Aquaculture Sector Profile [1] - Norway

June 2012
Produced by the Canadian Trade Commissioner Service

Sector Overview

The fisheries sector (caught and farmed) is a vital part of the Norwegian economy. Today, fish is the third most important export product after oil & gas and metals, and accounts for 6.6% of the total Norwegian export value. Norway is the second largest seafood exporter in the world, and Norwegian seafood is currently exported to about 130 countries. The sector as a whole constitutes 0.7% of Norway's GDP, and the aquaculture industry alone directly employs over 5,500 people.

While fish farming in Norway started in the 1970s, the industry really began to take off at the start of the 1980s. Today, over 1,400 fish farming licenses are in use and the harvest quantity of farmed salmon is nearing 1 million tonnes. Measured on percentage of global volume, Norway is in fact the world's 8th largest fish farming nation, with China and India leading the pack. The most conservative Norwegian forecasts anticipate a doubling of Norwegian salmonid output by 2020, but the majority foresee an increase considerably higher.

Aquaculture production constitutes 41% of total seafood exports. Salmon makes up 90% of this total, and Norway is responsible for about 62% of global Atlantic salmon production. Rainbow trout is the second most dominant farmed species, but the farming of other species such as cod, halibut, wolf fish and crustaceans has also been attempted with varying degrees of success.

Norwegian farmed fish export

In 2011, Norway sold over 1 million tonnes of salmon and trout valued at over NOK 30 billion – a record-breaking figure.

In addition to the domestic market, Russia and France are the two biggest markets for Norwegian seafood. The EU is by far the most important market for Norwegian salmon and trout, particularly member countries like France, Poland and Denmark. Norway has about 71% share of the EU market, and its exports to the EU are steadily increasing. Exports to the EU represent approximately 60% of Norway's total salmon exports. Outside of Europe, Japan and China are valuable markets. However, Russia is slowly replacing Japan in importance.

Whereas in the early 1990s the Norwegian fish farming industry was characterized by many small companies, the industry has seen a significant amount of consolidation in the past few years. The same can be said for the seafood export industry, as exports of Norwegian salmon and trout have been carried out by fewer and fewer companies. There are 252 companies registered in food fish production, and 167 companies in hatchery/fry production.
**Norway’s main fish farming companies**

The world’s largest fish farming company is Norwegian, and a number of other Norwegian companies operate multi-nationally. There are also a number of large regional companies (with 6 or more licenses) and small-medium sized companies (with between 1 and 5 licenses). The following list of companies is ranked in order of harvest quantity.

**Norwegian multinational companies (local operations)**

**Marine Harvest Norway**

Marine Harvest is the world's leading seafood company and largest producer of farmed salmon. Marine Harvest engages in a variety of farming, processing, smoking, distribution and sales activities in its locations around the world. The company has farms in Norway, Canada, Scotland and Chile. In addition to fillet production and further processing in Norway, Scotland, Ireland, Chile and Canada, the company also has value added processing activities in the US, France, Belgium, Poland and Netherlands. Marine Harvest Norway is the country's largest salmon producer with 215 licenses and annual harvest of approximately 200,000 tonnes.

**Mainstream Norway**

The Mainstream Group is one of the largest players in the salmon farming industry. The Group produces Atlantic salmon, trout and Coho, and has undertakings in Chile, Canada, Norway and Scotland. The companies Mainstream Chile S.A., Mainstream Canada Ltd, Mainstream Norway AS and Mainstream Scotland Ltd supplied about 120,000 tonnes of salmon in 2011. Mainstream Norway held 44 licenses.

**Grieg Seafood Norway**

Grieg Seafood ASA is one of the world's leading fish farming companies, specializing in salmon and trout. The Group is today present in Norway, British Columbia (Canada) and in Shetland (UK). Grieg Seafood ASA was listed on the Oslo Stock Exchange (OSEBX) in June 2007. Grieg Seafood Norway held 40 licenses and harvested approximately 28,000 tonnes of salmon.

**Top-5 regional companies**

**Lerøy Seafood Group**

Lerøy Seafood Group is a publicly-listed company. In addition to being Norway’s largest exporter of seafood through Hallvard Lerøy, the company has acquired several farming companies. The salmon farming divisions of Lerøy Seafood Group operate quite independently through separate legal entities: Lerøy Aurora AS, Lerøy Austevoll AS, Lerøy Fossen AS, Lerøy Hydrotech AS, and Lerøy Midnor AS. The five entities combined held about 100 licenses and harvested approximately 120,000 tonnes of salmon.

**Salmar ASA**

SalMar is the second largest regional company in Norway. In the past few years, they have acquired the shares in Senja Sjøfarm, a hatchery from Halsa Fiskeoppdrett AS, and the licenses of Arctic Seafood Holding. The company also owns 50% of the shares in Norskott, a company established by SalMar and Lerøy Seafood group to buy and operate Scottish Seafarm Ltd in UK. The company is listed on the Oslo stock exchange. Salmar AS held 90 licenses and harvested 93,000 tonnes of salmon.
Nova Sea AS

Nova Sea, previously Seafarm Invest, has its headquarters and a packing station on the island Lovund in Nordland. The majority of the shares in Nova Sea are owned by the Olaisen family. Nova Sea AS held 29 licenses and harvested approximately 29,000 tonnes of salmon.

Sjøtroll Havbrukas

Sjøtroll is located in Austevoll municipality on the west coast of Norway. The company has its own harvesting, packing station and processing plant. Sjøtroll Havbruk AS held 25 licenses and harvested approximately 30,000 tonnes of fish. Sjøtroll is also one of the largest trout producers in Norway.

Nordlaks Holding AS

Nordlaks Holding AS is fully owned by the local entrepreneur Inge Berg. The company has its own packing station and processing plant together with several hatcheries. Nordlaks Holding AS held 23 licenses and harvested approximately 24,000 tonnes of salmon.

Top-5 small medium sized companies

- Emilsen Fisk AS – approximately 3,900 tonnes.
- Egil Kristofferson & Sønner AS – approximately 3,900 tonnes.
- Måsøval Fiskeoppdrett AS – approximately 3,100 tonnes.
- Lovundlaks AS – approximately 3,100 tonnes.
- Sulefisk AS – approximately 3,100 tonnes.

Norwegian aquaculture investment in Canada

Norwegian companies are the main foreign investors in Canada’s aquaculture sector. All of Norway's multi-national aquaculture companies have operations in Canada which include farming (from broodstock production to harvesting), processing, feed production, distribution and sales.

Marine Harvest Canada, the largest aquaculture company operating in Canada, has 500 employees in BC. The company's operations include 7 hatcheries and fresh water sites, 37 sea water sites, and processing activities in Port Hardy and Klemtu.

Grieg Seafood's operations in Canada (Grieg Seafood BC) include 1 smolt production facility; 18 growout licences; Broodstock production; and a Harvesting facility. The company has about 80 employees in Canada. The company's most recent growth has been through acquisition of Target Marine in 2007; the acquisition more than doubled Grieg’s full time employees in Canada, and also gave Grieg ownership of the Egmont Fish Plant. Grieg is also the single largest employer on Quadra Island (through Walcan Seafoods Ltd.)

Cermaq's fish farming activities are organized under Mainstream Canada, while fish feed activities are organized under EWOS (plant, administration and sales management in Surrey, BC). Mainstream Canada and EWOS Canada have a combined 320 employees. Cermaq's activities in Canada grew in 2005, when it acquired the west coast assets of Heritage.
**Scientific research and technology**

Marine research is a priority area in Norway and the country is an international leader in research on fisheries and aquaculture. About NOK 2.8 billion was spent on R&D in the marine sector in 2009. Public sector funding accounted for 63% of this total. The budget for marine research in the Research Council of Norway has steadily increased and was NOK 85 million in 2009. The Research Council also identified aquaculture as one of seven large-scale research programmes. The programme is a special funding instrument to support research for a sustainable, profitable aquaculture industry. The Norwegian Fishing and Aquaculture Industry Research Fund, on the other hand, is a joint agency that co-ordinates the industry’s research activities.

There is a high level of cooperation between researchers and the industry, making Norwegian aquaculture innovative and leading-edge. Norwegian innovation includes a new generation of well boat for the transfer of farmed fish; vaccines for heart and skeletal muscle inflammation and infectious pancreatic necrosis; and recirculation technology to permit the husbandry of new species like the blowfish. Many of these technologies are being applied in other fish-farming countries such as India and Chile.

Some of Norway's prominent research institutes in this field include:

- Nofima
- SINTEF Fisheries & Aquaculture
- The Institute of Marine Research
- The National Veterinary Institute
- The University of Bergen (Marine Biology)
- The University of Life Sciences
- The Norwegian University of Science and Technology (Sealab)

In addition to the research institutes, a number of small technology-intensive companies are also important contributors to new innovations in the aquaculture sector.

There is a significant level of ongoing scientific cooperation between Canada and Norway in aquaculture. Virtually all of Norway’s aquaculture-related research institutes have some type of cooperation with a Canadian partner on an individual researcher or institute-to-institute level. Norway has signalled an interest in expanding this cooperation through participation in initiatives like the Trilateral Research and Development Cooperation group, and funding earmarked for researcher mobility between Canada and Norway through the Research Council of Norway. Canada and Norway signed an MOU on Fisheries Cooperation, Aquaculture and International Governance Issues in 2008, which will further promote opportunities for technical and scientific collaboration. In addition, the Institute for Marine Research and Fisheries and Oceans Canada signed an MOU in 2009 focussing on the themes of Aquaculture, Environmental Impacts of Energy Development – Offshore Oil and Gas, Ecosystem Science, and Climate Change and the Arctic.

**Market and Sector Challenges (Strengths and Weaknesses)**

Norway is recognized internationally for its progressive policy and regulatory framework aimed at the aquaculture industry. The Norwegian government’s Aquaculture Act deregulates ownership rules and simplifies application processes for the industry. At the same time, it places an emphasis on environmental assessment in order to protect coastal areas before fish farms are established. Additionally, Norway imposes strict restrictions on biomass, and the use of antibiotics and vaccines. Norway has a good oversight of its aquaculture industry, and complies with all international standards and requirements.

Backed by sound policy and strong science and innovation, the Norwegian aquaculture sector has been growing impressively and this trend is projected to continue. The biggest threats to the industry’s performance and
growth are fish prices and disease, both of which are difficult to control and have a significant effect on profit margins. The industry is also sensitive to fluctuations in commodity prices, which affect the price of feed – one of the largest operation costs in fish farming.

Local industry experts have identified a number of important future challenges for the aquaculture industry, and Canadian companies developing innovative solutions to these challenges could benefit from opportunities in this market:

1. Cost efficient production and distribution (improved breeding stocks; improved feed and feed management; optimized production environment)
2. Risk and reputation management (quality-control and food safety; traceability and documentation)
3. Sustainability (consequences for the environment; cost efficient replacement of fish oils and fish meals; reliability)
4. Biotechnology (use of gene-technology within breeding and health; GMO feedstuffs)
5. Health and prevention of new diseases (production-related diseases, treatment of parasites, bacterial and viral diseases)
6. Total utilisation of the fish (upgrading of by-products, preferably to consumer products; improved shelf life; new value added processed products)

As the Norwegian aquaculture industry is well established as one of the most technologically advanced in the world, Canadian companies wishing to enter this market as suppliers to the industry will face strong local competition. The market is currently served mainly by local players. Companies are encouraged to consider joint venture or technology transfer as a starting point in the market. The Canadian operations of Norwegian companies could also provide a good opportunity for Canadian technology and service companies to test interest in their products or services. As aquaculture is a high technology sector, and Norway and Canada are well-established scientific collaborators in this field, there are many opportunities for technology partnerships.

Sources:

- Statistics Norway
- Kontali Analyse
- Ministry of Fisheries and Coastal Affairs
- Norwegian Seafood Council

**Canadian Government Contacts**

**Embassy of Canada in Norway**
Email: oslo-td@international.gc.ca
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**Fisheries and Oceans Canada**
Email: info@dfo-mpo.gc.ca
Website: www.dfo-mpo.gc.ca/

**Foreign Affairs and International Trade Canada**
125 Sussex Dr.
Ottawa, ON K1A 0G2
Website: www.infoexport.gc.ca
Useful Websites

- Canadian Aquaculture Industry Alliance
- Norway’s official site on seafood safety and resource and aquaculture management
- The Ministry of Fisheries and Coastal Affairs mandate covers the fisheries industry, the aquaculture industry, seafood safety and fish health and -welfare, ports, infrastructure for maritime transport and preparedness against acute pollution
- The Directorate of Fisheries serves as the Ministry’s advisory and executive body in matters pertaining to fishing and the management of aquaculture
- Innovation Norway administers financial instruments aimed at fleets, aquaculture, and the fisheries industry
- The Norwegian Seafood Council is responsible for joint marketing measures for fish and fish products at home and abroad
- The Norwegian Seafood Federation represents the majority of companies within the fisheries and aquaculture sectors
- Official Norwegian Trade Portal

[1] The Government of Canada has prepared this report based on primary and secondary sources of information. Readers should take note that the Government of Canada does not guarantee the accuracy of any of the information contained in this report, nor does it necessarily endorse the organizations listed herein. Readers should independently verify the accuracy and reliability of the information.