market for Faroese groundfish along with the US and Nigeria is a valuable market for dried fish. Canada is highly dependent on the US, which is a net importer of seafood products. Norway enjoys diverse markets for its products with no reliance on any single market.

Table 02. Main Export Countries in 2011

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<th>1.</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Iceland</td>
<td>Norway</td>
<td>Faroe Islands</td>
<td>Greenland*</td>
<td>Canada</td>
<td>US</td>
</tr>
<tr>
<td></td>
<td>UK (18%)</td>
<td>Russia (10%)</td>
<td>UK (14%)</td>
<td>Denmark (87%)</td>
<td>US (62%)</td>
<td>Canada (19%)</td>
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<td></td>
<td>France (10%)</td>
<td>Nigeria (10%)</td>
<td>China (9%)</td>
<td>EU (17%)</td>
<td>EU (17%)</td>
<td>EU (17%)</td>
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<tr>
<td></td>
<td>Spain (10%)</td>
<td>Spain (10%)</td>
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<td>US (62%)</td>
<td>Canada (19%)</td>
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<tr>
<td></td>
<td>Denmark (7%)</td>
<td>US (9%)</td>
<td>Japan (8%)</td>
<td>Mexico (14%)</td>
<td>Mexico (14%)</td>
<td>Mexico (14%)</td>
</tr>
<tr>
<td></td>
<td>Portugal (5%)</td>
<td>China (9%)</td>
<td>Mexico (14%)</td>
<td>Portugal (5%)</td>
<td>Portugal (5%)</td>
<td>Portugal (5%)</td>
</tr>
<tr>
<td></td>
<td>Greenland*</td>
<td>Iceland (1%)</td>
<td>Japan (8%)</td>
<td>Portugal (5%)</td>
<td>Portugal (5%)</td>
<td>Portugal (5%)</td>
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<tr>
<td></td>
<td>US (62%)</td>
<td>Canada (19%)</td>
<td>Mexico (14%)</td>
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<td>Mexico (14%)</td>
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<td>Iceland (1%)</td>
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<td></td>
<td>Japan (8%)</td>
<td>Portugal (5%)</td>
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<td>Portugal (5%)</td>
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<td>Portugal (5%)</td>
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<tr>
<td></td>
<td>Mexico (14%)</td>
<td>Portugal (5%)</td>
<td>Portugal (5%)</td>
<td>Portugal (5%)</td>
<td>Portugal (5%)</td>
<td>Portugal (5%)</td>
</tr>
</tbody>
</table>

*Numbers from 2011  
**Numbers from 2009  

Source: Statistics Iceland, Fisheries and Oceans Canada, Statistics Norway, Directorate of Fisheries Norway, Fishery Statistics Division US, Statistics Greenland and Statistics Faroe Islands

North Atlantic Report
Export Value by Species in 2011

<table>
<thead>
<tr>
<th>Source</th>
<th>Iceland</th>
<th>Greenland</th>
<th>Canada</th>
<th>US</th>
</tr>
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<tbody>
<tr>
<td>Salmon</td>
<td>31%</td>
<td>9%</td>
<td>10%</td>
<td>19%</td>
</tr>
<tr>
<td>Cod</td>
<td>30%</td>
<td>10%</td>
<td>55%</td>
<td>50%</td>
</tr>
<tr>
<td>Lobster</td>
<td>12%</td>
<td>9%</td>
<td>15%</td>
<td>11%</td>
</tr>
<tr>
<td>Mackeral</td>
<td>4%</td>
<td>12%</td>
<td>25%</td>
<td>4%</td>
</tr>
<tr>
<td>Prawn</td>
<td>8%</td>
<td>19%</td>
<td>18%</td>
<td>9%</td>
</tr>
<tr>
<td>Herring</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>9%</td>
</tr>
<tr>
<td>Redfish</td>
<td>6%</td>
<td>4%</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>Haddock</td>
<td>56%</td>
<td>10%</td>
<td>10%</td>
<td>9%</td>
</tr>
<tr>
<td>Blue Whiting</td>
<td>5%</td>
<td>7%</td>
<td>15%</td>
<td>6%</td>
</tr>
<tr>
<td>Crab</td>
<td>3%</td>
<td>9%</td>
<td>18%</td>
<td>5%</td>
</tr>
<tr>
<td>Saithe</td>
<td>9%</td>
<td>10%</td>
<td>10%</td>
<td>4%</td>
</tr>
<tr>
<td>Capelin</td>
<td>4%</td>
<td>4%</td>
<td>15%</td>
<td>4%</td>
</tr>
<tr>
<td>Pollock</td>
<td>23%</td>
<td>6%</td>
<td>10%</td>
<td>11%</td>
</tr>
<tr>
<td>Sculps</td>
<td>9%</td>
<td>10%</td>
<td>50%</td>
<td>40%</td>
</tr>
<tr>
<td>Greenland halibut</td>
<td>12%</td>
<td>10%</td>
<td>18%</td>
<td>15%</td>
</tr>
<tr>
<td>Other</td>
<td>8%</td>
<td>7%</td>
<td>12%</td>
<td>11%</td>
</tr>
</tbody>
</table>

The Icelandic Economy

Iceland is located in Northern Europe, an island between the Greenland Sea and the North Atlantic Ocean, northwest of the United Kingdom. The country is rich in natural resources such as geothermal and hydropower, and seafood.

The Icelandic economy depends heavily on the fishing industry and is the second largest fishing nation in the North Atlantic behind Norway. In 2011, the seafood sector provided over 38% of export earnings, contributed about 8% of GDP, and employed over 5% of the workforce.

The following figures show the development of the Icelandic fishery from 2000 to 2011.

Over the last decade three of the major species have decreased in volume by an average 25%. The total catch has fallen by 42% from about 1,900,000 MT in 2001 to just over 1,100,000 MT in 2011. The primary cause for the decline is a fall in the capelin stock. Total seafood catch in 2011 was valued at EUR 953 million, a 16% increase from 2010. Cod was the most important species in 2011 in terms of value followed by redfish, herring, and haddock.

The main species in terms of volume are capelin, herring, cod, redfish, and haddock.

### Historical Landings

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The Norwegian Economy

Norway comprises the western portion of the Scandinavian Peninsula in Northern Europe. The country has long been considered unique for its spectacular fjords, spanning more than 21,000 km. About 80% of the country’s population resides around the coast and up to 10 km inland.

Norway is rich in natural resources, such as petroleum, hydropower, fish, forests, and minerals. The country is highly dependent on the petroleum sector, which accounts for a significant portion of total export revenue. Norway is the world’s second-largest natural gas exporter and seventh largest oil exporter.

The fishing sector is the second largest export sector in Norway, with total exports valued at about EUR 5 billion in 2011 and employing around 19,000 people, both directly and indirectly.

Historical Landings

The following figures show the development of the Norwegian fishery from 2000 through 2011.

The most significant change in terms of volume has been in herring and capelin. After reaching its peak in 2009, herring has decreased by 41%, reaching a total volume of 633,103 MT.

As in previous years, cod remains the most valuable species in Norway accounting for 25% of total value in 2011.
The Faroe Islands Economy

The Faroe Islands are an island group and archipelago under the sovereignty of Denmark, situated between the Norwegian Sea and the North Atlantic Ocean, about halfway between Norway and Iceland.

For decades fishing has been the main source of income for the Faroese, with fish and fish related products representing over 91% of Faroese exports in 2012. Initial discoveries of oil in the Faroese area give hope for eventual oil production, which may provide a foundation for a more diversified economy and less dependence on Danish economic assistance.

In 2012, Faroe Island’s commercial fishing industries generated more than EUR 429 million and created more than 2,846 jobs. Fish farming is also an important industry in the Faroe Islands, creating more than 796 jobs, valued at EUR 245 million.

In recent years, increased mackerel landings have partially offset the decline in the whiting catch. The mackerel catch increased from 15,000 MT in 2009 to 125,000 MT in 2011.

Historical Landings

The following figures show the development of the Faroe Islands’ fishery from 2001 to 2011.

The collapse of the blue whiting stock has had a major impact on the fishery. At its peak in 2003 the total catch of blue whiting was 320,000 MT, which represented 53% of the Faroese' total catch.

In 2011, the total catch was 16,000 MT, a 95% decrease compared to 2003.
The Greenland Economy

Greenland, which is located between the Arctic Ocean and the North Atlantic Ocean, is the largest island in the world. Ice covers about 81% of the island and the majority of the population lives in towns along the West Coast.

Greenland is rich in many natural resources, the main ones being the fisheries, with more than 250 fish species living in its waters. Furthermore, Greenland has abundant mineral resources such as coal, iron ore, uranium, lead, zinc, molybdenum, diamonds and gold, and has recently gained international attention because of the country’s strategic location for the future development of the Arctic, including Arctic shipping lanes.

The fishing industry is a vital part of the national economy, accounting for 90% of the country’s exports and providing around 1,500 jobs in 2011.

The Greenland Economy (Amounts in million EUR)

| Area (km²) | 2,166,086 |
| Population | 56,749 |
| GDP (PPP) | 1,529 |
| GDP (growth) (PPP) | 3.0% |
| GDP per capita (PPP) | 25,423 |
| GDP composition by sector | |
| Agriculture | 4.0% |
| Industry | 29.0% |
| Services | 67.0% |
| Inflation rate | 2.8% |
| Unemployment rate | 4.9% |
| Trade balance | |
| Export | 289 |
| Import | 613 |

Numbers are 2009 and 2012 est.

Historical Landings

As can be seen in the following figures, shrimp (northern prawn) is by far the most caught species in Greenlandic waters, accounting for over 46% of the total catch in 2011, followed by the Greenland halibut and cod.

Recently, capelin has increased in volume, reaching 48,000 MT in 2011, a sharp increase compared to the previous five years. Snow crab was a substantial part of Greenland’s total catch up until 2007 but has decreased by more than 50% since then (crab is listed among other species in the figures).

Northern prawn is also the most valuable species accounting for more than 55% of total landings by value in 2011. Greenlandic halibut is the second most valuable species with around 21% of the total value in 2011.
The Canadian Economy

Located in North America, Canada borders the North Atlantic Ocean on the east, North Pacific Ocean on the west, and the Arctic Ocean on the north. The country is rich in natural resources such as natural gas, oil, arable crops, wildlife, and seafood. Since World War II the growth of manufacturing, mining, and service sectors has transformed the country into an industrial economy. Canada has one of the world’s most valuable commercial fishing industries, directly contributing about EUR 1.3 billion a year and is estimated to account for more than 81,000 jobs. Seafood is the most significant food commodity exported by Canada.

Historical Landings

The following figures show the development of the Canadian fishery in the Atlantic Region from 2000 to 2011. Total seafood landings in 2011 were valued at EUR 1.3 billion, a 19% increase from 2010. Lobster was the most important species in 2011 in terms of value followed by queen crab, shrimp, and scallop.

All of the major species increased in total value between 2010 and 2011, by an average of 34%. This increase is primarily due to increased landings and the weakening of the Canadian dollar.

The Canadian Economy (Amounts in million EUR)

<table>
<thead>
<tr>
<th>Area (km²)</th>
<th>9,864,670</th>
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<tbody>
<tr>
<td>Population</td>
<td>34,568,211</td>
</tr>
<tr>
<td>GDP (PPP)</td>
<td>1,143,146</td>
</tr>
<tr>
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</tr>
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<td>GDP composition by sector</td>
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</tr>
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</tr>
<tr>
<td>Import</td>
<td>373,972</td>
</tr>
</tbody>
</table>

Numbers are 2012 est.

Fig. 17. Total Landings, by Species and Volume

Fig. 18. Total Landings, by Species and Value

Sources: CIA World Factbook and Fisheries and Oceans Canada

Source: FAO and Fisheries and Oceans Canada

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The US Economy

The United States is located in North America, bordering both the North Atlantic Ocean and the North Pacific Ocean, between Canada and Mexico. The US is the third-largest country by total land area and population. It abounds with natural resources, as well as having well-developed infrastructure, and high productivity.

Fisheries, whether for commerce or recreation, play significant role in the US economy. Commercial fishermen in the US directly contributed about EUR 3.8 billion in 2011 into the US economy supporting 1.2 million full and part-time jobs.

### The US Economy (Amounts in million EUR)

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Area (km²)</td>
<td>9,826,675</td>
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<tr>
<td>Population</td>
<td>316,668,567</td>
</tr>
<tr>
<td>GDP (PPP)</td>
<td>12,178,004</td>
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<tr>
<td>GDP (growth) (PPP)</td>
<td>2.2%</td>
</tr>
<tr>
<td>GDP per capita (PPP)</td>
<td>38,727</td>
</tr>
</tbody>
</table>

GDP composition by sector:

- Agriculture: 1.2%
- Industry: 19.1%
- Services: 79.9%

Inflation rate: 2.0%

Unemployment rate: 8.2%

Trade balance:
- Export: 1,244,241
- Import: 1,835,255

Numbers are 2012 est.

Sources: CIA World Factbook, NOAA and Fisheries Economics of the United States

**Historical Landings**

The following figures depict the development of the US fishery in New England and Mid-Atlantic Region from 2002 to 2011. Note that other large fisheries within the US (e.g. Alaska) are not covered in this report which focuses on the North Atlantic region. For additional information on these fisheries, please see our report on the US dated September 2010.

In 2011, commercial fishermen in the New England Region landed 282,000 MT of finfish and shellfish, valued at EUR 790 million, a 6.8% increase relative to 2010.

American lobster and sea scallop were the most important species in 2011 in terms of value in the New England Region.

In 2011, commercial fishermen in the Mid-Atlantic Region landed 354,000 MT of finfish and shellfish, valued at EUR 378 million, a 6.9% increase from 2010.

Sea scallop and blue crab were the most valuable species in total landings in the Mid-Atlantic Region.

### Fig. 19. Total Landings, by Species and Volume

Source: FAO, NOAA and Fisheries Economics of the United States
Main Fish Stocks in the North Atlantic

These six nations of the North Atlantic are very different in terms of geographic size, population and economic conditions. The US is by far the largest country. However, Norway’s economy is the strongest with 0.6% inflation, 3.1% unemployment and 3.1% economic growth.

<table>
<thead>
<tr>
<th>Iceland</th>
<th>Norway</th>
<th>Canada</th>
<th>Greenland</th>
<th>Faroe Islands</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area (km²)</td>
<td>103,000</td>
<td>385,252</td>
<td>9,984,670</td>
<td>2,166,086</td>
<td>1,393</td>
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<tr>
<td>Population</td>
<td>313,183</td>
<td>4,722,701</td>
<td>34,568,211</td>
<td>56,749</td>
<td>47,709</td>
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<td>GDP (PPP)</td>
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<td>1,107</td>
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<tr>
<td>GDP growth (PPP)</td>
<td>2.7%</td>
<td>3.1%</td>
<td>1.3%</td>
<td>3.0%</td>
<td>2.9%</td>
</tr>
<tr>
<td>GDP per capita (PPP)</td>
<td>30,639</td>
<td>43,004</td>
<td>32,272</td>
<td>25,423</td>
<td>20,732</td>
</tr>
</tbody>
</table>

Table 03. Comparison of the North Atlantic Countries Economies (Amounts in Million EUR)

Numbers are 2012 est.
Atlantic Herring

Herring is the most abundant fish in the North Atlantic. It is a pelagic zooplankton feeder, mostly feeding on the copepod Calanus finmarchicus. The herring’s common size is between 30 and 40 cm. Herring is processed into meal and oil, and frozen or salted for human consumption.

The North Atlantic herring is split into many stocks, based on where and when they spawn. Historically, the largest of these stocks is the Norwegian spring spawning herring. This stock spawns along the coast of central Norway.

International landings of herring in the North Atlantic in 2011 were 1,800 MT, a 19% decrease from 2010.

Atlantic Mackerel

The mackerel is a streamlined and fast swimming fish known for extensive migrations. Common size for adults is from 35 cm to 45 cm, but it can reach 60 cm in length. Mackerel feeds on a variety of pelagic animals, mostly crustaceans and fish juveniles.

The Atlantic mackerel can be found from the northeast coast of US, up to Newfoundland. On the eastern side of the Atlantic, it is found off Morocco, in the Mediterranean Sea and all the way up to the Barents Sea. Three stocks are recognised in the northeast Atlantic.

The mackerel is a valuable pelagic fish and most of the catch is used for human consumption.

International landings of mackerel in the North Atlantic in 2011 were 938,000 MT, an about 7% increase from 2010.
Atlantic Cod

The Atlantic cod is among the most caught species in the North Atlantic. Common size for the Atlantic cod is in the range of 45 to 85 cm long.

The Atlantic cod is distributed from Cape Cod in the North-western Atlantic, along the coast of Labrador, off southern Greenland, Iceland, Faroe Islands, south to the English Channel, in the North Sea, Baltic Sea and in the Barents Sea.

Cod is processed in a variety of ways; a large proportion is salted and sold as quality food to southern Europe. A roughly equal proportion is iced at sea and processed and frozen after landing. A large but declining quantity is processed and frozen at sea, and an increasing proportion is exported fresh by air or in containers by sea.

International landings of cod in the North Atlantic in 2011 were over 1,000 MT, a 10% increase from 2010.

Blue Whiting

The blue whiting is a rather small codfish, usually 22 to 30 cm long, but can reach up to 50 cm in length. It is unique among codfish since it is purely an open ocean pelagic fish. The blue whiting is a true international fish and feeds on a variety of pelagic organisms, small fishes, small squid, copepods and krill.

Blue whiting is among the ten most fished species in the world. The stock is very large and primarily fished in the northeast Atlantic.

The majority of the blue whiting catch is processed into fish meal. However, a small but increasing share is frozen at sea for human consumption.

International landings of blue whiting in the North Atlantic in 2011 were 103,000 MT, an 81% decrease from 2010.
Capelin

Capelin is a small pelagic fish, usually between 15 and 18 cm in length, and has a very short life cycle. It has a key role in the food chain between animal plankton and larger fish. Most groundfish species feed on capelin at some stage in their life and it is estimated that capelin may be 40% of the total feedstock of cod.

Most of the capelin catch is processed for fish meal and oil. Part of the catch is frozen at sea, or after landing, and processed for human consumption.

International landings of capelin in the North Atlantic in 2011 were 850,000 MT, a 68% increase from 2010.

Northern Prawn (Shrimp)

Northern shrimp is a subarctic species, widespread in the northern parts of the North Atlantic and the North Pacific Oceans.

The northern shrimp has opportunistic feeding habit. It scavenges on the bottom sediments, is a predator on small benthic invertebrates and also seems to be able to filterfeed during migrations to the water column in the night.

Currently most of the shrimp catch is iced at sea and then processed further and after landing. When shrimp catches were higher, a considerable proportion was also frozen at sea. After landing, the shrimp is cooked and peeled by machines.

International landings of the northern prawn in the North Atlantic in 2011 were 328,000 MT, a 6.8% decrease from 2010.
Aquaculture has grown rapidly over the last decades. In 2011, the total production of farmed fish was 63,000,000 MT with an estimated value of EUR 94 million. Aquaculture accounted for 41.3% of global fish production in 2011, a 6.2% increase over 2010. Aquaculture is predominantly used for human consumption. Asia is by far the largest producer with about 90% of worldwide production. FAO expects that farmed fish for human consumption will outweigh caught fish by 2018.

The state of aquaculture in Canada, Faroe Islands, Greenland and Norway could hardly be more different. Norway is by far the largest producer in the region with 1,138,000 MT produced in 2011, placing them among the top ten producers in the world. On the other hand, Greenland has no aquaculture at all. The east coast of Canada produced 71,000 MT in 2011, and Faroe Islands produced 60,500 MT.

Sources: FAO
Aquaculture has grown rapidly in Norway, increasing by 600,000 MT or 100% during the period from 2002 to 2011, entirely due to increased salmon production. During this period, aquaculture increased only slightly in the other North Atlantic focus countries. The value of farmed fish increased significantly during this period from EUR 1.0 billion in 2002 to EUR 4.5 billion in 2011, about 450% jump in value.

Atlantic Salmon is an anadromous species and has a rather complex life story. Salmon spawns in fresh water and juveniles grow there for two to three years before migrating to the ocean. It stays there for another two to three years before returning to fresh water to spawn.

International production of salmon increased by 21% compared to 2010.
Conclusion

The North Atlantic Ocean has abundant seafood which is an important resource for many countries. The ocean contains many different species of fish whose harvesting is the foundation of significant populations. It is unlikely that we will see major expansion in wild caught species in the future, and therefore, the focus nations will look for other ways to increase the value of their seafood industry.

A major recent development has been improved processing techniques designed to maximise the value extracted from the sea. This involves processing as much of the catch as possible for human consumption, and creating value from the parts of the catch that were previously wasted. This has become a major undertaking for seafood companies and there are a number of opportunities for further efficiencies in processing. Progress in the focus countries varies greatly, but there is much scope for improvement for all of them.

In the future increasing supplies of seafood for human consumption will come from further processing along with aquaculture. Aquaculture has shown rapid growth rates in recent years. Today, 47% of seafood for human consumption is farmed and it is believed that farmed fish will overtake fish caught for human consumption by 2018. As shown in the report, some of the North Atlantic countries are already very advanced in aquaculture and have built up strong local industries. Fish farming at sea has limited growth potential due to the fact that it is important not to disrupt the ecology of other organisms.
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