



European
Commission



COUNTRY ANALYSES

2014-2018 EDITION



LAST UPDATE: JANUARY 2019

WWW.EUMOFA.EU

E U M O F A
European Market Observatory for
Fisheries and Aquaculture Products

Maritime Affairs
and Fisheries

Manuscript completed in January 2019

Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use that might be made of the following information.

Luxembourg: Publications Office of the European Union, 2019

© European Union, 2019

Reuse is authorised provided the source is acknowledged.

The reuse policy of European Commission documents is regulated by Decision 2011/833/EU (OJ L 330, 14.12.2011, p. 39).

For any use or reproduction of photos or other material that is not under the EU copyright, permission must be sought directly from the copyright holders.

PDF ISBN 978-92-79-82018-2 doi:10.2771/01182

FOR MORE INFORMATION AND COMMENTS:

Directorate-General for Maritime Affairs and Fisheries

B-1049 Brussels

Tel: +32 229-50101

E-mail: contact-us@eumofa.eu

Contents

	Fisheries and aquaculture in Australia.....	4
	Fisheries and aquaculture in Bulgaria and Romania.....	12
	Fisheries and aquaculture in Canada.....	1
1	Fisheries and aquaculture in Chile	2
2	China's role in seafood trade and processing	3
3	Fisheries and aquaculture in Ecuador	9
4	Fisheries and aquaculture in the Faroe Islands.....	15
5	Fisheries and aquaculture in Ghana.....	21
6	Icelandic fisheries	27
7	Fisheries and aquaculture in India.....	32
8	The Japanese market for fisheries and aquaculture products.....	37
9	Fisheries and aquaculture in Madagascar.....	42
10	Fisheries in Malta.....	47
11	Fisheries and aquaculture in Mauritania.....	51
12	Fisheries in Morocco.....	56
13	Fisheries and aquaculture in New Zealand	59
14	Norwegian capture fisheries	65
15	The Polish market.....	70
16	Fisheries in Senegal	73
17	Fish wholesale in Spain	76
18	The Swiss market for fisheries and aquaculture products.....	79
19	Fisheries and aquaculture in Turkey.....	83
20	Seafood in food service in the UK	87
21	The US market for seafood product.....	91
22	Fisheries in Vietnam	94

Fisheries and aquaculture in Australia

This case study is available in the
Monthly Highlights N° 3-2018

INTRODUCTION

1 Australian Fisheries Management Authorities (AFMA), is an agency of the Australian Department of Agriculture and Water Resources and is the Government statutory authority responsible for the management and sustainable use of fisheries resources in the Australian Fishing Zone. This zone covers more than 8 million square kilometres and is the third largest in the world. However, on a tonne per square-kilometer basis, the waters around Australia are not very productive compared to other regions, and Australia only ranked as the 65th largest country in terms of fisheries output in 2015. When it comes to aquaculture, Australia is better positioned, as it occupied the 38th position among the most important countries in terms of production volume and ranked 24th in terms of value in 2015.

1.1

Management of fisheries within the Australian Fishing Zone provides for the states and the Northern Territory to manage fisheries out to 3 nautical miles from the coast, and for the Australian Government to manage fisheries from 3 to 200 nautical miles¹. This is done through more than 20 separate “Commonwealth fisheries”, consisting of both single-species and multi-species arrangements.

The Department of Agriculture and Water Resources also leads Australia's engagement in the following RFMO's (Regional Fisheries Management Organisations):

- Commission for the Conservation of Southern Bluefin Tuna (CCSBT);
- Indian Ocean Tuna Commission (IOTC);
- Southern Indian Ocean Fisheries Agreement (SIOFA);
- South Pacific Regional Fisheries Management Organisation (SPRFMO);
- Western & Central Pacific Fisheries Commission (WCPFC).

In addition, the aquaculture sector falls under the responsibility of the Department of Agriculture and Water Resources, but the primary responsibility for regulating aquaculture rests with the states and Northern Territory government departments.

PRODUCTION

1.2

FISHERIES

1.2.1

Australia reports – for most statistical purposes – annual figures for the period July–June, and the last period for which figures have been published, is July 2015 to June 2016. Australian catches amounted to 174.247 tonnes in 2015–2016, of which 73% was fish, 20% crustaceans, and 7% molluscs. In terms of value, fish only accounted for 30% of the value, while crustaceans represented as much as 60%. Molluscs represented 10% of the catch value. Total catch value of the fisheries sector in 2015–2016 was approximately AUD 1–750 million, which corresponded to EUR 1.193 million. The sector experienced a volume growth of 13%, equivalent to 20.000 tonnes in 2015–2016, while value increased by 8%.

Table 1-1 AUSTRALIAN FISHERIES PRODUCTION

		2011–12	2012–13	2013–14	2014–15	2015–16
Volume	Fish	113.803	108.700	105.083	104.666	126.497
	Crustaceans	33.014	32.996	37.114	35.979	35.114
	Molluscs	12.248	15.410	11.020	13.375	12.392
	Other	230	177	285	231	245
	Total	159.294	157.283	153.504	154.251	174.247
Value (AUD 1000)	Fish	452.304	449.524	414.951	431.024	516.282
	Crustaceans	664.510	718.619	924.222	1.007.442	1.056.066
	Molluscs	181.334	198.358	173.414	176.022	176.314
	Other	7.343	900	1.155	1.182	921
	Total	1.305.490	1.367.401	1.513.742	1.615.670	1.749.583
Total value (EUR 1000)	Total	1.024.308	1.085.149	1.024.453	1.125.368	1.192.701

Source: ABARES (Australian Bureau of Agricultural Resource Economics and Sciences).

¹ <http://www.agriculture.gov.au/fisheries/domestic/zone>

The most valuable species in the Australian fisheries is rock lobster. In 2015–2016, 10.100 tonnes of rock lobster were caught, which were worth close to AUD 695 million, corresponding to a unit value of approximately 69 AUD/kg (47 EUR /kg). The fisheries of shrimp (commonly referred to as prawn in Australia) are also an important contribution to the catch value. In 2015–2016, prawn catches were approximately 20.000 tonnes, with a value of more than AUD 300 million. The major species are tiger prawn and banana prawn.

The most valuable category of fish species is tuna, of which the Southern bluefin tuna is the major species. The Southern bluefin tuna industry operates out of South Australia with Port Lincoln as the major port. The waters outside Port Lincoln are also where the tuna is destined for fattening and transferred to on-growing cages.

Yellowfin tuna and bigeye tuna are common species caught in Australia, in addition to other migratory species such as sharks (gummy shark, school shark etc.), marlins and other billfish.

AQUACULTURE

The value of Australian aquaculture production has steadily increased over the past few years. Salmonids, mostly consisting of Atlantic salmon, were the major driver for this growth. There is minor production also of large rainbow trout, but the share has declined over the past five years.

1.2.2 Oysters are the second most important aquaculture sector in Australia including both the culture of oysters for food utilization, and for the production of pearls.

Moreover, both tuna and prawns rank among the top farmed species. While the value of prawn production has seen an increase over the past seven years, that for tuna fattening has been stagnating.

Table 1-2 AUSTRALIAN AQUACULTURE PRODUCTION (value in AUD 1000)

	2008–09	2009–10	2010–11	2011–12	2012–13	2013–14	2014–15	2015–16
Salmonids	326.218	369.491	427.433	513.638	518.014	542.956	630.842	717.714
Tuna	157.777	102.175	114.500	150.000	153.500	122.400	130.670	126.870
Edible oyster	92.875	100.917	97.323	90.071	93.547	91.297	93.015	97.041
Prawns	56.841	75.400	57.332	60.454	60.062	63.522	86.288	86.485
Pearl oyster	90.099	104.622	120.077	102.312	79.170	60.728	67.863	78.354
Barramundi	31.661	32.028	35.730	40.811	32.771	33.857	37.058	34.979
Abalone	23.056	15.440	16.389	19.192	23.685	25.714	28.698	28.659
Other	88.186	77.527	78.884	62.806	95.005	56.344	112.447	136.632
Total	866.712	877.600	947.667	1.039.284	1.055.754	996.818	1.186.881	1.306.733

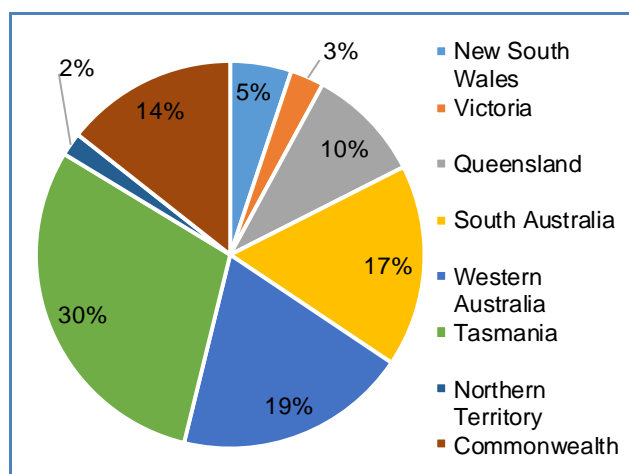
Source: ABARES (Australian Bureau of Agricultural Resource Economics and Sciences).

Table 1-3 AUSTRALIAN AQUACULTURE PRODUCTION (volume in tonnes)

	2008–09	2009–10	2010–11	2011–12	2012–13	2013–14	2014–15	2015–16
Salmonids	30.048	31.964	36.841	44.151	43.027	41.846	48.614	56.319
Edible oyster	14.227	14.931	13.927	12.559	12.382	11.552	10.970	11.345
Tuna	8.786	7.284	5.800	7.087	7.486	7.544	8.418	8.895
Prawns	3.985	5.280	3.970	4.021	3.742	3.774	5.282	4.628
Blue Mussels	3.372	3.465	3.115	3.672	3.679	3.237	3.678	3.625
Barramundi	2.966	3.628	4.352	4.473	3.560	3.440	3.772	3.542
Abalone	681	455	491	604	724	825	850	757
Other	6.132	6.822	8.165	5.264	5.462	2.813	7.734	7.933
Total	70.196	73.829	76.662	81.833	80.061	75.032	89.318	97.046

Source: ABARES (Australian Bureau of Agricultural Resource Economics and Sciences).

Salmonids production takes place in Tasmania, while other species are specific to other states. The tuna fattening sites are located in Southern Australia, barramundi and shrimp operations are primarily located in Queensland, and New South Wales, Southern Australia and Tasmania are all home for the edible oyster farming. While the farming of abalone and blue mussels is done along the southern coast line (Western Australia, Southern Australia and Victoria), the pearl oyster industry is based out of Western Australia.

Figure 1-1 FISHERIES AND AQUACULTURE IN AUSTRALIA – VALUE DISTRIBUTION (State and Commonwealth)

Source: Source: ABARES (Australian Bureau of Agricultural Resource Economics and Sciences).

Salmonids represent nearly 60% of the volume of Australian aquaculture production, followed by edible oyster and tuna. In terms of value, salmonids have been the main driver behind the growth over the past years. From 2008–2009 until 2015–2016, the growth was nearly 90%.

Combining the value of both fisheries and aquaculture, Tasmania was the most important state in terms of value (30%) in 2015–2016, followed by Western Australia (19%) and South Australia (17%).

The value of Commonwealth fisheries is driven by tunas (other than Southern bluefin tuna), small pelagics, sharks, whiting and prawns (for nearly half of the total).

In 2015–2016, 14% of the total value of fisheries and aquaculture production in Australia was represented by Commonwealth.

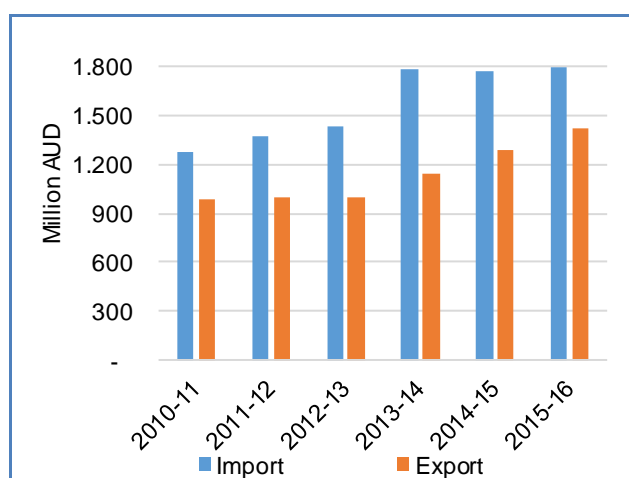
SEAFOOD PROCESSING

- 1.3 There is only a limited processing activity present in the Australian seafood industry. There are a few clusters or hubs which are significant, with Tasmania as the primary processing state for fresh gutted salmon exports, as well as higher-processed products for the domestic market, such as salmon fillets and smoked salmon.

Besides being one of the most important fisheries ports, Port Lincoln is also home to a quite varied processing structure. Various types of tuna, including the farmed Southern bluefin, as well as farmed kingfish, are processed there. Oysters, mussels, rock lobsters and abalone are also processed and traded through Port Lincoln, which is also one of the major shipping ports for other outbound commodities, such as wheat and meat.

1.4

TRADE

Figure 1-2 Australian edible seafood trade balance

Source: ABARES (Australian Bureau of Agricultural Resource Economics and Sciences).

Australian seafood trade is dominated by exchanges with Asian counterparts. While imports are characterized by a large share of processed and prepared (i.e. canned) products, exports are into a far stronger degree either live, fresh whole or frozen whole.

Throughout the last decade, Australia has shifted from being a net exporter until 2006–2007², to a situation where imports have surpassed exports in value, every year since 2007–2008.

Non-food products originating from fisheries and aquaculture are both imported and exported by Australia. Exports consist primarily of pearl oysters, where the pearls are later re-imported. Also, there is a notable import of fishmeal and fish oil. In 2015–2016, Australia imported fishmeal and fish oil worth more than AUD 60 million each.

Between 2013–2014 and 2015–2016, exports of pearl oysters declined from AUD 240 million to 150 million, while the value of re-imports of pearls increased from around AUD 100 to 140 million in the same period.

² <http://www.agriculture.gov.au/SiteCollectionDocuments/fisheries/aus-seafood-trade.pdf>

EXPORTS

Table 1-4 AUSTRALIAN EXPORTS OF EDIBLE SEAFOOD BY MAIN MARKETS (volume in tonnes, value in million AUD)

	Volume			Value		
	2013–14	2014–15	2015–16	2013–14	2014–15	2015–16
1.4.1 Vietnam	9.837	11.201	9.895	566	716	682
Hong Kong	4.750	4.538	5.029	209	192	205
Japan	11.124	11.958	13.395	192	192	205
China	1.736	3.485	6.609	37	49	105
United States	803	1.228	2.150	22	28	45
Singapore	963	1.256	1.224	34	35	35
Taiwan	433	685	1.032	14	15	21
New Zealand	3.783	2.973	3.903	14	14	20
Other	5.474	5.936	18.816	51	52	82
Total	38.904	43.261	62.055	1.138	1.293	1.418

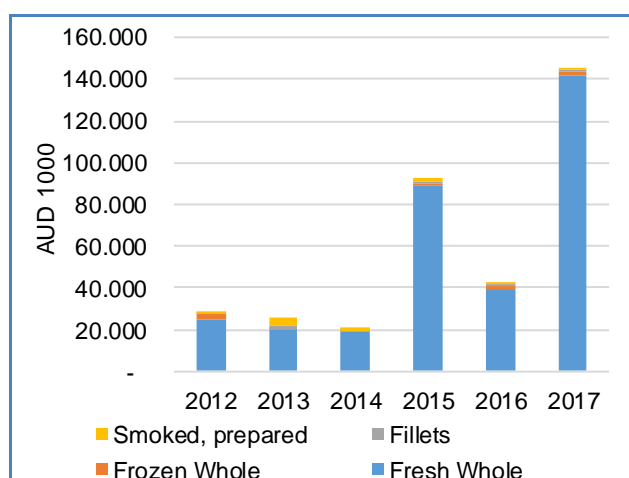
Source: ABARES (Australian Bureau of Agricultural Resource Economics and Sciences).

Vietnam is the major destination market, absorbing nearly 90% of the value of Australian exports of rock lobsters. The total value of Vietnamese imports from Australia in 2015–2016 was AUD 682 million. Hong Kong and Japan follow with AUD 224 and 205 million, respectively. Exports to Hong Kong are more diverse, with abalone, rock lobster and prawns as the most important categories. Exports to Japan are dominated by tuna (frozen and fresh whole tuna representing two thirds of the total), with prawns, abalone and salmon at 14%, 7% and 6 %, respectively.

Table 1-5 AUSTRALIAN EXPORTS OF EDIBLE SEAFOOD BY MAJOR SPECIES (volume in tonnes, value in million AUD)

Species	Volume			Value		
	2013–14	2014–15	2015–16	2013–14	2014–15	2015–16
Rock lobster	7.966	8.203	7.987	590.293	691.232	693.199
Abalone	2.742	2.578	2.615	170.043	173.753	181.982
Tuna	11.000	12.069	13.752	135.539	150.993	163.255
Prawns	7.055	6.491	6.689	100.976	94.166	114.384
Salmonids	1.817	4.955	8.038	17.396	48.142	79.936
Live fish	910	775	800	34.174	29.862	30.179
Scallop	549	297	364	13.576	10.674	11.698
Crab	421	565	558	5.534	7.948	7.614
Swordfish	443	478	554	3.921	4.404	6.904
Other	6.001	6.850	20.698	66.896	81.483	129.173
Total	38.904	43.261	62.055	1.138.348	1.292.656	1.418.323

Source: ABARES (Australian Bureau of Agricultural Resource Economics and Sciences).

Figure 1-3 AUSTRALIAN EXPORTS OF ATLANTIC SALMON TO CHINA, BY CATEGORY

Source: ABARES (Australian Bureau of Agricultural Resource Economics and Sciences).

Exports to China are also quite diverse. In less than two years, fresh gutted Atlantic salmon has overtaken the lead role as the main export product over abalone, prawns and rock lobster.

Fresh gutted salmon represents around 97% of the total export value for salmon.

The increase has continued until recently: the development from 2012 to 2017 shows that the growth in 2017 (primarily the second half) has been the strongest.

The unit value of every kilogram of seafood exports from Australia, has over this three-year period been 3–4 times higher than the corresponding unit-value per kilogram of seafood imports. This underlines the fact that Australian seafood exports are dominated by high value crustaceans and molluscs, such as rock lobster and abalone, while also a majority of the fish exports are within the high-end segments, such as bluefin tuna, salmon, barramundi and coral trout (grouper).

IMPORTS

1.4.2 **Table 1-6 AUSTRALIAN IMPORTS OF EDIBLE SEAFOOD BY MAJOR SUPPLIERS (volume in tonnes, value in million AUD)**

	Volume			Value		
	2013–14	2014–15	2015–16	2013–14	2014–15	2015–16
Thailand	66.373	66.076	61.280	417	422	416
China	41.079	35.186	34.959	342	285	292
Vietnam	31.880	31.597	32.743	342	285	292
New Zealand	31.342	28.115	27.644	207	190	200
Indonesia	8.369	9.226	9.697	73	86	90
Malaysia	11.346	10.993	10.294	98	95	89
Norway	3.238	4.659	4.338	45	68	67
Taiwan	7.727	7.573	8.025	44	58	60
United States	7.021	6.276	6.991	56	53	55
Denmark	2.434	3.247	2.378	45	58	48
Other	26.691	24.644	24.400	112	167	184
Total	237.500	227.592	222.749	1.781	1.767	1.793

Source: ABARES (Australian Bureau of Agricultural Resource Economics and Sciences).

Thailand is the major origin of Australian seafood imports, which are primarily canned/prepared tuna, canned salmon, prawns (warm-water shrimp) and other preserved seafood. China is also shipping a great variety of seafood products to Australia, but prawns, squid, scallops are the most important with 39%, 18% and 11% of total import value, respectively. Vietnam ranks as the third most important supplier and is the largest supplier of prawns and a major source of various frozen fish (i.e. frozen pangasius fillets).

New Zealand is among the top four countries of origin of Australian imports, with major products being salmonids and molluscs, in addition to various fresh and frozen whitefish products (hoki, hake and orange roughy).

Other South–East Asian countries like Malaysia and Indonesia are important suppliers, primarily for prawns, prepared tuna, prepared/canned other fish and squid.

Norway and Denmark are the only European countries among Australia's main suppliers, large enough in value to be included among the top 10, with salmon and smoked salmon, respectively, as the major products exported. Other EU countries are ranked among the top 20, namely Poland, Italy, the UK and Germany, where canned and prepared fish of various categories are dominating.

Table 1-7 AUSTRALIAN IMPORTS OF EDIBLE SEAFOOD BY MAJOR SPECIES (volume in tonnes, value in million AUD)

Species	Volume			Value		
	2013–14	2014–15	2015–16	2013–14	2014–15	2015–16
Prawns	38.672	32.359	31.919	495.113	431.201	400.871
Tuna	50.129	49.155	44.859	296.105	283.894	274.792
Salmonids	14.243	16.127	15.059	167.451	190.654	184.683
Squid & Octopus	23.166	22.254	23.380	114.470	111.575	134.837
Lobsters and Crabs	3.078	3.144	2.784	50.703	59.357	58.566
Scallops	3.456	2.864	2.624	52.907	49.552	54.998
Hake	4.510	4.931	5.123	19.450	21.841	23.576
Mussels	3.568	3.134	3.329	19.122	17.922	20.022
Other fish	91.929	89.610	89.440	521.889	558.207	589.594
Other Crustaceans & Molluscs	4.750	4.014	4.231	43.961	42.869	50.728
Total	237.500	227.592	222.749	1.781.172	1.767.073	1.792.666

Source: ABARES (Australian Bureau of Agricultural Resource Economics and Sciences).

1.4.3

TRADE WITH THE EU

Table 1-8 SEAFOOD TRADE BALANCE BETWEEN AUSTRALIA AND THE EU (volume in tonnes, value in EUR 1000)

2016		2015	2016	2017
EU Export to Australia	Volume	10.313	11.698	11.940
	Value	81.636	93.656	116.663
EU Import from Australia	Volume	785	1.316	1.237
	Value	11.276	13.773	15.903

Source: Eurostat. Comext.

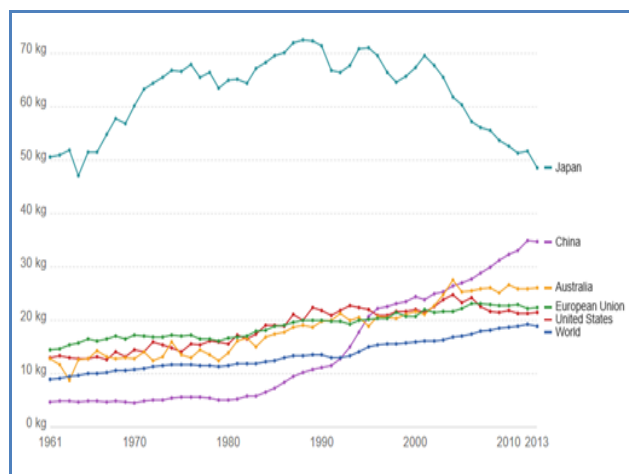
The trade in seafood between the EU and Australia is minor, with the EU exporting far more to Australia, than Australia to the EU. Smoked salmon, and various types of canned seafood, are the major products exported to Australia. From Australia to the EU, it is typically products with a higher unit value being traded, such as abalone, tropical shrimp, tuna, and certain high-value marine fish (i.e. grouper).

CONSUMPTION

Seafood consumption in Australia has during the last two decades, for which FAO estimates are available, developed nearly in line with the global growth. While global per capita consumption has grown by more than 40% between 1993 and 2013, Australian growth has been at 30%. In comparison, the EU per capita consumption in the same period increased by 17%. This contrasts with the US, where consumption declined by 6%, and Japan by 28%.

1.5 According to IBIS World, an Australian branch research company, seafood consumption per capita in Australia saw a slight decrease through the two years between 2013–2014 and 2015–2016 (–2%). At the same time, IBIS World anticipates a growth in seafood consumption over the next five–year period.

Figure 1-4 AUSTRALIAN SEAFOOD CONSUMPTION BETWEEN 1963 – 2013



Source: FAO³.

Characteristics of Australian seafood consumption include the fact that through the trade of seafood products, high priced species of fish, crustaceans and molluscs are being exported in exchange for imports of lower priced fish fillets, frozen preparations of shrimp, squid and octopus, as well as canned tuna and salmon. According to domestic research on Australian seafood consumption⁴, the canned fish consumed in Australia generally consists of low value tuna products, such as skipjack tuna. The low cost, white boneless flesh and neutral flavour of the imported fish (predominantly pangasius), makes it attractive to a large cross section of the Australian community.

³ <https://ourworldindata.org/meat-and-seafood-production-consumption#per-capita-trends-in-meat-consumption>

⁴ <http://www.agriculture.gov.au/SiteCollectionDocuments/fisheries/aus-seafood-trade.pdf>

Fisheries and aquaculture in Bulgaria and Romania

This case study is available in the
Monthly Highlights N° 5-2018

INTRODUCTION

2

2.1

Situated in the south-east of Europe, Bulgaria and Romania have coastlines of 378 km and 256 km long, respectively. Both countries are characterized by land resources and availability of inland waters. These conditions offer opportunities for the development of fishing and aquaculture activities in both marine and freshwater areas, as well as related processing activities. In Romania, although fisheries and aquaculture contribution to the Gross Domestic Product is very limited (0,0086%), these sectors can be particularly important in remote areas, where they represent the main source of income for local communities. In Bulgaria, fisheries and aquaculture activities represent 0,14% of the GDP.



Source: AND International.

Table 2-1 FISHERIES AND AQUACULTURE PRODUCTION IN BULGARIA AND ROMANIA (volume in tonnes)

Activities	Bulgaria					Romania				
	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016
Aquaculture	5.975	12.152	11.172	13.537	15.762	10.004	10.146	10.680	11.042	12.574
Marine fisheries	8.153	9.535	8.546	8.743	8.562	231	537	810	1.618	2.198
Inland fisheries	1.428	135	142	86	52	2.457	2.717	3.150	3.600	4.050

Source: FAO FishStat.

In **Bulgaria**, the total fisheries and aquaculture production was 24.376 tonnes in 2016, from which 65% was from farming. While marine catches remained stable over the period from 2012 to 2016, the inland catches have experienced a drastic drop, following the ban on commercial fishing within inland water basins since 2012.

2.2

In **Romania**, historically, the fisheries activities along the coast of the Black Sea are limited compared to inland fisheries. However, in recent years, landings from the Black Sea are becoming significant due to the increasing landings of *Rapana venosa*.

MARINE FISHERIES PRODUCTION

Marine fisheries activities take place exclusively in Black Sea national waters. The Bulgarian and Romanian fishing fleets are relatively modest, with 1.881 vessels for Bulgaria⁵ and only 155 vessels for Romania in 2017. The bulk of the fleet is composed of small scale vessels (up to 11 m in length), accounting for about 67% of the fishing fleet in Bulgaria and 47% of the fishing fleet in Romania⁶.

⁵ The Operational Programme of the European Maritime and Fisheries Fund of Bulgaria estimates that the half of the fishing fleet is inactive.

⁶ EU fishing fleet register.

Table 2-2 Top Marine Species Caught In Bulgaria and Romania in 2016 (volume in tonnes)

Bulgaria	Volume	Romania	Volume
Shellfish (conch, mussel, shrimp)	4.050	Veined rapa whelk	6.505
European sprat	2.290	European anchovy	102
Red mullet	878	Mediterranean mussel	68
Bluefish	710	European sprat	49
Scad (horse mackerel)	167	Mediterranean horse mackerel	32
Spiny dogfish	83	Turbot	29
Other	362	Other	55
Total	8.540	Total	6.840

Source: Data for Romania – FAO FishStat; Data for Bulgaria – Bulgarian Executive Agency for Fisheries and Aquaculture.

In **Bulgaria**, 8.562 tonnes of fish were caught in marine waters in 2016. The top three species were conch, mussels and shrimps, accounting for 47% of the total, followed by European sprat (27%), red mullet (10%) and bluefish (8%). Other species include horse mackerel, spiny dogfish, goby, European anchovy, and others caught at lower volumes. The main ports used by fishermen for landing catches are Baltchik, Burgas, Varna, Sozopol, Pomorie, Chernomorets and Nessebar.

In **Romania**, marine fishing is limited to the marine areas up to 60-meter isobaths, because of the characteristics of the vessels and their limited autonomy. The fleet targets particularly small pelagic species, such as Black Sea shad and European sprat. In addition, it catches flatfish (turbot), some sharks/dogfish, and, more recently, large sea snails (veined rapa whelk). In 2016, marine and inland catches together amounted to 6.840 tonnes. Veined rapa whelk is the main species with 6.505 tonnes which represents 95% of the total catches in Romania. Other main species are European anchovy, Mediterranean mussel, European sprat, Mediterranean horse mackerel and turbot. In Romania, all landed fish is fresh and is used for human consumption. The main ports for landing catches used by fishermen are Mangalia, Olimp, Costinesti, Mamaia and Cape Midia. However, Romania has no specialized fishing ports.

In the EU waters of the Black Sea, a quota for Bulgaria and Romania is allocated to sprat and turbot. Black Sea stocks exploited by the two countries are shared with non-EU countries (e.g. Turkey, Ukraine, Georgia and the Russian Federation). However, there are no TACs (Total Allowable Catches) decided at regional level between EU and non-EU countries. For 2018, the quota is 644 tonnes for turbot and 11.475 tonnes for sprat, of which 70% is allocated to Bulgaria and 30% to Romania⁷.

2.3 INLAND FISHERIES PRODUCTION

In **Bulgaria**, commercial inland catches mainly take place in the Danube, where in 2016 only 52,2 tonnes were caught. The main species caught included carp (8,6 tonnes), silver carp (6,7 tonnes), barbel (6,7 tonnes), Prussian carp (6,05 tonnes) and wels catfish (4,7 tonnes). In January 2012, the Ministry of Agriculture and Food banned fishing, transporting and selling of the sturgeon and product derived from sturgeon. The ban was imposed for four years and aimed to conserve the Danube sturgeon. In 2016, it was extended for another five years.

In **Romania**, inland fishing is carried out as a main, full-time occupation, often by traditional fishers, in most cases as subsistence activity. Commercial inland fishing is carried out mainly in the Danube river, the Danube delta, the lagoon Razum-Sinoe, the Prut river and the dam lakes on the rivers Siret and Olt. In 2016, around 1.600 fishing boats and over 2.500 fishermen were involved in inland fishing. Inland capture fisheries production reached 5.888 tonnes in 2016, increasing by 140% compared with the 2.457 tonnes reported in 2010. They are largely dominated by Cyprinids: goldfish represents 50% of the total, followed by freshwater bream (9%) and common carp (8%). Other species caught include pontic shad, roaches, wels catfish, Northern pike, perch-pike, etc.

AQUACULTURE PRODUCTION

Land resources and availability of inland waters provide Bulgaria and Romania perfect conditions for the development of aquaculture. Thus, the overwhelming bulk of the production is finfish produced in freshwater systems, but there is also marine production of mussel in Bulgaria and small marine production of mussel and turbot in Romania. In both countries, carp production represents the largest share of total aquaculture production.

In **Bulgaria**, over the period from 2012 to 2016, aquaculture production doubled, from 7.557 tonnes to 15.432 tonnes according to the Bulgarian Executive Agency for Fisheries and Aquaculture. This increase was related to higher production of three main species, namely chiefly rainbow trout, common carp and silver carp. Main aquaculture activities occur in freshwater areas (warm and cold waters); the only marine aquaculture product farmed is black mussel. In 2016, aquaculture companies were 683, of which 33 marine aquaculture farms that produced 3.376 tonnes of black mussels (8% more compared to 2015). In recent years, cultivated species were further diversified and an increase in the production of sturgeon species, catfish species, algae and mussels has been recorded. Mostly, the traditional pond fish farming method is used, with carp making up 80% of the total production in terms of volume⁸.

⁷ <http://www.consilium.europa.eu/fr/press/press-releases/2017/12/11/black-sea-fisheries-council-adopts-2018-catch-limits/>

⁸ Bulgarian Executive Agency for Fisheries and Aquaculture.

In **Romania**, aquaculture is diversified in terms of produced species, technologies used and environment (freshwater or marine). Aquaculture production in Romania increased⁹ from about 10.000 tonnes in 2012 to 12.574 tonnes in 2016. The growth of national production can be attributed to the expanded production of carp in polyculture¹⁰, in extensive or semi-intensive production systems. A significant number of carp and other species are produced. Common carp is the most important with 4.841 tonnes produced in 2016 (38% of the total in terms of volume and 41% in terms of value), followed by silver carp, bighead carp, rainbow trout and to a lesser extent crucian carp and brook trout. Other freshwater species are reared, such as pike-perch, grass-carp, European eel, catfish, sturgeons, etc. Marine aquaculture remains limited with 25 tonnes of mussels and 20 tonnes of turbot farmed in 2016. In 2015, there were 635 production centers in the country. Almost all farms were inland establishments producing freshwater fish. 501 centers were registered for the production of carp species, 132 centers for trout and other salmon species, 1 turbot farm, 1 mussel farm and 4 hatcheries for freshwater fish, including 3 hatcheries for cyprinids species and 1 hatchery for salmonids species¹¹.

SEAFOOD PROCESSING

In **Bulgaria** and **Romania**, processing can be operated for both freshwater and marine species and is split into two major fields: processing by fish farmers or other primary producers (cleaning the fish, filleting, smoking, etc.) and industrial processing for the domestic market and for export.

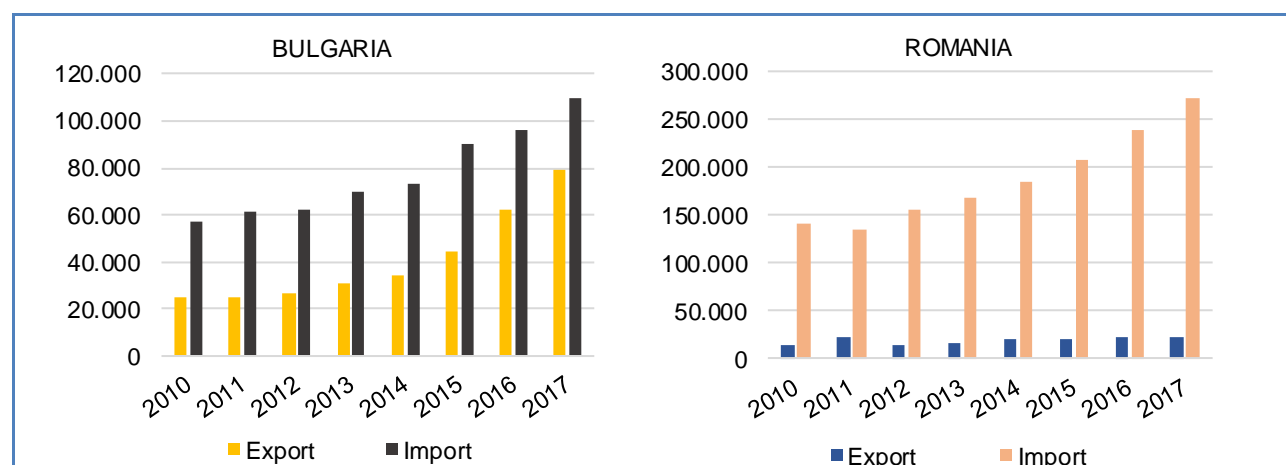
- 2.5 **Bulgaria** has 43 seafood processing companies (2015) employing 1.520 persons¹². In 2016, the main products sold were crustaceans, molluscs and other aquatic invertebrates and seaweed, prepared or preserved, followed by prepared or preserved mackerel, whole or in pieces and frozen, dried, salted or in brine scallops, mussels, cuttlefish, squid and octopus¹³.

In **Romania**, the development of processing capacity is not supporting any improvement of the primary production sector, since the main processing inputs are imported sea species, especially mackerel and herring. Imports mostly consist of frozen fish (mackerel, herring, sprat, Alaska cod, whiting, sardines and anchovies). Local species processed are carp (90% of the local fish processed), trout, sander, pike, European catfish and perch. There is a great variety of value-added products such as salads, smoked fish, and marinades, as well as primary processed fish which are headed, gutted, or portioned¹⁴. In 2015, there were 35 fish processing companies employing 1.279 persons¹⁵.

TRADE

- 2.6 Over the period from 2010 to 2017, the trade balance in Bulgaria and Romania was negative every year. The Bulgarian seafood market seems less dependent on imports than the Romanian one. In both countries, trade is dominated by exchanges with other EU Member States.

Figure 2-1 SEAFOOD TRADE BALANCE BETWEEN 2010 AND 2017 IN BULGARIA AND ROMANIA (value in EUR 1000)



Source: Comext.

In **Bulgaria**, over the period from 2010 to 2017, volumes of exports of fisheries and aquaculture products increased by 66%. Their value has more than doubled to reach EUR 79 million in 2017 (around four times higher than exports of Romania). This significant increase in exports value is related to the increase of catching and aquaculture activities as well as the increase of exports of value-added products such as prepared-preserved products. In the same period, imports increased by 29% in volume and 91% in value reaching 47.041 tonnes and almost EUR 110 million. In Romania, over the same period, exports of fisheries and aquaculture products remained stable in volume terms at around 6.600 tonnes. However, their value has increased by 49% to reach almost EUR 22 million. Imports increased by 16% in volume and 92% in value, to reach 107.605 tonnes and EUR 272 million in 2017.

⁹ Aquaculture production was supported by the European Fisheries Fund (EFF) and now by the European Maritime and Fisheries Fund (EMFF).

¹⁰ Cyprinids in Romania are grown in ponds with each other as well as with some other species. The idea is to exploit different trophic levels in the pond.

¹¹ EUROFISH – <http://www.eurofish.dk/romania>

¹² Eurostat-SBS.

¹³ Eurostat-PRODCOM.

¹⁴ Operational Programme for Fisheries in Romania.

¹⁵ Eurostat-SBS.

EXPORT

Table 2-3 EXPORTS OF FISHERIES AND AQUACULTURE PRODUCTS BY MAIN DESTINATION MARKETS IN 2017
(volume in tonnes, value in EUR 1000)

Bulgaria			Romania		
Partner country	Volume	Value	Partner country	Volume	Value
Sweden	2.793	24.172	Republic of Moldova	23.554	37.352
Romania	5.682	13.235	Italy	12.339	29.259
Republic of Korea	1.354	9.435	Bulgaria	6.753	23.883
Spain	873	4.698	Greece	12.138	22.667
Japan	594	3.851	United Kingdom	704	1.911
Other	8.008	23.643	Other	1.989	8.578
Total	19.304	79.034	Total	107.605	272.483

Source: Comext

In **Bulgaria**, exports include a wide range of species but the most important are those of shrimps and molluscs and aquatic invertebrates, which are responsible for 47% of the total in terms of value. In 2017, 32% of exports consisted of prepared-preserved products such as ready-to-eat food, canned fish, caviar and canned crustaceans, and molluscs, 30% of live/fresh fish (mostly carp) and 15% of frozen products (mainly mackerel and sole). Although volumes of exported smoked, salted and dried products are low, they have experienced a significant increase in comparison to previous years. Bulgaria exports its fisheries and aquaculture products to a wide range of countries. Sweden, Romania and the Republic of Korea are the main destinations, accounting for 51% of the total in volume and 59% in value in 2017.

In **Romania**, exports include a wide range of species as well. Apart from salmon and mackerel, the main exported species belong to main commercial species defined in EUMOFA as “other products”, “other marine fish”, “other molluscs and aquatic invertebrates” and “miscellaneous shrimps”¹⁶. In 2017, 60% of fisheries and aquaculture products were exported prepared-preserved, 15% frozen, 8% dried-salted-smoked and 6% fresh (12% are unspecified). Romania exports its fisheries and aquaculture products to a wide range of countries. The Republic of Moldova, Italy, Bulgaria and Greece are the main destinations, accounting for 57% of the total in volume and 52% in terms of value.

2.6.2 IMPORT

Table 2-4 IMPORTS OF FISHERIES AND AQUACULTURE PRODUCTS BY MAIN DESTINATION MARKETS IN 2017
(volume in tonnes, value in EUR 1000)

Bulgaria			Romania		
Partner country	Volume	Value	Partner country	Volume	Value
Greece	3.164	16.925	Netherlands	23.554	37.352
Denmark	3.532	12.492	Poland	12.339	29.259
Spain	5.021	11.044	Germany	6.753	23.883
Netherlands	3.708	6.591	Spain	12.138	22.667
Czech Republic	810	6.178	Italy	4.764	22.644
Other	30.807	56.505	Other	48.057	136.678
Total	47.041	109.735	Total	107.605	272.483

Source: Comext.

With a share of 46% of total imports' value in 2017, mackerel, shrimp, salmon and sea cucumber are the most imported species for the Bulgarian market. Mackerel alone represents 25% of the total in volume and 14% in value. To satisfy the market demand of mackerel for direct consumption and the demand of the processing industry, the species is mainly imported frozen. The Netherlands is the main supplier with 2.870 tonnes worth almost EUR 3,6 million in 2017. In the same year, the structure of imports consisted of frozen fish (46% of the value of imports in 2017), followed by live/fresh products (30%), prepared-preserved (17%) and to a lesser extent smoked, salted and dried fish. In 2017, 27.028 tonnes of frozen fish were imported at a value close to EUR 51 million, of which the volume of mackerel imports represented 42%. The main suppliers of the Bulgarian market are Greece (mainly for live/fresh products such as seabass and seabream), Denmark (mainly for fresh salmon), Spain (mainly for fresh trout), Netherlands (mainly for frozen mackerel) and the Czech Republic (mainly for live/fresh products, such as salmon).

In **Romania**, mackerel, salmon, skipjack tuna, trout and herring were the most valued species imported in 2017. Together, they represent 48% of the value of imports of fisheries and aquaculture products in the country. In 2017, mackerel alone represented 29% of the total in terms of volume and 16% in value. It has been the most imported species in both volume and value over the period between 2010 and 2017. It is mainly imported frozen, from the Netherlands, and to a lesser extent from Spain, Poland and Sweden. Skipjack tuna is the second imported species (3.277 tonnes) in 2017. The species is mostly imported prepared-preserved (98% of the total), mainly originating from Germany (1.323 tonnes in 2017). Imports consist mostly of frozen fish which represented

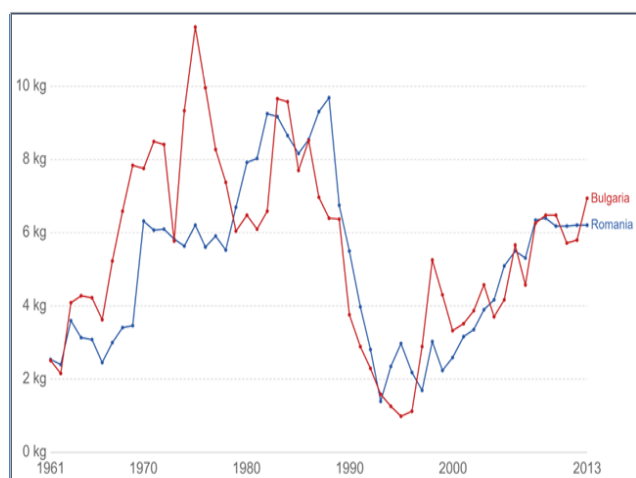
¹⁶ The CN-8 items included in this groupings can be found here: <http://www.eumofa.eu/documents/20178/24415/Metadata+2+-+DM+-+Annex+4+Corr+CN8-CG-MCS+%282002+-+2014%29.pdf/ae431f8e-9246-4c3a-a143-2b740a860291>

54% of imports in 2017, mainly to supply the processing industry. In 2017, almost 58.000 tonnes of frozen fish were imported worth a total of EUR 101 million, of which mackerel represented more than half. The Netherlands was the major supplier of fisheries and aquaculture products to the Romanian market with a share of 14% of the total, followed by Poland (11%), Germany (9%), Spain and Italy (8% each). Fifty percent of the value of the Romanian imports originated from these countries. From the Netherlands, imports concern mostly frozen mackerel (14.784 tonnes imported in 2017 for almost EUR 19 million). From Poland, Romania mainly imports herring (4.273 tonnes in 2017) and mackerel (3.791 tonnes in 2017), mostly frozen. From Germany, the main imported species is skipjack tuna, prepared-preserved (1.323 tonnes).

CONSUMPTION

Figure 2-2 SEAFOOD CONSUMPTION BETWEEN 1961 AND 2013 IN BULGARIA AND ROMANIA

2.7



Source: FAO¹⁷.

For both countries, national seafood consumption is far below the EU average. In Bulgaria fish consumption dropped from more than 9 kg per capita person in 1987 to a minimum of less than 2 kg per capita in the years between 1993 and 1996. In Romania, it decreased from more than 8 kg per capita in 1989 to a minimum of less than 3 kg per capita in the years between 1993 and 2000. Since then, it has been increasing again and stabilized around 6 kg per capita in both countries. In 2016, Bulgarian consumption was estimated by the Bulgarian National Statistical Institute to reach 5 kg per capita. In Romania, it reached 6,3 kg per capita. The drop in seafood consumption in both countries between 1987 and 2000 is related to the decline in the purchasing power of the population during this period, which resulted from a decrease of real income due to inflation.

Bulgarian consumers currently tend to prefer species like European sprat, carp, rainbow trout, Prussian carp, silver carp, and zander, although there is increasing demand for more mid-range and high-end products like hake, mackerel, squid, salmon, shrimp and prawn, trout, tuna, catfish, and lobster¹⁸.

Although the Romanian consumption of seafood is among the lowest averages in the EU, a wider range of products is available on the Romanian market, reflecting a change in consumers' preferences towards new species and new forms of presentation (fillets, headed, gutted). Romania's household consumption is dominated by live / fresh fish, followed by frozen fish, and marinated and prepared products. The top four preferred species are trout, carp, mackerel and salmon.

2.8

PERSPECTIVES AND FUTURE DEVELOPMENT

In Romania and Bulgaria, the fisheries and aquaculture sectors are facing several challenges. They mainly involve the enhancement of the competitiveness for both production and processing sectors. In Bulgaria, some additional concerns involve environmental issues and sustainability of fisheries and aquaculture activities.

In **Romania**, the government is working on improving and modernizing the fishing fleet by increasing the share of vessels over 12 m in length¹⁹. Regarding aquaculture, local stakeholders expect the sector to grow, as over the next years the available area for fish farming is set to increase by a further 25.000 ha, while recirculation systems are expected to expand²⁰. The production of organic species has begun (particularly for common carp and trout) and is expected to be improved by the increasing demand of organic food products²¹.

In **Bulgaria**, the number of aquaculture businesses is likely to increase in the future as new and modern production facilities are established under the Operational Programme for Bulgaria for the European Maritime and Fisheries Fund. In addition, although the consumption level has remained stable for the last three years, industry forecasts indicate that it will increase slightly, despite increasing wholesale and retail prices of fish and fishery products which are linked to rising consumers' incomes.

¹⁷ <https://ourworldindata.org/meat-and-seafood-production-consumption#wild-fishery-and-aquaculture-production>

¹⁸ Fish and Seafood Market Brief – Bulgaria, 2018.

¹⁹ Boosting the potential of the sector, EUROFISH Magazine, 2017.

²⁰ Boosting the potential of the sector, EUROFISH Magazine, 2017.

²¹ Traditional trout products with a twist, EUROFISH Magazine, 2017.

Fisheries and aquaculture in Canada

This case study is available in the
Monthly Highlights N° 9-2018

3 INTRODUCTION

Canada is one of the world's major fishing nations, catching almost 900.000 tonnes and farming 200.000 tonnes of fish and shellfish on a yearly basis²². The sector benefits from a considerable coastline in both Pacific and Atlantic coasts and large inland water bodies.

- 3.1 The Canadian fish and seafood sector is highly export oriented, exporting about 75% of its production, the majority of exports going to the US market. Also, Canada is a major EU trade partner for fisheries and aquaculture products. In 2017, the EU imported EUR 451 million and 59.102 tonnes of fish and seafood products, dominated by shrimp and lobster.

Moreover, the trade agreement²³ in force since September 2017 between Canada and the EU is expected to boost fish and seafood trade flows and reduce prices for most traded species.

PRODUCTION

3.2

Canada is located in the northern part of North America. Its ten provinces and three territories extend from the Atlantic to the Pacific and northward into the Arctic Ocean, covering 9,98 million square km, making Canada the world's second largest country by total area. In addition, Canada has the world's longest coastline (more than 200.000 km) and is responsible for 2,76 million square km of ocean (for comparison, this is in the same range as countries such as Denmark or Norway. The EU Exclusive Economic Zone is of 25,6 million square km).

Canada has fisheries in the Atlantic, Pacific and Arctic oceans as well as in inland freshwater lakes. Landings in the Atlantic are by far the largest, followed by those in the Pacific and in freshwater lakes. The aquaculture sector is also important, most of the production being salmonids and to a lesser extent shellfish species such as mussels.

3.2.1

FISHERIES

Canada's commercial fisheries operate in three broad regions: along the Atlantic and Pacific coasts and inland (mainly near the Great Lakes and Lake Winnipeg). Fisheries on the Atlantic and Pacific coasts of Canada are very different in terms of landed volumes and species. However, while the fisheries sector is locally important on both coasts, it is a relatively minor part of the economic activity regionally and nationally.

The fisheries of the Atlantic coast have historically been dominated by large volumes of demersal species (mostly cod, haddock and flatfishes) and small pelagics (mostly herring). In 2016, Atlantic landings exceeded 665.000 tonnes, dominated by shellfish (59%) and pelagic species (25%), for a value of almost CAD 3 billion (EUR 2 billion)^{24,25}.

Fisheries on the Canadian Pacific coast are more diversified in terms of species. The Pacific coast also has important salmon fisheries. In 2016, Pacific landings reached almost 183.000 tonnes, dominated by groundfish (65%) and pelagic species (27%) for a value of CAD 352 million (EUR 239 million).

The structure of the Canadian fishing industry ranges from a multitude of small operators to a relatively small number of large vertically-integrated companies. More than 17.700 fishing vessels operated in marine waters in 2016, the great majority of them (over 86%) in the Atlantic.

Inland or freshwater commercial fisheries in Canada are relatively small in terms of catches and value. With lakes ranging in size from a few square km to more than 82.000 square km (Lake Superior), the vessels are equally diverse – from tracked snow vehicles and small open boats (5 to 8 m) powered by outboard engines, to larger vessels (12 to 25 m) which fish in the Great Lakes, other large bodies of water in western Canada and the Northwest Territories²⁶. In 2016, there were

²² [FAO Fishstat](#).

²³ [The Comprehensive Economic and Trade Agreement \(CETA\)](#).

²⁴ <http://www.dfo-mpo.gc.ca/stats/facts-info-17-eng.htm>

²⁵ CAD: Canadian dollar (in 2016, EUR 1 = CAD 1.47).

²⁶ <http://www.fao.org/fishery/facp/CAN/en>

still 114 active vessels involved in inland fisheries, landing more than 30.000 tonnes for a value of CAD 74 million (EUR 50 million).

Table 3-1 COMMERCIAL SEA AND FRESHWATER FISHERIES IN CANADA IN 2016

Commercial sea and freshwater fisheries	Pacific	Inland	Atlantic	Canada
Number of registered vessels	2.427	114	15.256	17.817
Total volume of landings (tonnes)	182.983	30.382	665.182	878.547
Total value of landings (in CAD 1000)	351.670	74.220	2.949.702	3.375.592

Source: Economic Analysis and Statistics, Fisheries and Oceans Canada.

Fisheries in Canada are highly regulated. A licence is required to fish commercially, and recreational fishing for commercial species is also regulated. Most commercial marine fisheries are managed by Total Allowable Catch (TAC) allocated to various gear/area sectors by quotas. Individual transferable quotas (ITQs) have been found to be useful in reducing overcapacity in several fisheries²⁷.

According to FAO, Canadian catches exceeded 874.000 tonnes in 2016. The main species in terms of volume were herring, shrimps and lobster accounting for 14%, 12% and 10%, respectively, of the total catches. To a lesser extent Queen crab and hake (both 10%), scallops and flatfishes (5%) also represented significant volumes.

Over the 2007–2016 period, Canadian catches have experienced a decreasing trend (–16%), with very contrasted changes among the main species: strong declines for herring (–29%) and shrimps (–42%) and significant increasing trend for lobster (+85%).

Table 3-2 CANADIAN CATCHES BY MAIN SPECIES (volume in tonnes)

Species	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Atlantic herring	167.782	140.237	155.178	149.883	134.468	113.989	126.102	114.610	114.200	118.492
Coldwater shrimp	188.216	167.071	138.549	164.784	151.293	149.307	148.816	131.801	140.771	108.877
American lobster	48.870	58.984	58.342	67.277	66.978	74.790	74.686	92.779	90.875	90.624
Queen crab	90.672	93.868	97.308	84.642	84.372	92.849	98.065	96.103	93.519	82.519
North Pacific hake	73.448	73.750	55.885	48.013	45.687	46.913	53.887	37.437	41.604	78.289
Scallops, pectens	65.337	67.621	62.921	60.306	59.902	53.306	64.684	69.745	61.061	53.764
Flounders, halibuts, soles	36.125	42.181	36.786	39.685	39.059	35.362	45.449	47.860	44.327	45.330
Other	374.536	324.168	388.206	364.931	298.351	266.137	255.235	286.390	276.335	296.832
Total	1.044.986	967.880	993.175	979.521	880.110	832.653	866.924	876.725	862.692	874.727

Source: FAO - Fishstat.

²⁷ <http://www.fao.org/fishery/facp/CAN/en>

AQUACULTURE

In Canada, various attempts to develop aquaculture have been undertaken from as early as the 19th century, but it is only during the last 40 years that this sector has taken significant importance²⁸. Since the 1980s, production and value increased linearly, almost without interruption, to 200.000 tonnes worth CAD 1,3 billion (EUR 0,9 million) in 2016.

The largest contributors to production and value are salmon and trout, followed by mussels and oysters. At province level, British Columbia is by far the most important player in the Canadian aquaculture industry. In 2016, it was estimated that 3.2.2 the Canadian aquaculture production sector included 917 companies and 3.340 jobs.

Table 3-3 AQUACULTURE IN CANADA IN 2016

Commercial sea and freshwater fisheries	Pacific	Inland	Atlantic	Canada
Number of aquaculture establishments	243	166	508	917
Total volume of production (tonnes)	102.325	5.440	90.540	200.565
Total value of production (in CAD 1000)	Confidential	32.500	224.375	1.347.311

Source: Economic Analysis and Statistics, Fisheries and Oceans Canada.

Table 3-4 AQUACULTURE PRODUCTION IN CANADA BY SPECIES IN 2016

Main farmed species	Volume (tonnes)	Value (CAD 1000)	Main producing province
Salmon	123.522	1.022.127	British Columbia
Trout	9.507	56.275	Ontario
Other finfish	1.237	14.705	Nova Scotia
Clams	1.962	7.076	British Columbia
Oysters	13.824	39.693	British Columbia
Mussels	24.584	37.736	Prince Edward Island
Scallops	38	392	Quebec
Other shellfish	103	2.702	Nova Scotia
Total aquaculture	200.565	1.347.311	

Source: Economic Analysis and Statistics, Fisheries and Oceans Canada.

In 2016, according to FAO, total aquaculture production amounted to more than 200.000 tonnes, of which Atlantic salmon accounted for 62%. Other major farmed species were other salmonids (17%), blue mussel (12%) and oysters (7%). Over the 2007–2016 period, aquaculture production has experienced a slight decline in volume (–12%). The main trends have been the overall development of the Atlantic salmon production (+20%, despite strong fluctuations) and the significant increase of trout production (+88%).

Table 3-5 CANADIAN AQUACULTURE PRODUCTION BY TOP SPECIES IN 2007–2016 (volume in tonnes)

Species	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Atlantic salmon	102.509	104.075	100.212	101.544	110.328	116.101	97.629	86.347	121.926	123.522
Other salmonids	-	11.545	13.625	12.899	14.536	17.174	22.362	6.230	19.948	25.588
Blue mussel	23.835	19.835	21.461	25.675	25.897	29.033	26.119	25.231	22.725	24.584
Oysters	11.075	8.984	8.813	11.114	9.779	10.497	10.835	10.662	11.153	13.824
Other	15.067	11.110	11.817	11.109	9.166	12.105	11.070	11.262	11.622	13.247
Total	152.486	155.549	155.928	162.341	169.706	184.910	168.015	139.732	187.374	200.765

Source: FAO - Fishstat.

²⁸ <http://www.fao.org/fishery/facp/CAN/en>

PROCESSING

The Canadian processing industry for the preparation and packaging of seafood products is of importance, with CAD 6,2 billion (EUR 4,2 billion) of gross added value, representing 28.718 jobs. It is highly export-oriented²⁹. In 2012, 722 seafood processing establishments operated in Canada with the majority located in Nova Scotia (188), Newfoundland and Labrador (148), British Columbia (137), and New Brunswick (83)³⁰.

TRADE

3.3

CANADIAN FISH AND SEAFOOD TRADE

Canada is a net exporter of fish and seafood products, with a trade surplus of CAD 3 billion (EUR 2 billion) in 2017³¹.

3.4 In 2017, seafood exports reached 597.000 tonnes for a value of CAD 6,9 billion (EUR 4,7 billion), representing a 7% decrease in volume but a +5% increase in value compared to 2016. In 2017, Canadian fish and seafood imports amounted to 534.000 tonnes for CAD 3,9 billion (EUR 2,7 billion), an increase of 0,6% in volume and 2,4% in value over 2016.

3.4.1

In 2017, the main exported species were lobster, Queen crab and salmon, accounting for 31%, 15% and 13%, respectively, of total fish and seafood exports value. Main imported species were shrimp, salmon and lobster, accounting for 18%, 8% and 8%, respectively, of total fish and seafood import value.

The main markets for Canadian fish and seafood are the United States, China, Japan and the EU. The United States remains by far the largest among these markets. Main origins for Canadian imports were the United States and China.

Table 3-6 CANADIAN EXPORTS OF FISH AND SEAFOOD BY TOP SPECIES IN 2016 AND 2017

Top products exports, by species	Volume (tonnes)		Value (CAD 1000)	
	2016	2017	2016	2017
Lobster	83.757	84.390	2.148.504	2.125.996
Snow/Queen Crab	47.732	48.924	809.670	1.011.432
Atlantic salmon	95.215	84.586	966.850	908.847
Shrimp	66.325	39.829	466.170	472.035
Crab	17.536	22.905	285.301	461.711
Total exports, all species	640.043	597.492	6.553.488	6.864.988

Source: Statistics Canada, Canadian International Merchandise Trade Database.

Table 3-7 IMPORTS OF FISH AND SEAFOOD IN CANADA BY TOP SPECIES IN 2016 AND 2017

Top products imports, by species	Volume (tonnes)		Value (CAD 1000)	
	2016	2017	2016	2017
Shrimps	51.097	55.991	633.315	708.482
Salmon	19.337	20.304	272.075	312.015
Lobster	31.715	24.628	436.438	304.498
Skipjack/bonito tuna	34.598	32.183	190.650	199.207
Sockeye salmon	16.755	14.877	162.671	171.680
Total imports, all species	530.882	534.000	3.770.472	3.860.796

Source: Statistics Canada, Canadian International Merchandise Trade Database.

²⁹ <http://www.dfo-mpo.gc.ca/stats/facts-info-17-eng.htm>

³⁰ <http://www.agr.gc.ca/eng/industry-markets-and-trade/canadian-agri-food-sector-intelligence/processed-food-and-beverages/profiles-of-processed-food-and-beverages-industries/canada-s-seafood-product-preparation-and-packaging-industry/?id=1449759885273>

³¹ Annual exchange rate in 2017 : 1 EUR=1,46 CAD.

TRADE BETWEEN CANADA AND THE EU

In 2017, EU imports of Canadian fisheries products totaled EUR 451 million and 59.102 tonnes. In value terms, prepared/preserved products and frozen products accounted for 40% and 35%, respectively, of the total EU imports from Canada, while fresh products accounted for 19% of the import value. The most important species imported were miscellaneous shrimps (34% of total import value), and lobster (29%), and, to a lesser extent, scallop and salmon³² (both 8%).

3.4.2 The main EU destinations for Canadian exports were the UK (28% of total EU import value) and Denmark (21%). Other important EU importers of Canadian fisheries products were France (14%), Belgium (9%), Spain (7%), and the Netherlands (5%).

Table 3-8 TOP EU MARKETS FOR SEAFOOD IMPORTS FROM CANADA (value in million EUR, volume in tonnes)

Country	2015		2016		2017	
	Value	Volume	Value	Volume	Value	Volume
United Kingdom	206	18.264	139	15.389	126	15.889
Denmark	116	15.099	79	10.809	94	13.640
France	57	5.915	56	6.415	65	6.592
Belgium	42	3.220	43	3.093	41	2.809
Spain	23	3.696	29	4.289	29	3.788
Other	97	17.770	104	17.539	96	16.386
Total	542	63.964	450	57.535	451	59.102

Source: EUMOFA.

Table 3-9 TOP MAIN COMMERCIAL SPECIES IMPORTED FROM CANADA (value in million EUR and volume in tonnes)

Species	2015		2016		2017	
	Value	Volume	Value	Volume	Value	Volume
Shrimp, miscellaneous	256	22.052	154	16.261	151	16.636
Lobster <i>Homarus</i> spp.	121	8.690	134	9.061	130	8.731
Scallop	38	1.685	29	1.388	37	1.635
Salmon	32	4.693	38	6.509	36	5.803
Shrimp, coldwater	36	8.843	24	5.798	23	6.071
Cod	8	1.795	10	2.220	15	3.486
Hake	8	4.127	9	5.095	10	5.746
Other	43	12.080	51	11.202	48	10.995
Total	542	63.964	450	57.535	451	59.102

Source: EUMOFA.

3.4.3 In comparison to imports, EU exports to Canada are much lower but still significant. In 2017, EU exports of fish and seafood to Canada totaled EUR 98 million for 26.644 tonnes of products. Fresh and prepared/preserved products accounted for 32% and 26%, respectively, of the total export value. Main species exported were salmon (25% in value), fishmeal (14%) and other marine fish (10%). Main EU countries exporting to Canada were the UK and Denmark (18% of total EU export value each) and to a lesser extent the Netherlands and Portugal (10% each).

TRADE AGREEMENT

On 21 September 2017, between the EU and Canada a free trade agreement – the Comprehensive Economic and Trade Agreement (CETA) came into force, which the EU Parliament had approved on 15 February 2017 after more than eight years of negotiations. CETA eliminates virtually all tariffs on imports between the two economies, harmonizes and reduces trade regulations and related structural barriers, and provides a mechanism to resolve disputes concerning, trade, investment, and other economic matters. For fish and seafood products, CETA eliminates tariffs that were already zero or low (many under 5% ad valorem) on most products. However, some important items such as lobsters from Canada and herrings from the EU faced significant import tariffs. With the removal of these tariffs, prices of such products are expected to fall leading to increased demand, consumption, and trade³³.

³² Mostly Pacific salmon (wild-caught).

³³ <http://www.eurofishmagazine.com/sections/trade-and-markets/item/442-new-eu-canada-trade-agreement-implemented>

Fisheries and aquaculture in Chile

This case study is available in the
Monthly Highlights N° 4-2017

4 Chile is a large player globally in both marine fisheries and aquaculture. Marine fisheries supply mainly small pelagic species. Aquaculture produces mainly salmonids in addition to various molluscs. However, catches of small pelagics have declined recently, mainly as a result of reduced quotas forced by various natural conditions. Also, disease and natural phenomena have created challenges in the Chilean aquaculture sector. Still, Chile is a major player in the seafood business; it is the second largest producer of salmonids in the world, exporting seafood products worth EUR 4,7 billion in 2016. According to the FAO, Chile ranked 11th on the list of world's largest marine capture producers (2014) and was second in Latin America.

PRODUCTION

MARINE FISHERIES AND FISHMEAL AND FISH OIL PRODUCTION

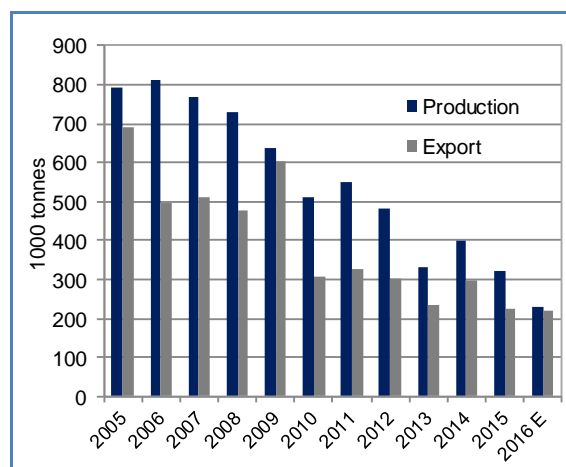
4.1

4.1.1

Most landings in Chile are small pelagic species, with anchovy as the main species. In 2016, the volume of anchovy decreased 38% from 2015 and accounted for 22% of the total landed volume at 333.500 tonnes. In past years, the biomass has decreased as a result of frequent El Niño events, causing a closure in the anchovy and sardine fisheries.

During the past ten years, Chilean fishmeal and fish oil production has declined from approximately 800.000 tonnes in 2006 to approximately 230.000 tonnes estimated for 2016. The raw materials for the fishmeal and fish oil industries are mainly anchovy and sardine, and in the past years, horse mackerel, which is used for non-food purposes and human consumption. The decline in horse mackerel was attributable to reduced availability of raw material through reduced quotas after a period of overfishing by both Chilean and foreign vessels in national and international waters. In addition to the reduced availability of horse mackerel, the modest landings of anchovy and sardines in Chile in past years have contributed to the reduced production volume of fishmeal and fish oil. Fishmeal is used for finfish aquaculture, and a significant share is exported.

Figure 4-1 CHILEAN PRODUCTION AND EXPORT OF FISHMEAL



Source: IFFO; Portal Comex CCS.

The largest Chilean fishmeal exporter in 2016 was Corpesca, accounting for 20% of the volume, followed by Pesquera Pacific Star S.A. (14%), and Camanchaca Pesca Sur S.A. (9%)³⁴.

Most of the fishmeal that is not exported is used as fish feed for the salmon-farming industry. Chile is also an importer of fishmeal. From 2010 to 2016, imports averaged 44.000 tonnes annually.

AQUACULTURE

Chile is the largest producer globally of large trout and coho (silver salmon) and the second largest producer globally of salmonids (Atlantic salmon, large trout, and coho) behind Norway. Currently, approximately 25 companies produce salmonids. The 14 largest companies are responsible for approximately 80% of total production. Among the top 15 salmonid farming companies globally, six are Chilean: Aqua Chile (6th), Salmones Multiexport (8th), Pesquera los Fjordos (9th), Australis seafood (10th), Pesquera Camanchaca (14th), and Salmones Blumar (15th). In addition, multinational companies such as Marine Harvest, Mitsubishi/Cermaq, and Cooke Aquaculture operate in Chile.

The main areas for freshwater production (smolt) are Regions VIII, IX, XI, XII, and XIV. The sites use flow-through systems close to rivers or recirculating aquaculture system (RAS) technology. Historically, lakes were used for smolt production as well. Because most seawater sites are south of the main smolt production areas, transport by truck is the main means of transport before the final transfer to the seawater sites in well boats. The main areas for the seawater production are in the southern part of Chile (Regions X, XI, and XII)³⁵.

Chile experienced a substantial growth in production over the past 20 years, although biological (disease) and environmental challenges have resulted in some set backs. In 2008 and 2009, the Chilean aquaculture industry struggled

³⁴ Portal Comex CSS - <https://www.portalcomexccs.cl/>

³⁵ <http://www.sernapesca.cl>

with infectious salmon anaemia (ISA), resulting in a substantial drop in harvest volume in 2009 and 2010.

Today, the industry is struggling with salmon Rickettsial Syndrome (SRS), in addition to various natural phenomenon such as earthquakes, volcano eruptions, and the effects of El Niño, all of which cause loss and reduced harvest volume. For instance, the February 2016 algae bloom resulted in the loss of more than 25 million individual salmonids, mainly Atlantic salmon.

With a new regulatory regime implemented, industry growth will depend on a different set of sustainable indicators and sanitary plans, especially in Regions X and XI, where disease and parasites are most frequent. This could limit the exponential growth experienced recently. In the southernmost regions, where fewer biological challenges exist, growth is likely to be greater.

The regulations and biological challenges have resulted in a reduction of large trout production. Coho production will remain stable or grow, and production of Atlantic salmon is estimated to increase its share compared with other Chilean salmonids. In 2016, Atlantic salmon, the leading species farmed in Chile, accounted for 52% of the total aquaculture production volume.

There are 22 processing plants in Chile. Most Atlantic salmon and large trout (60%) is processed (fillets/VAP); only a small share of coho is processed before being exported (7%). More than 50% of exported Atlantic salmon is frozen, and approximately 30% is chilled fresh³⁶.

In addition to salmonids, Chile is a large producer^{4.2f} of mussels, only surpassed by China and Spain in volume. The Chilean mussel (*Mytilus chilensis*) is also an important export product. Most exported mussel is frozen or canned. In 2016, the produced volume of mussel accounted for 28% of the total aquaculture production.

4.2

TRADE

4.2.1

EXPORT

From 2012 to 2016, the value of exported Chilean seafood products increased from approximately EUR 3,5 billion to approximately EUR 4,7 billion (+36%). This is mainly the result of the increased production of Atlantic salmon, Chile's leading seafood export commodity.

Chile and Norway are by far the largest producers of farmed Atlantic salmon, with 23% and 54%, respectively, of the world's production in 2016. The USA is Chile's main market, and the EU is the main market for Norwegian salmon. However, the two countries also compete on their main markets. Over the past two years, exports of Atlantic salmon products from Chile to the EU averaged 33.000 tonnes, mainly frozen processed products.

In 2016, Chilean salmon exports accounted for 61% and 38% of the total export value and volume, respectively. A large share of exported Chilean salmon (26%) and other seafood products ends up in the USA. On a round weight basis, both countries sell/export 50.000–60.000 tonnes to their competitor's main market. Norway targets the US market with airfreight fresh whole salmon on the east coast market and fresh salmon fillets on the west coast market. The latter is in

strong competition with Chile. Chile supplies the EU market with frozen salmon fillets. They have a strong position in the catering sector. According to Norwegian producers, it is difficult to compete with Chile because their prices are normally approximately 1 EUR/kg lower.

In 2016, the US market accounted for 30% and 16% of the export value and volume, followed by Japan, which accounted for 18% of the export value and 14% of the volume.

The EU accounted for 11% of Chilean exports in 2016, an increase of 9% over 2015, to EUR 504 million. In 2016, the main market for Chilean seafood products was Spain, accounting for 33% of the export value to the EU. Hake and mussels are the main exports to Spain. They consist of both precooked, frozen vacuum-packed mussels in shells and frozen mussel meat. The latter is used mainly as raw material for canning. As for mussels, Chile is both a competitor and a supplier to the Spanish mussel industry. Exports of mussels from Chile to the EU fall in the prepared/preserved category. Within this category, most of the mussels are exported as cooked/vacuum packed/frozen. Although Chile mainly targets segments other than the canning industry (owing to the price), some Chilean mussels are canned in Spain. Although Chile can be considered both a supplier and competitor, depending on the market segment, Spain has the opportunity to supply the market with fresh mussels, and Chile does not.

IMPORT

Although Chile is mostly an exporter of seafood products, it also imports products such as fish oil and various species of tuna and shrimp. In 2016, the total import value was approximately EUR 307 million, a 23% decrease from 2015. The volume in the same year was approximately 144.000 tonnes (-27%). The main suppliers to Chile in 2016 were China and Peru, accounting for 35% and 16% of the total export value, respectively. The main products imported from China are fish oil and various types of shrimp. Peru supplies mainly fishmeal and fish oil. Tuna originates mainly in Thailand and Ecuador.

CONSUMPTION

Chile's mussel culture is based on the production of three main species: the Chilean mussel (*Mytilus chilensis*), which is known locally as "chorito" and is the best known internationally; the cholga mussel (*Aulacomya ater*); and the giant or choro mussel (*Choromytilus chorus*). While most Chilean mussels are exported, all the cholga and giant mussels are consumed locally. Domestic mussel consumption is estimated by comparing production with exports and then indicating a percentage.

In 2016, the per capita consumption of fish and seafood in Chile was 10 kg. To increase the consumption, the National Fisheries Society (*Sonapesca*) and the Federation of Fishing Industries of Southern Chile (FIPES) organised a campaign known as *Come pescado y súmate al kilo de salud por año*. The campaign's main objective is to increase seafood consumption by a kilo per capita per year until 2022. The Chilean government emphasized that Chilean consumers should be able to consume seafood up to three times a week.

Table 4-1 CHILEAN CATCHES AND AQUACULTURE PRODUCTION BY MAIN SPECIES, EXCLUDING ALGAE (volume in 1000 tonnes)

Product	2012	2013	2014	2015	2016*
---------	------	------	------	------	-------

³⁶ <http://www.salmonchile.cl/en/exportaciones.php>

MARINE FISHERIES					
Anchovy	904	803	818	540	334
Sardine	848	237	543	436	280
Atlantic horse mackerel	227	231	272	289	320
Cuttlefish	145	106	177	144	181
Other species	882	912	779	722	428
Total marine fisheries	2.559	1 758	2.159	1.773	1.543
AQUACULTURE					
Atlantic salmon	400	493	644	622	502
Coho	163	146	159	154	102
Rainbow trout	263	146	152	107	71
Chilean mussels	258	254	238	289	277
Other species	21	25	21	20	19
Total aquaculture	1.105	1.064	1.214	1.192	971
TOTAL PRODUCTION	3.664	2.822	3.373	2.965	2.514

Source: www.sernapesca.cl

*Preliminary data.

Table 4-2 CHILEAN EXPORT OF SEAFOOD PRODUCTS RANKED BY VALUE (value in million EUR and volume in 1000 tonnes)

Product	Unit of measure	2012	2013	2014	2015	2016
Salmon	Value	1.389	1.895	2.528	2.549	2.886
	Volume	322	392	465	498	441
Rainbow trout	Value	684	569	523	386	361
	Volume	140	110	75	66	49
Fishmeal	Value	344	315	321	323	295
	Volume	309	240	258	194	192
Toothfish	Value	55	53	47	54	80
	Volume	3	4	3	2	3
Fish oil	Value	85	82	99	98	78
	Volume	71	67	85	80	69
Other	Value	927	920	995	1.030	1.042
	Volume	407	428	446	389	418
Total	Value	3.483	3.834	4.514	4.439	4.742
	Volume	1.252	1.240	1.332	1.228	1.171

Source: EUMOFA, based on Global Trade Atlas.

Table 4-3 MAIN EXPORT MARKETS OF CHILEAN SEAFOOD PRODUCTS RANKED BY VALUE (value in million EUR and volume in 1000 tonnes)

Market	Unit of measure	2012	2013	2014	2015	2016
USA	Value	750	980	1.174	1.227	1.405
	Volume	145	162	188	196	188
Japan	Value	1.022	765	925	878	831
	Volume	262	203	193	203	166
EU	Value	399	428	501	463	504
	Volume	184	159	198	152	160
Brazil	Value	257	380	430	450	492
	Volume	75	88	95	102	89
China	Value	266	299	294	266	351
	Volume	215	203	178	144	153
Other	Value	1.097	1.179	1.380	1.334	1.347
	Volume	522	523	601	513	514
Total	Value	3.483	3.834	4.514	4.439	4.742
	Volume	1.252	1.240	1.332	1.228	1.171

Source: EUMOFA, based on Global Trade Atlas.

China's role in seafood trade and processing

This case study is available in the
Monthly Highlights N° 4-2016

5 SUMMARY

Over the past 10–12 years, China has become the largest re-processor of seafood in the world, especially for whitefish species like Alaska pollock, cod and haddock, but also salmon. Chinese exports to the EU increased five times between 2002 and 2010 and stabilised at around EUR 1,5 billion from 2010 to 2015. This stagnation contrasts with other suppliers, such as Norway, who are increasing their exports to the EU, suggesting that China is over the peak.

5.1

Although China has been and still is a massive re-exporting hub for several large seafood species, domestic demand is increasing and internal consumption is estimated to grow rapidly in the coming years. Several important suppliers to the re-processing trade in China have moved or are planning to move their operations to other countries, including the Baltics and Vietnam, which could cause a significant shift in the global seafood trade.

PRODUCTION

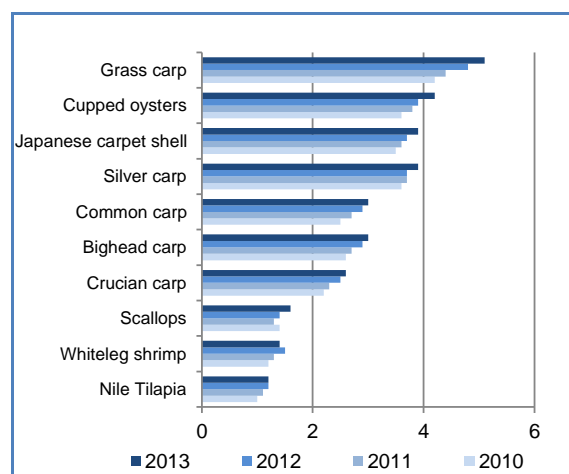
5.2

In 2013, China accounted for 39% of world fishery and aquaculture production. The country was leading in the aquaculture sector (59% of world production) as well as in the fishery sector (18% of world production)³⁷. China was also the largest exporter of seafood in 2015, at EUR 31 billion, and fourth largest importer (EUR 7,8 billion) after the EU (EUR 22,3 billion), USA (EUR 17 billion) and Japan (EUR 12,1 billion).

Chinese aquaculture represented 73% of the total domestic production of seafood (excl. aquatic plants) in 2013, at 42,7 million tonnes, and was one of the fastest growing food sectors, expanding by 8% each year from 1990–2013. For the fishery sector, annual growth is also substantial averaging 4% a year from 1990–2013. In 2013, the total catch was 16 million tonnes. Chinese vessels operate in Asian waters, but also significantly in African waters and at a smaller scale in Central and South America, and Antarctica, making the Chinese fleet the world's largest long-distance fleet. In 2014, the Chinese fleet consisted of almost 200.000 vessels, including approximately 2.500 related to the long distance fleet.

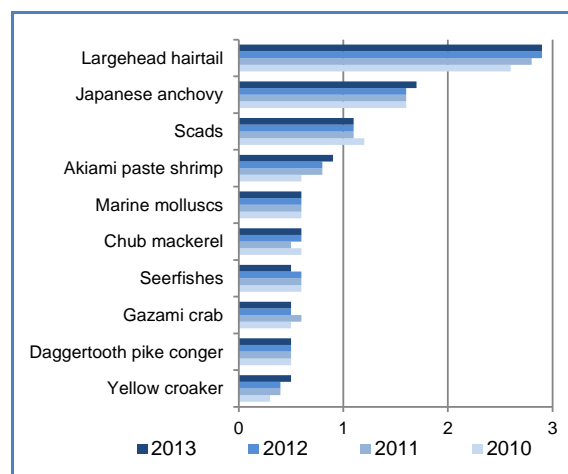
In terms of aquaculture production, China produces mainly carps: over 18 million tonnes in 2013 or 70% of total aquaculture production. Carp production has increased 70% since 2000. China is also a massive producer of aquatic plants, producing 13,56 million tonnes in 2013. Japanese kelp was the largest sort accounting for almost 40% of the produced volume.

Figure 5-1 TOP 10 AQUACULTURE SPECIES (EXCL. AQUATIC PLANTS) BY VOLUME IN MILLION TONNES



Source: FAO.

Figure 5-2 TOP 10 FISHERIES SPECIES (EXCL. AQUATIC PLANTS) BY VOLUME IN MILLION TONNES



Source: FAO.

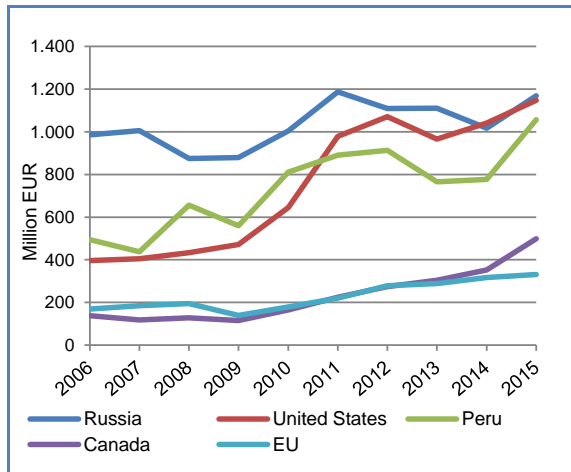
TRADE

China has a huge seafood foreign trade surplus: EUR 11,7 billion in 2015. And this surplus has continued to grow in recent years (+6% in 2014 and +10% in 2015), in spite of rapidly growing domestic demand.

In the figures below, one can see the top suppliers of seafood to China and China's main markets. The EU is the seventh largest supplier of seafood to China and the fourth largest market for Chinese exports. From 2006 to 2015, supplies of seafood from the EU to China increased 85% in value, while the value of Chinese exports to the EU increased 4%.

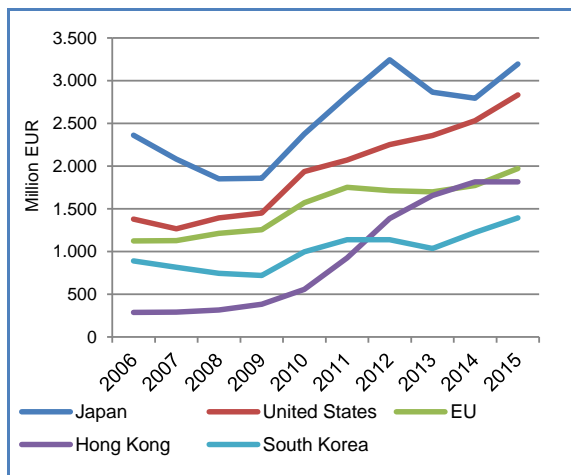
³⁷ EUMOFA – The EU fish market, 2015 / FAO.

Figure 5-3 MAIN SUPPLIERS OF SEAFOOD TO CHINA



Source: EUMOFA/Chinese statistics (GTA).

Figure 5-4 MAIN MARKETS FOR CHINESE EXPORT OF SEAFOOD



5.3.1

Source: EUMOFA/Chinese statistics (GTA).

IMPORT

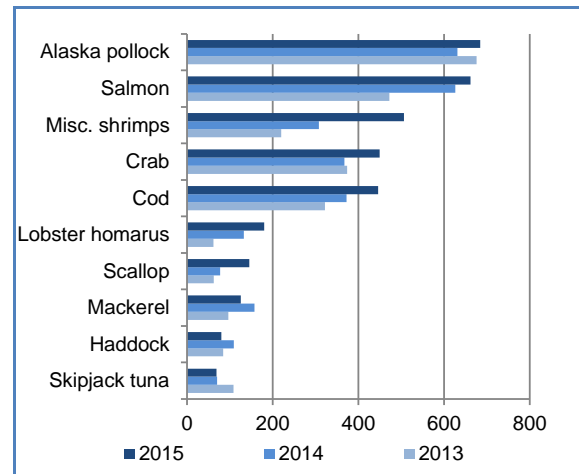
In 2015, the top three imported seafood species by value to China were Alaska pollock, salmon and miscellaneous shrimps, coming mainly from Russia, USA and Ecuador, respectively. Miscellaneous shrimps imported to China consist primarily of frozen, whole white-leg shrimp (*Litopenaeus vannamei*/Pacific white shrimp).

As well as being the largest aquaculture producer and fishery nation in the world, China is the main re-processing nation. All the large players in the seafood industry have, and still are, utilising re-processing in China where the production cost is significantly lower than in most western countries. The three main species imported to China for re-processing are Alaska pollock, cod and salmon. In addition

to this, imports of fishmeal constitute a large share of Chinese seafood imports. Fishmeal is mainly from Peru, and is used as feed for the massive aquaculture production in China.

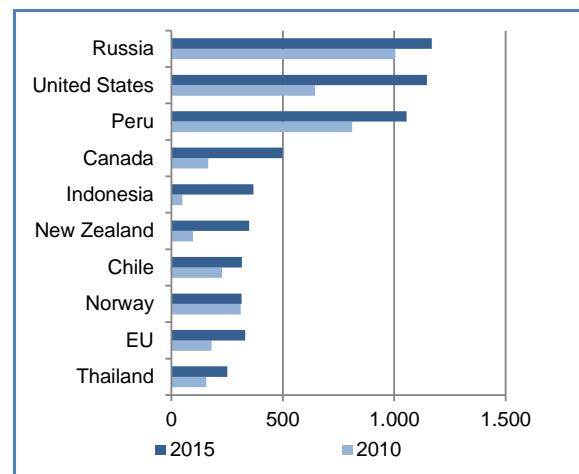
The majority of the seafood products imported by China are frozen, whole/headed and gutted (HG). A large share of this volume is processed, mainly to fillets, and re-exported as frozen products to the global market. From 2010 to 2015, the total import volume of seafood saw a 13% increase, while the proportion of products imported as frozen whole/HG saw a 3% decline. This resulted in a decrease in import share for frozen whole/HG products from 57% to 49%.

Figure 5-5 CHINESE IMPORT OF SEAFOOD (EXCL. AQUATIC PLANTS) by main species in million EURO



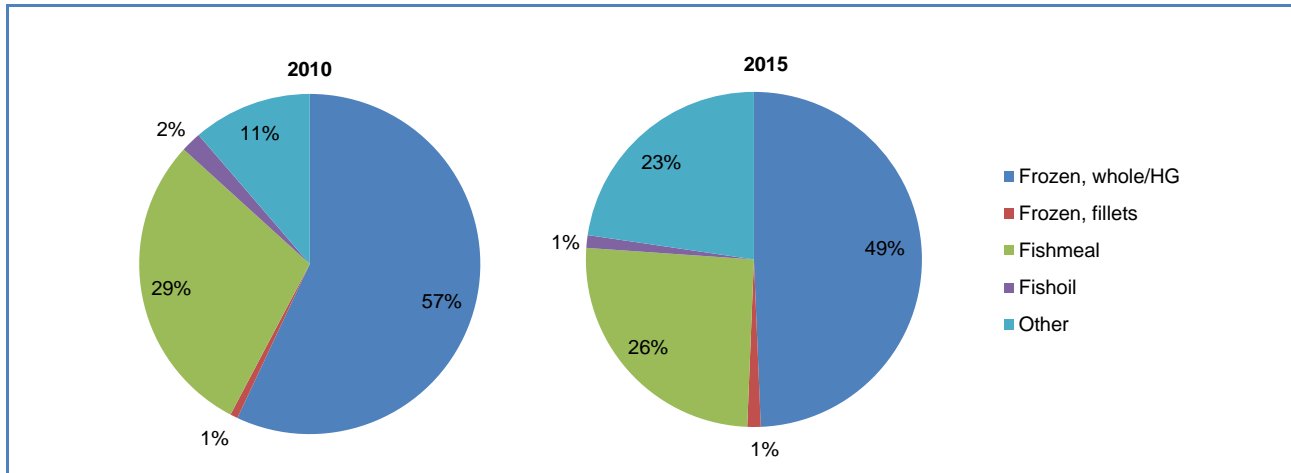
Source: EUMOFA/Chinese statistics (GTA).

Figure 5-6 CHINESE IMPORT OF SEAFOOD (EXCL. AQUATIC PLANTS) by main partner country in million EURO



Source: EUMOFA/Chinese statistics (GTA).

Figure 5-7 CHINESE IMPORT VOLUME OF SEAFOOD (EXCL. AQUATIC PLANTS) by presentation and preservation



Source: EUMOFA/Chinese statistics (GTA).

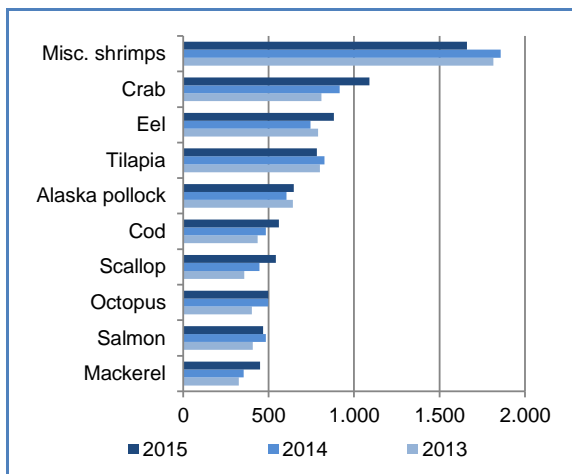
The other category in figure 21 consists mainly of frozen cuttlefish and squid, whole, prepared or preserved from Peru, USA and Taiwan.

EXPORT

5.3.2 In 2015, the top three species by value exported from China were miscellaneous shrimps, crab and eel, with the main markets being Japan, USA, Hong Kong and the EU.

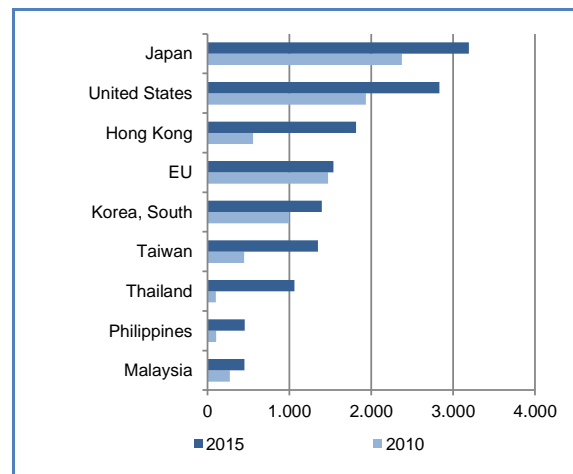
From 2010–2015 Chinese seafood export volumes (excl. aquatic plants) increased 10%, boosted by several products, including whole/HG products, although the imported share of this product decreased slightly in the period (31% to 30%). In the same time period, the export share of frozen fillets decreased from 21% to 19%. The stagnation of the volume imported as processed products corresponds well to the declining share of whole/HG (raw material) in the imports.

Figure 5-8 CHINESE EXPORT OF SEAFOOD (EXCL. AQUATIC PLANTS) by main species in million EURO



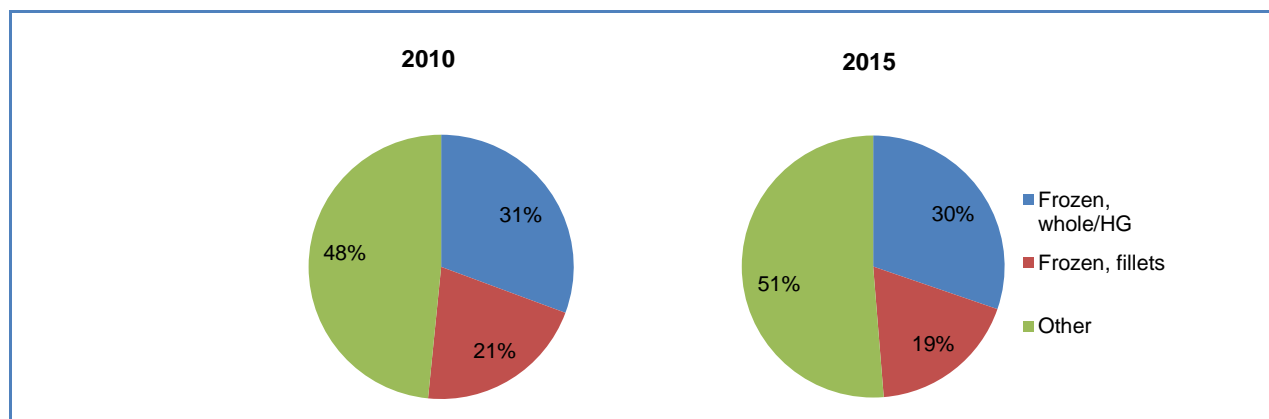
Source: EUMOFA/Chinese statistics (GTA).

Figure 5-9 CHINESE EXPORT OF SEAFOOD (EXCL. AQUATIC PLANTS) by main partner country in million EURO



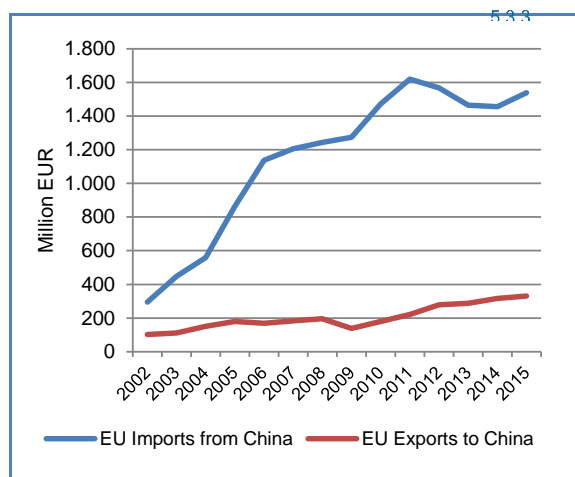
Source: EUMOFA/Chinese statistics (GTA).

Figure 5-10 CHINESE EXPORT VOLUME OF SEAFOOD (EXCL. AQUATIC PLANTS) by presentation and preservation



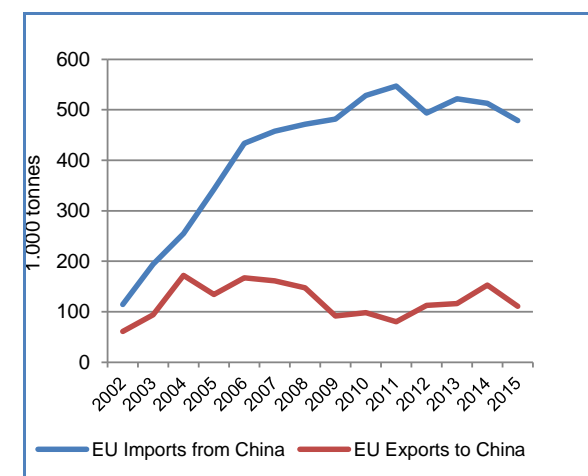
Source: EUMOFA/Chinese statistics (GTA)

Figure 5-11 SEAFOOD TRADE BETWEEN THE EU AND CHINA IN VALUE



Source: EUMOFA.

Figure 5-12 SEAFOOD TRADE BETWEEN THE EU AND CHINA IN VOLUME



Source: EUMOFA.

CHINA AND THE EU

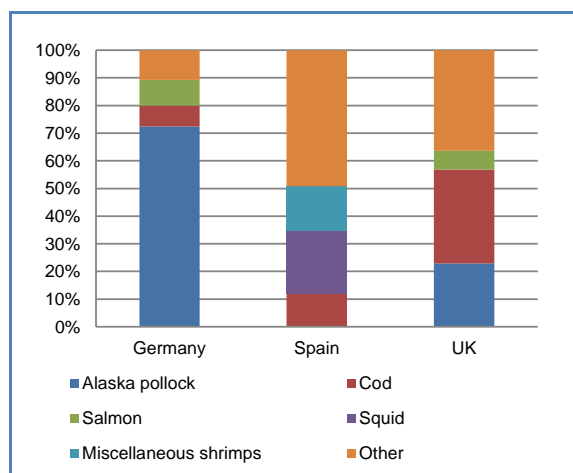
Of the total EU export of seafood (excl. aquatic plants) in 2015, exports to China accounted for EUR 331 million with a volume of 110.861 tonnes. This made China the 3rd largest market - by value - for the EU, behind USA and Norway. Of the total volume exported from the EU to China in 2014, approximately 67% or 73.705 tonnes were frozen whole/HG products. The percentage has been stable at around 70–80% in recent years.

After a strong increase in exports from the EU to China in 2004, volumes have ranged between 100.000 and 150.000 tonnes. The export value has seen a boost in recent years, mainly because of higher exported volumes of salmon, and blue whiting. The main reason for the upswing in exports of salmon from the EU to China after 2010 was the reduction in exports of fresh Norwegian salmon to China.

In 2015, Denmark, the UK, and Spain were the main EU exporters to China, together accounting for 71% and 54% of the total value and volume, respectively.

In 2015, the EU imported seafood (excl. aquatic plants) from China worth EUR 1,54 billion, five times more than it exported to China, with a volume of 480.727 tonnes. This made China the 2nd most important supplier of seafood – by value to the EU in 2014, behind Norway. Of the total volume imported to the EU from China in 2015, 64% or 308.870 tonnes were frozen fillets. In recent years, the proportion of this product category imported to the EU from China has been stable at 60–66%.

The main EU importers of seafood from China in 2015 were Germany, followed by Spain and the UK. The three countries were, and still are, mainly importing for direct consumption, and accounted for 56% of the total value and volume. Alaska pollock, cod and salmon were the top three species imported by the EU, accounting for approximately 50% of the total value and 53% of the total volume.

Figure 5-13 MAIN EU MARKETS AND TOP SPECIES by volume

Source: EUMOFA.

PROCESSING IN CHINA – LOSING GROUND?

5.4

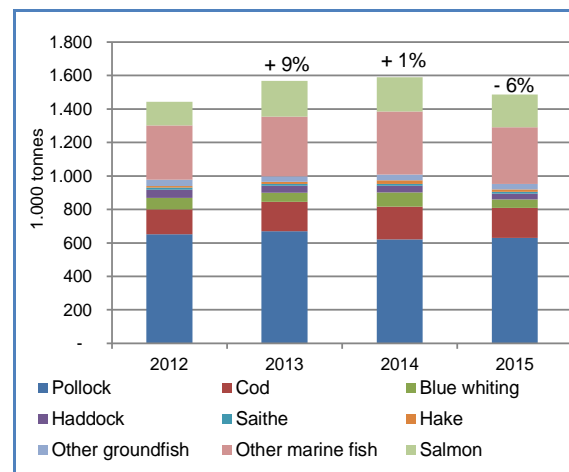
Russian frozen HG Alaska pollock, represents a major part of the Chinese imports of frozen raw material being thawed, filleted and processed, and re-exported. This trade is now well established partly because frozen HG is the main product form produced by the Russian pollock-fishing fleet.

Only some 15–20% of the pollock is frozen whole round for African markets, and less than 10% of the total catch volume is processed on-board to fillets and blocks. The rest of the catch is turned into frozen HG, the raw material for processing into double-frozen fillet- and block-products.

In 2015 and the first quarter of 2016, the value chain for Alaska pollock products, of which a majority goes to Germany and the rest of the EU market, has been disrupted by processing companies both in Europe and China, facing financial problems. This has also ended in bankruptcies, and banks are being far more cautious about giving credit lines to Chinese processors. Russian players are therefore starting to look for alternatives to China for processing pollock. In the longer term, ambitions in Russia include both modernising the fleet, including factory vessels for on-board processing, and establishing Russian plants in order to move processing activity from China to Russia.

Although, to a lower extent than for pollock, similar trends can be seen in other groundfish species and salmon concerning declining activity in re-processing for re-export. For the trade of shrimp, the trend is somewhat different. While imports of frozen whole shrimp increased from 2012 to 2015, the export of both processed and whole shrimp has decreased in the same period.

However, China's trade of shrimp predominantly consists of exports of domestically produced tropical shrimp, while imports, which are less significant, are probably being used for both domestic consumption and for some re-processing.

Figure 5-14 CHINESE IMPORTS OF FROZEN WHOLE/HG GROUND FISH AND SALMON in tonnes product weight

Source: EUMOFA/Chinese statistics (GTA).

DOMESTIC CONSUMPTION IN CHINA

From 2008 to 2013, seafood consumption (excl. aquatic plants) rose from 28,9 kg/capita to 33,85 kg/capita. Freshwater fish, which is the largest commodity group consumed by the Chinese, includes tilapia and different species of carp. In the same time period, the share of domestic sales of fresh fish and seafood (incl. aquatic plants) in the foodservice sector in China saw a slight increase every year, except 2009-2010, while the trend for retailers has been the opposite. In 2013, foodservices accounted for 30% of the total end-consumer sales in China, while retailers saw a market share of 55%.

FUTURE ASPECTS

With wages increasing in China, certain foreign companies have been and are continuing to look to other nations, including the Baltic countries and several Asian countries, where seafood could be processed in the future. Vietnam is one of the countries, in which several large scale companies in the pollock sector claim to be interested. The main thought behind the strategy is the shift in China from being a re-processing nation to becoming a consumption-driven nation.

Vietnam is not at this stage, yet. Also, Vietnam recently signed a Free Trade Agreement with the EU and another that includes Russia.

With China developing into a consumption-driven nation, there is a strong demand for food, and particular seafood. The country accounted for about 35% of global seafood consumption in 2014, a figure that is forecast to grow to 38% in 2030³⁸. This suggests that aquaculture will continue to grow strongly and that the Chinese fleet, where a significant part of the vessels are old and outdated, will be renewed.

³⁸ Fish to 2030: prospects for fisheries and aquaculture (The World Bank).

Table 5-1 SEAFOOD CONSUMPTION (EXCL. AQUATIC PLANTS) IN CHINA PER CAPITA IN KG

COMMODITY GROUP	2008	2009	2010	2011	2012	2013
Freshwater fish	13,4	14,1	14,97	15,48	15,96	15,87
Molluscs	6,94	7,67	7,96	8,1	8,9	8,85
Crustaceans	3,04	3,45	3,4	3,51	3,93	3,9
Demersal fish	3,51	3,26	3,33	3,41	3,42	3,4
Marine fish, other	0,76	1,29	1,38	1,35	1,45	1,44
Pelagic fish	1,25	0,86	0,58	0,4	0,39	0,39
Total	28,9	30,63	31,62	32,25	34,05	33,85

Source: FAO.

Table 5-2 DISTRIBUTION OF FRESH FISH AND SEAFOOD SALES IN CHINA

COMMODITY GROUP	2008	2009	2010	2011	2012	2013
Retail	57,5 %	56,4 %	56,4 %	55,6 %	55,0 %	54,8 %
Food service	27,5 %	28,6 %	28,6 %	29,4 %	30,0 %	30,2 %
Institutional	15,0 %	15,0 %	15,0 %	15,0 %	15,0 %	15,0 %
Total	100%	100%	100%	100%	100%	100%

Source: Euromonitor International, 2014.

Fisheries and aquaculture in Ecuador

This case study is available in the
Monthly Highlights N° 1-2018

6 Ecuador is notable for its production and trade of seafood products. Within fisheries production, Ecuador is the largest tuna harvester in the Americas, with exports of tuna products worth EUR 720 million in 2016. Within aquaculture, which in Ecuador's case is dominated by shrimp, the country ranked as the 10th largest producer in the world in terms of value and the 17th largest in terms of volume in 2015.

Ecuador is among the most important partner countries of the EU for seafood imports. In 2016, Ecuador ranked as the 5th most important supplier to the EU in terms of value and 7th in terms of volume³⁹. The EU imports from Ecuador consist mainly of shrimp (primarily frozen whole), and tunas (primarily canned).

PRODUCTION

CATCH

6.1 Ecuadorian catches are dominated by tunas and small pelagics, while minor volumes of sharks, rays, squid and demersal fish such as hakes, are also targeted by the Ecuadorian fleet. During the last 5 years, tuna and small pelagics have represented more than 90 % of the total catch volumes⁴⁰.

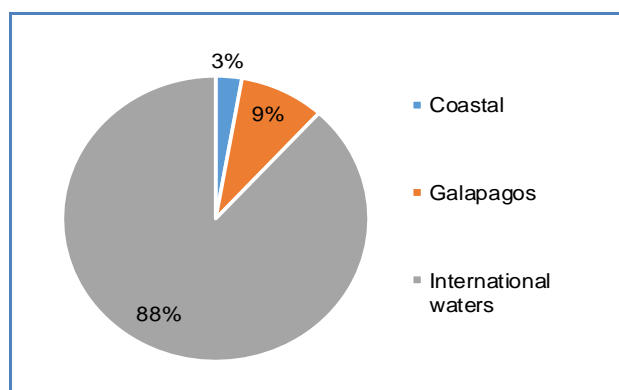
6.1.1 Tuna catches include skipjack, yellowfin and bigeye tuna, where the skipjack by far is the most important in terms of volume. The fleet of purse seiners targeting the tuna fisheries amounted to 116 vessels in 2016, which represents close to 50% of the whole fleet of tuna purse seiners operating in the Eastern Pacific Ocean⁴¹. The Ecuadorian fleet operates primarily in international waters (88% of its catch volume in 2016), but also in national waters around the Galapagos Archipelago (9%) and national coastal waters (3%)⁴².

Table 6-1 ECUADOR TUNA CATCHES - BY SPECIES (1000 tonnes)

Species	2000	2005	2010	2011	2012	2013	2014	2015	2016
Skipjack	103	107	102	174	174	189	193	214	195
Yellowfin	32	36	27	31	30	27	39	48	53
Bigeye	27	13	32	34	44	38	38	48	39
Total	162	157	161	240	248	254	270	310	287

Source: INP (Instituto Nacional de Pesca del Ecuador).

Figure 6-1 ECUADOR TUNA CATCHES - BY CATCH AREA



Source: INP (Instituto Nacional de Pesca).

There are 3 major landing ports for tuna: Manta, Guayaquil and Posorja. These ports serve the important tuna processing industry in the provinces of Manabí, Guayas and Santa Elena. In addition, the port of Guayaquil is the major hub for outbound maritime export shipments.

³⁹ Comext / EUMOFA

⁴⁰ FAO / INP

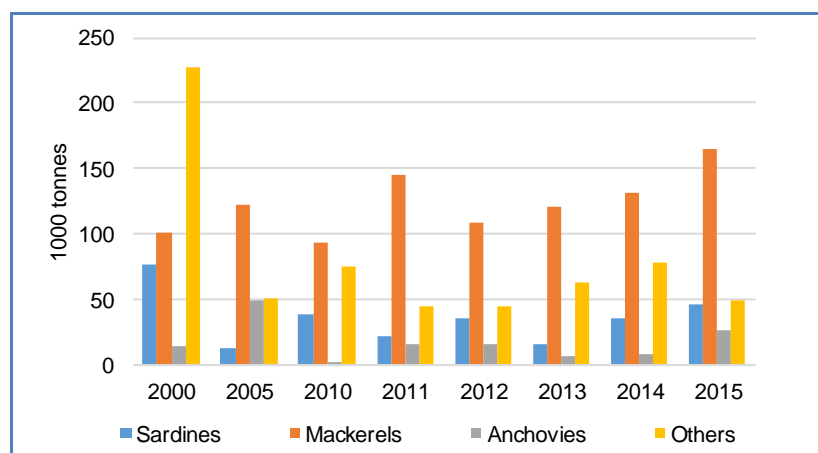
⁴¹ CNP (Camara Nacional de Pesca)

⁴² INP (Instituto Nacional de Pesca del Ecuador) - <http://www.institutopesca.gob.ec/>

The catches of small pelagics consist mainly of Pacific sardines, anchovies and mackerel. These species are landed mainly in the same ports as the tunas, but also in Esmeraldas⁴³. Small pelagics were historically the top species in terms of volume for Ecuador fisheries. In the mid 80's, more than 1 million tonnes were caught annually, and as late as in the mid 90's, annual catches were still around 0,5 million tonnes. Since then, however, the annual catches have declined to approximately 200–250 thousand tonnes in the last 15 years⁴⁴.

The majority of these catches, are destined for the fishmeal and fish oil sector, which also benefits from regular supplies of tuna trimmings and waste, as by-products from the canning industry. In the last 5 years, about 100.000 tonnes of fishmeal and 12–15.000 tonnes of fish oil have been exported from Ecuador. A certain share of the small pelagics, particularly sardines, is processed into canned fish and exported.

Figure 6-2 ECUADOR SMALL PELAGIC CATCHES - BY SPECIES CATEGORIES (1000 tonnes)

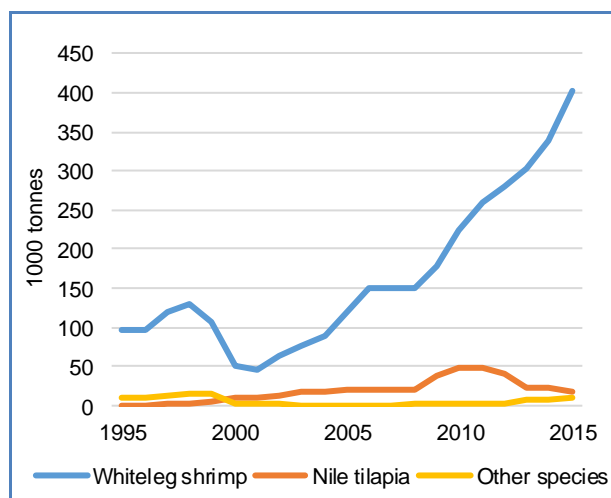


Source: INP (Instituto Nacional de Pesca).

⁴³ CNP report from January 2016; "Ecuador – A tuna leader" (<https://camaradepesqueria.com/wp-content/uploads/2016/03/ECUADOR-A-TUNA-LEADER.pdf>)

⁴⁴ INP

AQUACULTURE

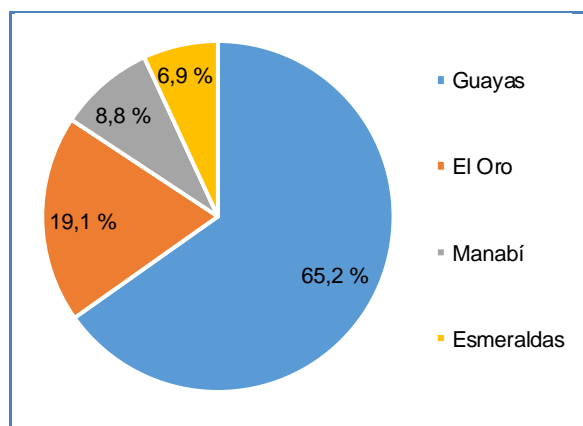
Figure 6-3 ECUADOR - AQUACULTURE PRODUCTION (1000 tonnes)

Source: FAO.

Ecuador was the first country in South America to reach a modern, industrialized level of shrimp farming. Already in the mid 80's, Ecuador produced more than 50.000 tonnes of whiteleg shrimp (*Litopenaeus vannamei*), while the rest of the continent produced less than 10.000 tonnes⁴⁵.

However, as a result of being the frontrunner of increased production, Ecuador also suffered severely by the white spot disease a few years after the Asian shrimp industry was affected: from 1999 to 2002, the production fell from about 130.000 tonnes to about 40.000 tonnes⁴⁶.

As a result, a large share of the pond area in Ecuador was shifted to stocking Nile tilapia instead, creating the first growth period of tilapia farming in Ecuador. The annual tilapia production grew from only 4.400 tonnes in 1999 to almost 50.000 tonnes in both 2010 and 2011, but since then production has declined, falling to less than 20.000 tonnes in 2015⁴⁷.

Figure 6-4 ECUADOR SHRIMP PRODUCTION AREA BY PROVINCE

Source: Subsecretaria de Acuacultura (MGAP), by Seafood Trade Intelligence Portal.

The reduction in tilapia has partially been a result of pond area once again shifting to shrimp whose production rapidly increased again, approaching a level of 400.000 tonnes annually in 2015. Although estimating a somewhat lower production level than FAO in 2015, a survey conducted by Global Aquaculture Association indicated expected growth rates in shrimp production of more than 5% per year for the period 2017–2019⁴⁸.

A notable share of the Ecuadorian shrimp producers still relies on extensive production methods - much more than Asian producers⁴⁹. Both the European market and increasingly, also Asian markets, have learned to appreciate the generally larger-sized and uniform Ecuadorian shrimp, sizes which most of the Asian shrimp producers have difficulties in supplying.

The province of Guayas represented more than 65% of the production area in Ecuador in 2015, with the rest distributed between El Oro (19,1%), Manabí (8,8%) and Esmeraldas (6,9%).

PROCESSING

Besides fishmeal and fish oil plants, most of the processing industry in Ecuador is focused on canned tuna, canned sardines and shrimp processing. In addition, a small filleting industry exports both fresh and frozen whitefish fillets.

The tuna processing industry is generally vertically integrated through companies controlling both the fishing vessels, the processing facilities, and integrated sales and export activities⁵⁰. Tuna catches by Ecuadorian vessels only account for about 50% of Ecuador's total tuna processing volume of approximately 500.000 tonnes; the rest of the processing industry's input needs is imported⁵¹.

The same structure with a high degree of vertical integration is found among the leading enterprises in the shrimp industry, controlling both the production, processing and sales/exports. The processing activity is however primarily limited to the sorting, freezing and packing of frozen whole shrimp. The main export category for Ecuadorian shrimp is frozen HOSO (head-on, shell-on)⁵².

The small filleting industry is supplied both by coastal fisheries for demersal species, primarily hakes, as well as from the tilapia farming sector.

⁴⁵ FAO.⁴⁶ FAO.⁴⁷ FAO.⁴⁸ GOAL 2017 Shrimp production survey (Global Aquaculture Alliance)⁴⁹ The Seafood trade intelligence portal (www.seafood-tip.com)⁵⁰ Cluster del Atun en conserva en Ecuador (P. Fuentala E./ Sebastian Rojas)⁵¹ The Seafood trade intelligence portal (<https://www.seafood-tip.com/sourcing-intelligence/countries/ecuador/>)⁵² The Seafood trade intelligence portal (www.seafood-tip.com) and GOAL 2017 Shrimp production survey

TRADE

Seafood exports from Ecuador have increased over the past 5–6 years, reaching EUR 3,56 billion in 2016. The export value has continued to increase through the first 3 quarters of 2017 with a growth rate of more than 15%. Compared to exports, the Ecuadorian import of seafood is minor and mainly consist of fishmeal, fish oil and tunas⁵³.

Table 6-2 ECUADOR SEAFOOD EXPORTS AND IMPORTS (million EUR and 1000 tonnes)

	2010	2011	2012	2013	2014	2015	2016
Export volume	497	621	640	700	765	773	829
Import volume	105	119	79	30	48	57	48
Export value	1.348	1.794	2.228	2.723	3.220	3.296	3.562
Import value	89	114	94	46	51	56	44

Source: EUMOFA / GTA.

Table 6-3 ECUADOR SEAFOOD EXPORTS BY MAJOR SPECIES (million EUR)

	2012	2013	2014	2015	2016
Shrimp	1.003	933	1.511	1.741	2.055
Tuna	675	826	800	686	720
Fishmeal/Fish oil	110	140	101	132	166
Small pelagics	44	61	76	86	69
Groundfish	6	56	62	51	24
Tilapia	0	32	14	20	23
Swordfish	13	13	16	26	16
Other freshwater fish	1	11	11	22	11
Other marine fish	361	211	161	166	162
Other	14	441	468	365	314
Total	2.228	2.723	3.220	3.296	3.562

Source: EUMOFA / GTA.

Table 6-4 ECUADOR SEAFOOD EXPORTS BY MAJOR COUNTRIES OF DESTINATION (million EUR)

	2012	2013	2014	2015	2016
Spain	286	326	321	373	418
France	147	205	205	200	213
Italy	170	194	199	166	203
Netherlands	46	93	113	88	94
Other EU	168	208	177	151	171
Total EU	816	1.026	1.016	979	1.100
Vietnam	110	241	472	708	1.008
USA	650	682	833	776	726
Colombia	94	124	142	142	155
China	69	103	126	212	150
Argentina	47	52	42	55	55
All others	442	494	588	425	368
Total	2.228	2.723	3.220	3.296	3.562

Source: EUMOFA / GTA.

Tropical (farmed) shrimp comprises most of the exports, with nearly 60% of the total seafood export in terms of value in 2016 (EUR 2,05 billion out of a total of EUR 3,56 billion). In terms of volume, the share of shrimp was less than 40% in 2016 (326.000 tonnes out of a total of 829.000 tonnes), indicating that shrimp is among the export products that achieve the highest unit values per kg.

The EU has been an important trading partner for Ecuadorian shrimp and purchased more than 50% of Ecuador's exports back in 2010. Since then, other markets have gained a growing share of Ecuador's shrimp exports, at the expense of EU's share. The share going to the EU declined to less than 30% in 2015 and 2016, and to less than 25% during the first 10 months of 2017. Due to the rapidly increasing production, the annual export volume destined for EU has remained strong, from 80.000 tonnes in 2010,

⁵³ EUMOFA / GTA – Bilateral trade

to 91.000 tonnes in 2016. For the period January to October 2017, exports to the EU amounted to 76.200 tonnes, compared to 80.600 tonnes in the same period of 2016 (-6%).

The Ecuador export market with the greatest growth is Vietnam, which grew from less than 1% of Ecuador's export value for shrimp in 2010 to nearly 50% in 2016 and is still on the increase. The other large importer in Asia is China, but parallel to Vietnam's growth, exports to China have declined. It is believed that a notable share of the product going to Vietnam still has China as the final destination.

Table 6-5 ECUADOR SHRIMP EXPORT BY MAJOR COUNTRIES

	Export volume (in 1000 tonnes)				Export value (in mill EUR)			
	2014	2015	2016	Change 16/15	2014	2015	2016	Change 16/15
Viet Nam	60	104	151	46%	369	604	889	47%
United States	57	53	49	-7%	399	338	348	3%
Spain	25	28	32	18%	143	155	201	30%
France	23	28	28	3%	140	152	169	11%
Italy	20	18	19	9%	131	105	128	22%
China	13	26	11	-59%	83	155	66	-57%
Others	34	34	35	5%	248	231	254	10%
Total	232	289	326	13%	1.511	1.741	2.055	18%
EU subtotal	80	83	91	10%	504	489	588	20%

Source: EUMOFA / GTA.

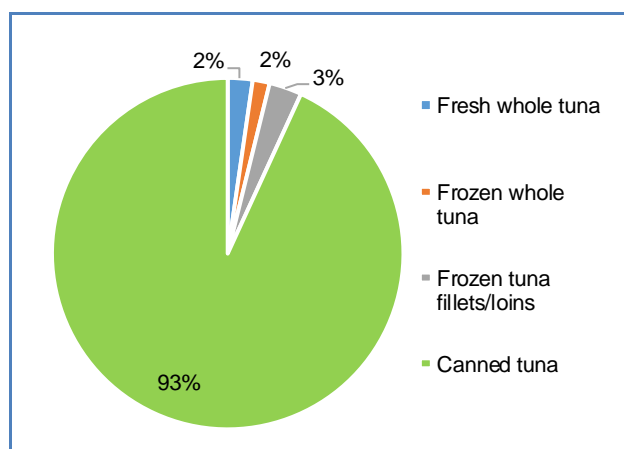
In 2016, the top 5 importing Member States of frozen shrimp in terms of value were Spain (36% of EU imports), France (33%), Italy (27%), the UK (4%) and the Netherlands (3%).

Tuna constitutes approximately 25% of the volume and 20% of the value of the total FOB exports. Over the period 2011 – 2016, the EU became increasingly important for Ecuadorian tuna exports, representing 58% of the total tuna export value in 2016 (EUR 414,4 million), compared to 42% in 2011 (EUR 191,8 million). During the first 9 months of 2017, the EU's share has increased to 68%.

Table 6-6 ECUADOR TUNA EXPORTS BY MAJOR COUNTRIES

	Export volume (in 1000 tonnes)				Export value (in mill EUR)			
	2014	2015	2016	Change 16/15	2014	2015	2016	Change 16/15
Spain	38	51	51	-2%	119	170	188	11%
United States	17	20	20	1%	89	112	111	-1%
Netherlands	22	17	20	17%	86	69	72	5%
Colombia	19	17	20	18%	56	56	67	20%
Italy	8	5	9	72%	35	21	41	97%
Argentina	9	11	11	-1%	29	37	39	4%
Germany	14	11	10	-4%	51	36	33	-7%
United Kingdom	10	9	9	1%	32	26	27	3%
France	9	7	7	-9%	30	28	26	-6%
Others	68	43	37	-14%	274	133	118	-11 %
Total	214	191	193	1%	800	686	720	5%
EU subtotal	106	108	115	6%	371	372	414	11%

Source: EUMOFA/GTA.

Figure 6-5 TUNA EXPORTS BY CATEGORY (in value in 2016)

Source: EUMOFA/GTA.

In 2016, the top 5 EU importers of canned tuna in terms of value were Spain (45% of EU imports), the Netherlands (17%), Italy (10%), Germany (8%) and the UK (7%).

More than 90% of the tuna export value of Ecuador is represented by canned tuna, and the rest is frozen and fresh tuna loins (fillets). The fresh tuna exports are primarily directed towards the USA, while Spain and the USA are the major buyers of frozen loins.

For a number of years, EU imports from Ecuador have enjoyed beneficial import duty rates, because Ecuador is an eligible economy within the framework for EU's Generalized System of Preferences (GSP+) system. As a result, canned tuna imports are dutiable at zero %, as compared to a general import duty rate of 24%. This preferential import scheme has also allowed a 3,6% import duty for frozen raw shrimp, rather than 12% for other "Most-Favoured-Nation" (MFN) countries and has altogether been an important factor facilitating the seafood trade from Ecuador to the EU⁵⁴.

During 2014, there was some uncertainty whether Ecuador from 2015 onwards would still be eligible for the GSP+ scheme. The preferential tariffs were extended until December 31 of 2016. In January 2017, Ecuador joined the EU-Peru-Colombia Free Trade Agreement which was signed in 2012. As a result, all seafood products from Ecuador now enjoy duty-free access to the EU⁵⁵.

⁵⁴ www.eafe2015.unisa.it – Conference papers.

⁵⁵ Protocol of Accession of Ecuador to the EU-Colombia/Peru Trade Agreement - (<http://trade.ec.europa.eu/doclib/press/index.cfm?id=1261>)

Fisheries and aquaculture in the Faroe Islands

This case study is available in the
Monthly Highlights N° 6-2018

7 INTRODUCTION

The Faroe Islands are an archipelago located between Iceland and Scotland in the North-East Atlantic. The country is a self-governed nation under the external sovereignty of Denmark⁵⁶. It is known for its aquaculture production of Atlantic salmon and for being a large fishing nation, especially regarding fishing of pelagic species. Faroese fishermen harvest a large variety of species within their 200-mile exclusive fisheries zone (EFZ), in international waters and in other countries' EFZs through fisheries agreements⁵⁷.

7.1

Despite its small population (50.844 inhabitants on 1 May 2018) and size (1.393 km²), the Faroe Islands are a significant player in the global seafood market and export a wide range of products from different species. According to the Faroese government, seafood represents 90-95% of all exports from that country. In 2017, 41% of the seafood exports volume was destined for EU markets, with the Netherlands, Denmark and the United Kingdom being the largest importers.

The fisheries and aquaculture sector provides more than 14% of all Faroese jobs or 3.764 jobs in March 2018 (1.501 in the fishing sector, 963 in aquaculture and 1.300 in fish processing) out of a total of 26.358 jobs⁵⁸.

The catch of marine finfish and aquaculture production dominates the Faroese seafood industry. The catch of crustaceans and molluscs is relatively small.

Table 7-1 FISHERIES AND AQUACULTURE IN THE FAROE ISLANDS 2000-2016 (1000 tonnes)

Species	2000	2005	2012	2013	2014	2015	2016
Marine fish	438	553	348	477	533	578	561
Crustaceans	13	7	5	4	5	5	5
Molluscs	4	5	7	5	5	3	3
Aquaculture	29	20	63	63	71	66	68
Total	483	585	423	550	614	652	637

Source: FAO, Hagstova – Faroese statistics agency.

⁵⁶ Faroeislands.fo - <https://www.faroeislands.fo/the-big-picture/in-brief/>

⁵⁷ Faroeislands.fo- a fishing nation with proud traditions. <https://www.faroeislands.fo/economy-business/fisheries>

⁵⁸ Hagstova – Faroese statistics agency - <http://www.hagstova.fo/en>

PRODUCTION

FISHERIES

The most important fish species for Faroese capture fisheries include cod, haddock and saithe, along with pelagic species such as herring, blue whiting and mackerel. The whitefish species sold mostly to the EU market have the highest value per kg. In 2017, cod exported from the Faroe Islands to the EU commanded an average price of 4,3 EUR/kg. Blue whiting had the lowest price (0,38 EUR/kg in average)⁵⁹. Catches of blue whiting are typically destined for the production of fishmeal and fish oil.

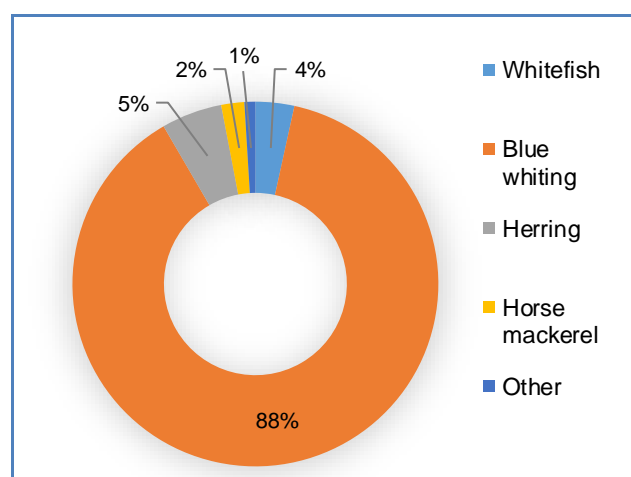
- 7.2 The Faroese commercial fishing fleet comprises long liners, gill netters, single and pair trawlers, purse seiners and a number of ocean-going factory vessels, as well as smaller coastal vessels. The Faroese fleet consists of about 240 vessels above 20 Gross Tonnage (GT) and about 1.000 smaller vessels⁶⁰.

Table 7-2 FAROE ISLANDS FISHERIES CATCH, MAIN SPECIES IN TERMS OF VOLUME (in 1000 tonnes)

Species	2000	2005	2012	2013	2014	2015	2016
Blue whiting	153	267	43	83	226	282	282
Atlantic mackerel	21	10	107	145	150	107	94
Atlantic herring	65	72	51	116	43	42	55
Saithe	36	76	39	30	27	28	32
Cod	33	36	30	32	36	40	37
Capelin	60	20	30	29	8	30	8
Haddock	16	25	5	6	5	7	7
Greenland halibut	6	2	4	4	4	4	6
Other species marine fish	48	46	39	34	32	37	38
Total	438	553	348	477	533	578	561

Source: FAO.

Figure 7-1 EU CATCH IN FAROES WATERS (2017)



Source: Hagstova – Faroese statistics agency.

The Faroe Islands participate in international fishery associations and have different agreements with other coastal countries regarding shared fish stocks.

In December 2017, the EU and the Faroe Islands reached an agreement on fisheries opportunities. The EU was granted access to mackerel, blue whiting and herring in Faroese water territories and a quota of each species was set. In return, the Faroe Islands were granted access to the same quota for the same species in specific EU waters in the North Sea⁶¹.

The EU catch in Faroese territory was approximately 22.450 tonnes in 2017, 88% of which represented by blue whiting⁶².

⁵⁹ EUMOFA.

⁶⁰ House of industry - <http://www.industry.fo/international-edition/branch-associations/the-faroe-islands-fish-producers-association/the-faroese-fishing-industry>

⁶¹ https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/2018-agreed-record-eu-faroe-islands_en.pdf

⁶² Hagstova – Faroese statistics agency - <http://www.hagstova.fo/en>

AQUACULTURE

Even though a very limited volume of trout was harvested in 2015, trout production was in reality discontinued since 2010. Factors influencing this development were high anti-dumping duties imposed for Faroese trout on the EU market in 2004, and higher market prices for farmed Atlantic salmon. The aquaculture industry in the Faroe Islands now consists of a few players producing Atlantic salmon. The largest producer operates within a fully integrated company that control the value chain from feed and smolt to processing and export.

7.2.2 The farming of Atlantic salmon is an important part of the Faroese seafood industry. The ocean conditions with strong currents and relatively stable temperatures are ideal for fish farming. Due to problems with disease in the early 2000s, in 2003 the Faroese government implemented strict regulations in the aquaculture industry. The goal was to create a sustainable salmon production so to ensure both fish welfare and quality⁶³. The regulations state that each production site is limited to only one generation of salmon and that in between generations the site has to be emptied, cleaned and lie fallow for a minimum of two months.

Table 7-3 FAROE ISLANDS AQUACULTURE PRODUCTION (volume in tonnes)

Species	2000	2005	2013	2014	2015	2016	2017
Atlantic salmon	27.477	15.549	63.266	70.893	66.090	68.271	71.172
Trout	1.184	4.044	0	72	0	0	0
Total	28.661	19.593	63.266	70.965	66.090	68.271	71.172

Source: Hagstova – Faroese statistics agency.

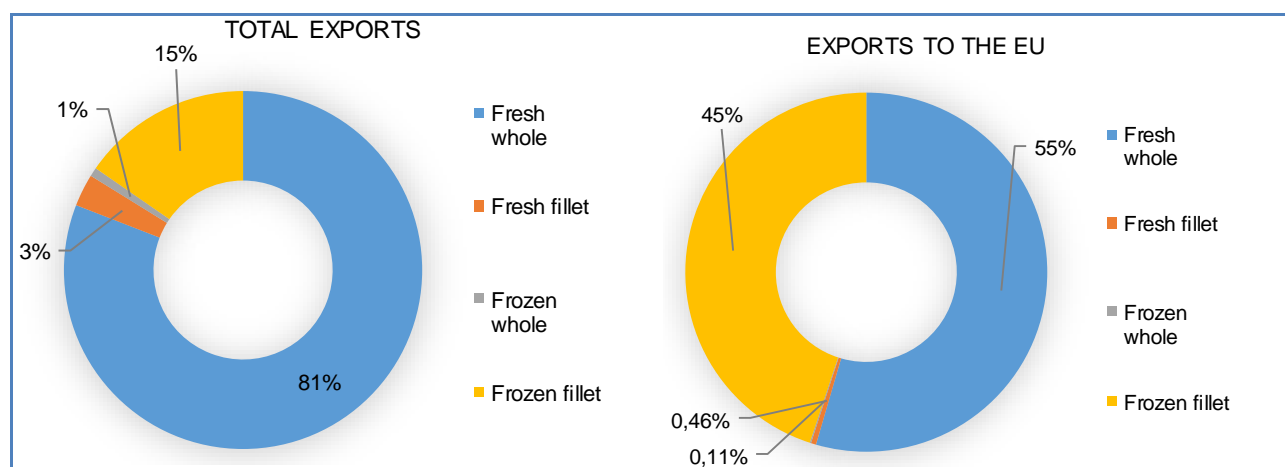
SEAFOOD PROCESSING

7.3 The seafood processing industry in the Faroe Islands is diverse. The catch of pelagic species such as mackerel and herring typically goes into production of fish oil and fishmeal. The products are then either used in fish feed production on the Faroe Islands or exported to Europe for various purposes. Frozen whole mackerel and herring are also exported directly from the Faroe Islands for production of fish oil and fishmeal elsewhere.

The catch from fisheries is exported fresh to Scotland or Denmark or processed in factories on the Faroe Islands. The catch is processed into fillets, both fresh and frozen, or salted before export⁶⁴. Of the catch from fisheries exported to the EU, approximately 70% are frozen products⁶⁵.

The companies producing Atlantic salmon have their own processing facilities: salmon is mainly exported as fresh whole fish and frozen fillets.

Figure 7-2 FAROESE TOTAL EXPORTS OF SALMON AND EXPORTS TO THE EU OF SALMON BY PRESERVATION AND PRESENTATION STATE



Source: EUMOFA

⁶³ <https://www.faroeislands.fo/economy-business/aquaculture/>

⁶⁴ VMF - <http://www.vmf.fo/industries/>

⁶⁵ EUMOFA.

TRADE

Since 1997, the Faroe Islands have had a free trade agreement with the EU, by which fresh and chilled fish is duty free⁶⁶.

In addition, the most important frozen fish products (in terms of volume and value) can also be sold to the EU market free of duties. The same applies also for important processed fish products⁶⁷. The country has also free trade agreements with Iceland, Norway and Switzerland. The Faroe Islands also benefit from being the only country in the North of Europe not included in the Russian import ban imposed in 2014. This makes the country the only foreign supplier of fresh farmed salmon to the Russian market. The import ban also gives the Faroe Islands an advantage with other seafood products on the Russian market, as the import ban also includes other species. In 2010 Russia imported 5 thousand tonnes of seafood from the Faroe Islands, in 2017

7.4 the country imported 156 thousand tonnes. The Russian import of herring, mackerel and salmon from the Faroe Islands have especially increased.

IMPORT

Imports of fisheries and aquaculture products in the Faroe Islands are minor compared to the level of exports from the country. Imports totalled EUR 40.788 in 2017, compared to exports valued at EUR 1.063 million. Hagstova reports that the seafood/marine products imported are recorded as "Raw materials for fish production". These products were worth approx. EUR 40.800 in 2017, of which EUR 17.300 is represented by products coming from EU Member States. Most likely, these amounts refer to landings of marine fish from foreign vessels in the Faroe Islands. The statistics do not distinguish between different species that this raw material originates from.

7.4.1

Table 7-4 IMPORT OF RAW MATERIALS FOR FISH PRODUCTION (value in EUR)

Country of origin	2013	2014	2015	2016	2017
EU-28	5.343	8.140	7.108	9.123	17.273
Other European countries	16.574	6.407	15.612	17.286	22.076
Other	701	2.017	1.817	2.796	1.438
Total	22.618	16.565	24.537	29.206	40.788

Source: Hagstova – Faroese statistics agency.

EXPORT

7.4.2

Faroese exports of fisheries and aquaculture products are mostly destined for the EU. They have followed an upward trend in recent years, hitting 202.000 tonnes in 2016 and 2017. The main species or products imported by the EU are mackerel, herring, blue whiting, fishmeal, cod and saithe.

Table 7-5 FAROESE EXPORTS OF FISHERIES AND AQUACULTURE PRODUCTS (volume in 1000 tonnes)

Markets	2013	2014	2015	2016	2017
EU-28	176	192	151	202	202
Russia	70	62	118	108	156
Norway	30	25	37	72	59
Nigeria	52	46	38	11	20
USA	15	15	13	15	13
China	14	16	11	12	13
Total	356	357	369	420	462

Source: EUMOFA.

Table 7-6 FAROESE EXPORTS OF FISHERIES AND AQUACULTURE PRODUCTS (value in million EUR)

Markets	2013	2014	2015	2016	2017
EU-28	404	417	379	469	506
Russia	83	131	237	243	319
USA	86	88	80	121	104
China	53	52	48	76	62
Norway	27	29	43	50	59
Nigeria	61	48	41	10	12
Total	714	764	827	969	1.063

Source: EUMOFA.

⁶⁶ <https://www.government.fo/en/foreign-relations/missions-of-the-faroe-islands-abroad/the-mission-of-the-faroes-to-the-european-union/the-faroe-islands-and-the-european-union/free-trade-agreement/>

⁶⁷ Government.fo - Free trade between the Faroe islands and the European community

Denmark mainly imports marine products from the Faroe Islands, for non-food use, such as fishmeal and blue whiting. Only small amounts of whitefish is exported by the Faroe Islands to Denmark. The Netherlands mainly imports pelagic fish such as mackerel, herring and blue whiting. To the United Kingdom, exports mainly consist of cod, haddock and fishmeal. Germany mainly imports mackerel.

Table 7-7 FAROESE EXPORTS OF FISHERIES AND AQUACULTURE PRODUCTS TO THE EU (volume in 1000 tonnes)

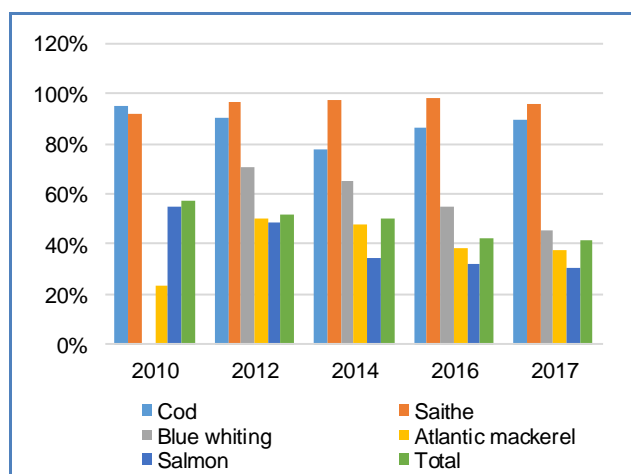
Country of destination	2013	2014	2015	2016	2017
Denmark	48	52	29	63	37
Netherlands	32	53	42	44	56
United Kingdom	23	23	17	26	29
Germany	25	18	13	16	28
Poland	10	13	12	17	17
France	10	10	8	11	8
Spain	6	5	8	6	7
Italy	5	5	6	6	7
Total	160	178	136	191	187

Source: EUMOFA.

Table 7-8 FAROESE EXPORTS OF FISHERIES AND AQUACULTURE PRODUCTS TO THE EU (value in million EUR)

Countries of destination	2013	2014	2015	2016	2017
United Kingdom	91	88	78	112	103
Netherlands	72	85	48	68	104
Germany	52	53	64	77	65
United Kingdom	39	45	36	41	61
France	42	38	36	49	33
Poland	23	23	36	31	39
Spain	30	27	27	33	34
Italy	23	24	26	24	28
Total	372	383	350	437	467

Source: EUMOFA.

Figure 7-3 EU SEAFOOD IMPORTS FROM FAROE ISLANDS (% SHARE OF TOTAL EXPORT VOLUME)

Source: EUMOFA.

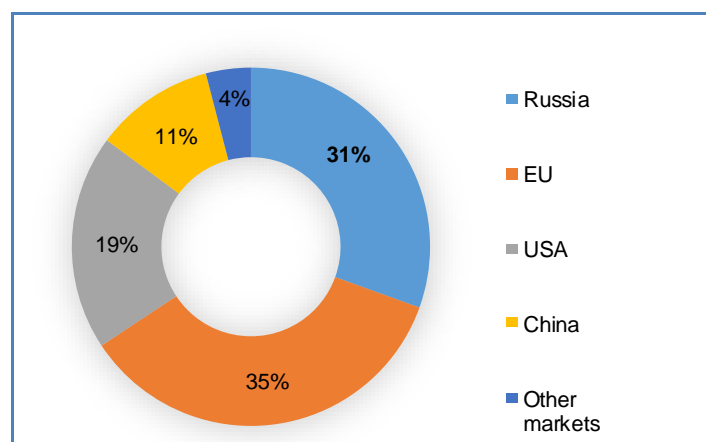
The EU imports a number of species from the Faroe Islands. For cod and saithe, almost all of the Faroese catch is exported to the EU, with an export share of 90% for cod and 96% for saithe in 2017. In 2012, the EU imported 71% of the blue whiting catch on the Faroe Islands; in 2017 the share had fallen to 46%.

Of all seafood exports from the Faroe Islands in 2017, 41% went to the EU – a decline from a 57% share in 2010.

EXPORT OF SALMON

In recent years, destination countries of Faroese exports have changed dramatically. In 2010, Russia had a share of only 1% of the total salmon export volume. After the Russian import ban was imposed in 2014 for other European countries, Russia accounted for 34% of the volume of salmon exported from the Faroe Islands in 2017. The EU share dropped from 55% in 2010 to 31% in 2017.

7.4.3

Figure 7-4 MAIN MARKETS FOR FAROESE EXPORTS OF AQUACULTURE (% in value)

Source: EUMOFA.

Table 7-9 FAROESE EXPORTS OF SALMON (volume in 1000 tonnes and value in million EUR)

Market	2015		2016		2017	
	Volume	Value	Volume	Value	Volume	Value
Russia	21	123	17	121	21	159
EU	13	109	20	169	19	183
USA	12	78	14	119	12	101
China	8	42	9	70	7	56
Other markets	2	14	2	13	3	21
Total	56	367	61	492	62	520

Source: EUMOFA.

7.5

PERSPECTIVES AND FUTURE DEVELOPMENT

In December 2017, the Faroese parliament passed a bill that represents a major reform for the national fisheries management. The goal is to ensure that the natural resources from the ocean are beneficial to the Faroese. To add more value in the industry, the legislation requires that all fish caught in Faroese waters should be landed in the Faroe Islands, and vessels will eventually be required to land all parts of the fish, to eliminate discards⁶⁸.

Fishing licences may only be granted to Faroese-owned operators. In order to take part in Faroese fisheries, the company or individual must be registered and pay taxes in the Faroe Islands, as well as pay their crew in accordance with Faroese labour market rules and agreements. A six-year period for the phasing out of foreign ownership will be implemented⁶⁹.

Subsidies to the fishing industry, which amounted to DKK 172,6 million in 1995, steadily decreased to DKK 2,4 million (328.000 EUR) in 2017. In the 1990's and 2000's the subsidies were mainly wage and investment subsidies, whereas at present they are limited to transport subsidies.

On the trade side, the Faroe Islands has been in negotiations with Russia aiming to reach a free trade agreement (FTA). Negotiations are ongoing with the Eurasian Economic Union (EAEU) which includes Russia, Belarus, Kazakhstan, Armenia and Kyrgyzstan.

In addition, the country signed a FTA with Turkey in 2017, which is yet to be implemented. The Faroe Islands have also reached a trade deal with China: as from January 2018, the two countries will have a veterinary agreement that will regulate, among other things, mackerel exports.

⁶⁸ Government.fo – The Faroese parliament passes fisheries reform (<https://www.government.fo/en/news/news/the-faroese-parliament-passes-fisheries-reform/>)

⁶⁹ Government.fo – The Faroese parliament passes fisheries reform (<https://www.government.fo/en/news/news/the-faroese-parliament-passes-fisheries-reform/>)

Fisheries and aquaculture in Ghana

This case study is available in the
Monthly Highlights N° 8-2018

INTRODUCTION

8 Ghana is located along the Gulf of Guinea in west Africa, bordering Ivory Coast in the west and Togo in the East. It has a substantial fish stock and a strong tradition for both catch and consumption of seafood. As many as 2,2 million people are dependent on the fisheries sector for their livelihoods. The fish stocks are heavily overexploited, and they depend on imports to cover their annual demand⁷⁰.

8.1 Ghana has a territorial sea of 12 nautical miles (Nm), a contiguous zone of 24 Nm and an Exclusive Economic Zone (EEZ) of 200 Nm, covering an area of 225.000 km². With this combination of valuable attributes, and a 550-kilometre coastline which stretches from Aflao in the East to Half Assini in the West, Ghana's fisheries sector contributes significantly towards sustainable livelihoods, food security and poverty reduction⁷¹.

The fisheries sector in Ghana is estimated to contribute 3% to the total GDP and 5% of the value of agricultural production. About 10% of the country's population is engaged in various aspects of the fishing industry⁷². In 2016, the country had production of 379.000 tonnes from marine fisheries and inland waters. In 2017, they imported 357.000 tonnes. The imported species are mainly mackerel species and small pelagics imported from Mauritania, Morocco and Belgium among others⁷³. Detailed information on the main importing countries can be found in table 11 and 12.

The catch of marine fish and freshwater fish (from Lake Volta) dominates the fisheries industry.

Table 8-1 FISHERIES IN GHANA 2000–2016 (volume in 1000 tonnes)

Species	2000	2005	2012	2013	2014	2015	2016
Marine fish	371	287	266	202	190	239	229
Freshwater fishes	80	76	117	122	128	135	142
Crustaceans	1,6	4,2	3,6	2,8	1,3	0,9	0,9
Diadromous fishes	3,3	5,5	4,4	3,3	2,9	13,0	4,3
Molluscs	1,8	2,5	2,0	2,6	3,9	3,4	3,7
Total	457	375	393	333	326	391	379

Source: FAO.

8.2

MARINE FISHERIES PRODUCTION

The structure of the marine fishing industry in Ghana can be categorized into four identifiable groups, namely the artisanal, semi-industrial (inshore sector), industrial (deep sea) and tuna-targeting fleets⁷⁴. The pelagic species mainly go for local consumption, while a large share of tuna is exported. Ghana's catches from marine fisheries have declined in recent years. The catch of pelagic species has especially been reduced, probably due to problems with managing stocks as well as illegal, unregulated and unreported fishing (IUU). Between 2000 and 2016, total catches fell by 37%, from 364.000 tonnes to 229.000 tonnes.

The EU distant-water fishing fleets have been targeting tropical tunas in the Gulf of Guinea since the 1950s, today they catch about 10% of their global tuna catches in the Atlantic Ocean. Although the EU has never concluded a fisheries agreement with Ghana, the EU fleet has been fishing in Ghana's waters under private licences since 2007⁷⁵.

Table 8-2 GHANA MARINE FISHERIES CATCHES, MAIN SPECIES (volume in 1000 tonnes)

Species	2000	2005	2012	2013	2014	2015	2016
Round sardinella	102	64	25	26	21	23	27
European anchovy	84	36	50	8	6	5	13
Skipjack tuna	35	54	56	45	49	61	51

⁷⁰ <https://www.mofad.gov.gh/projects/west-africa-regional-fisheries-programme/warfp-ghana-project-overview>

⁷¹ <http://www.fao.org/fishery/facp/GHA/en>

⁷² <http://gipcghana.com/21-investment-projects/agriculture-and-agribusiness/fishing-and-aquaculture/300-investing-in-ghana-s-fishing-industry.html>

⁷³ EUMOFA.

⁷⁴ <http://gipcghana.com/21-investment-projects/agriculture-and-agribusiness/fishing-and-aquaculture/300-investing-in-ghana-s-fishing-industry.html>

⁷⁵ <https://publications.europa.eu/en/publication-detail/-/publication/0750e79f-fff2-11e6-8a35-01aa75ed71a1>

Yellowfin tuna	12	13	10	9	12	13	19
Bigeye tuna	5	9	9	11	10	12	5
Atlantic chub mackerel	28	6	8	4	4	4	2
Bigeye grunt	10	17	13	7	7	13	15
Madeiran sardinella	15	14	9	7	5	6	2
Other	72	73	85	86	76	101	94
Total	364	287	266	202	190	239	229

Source: FAO.

ILLEGAL FISHING

In November 2013, Ghana was issued a “yellow card” sanction from the European Commission due to their failure to take sufficient actions against IUU fishing activities⁷⁶. Following the sanction, Ghana has made progress in improving the governance of the fisheries sector and in combating IUU.

- 8.2.1 Through the West Africa Regional Fisheries Program (WARFP), the country has put in place fisheries legislative measures, international collaboration and resources to manage and regulate the fisheries sector. In October 2015, the “yellow card” sanction was lifted as the European Commission (EC) removed Ghana from their IUU watch list⁷⁷ and recognized the country for their strong commitment against IUU⁷⁸. After 2015, Ghana has expressed an interest in concluding a sustainable fisheries partnership agreement with the EU. An evaluation report for the EC was made in 2016, assessing the feasibility of setting up a Sustainable Fisheries Partnership Agreement (SFPA) and Protocol between the European Union (EU) and Republic of Ghana⁷⁹.

INLAND FISHERIES PRODUCTION

- 8.3 The inland fishery is considered as small-scale/artisanal. The Lake Volta reservoirs and coastal lagoons are the main sources of inland or freshwater fish. There are about 80.000 fishermen and 20.000 fish processors and traders engaged in the Lake Volta fishery. There are 17.500 canoes actively fishing in the Lake Volta. The fishing gears used are: cast and gillnets, hook and line, traps, spears and atidja (brush park)⁸⁰. The inland fisheries catch was 142.000 tonnes in 2016⁸¹.

8.4 AQUACULTURE PRODUCTION

Aquaculture has only recently emerged as an assured way of meeting the deficit in Ghana's fish demand. It is seen as the more sustainable way to bridge the gap between domestic demand and supply⁸². The aquaculture sub-sector comprises mainly small-scale subsistence farmers who practice extensive aquaculture in earthen ponds⁸³. The species produced in Ghanaian aquaculture is mainly Nile tilapia, and North African catfish and African bonytongue in small volumes. Nile tilapia is the main species produced through aquaculture with a harvest volume of 50.900 tonnes, which represents 97% of the total aquaculture production (52.480 tonnes) in 2016. The aquaculture production of tilapia has grown steadily, since 2010 when only 9.400 tonnes were harvested.

⁷⁶ http://europa.eu/rapid/press-release_IP-15-5736_en.htm

⁷⁷ <https://www.modernghana.com/news/822962/ghana-makes-progress-in-combating-illegal-fishing.html>

⁷⁸ http://europa.eu/rapid/press-release_IP-15-5736_en.htm

⁷⁹ <https://publications.europa.eu/en/publication-detail/-/publication/0750e79f-ff2-11e6-8a35-01aa75ed71a1>

⁸⁰ Research gate- value chain analysis Ghana fisheries.

⁸¹ FAO.

⁸² <https://www.mofad.gov.gh/projects/west-africa-regional-fisheries-programme/warfp-ghana-project-overview/>

⁸³ <http://gipcghana.com/21-investment-projects/agriculture-and-agribusiness/fishing-and-aquaculture/300-investing-in-ghana-s-fishing-industry.html>

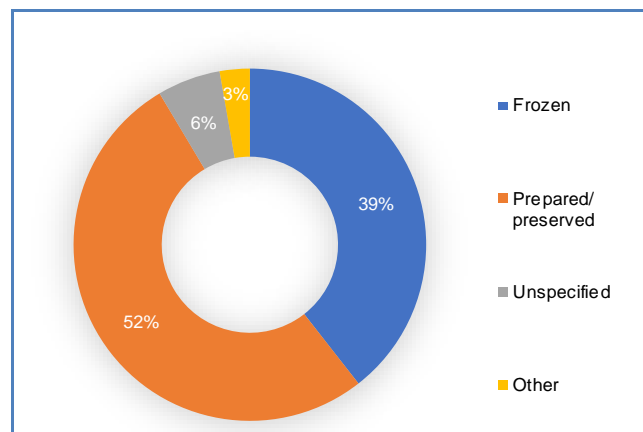
TRADE**EXPORT**

Tuna represents the main fisheries product currently exported from Ghana. Stocks, managed by the ICCAT, can sustain current catch levels from industrial purse seiners and pole-and-line vessels.

8.4 The export of fisheries products from Ghana has fluctuated in recent years, with a large increase from 2016 to 2017. The largest EU importer of products from Ghana is currently the UK which imports mostly canned tuna.

8.5 Tuna is mainly exported as frozen whole or in cans to China, Iran, Thailand and the EU.

Figure 8 1 GHANA'S EXPORTS OF FISHERIES PRODUCTS BREAKDOWN BY PRESERVATION STATE IN VALUE IN 2017



Source: EUMOFA.

Table 8-3 GHANA EXPORT VOLUME BY MAIN COMMERCIAL SPECIES (volume in tonnes)

Species	2012	2013	2014	2015	2016	2017
Tuna, yellowfin	987	1.119	9	6.566	8.271	15.250
Other flatfish	0	4.068	4.178	2.719	6.641	4.310
Tuna, miscellaneous	1.915	1.307	151	565	356	14.041
Other marine fish	7.719	2.529	1.506	1.892	1.624	1.238
Other	1.824	2.893	5.279	2.405	5.338	16.899
Total	12.445	11.915	11.124	14.147	22.229	51.738

Source: EUMOFA.

Table 8-4 GHANA'S EXPORT VOLUME OF FISHERIES PRODUCTS, BY COUNTRY OF DESTINATION (volume in tonnes)

Markets	2012	2013	2014	2015Is	2016	2017
China	3.673	6.074	5.411	5.446	12.188	10.914
Ivory Coast	880	2.168	0	6.566	5.254	1.137
Iran	815	111	0	0	806	9.533
Thailand	833	0	0	0	0	7.285
United Kingdom	11	10	10	5	4	5.896
Spain	1.139	847	1.530	694	591	438
Japan	58	3	0	0	141	4.605
Italy	695	426	555	0	74	2.272
France	214	754	76	0	0	2.496
Portugal	1.031	175	334	466	132	759
Other	3.096	1.347	3.207	969	3.040	6.404
Total	12.445	11.915	11.124	14.147	22.229	51.738

Source: EUMOFA.

Table 8-5 GHANA'S EXPORT VALUE OF FISHERIES PRODUCTS, BY COUNTRY OF DESTINATION (value in EUR 1000)

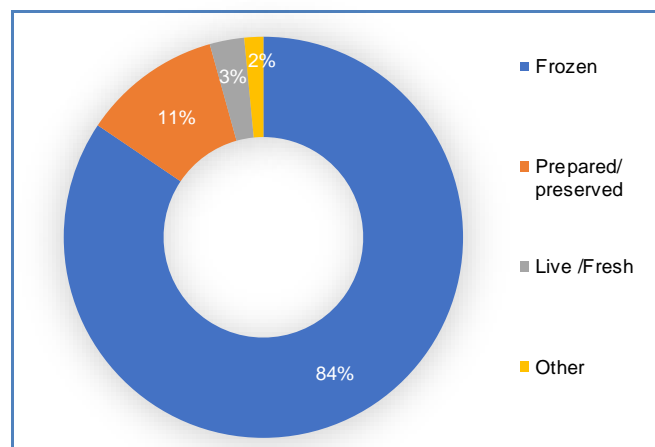
Markets	2012	2013	2014	2015	2016	2017
United Kingdom	8	12	13	3	1	23.325
China	1.917	3.126	2.115	1.717	4.020	6.505
Iran	738	43	0	0	707	12.038
France	308	1.020	83	0	0	11.108
Ivory Coast	741	3.055	0	3.740	2.326	1.932
Thailand	604	0	0	0	0	8.800
Germany	0	4	7	0	0	9.194
Italy	279	206	95	0	432	7.940
Portugal	1.545	253	431	1157	420	3.308
Spain	1.444	814	1.471	853	813	537
Other	3.179	1.344	3.347	882	1.887	12.001
Total	10.764	9.877	7.562	8.352	10.606	96.688

Source: EUMOFA.

Table 8-6 GHANA'S EXPORT OF TUNA SPECIES (volume 1000 tonnes and value EUR 1000)

Preservation	2015		2016		2017	
	Volume	Value	Volume	Value	Volume	Value
Tuna, miscellaneous	565	476	356	471	14.041	52.272
Tuna, yellowfin	6.566	3.740	8.271	4.429	15.250	20.252
Tuna, skipjack	0	0	182	245	7.008	10.490
Tuna, bluefin	0	0	0,4	0,4	1.703	1.265
Tuna, bigeye	0	0	0	0	548	772
Tuna, albacore	0	0	0	0	101	260
Total	7.131	4.216	8.809	5.146	38.651	85.310

Source: EUMOFA.

Figure 8 2 GHANA'S IMPORTS OF FISHERIES PRODUCTS – BREAKDOWN BY PRESERVATION STATE IN VALUE IN 2017

Source: EUMOFA.

Ghana's fish demand is presently higher than domestic supply, making Ghana a net importer of fish. With a high fish consumption per capita (25 kg/year per capita), Ghana imports fish from countries worldwide⁸⁴.

In 2017, 357.000 tonnes of fish, valued at EUR 244 million, were imported to supplement local supply. The import volume has increased in recent years. In 2010, Ghana imported 216.000 tonnes, and in 2016 the import had reached 372.000 tonnes.

The large volumes of mackerel that were imported to Ghana in 2017 mainly came from Japan (22.000 tonnes), Mauritania (21.000 tonnes) and China (18.000 tonnes). Horse mackerel was mostly imported from Mauritania (35.000 tonnes), Belgium (23.000 tonnes) and Morocco (16.000 tonnes).

Ghana's imports mainly consist of frozen whole/gutted mackerel (104.000 tonnes).

Table 8-7 GHANA'S IMPORTS OF FISHERY PRODUCTS (volume in 1000 tonnes)

	2012	2013	2014	2015	2016	2017
Mackerel	71	119	94	118	125	123
Horse mackerel, other	0	75	71	87	118	111
Miscellaneous small pelagics	52	74	74	52	83	78
Other marine fish	104	52	25	36	31	23
Hake	1	2	2	3	6	12
Herring	0	4	1	1	2	3
Other species	14	14	13	8	7	8
Total	243	340	279	306	372	357

Source: EUMOFA.

Table 8-8 GHANA'S IMPORTS OF FISHERIES PRODUCTS BY COUNTRY OF ORIGIN (volume in 1000 tonnes)

	2012	2013	2014	2015	2016	2017
Mauritania	68	53	83	53	83	83
Morocco	39	69	44	53	43	49
Belgium	4	17	12	31	67	47
China	9	23	17	19	23	22
Guinea-Bissau	0	47	15	20	18	10
Angola	0	1	20	33	15	29
Senegal	45	9	2	5	5	3
Japan	7	14	6	4	13	23
Other countries	72	107	81	87	104	92
Total	243	340	279	306	372	357

Source: EUMOFA.

⁸⁴https://www.researchgate.net/profile/Pierre_Failler/publication/277329183_Value_chain_analysis_of_the_fishery_sector_in_Ghana_with_focus_on_quality_environmental_social_sustainable_food_safety_organic_requirements_and_its_compliance_infrastructure/links/5568776808aeab77721fd7ab/Value-chain-analysis-of-the-fishery-sector-in-Ghana-with-focus-on-quality-environmental-social-sustainable-food-safety-organic-requirements-and-its-compliance-infrastructure.pdf

Table 8-9 GHANA'S IMPORTS OF FISHERIES PRODUCTS BY COUNTRY OF ORIGIN (value in EUR million)

	2012	2013	2014	2015	2016	2017
Mauritania	56	40	64	45	65	50
Morocco	24	46	31	45	30	34
Belgium	3	10	8	26	50	34
Japan	6	13	6	4	11	18
China	6	15	11	13	15	17
Angola	0	1	13	23	9	16
United States	1	2	1	4	2	12
Sierra Leone	0	0	3	2	4	6
Other countries	88	123	61	70	101	56
Total	184	251	198	233	288	244

Source: EUMOFA.

CONSUMPTION

- 8.6 The Ministry of Food and Agriculture has recognised fish as a preferred source of animal protein in Ghana, and about 75% of the total domestic production of fish is consumed locally. The Ministry estimates that fish contributes about 60% of the population's animal protein intake. The per capita consumption is estimated at approximately 25 kg per year⁸⁵. With a population of 28 million (2016) that has an estimated growth of 2,1% per year⁸⁶, and a strong tradition for eating fish, Ghana's import dependency on seafood will likely increase in the future.

8.7 STRATEGIES AND POLICIES IN GHANA FISHERIES SECTOR

Ghana's Ministry of Fisheries and Aquaculture Development (MOFAD) was established in 2013 to accelerate development in the fisheries sector. In addition to combating IUU, developing fisheries infrastructure to modernize the sector, and promoting aquaculture development, Ghana chairs the West Africa Regional Fisheries programme (WARF) and the Sustainable Fisheries Management programme (SFM).

Both these programmes aim at improving sustainable management in the fisheries sector. The WARF programme focuses on reducing illegal fishing, increasing the value and profitability generated by the fish resources and developing aquaculture for increased national food security, economic development and poverty reduction. The SFM programme's goal is to rebuild targeted marine fish stocks that have seen major declines in landings over the last decade, particularly the small pelagic fisheries that are important for food security in Ghana.

⁸⁵ http://mofa.gov.gh/site/?page_id=244

⁸⁶ The World Bank.

9 Icelandic fisheries

The Icelandic marine sector is still a main economic sector and a pillar of export activity in Iceland, but its relative importance has weakened in line with the growth of the aluminium and service industries. The fishing industry still provides 40% of export earnings and more than 12% of GDP, and employs nearly 5% of the workforce (2014). It remains sensitive to declining fish stocks as well as to fluctuations in world prices for its main exports: fish and fish products.

According to the FAO catch and aquaculture production estimates for 2014, Iceland was the 23rd largest player in the world. In Europe, Iceland was the fourth largest fishing nation after Russia, Norway, and Spain, representing 8% of European catches in 2014.

Iceland's aquaculture also produces a limited volume. In 2014, it represented 1% of the seafood supply.

The extension of the Icelandic economic zone to 200 miles in 1975 afforded stronger control over fishing resources, which by that time were overfished. In the period 1950–1974, foreign vessels (from the UK and Germany) took an average of 360.000 tonnes of demersal species in the sea around Iceland. Since 1976, fishing by foreign vessels has played a limited role in the total catch.

The fishing zone has an area of 760.000 square kilometres, seven times the area of Iceland itself. Some of the largest fish stocks in the North Atlantic are found in Icelandic waters, including the cod stock, Iceland's most important stock, and the capelin stock, which is generally the largest.

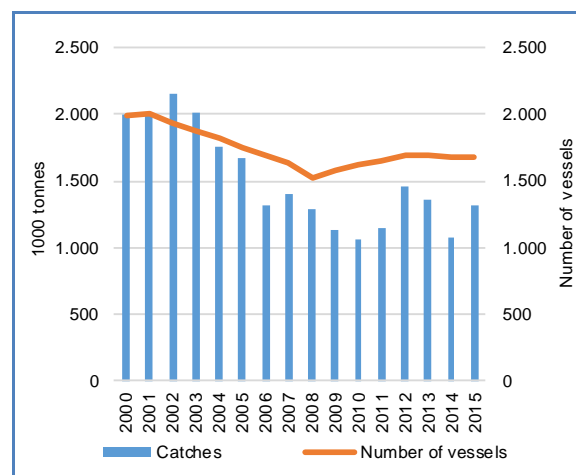
During the past 20 years, a substantial consolidation has taken place in the Icelandic fishery and fleet sector as well as the processing sector. The consolidation has resulted in vertically integrated companies where the actors control the whole value chain from fishery to market.

This case study is available in the
Monthly Highlights N° 9-2016

9.1 CATCH

In 2015, the total volume landed exceeded 1,3 million tonnes, a 22% increase over the previous year. Overall, the variations in Icelandic catches are caused to a large degree by the fluctuating quotas for Icelandic capelin. During the past 15 years, capelin catches have varied from more than one million tonnes a year (2002) to 15.000 tonnes (2009). The fishing year runs from 1 September to 31 August.

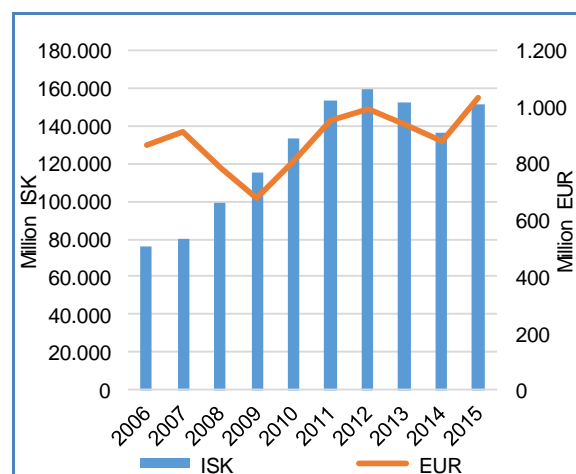
Figure 9-1 Icelandic volume catch and number of vessels (2000-2015)



Source: FAO and Statistics Iceland.

The value of Icelandic catches has increased from approximately ISK 76 billion in 2006 to more than ISK 151 billion in 2015, a 99% increase.

Figure 9-2 First-sales value in Iceland



Source: Statistics Iceland.

9.2 FISHERIES MANAGEMENT AND FIRST SALES

The catch-limitation system is the cornerstone of the Icelandic fishery-management system. It is intended to limit the total catch and to prevent more fishing of endangered fish stocks than authorities allow.

The catch-limitation system is based on the catch share allocated to individual vessels. Each vessel is allocated a certain share of the TAC of the relevant species. During the fishing year, each vessel's catch limit is thus determined on the basis of the TAC of the relevant species and the vessel's share in the total catch.

Norway, the Faroe Islands and Iceland participate in a bilateral, "northern" agreement with the EU. This agreement coordinates the countries' fishery activities, including joint management and exchange of quotas. This is especially important because the different fleets are often interested in different stocks.

Table 9-1 Top species landed in Iceland by value and volume

Species	Value (million EUR)			Volume (1000 tonnes)		
	2013	2014	2015	2013	2014	2015
Cod	292	343	417	236	239	244
Redfish	86	85	92	60	57	58
Haddock	75	67	78	46	36	41
Mackerel	95	99	71	151	170	168
Capelin	96	21	68	454	111	354
Other	299	267	308	572	461	448
Total	942	881	1.034	1.519	1.074	1.313

Source: Statistics Iceland.

The top five species by value landed in Iceland in 2015 were cod, redfish, haddock, mackerel, and capelin. This made Iceland the third largest cod supplier in Europe, and the first, fourth, third and first largest supplier of redfish, haddock, mackerel, and capelin, respectively, in Europe in 2014. The value of these species together (2015) constituted 70% of the total first-sales value. For the past three years, cod landings have risen slightly every year, and the 2015 sales value has increased 22% and 43% over 2014 and 2013, respectively.

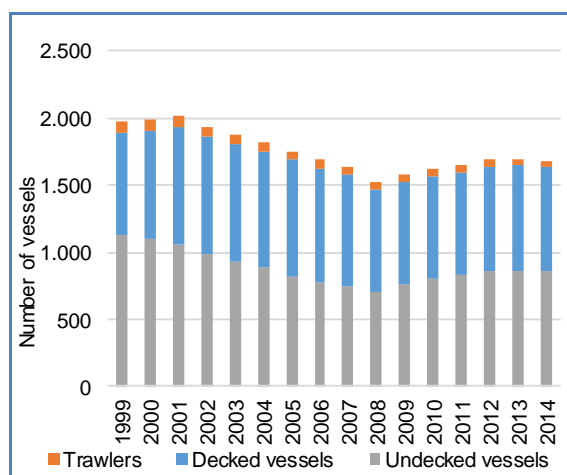
Most of the landings are from Icelandic vessels and are fished mainly in Icelandic waters. The species landed by foreign fleets are mostly capelin, blue whiting, and shrimp, for which foreign nations have quota shares in Icelandic waters. In 2014, foreign landings constituted approximately 89.000 tonnes, of which nearly 49.000 tonnes were capelin, 20.000 tonnes were blue whiting, and 12.000 tonnes were coldwater shrimp.

Figure 9-3 landing regions in Iceland

Landings in Iceland occur in all regions, but most are landed in the eastern and southern regions (60%). Approximately 10% of the landings occur in the capital region.

The Icelandic fishing fleet has traditionally been split into three groups: trawlers, decked boats, and undecked boats. The decked-boat category is by far the most diverse, ranging from small boats (smaller than many undecked boats) to large purse-seiners and multipurpose vessels. However, the separation of decked boats and trawlers is not very clear, because many decked boats can also operate trawls.

Figure 9-4 Icelandic fishing fleet



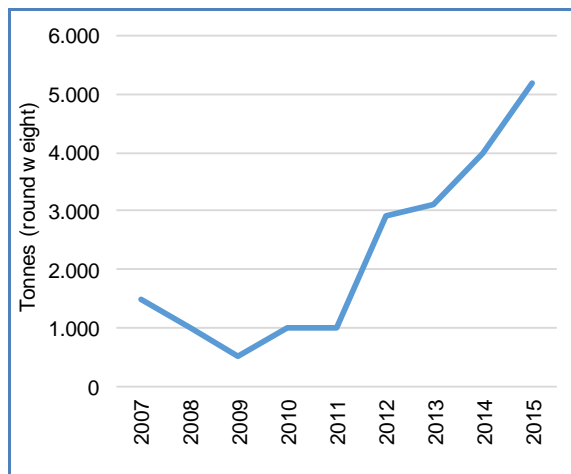
Source: Statistics Iceland.

In total, 1,685 vessel were registered at the end of 2014, 11 less than a year earlier. The number of decked vessels was 774, 10 fewer than a year earlier.

9.3 AQUACULTURE

Salmon is the main species produced from aquaculture in Iceland, followed by Arctic char, trout, halibut, and tilapia. The total volume produced in 2015 was approximately 10.000 tonnes.

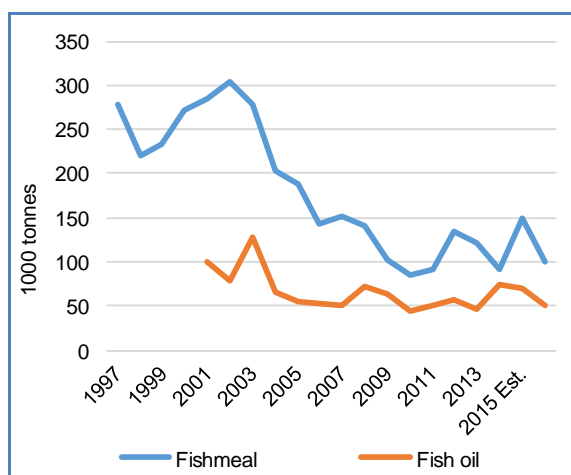
Icelandic salmon production has been growing rapidly in the recent years, but remains smaller than other producing countries, such as Norway. In 2015, the total estimated Icelandic production of salmon was 5.200 tonnes, a strong increase over the 500 tonnes estimated in 2009. It is expected that Icelandic salmon production will continue to grow.

Figure 9-5 Icelandic volume production of salmon (estimates)

Source: Kontali Analyse.

9.4 FISH MEAL AND FISH OIL PRODUCTION

The cornerstone of Iceland's fishery sector is fishmeal and fish oil production. The industry's raw material is sourced mainly from capelin and blue whiting, as well as offal from the groundfish fisheries. The production is therefore vulnerable to quota variations for capelin and blue whiting. During 2002–2010, fishmeal production has ranged between 300.000 tonnes down to only 85.000 tonnes. The industry operates seven fishmeal and fish oil facilities throughout Iceland.

Figure 9-6 Icelandic volume production of fishmeal and fish oil

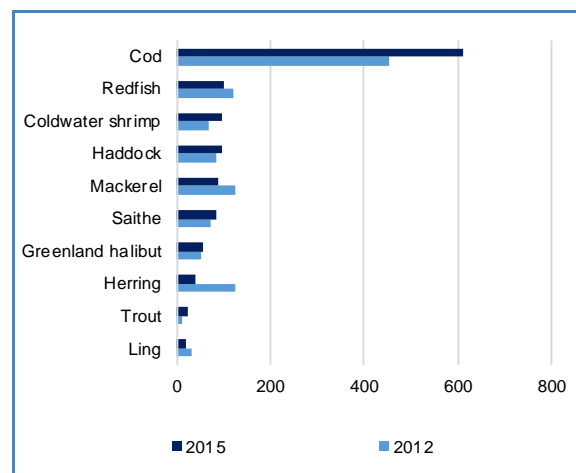
Source: Iceland fishmeal and fish oil organization.

9.5 TRADE

9.5.1 EXPORTS

In 2015, the total Icelandic export of seafood (excluding fishmeal and fish oil) was EUR 1,57 billion and 454.553 tonnes. This was a 9% increase in value and a 16% decrease in volume compared with 2014. The increase in value was caused mainly by a higher exported volume (+8%) and export price (+13%) for cod, while the overall decrease in volume was caused by a decrease in the export of mackerel (-34%).

By far, the main Icelandic species exported, in both value and volume, is cod. In 2015, the total exported value and volume of cod from Iceland was EUR 611 million and 102.000 tonnes. This was equivalent to 38% of the total export value and 22% of the volume. Other important species exported from Iceland are redfish, coldwater shrimp, haddock, mackerel, and saithe. All accounted for 6% or less of the total exported value in 2015.

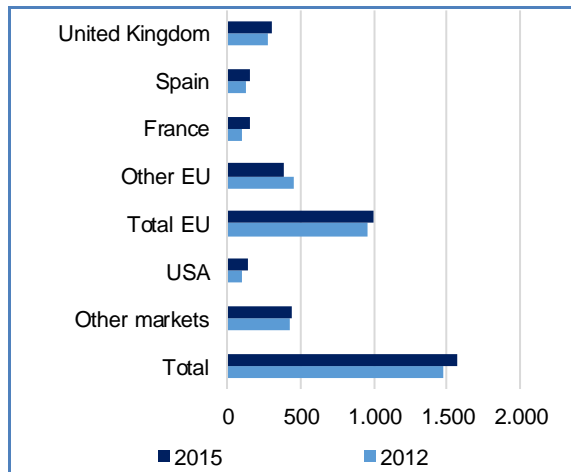
Figure 9-7 Icelandic export of seafood (excl. fish oil and fishmeal) by main commercial species (million EUR)

Source: EUMOFA.

The EU is the main export market for Icelandic seafood (excluding fishmeal and fish oil). In 2015 and 2014, the EU market accounted for 64% of total export value, at EUR 1 billion and EUR 917 million, respectively. In the same two years, the EU market accounted for 54% and 52% of the total exported volume, at 244.760 tonnes and 283.200 tonnes, respectively.

The UK is the main EU market for Icelandic seafood products (excluding fishmeal and fish oil). In 2015, the UK accounted for 30% and 22% of the total export value and volume to the EU, at EUR 303,6 million and 53.164 tonnes. The main commercial species exported to the UK were cod, followed by coldwater shrimp and haddock. Other important EU export markets for Iceland are France (cod, saithe, and haddock) and Spain (cod, saithe, and Norway lobster). The USA (cod, haddock, and trout) is also a major market. The increase in exports to the USA has several causes, including an increased number of flights between the two countries and growing tourism. Technological developments such as cooling (superchilling) also play a role, allowing the raw material to be kept fresh longer.

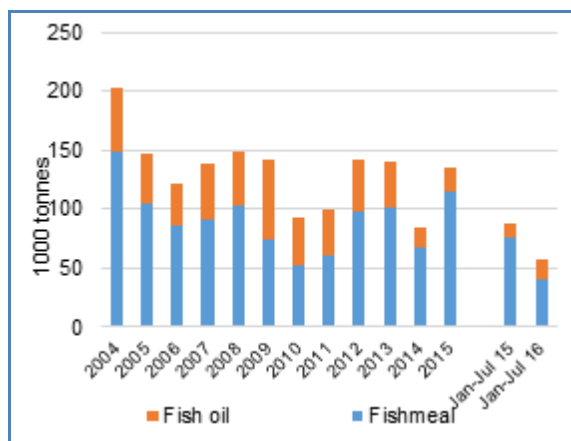
Figure 9-8 Icelandic export value of seafood (excl. fish oil and fishmeal) by main markets (million EUR)



Source: EUMOFA.

As a result of a rapid increase in production, the export of Icelandic salmon has also increased in recent years. In 2015, the total exported volume of salmon (all categories) was approximately 1.150 tonnes, a 50% increase over the previous year. Most fishmeal and fish oil is exported to markets in Europe where it is used primarily as feed for animals and fish feed in aquaculture. Consequently, the largest buyer of Icelandic meal and oil is Norway, where it is used to feed salmon. In 2015, nearly 50% of the fishmeal volume and 75% of the fish oil volume were exported to Norway.

Figure 9-9 Icelandic export volume of fishmeal and fish oil

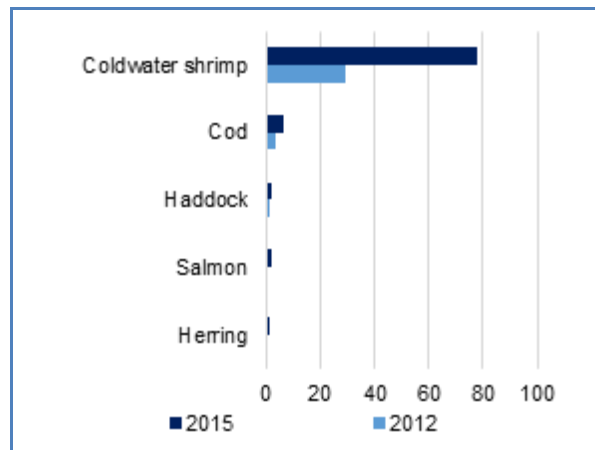


Source: Statistics Iceland.

9.5.2 IMPORTS

In 2015, the total Icelandic import value of seafood (excluding fishmeal and fish oil) was EUR 113,83 million and 69.020 tonnes. This was a strong increase over 2014, especially in value (+71%), but also in volume (+30%). The strong increase was caused mainly by a higher imported volume of coldwater shrimp (+60%), ending at 24.370 tonnes, as well as a higher import price (+24%).

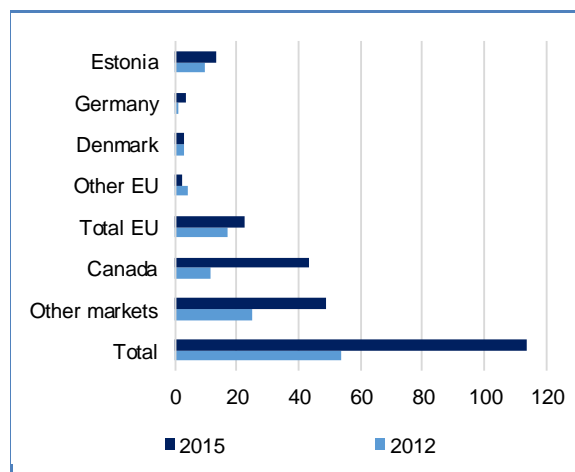
Figure 9-10 Icelandic import value of seafood (excl. fish oil and fishmeal) by main commercial species (million EUR)



Source: EUMOFA.

Canada, which is the main supplier of seafood (excluding fishmeal and fish oil) to Iceland, is also the main supplier of coldwater shrimp. As Icelandic landings of shrimp have declined recently, a vast increase in the imported volume of the species has occurred. Most shrimp imported to Iceland is reprocessed (peeled and cooked) for further export to other markets, mainly the UK. Estonia is Iceland's main EU supplier of seafood (excluding fishmeal and fish oil), most of which are landings of coldwater shrimp in Icelandic ports. Estonian vessels flying the Estonian flag catch shrimp in areas regulated by the Northwest Atlantic Fisheries Organization (NAFO). Estonia is the leading EU supplier of shrimp in the area.

Figure 9-11 Icelandic import value of seafood (excl. fish oil and fishmeal) by main markets (million EUR)



Source: EUMOFA.

9.6 CERTIFICATION SCHEMES IN THE ICELANDIC FISHERY

Several species in Icelandic waters are certified to the Icelandic Responsible Fisheries Management (IRFM) standard. The IRFM is a certification standard based on

the 1995 FAO Code of Conduct for Responsible Fisheries (CCRF) and on the FAO Guidelines for the Ecolabelling of Fish and Fishery Products from Marine Capture Fisheries adopted in 2005 and extended in 2009.

The Iceland Responsible Fisheries Foundation (IRFF) is the standard owner and the IRFF Technical Committee is responsible for writing, issuing and reviewing the IRFM standard.

In 2014, the golden redfish fishery was certified. Later that year, the Icelandic cod fishery was recertified, and in 2015, the Icelandic haddock and saithe fisheries were also recertified to the IRFM standard. In addition to the IRFM standard, which is a national standard for Iceland, several species in Icelandic waters are also certified to the Marine Stewardship Council (MSC) standard. This is the case for Icelandic saithe as well as cod, haddock, and golden redfish.

10 Fisheries and aquaculture in India

This case study is available in the
Monthly Highlights N° 7-2017

India is one of the largest players in the global fish and seafood industry. It was the third world's third largest fish producer (marine, inland fisheries and aquaculture) in 2015. It was the third largest aquaculture producer and the fourth largest capture-fishery (including inland) producer. The value of Indian exports of fish, crustaceans, molluscs, and other aquatic invertebrates reached EUR 4,2 billion in 2015 (USD 4,9 billion)¹. This was a 13% decrease from 2014. Frozen shrimp contributes substantially to India's export value, but apart from farmed shrimp, most production supplies the domestic market.

10.1 PRODUCTION

10.1.1 CATCH

India has a coastline of 7.516 km spread over nine maritime states and four union territories². The Indian Exclusive Economic Zone (EEZ) reaches more than 2 million km². In addition, India has many rivers and lakes where important inland fishery activity occurs³. According to the FAO, total capture fishery production reached more than 4,8 million tonnes in 2015, of which approximately 25% was from inland resources.

Source: <http://www.maps-of-india.com>

India's freshwater resources consist of rivers and canals (197.024 km),

reservoirs (3,15 million ha), ponds and tanks (235 million ha), oxbow lakes and derelict waters (1,3 million ha), brackish waters (1,24 million ha) and estuaries (0,29 million ha). The inland capture fish production has increased from 192.000 tonnes in 1950 to 1,25 million tonnes in 2014; the major species are cyprinids, siluroids, and murels⁴.

Production of marine fish has increased from approximately 50.000 tonnes in 1950 to 3.51 million tonnes in 2015, approaching the catch potential of 4,4 million tonnes of the Indian EEZ, but registering a 5,3% decline from 3,59 million tonnes in 2014. The major species were sardine, prawn, cephalopods, threadfin and dwarf bream, and tuna, bonito, and billfish.

In 2016, marine fish landings reached 3,63 million tonnes, a 6,6% increase over 2015. The corresponding estimated value was EUR 6,42 billion, 21% over 2015. Pelagic species contributed 52% to total landings (top species: Indian mackerel, oil sardine, and ribbonfish). Demersal finfish accounted for 29% of landings (threadfin bream, croaker, and bulleye), crustaceans (12%; prawn), and molluscs (7%; squid and cuttlefish). In 2016, Indian mackerel became the highest contributor with 249.000 tonnes; Indian oil sardine slipped to second position, continuing the decreasing trend observed since 2013. In addition, a significant change was observed in the 2016 landing pattern of bulleye (*Priacanthus spp.*). From a mere 43.576 tonnes in 2015, its landings have increased sharply to 130.000 tonnes⁵.

Marine fishery catches are greater in waters off the west coast of India (64% of landing volumes in 2016) owing to the large continental shelf in the Arabian Sea and a more active upwelling phenomenon. In 2016, the northwest region, including Gujarat and Maharashtra, accounted for 33% of landing volume; the southwest region, including Goa, Karnataka, and Kerala, accounted for 31%; the southeast region, including Tamil Nadu, Pondicherry, and Andhra Pradesh, accounted for 26%; and the northeast region, including Orissa and West Bengal, accounted for 10%.

Coastal fisheries fall under state jurisdiction and take place within the first 12 nautical miles from the baseline out to sea. Deep-sea fishery operations, falling under the jurisdiction of the union government, take place mostly between the 12 nautical miles and the outer boundary of the EEZ. Management of inshore fisheries is the responsibility of state governments, usually operating through state fishery departments and with specific state-based legislation⁶. According to government figures, approximately 80.000 mechanised fishing boats are currently in use along with approximately 75.000 motorised fishing boats and approximately 50.000 traditional non-motorised fishing craft. A large variety of fishing gear is used. However, trawlnets, gillnets, and ring-seines account for nearly 80% of marine landings.

¹ MPEDA.

² <http://iomennis.nic.in/index2.aspx?slid=758&sublinkid=119&langid=1&mid=1>

³ <http://nfdp.gov.in/about-indian-fisheries.htm>

⁴ <https://indianfisheries.icsf.net/>

⁵ http://eprints.cmfri.org.in/11831/3/Marine%20Fish%20Landings_2016.pdf

⁶ <http://mpeda.gov.in/MPEDA/cms.php?id=ZmlzaGVyeS1pbmZyYXN0cnVidHVyZQ==#>

10.1.2 AQUACULTURE

According to the FAO, total aquaculture production in 2015 was 5,24 million tonnes, most of which was consumed on the domestic market, except for shrimp and freshwater prawn, which were mainly exported.

Aquaculture production can be divided into three sectors: freshwater aquaculture, brackish-water aquaculture, and marine aquaculture, which are present in different states.

First, in 2015, Indian **freshwater aquaculture** accounted for 88% of the total aquaculture production in volume (source: FAO). It comprises approximately 2,36 million ha of ponds and tanks, and accounts for nearly 50% of the total fish production in India. Additionally, freshwater aquaculture occurs in lakes, irrigation canals, reservoirs, and paddy fields. It is often combined with the production of shrimp in traditional low-brackish-water ponds.

Freshwater aquaculture in eastern India consists mainly of ponds and tanks of less than 1 ha. In western India, aquaculture is operated on a larger scale, with watersheds of 25 ha. In northern India, more use is made of open waters for aquaculture. In the south, ponds for crop irrigation are used in aquaculture. Different species of Indian carp – catla (*Catla catla*), roho (*Labeo rohita*), and mrigal (*Cirrhinus mrigala*) – contribute between 70% and 75% of the total freshwater fish production. Silver carp, grass carp, common carp, and catfish make up 25–30% of the production. Production is destined mainly for the high-demand domestic market; processing of freshwater aquaculture produce is rare. Second, in the domain of **brackish water aquaculture**, shrimp species are the main product. Between 2006 and 2015, shrimp farming experienced a significant increase from 144.000 tonnes to more than 500.000 tonnes. The whiteleg shrimp (*Litopenaeus vannamei*) is produced inland and is mainly destined for export. This species is rapidly replacing the black tiger shrimp (*Penaeus monodon*). In addition to the production of shrimp, seabass, milkfish, and other freshwater species are also produced in brackish-water aquaculture. The shrimp production uses different methods: (1) after the harvest of rice (polyculture), such as in central Kerala, Odisha, Karnataka, Goa, and parts of West Bengal, combined with the growing of rice, which is mainly practiced in Goa and West Bengal, or (2) in dedicated ponds using scientific methods, as in Andhra Pradesh and parts of West Bengal. Third, **marine aquaculture**, focusing on the production of mussels, oyster, and seaweed, has experienced a recent increase in production (especially for oyster). However, the production, which takes place mainly in the states of Maharashtra, Gujarat, Kerala, Andhra Pradesh, West Bengal, and Tamil Nadu, is still modest and is often based on traditional practices. Additionally, the great potential of finfish sea-farming has not been realised, mainly because of technical and marketing issues. The development of circular cages and the production of seabass and cobia species are receiving much attention.

Although marine aquaculture at sea is limited, inland and coastal production of saltwater shrimp is more common (<https://www.rvo.nl/sites/default/files/2017/04/aquaculture-in-india-report-2017.pdf>).

According to FAO, in 2015, Indian aquaculture production of marine fish and molluscs reached 90.000 tonnes and 12.600 tonnes, respectively

Table 10-1 TOP SPECIES GROUPS CAUGHT BY THE INDIAN INLAND AND MARINE CAPTURE FISHERIES (tonnes)

Species group	2010	2011	2012	2013	2014	2015
Carps, barbels and other cyprinids	575.773	373.293	614.927	499.851	511.500	548.500
Shrimps, prawns	303.757	385.747	393.236	390.119	432.807	395.346
Clupeoids nei	89.236	93.330	100.299	93.959	292.875	339.106
Indian oil sardine	320.227	381.713	404.298	376.189	544.684	265.667
Squids, cuttlefishes, octopuses	110.453	88.329	98.048	80.225	173.213	213.477
Threadfin and dwarf breams	-	-	-	-	136.931	162.764
Tunas, bonitos, billfishes	141.276	157.382	185.212	189.374	190.066	156.327
Anchovies	107.536	113.916	114.449	124.276	143.545	146.287
Snakeheads (=Murrels)	87.236	66.164	76.776	127.953	130.000	139.700
Bombay-duck	156.262	136.820	188.313	196.975	113.346	111.167
Other	2.824.060	2.539.438	2.720.071	2.588.261	2.332.011	2.383.697
Total	4.715.816	4.336.132	4.895.629	4.667.182	5.000.978	4.862.038

Source: FAO.

Table 10-2 TOP SPECIES PRODUCED BY INDIAN AQUACULTURE (tonnes)

Species	2010	2011	2012	2013	2014	2015
Catla	2.705.184	2.148.427	2.458.788	2.489.759	2.500.000	2.500.000
Roho labeo	279.004	645.300	627.662	743.284	790.000	846.000
Whiteleg shrimp		125.000	136.300	211.200	305.251	416.347
Silver carp	129.847	103.331	123.240	301.339	320.000	343.000
Mrigal carp	87.686	131.793	165.782	159.028	170.000	182.000
Giant tiger shrimp	-	130.000	131.900	78.500	70.389	82.043
Other	588.300	393.733	570.308	572.099	728.381	868.629
Total	3.790.021	3.677.584	4.213.980	4.555.209	4.884.021	5.238.019

Source: FAO.

Table 10-3 INDIAN TRADE BALANCE OF SEAFOOD (billion USD)

Trade flow	2013	2014	2015
Exports	4,81	5,61	4,88
Imports	0,06	0,07	0,09
Balance	4,75	5,54	4,79

Source: MPEDA, Fishexchange⁹³.

Table 10-4 MAIN IMPORTING COUNTRIES FROM INDIA (2015–2016)

Countries	Volume (tonnes)	Value (million USD)
USA	153.695	1.334
Southeast Asia	328.900	1.153
EU	186.349	971
Japan	75393	403
Middle East	53.905	276
China	50.042	221
Others	97.609	330
Total	945.892	4.688

Source: MPEDA⁹⁴.

10.2 TRADE

10.2.1 GLOBAL INDIAN FISH TRADE

In recent years, India has become one of the world's most important seafood exporters. In 2015, the country had a positive trade balance of EUR 4,11 billion (USD 4,79 billion).

According to the Marine Products Exports Development Authority (MPEDA), during the 2015–2016 financial year, Indian seafood exports reached EUR 4,7 billion (USD 5,5 billion), of which 66% were frozen shrimp. The remaining export value included frozen fish (11%), frozen cuttlefish (5%), frozen squid (5%), dried items (3%), chilled items (3%), live items (1%), and other items (6%).

The main destination countries were the USA (28%), Southeast Asia (25%; mostly Vietnam and, to a lesser extent, Thailand, Taiwan, Malaysia, and Singapore), the EU (21%), Japan (9%), Middle Eastern countries (6%), and China (5%).

During the period 2015–2016, Indian seafood imports reached EUR 92 million (USD 107 million) and 50.000 tonnes. The main products imported were other frozen fish of Combined Nomenclature (CN) heading 030289 (15% of import value), fish powder, fishmeal fit for human consumption (15%), other fish products (11%), other fish filet and fish meat (9%; excluding fresh, chilled, or frozen), and other algae (9%).

The main exporters to India during the period were Bangladesh (20%), Vietnam (16%), the USA (11%), Israel (9%), the EU (6%), Thailand (5%), Morocco (5%), and Mauritania (4%).

⁹³ <http://fishexchange.mpeda.gov.in/CountryProfile/Index>

⁹⁴ <http://mpeda.gov.in/MPEDA/admin/app/webroot/files/annualreport/1495802671MPEDAAR201516FinalPrintPress16112016compressed.pdf>

Table 10-5 TOP EXPORTING COUNTRIES TO INDIA

Countries	Volume (tonnes)	Value (million USD)
Bangladesh	9.031	21
Vietnam	12.145	17
USA	645	12
Israel	44	10
EU	663	7
Thailand	3.864	6
Morocco	3.454	5
Mauritania	3.579	4
Others	16.694	26
Total	50.119	107

Source: Fishexchange.

10.2.2 INDIA AND THE EU

In 2016, EU imports of Indian seafood totalled EUR 943 million and 183.000 tonnes. The most important species imported were tropical shrimp (43% of import value), squid (17%), other molluscs and aquatic invertebrates (17%), and miscellaneous shrimps (15%). Seafood imports from India were mostly frozen (93%). The rest was imported prepared or preserved (3%) or fresh (2%). The main EU destinations for Indian exports were Spain (21%), Italy (15%), the UK (14%), France (12%), the Netherlands (11%), and Belgium.

In 2016, EU exports of seafood to India totalled EUR 5 million and 1.900 tonnes. The most important commercial species exported by value were salmon (35%), other non-food use (23%), and tropical shrimp (12%). In 2016, the main EU exporter to India was the UK (31%), followed by Ireland (21%) and Denmark (12%). Salmon was the most important seafood product exported from the UK (mostly fresh) and Denmark (frozen or smoked), whereas Ireland's major export product was other non-food use products. Top EU Member States exporting to India (1000 EUR AND TONNES)

Table 10-6 TOP EU MARKETS FOR SEAFOOD IMPORTS FROM INDIA (million EUR and 1000 tonnes)

Country	2014		2015		2016	
	Value	Volume	Value	Volume	Value	Volume
Spain	152	47	178	48	201	51
Italy	113	32	128	32	139	32
France	130	23	117	20	134	19
United Kingdom	131	18	125	16	117	18
The Netherlands	83	14	104	17	107	17
Belgium	146	20	135	19	105	15
Other	120	28	129	27	140	31
Total	875	183	917	180	943	183

Source: EUMOFA.

Table 10-7 TOP MAIN COMMERCIAL SPECIES IMPORTED FROM INDIA (million EUR and 1000 tonnes)

Main Commercial Species	2014		2015		2016	
	Value	Volume	Value	Volume	Value	Volume
Tropical shrimp	429	54	407	52	407	52
Squid	91	35	114	38	161	47
Other molluscs and aquatic invertebrates	136	42	154	40	157	35
Miscellaneous shrimps	149	27	166	27	145	25
Other	71	25	76	23	72	24
Total	875	183	917	180	943	183

Source: EUMOFA.

Table 10-8 TOP EU MEMBER STATES EXPORTING TO INDIA (1000 EUR and tonnes)

Country	2014		2015		2016	
	Value	Volume	Value	Volume	Value	Volume
United Kingdom	1.641	234	2.084	392	1.589	244
Ireland	258	365	700	1.452	1.063	1.340
Denmark	437	42	351	29	620	51
Poland	684	62	201	20	365	24
Italy	81	28	129	26	358	104
Other	1.455	305	2.178	314	1.126	150
Total	4.557	1.036	5.642	2.233	5.120	1.914

Source: EUMOFA.

Table 10-9 TOP MAIN COMMERCIAL SPECIES EXPORTED TO INDIA (1000 EUR and tonnes)

Species	2014		2015		2016	
	Value	Volume	Value	Volume	Value	Volume
Salmon	1.974	200	1.364	160	1.778	166
Other non-food use	211	354	790	1.465	1.200	1.349
Tropical shrimp	685	83	1.312	142	626	69
Other molluscs and aquatic invertebrates	-	-	109	27	424	76
Other products	535	129	667	240	319	115
Other	1.151	271	1.400	198	773	139
Total	4.557	1.036	5.642	2.233	5.120	1.914

Source: EUMOFA.

11 The Japanese market for fisheries and aquaculture products

This case study is available in the
Monthly Highlights N° 10-2018

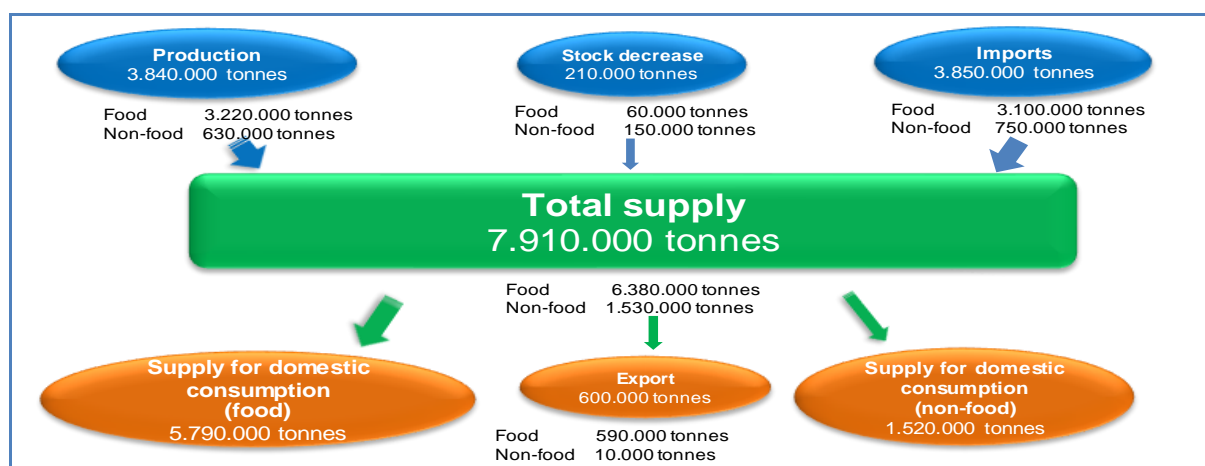
The Japanese market for fisheries and aquaculture products has significantly decreased in the last 20 years but remains one of the world's leading markets, exceeded only by China and the EU.

The Japanese market supplemented its consumption demand by imports (44% of total value) and had a trade deficit close to EUR 12 billion in 2017. The EU has a positive balance with Japan, with a surplus of EUR 247 million, mainly generated by tuna.

11.1 MARKET SUPPLY

Japan is the largest fish-consuming nation in the world after China. In 2016, the supply of fisheries and aquaculture products in Japan was estimated at 7,3 million tonnes fresh fish equivalent, of which 5,79 million tonnes (79%) were for human consumption (food) and 1,52 million tonnes (21%) for feed and fertilizers (non-food). The self-sufficiency rate of fisheries and aquaculture products for 2016 was 56%, a decrease of 3 points from the previous year.

Figure 11-1 SUPPLY BALANCE OF FISHERIES AND AQUACULTURE PRODUCTS IN 2016



Source: Food balance sheet (Ministry of Agriculture, Forestry and Fisheries, Japan).

11.2 CONSUMPTION

Japan's per capita consumption is still at a high level but has significantly declined since 2000 and is at the same level as 50 years ago. The apparent per capita consumption of fisheries and aquaculture products is 45,6 kg (fresh fish equivalent), or 24,6 kg net, in 2016. In the last 25 years, fish consumption experienced a clear downward trend (from 38 kg net in 1989 to 24,6 kg net in 2016), while meat consumption recorded an upward trend, from 25,8 kg in 1989 to 31,6 kg in 2016. Until 2010, fish consumption exceeded meat consumption, but since 2011 meat is the primary source of animal proteins in the Japanese diet. The consumption of fisheries and aquaculture products is higher among consumers above 50 years of age, but they too are consuming less fish. The decline in the consumption of fisheries and aquaculture products is especially significant among younger Japanese people aged under 40 years, who furthermore prefer processed food while older generations (60 years and above) buy three times more fresh fish than those aged below 40 years. The annual expenditure per household on fresh fish has been flat in recent years. A survey commissioned by the Ministry of Agriculture suggests that challenges in prices and convenience may result in decreases in consumption, while health benefits and taste are highly valued.

11.3 TRENDS IN JAPANESE PRODUCTION

Table 11-1 JAPANESE FISHERIES AND AQUACULTURE PRODUCTION IN 2016 (volume in 1000 tonnes)

Fisheries	Distant water	334
	Offshore	1.936
	Coastal	994
	Inland water	28
	Total fisheries	3.292
Aquaculture	Marine	1.033
	Inland water	35
	Total aquaculture	1.068
Total	4.360	

Source: Ministry of Agriculture, Forestry and Fisheries, Japan.

The results of the 2017 stock assessment in the waters around Japan (for 84 stocks of 50 species) show that resource levels are high for 14 stocks, moderate for 31 stocks, and low for 39 stocks. Domestic fisheries and aquaculture production was 4,36 million tonnes in 2016, a drop of 270.000 tonnes from the previous year. Marine fisheries production decreased by 230.000 tonnes to 3,29 million tonnes. Japan has the world's third largest distant water fishing fleet (mainly long line vessels) and catches by this fleet account for 10% of the fisheries production. Catches of salmon and Japanese squid, among others, decreased while Japanese sardine increased. Marine aquaculture decreased by 40.000 tonnes to 1,03 million tonnes. Inland water fisheries and aquaculture production decreased by 6.000 tonnes to 63.000 tonnes.

The value of fisheries and aquaculture production was JPY 1.586 billion (EUR 13 billion) in 2016, which was about the same as in the previous year. The value of marine fisheries decreased by JPY 33,6 billion (EUR 280 million) to JPY 962,1 billion, (EUR 8,0 billion) that of marine aquaculture increased by JPY 23,1 billion (EUR 192 million) to JPY 509,7 billion (EUR 4,2 billion), and that of inland water fisheries and aquaculture increased by JPY 10,2 billion (EUR 85 million) to JPY 113,8 billion (EUR 947 million). The main species caught by the Japanese fleet are small pelagics (chub mackerel, jack mackerel, pilchard, anchovy, saury).

Table 11-2 JAPANESE CATCHES BY MAIN SPECIES (volume in tonnes)

Species	ERS code	2010	2011	2012	2013	2014	2015	2016
Pacific chub mackerel	MAS	491.813	392.506	438.269	374.954	485.717	557.285	489.100
Japanese pilchard	JAP	70.159	175.781	135.236	215.004	195.726	340.119	374.600
Yesso scallop	JSC	327.087	302.990	315.387	347.541	358.982	233.885	213.700
Skipjack tuna	SKJ	317.264	257.879	263.410	270.054	232.798	224.047	202.006
Japanese anchovy	JAN	350.683	261.594	244.738	247.427	248.069	168.745	172.700
Alaska pollock	ALK	251.166	238.920	229.823	229.577	194.920	180.349	134.000
Japanese jack mackerel	JJM	159.440	168.417	134.014	150.884	145.767	151.706	128.700
Chum(=keta) salmon	CHU	174.216	144.044	139.438	170.457	153.912	141.330	122.774
Pacific saury	SAP	207.488	215.353	221.470	149.853	228.647	116.243	113.900
Amberjacks	AMX	106.890	110.917	101.842	117.175	125.223	123.177	104.800
Other		1.730.160	1.607.964	1.536.783	1.460.746	1.362.500	1.311.207	1.216.967
Total		4.188.376	3.878.376	3.762.422	3.735.685	3.734.275	3.550.108	3.275.263

Source: FAO–Fishstat.

The huge tsunami following the March 2011 earthquake damaged more than 300 fishing ports in seven prefectures, including Iwate, Miyagi and Fukushima and in the latter three prefectures about 90% of the 29.000 fishing boats were made unusable. Catches in these three prefectures accounted for 10% of Japan's catch.

The aquaculture industries in the region were also severely damaged, particularly in Iwate and Miyagi prefectures, where production of oysters and wakame seaweed is widespread. In these prefectures, the tsunami devastated sea squirt and salmon farms which accounted for 95% of their respective markets in Japan. By 2016 aquaculture production in the region was back to pre-tsunami levels.

The main species farmed by Japanese aquaculture are algae, scallops, oysters and amberjacks.

Table 11-3 JAPANESE AQUACULTURE PRODUCTION BY MAIN SPECIES (volume in tonnes)

Species	ERS code	2010	2011	2012	2013	2014	2015	2016
Laver (nori)	PRT	328.700	292.345	341.580	316.228	276.129	297.370	300.683
Yesso scallop	JSC	219.649	118.425	184.287	167.844	184.588	248.209	214.571
Pacific cupped oyster	OYG	200.298	165.910	161.116	164.139	183.685	164.380	158.925
Japanese amberjack	AMJ	138.936	146.240	160.215	150.387	134.608	140.292	140.868
Silver seabream	GSU	67.607	61.186	56.653	56.651	61.702	63.605	66.965
Wakame	UDP	52.393	18.751	48.343	50.614	44.716	48.951	47.672
Japanese kelp	LNJ	43.251	25.095	34.147	35.410	32.987	38.671	27.068
Japanese eel	ELJ	20.543	22.006	17.377	14.204	17.627	20.119	18.907
Sea squirts	SSX	10.272	693	610	889	5.344	8.288	18.271
Pacific Bluefin tuna	PBF	-	-	9.639	10.396	14.713	14.825	13.413
Coho salmon	COH	14.766	116	9.728	12.215	12.802	13.937	13.208
Other		54.686	57.205	50.126	48.764	53.038	47.005	47.443
Total		1.151.101	907.972	1.073.821	1.027.951	1.021.849	1.105.652	1.067.994

Source: FAO–Fishstat.

Due to high domestic demand, Japan has put huge research efforts in technology and knowledge on extensive bluefin tuna farming for becoming the leading producer. From zero in 2010–2011, production of farmed bluefin tuna grew to 13.000 tonnes in 2016, i.e. approximately 25% of the domestic market.

11.4 DISTRIBUTION AND PROCESSING

Food service is the main distribution channel, accounting for 48% of the distribution of fresh fisheries and aquaculture products in Japan, followed by the retail channel (34%) and institutional catering (18%). Imported products, such as salmon, tuna and mackerel are in heavy demand in the food service sector¹.

Wholesale markets play a critical role in the effective distribution of fisheries and aquaculture products. However, first-sale markets in landing areas are in a weak position in terms of price formation; from 2008 to 2015 their number decreased from 333 to 317, while the number of wholesale markets in consuming areas decreased from 287 to 257. According to the Ministry of Agriculture, the process of consolidation should be continued. An increasing share of the seafood consumed in Japan is distributed outside wholesale markets. This is especially true for imported seafood, which constitutes a large share of Japanese seafood consumption.

Production of the processed fish and seafood decreased by 50.000 tonnes to reach 1,63 million tonnes in 2016. Almost all fish processing companies are small- and medium-sized companies with less than 300 employees. The major challenges for the processing industry are to secure both raw material supply and labour.

The main manufactured products are surimi products, dried and salted fish, cured fish, baked laver and frozen products.

¹ "Fish products in Japan" (Agriculture and Agri-Food Canada, 2017).

11.5 TRADE

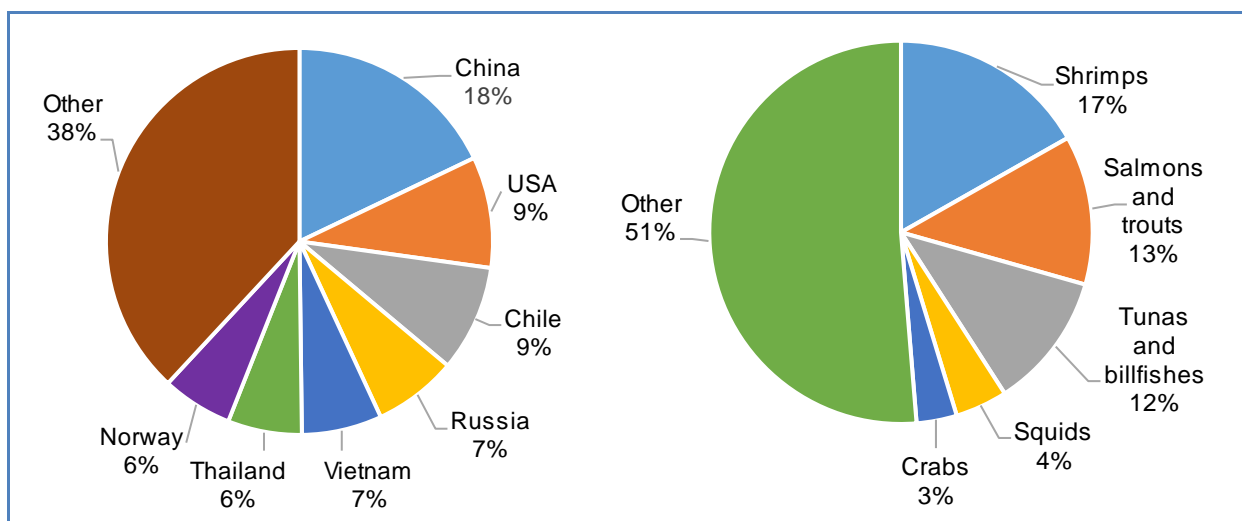
11.5.1 JAPANESE TRADE IN FISHERIES AND AQUACULTURE PRODUCTS

In 2017, Japan recorded a trade deficit in fisheries and aquaculture products of JPY 1.500 billion (EUR 11,8 billion)².

11.5.2 IMPORTS

In 2017, the import volume of fisheries and aquaculture products increased by 4% over 2016 (on a product weight basis) to 2,48 million tonnes and the import value increased by 11% to JPY 1.775 billion (EUR 14,0 billion)³. In a long-term perspective, the import volume has been decreasing. Major import partners are China, the US, Chile and Russia (in terms of value). Major imported products are shrimps, salmons and trouts, tunas and billfishes (in terms of value).

Figure 11-2 JAPANESE IMPORT VALUE OF FISHERIES AND AQUACULTURE PRODUCTS BY MAJOR SUPPLIERS (LEFT) AND MAJOR SPECIES (RIGHT) IN 2017



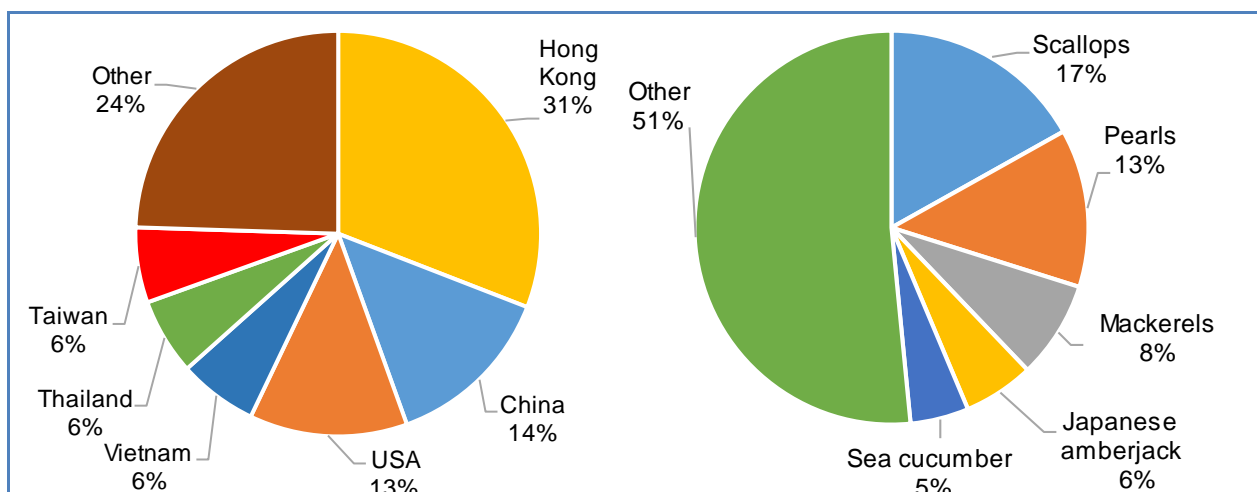
Source: Fisheries Agency/Foreign Trade statistics, Japan.

11.5.3 EXPORTS

In 2017, the export volume of fisheries and aquaculture products increased by 11% over 2016 to 600.000 tonnes and the export value increased by 4% to JPY 274,9 billion (EUR 2,2 billion). In a long-term perspective, export volume has been on an increasing trend.

Major export partners in terms of value are Hong Kong, China and the US. Major exported items are scallops, pearls and mackerels.

Figure 11-3 JAPANESE EXPORT VALUE OF FISHERIES AND AQUACULTURE PRODUCTS BY MAJOR DESTINATIONS (LEFT) AND MAJOR SPECIES (RIGHT) IN 2017



Source: Fisheries Agency/Foreign Trade statistics, Japan.

² In comparison, the EU-28 trade deficit amounted to EUR 20.2 billion in 2017.

³ European Central Bank exchange rates: 1 EUR = 120,197 JPY (2016); 1 EUR = 126,711 JPY (2017)

11.5.3.1 Japan's export strategy

The "Strategy to Improve Export Performance in Agriculture, Forestry and Fisheries" was compiled in May 2016 by the Ministry of Agriculture. According to the strategy, the Japanese government intends to improve the supply chain for fisheries and aquaculture products with the aim of expanding exports. The strategy also plans to improve the export environment (market intelligence, financing instruments, promotion) in order to better address the expansion of overseas markets and to ensure compliance with the health standards of export markets targeted.

With regard to agricultural, forestry and fisheries products, the "Economic Policy to Attain Investment for the Future" compiled in August 2016 sets an export target of JPY 1 trillion (including JPY 350 billion or EUR 2,8 billion for fisheries and aquaculture products) by 2019.

11.5.4 JAPAN AND THE EU

The EU has a positive trade balance in fisheries and aquaculture products with Japan, with a surplus of EUR 247 million in 2017.

EU imports of Japanese fisheries and aquaculture products totaled EUR 66 million and 6.000 tonnes in 2017. In value terms, scallop, "other non-food use" products and fish oil accounted for 39%, 20%, and 13%, respectively, of total EU imports from Japan.

Table 11-4 MAIN COMMERCIAL SPECIES (MCS) IMPORTED FROM JAPAN BY THE EU (value in 1000 EUR and volume in tonnes)

MCS	2015		2016		2017	
	Value	Volume	Value	Volume	Value	Volume
Scallop	16.856	925	26.049	1.070	25.852	1.083
Other non-food use	10.801	499	12.112	331	12.892	353
Fish oil	4.891	271	5.472	370	8.657	637
Other	15.620	3.294	18.209	4.054	18.505	3.898
Total	48.168	4.989	61.842	5.825	65.906	5.971

Source: EUMOFA.

The main EU destination for Japanese exports were the Netherlands, which also acted as a gateway to other EU Member States (63% of total EU import value), followed by the UK (8%), Germany (8%) and France (7%).

EU exports to Japan totaled EUR 313 million and nearly 58.000 tonnes in 2017. Tuna (mostly bluefin tuna shipped by Malta, Croatia and Spain) represented 45% of total value. The other major products exported to Japan are "other marine fish" (cobia, seabass) and caviar, which accounted for 9% and 5%, respectively, of total export value. In volume, small pelagics (mostly horse mackerel and mackerel) accounted for 18.500 tonnes in 2017, i.e. 32% of total volume exported to Japan but less than 9% of total value.

Table 11-5 MAIN COMMERCIAL SPECIES (MCS) EXPORTED TO JAPAN BY THE EU (value in 1000 EUR and volume in tonnes)

MCS	2015		2016		2017	
	Value	Volume	Value	Volume	Value	Volume
Bluefin tuna	113.703	8.374	144.324	11.543	101.331	8.315
Tuna, miscellaneous	36.084	2.289	35.892	2.293	40.748	2.610
Other marine fish	2.606	506	3.481	392	28.342	2.574
Caviar	18.636	1.608	17.347	1.544	16.152	1.128
Other	124.048	42.211	135.401	37.429	126.735	42.928
Total	295.077	54.988	336.445	53.201	313.308	57.555

Source: EUMOFA.

The main EU countries exporting to Japan were Malta (24% of total value), Spain (22%), Denmark (12%) and Croatia (10%).

On 17 July 2018 the European Union and Japan signed an Economic Partnership Agreement (EPA). This agreement will see Japan eliminating duties on most agricultural products and make them more affordable to Japanese consumers. For most fishery and aquaculture products duties will be gradually eliminated in 9 years. But for some products (usually with a base rate of 10%), where Japan has a significant fishing or farming activity, duties will be eliminated over a period of 16 years. This is the case for mostly small pelagics, Alaska pollock, hake and scallop.

12 Fisheries and aquaculture in Madagascar

This case study is available in the
Monthly Highlights N° 7-2018

Thanks to its significant fish resources and a dynamic aquaculture sector, Madagascar is a major player in the fisheries sector in the Indian Ocean, and a major EU partner in fish trade, especially for shrimp and tuna species. However, other value-added products are also produced targeting export markets for red seaweeds, sea cucumber, crabs, among others.

In 2017, Malagasy exports to the EU reached EUR 142 million and 21.318 tonnes, mostly frozen shrimp and canned tuna. The main EU partner for Malagasy seafood is by far France, accounting for 77% of the EU import value from Madagascar in 2017.

12.1 PRODUCTION

Madagascar is a wide island situated off the eastern African coast in the Indian Ocean. As the fourth largest island in the world, Madagascar, with a coastline estimated to be 5.600 km in length, has one of the largest EEZ (Exclusive Economic Zone) in the Indian Ocean with a surface area of 1,14 million km². The continental shelf area is estimated at 117.000 km², with a larger extension in the north-western and southern part of the island. The West coast is characterized by many estuaries and bays and colonized by dense mangrove forests covering an estimated area of 3.300 km². The Eastern coast is comparatively straight and featureless, with few estuaries, capes, and bays. The coastal habitats and shallow-water marine ecosystem are dominated by coral reefs, mangroves, seagrass beds, estuarine mud flats, steep beaches and rocky shorelines. Demersal fish, which are closely associated with these habitats, form the basis of traditional fisheries in Madagascar.

Malagasy legislation distinguishes three ways of fishing: traditional (by foot or canoes, motorized or not), artisanal (engine power under, or equal to 50 HP) and industrial fishing. In 2011, the contribution of the three major fishing fleet segments to the total fish production was as follows: 71,7% traditional, 0,2% artisanal, and 28,7% industrial (domestic and foreign)⁹⁸.

Inland fishery resources in Madagascar are mostly based on lacustrine fisheries which cover a total surface area of close to 1.500 km², in addition to a few major inland water bodies. The main species caught in Malagasy inland fisheries are tilapias, carps, and black-bass. The inland fisheries potential is estimated at 30.000 tonnes per year. Fish utilization involves fishmongers and fish collectors. Most fishery products are sold on the local markets⁹⁹.

In addition, aquaculture activities are increasing in both freshwater and marine areas. While inland aquaculture is local market-oriented, marine aquaculture (mostly shrimp and red seaweeds) is designed for the export market¹⁰⁰.

12.1.1 TRADITIONAL AND ARTISANAL FISHERIES

The small-scale fishery sub-sector operates in inshore waters within the reef ecosystem due to technological limitations. Most of the dugout canoes use oars and sails. The most common gear used by traditional fishing are gillnets, traditional traps, long-lines, hand lines, harpoons and seine nets. Official statistics suggest that total annual catch from traditional fishing is about 70.000 tonnes per year. This might however be an under-estimate given the low level of accuracy of declarations¹⁰¹.

Artisanal fishing, whose development was encouraged in the 1980's in the context of shrimp fisheries (through grants from the Japanese cooperation and then through industrial boat-owners), is mostly undertaken in Morondava, on the west coast. Formerly introduced in shrimp fisheries, artisanal fishers now target mostly demersal fisheries. Their number was close to 20 vessels in 2011. Artisanal fishing is regulated through a licencing system.

12.1.2 INDUSTRIAL FISHERIES

The domestic industrial fleet was mostly composed of shrimp trawlers until 2005. Since then, the number of fishing licences has decreased from about 100 to 37 in 2011 – a result of diminishing shrimp stocks despite significant efforts in terms of regulation of the fishing effort. At the same time, the number of fishing licences for demersal and pelagic fish has increased from about 10 in 2005 to 40 in 2011.

The domestic industrial fleet also includes tuna long-liners. In 2011, there were two private access agreements for tuna with Malagasy companies. The same year, another 3 licenses for long-liners flying the Malagasy flag were issued. Domestic tuna vessels have permission to fish beyond the 6 nautical mile (nm) limit from the coast. It is to be noted that foreign tuna vessels must operate in the EEZ (beyond 12 nm)¹⁰².

⁹⁸ <http://www.fao.org/3/a-br796e.pdf>

⁹⁹ <http://www.fao.org/3/a-br796e.pdf>

¹⁰⁰ http://www.fao.org/fishery/countrysector/naso_madagascar/en

¹⁰¹ <http://www.fao.org/3/a-br796e.pdf>

¹⁰² <http://www.fao.org/3/a-br796e.pdf>

12.1.3 NATIONAL CATCH

Malagasy catches (by vessels operating under national licenses) exceeded 142.000 tonnes in 2016, of which 21% were provided by inland fisheries. The accuracy of national statistics does not allow to identify the catches at species level. Therefore, the main species group in terms of volume that corresponds to marine fishes not identified, likely include miscellaneous coastal species, caught by small-scale fleets. However, shrimps and tunas and tuna-like species are among the main species groups caught in Madagascar, accounting for respectively 10% and 6% of total catches in 2016. To a lesser extent sharks and rays (4%), other marine molluscs (likely to include mostly sea cucumber) and crabs (2%) represented also significant volumes¹⁰³.

During the 2007–2016 period, Malagasy catches have stayed almost stable (–4%), despite some significant fluctuations (especially for the shrimp fishery). The main trend is the strong increases in the volume of catches for other molluscs and crabs.

Table 12-1 MALAGASY CATCHES BY MAIN SPECIES (volume in tonnes)

Species group	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Marine fishes not identified	80.053	62.495	71.352	67.135	69.700	55.680	43.756	38.343	53.105	70.938
Inland fishes	32.630	32.630	32.828	35.500	30.831	27.000	23.163	22.000	25.940	30.461
Shrimps	16.604	6.683	7.330	6.509	4.280	9.934	13.483	10.344	10.549	14.569
Tunas, bonitos, billfishes	8.703	8.705	8.506	8.756	8.692	8.672	8.654	8.675	8.680	8.657
Sharks, rays, chimaeras	5.668	5.616	5.616	5.699	5.670	5.665	5.650	5.660	5.654	5.651
Other molluscs ¹⁰⁴	380	360	340	320	300	290	300	222	1.799	5.473
Crabs	1.370	1.370	2.580	2.019	3.700	2.824	3.909	4.515	4.749	2.908
Cephalopods	1.150	1.300	1.450	1.600	1.765	6.206	1.739	2.790	1.483	2.013
Other	2.020	2.105	2.101	2.100	2.131	1.804	3.943	3.271	2.794	1.663
Total	148.578	121.264	132.103	129.638	127.069	118.075	104.597	95.820	114.753	142.333

Source: FAO –Fishstat.

¹⁰³ FAO.

¹⁰⁴ Including sea cucumber.

12.2 MADAGASCAR AND THE EU FISHERIES PARTNERSHIP

Foreign industrial fishing, mainly specialized in tuna fisheries, is undertaken by European vessels operating under a Sustainable Fishing Partnership Agreement (SFPA) between Madagascar and the EU, and Asiatic vessels operating under agreements with private companies. The current protocol to the fisheries partnership agreement between the EU and Madagascar was signed on 19 December 2014 and covers the period 1 January 2015 – 31 December 2018 with a financial contribution of EUR 6,1 million for the whole duration of the protocol, out of which EUR 2,8 million is dedicated to the support of the fisheries policy of Madagascar¹.

This fisheries partnership agreement allows EU vessels, mainly from Spain, Portugal, Italy and France, to fish in the Malagasy waters, and is part of the tuna network fisheries agreements in the south-west zone of the Indian Ocean. The current SFPA protocol that covers the period 2015–2018 includes a reference tonnage of 15.750 tonnes per year.

Also, non-EU foreign tuna fleets operate under private access agreements for tuna between Madagascar and foreign private companies. In 2011, there were nine agreements: in addition, 10 licences for purse seiners and 50 licences for long-liners were also issued. It should be noted that catch estimates of non-EU foreign fleets are very difficult to obtain²

12.3 AQUACULTURE

Freshwater aquaculture in Madagascar has been in place for a long time, following technological improvements and investment trends. The main freshwater species being farmed is the common carp, which was introduced in 1959. Nile tilapia, introduced in 1956, is becoming increasingly more common in ponds and in cages.

However, over the past 20 years, coastal shrimp farming has undergone rapid development. Marine algae culture is also practised by one company in conjunction with the small farmers in the north-eastern part of the island. Spirulina and sea cucumber farming were still in a start-up phase in 2011. Currently, marine aquaculture is based mainly on the giant tiger prawn (*Penaeus monodon*), farmed behind the mangrove areas on the north-west coast, which is also fished locally. In addition, tropical marine seaweed (*Eucheuma striatum*) Zanzibar strain farming, introduced in 1998, has experienced strong development in the coastal zones³.

In 2016, total aquaculture production amounted to almost 26.000 tonnes, of which seaweeds accounted for 67% and shrimp for 16%. Freshwater aquaculture accounted for 17% of the total in 2016. Over the 2007–2016 period, the main trends have been the spectacular development of the seaweed production and the significant decrease of the shrimp production (–51%, mostly attributable to serious disease issues in farms)⁴.

Table 12-2 MALAGASY AQUACULTURE PRODUCTION BY MAIN SPECIES (volume in tonnes)

Species	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<i>Eucheuma</i> seaweeds	3.650	3.650	3.600	4.000	1.699	1.400	3.575	6.970	15.377	17.423
Giant tiger prawn	8.457	8.000	3.260	4.000	5.405	4.952	5.362	4.691	3.447	4.139
Common carp	2.800	2.800	2.800	2.800	3.350	3.540	2.600	2.600	2.600	2.800
Nile tilapia	30	30	30	50	50	50	907	1.163	1.220	1.600
Other	6	6	26	36	40	46	105	16	50	36
Total	14.943	14.486	9.716	10.886	10.544	9.988	12.549	15.440	22.694	25.998

Source: FAO–Fishstat.

¹ https://ec.europa.eu/fisheries/cfp/international/agreements/madagascar_en

² <http://www.fao.org/3/a-br796e.pdf>

³ http://www.fao.org/fishery/countrysector/naso_madagascar/en

⁴ <http://www.gapcm.org/wp-content/uploads/2016/04/Acte-Atelier-White-Spot-perf.pdf>

12.4 PROCESSING

With the exception of products targeting the export markets – mostly shrimp (one processing plant) and tuna (canneries) – the processing activities are still limited in Madagascar. Most of the fisheries products from traditional fishing are sold on the domestic market. Poor conditions of storage and lack of transportation infrastructure result in high physical and/or economic post-harvest losses, particularly in remote areas. For those products with export market opportunities, such as mangrove crabs or octopus, fish export companies use processing plants and modern equipment for the collection of catch from traditional fishing, in line with EU standards. However, several investment policies currently aim to reduce these losses and improve the added value of the Malagasy fishery sector's products¹.

12.5 TRADE

In the last decade, Malagasy exports of fisheries products have slightly decreased in value and volume, from EUR 136 million (30.000 tonnes) in 2007 to EUR 122 million (22.000 tonnes) in 2016, despite some fluctuations over the decade. In comparison, imports of fisheries products are much lower: EUR 19 million imported in 2016 (14.500 tonnes). The country had a positive trade balance of EUR 104 million in 2016².

Table 12-3 MALAGASY TRADE BALANCE FOR SEAFOOD (value in million EUR)

Trade flow	2014	2015	2016
Exports	119	102	122
Imports	28	20	19
Balance	92	82	104

Source: FAO fish trade and commodity statistics.

Madagascar import includes a significant quantity of frozen tuna that is then processed in canneries before being exported or sold on the local market. These imports mostly include landings by foreign vessels in Malagasy ports to supply the canning industry. In 2016, Madagascar imported 14.500 tonnes of fish in total, of which approximately 13.300 tonnes was tuna, valued at EUR 16 million³.

Seafood export is mostly composed of frozen shrimp from industrial fishing and aquaculture, as well as processed tuna from canneries. The traditional fishery sub-sector targeting high-value species such as octopus, crabs, holothurians, however, also contributes significantly to exports through systems involving fishmongers, fish collectors and fish export companies. About 85% of fish and fisheries products are exported to EU markets⁴. Of the total 2016 exports value, 64% were shrimp products and 21% were tuna products (mostly canned).

Table 12-4 MAIN PRODUCTS EXPORTED FROM MADAGASCAR (2016)

Product	Volume (tonnes)	Value (million EUR)
Shrimps, prawns	8.452	79.593
Tunas, bonitos, billfishes	7.501	26.691
Molluscs, aquatic invertebrates	1.042	3.379
Lobsters, spiny-rock lobsters	214	3.003
Crabs, sea-spiders	668	2.468
Other fish	1.129	1.942
Fish fresh or chilled, excluding fillets and meat	245	1.248
Seaweeds and aquatic plants	1.688	913
Others	25.460	2.988
Total	22.045	122.441

Source: FAO fish trade and commodity statistics.

¹ <http://www.fao.org/3/a-br796e.pdf>

² FAO fish trade and commodity statistics

³ FAO Fishstat.

⁴ <http://www.fao.org/3/a-br796e.pdf>

12.6 MADAGASCAR AND THE EU

In 2017, EU import of Malagasy fisheries products totaled EUR 142 million and 21.318 tonnes. The most important commodity group imported were crustaceans (67% of total import value), and tuna and tuna-like species (26%), and to a lesser extent cephalopods and other marine fish (both 3%). Most of the EU seafood imports from Madagascar were frozen products (73% of import value), whereas the rest was imported as prepared or preserved products (23%).

The main EU destination for Malagasy exports in 2017 was by far France (77% of total value). Other EU importers of Malagasy fisheries products included Spain (11%), Portugal (3%), Belgium (3%), and Italy (3%).

Table 12-5 TOP EU MARKETS FOR SEAFOOD IMPORTS FROM MADAGASCAR (value in million EUR and volume in tonnes)

Country	2015		2016		2017	
	Value	Volume	Value	Volume	Value	Volume
France	73,8	11.787	89,7	12.442	109,2	13.520
Spain	15,7	4.097	10,7	2.927	16,0	4.243
Portugal	0,6	103	4,3	535	4,2	496
Belgium	2,2	594	0,3	83	3,9	983
Italy	4,5	804	6,2	1.670	3,7	717
Others	4,0	1.190	3,5	923	4,5	1.359
Total	100,8	18.575	114,8	18.580	141,6	21.318

Source: Comext.

Table 12-6 TOP MAIN COMMERCIAL SPECIES IMPORTED FROM MADAGASCAR (value in million EUR and volume in tonnes)

Species	2014		2015		2016	
	Value	Volume	Value	Volume	Value	Volume
Shrimp, warmwater	48,0	4.651	66,3	5.849	86,0	7.308
Tuna, skipjack	19,6	5.977	14,3	4.056	20,8	5.443
Tuna, yellowfin	13,1	3.265	12,8	3.504	11,6	3.282
Octopus	3,1	734	3,8	812	4,7	977
Tuna, miscellaneous	3,9	1.162	1,8	530	4,5	1.037
Other marine fish	3,4	588	3,6	649	3,6	628
Shrimp, miscellaneous	4,1	668	5,0	798	3,2	493
Crab	2,0	480	2,7	577	2,6	521
Rock lobster and crawfish	1,5	68	1,7	73	2,6	122
Other	2,0	982	2,8	1.733	1,9	1.507
Total	100,8	18.575	114,8	18.580	141,6	21.318

Source: Comext.

In comparison to import, EU export to Madagascar is much lower and correspond mostly to EU tuna vessels landing in Madagascar in the framework of the SFP. In 2016, EU exports of fish and seafood to Madagascar totaled EUR 12 million and 7.707 tonnes. In 2017, 94% of the export value and 97% of the volume were frozen tuna (mostly skipjack and yellowfin tuna) landed in Madagascar to supply the local canneries.

13 Fisheries in Malta

This case study is available in the
Monthly Highlights N° 1-2017

Malta plays an important role in European fisheries and aquaculture sector, especially concerning bluefin tuna farming. The country accounts for a significant share of EU exports of bluefin tuna to the Japanese sushi and sashimi market. Most Maltese tuna exports originate in other EU Member States. They are imported live and are transferred to pens for fattening. A small amount is fished in the Mediterranean Sea before the fattening process. Currently, Malta is conducting a strategy known as *Towards Sustainability 2014–2025*. Its aim is to develop the aquaculture business, emphasising such factors as management and sustainability to increase production and quality. The aims will be achieved through such factors as the composition of feed and the designation of operational aquaculture zones.

13.1 PRODUCTION

13.1.1 MARINE FISHERIES

Malta is made up of many islands in the eastern basin of the Mediterranean Sea, of which three are inhabited: Malta, Gozo, and Comino. Landings from marine fisheries are made on these three islands. In 2015, 84% of the volume was landed on Malta, and 16% was landed on Gozo and Comino. The Maltese fleet consists of both full-time (399) and part-time (617) vessels, most of which (64%) are 5–10 m and are used mainly for multipurpose fisheries. Some of the most common gear types used by the Maltese fleet are: (1) demersal trawlers, (2) pelagic trawlers, (3) purse-seiners, (4) pots and traps, and (5) hooks and lines.¹ Specific provisions apply to the Community fishing vessels which operate within the 25-mile management zone around Malta.² The first-sales value of landings on Malta is dominated by swordfish and bluefin tuna, accounting in 2015 for 26% and 16%, respectively. Because of swordfish and bluefin tuna's significant seasonality, Maltese fishermen supplement their income with a mixed fishery on several demersal and small pelagic species throughout the year, such as red mullet and mackerel.

From 2010 to 2016, the Maltese quota for bluefin tuna rose 40%, to 226 tonnes, following the trend of the EU quota (11.204 tonnes) in the same period (+58%).³ In 2016, the maximum number of Maltese vessels authorised to fish for, retain on board, transport, or land bluefin tuna in the eastern Atlantic and Mediterranean was 36, of which 35 were longliners and one was a purse-seiner. In the same year, Malta's maximum farming and fattening capacity for bluefin tuna was 12.300 tonnes, while the maximum input from wild catches was 8.768 tonnes.

Table 13-1 TOP SPECIES LANDED IN MALTA (value in million EUR and volume in tonnes)

Species	2012		2013		2014		2015	
	Value	Volume	Value	Volume	Value	Volume	Value	Volume
Swordfish	3,56	503	3,22	460	2,46	377	3,08	489
Bluefin tuna	1,35	137	0,99	155	1,40	156	1,94	180
Red mullet	0,65	99	0,46	66	0,51	58	0,45	60
Mackerel	0,50	249	0,73	308	0,40	852	0,34	626
Other	6,58	1.216	6,85	1.366	5,57	960	5,86	1.082
Total	12,64	2.204	12,25	2.355	10,34	2.403	11,67	2.437

Source: EUMOFA.

13.1.2 AQUACULTURE

Aquaculture in Malta is split into two sectors: (1) tuna penning, relying on captured wild fish and referred to as capture-based species (CBS), and (2) the farming of closed-cycle species (CCS), such as seabream, seabass, and other species that are cultured from eggs produced in hatcheries.

The production process for tuna starts with the capture of wild adult fish, preferably weighing more than 70 kg. The species is commonly located and fished in the southern Mediterranean Sea in the months May or June, when it is migrating for spawning purposes. The tuna is transferred to pens for fattening, normally fed with thawed, wet baitfish. In autumn, the individuals have added approximately 30% in bodyweight, making them ready for harvest and sale.

For gilthead seabream, production starts with the hatchery production of fry, stocked in sheltered nursery cages at

weights of 2–5 g. The fry are transferred to more exposed cages for the fattening process, which lasts at least 14–16 months. They are harvested at approximately 400 g. Seabass follows the same production procedures, but is grown to a higher weight class, approximately 2–3 kg. Both species are fed with dried pellets.

The CCS species meagre was recently introduced in Malta. It follows the same production pattern as seabream and seabass. The species is well suited to aquaculture, with fast growth, low mortality, and a good food-conversion ratio. However, owing to the lack of consumer familiarity and an appearance perceived as unattractive, no significant market exists at the moment.¹¹⁶

Currently, six aquaculture farms operate on Malta from nine sites in designated aquaculture zones. These zones must meet carrying capacity limits established through regulatory

¹ https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/op-malta_mt.pdf

² [http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32006R1967R\(01\)&from=EN](http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32006R1967R(01)&from=EN)

³ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0072&from=EN>

¹¹⁶ [https://eufunds.gov.mt/en/EU%20Funds%20Programmes/Agricultural%20Fisheries%20Fund/Documents/DRAFT_AQUACULTURE_STRATEGY_FOR_MALTA_MARCH_2012\[1\].pdf](https://eufunds.gov.mt/en/EU%20Funds%20Programmes/Agricultural%20Fisheries%20Fund/Documents/DRAFT_AQUACULTURE_STRATEGY_FOR_MALTA_MARCH_2012[1].pdf)

and environmental monitoring measures. Four of the six farms produce only CBS or tuna, one farm produces only CCS, and one farm produces both CBS and CCS. The operational aquaculture zones are shown in red in Figure 9.

117

In 2014, aquaculture production reached a total value of EUR 97,34 million, with a volume of 8.606 tonnes. Of this, bluefin tuna accounted for 84% of the value and 63% of the volume.

Table 13-2 TOP SPECIES PRODUCED FROM AQUACULTURE IN MALTA (value in million EURO and volume in tonnes)

Species	2011		2012		2013		2014	
	Value	Volume	Value	Volume	Value	Volume	Value	Volume
Bluefin tuna	38,60	1.759	78,91	3.904	92,80	6.123	81,46	5.451
Gilthead seabream	10,19	2.159	11,03	2.605	10,93	2.550	11,98	2.704
European seabass	0,56	54	0,83	126	0,70	127	0,98	190
Other	1,61	100	2,24	806	1,44	277	2,92	261
Total	50,97	4.072	93,01	7.441	105,86	9.077	97,34	8.606

Source: EUMOFA.

13.2 TRADE

13.2.1 EXPORT

Maltese exports of bluefin tuna are the most valuable. In 2015, Malta was the second largest EU exporter of bluefin tuna to all markets outside the EU, with 34% of the value and 35% of the volume. It was the largest exporter to Japan (especially whole frozen bluefin tuna), accounting for 43% of the value and 46% of the volume. More than 90% of total extra-EU exports and Maltese exports of bluefin tuna is exported to Japan.

In 2015, export of seafood products from Malta increased 33% in value and 37% in volume over the previous year, at EUR 82,08 million and 8.294 tonnes. The increase was driven mainly by increased exports of bluefin tuna to Japan, at EUR 49,06 million (+58%) and 3.839 tonnes (+60%). In 2015, frozen whole bluefin tuna to Japan accounted for approximately 60% of the total export value and 50% of the volume. With an annual Japanese consumption of 50.000 tonnes of bluefin tuna, this product is in high demand. It is estimated that Mediterranean penned tuna contributes approximately 20%, of which Malta contributes 5–10%.¹¹⁸

The second largest market for Maltese seafood exports is Italy, where 93% of the value and volume is made up of exports of fresh whole gilthead seabream at EUR 8,29 million and 1.595 tonnes.

Table 13-3 TOP SPECIES EXPORTED BY MALTA (value in million euro and volume in tonnes)

Species	2012		2013		2014		2015	
	Value	Volume	Value	Volume	Value	Volume	Value	Volume
Bluefin tuna	21,43	1.170	45,03	2.636	35,99	2.743	53,22	4.061
Gilthead seabream	7,22	1.755	5,59	1.306	6,79	1.457	8,69	1.683
Skipjack tuna	0	0	0	0	0	0	1,08	125
Other	13,32	1.186	12,69	1.933	18,99	1.856	19,08	2.425
Total	41,98	4.111	63,30	5.875	61,77	6.055	82,08	8.294

Source: EUMOFA.

¹¹⁷<http://msdec.gov.mt/en/Document%20Repository/Aquaculture%20Strategy%202014-25.pdf>

¹¹⁸[https://eufunds.gov.mt/en/EU%20Funds%20Programmes/Agricultural%20Fisheries%20Fund/Documents/DRAFT_AQUACULTURE_STRATEGY_FOR_MALTA_MARCH_2012\[1\].pdf](https://eufunds.gov.mt/en/EU%20Funds%20Programmes/Agricultural%20Fisheries%20Fund/Documents/DRAFT_AQUACULTURE_STRATEGY_FOR_MALTA_MARCH_2012[1].pdf)

Table 13-4 TOP MARKETS FOR MALTESE EXPORTS OF SEAFOOD (value in million euro and volume in tonnes)

Country	2012		2013		2014		2015	
	Value	Volume	Value	Volume	Value	Volume	Value	Volume
Japan	26,22	1.363	44,87	2.569	42,41	3.218	55,46	4.316
Italy	7,71	1.846	5,61	1.334	7,66	1.634	8,96	1.720
Spain	0,79	44	0,53	46	2,46	164	6,94	1.377
South Korea	2,85	104	5,12	474	4,65	318	6,26	306
Other	4,40	755	7,18	1.452	4,58	721	4,46	575
Total	41,98	4.111	63,30	5.875	61,77	6.055	82,08	8.294

Source: EUMOFA.

13.2.2 IMPORT

In 2015, the total import of seafood products to Malta was EUR 61,39 million and 30.141 tonnes. The main species imported to Malta in 2015 in value was live bluefin tuna from Italy (65%) and France (35%), which is mainly re-exported to other markets (e.g. Japan) after fattening.

When importing live species, it is the responsibility of the Fish and Farming Regulation and Control division (FFRC) of the Ministry of Resource and Rural Affairs (MRRA) to ensure that all live stock arrives in a clinically healthy state and does not originate in areas with unresolved increasing mortality. This legislation is based on a list of notifiable diseases and the species of fish susceptible to those diseases, as defined by the EU authorities.¹¹⁹

Table 13-5 TOP SPECIES IMPORTED TO MALTA (value in million euro and volume in tonnes)

Species	2012		2013		2014		2015	
	Value	Volume	Value	Volume	Value	Volume	Value	Volume
Bluefin tuna	32,11	2.164	31,13	2.518	27,37	2.449	16,67	1.538
Skipjack tuna	0	0	0	0	0	0	7,06	1.727
Herring	0,63	529	2,37	2.347	1,91	2.379	6,08	9.040
Mackerel	3,09	3.967	4,96	6.615	4,73	6.564	4,47	6.698
Other	37,66	18.030	38,11	20.829	39,73	17.093	27,23	11.139
Total	73,38	24.690	76,51	32.309	73,67	28.485	61,39	30.141

Source: EUMOFA.

Table 13-6 TOP SUPPLIERS OF SEAFOOD TO MALTA (value in million euro and volume in tonnes)

Country	2012		2013		2014		2015	
	Value	Volume	Value	Volume	Value	Volume	Value	Volume
Italy	29,33	3.722	32,14	3.526	31,79	4.134	23,21	3.377
France	4,88	376	10,19	1.317	9,39	742	6,74	1.182
The Netherlands	4,18	3.192	4,18	3.495	7,31	8.016	6,08	6.622
Spain	5,50	5.592	6,12	6.735	2,61	2.439	5,60	5.824
Other	29,49	11.808	23,88	17.236	22,58	13.154	19,77	13.135
Total	73,38	24.690	76,51	32.309	73,67	28.485	61,39	30.141

Source: EUMOFA.

¹¹⁹[https://eufunds.gov.mt/en/EU%20Funds%20Programmes/Agricultural%20Fisheries%20Fund/Documents/DRAFT_AQUACULTURE_STRATEGY_FOR_MALTA_MARCH_2012\[1\].pdf](https://eufunds.gov.mt/en/EU%20Funds%20Programmes/Agricultural%20Fisheries%20Fund/Documents/DRAFT_AQUACULTURE_STRATEGY_FOR_MALTA_MARCH_2012[1].pdf)

13.3 CONSUMPTION

From 2005 to 2014, the domestic consumption of seafood in Malta increased from 30,6 to 32 kg per capita (+5%), making Malta the seventh largest domestic market for seafood per capita in the EU. The development was mainly the result of a national campaign aimed at educating consumers, increasing consumer awareness, and diversifying national consumption patterns. The main species consumed are European hake, chub mackerel, Atlantic horse mackerel, amberjack, ray, European seabass and gilthead seabream, and saddled seabream.

13.4 FUTURE DEVELOPMENT

The International Commission for the Conservation of Atlantic Tunas (ICCAT) has agreed on a recovery plan for the depleted Mediterranean swordfish stocks, which have been overfished for decades. With scientists advising significant cuts in catches, the plan includes a modest reduction and adoption of a quota system. As swordfish is the most valuable species landed in Malta, the ICCAT agreement will affect Maltese landings. In June 2014, Malta launched its first National Aquaculture Strategy, towards sustainability 2014–2025. The main objective is to secure sustainability. According to the strategy, improved management, both regulatory and operational, will improve product quality without damaging the environment and creating conflicts with other coastal and maritime users. Operational aquaculture zones will play an important role. The main goals include (1) diversifying the overall economy, especially in primary food production; (2) generating employment; (3) creating a stronger and more valuable provider of fish for the local retail and food-service sectors; and (4) contributing positively to the EU trade deficit for seafood products. A specific goal of the strategy is to reach production of 5.000 tonnes from aquaculture, in addition to tuna penning production, by 2020, which will increase the total number of full-time equivalent direct and indirect jobs to approximately 1.185. This can add EUR 70 million gross value to the Maltese economy. To achieve the production goal, Malta will depend on the development of other species, such as amberjack and other Mediterranean species as a main priority, using its already extensive knowledge of breeding techniques of such species. An attempted move to alternative tuna feed will reduce the reliance on baitfish, which will improve sustainability and achieve greater competitiveness.¹²⁰

¹²⁰<http://msdec.gov.mt/en/Document%20Repository/Aquaculture%20Strategy%202014-25.pdf>

14 Fisheries and aquaculture in Mauritania

This case study is available in the
Monthly Highlights N° 2-2018

Thanks to its significant fish resources, Mauritania plays a major role in the East Atlantic fishery sector. The resources, including mostly small pelagics used for fishmeal processing, are exploited by the Mauritanian fishing fleet as well as other countries' industrial fleets. Mauritania is an important partner of the EU in the field of fisheries through a Sustainable Fisheries Partnership Agreement giving the EU vessels access to the Mauritanian Exclusive Economic Zone (EEZ). However, the Mauritanian government is implementing a strategical plan aiming to develop and diversify its own fishery sector and benefit more from its EEZ richness.

14.1 PRODUCTION

Mauritania is located at the extremity of West Africa, bordered by Western Sahara to the north and Senegal to the south. Its coastline is 720 km long. The EEZ of Mauritania covers an estimated area of 234.000 km². Mauritania has some of the world's most fish-abundant waters due to strong upwelling coastal currents and a large continental shelf favouring the development of fisheries resources. Mauritanian legislation distinguishes three kinds of fishing: artisanal (canoes), coastal and industrial. The main species targeted are cephalopods (octopus, cuttlefish, squid), demersal fish (hake, breams, mullets, rays, sharks, etc.), crustaceans (shrimp, rocky lobster and deep-water crabs), small pelagics (sardinellas, sardines, horse mackerels, mackerels, etc.) and tunas. Total annual catches in the Mauritanian EEZ reach between 800.000 and 1,2 million tonnes.

14.1.1 ARTISANAL AND COASTAL FISHERIES

The artisanal fleet mostly targets octopus and has grown in the last decade. The number of canoes rose from 4.000 in 2007 up to 7.000 in 2013. About 100 vessels represent the Mauritanian coastal fleet, but only half of them are active; most of them target octopus. Foreign coastal fishing vessels operating in Mauritanian waters are mostly purse-seiners targeting small pelagics. In 2015, there were 450 purse-seiners fishing in Mauritanian waters. Artisanal and coastal fleets caught more than 344.000 tonnes of fish in 2013 (against 100.000 tonnes in 2009). This increasing trend is mainly the result of the increasing fishing effort on small pelagics (83% of catches in 2013) due to the growth of the fishmeal industry¹²¹.

14.1.2 INDUSTRIAL FISHERIES

In contrast to the artisanal and coastal fleets, the industrial fleet targeting demersal species shrank as the number of vessels operating in the Mauritanian EEZ fell from 380 in 2002 to 137 in 2013. Cephalopods account for 70% of landing volumes (about 40.000 tonnes in total in 2013). In 2013, the industrial pelagic fleet operating in Mauritanian EEZ included about 50 vessels, most of them being foreign vessels. In 2013, eight seiners owned by a private Asian company operated under Mauritanian fishing license. After having reached a peak at 1,2 million tonnes in 2010, small pelagic industrial catches have been slightly but constantly declining, after several foreign vessels stopped their activity in Mauritanian waters. In 2013, industrial pelagic catches reached 600.000 tonnes, of which 40% were sardinellas. Tuna and tuna-like species fisheries involve vessels operating all along the West African coast. Tuna catches reached 47.000 tonnes in 2013.

All catches by EU vessels are landed or transhipped in Mauritania. The small pelagics are transhipped to Gulf of Guinea countries (Nigeria and Ivory Coast in particular) as well as to Russia and neighbouring countries. Demersal species enter into the distribution cycle of the Spanish market.

The access of foreign fleets to Mauritanian fishing zones is made possible through bilateral agreements (EU), private arrangements with private companies (Chinese and Turkish for small pelagics and Japanese for tuna) or by the acquisition of private licenses.

From 2007 to 2013, industrial fishing represented between 85% and 90% of total reported catch by artisanal and industrial activities (1 million tonnes in 2012). About 90% of industrial catches were small pelagics (of which 30% caught by EU vessels)¹²². In 2016, industrial catches reached 740.000 tonnes, according to national sources.

The volume of fish landed in Mauritanian ports was estimated at 400.000 tonnes in 2014, accounting for approximately 30% of the total catches in Mauritanian waters. This share has been increasing constantly in the last decade due mostly to significant improvements in landing facilities and port infrastructure.

Although some small pelagic stocks are considered to be overexploited or exploited slightly above sustainable level (in particular sardinella and mackerel), several stocks targeted by artisanal fleets remain underexploited (shrimps and clam) and may be considered as a development opportunity for the future of the local industry¹²³.

¹²¹<http://extwprlegs1.fao.org/docs/pdf/mau152643.pdf>

¹²²https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/report-mauritania-2014_fr.pdf

¹²³ Source: Tuna Fisheries Transparency Initiative in ATLAFCO zone, 2016.

14.1.3 NATIONAL CATCH

According to FAO, Mauritanian catches (i.e. vessels operating under national license) exceeded 400 thousand tonnes in 2015. Sardinellas were by far the main species caught with 190 thousand tonnes caught in 2015, accounting for 47% of the total catches. Other important species groups were coastal fishes (11%), bonga shad (9%), octopuses (8%) and jack and horse mackerels (8%).

Table 14-1 CATCHES IN MAURITANIA BY MAIN SPECIES (tonnes)

Species	2010	2011	2012	2013	2014	2015
Sardinellas	147.651	165.031	216.248	205.026	233.814	190.165
Coastal fishes	20.114	16.117	25.115	19.703	29.813	42.945
Bonga shad	1.416	2.382	2.862	90.349	43.326	36.372
Octopuses	15.801	16.716	25.227	24.733	20.798	33.249
Jack and horse mackerels	33.710	47.154	55.553	322	2.707	32.197
Freshwater fishes ¹²⁴	15.000	15.000	15.000	15.000	15.000	15.000
Sardine	16.674	27.955	11.361	1.491	1.532	14.793
Flounders, halibuts, soles	195	1.049	1.752	2.042	2.702	11.715
Crustaceans	962	1.260	4.742	2.781	1.063	2.889
Other	24.715	79.347	79.849	26.386	27.584	24.451
Total	276.238	372.011	437.709	387.833	378.339	403.776

Source: FAO – Fishstat

14.1.4 OTHER SECTORS: INLAND FISHERIES AND MARINE AQUACULTURE

Inland fisheries and marine aquaculture activities are very limited though they are considered to have an important potential. Inland fishery production reaches yearly approximatively 2.500 tonnes annually. Marine aquaculture is considered to have a high potential, especially for oyster and algae farming. The production of oysters was below 40 tonnes in 2014¹²⁵.

14.2 PROCESSING

In general, Mauritanian fish products are sold with a low level of processing: fresh whole on the domestic market and frozen whole for exports. Processing stage includes only initial steps (heading, gutting, filleting) before being frozen, as well as traditional processing (drying and salting). However, the fishmeal and fish oil industry has become more and more important mostly in Nouadhibou, and to a lesser extent in the area of Nouakchott.

Processing small pelagics into fishmeal and fish oil has become very important in the Mauritanian fishery industry. In 2006 only 5 factories were processing fishmeal and oil. In 2016 they were 40. These factories are related to foreign investments (mainly Chinese, Turkish, and to a lesser extent, Moroccan and Russian). In 2014, the volume of small pelagics processed into fishmeal was above 300.000 tonnes¹²⁶ and is assessed to have been around 450.000 tonnes in 2017, according to the Mauritanian fisheries Ministry.

14.3 MAURITANIA AND THE EU: FISHERIES PARTNERSHIP

The current four-year Protocol to the Fisheries Partnership Agreement (FPA) entered into force in November 2015. Under the Protocol, the EU fleet is allowed to fish in Mauritanian waters for shrimp, demersal fish, tuna and pelagic fish, up to total of 287.050 tonnes a year. In addition to the fees paid by the European fleet, the EU pays a financial contribution of 61,6 million euros per year for this partnership. A share of this amount aims to support local fishing communities and improve fisheries governance¹²⁷.

14.4 5.2 TRADE

14.4.1 MAURITANIAN GLOBAL FISH TRADE

According to FAO, in recent years, Mauritanian exports of fishery products have grown in value: from EUR 148 million (134 000 tonnes) in 2010 to EUR 512 million (367 000 tonnes) in 2015. In comparison, imports of fishery products are much lower: EUR 1,3 million imported in 2015 (3 860 tonnes), according to FAO. In 2015 the country had a positive trade balance of EUR 512 million.

¹²⁴ This assessment seems unrealistic, it should be closer to 2 500 tonnes, according to national sources.

¹²⁵ Ministry of Fisheries and Maritime Economy of Mauritania <http://extwprlegs1.fao.org/docs/pdf/mau152643.pdf>

¹²⁶ <http://extwprlegs1.fao.org/docs/pdf/mau152643.pdf>

¹²⁷ <https://ec.europa.eu/fisheries/cfp/international/agreements/mauritania>

Table 14-2 MAURITANIAN TRADE BALANCE FOR SEAFOOD (million EUR)

Trade flow	2013	2014	2015
Exports	260	330	513
Imports	0,8	1,0	1,3
Balance	260	329	512

Source: FAO fish trade and commodity statistics.

According to the Mauritanian Ministry of Fisheries and Maritime Economy, over the first 11 months in 2016 Mauritanian seafood exports reached MRO128 222 billion (EUR 520 million) for a volume of 728 thousand tonnes. Fishery sector is estimated to account for almost 50% of total Mauritanian exports.

The main destination for Mauritanian exports of fishery products is Europe (36%), followed by Asia (28%) and Africa (24%), and to a lesser extent Russia (11%).

Table 14-3 MAIN DESTINATION MARKETS FOR MAURITANIAN EXPORTS (January–November 2016)

Countries	Volume (tonnes)	Value (million MRO)
Africa	428.930	54.040
America	610	227
Asia	79.642	63.067
Europe	117.337	79.314
Russia	101.040	25.253
Total	727.558	221.902

Source: Ministère des Pêches et de l'Economie Maritime¹²⁹.

Over the 11 first months in 2016, the main fishery products exported were cephalopods (35% in value), and frozen fish ((29%). Other important products exported were pelagics (13%) and fishmeal (13%). Fresh fish accounted only for 1% of exports value.

Table 14-4 MAIN PRODUCTS EXPORTED FROM MAURITANIA (January – November 2016)

Product	Volume (tonnes)	Value (million MRO)
Cephalopods	33.436	76.913
Frozen products	401.241	64.428
Pelagics	148.017	28.465
Fishmeal	68.842	28.081
Fish oil	17.749	7.227
Fresh	24.473	4.837
Demersal	4.388	3.146
Lobster	1.232	2.254
Shrimp	969	2.235
Preserved	751	1.142
SSF	999	185
Others	25.460	2.988
Total	727.558	221.902

Source: Ministère des Pêches et de l'Economie Maritime.

¹²⁸ Mauritanian ouguiya¹²⁹ http://www.peches.gov.mr/IMG/pdf/exportation_globale-2.pdf

14.5 MAURITANIA AND THE EU

In 2016, EU imports of Mauritanian fishery products totalled EUR 278 million and 79.000 tonnes. The most important species imported were octopus (35% of total import value), other marine fish (17%), fishmeal (13%) and to a lesser extent squid and fish oil (both 8%). Most of seafood imports from Mauritania were frozen products (57% of import value). The rest was imported fresh (22%) or under unspecified preservation state (21%). The main EU destination for Mauritanian exports was by far Spain (67% of total value). Other important EU importers of Mauritanian fishery products were Italy (8%), Denmark (7%), France (6%), and Germany (5%).

Table 14-5 TOP EU MARKETS FOR SEAFOOD IMPORTS FROM MAURITANIA (value in 1000 EUR and volume in tonnes)

Country	2014		2015		2016	
	Value	Volume	Value	Volume	Value	Volume
Spain	115.286	26.598	174.067	35.426	185.611	35.396
Italy	24.607	4.295	28.690	5.482	23.593	3.679
Denmark	23.804	23.760	15.538	11.648	18.860	14.012
France	9.578	5.996	11.434	5.981	16.633	7.883
Germany	18.116	18.343	2.948	2.602	14.573	11.404
Greece	5.946	2.195	7.776	2.327	8.684	3.864
Portugal	19.782	2.839	8.102	1.253	6.112	894
Netherlands	1.522	1.193	1.535	903	2.155	1.239
Others	1.554	881	792	313	1.472	782
Total	220.194	86.100	250.883	65.936	277.694	79.152

Source: COMEXT.

Table 14-6 TOP MAIN COMMERCIAL SPECIES IMPORTS FROM MAURITANIA (value in 1000 EUR and volume in tonnes)

Species	2014		2015		2016	
	Value	Volume	Value	Volume	Value	Volume
Octopus	70.990	12.122	94.805	16.033	95.973	13.374
Other marine fish	34.278	7.336	40.148	7.790	46.693	9.021
Fishmeal	38.182	39.510	21.360	16.828	37.068	29.492
Squid	10.320	1.932	20.729	3.725	22.098	3.753
Fish oil	17.312	15.401	15.099	10.434	21.230	12.696
Other seabreams	9.920	2.151	13.216	2.915	14.722	3.233
Rock lobster and sea crawfish	11.590	872	16.566	948	11.642	514
Others	27.603	6.776	28.961	7.263	28.269	7.071
Total	875	183	917	180	943	183

Source: COMEXT via EUMOFA.

In comparison to imports, EU exports to Mauritania are much lower. In 2016, EU exports of seafood to Mauritania totalled EUR 5,8 million and 6.694 tonnes. The most important main commercial species exported by value were other products (33% of total value, mostly soups and broths and preparations), skipjack tuna (24%), and to a lesser extent sardine (13%) and yellowfin tuna (11%). These EU exports concerned mostly frozen products (57%) and prepared and preserved products (43%). In 2016, the main EU exporters to Mauritania were by far Spain (76% of total value) and Germany (22%, mostly small pelagics).

14.6 STRATEGY AND PROSPECTIVE

In 2014, the Mauritanian Ministry of Fisheries and Marine Affairs has published a document providing the strategy for the fisheries sector over the 2014-2019 period¹³⁰. This strategical plan has 6 main objectives:

- **Improving knowledge on marine resources and environment:** conservation of marine and coastal environment, evaluation of stocks status and dynamics, enhancing research capacity.
- **Optimizing fisheries management:** planning of fisheries activities, management of the allocation of access and resource (licenses, TAC and quotas), enhancing surveillance of fishing activities.
- **Enhancing integration of the fishery sector in the national economy:** development of facilities and processing industries in coordination with other policies objectives (coastal management, policy against poverty, etc.), contributing to food security, development of professional training in the field of marine economy (fisheries, processing, aquaculture), enhancing health and quality control.
- **Promoting inland fisheries and aquaculture:** development of a legal framework for these activities (in inland and marine areas), deepening knowledge and competences on technical aspects (production system, species, water management, etc.), increase in production (new aquaculture projects, pilot-projects).
- **Developing marine affairs** (in the context of blue growth): enhancing onboard security, improving coastal and public-owned coastal land governance, enhancing protection of marine environment, development of marine and river transport (legal framework and facilities to be developed), development of ancillary marine jobs and improvement of human resources management.
- **Enhance fisheries governance:** adaptation and modernization of the legal and institutional framework, promotion of dialogue in the decision making with the sector's stakeholders, improving transparency and cooperation in the field of sustainable management of the fishery sector.

This strategy aims to make the fishery sector grow, through sustainable development, modernization and diversification. Quantitative objectives have been drafted and some of them, market-related, are provided in the table below.

Table 14-7 MARKET – RELATED QUANTITATIVE OBJECTIVES OF THE MAURITANIAN STRATEGY FOR THE FISHERIES SECTOR

Indicator	State of play 2013/2014	Objective 2019/2020
GDP fishery sector (in million USD)	142,6	226,6
EEZ Fisheries production in volume (tonnes)	800.000	1.200.000
EEZ Fisheries production in value (million USD)	740	900
GDP processing sector (million USD)	105,52	198,79
% of production landed in Mauritania	15%	60%
Inland fisheries and aquaculture (tonnes)	1.000	20.000
Oyster farming production (tonnes)	40	250
Algae farming production (tonnes)	0	100
Domestic fish consumption	6 kg/year/capita	10 kg/year/capita

¹³⁰ <http://extwprlegs1.fao.org/docs/pdf/mau152643.pdf>

15 Fisheries in Morocco

This case study is available in the
Monthly Highlights N° 4-2015

With two seaboard, one on the Mediterranean and one on the Atlantic, a 3.500-km long coastline, and a maritime area of 1,2 million km², Morocco has abundant fishery assets. The fisheries sector plays a vital role in the kingdom's economy: it contributes 2,3% to GDP; it provides 170.000 jobs directly and 490.000 jobs indirectly; and it represents 50% of agrofood exports and 7% of total exports. With landings approaching 1,3 million tonnes, Morocco ranks first among fishing countries in Africa and 25th worldwide.

15.1 PRODUCTION

15.1.1 LANDINGS

In 2014, Morocco's landings reached 1,28 million tonnes (+9% over 2013) for a first-sales value in Moroccan dirhams (MAD) of 6,03 billion (+10%) or EUR 541 million. Small pelagics account for 43% of total landings in value and 90% in volume. Morocco, with 50 canning companies, is the leading producer and exporter of *Sardina pilchardus* worldwide.

Cephalopods come second with 29% of value and 3% of volume. White fish represents 23% of value and 6% of volume (78.500 tonnes).

Table 15-1 MOROCCO: LANDINGS by main species (2014)

Species	Volume (1000 tonnes)	Value (million MAD)
Sardine	848	1.548
Octopus	25	1.243
Mackerel	178	436
Shrimp	3	125
Horse mackerel	15	105
Anchovy	9	75
Other	209	2.503
Total	1.287	6.035

Source: Office National des Pêches (ONP), Kingdom of Morocco.

Most resources are concentrated in the central and southern Atlantic. With landings of 31.000 tonnes, the Mediterranean contributes little to Morocco's total landings (8% of value and 2% of volume).

15.1.2 AQUACULTURE

Aquaculture is still a minor sector (433 tonnes in 2013), currently limited to two species: oyster (in Dakhla Bay, in the south on the Atlantic coast, and in Oualidia Lagoon, north of Safi) and seabass (in the north on the Mediterranean coast close to Tetuan).

An ambitious target of producing 200.000 tonnes has been set by the government in the framework of the Halieutis strategy. The first agreements signed in 2014 should lead to the creation of 600 jobs and the production of 23.000 tonnes of finfish (mostly seabass and seabream) and 1.500 tonnes of shellfish (mostly oyster).

15.1.3 PROCESSING

The processing industry realised sales of MAD 16,3 billion (EUR 1,5 billion) in 2013 and focuses on two major activities: freezing and canning. Freezing units are located in the south (Dakhla, Laayoune) as well as in Agadir and Casablanca and process mostly small pelagics and cephalopods. Canning factories focus on sardine and are located in Agadir and in the south.

Table 15-2 MOROCCO: STRUCTURE OF THE FISH PROCESSING INDUSTRY (2013)

Activity	Production (tonnes)	Turnover (million MAD)
Freezing (onshore)	258.300	6.450
Packaging Fresh	20.950	1.650
Canning	163.700	5.740
Semi preserves	19.000	1.420
Fishmeal	62.000	650
Fish oil	16.800	295
Other	6.690	425
Total	547.440	16.630

Source: Ministry of Agriculture and Fisheries, Kingdom of Morocco.

15.2 MOROCCO AND THE EU: FISHERIES PARTNERSHIP

The current Fisheries Partnership Agreement (FPA) between the EU and Morocco entered into force on 28 February 2007, for a period of four years. Since then, it has been tacitly renewed twice. The current protocol to this agreement was signed on 18 November 2013, and endorsed by the Council and the European Parliament. It entered into force on 15 July 2014, following the completion of the internal ratification procedures by Morocco.

The EU's financial contribution amounts to EUR 30 million a year: EUR 16 million for access to the resource and EUR 14 million earmarked to support Moroccan fishery policy, in order to promote sustainability in its waters.

In addition, the European fleet pays a yearly fee of approximately EUR 10 million based on volume of catches. For instance, tuna ship owners pay a fee of EUR 35 per tonne caught; for industrial fishing of small pelagics, freezer trawlers pay EUR 100 per tonne, and RSW vessels (vessels equipped with refrigerated seawater tanks) pay EUR 35 per tonne.¹³¹

Vessels from 11 EU Member States have the authorisation to fish in Morocco waters under the agreement and the current protocol. A quota of 80.000 tonnes for industrial fishing of pelagic species is allocated among Germany, Lithuania, Latvia, the Netherlands, Ireland, Poland, the United Kingdom, Spain, Portugal, and France. Licences are also attributed for small-scale fishing (Spain, Portugal), demersal fishing (Spain, Portugal), and tuna fishing (Spain, France). Main species targeted and captured are tuna, and small pelagics.

¹³¹http://ec.europa.eu/fisheries/cfp/international/agreements/morocco/index_en.htm

15.3 MOROCCO AND THE EU: TRADE

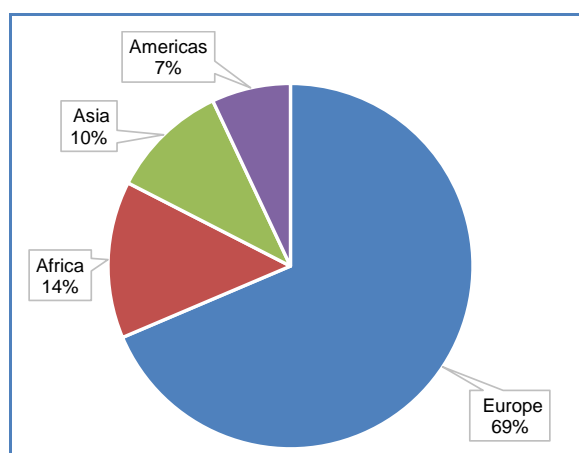
15.3.1 EU'S PLACE IN MOROCCO'S EXPORTS

The EU is Morocco's main commercial partner and absorbs 64% of Morocco's total fishery exports in value.

The EU is Morocco's first partner for fresh fish (96% of Morocco's total exports), semi-preserves (90%), fish oil (74%), frozen fish (66%), canned fish (47%) and algae (44%).

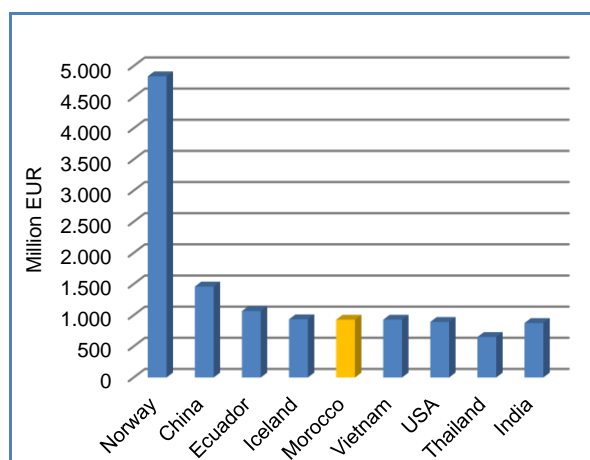
Africa imports mostly canned fish from Morocco, and Asia imports concentrate on frozen fish.

Figure 15-1 MOROCCO: FISHERY PRODUCTS EXPORTS by main partners (2014)



Source: Office des Changes, Kingdom of Morocco.

Figure 15-2 EU: FISHERY PRODUCTS IMPORTS by main partners (2014)



Source: EUMOFA.

Three commodity groups represent 83% of EU imports from Morocco in value (2014): cephalopods (35%), small pelagics (32%), and crustaceans (16%).

The main commercial species are octopus (22%), shrimp (15%), sardine (15%), anchovy (11%), squid (6%), cuttlefish (6%), and mackerel (5%).

EU's imports from Morocco follow an upward trend in the period 2006–2014. They increased 24% in volume and 9% in value.

15.3.2 MOROCCO'S PLACE IN THE EU'S IMPORTS

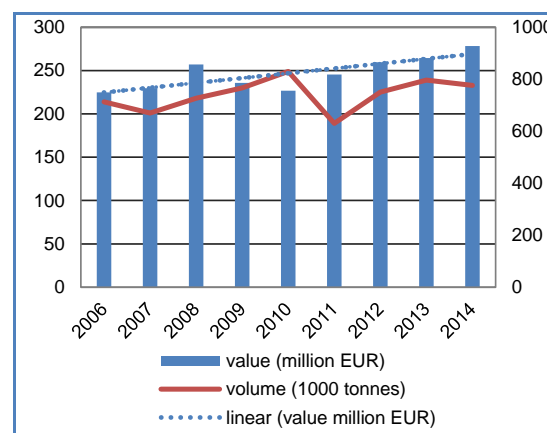
Morocco is the EU's fifth largest partner. In 2014, the EU imported fishery and aquaculture products from Morocco with a total value of EUR 928 million. Morocco supplies 4,4% of the EU's total extra-EU imports.

Table 15-3 MOROCCO: EXPORTS OF FISHERY PRODUCTS by destination in value (2013) (million MAD)

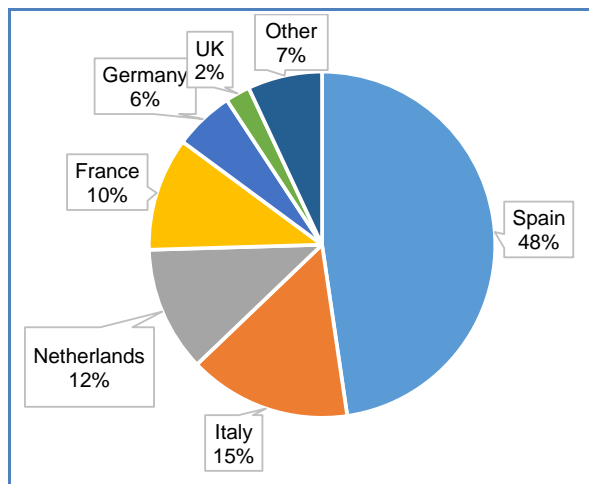
Destination	Fresh	Frozen	Canned	Semi-preserves	Fish meal	Fish oil	Algae*	Other	Total
EU	1.579	4.288	2.179	1.267	282	203	156	55	10.009
Africa	1	364	1.698	2	79	0	4	14	2.162
Asia	57	1.272	176	22	100	19	127	3	1.776
Americas	0	286	310	96	2	19	66	-	779
Rest of Europe	15	235	45	14	404	34	0	-	745
Middle East	-	6	169	3	-	-	0	1	179
Other	-	5	14	10	5	-	-	-	33
Total	1.651	6.455	4.591	1.413	873	275	354	72	15.684

Source: Office des Changes. * including agar-agar

Figure 15-3 EU IMPORTS FROM MOROCCO (2006-2014)



Source: EUMOFA.

Figure 15-4 EU IMPORTS FROM MOROCCO BY MEMBER STATES (2014)

Source: EUMOFA.

Spain is by far Morocco's main partner, accounting for half of total EU imports from Morocco. Italy, the Netherlands, France, and Germany are the other major MSs importing from Morocco.

Approximately 25.000 tonnes of brown shrimps, *Crangon crangon*, caught in the North Sea are transported each year by truck to Morocco, where they are peeled manually in large plants around Tanger before being shipped back to the Netherlands.

15.4 MOROCCO AND THE FUTURE: THE HALIEUTIS STRATEGY

Since 2009, Morocco has been developing a strategy for the development and competitiveness of the fishery sector, aimed at a 2020 horizon, known as the Halieutis strategy.¹³² Its main objectives are:

- to reach an income of production and processing of MAD 21,9 billion (EUR 2 billion) by 2020 (baseline 2007: MAD 8,3 billion);
- to develop fishing so as to reach catches of 1,66 million tonnes by 2020 (baseline 2007: 1,04 million tonnes; output 2014: 1,29 million tonnes);
- to develop exports so as to reach USD 3,1 billion by 2020 (baseline 2007: USD 1,2 billion; output 2013: USD 1,9 billion);
- to develop aquaculture to reach a production of 200.000 tonnes by 2020 (baseline 2007: <500 tonnes);
- to increase the local consumption from 12 kg per capita, per year to 16 kg by 2020

¹³²http://www.maroc.ma/en/system/files/documents_page/HALIEUTIS%20Marrakech2010.pdf

16 Fisheries and aquaculture in New Zealand

This case study is available in the
Monthly Highlights N° 11-2018

New Zealand is located in the south-west Pacific Ocean, with a population of approximately 4,9 million¹³³. The country consists of two main Islands, the North and the South Island and it has a coastline that is over 15.000 km long, the ninth longest in the world. The seafood industry employs over 13.000 people, out of whom about 2.500 work in commercial fishing or aquaculture at sea¹³⁴. New Zealand has an Exclusive Economic Zone (EEZ) of 200 nautical miles and 123 species are fished commercially. The indigenous people of New Zealand, the Maori, have about 50% of New Zealand's fishing quotas¹³⁵ and are guaranteed 20% of the quota for each new species entering the country's quota management system¹³⁶.

New Zealand has been recognized for its sustainable fisheries, as several fisheries have received certification by the Marine Stewardship Council (MSC)¹³⁷. According to the Ministry for Primary Industries, of the 165 stocks scientifically evaluated in 2017 (which represent 78% of the total catch in value and 71% in volume), 138 are sustainable (above the "soft" limit) and 27 below the soft limit¹³⁸. Below the soft limit a fish stock is considered to be overfished or depleted and needs to be actively rebuilt¹³⁹. The main species caught in New Zealand are blue grenadier (also known as "hoki"), squid, mackerel, snoek and southern blue whiting. In 2016, the country's total catch from fisheries was 425.000 tonnes, with marine fish dominating the industry. Catches of crustaceans are mainly red rock lobster and New Zealand lobster that are exported live to Asian markets.

New Zealand is also known for its aquaculture production of mussels and chinook salmon (or king salmon). The country also has some aquaculture production of abalone which is known for having a high value in Asian markets.

Table 16-1 CATCHES IN NEW ZEALAND (volume in 1000 tonnes)

Species	2000-2005 average	2006-2011 average	2012	2013	2014	2015	2016
Marine Fish	491	394	397	408	418	407	370
Molluscs	63	57	39	30	20	21	48
Crustaceans	4	4	4	4	4	4	4
Other	1	1	2	2	2	2	3
Total	559	455	442	444	443	433	425

Source: FAO.

¹³³ <https://www.stats.govt.nz/indicators/population-of-nz>

¹³⁴ <https://www.seafoodnewzealand.org.nz/industry/key-facts/>

¹³⁵ <https://www.seafoodnewzealand.org.nz/industry/key-facts/>

¹³⁶ <http://www.treaty2u.govt.nz/the-treaty-today/fisheries/index.htm>

¹³⁷ <https://fisheries.msc.org/en/fisheries/@@search?q=new+zealand&search=>

¹³⁸ <https://www.mpi.govt.nz/growing-and-harvesting/fisheries/fisheries-management/fish-stock-status/>

¹³⁹ <https://www.mpi.govt.nz/growing-and-harvesting/fisheries/fisheries-management/fish-stock-status/>

16.1 CATCHES

In 2016, New Zealand had a total catch from fisheries at about 425.000 tonnes, a decline by 23% from 2000 but being relatively stable during the last five years.

Catches of blue grenadier accounted for 33% of the total in 2016. It is caught by trawling in fishing regions mainly off the South Island¹⁴⁰. Approximately 10% of the total catch consisted of squid. The majority of squid fishing activities takes place from January to May in territories around the EEZ, using both trawlers and jigging vessels¹⁴¹.

Table 16-2 CATCHES IN NEW ZEALAND, MAIN SPECIES (1000 tonnes)

Species	2000-2005 average	2006-2011 average	2012	2013	2014	2015	2016
Blue grenadier	182	104	128	132	149	157	140
Jack and horse mackerels	35	42	43	45	50	45	39
Southern blue whiting	29	32	30	33	32	25	23
Snoek	24	27	28	23	26	25	23
Wellington flying squid	54	52	35	25	15	16	43
Pink cusk-eel	19	14	15	14	15	15	15
Blue mackerel	10	10	10	9	6	11	9
Orange roughy	17	12	6	7	9	10	8
Other	188	163	146	157	141	132	125
Total	559	455	442	444	443	433	425

Source: FAO.

16.2 AQUACULTURE

Aquaculture production in New Zealand amounted to 109.016 tonnes in 2016, increasing by almost 20% with respect to 2015 and reaching almost the same level of 2014.

With 94.037 tonnes, production of green mussel (also known as New Zealand mussel) covered 86% of total aquaculture in 2016. The most common farming method for the species is the culture on ropes. The mussels reach market size in 12–18 months.

Production of chinook salmon has averaged 12.130 tonnes in the last five years, with a drop in 2014 to less than 11.000 tonnes. New Zealand is the world largest producer of this species, and the industry uses traditional methods for its farming, which means that production starts in land-based hatcheries and after growing to a certain size the fish are transferred to net pens in the sea to continue growing. Production is located in the areas of Marlborough Sounds, north of the South Island, around Stewart Island on the south end of the South Island and also in Akaroa Harbour on the east side of the South Island¹⁴².

Table 16-3 AQUACULTURE PRODUCTION IN NEW ZEALAND (volume in tonnes)

Species	2012	2013	2014	2015	2016
Green mussel (New Zealand mussel)	86.447	83.561	97.438	76.811	94.037
Chinook salmon	12.397	11.988	10.840	12.474	12.943
Pacific cupped oyster	1.216	1.497	1.509	1.909	1.946
Rainbow abalone	101	77	87	81	90
Total	100.161	97.123	109.874	91.275	109.016

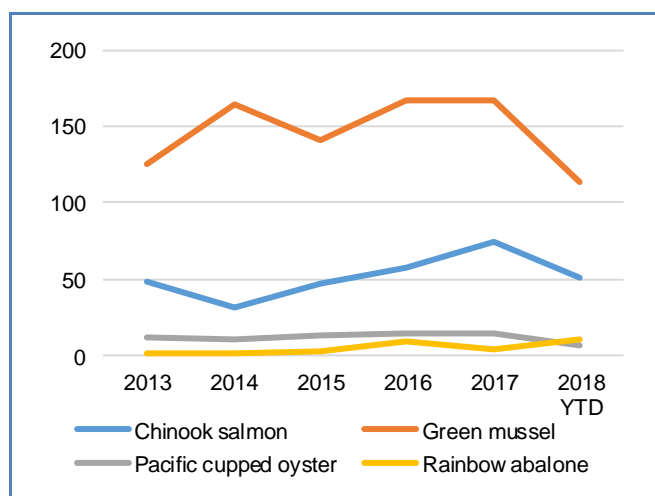
Source: FAO.

¹⁴⁰ <http://deepwatergroup.org/species/hoki/>

¹⁴¹ <https://fs.fish.govt.nz/Page.aspx?pk=5&tk=1&fpid=48>

¹⁴² <https://www.aquaculture.org.nz/industry/king-salmon/>

Figure 16-1 EXPORT VALUE OF SPECIES FARMED IN NEW ZEALAND (value in million EUR)



Source: FAO.
 * Data for 2018 are available up to September.

Rainbow abalone, which is produced in relatively small volumes, has a very high export value. In 2017, fresh abalone was exported at 781 EUR/kg and frozen abalone at 343 EUR/kg. Abalone is mainly exported to China, Australia and Hong Kong.

16.3 PROCESSING

The different species caught or/and farmed in New Zealand are preserved and processed differently before being exported.

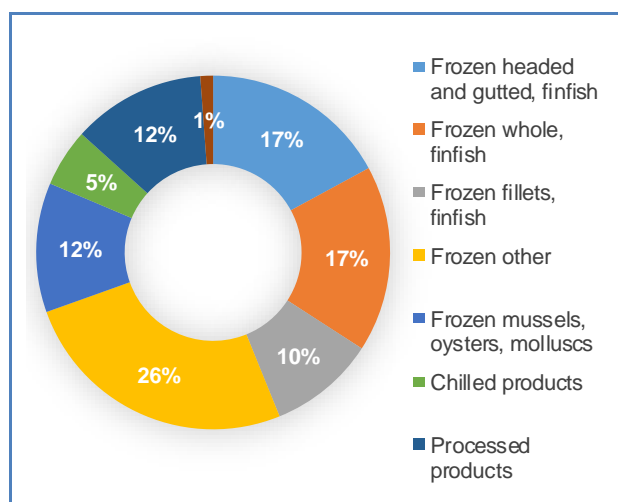
Blue grenadier is commonly processed on board, either into frozen blocks or into fillets, the latter achieving a higher market value. Mussels are either canned, frozen or put in vacuum, or in the half-shell. Rock lobster is mainly exported live to China, with small volumes being frozen.

Salmon is subject to both primary and value-added processing. Salmon is processed and packaged into varying formats to be sent to market in either chilled or frozen format. The most popular product forms include whole salmon and salmon fillets as well as smoked salmon using either hot or cold natural wood smoking methods¹⁴³.

In 2017, 82% of the seafood export from New Zealand consisted of frozen products. Finfish that is exported as frozen whole products, headed and gutted or in fillets, made up 60% of the total. Frozen mussels, oysters and molluscs accounted for 12% of the total.

Processed products (such as smoked, dried and canned) represented 12% of the total, while another 5% included chilled products and 1% was exported live.

Figure 16-2 SEAFOOD EXPORTS FROM NEW ZEALAND BY PRESERVATION STATE (volume in 1000 tonnes)



Source: EUMOFA/EUROSTAT.

¹⁴³ <http://www.nurturedseafood.com/nz-king-salmon/traceability/processing/>

16.4 TRADE

16.4.1 EXPORT

In 2017, New Zealand exported seafood to 113 different countries including EU Member States. Of them, 57 countries imported more than 1.000 tonnes of seafood from New Zealand. This demonstrates how New Zealand has effective transport routes and can reach markets all over the world despite its remote location in the south west Pacific.

The most popular species exported from New Zealand are blue grenadier and mackerel. Of the 59.000 tonnes of blue grenadier exported in 2017, the largest amounts were destined to China (23.600 tonnes), Australia (10.400 tonnes) and Poland (6.200 tonnes). Mackerel is mainly exported to China (6.800 tonnes), Cameroon (5.600 tonnes) and Mozambique (3.300 tonnes). This mainly comprises jack mackerel, exported at 1,01 EUR/kg in 2017.

Mussels are mainly exported to the United States (10.000 tonnes), the EU (6.000 tonnes) and China (4.800 tonnes), at an average export price of 4,67 EUR/kg in 2017.

One of the most valuable species exported by New Zealand is rock lobster, reaching a price of 63,70 EUR/kg in 2017. This was a decline of 13% from 2016 when the price was 72,10 EUR/kg. Nearly all of the rock lobster exports from New Zealand in 2017 went to China.

Table 16-4 SEAFOOD EXPORTS FROM NEW ZEALAND BY SPECIES (volume in 1000 tonnes and value in million EUR)

Species	2014		2015		2016		2017	
	Volume	Value	Volume	Value	Volume	Value	Volume	Value
Blue grenadier (hoki)	57	133	55	131	56	133	59	141
Mackerel	43	51	46	48	40	38	44	45
Mussels	33	165	28	141	33	167	36	167
Barracouta	15	14	17	17	14	17	18	25
Squid	14	28	15	26	38	73	17	50
Southern blue whiting	17	15	13	12	8	7	12	12
Ling	6	31	5	30	6	34	7	41
Skipjack tuna	15	13	16	13	6	7	6	8
Salmon	3	29	3	38	4	46	5	59
Orange roughy	3	24	5	34	5	39	5	33
Rock lobster	3	175	3	192	3	206	3	173
Albacore tuna	2	5	2	6	2	6	2	7
Other	83	317	81	339	77	349	83	342
Total	292	1.001	290	1.027	292	1.124	296	1.102

Source: Seafood New Zealand (www.seafood.org.nz/publications/export-information/).

Table 16-5 SEAFOOD EXPORTS FROM NEW ZEALAND BY DESTINATION (volume in 1000 tonnes, value in million EUR)

Market	2014		2015		2016		2017	
	Volume	Value	Volume	Value	Volume	Value	Volume	Value
China	74	292	74	325	78	361	73	333
Australia	34	148	33	141	34	157	35	150
United States	17	116	16	126	19	145	21	141
Japan	19	65	19	65	19	71	20	70
South Korea	12	28	13	30	10	33	13	31
South Africa	8	7	11	12	10	13	13	16
Spain	7	24	7	27	10	34	9	31
Russia	8	16	6	10	4	10	7	14
Other	115	306	111	291	107	301	106	315
Total	292	1.001	290	1.027	292	1.124	296	1.102

Source: Seafood New Zealand (www.seafood.org.nz/publications/export-information/).

16.4.2 EXPORTS TO THE EU

New Zealand exported 41.000 tonnes of seafood with a value of EUR 147 million to the EU in 2017. Blue grenadier was the most common species exported, mainly as frozen fillets or frozen fillet blocks destined to Poland, France and Germany.

Exports of 6.000 tonnes of mussels with a value of EUR 30 million were shipped to 19 EU Member States in 2017. Spain (880 tonnes), Portugal (720 tonnes) and the UK (688 tonnes) imported the largest volumes.

Of New Zealand's squid exports, 77% was destined to Greece and 9% to Spain.

In 2017, New Zealand exported 98% of ling to Spain and Portugal, where the species is popular.

Table 16-6 EXPORTS FROM NEW ZEALAND TO THE EU BY SPECIES (volume in 1000 tonnes and value in million EUR)

Species	2015		2016		2017	
	Volume	Value	Volume	Value	Volume	Value
Blue grenadier (hoki)	13	42	16	47	16	49
Mussels	5	28	6	35	6	30
Squid	4	7	14	28	5	16
Ling	2	9	2	11	4	18
Hake	3	3	1	3	2	5
Albacore tuna	1	3	1	3	1	4
Other	7	34	6	20	8	24
Total	36	126	46	148	41	147

Source: Seafood New Zealand (www.seafoodnewzealand.org.nz/publications/export-information/).

Table 16-7 EXPORTS FROM NEW ZEALAND TO THE EU BY DESTINATION (volume in 1000 tonnes and value in million EUR)

Market	2015		2016		2017	
	Volume	Value	Volume	Value	Volume	Value
Spain	7	27	10	34	9	31
Poland	4	13	7	22	6	21
France	7	21	6	15	6	16
Germany	4	18	5	22	5	20
Portugal	2	9	2	11	4	15
Greece	2	4	5	11	3	10
Other	9	34	11	34	8	34
Total	36	126	46	148	41	147

Source: Seafood New Zealand (www.seafoodnewzealand.org.nz/publications/export-information/).

16.4.3 IMPORTS FROM THE EU

New Zealand imports some volumes of seafood from the EU, amounting to 23.000 tonnes in 2017. This mainly included 11.100 tonnes of prepared “other cuts” of tuna and “other marine fish”, and 5.100 tonnes of frozen whole products.

Since 2009, when New Zealand imported 60.000 tonnes of seafood from EU Member States, volumes have decreased each year, especially for “other marine fish” and “other cephalopods”. On the other hand, tuna imports have been stable through the period.

Table 16-8 IMPORTS IN NEW ZEALAND FROM THE EU BY SPECIES (volume in 1000 tonnes and value in million EUR)

Species	2015		2016		2017	
	Volume	Value	Volume	Value	Volume	Value
Other marine fish	14	31	6	16	6	15
Miscellaneous tuna	5	18	5	18	5	19
Miscellaneous shrimps	2	19	3	26	3	29
Other cephalopods	8	16	8	19	2	8
Other	18	59	7	26	7	31
Total	47	143	29	105	23	103

Source: EUMOFA/EUROSTAT.

16.5 CONSUMPTION

With a population of only 4,9 million people¹⁴⁴, the domestic consumption of seafood in New Zealand is not very significant, even though it is an island nation. This can perhaps be explained by its British heritage, as the migrants from Europe had a diet consisting of beef and sheep as their protein source. Immigrants from Asia have brought seafood traditions, but most New Zealanders still only eat small amounts of fish¹⁴⁵.

However, during the last 30 years, seafood has become more popular among New Zealanders. For the Maori, seafood has always been an important part of their diet¹⁴⁶. Orange roughy and blue grenadier are the main species consumed.

Seafood consumption is also influenced by tourists, as about 3,7 million people visited New Zealand in 2017¹⁴⁷.

¹⁴⁴ <https://www.stats.govt.nz/indicators/population-of-nz>

¹⁴⁵ <https://teara.govt.nz/en/seafood>

¹⁴⁶ <https://nzhistory.govt.nz/culture/no-pavlova-please/seafood-consumption>

¹⁴⁷ <https://www.stats.govt.nz/information-releases/international-travel-and-migration-december-2017>

17 Norwegian capture fisheries

This case study is available in the
Monthly Highlights N° 2-2016

17.1 FISHERY ACTIVITY – A HISTORICAL PERSPECTIVE

Norway was ranked by the FAO the 11th largest player concerning fisheries and aquaculture production representing approximately 1,83% of the global catch and production in 2013. In Europe, Norway was the third largest producer after Russia and the EU.¹⁴⁸ In 2014, the contribution of fishery and aquaculture to the Norwegian GDP was almost twice as large as that of agriculture and forestry (0,9% versus 0,5%).¹⁴⁹ It represented NOK 28,4 billion (EUR 3,4 billion). The biggest share was from aquaculture (2013) at NOK 14,9 billion (EUR 1,9 billion), whereas fisheries contributed with NOK 8,2 billion (EUR 1,1 billion).¹⁵⁰

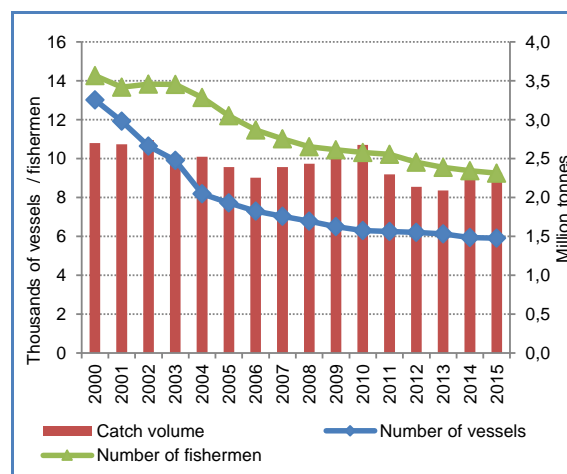
Since the expansion of the Norwegian economic zone to 200 nautical miles in the late 1970s, the fishing grounds of the Norwegian fishing fleet stretch from Svalbard and the Barents Sea in the north, via the North Sea, to the Skagerrak in the south. In the Barents Sea, Norway, together with Russia, is responsible for the resource management of the largest Atlantic cod stock. The North Sea is the main fishing ground for pelagic species, such as herring and Atlantic mackerel.

Over the past 15 years, the catch volume has remained relatively stable, between 2,1 and 2,7 million tonnes. During the same period, the number of both registered vessels and fishermen has fallen steadily. In 2015, 9,261 people registered fishing as their main occupation, half as many as registered in the early 1990s. In all, 5,914 vessels were operating in 2015, of which 80% were coastal vessels with a hull length of less than 11 m, typically operated by one person.

In 2015, the total volume landed in Norwegian ports was 2,5 million tonnes, of which 2,15 million tonnes came from Norwegian vessels. In the preceding 15 years, landings from foreign vessels varied between 150 and 600 thousand tonnes, with Russia, the UK, and Denmark as the vessels' major flag states. In 2015, Russian vessels landed primarily cod, haddock, and saithe in northern Norway. The fleets from the UK and Denmark landed pelagic species in ports around the North Sea basin.

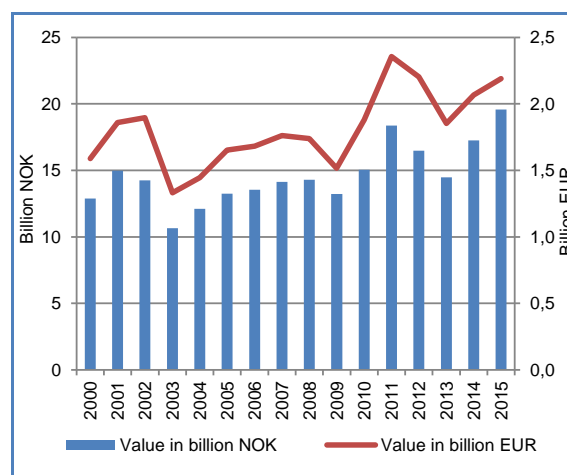
The value of first sales in Norway has increased from around EUR 1,6 billion to approximately EUR 2,2 billion in the past 15 years, a 38% increase. However, when measuring the value increase in the local currency, Norwegian krone (NOK), the corresponding growth has been 52%. The depreciation of the NOK has strongly affected the competitiveness of Norwegian seafood exports between 2012 and 2015, when the value of landings increased 19% in NOK, while declining 0,5% if measured in EUR.

Figure 17-1 NORWEGIAN CATCH VOLUME AND THE NUMBER OF VESSELS AND FISHERMEN (2000–2015)



Source: Norwegian Directorate of Fisheries.

Figure 17-2 NORWEGIAN FIRST-SALES VALUE



Source: Norwegian Directorate of Fisheries.

17.2 MANAGEMENT OF FISHERIES AND LANDINGS

Approximately 90% of Norway's catch volume comes from stocks in zones shared with other countries. For the most important fish stocks, quota levels are set in cooperation with other countries, including Russia, Iceland, the Faroe Islands, Greenland, and the EU.

In Norway, first sales of fishery products are managed through the systems of six sales cooperatives. Norges Sildesalgslag (Norwegian Fishermen's Sales Organisation for Pelagic Fish) is Europe's largest marketplace for first sales of pelagic species. First sales of all other fish, as well as shellfish and crustaceans, are made through the other five organisations of which Norges Råfisklag (Norwegian Fishermen's Sales Organisation) is the largest, covering

¹⁴⁸ EUMOFA: The EU fish market 2015 edition.

¹⁴⁹ http://www.ssb.no/befolkning/artikler-og-publikasjoner/_attachment/225818?_ts=14d005cc3c8

¹⁵⁰ <https://www.ssb.no/statistikkbanken/SelectVarVal/saveselections.asp>

more than half of the Norwegian coastline, in Norway's six northernmost counties.

The six sales cooperatives are the fishermen's own sales organizations and operate as marketplaces for wild-caught Norwegian seafood. The cooperatives manage trade, sales, payments and quality assurance. They also set minimum prices for landings to secure reasonable prices for the fishermen when selling their catches in the ports.

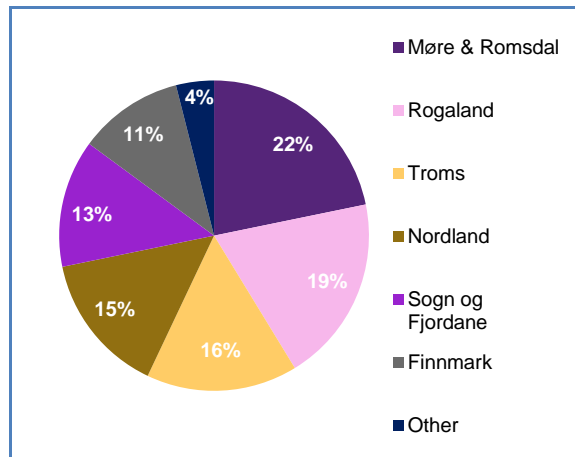
17.3 FIRST SALES

The top five species by value landed in Norway in 2015 were cod, mackerel, herring, saithe, and shrimp. For the past three years, the volume of cod has declined as a result of progressively lower TACs, while the value has risen. A higher value was mainly caused by the development of new markets creating high demand. In 2015, when availability was lower than in 2013 and 2014, market prices for cod increased significantly.

Some of Norway's fisheries are highly seasonal. The main season for cod fisheries is January–April, with several smaller peaks in late autumn around Christmas (October–December). Mackerel's main season is August–October. Herring fisheries are typically split into winter and autumn seasons.

The main season for shrimp occurs during summer (May–September), while saithe is landed year-round. Landings in Norway occur from the south to the North Cape, but some counties register more volume than others. Møre and Romsdal county, in Norway's midwest region at approximately 62° north, is the largest, with approximately 22% of the total registered landings.

Figure 17-3 THE TOP SIX FIRST-SALES COUNTIES IN NORWAY BY VOLUME



Source: Norwegian Directorate of Fisheries.

Table 17-1 THE TOP FIVE LANDED SPECIES IN NORWAY

	Volume (tonnes)			Value (million NOK)			Value (million EUR)		
	2013	2014	2015	2013	2014	2015	2013	2014	2015
Cod	564.931	599.573	535.908	4.739	5.690	6.512	607	681	728
Mackerel	240.026	432.248	386.199	2.092	3.229	3.192	268	386	357
Herring	561.839	448.807	338.869	2.654	2.082	1.992	340	249	223
Saithe	156.735	160.761	159.250	998	1.306	1.530	128	156	171
Shrimp	17.397	23.817	36.360	522	735	1.307	67	88	146
Other	671.664	840.542	1,048.611	3.464	4.223	5.049	444	505	565
Total	2,212.592	2,505.749	2,505.198	14.470	17.265	19.582	1,854	2,066	2,190

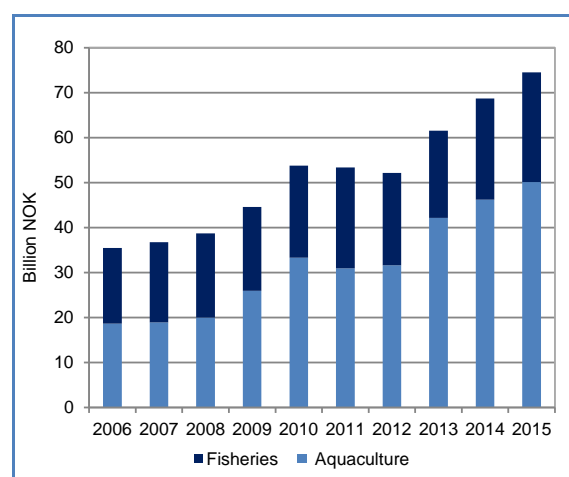
17.4 EXPORTS AND MARKETING

Norwegian seafood exports in 2015 ended on a record high. The export value of fishery and aquaculture products (FAPs) rose 8% in 2015 to around NOK 74 billion (EUR 8,2 billion EUR).

It is more than a twofold increase in 10 years. Fishery and aquaculture products accounted for 9% of overall Norwegian export revenues in 2015, while 10 years ago, they accounted for only 5%. Aquaculture represented the highest growth in export value in the last decade (+170%).

Norway also imports certain fishery products, mainly fishmeal and fish oil, along with fresh herring and mackerel, as foreign vessels sell and land their catches to Norwegian processing plants.

Figure 17-4 NORWEGIAN EXPORT OF FISHERY AND AQUACULTURE PRODUCTS



Source: Statistics Norway (2015 preliminary data).

Record high export values were observed both for fishery and aquaculture species. However, the export value from fisheries grew more slowly than for aquaculture. In 2015, the export value from fisheries amounted to NOK 24,4 billion (EUR 2,7 billion) or 33% of total FAP export value. In the period 2006–2008, fisheries accounted for almost half of the export value (48%).

Cod was the highest valued fishery species in 2015. Despite a 21% fall in export volume, export value increased 9% between 2014 and 2015 to NOK 7,9 billion (EUR 0,88 billion). In comparison, the export value in 2005 was NOK 5 billion (EUR 0,62 billion). From 2014 to 2015, the export volume and value for mackerel fell 12% and 7%,

respectively, while volume and value for herring fell 28% and 12%. The combined export value for the two species in 2015 amounted to NOK 6,2 billion (EUR 0,7 billion) which was 6% lower than in 2005.

For shrimp, first-sales prices increased significantly from 2005 to 2015 causing also the average export price to increase significantly, from 3,16 EUR/kg to 9,60 EUR/kg, respectively.

Table 17-2 TOP 15 EXPORTED SPECIES (FISHERY AND AQUACULTURE)

Species	2005		2015	
	Value billion EUR	Volume 1000 tonnes	Value billion EUR	Volume 1000 tonnes
Atlantic salmon	1,71	480	5,34	1.035
Cod	0,62	123	0,88	205
Mackerel	0,29	167	0,43	352
Herring	0,45	537	0,27	216
Trout	0,16	44	0,26	53
Saithe	0,19	108	0,23	73
Haddock	0,08	38	0,15	57
Shrimp	0,10	33	0,09	9
Crab	0,02	2	0,07	5
Greenland halibut	0,05	14	0,06	13
Blue whiting	0,00	5	0,04	170
Ling	0,03	6	0,03	8
Redfish	0,02	8	0,03	16
Halibut	0,01	1	0,02	2
Tusk	0,00	0	0,02	4
Other species	0,23	211	0,42	408
Total	3,96	1.777	8,33	2.625

Source: Statistics Norway (2015 preliminary data).

In 2015, as in previous years, the EU has been the main market for Norwegian FAPs. In 2015, the EU accounted for 67% of the total export value of Norwegian FAPs which was an increase from 61% in 2014. The EU had a market value share of 57% for fishery products in 2015, up from 50% in 2014.

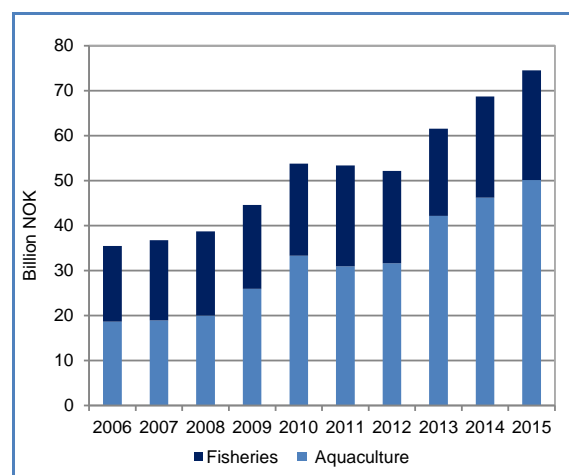
17.5 EXPORTS AND MARKETING

Norwegian seafood exports in 2015 ended on a record high. The export value of fishery and aquaculture products (FAPs) rose 8% in 2015 to around NOK 74 billion (EUR 8,2 billion EUR).

It is more than a twofold increase in 10 years. Fishery and aquaculture products accounted for 9% of overall Norwegian export revenues in 2015, while 10 years ago, they accounted for only 5%. Aquaculture represented the highest growth in export value in the last decade (+170%).

Norway also imports certain fishery products, mainly fishmeal and fish oil, along with fresh herring and mackerel, as foreign vessels sell and land their catches to Norwegian processing plants.

Figure 17-5 NORWEGIAN EXPORT OF FISHERY AND AQUACULTURE PRODUCTS



Source: Statistics Norway (2015 preliminary data).

Record high export values were observed both for fishery and aquaculture species. However, the export value from fisheries grew more slowly than for aquaculture. In 2015, the export value from fisheries amounted to NOK 24,4 billion (EUR 2,7 billion) or 33% of total FAP export value. In the period 2006–2008, fisheries accounted for almost half of the export value (48%).

Table 17-3 TOP 15 EXPORTED SPECIES (fishery and aquaculture)

Species	2005		2015	
	Value billion EUR	Volume 1000 tonnes	Value billion EUR	Volume 1000 tonnes
Atlantic salmon	1,71	480	5,34	1.035
Cod	0,62	123	0,88	205
Mackerel	0,29	167	0,43	352
Herring	0,45	537	0,27	216
Trout	0,16	44	0,26	53
Saithe	0,19	108	0,23	73
Haddock	0,08	38	0,15	57
Shrimp	0,10	33	0,09	9
Crab	0,02	2	0,07	5
Greenland halibut	0,05	14	0,06	13
Blue whiting	0,00	5	0,04	170
Ling	0,03	6	0,03	8
Redfish	0,02	8	0,03	16
Halibut	0,01	1	0,02	2
Tusk	0,00	0	0,02	4
Other species	0,23	211	0,42	408
Total	3,96	1.777	8,33	2.625

Source: Statistics Norway (2015 preliminary data).

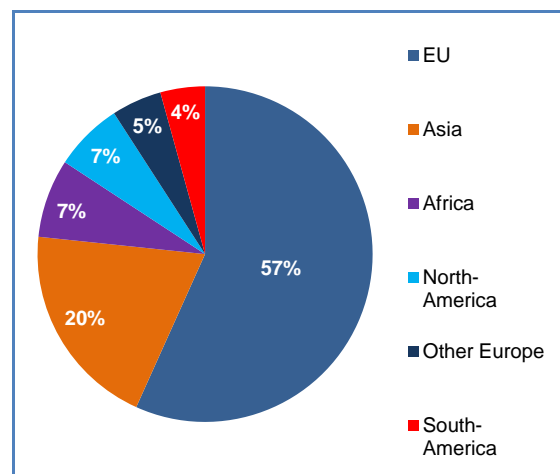
Cod was the highest valued fishery species in 2015. Despite a 21% fall in export volume, export value increased 9% between 2014 and 2015 to NOK 7,9 billion (EUR 0,88 billion). In comparison, the export value in 2005 was NOK 5 billion (EUR 0,62 billion). From 2014 to 2015, the export volume and value for mackerel fell 12% and 7%, respectively, while volume and value for herring fell 28% and 12%. The combined export value for the two species in 2015

amounted to NOK 6,2 billion (EUR 0,7 billion) which was 6% lower than in 2005.

For shrimp, first-sales prices increased significantly from 2005 to 2015 causing also the average export price to increase significantly, from 3,16 EUR/kg to 9,60 EUR/kg, respectively.

In 2015, as in previous years, the EU has been the main market for Norwegian FAPs. In 2015, the EU accounted for 67% of the total export value of Norwegian FAPs which was an increase from 61% in 2014. The EU had a market value share of 57% for fishery products in 2015, up from 50% in 2014.

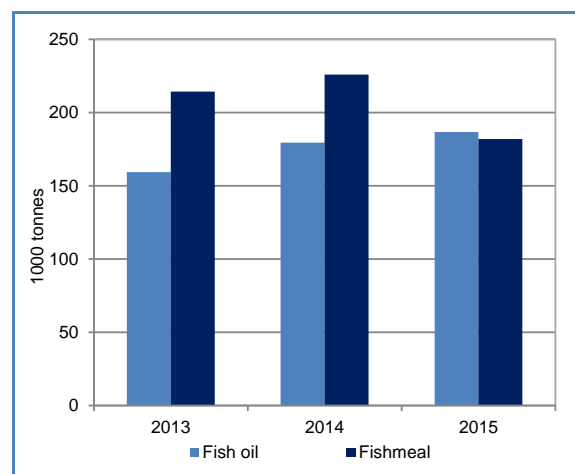
Figure 17-6 MAIN MARKETS FOR CAPTURE FISHERIES by value (2015)



Source: Statistics Norway (preliminary data).

Although Norway is by far a net exporter of FAPs, the growth in the aquaculture industry has made Norway dependent on the import of feed, especially fish oil. Imports of fish oil in 2015 totalled 186.600 tonnes and surpassed imports of fishmeal (181.900 tonnes) for the first time.

Figure 17-7 NORWEGIAN IMPORT OF FISHMEAL AND FISH OIL



Source: Statistics Norway (2015 preliminary data).

From 2013 to 2015, the average import price of fish oil rose from 16,43 NOK/kg to 24,18 NOK/kg (+47%), while the import price of fishmeal rose 23%, to 13,08 NOK/kg. In addition to fishmeal and fish oil, the main FAPs imported by Norway were 131.500 tonnes of fresh mackerel (-6% from 2014) and 15.900 tonnes of fresh herring (-4% from 2014).

Table 17-4 DEVELOPMENT IN FOREIGN EXCHANGE RATES

	2013	2014	2015	% change
NOK / EUR	7,81	8,36	8,94	7%
NOK / GBP	9,19	10,37	12,32	19%
NOK / USD	5,88	6,3	8,06	28%
NOK / 100 JPY	6,03	5,95	6,66	12%

Source: European Central Bank.

Table 17-5 MAIN MARKETING INVESTMENTS BY THE NORWEGIAN SEAFOOD COUNCIL (2014)

	Marketing investments (million EUR)	Share of total investment
France	4,87	11%
Spain	3,29	8%
Germany	3,11	7%
Japan	2,87	7%
Norway	1,97	5%
Italy	1,91	4%
China	1,67	4%
Portugal	1,67	4%
Sweden	1,64	4%
UK	1,32	3%

Source: Norwegian Seafood Council.

17.6 EXCHANGE RATE

A major factor influencing the 8% increase in FAP export value in 2015 was changes in foreign exchange rates. It is estimated that 80–90% of FAP exports are exposed to foreign currencies. As the EU is the main export market for Norwegian FAPs, variations in the NOK/EUR exchange rate have affected market prices and demand. From 2014 to 2015, the NOK weakened 7% relative to the EUR and 19% relative to the GBP. Norwegian seafood export value to the UK rose 30% from 2014 to 2015. Export value to the USA, another important market, rose 37% from 2014 to 2015 measured in NOK. In the same period the NOK weakened 28% relative to the USD.

17.7 JOINT MARKETING AND R&D – EXPORT LEVY AND R&D LEVY

In general, a levy of 1,05% is applicable to exports of Norwegian FAPs. The levy can be divided in two parts: export levy (0,75%) and R&D levy (0,30%). The R&D levy is intended for the financing of the Norwegian Seafood Research Fund (FHF), which is instrumental in the Norwegian seafood industry's management of its R&D investments. The FHF board is appointed by the Ministry of Trade, Industry and Fisheries, and comprises representatives from the industry.

The Norwegian Seafood Council (NSC) is the body marketing Norwegian seafood. Its generic marketing activity is financed through the export levy. NSC is a public company owned by the Ministry of Trade, Industry and Fisheries, and the Ministry appoints the board of directors. In 2014, NSC spent close to EUR 43,1 million on marketing investments, of which EUR 29,4 million (68%) was spent on farmed

salmon and trout, EUR 3,2 million on pelagic species, EUR 2,9 million on white fish species, and EUR 7,4 million on other species and products. Most investments were made in the French, Spanish and German markets.

17.8 CERTIFICATION SCHEMES – BRANDING

Over the past eight years, many Norwegian fisheries have been certified by the Marine Stewardship Council (MSC). These processes started with the saithe fisheries (northeast Arctic and North Sea) in 2008, followed one year later by the herring fisheries (North Sea and Skagerrak, and spring-spawning fishery), and in 2010, by the cod and haddock fisheries in the northeast Arctic. The last fishery awarded MSC certification was the coldwater shrimp fishery in the northeast Arctic in 2012.

Based on 2016 quotas, 660.000 tonnes of demersal fish (of which 401.000 tonnes of cod), 446.000 tonnes of herring and 70.000 tonnes of prawns are MSC certified. Coldwater shrimp fisheries in the Norwegian Skagerrak and Norwegian Deep are under assessment for MSC certification. The decision is expected in March 2016. This makes Norway the main supplier of fish from MSC certified fisheries in Europe.

A majority of the FAPs exported from Norway is labelled with: NORGE – Seafood from Norway. The trademark is a collective brand logo and image for Norwegian seafood products. The owner and rights holder of the trademark is the Norwegian Seafood Council which also sets out the terms of use. The trademark can only be applied to products of Norwegian origin and products for human consumption. The brand can also be used in co-branding with other brands (producer and retailer brands).

The Norway Seafood Council has also established a special quality brand for Skrei (migratory Norwegian Arctic cod, larger than three kg, harvested within the January to April period in natural spawning areas – Lofoten/Vesterålen).

Despite Norway's long fishing tradition and the huge efforts put into marketing seafood of Norwegian origin, only one Norwegian fishery product is registered as Protected Geographical Indication: Tørrfisk fra Lofoten (stockfish from Lofoten).

17.9 INVESTMENTS ABROAD

Within the capture fishing sector, most Norwegian investments in Europe are related to investments in processing – both for pelagic and demersal species. Most of the processing facilities in question are located on the British Isles and Denmark. In addition to investments in Europe, Norway has also invested in the pelagic sector in South America – including fishing vessels and processing. This is mainly vessels delivering raw material for fishmeal and oil to factories owned by Norwegian companies.

The main investments by the Norwegian seafood industry are related to the salmon farming industry. In Europe, Norwegian companies hold a large share of the salmon farming operations in the UK and Ireland. In addition, Norwegian companies have also invested in the salmon farming industry on the Faroes Islands and Iceland. Norwegian investments have been made in first and secondary processing in Europe. Most of the investments in processing have come through acquisitions and merger.

18 The Polish market

This case study is available in the
Monthly Highlights N° 2-2017

Poland is one of the main seafood processing countries in Europe with hundreds of facilities processing raw materials from countries around the world including Norway, Sweden and China. Poland participates in marine fisheries in the Baltic Sea and North Sea, as well as producing substantial volumes of trout and carp from freshwater aquaculture. Polish fisheries and aquaculture sector is small compared with other economic sectors, however, it plays an important role in local communities and rural areas. In 2015, Poland ranked 12th in the EU in total expenditure for fishery and seafood products, but the per capita expenditure (EUR 25) was well below the EU average (EUR 106).

18.1 PRODUCTION

18.1.1 MARINE FISHERIES

The Polish fleet is split between the Baltic and long-distance fisheries. In 2015, it consisted of 875 vessels, including 556 registered vessels in the small-scale fleet¹⁵¹. The long-distance fleet includes three vessels and operates mainly in the North Sea and Norwegian waters and in waters under the jurisdiction of Angola, Guinea, and Mauritania, all in waters managed by the Northeast Atlantic Fisheries Commission (NEAFC). The Baltic fleet mainly targets cod, sprat, herring, salmon, and sea trout, whereas the long-distance fleet catches cod as well as saithe, redfish, halibut, mackerel, and horse mackerel. In 2014, catches by the long-distance fleet totalled approximately 52.000 tonnes. Most Polish fishing fleet is targeting and performing mixed fisheries¹⁵². In 2015, the most valuable species landed in Poland was Atlantic cod, followed by herring and sprat. The three-species represented approximately 80% of the first-sales value, at EUR 35 million.

Table 18-1 TOP SPECIES LANDED IN POLAND (value in million EUR and volume in 1000 tonnes)

Species	2013		2014		2015	
	Value	Volume	Value	Volume	Value	Volume
Cod	19	14	18	14	18	17
Herring	8	21	10	27	10	35
Sprat	13	48	11	48	7	44
Other	8	5	6	7	6	7
Total	53	102	50	109	45	114

Source: EUMOFA, based on elaborations of EUROSTAT data.

18.1.2 AQUACULTURE

Aquaculture production in Poland has a long history and, in most locations, it is land-based freshwater farming, using traditional earth ponds in a 3-year cycle. This production method is limited to a few Central and Eastern European countries. Although production of carp follows the traditional production cycle in earth ponds, trout production occurs in intensive fish production facilities.

In 2015, the two most valuable species produced from aquaculture in Poland were trout (mainly rainbow trout) and carp (mainly silver carp, grass carp, and bighead carp). They had a value of EUR 76 million or 92% of the total for farmed fish. Other species produced are different types of salmonids and tilapia. In 2014, Poland was well behind the largest producers of trout in the EU (Denmark, France and Italy), with approximately half of the volume, whereas for carp it was the largest producer, followed by the Czech Republic and Hungary.

Table 18-2 TOP SPECIES FARMED IN POLAND (value in million EUR and volume in 1000 tonnes)

Species	2014		2015	
	Value	Volume	Value	Volume
Trout	39	14	41	15
Carp	38	19	35	16
Other	12	3	7	3

¹⁵¹ <https://www.eurofish.dk/index.php/member-countries/poland>

¹⁵² https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/op-poland-fact-sheet_en.pdf

Total	89	36	83	34
--------------	----	----	----	----

Source: EUMOFA, based on elaborations of EUROSTAT data; Ministry of Maritime Economy and Inland Navigation of Poland.

The Polish aquaculture industry aims to achieve a production of 51.600 tonnes by 2023 and at the same time create sustainable employment and protect the environment. In 2014, the Polish aquaculture sector employed approximately 4.400 full-time workers¹⁵³. Supported by the European Maritime and Fisheries Fund (EMFF), Poland is diversifying and adding greater value to its aquaculture production, and rewarding producers looking to introduce innovative products, processes, or species. Poland is among the countries at the forefront of implementing recirculated aquaculture systems (RAS)-based salmon production inaugurating one of Europe's largest plant in 2015¹⁵⁴.

18.2 TRADE

In 2015, imported seafood products were valued at EUR 1,6 billion and 534.000 tonnes. Of those, 42%, goes for internal consumption and 58% for processing and export¹⁵⁵. Fresh whole salmon was the main product category imported at EUR 590 million and 121.000 tonnes. Most of the volume of salmon was of Norwegian origin.

The main suppliers to the Polish processing industry are Norway, Sweden, China, Germany, Denmark, and the Netherlands.

Other important species imported to Poland are herring (Denmark/Norway), cod (Russia/Norway), and Alaska pollock (China/USA). Frozen fillets of herring account for 54% and 55% of the total import value and volume, respectively, of herring products, and the imported volume for Alaska pollock is exclusively frozen fillets. For cod, there is a significant split between frozen fillets and frozen whole products. In 2015, the import value of frozen cod fillets was EUR 64 million and 13.000 tonnes; for frozen whole cod, it was EUR 56 million and 20.000 tonnes.

The most important seafood product exported from Poland is smoked salmon, followed by prepared and preserved (canned) herring fillets and frozen salmon fillets. In 2015, the top three product categories accounted for 50% of the total export value and 25% of the volume.

Most of the exported volumes of Polish seafood, both processed and non-processed, end up in the European market (~90%).

In 2015, the largest market for exports of Polish seafood products was Germany, accounting for 52% of the value and 34% of the volume. France and the UK were the second and third largest market, representing 8% and 7% of the value and 6% and 7% of the volume, respectively.

18.3 PROCESSING

The Polish fish processing industry is one of the largest in the EU after Spain, France and the United Kingdom. In 2014, it was valued at EUR 1,78 billion¹⁵⁶.

In 2014, approximately 250 processing plants were eligible to export to the EU market, whereas several hundred smaller companies were only permitted to sell to regional markets in Poland¹⁵⁷.

Important products processed in Poland include smoked (mainly salmonids species), canned (mainly pelagic species), and ready-to-eat fish products. However, ready-to-prepare products (breaded) and fresh and frozen whole products for cod, trout, and sprat account for a strong share of the processed volume. Sturgeon caviar production in Poland went from being an insignificant producer to the fourth largest in Europe and the seventh in the world, in volume. In 2015, Polish production of sturgeon caviar was 11.372 kg¹⁵⁸.

18.4 CONSUMPTION

In 2015, the expenditure for fishery and aquaculture products for EU households totalled EUR 54 billion. Poland accounted for 2%, at EUR 940 million, ranking 12th among the EU Member States. This was a 1,7% increase over 2014. However, with a population of 38 million, the per capita household expenditure was well below the EU average, at only EUR 25, the same as in 2014.

In 2014, Poland ranked 22 out of the 28 EU Member States in apparent consumption of fish and seafood in volume per capita (13 kg). This was an 11% decrease from 2013. By comparison, Portugal and Spain, ranked one and two respectively, had 55,3 kg and 46,2 kg per capita consumption in the same year¹⁵⁹.

Pollock, herring, and mackerel are the most popular saltwater species consumed in the domestic market, while carp, trout, and pangasius are the most common freshwater species. However, since 2007, the consumption of pangasius – as in many other markets – has declined, mainly because of health concerns and the product's perceived low quality.

¹⁵³ <https://www.eurofish.dk/index.php/member-countries/poland>

¹⁵⁴ Eurofish Magazine 5/2016 (page 36).

¹⁵⁵ National Marine Fisheries Research Institute (MIR-PIB), Poland

¹⁵⁶ <http://www.eumofa.eu/documents/20178/77960/The+EU+fish+market+--+2016+Edition.pdf>

¹⁵⁷ <https://www.eurofish.dk/index.php/member-countries/poland>

¹⁵⁸ Ministry of Maritime Economy and Inland Navigation of Poland

¹⁵⁹ EUMOFA based on elaboration of EUROSTAT data.

Table 18-3 TOP SPECIES IMPORTED BY POLAND (value in million EUR and volume in 1000 tonnes)

Species	2013		2014		2015	
	Value	Volume	Value	Volume	Value	Volume
Salmon	713	132	748	142	716	142
Herring	144	90	135	91	140	88
Cod	91	38	121	50	136	47
Alaska pollock	68	39	71	38	84	39
Trout	44	12	54	14	51	14
Mackerel	56	41	50	39	50	41
Other	404	178	409	173	447	164
Total	1.520	529	1.587	546	1.623	534

Source: EUMOFA, based on elaborations of EUROSTAT data.

Table 18-4 TOP SPECIES EXPORTED BY POLAND (value in million EUR and volume in 1000 tonnes)

Species	2013		2014		2015	
	Value	Volume	Value	Volume	Value	Volume
Salmon	676	69	761	71	765	74
Herring	157	59	151	60	151	64
Cod	85	19	78	18	96	19
Trout	47	6	63	7	61	7
Mackerel	24	8	26	8	25	9
Alaska pollock	12	4	13	5	14	5
Other	474	230	483	223	544	281
Total	1.473	396	1.575	391	1.655	457

Source: EUMOFA, based on elaborations of EUROSTAT data.

19 Fisheries in Senegal

This case study is available in the
Monthly Highlights N° 3-2017

Fisheries play a crucial role in Senegal's national economy. They contribute 3,2% of GDP, employ 17% of the country's population, and are the largest exporting sector with 21% of total exports.

Fish is also a major source of protein for the Senegalese population (consumption of fisheries products reached 29,7 kg per capita per year¹), as it provides 47% of nutritional intake of protein² and 70% of animal protein needs³.

Senegal has a 718-km coastline with a wide continental shelf and great biodiversity of fish resources. With catches of 395.000 tonnes in 2015, Senegal ranks fifth among sea fishing countries in Africa after Morocco (1.355.000 tonnes), South Africa (571.000 tonnes), Namibia (507.000 tonnes), and Angola (458.000 tonnes)⁴.

19.1 PRODUCTION

19.1.1 SMALL-SCALE FISHERIES

Artisanal fisheries are very active and contribute 2,5% of the GDP⁵. The fleet has 9.482 pirogues⁶ in service (out of which 8.053 are motorboats) and 53.100 fishermen on average (2015). Total landings of the artisanal fishing sector amounted to 383.000 tonnes in 2015 (+3% over 2014) for a value of EUR 169 million (+18% over 2014).

Main species landed are small pelagics; sardinellas accounted for 60% of total small-scale landings in volume in 2015.

19.1.2 LARGE-SCALE FISHERIES

The large-scale fishing fleet is composed of 105 vessels: 96 trawlers, 8 tuna fishing vessels, and 1 sardine fishing vessel. Total landings amounted to 47.400 tonnes in 2015 (-10% from 2014, despite increased fishing effort) for a value of EUR 66 million (+5% over 2014).

The trawler fleet accounted for 74% in volume and 89% in value of total landings of the large-scale fishing fleet. In value, shrimp is the main species landed by the trawlers; they accounted for 32% of total landings in 2015, leading Cunene horse mackerel (10%), octopus (8%), black hake (5%), and West African goatfish (4%).

The tuna fishing fleet landed 11.657 tonnes in 2015, of which 5.059 tonnes were provided by seiners and 6.598 tonnes by pole-and-line vessels.

The sardine fishing fleet has a single boat, based in Dakar, which landed fewer than 500 tonnes in 2015.

19.1.3 RECENT DEVELOPMENTS

Overall landings of the Senegalese fishing fleet have decreased slightly in past years (-4% in volume between 2012 and 2015). This moderate decline is the result of the artisanal fleet, whose landings experienced a 6% decrease during the period, while landings of the trawler fleet remained stable, and tuna landings moved upwards.

But the positive price evolution of the two main species landed by the artisanal fleet, round sardinella (whose price rose from 0,105 EUR/kg in 2012 to 0,189 EUR/kg in 2015) and Madeiran sardinella (whose price rose from 0,096 EUR/kg in 2012 to 0,156 EUR/kg in 2015), has led to a slight increase in revenues (+2% over the period).⁷

19.1.4 FOREIGN FLEET

The foreign fleet based in Dakar is composed of 8 tuna pole-and-line vessels (all Spanish), which landed 7.456 tonnes in 2015, and 2 hake-fishing boats (also Spanish), which landed 1.226 tonnes. A significant share of the pole-and-line catches landed in Senegal is trans-shipped on reefers for processing in Europe and Ivory Coast.

Dakar is also used by purse-seiners sporadically during summer, when the skipjack resource is abundant in the Mauritania–Senegal zone. These are fishing vessels from Spain and France. In addition to EU, fishing vessels from South America and West Africa are also present. Purse-seine catches transiting through Dakar are estimated at around 40.000 tonnes per year. In general, catches are trans-shipped for processing in the EU. Because International Commission for the Conservation of Atlantic Tunas (ICCAT) conservation and management measures prohibit trans-shipment at sea for purse-seiners, the fleet uses West African ports extensively for their unloading operations⁸.

¹ FAO, Sub-regional Fisheries Commission for West Africa (SRFC)

² ISS (Institute for Security Studies) – West Africa Report, November 2015.

³ <http://www.fao.org/senegal/actualites/detail-events/en/c/414466/>

⁴ FAO-Fishstat.

⁵ Agence Nationale de la Statistique, Sénégal.

⁶ Ministère de la Pêche et de l'Economie Maritime – Direction des Pêches Maritimes, Sénégal.

⁷ Ministère de la Pêche et de l'Economie Maritime – Direction des Pêches Maritimes, Sénégal.

⁸ Estimate of Global sales values from Tuna Fisheries, Study for Pew Charitable Trust, by Poseidon, February 2016.

<http://www.pewtrusts.org/~media/assets/2016/05/estimate-of-global-sales-values-from-tuna-fisheries--phase-3.pdf>

Table 19-1 LANDINGS OF SMALL-SCALE FISHERIES IN SENEGAL (2015) – main species

Rank	Species	1.000 tonnes	Rank	Species	1.000 EUR
1	Round sardinella	138	1	Round sardinella	17.135
2	Madeiran sardinella	93	2	Madeiran sardinella	9.524
3	Bonga shad	17	3	Octopus	7.156
4	Largehead hairtail	14	4	White grouper	6.622
5	Chub mackerel	12	5	Largehead hairtail	5.455

Source: DPM (Direction des Pêches Maritimes, Senegal).

Table 19-2 LANDINGS OF THE SENEGALESE FISHING FLEET BY SEGMENT (2015)

Segment	Volume (tonnes)				Value (1.000 EUR)			
	2012	2013	2014	2015	2012	2013	2014	2015
Small-scale fishing	405.974	398.124	372.548	383.222	150.912	146.636	142.653	168.798
Trawler fishing	35.626	37.084	46.650	35.326	76.093	64.070	58.989	58.670
Sardine fishing	177	48	1.605	461	27	4	223	115
Tuna fishing	6.184	5.908	4.199	11.657	4.128	8.823	3.872	7.176
Total	447.961	441.254	425.002	430.667	231.160	219.532	205.737	234.759

Source: DPM (Direction des Pêches Maritimes, Senegal)

19.1.5 AQUACULTURE

Aquaculture is still a sector of minor importance (1.213 tonnes for a value of EUR 3,3 million in 2015), currently limited to tilapia and cupped oyster. But the sector has achieved strong growth in past years, rising from 80 tonnes in 2010 to more than 1.200 tonnes in 2015.

19.1.6 PROCESSING

The artisanal processing segment produces mainly fermented dried fish, smoked dried fish, braised dried fish, and dried molluscs, which are mostly destined for domestic consumption. In 2015, this segment processed 40.340 tonnes for a value of EUR 31,5 million.

The industrial processing segment focuses on freezing, canning, and fish oil and fishmeal manufacturing, and is more export-oriented. Over the past years, foreign investment has been made mostly by South Korea to extend the tuna processing (canning) capacity in Senegal.

19.2 SENEGAL AND THE EU: FISHERIES PARTNERSHIP

The current Sustainable Fisheries Partnership Agreement (SFPA), concluded between the EU and Senegal, covers the period 20 November 2014–19 November 2019, and is tacitly renewed for five-year periods. The current protocol offers EU vessels fishing opportunities for tuna and includes a limited access to black hake, a deep demersal resource. The EU's financial contribution amounts to EUR 8,69 million over the five-year period, decreasing from EUR 1,808 million to EUR 1,668 million a year, including EUR 750.000 per year to the support of the Senegalese fisheries sector.

In addition, the fleet contributes up to EUR 1 million per year in case of full utilisation of the fishing possibilities granted by the protocol. Tuna ship owners pay a fee of 55 to 70 EUR per tonne caught, and hake trawlers pay a fee of 90 EUR per tonne caught.

Thirty-eight vessels from EU Member States Spain and France have fishing authorisation from Senegal under the Agreement and the current Protocol: 28 tuna seiners (Spain 16, France 12), 8 pole-and-liners (Spain 7, France 1), and 2 trawlers (Spain).

The agreement and protocol were negotiated in strict accordance with the requirements of the new EU fisheries policy, thus ensuring sustainability of the fish stocks, protection of the local fishermen and food security, strict controls, and support of the fight against illegal, unreported and unregulated (IUU) fishing.

19.3 TRADE

19.3.1 EXPORT

In 2015, the industrial sector exported 188.500 tonnes for a value of EUR 297 million, i.e. +25% and +9%, respectively, over 2014. This positive evolution is related to the expansion of installations (freezing vessels, land-based plants) approved for export, as well as to a regular supply of small pelagics, especially round sardinella.

Exports of the small-scale fishing sector are limited to Africa. They amounted to 30.800 tonnes in 2015¹⁶⁸.

All in all, exports are composed of 15% fresh products, 78% frozen products, and 7% processed products. Exports of frozen products have increased 27% over 2014, as a result of the strong presence of sardinella and horse mackerel. Exports of fish oil made a breakthrough, especially in Europe. Canned fish exports fell significantly, owing to low activity of the canning industry.

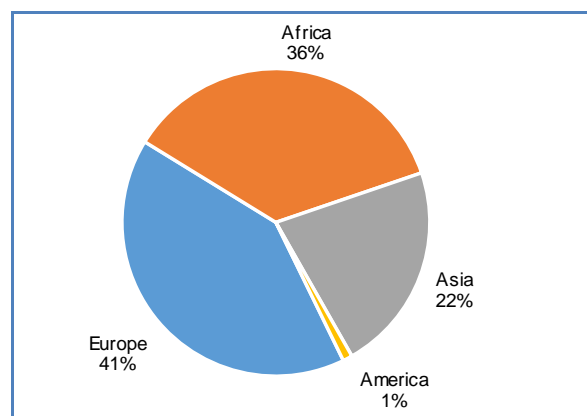
The analysis of Senegalese exports by continent demonstrates that the African market is gaining importance (124.500 tonnes in 2015 vs. 82.300 tonnes in 2014) and represents 66% of total exports in volume and 36% in value. Ivory Coast is the main destination with 68.500 tonnes, followed by Cameroon and Mali.

¹⁶⁸ Ministère de la Pêche et de l'Economie Maritime – Direction des Pêches Maritimes, Sénégal.

Exports to the EU market are more stable (+2% in volume over 2014): 33.500 tonnes, composed of 4.800 tonnes of fresh products (mostly whole fish), 21.700 tonnes of frozen products (fish, molluscs, and shrimp), and 7.000 tonnes of processed fish (canned fish, fishmeal, and fish oil). Main Member States are Italy, Spain, and France.

Exports to Asia fell 16% to 29.500 tonnes in 2015, mostly the result of decreasing exports of largehead hairtail (*Trichiurus lepturus*). Main Asian destinations are China and Korea.

Figure 19-1 EXPORT OF FISHERY PRODUCTS by destination in value (2015)



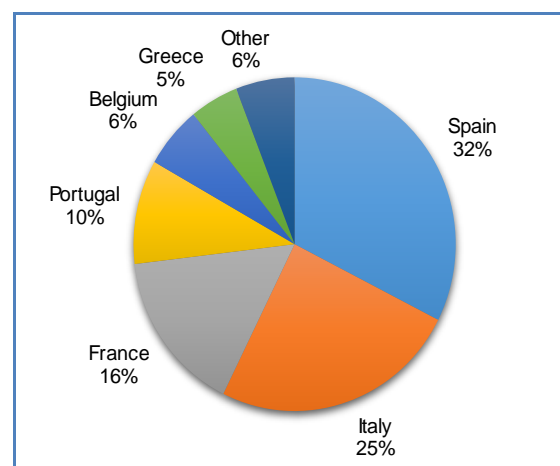
Source: DPM (Direction des Pêches Maritimes, Senegal).

19.3.2 TRADE WITH THE EU

19.3.2.1 EU import from Senegal

In 2016, the EU imported fishery and aquaculture products from Senegal for a total value of EUR 169 million. Senegal supplies 0,7% of total extra-EU imports to the EU. Four commodity groups represent 88% of EU imports from Senegal in value (2016): other marine fish (29%), cephalopods (26%), crustaceans (18%), and tuna and tuna-like species (15%). The main commercial species are shrimp (17,2%), octopus (14,7%), tuna (13,6%), and cuttlefish (9,6%). Spain is Senegal's main partner, accounting for 32,5% of total EU imports from Senegal in value. Italy (24,8%), France (15,8%), and Portugal (10,1%) are the other major Member States importing from Senegal. These four countries represent more than 80% of total EU imports from Senegal.¹⁶⁹

Figure 19-2 IMPORT OF FISHERY PRODUCTS FROM SENEGAL by main member states by value (2016)



Source: EUMOFA.

19.3.3 EU EXPORT TO SENEGAL

EU exports to Senegal reached 5.200 tonnes in 2016 (out of which 1.700 tonnes were horse mackerel) for a value of EUR 8 million. Spain (79%) and France (20%) provide nearly all of these exports.

19.4 FUTURE PERSPECTIVES

The PSE (Plan Sénégal Emergent), which is the reference framework for Senegal's strategy in the medium and long term (horizon 2035), identified the fisheries and aquaculture sector as a strategic sector for the country.

The operational framework of the sectoral policy is the LPSDPA¹⁷⁰ 2016–2023. Its specific objectives are the sustainable management of fisheries resources (through regulation of access to maritime and continental resources and development of management plans), the development of aquaculture (through setting up conditions likely to attract private investment, strengthening technical competence of actors and setting up support infrastructure for the development of farming activities), and the fostering of processing activities.

For aquaculture, LPSDPA sets a production goal of 30.000 tonnes by 2018 and 50.000 tonnes by 2023. Nile tilapia is the species that seems to offer the greatest potential.

¹⁶⁹ Eurostat - Comext and EUMOFA.

¹⁷⁰ Lettre de Politique Sectorielle de Développement de la Pêche et de l'Aquaculture, Ministère de la Pêche et de l'Economie Maritime, Sénégal.

20 Fish wholesale in Spain

This case study is available in the
Monthly Highlights N° 6-2017

20.1 ROLE OF WHOLESALE IN SPANISH FISH DISTRIBUTION

Wholesale distribution in Spain is mainly structured around a network of 23 wholesale markets (mercas) managed by a state-owned enterprise, MERCASA, of which 21 trade fish market.

The network's total sales of fresh and frozen fisheries and aquaculture products amounted to 623.000 tonnes in 2015, for a value exceeding EUR 4,0 billion. Approximately 50% of the total national consumption of fish (households and out of home) is sold through the network of mercas. In comparison, this rate is approximately 60% for fruit and vegetables and 30% for unprocessed meat. The year 2015 was the first to experience an overall volume increase since 2010. Still, 2015 volumes remained more than 100.000 tonnes below the 2010 level (-14%).

The 2015 value was EUR 320 million below the 2010 value (-7%). The two leading wholesale markets, Mercabarna and Mercamadrid, represent 62% of the value and 57% of the volume of this total. The volume of fisheries and aquaculture products in 2015 (i.e. 623.000 tonnes) includes the commercial activity brought by the zones of complementary activities (ZACs) located in the mercas. Not including the ZACs,

the volume of fresh and frozen fisheries and aquaculture products in 19 Spanish wholesale markets ended at 454.510 tonnes in 2015 (see Table 10).

Mercamadrid is the leading wholesale market for fresh and frozen products.

Mercabarna in particular has a huge ZAC, which includes:

- companies specialising in the handling, preparation, packaging, conservation, distribution, importing, and exporting of all types of fresh and frozen fish products;
- purchasing centres of the large-scale, food-retailing chains that source their fresh produce from Mercabarna;
- companies that specialise in supplying the catering industry.

In volume, the main species sold fresh are small pelagics (anchovy, sardine, and horse mackerel) 18%, merluccidae 15%, mussel 9%, and salmon 7%. Leading frozen products and their volumes are cephalopods 24%, shrimp 18%, and merluccidae 14%.

20.1.1 FOCUS ON FRESH PRODUCTS

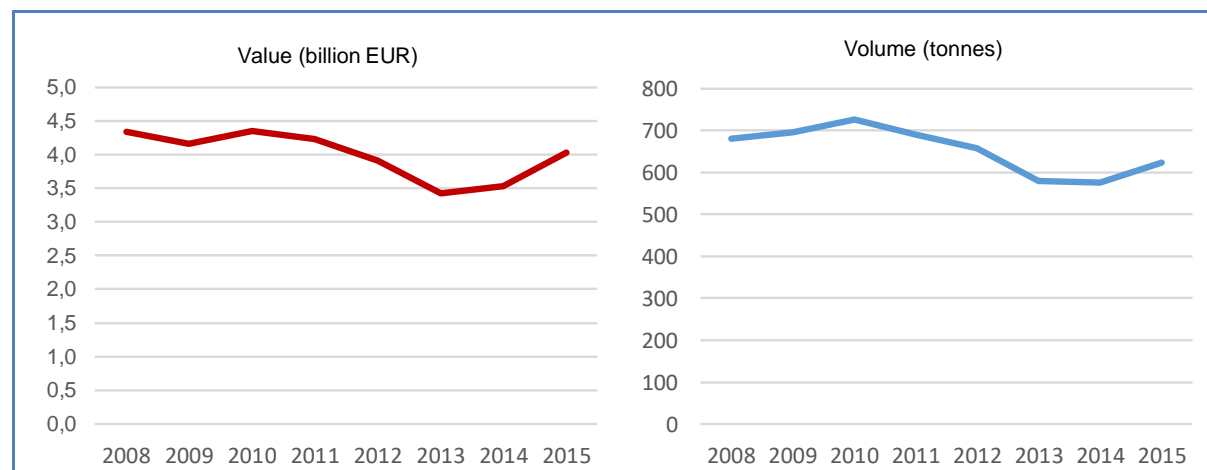
The 19 wholesale markets sold 334.600 tonnes of fresh fisheries and aquaculture products in 2015, of which 259.300 tonnes were fish and 75.300 tonnes were crustaceans and molluscs.

Madrid was the leading market (75.500 tonnes) for fresh fish, surpassing

Barcelona (41.300 tonnes), Valencia (40.300 tonnes), and Malaga (32.800 tonnes).

For fresh crustaceans and molluscs, Valencia (22.300 tonnes) and Barcelona (21.300 tonnes) were clearly ahead of Madrid (11.800 tonnes) and Bilbao (5.400 tonnes).

Figure 20-1 SALES OF FRESH AND FROZEN FISHERIES AND AQUACULTURE PRODUCTS IN SPANISH MERCAS IN 2015 (million EUR and 1000 tonnes)



Source: MERCASA.

Table 20-1 SALES OF FRESH AND FROZEN FISHERIES AND AQUACULTURE PRODUCTS IN SPANISH WHOLESALE MARKETS IN 2015

Mercas	Volume (tonnes)
Mercalgeciras	2.045
Mercabadajoz	847
Mercabarna	73.288
Mercabilbao	27.395
Mercacórdoba	6.288
Mercagalicia	320
Mercagranada	10.406
Mercairuña	3.646
Mercajerez	291
Mercalaspalmas	2.820
Mercaleón	1.220
Mercamadrid	133.546
Mercamálaga	38.384
Mercamurcia	1.016
Mercapalma	9.873
Mercasalamanca	1.098
Mercasevilla	24.833
Mercavalencia	95.966
Mercazaragoza	21.228
Total	454.510

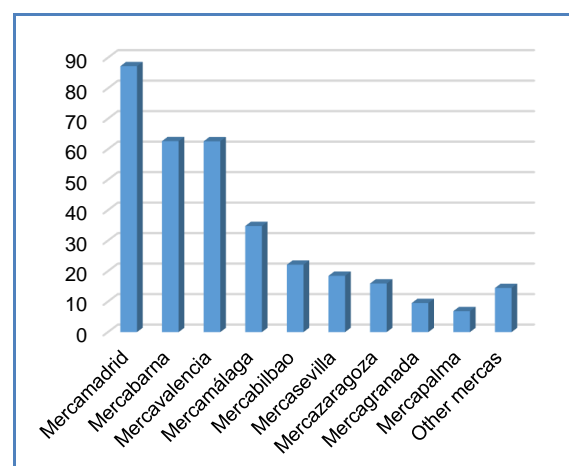
Source: MERCASA.

Table 20-2 SALES OF FRESH FISHERIES AND AQUACULTURE PRODUCTS IN SPANISH WHOLESALE MARKETS IN 2015

Mercas	Fish (tonnes)	Crustaceans & molluscs	Total fresh (tonnes)
Mercalgeciras	1.465	266	1.731
Mercabadajoz	693	105	798
Mercabarna	41.301	21.333	62.634
Mercabilbao	16.675	5.432	22.107
Mercacórdoba	4.323	1.148	5.471
Mercagalicia	-	320	320
Mercagranada	7.124	2.404	9.528
Mercairuña	2.960	450	3.410
Mercajerez	191	100	291
Mercalaspalmas	10	-	10
Mercaleón	981	235	1.216
Mercamadrid	75.460	11.769	87.229
Mercamálaga	32.784	2.025	34.809
Mercamurcia	89	42	131
Mercapalma	4.643	2.226	6.869
Mercasalamanca	917	178	1.095
Mercasevilla	15.460	3.001	18.461
Mercavalencia	40.321	22.268	62.589
Mercazaragoza	13.926	2.012	15.938
Total	259.323	75.314	334.637

Source: MERCASA.

Overall, the main fish species were hake (49.000 tonnes), anchovy (32.600 tonnes in 2015), salmon (23.800 tonnes), sardine (20.400 tonnes), blue whiting (16.500 tonnes), and seabream (11.800 tonnes). Leading crustaceans and molluscs were mussel (28.700 tonnes), squid (7.600 tonnes), cuttlefish (7.200 tonnes), striped venus (5.800 tonnes), and clam (5.500 tonnes).

Figure 20-2 RANKING OF FISH WHOLESALE MARKETS FOR FRESH FISH, CRUSTACEANS AND MOLLUSCS IN 2015 (1000 tonnes)

Source: MERCASA.

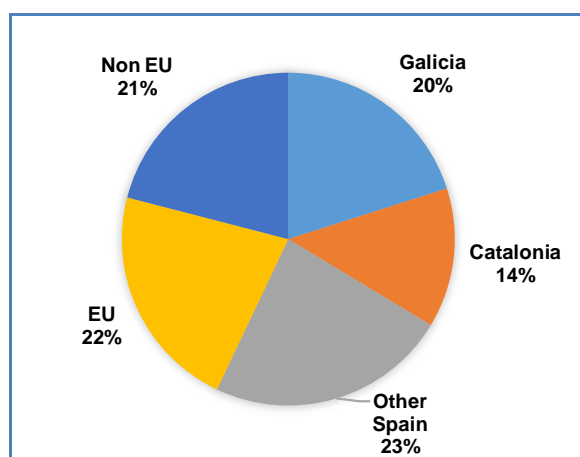
20.2 MERCABARNA

In 2016, the fish wholesale market of Barcelona sold 60.094 tonnes of fresh fisheries and aquaculture products (-2,7% from 2015) for a value of EUR 439 million (+4,4%). The average price rose from 6,80 to 7,30 EUR/kg. Main species sold are hake (8.428 tonnes), mussel (7.446 tonnes), monkfish (5.182 tonnes), salmon (4.079 tonnes), and tuna (2.628 tonnes).

20.2.1 FRESH FISH

More than half (57% in 2016) of fresh fish volumes sold in Mercabarna were of Spanish origin, mainly Galicia, Catalonia, and the Cantabrian Coast. The rest were equally supplied by the EU (22%) and non-EU (21%) countries.

Figure 20-3 MERCABARNA: SALES OF FRESH FISH BY ORIGIN IN 2016 (% volume)
Mercabarna: sales of fresh fish by origin in 2016 (% volume)

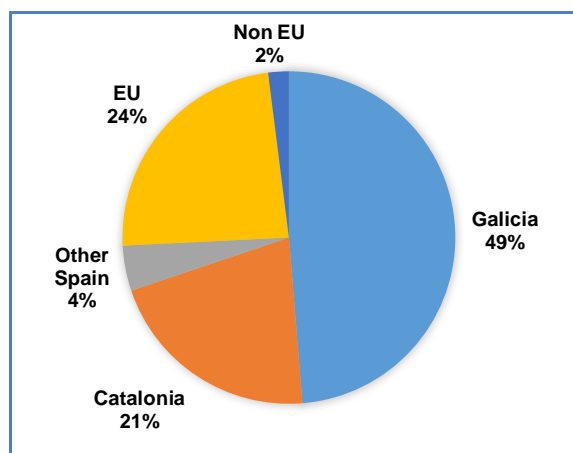


Source: EUMOFA based on MERCABARNA.

20.2.2 FRESH CRUSTACEANS AND MOLLUSCS

Fresh crustaceans and molluscs (predominantly molluscs) are provided by Galicia (49%), the EU (24%), and Catalonia (21%). The main EU suppliers are France, Italy, and the UK.

Figure 20-4 MERCABARNA: SALES OF FRESH CRUSTACEANS AND MOLLUSCS by origin in 2016 (% volume)



Source: EUMOFA based on MERCABARNA.

20.3 MERCAMADRID

In 2016, Mercamadrid marketed 89.978 tonnes of fresh fisheries and aquaculture products (3,2% over 2015).

This positive trend did not continue during the first five months of 2017, which saw volumes sold decrease 6%, mainly because of falls registered by two major imported species, salmon (-25%) and cod (-13%).

In 2017, 32% (10.962 tonnes) of the fresh products sold in the first five months by Mercamadrid were imported; the main suppliers were Norway, mainly for salmon (2.581 tonnes), and France for hake (1.439 tonnes), anchovy (263 tonnes), sardine, tuna, cod, and squid. Other foreign suppliers were Turkey and Greece (both for farmed seabass and seabream), Denmark (salmon, cod, and hake), Italy (red mullet, striped venus, anchovy, and sardine), Portugal (tuna and anchovy), the Netherlands (sole and hake), and Morocco (swordfish and octopus).

The supply of Spanish origin (68% of the total) comes mainly from Galicia, Basque Country, Andalusia, and Murcia. More specifically, the main provinces supplying Mercamadrid are Pontevedra (Vigo), which provides hake, squid, mussel, sardine, clam, tuna, cod, anchovy, megrim, dab, and seabream; La Coruña, which delivers hake, mussel, and farmed turbot; Guipuzcoa (Basque Country), which supplies hake, sole, pollack, saithe, tuna, conger, and megrim; and Murcia for farmed products (sea-ranched tuna, seabass, seabream).

Table 20-3 SALES OF FRESH FISHERIES AND AQUACULTURE PRODUCTS IN MERCAMADRID WHOLESALE MARKET IN 2016 AND 2017 (JANUARY-MAY), IN TONNES

Species	Jan-May 2016	Jan-May 2017
Hake	7.347	7.606
Salmon	6.404	4.829
Sardine	1.254	1.719
Seabass	1.787	1.609
Seabream	2.534	2.633
Anchovy	2.769	2.017
Cod	1.407	1.223
Tuna	2.920	2.466
Squid	1.488	1.265
Megrim	959	1.010
Mussel	876	923
Other	7.074	7.362
Total	36.819	34.662

Source: MERCASA.

21 The Swiss market for fisheries and aquaculture products

Switzerland is an important trade partner for EU fish and seafood products. Because domestic production remains limited (ca. 3.600 tonnes in 2015), the Swiss fish market depends greatly on imports, mostly from EU Member States; the trade deficit reached EUR 711 million in 2016. At the consumption level, more than half of the fish is consumed in the food service sector. The main products purchased at the retail stage are salmon, fish fingers, and shrimp.

This case study is available in the
Monthly Highlights N° 11-2017

21.1 PRODUCTION

21.1.1 CATCH

Switzerland is a landlocked country, geographically divided among the Alps, the Swiss Plateau, and the Jura. The hydrographic network includes several of the largest bodies of freshwater in central and western Europe, including Lake Geneva, Lake Neuchatel, Lake Constance, and Lake Zurich, which are the main lakes for commercial fisheries¹.

Switzerland's large lakes, mountain tarns, and many rivers provide habitat for cold-water fish, especially coregonids and salmonids, and for both commercial and recreational fishing. Because of the country's subdivision into autonomous cantons, the management of fisheries differs according to region, but coordination by the Federal authority serves to promote their development. Fisheries are mostly active in the lakes. Most are carried out using small vessels and several types of gear, such as nets and fish traps.

According to FAO, total capture fishery production reached more than 2.000 tonnes in 2015, exclusively from inland resources. The volume of Swiss catches has stayed relatively stable since 2010, slightly above 2.000 tonnes. Moreover, according to the Federal Statistical Office, catches from recreational fisheries in Swiss lakes amounted to 279 tonnes in 2014.

In 2015, whitefishes (*Coregonus* spp) accounted for 56% of total catches with 1.092 tonnes caught. Other important species were European perch (18%), northern pike (7%), roach (6%), and sea trout (6%).

Table 21-1 TOP SPECIES CAUGHT IN THE SWISS INLAND FISHERIES (tonnes)

Species groups	2010	2011	2012	2013	2014	2015
Whitefishes	1.130	1.068	1.032	1.064	1.087	1.092
European perch	371	453	399	377	350	359
Northern pike	134	119	131	135	129	141
Roach	160	147	154	118	121	122
Sea trout	131	129	119	118	115	119
Other	175	182	168	195	181	190
Total	2.101	2.098	2.003	2.007	1.983	2.023

Source: FAO-Fishstat.

¹<https://www.bfs.admin.ch/bfs/fr/home/statistiques/agriculture-sylviculture/chasse-peche-pisciculture/peche.html>

21.1.2 AQUACULTURE

Table 21-2 SWISS AQUACULTURE PRODUCTION: BREAKDOWN BY SPECIES (tonnes)

Species	2010	2011	2012	2013	2014	2015
Rainbow trout	1.100	1.300	1.300	1.300	1.300	1.300
European perch	50	50	50	165	165	165
Nile tilapia	60	60	60	60	60	60
Sea trout	40	40	40	40	40	40
Sturgeons	5	10	15	22	22	22
Chars	6	6	6	6	6	6
Total	1.261	1.466	1.471	1.593	1.593	1.593

Source: FAO-Fishstat.

According to the FAO, total Swiss aquaculture production in 2015 was 1.593 tonnes. Rainbow trout was by far the main species grown, with 1.300 tonnes produced in 2015, accounting for 82% of total aquaculture production. Other farmed species included European perch (10%), tilapia (4%), sea trout (3%), sturgeon, and char. However, in the context of increasing domestic demand for high-range and sustainable species, several projects are aiming to develop new farmed species (tropical shrimp, salmon) in Switzerland. Fish processing in Switzerland is limited, although a few artisanal smokeries produce high-value products (salmon, fera whitefish¹⁷², perch, etc.) for the domestic market and export.

21.2 TRADE

21.2.1 SWISS GLOBAL FISH TRADE

The Swiss fish and seafood market depends greatly on imports. The trade deficit reached 711 million EUR in 2016, increasing the market's dependence on imported products.

Table 21-3 SWISS TRADE BALANCE FOR SEAFOOD (million EUR)

Trade flow	2013	2014	2015	2016
Exports	20	17	18	17
Imports	620	644	689	728
Balance	-600	-627	-671	-711

Source: AFD (Administration Fédérale des Douanes).

Swiss exports are small. According to the Federal Customs Administration, in 2016, Swiss fish and seafood exports reached EUR 17 million of which 59% were fish oil, likely to be used as pharmaceutical fish oil capsules. The remaining export value included fresh and frozen fish, crustaceans and molluscs (29%), prepared and preserved fish (6%), prepared and preserved molluscs and crustaceans (6%). The main destination countries were by far EU Member States (64%). Other important destinations were Indonesia (12%), Turkey (5%), and the Philippines (5%).

Table 21-4 MAIN IMPORTING COUNTRIES FROM SWITZERLAND (2016)

Countries	Volume (tonnes)	Value (1000 EUR)
EU	524	10.822
Indonesia	104	1.961
Turkey	23	841
Philippines	44	812
Others	157	2.481
Total	852	16.918

Source: AFD (Administration Fédérale des Douanes).

In 2016, Swiss fish and seafood imports reached EUR 728 million and 76.216 tonnes. The main products imported were fish fillets (30% of import value), prepared and preserved fish (18%), dried, smoked, and salted products (12%), fresh whole fish (11%), and crustaceans (10%). In 2016, the main origin of Swiss imports was EU Member States, with 45.120 tonnes of seafood and fish products imported, accounting for 62% of total Swiss imports. Other important exporters to the Swiss market were Vietnam (10%), Norway (5%), Thailand (5%), and the USA (2%).

Table 21-5 SWISS IMPORTS BY MAIN ORIGIN (2016)

Countries	Volume (tonnes)	Value (million euros)
EU	45.120	454
Vietnam	9.125	76
Norway	3.813	40
Thailand	7.009	34
USA	1.298	17
Others	9.851	107
Total	76.216	728

Source: AFD (Administration Fédérale des Douanes).

¹⁷² The name given by the Swiss fishermen to the whitefish, coming from the native species *Coregonus fera*, but which has disappeared

from Swiss lakes. Whitefish caught in Swiss lakes now include mostly *Coregonus albula* or *Coregonus palaea*.

21.2.2 SWITZERLAND AND THE EU

In 2016, EU exports of fish and seafood to Switzerland reached EUR 437 million for 50.000 tonnes. The most important main commercial species (EUMOFA classification: main commercial species (MCS)) exported were the other marine fish (27% of export value, mostly battered fillets and prepared and/or preserved marine fish products) and salmon (21%). Other important main commercial species were other freshwater fish (fish fillets including the European perch, much appreciated in the food service sector) and

other products (both 5%), trout and other groundfish (both 4%). EU seafood exports to Switzerland were mostly fresh (40%) and prepared or preserved (25%). Most of the rest was exported dried, salted, or smoked (17%), or frozen (17%). The main EU Member States exporting to Switzerland were Germany (24%), the Netherlands (21%), and France (21%). Other important exporters were Denmark (7%), Italy (7%), and Spain (4%).

Table 21-6 TOP EU EXPORTERS FOR SEAFOOD TO SWITZERLAND (million EUR and tonnes)

Country	2014		2015		2016	
	Value	Volume	Value	Volume	Value	Volume
Germany	84	12.800	91	13.008	107	13.489
Netherlands	56	7.905	64	7.282	92	9.166
France	66	7.275	84	8.037	90	8.264
Denmark	35	4.493	37	4.792	32	3.499
Italy	29	3.975	32	4.105	31	4.124
Spain	14	1.765	16	1.951	19	2.112
Other	68	8.934	67	8.978	66	9.095
Totals	352	47.147	392	48.153	437	49.749

Source: EUMOFA.

Table 21-7 TOP MAIN COMMERCIAL SPECIES EXPORTED FROM EU TO SWITZERLAND (million EUR and tonnes)

Species	2014		2015		2016	
	Value	Volume	Value	Volume	Value	Volume
Other marine fish	86	12.846	98	12.652	117	13.729
Salmon	60	4.666	76	5.590	90	5.900
Other freshwater fish	20	1.774	22	1.817	21	1.762
Other products	19	4.277	20	4.321	20	4.411
Trout	12	1.428	15	1.605	19	1.929
Other groundfish	17	2.764	13	2.212	17	2.849
Other	138	19.393	147	19.956	152	19.170
Totals	352	47.147	392	48.153	437	49.749

Source: EUMOFA.

In 2016, EU imports of seafood from Switzerland totalled EUR 53 million and 10.435 tonnes. The significant discrepancy between these EU import figures and Swiss exports to the EU may be explained by the fact that EUMOFA data include non-food use fish products. The most important main commercial species¹⁷³ imported from Switzerland to the EU in value were the other products (87%, including mostly unspecified prepared/preserved/cooked fish, molluscs or crustaceans), fish oil (5%), and salmon (5%).

In 2016, the main EU importer from Switzerland was Germany (41% of EU import value). Other important importers were the UK (18%), Sweden (11%), and the Netherlands (8%).

¹⁷³ EUMOFA classification.

Table 21-8 TOP EU IMPORTERS FROM SWITZERLAND (million EUR and tonnes)

Species	2014		2015		2016	
	Value	Volume	Value	Volume	Value	Volume
Germany	15	2.882	18	3.792	22	4.849
United Kingdom	9	1.645	10	1.698	10	1.667
Sweden	6	1.132	6	1.225	6	1.092
Netherlands	6	747	2	211	4	621
Other	11	2.338	11	2.304	11	2.206
Totals	48	8.742	48	9.230	53	10.435

Source: EUMOFA.

Table 21-9 TOP MAIN COMMERCIAL SPECIES IMPORTED FROM SWITZERLAND TO EU (1000 EUR and tonnes)

Species	2014		2015		2016	
	Value	Volume	Value	Volume	Value	Volume
Other products	39.195	7.543	42.968	8.558	46.327	9.692
Fish oil	4.921	500	423	40	2.684	304
Salmon	2.251	76	2.494	39	2.452	38
Other non-food use	462	554	594	511	820	354
Other salmonids	643	19	671	16	653	16
Other MCS*	600	51	654	66	545	31
Totals	48.071	8.742	47.805	9.230	53.481	10.435

Source: EUMOFA.

*Other Main Commercial Species (EUMOFA classification) than those mentioned above.

21.3 CONSUMPTION

Switzerland has a population of 8,1 million in 26 cantons, four official languages, and very different habits towards fish and seafood consumption. For instance, French-speaking Swiss account only for 20% of the national population but represent 60% of the national fish and seafood consumption. The Swiss fish consumption market is estimated at around 70.000 tonnes, the average annual consumption per capita is 9 kg, and it is estimated that 55% of fish and seafood products are consumed in the foodservice sector. Only 2% originated from domestic production. The Swiss fish consumption has increased in recent years (+1% from 2015 to 2016) and especially concerning marine species to the detriment of freshwater species¹⁷⁴. Sustainable labels and organic products (EU organic label but also BioSuisse), from diverse origins, are much appreciated. For instance, the share of the organic fish market is estimated at 14% in the retail sector¹⁷⁵. In the retail sector, the main consumed products are salmon, fish fingers (white fish, mostly Alaska pollock, cod, etc.), and shrimp.

Table 21-10 TOP SALES IN RETAIL SECTOR (2016)

Products	Sales (in tonnes)
Salmon	3.333
Fish fingers	2.716
Shrimp	2.498
Frozen meals	1.598
Pangasius	1.384
Trout	1.354
Mussel	1.169
Salted Cod	856
Cod	619
Plaice	591

Source: Nielsen Switzerland, OFAG Retail sales / consumer panel.

¹⁷⁴ Office fédéral de l'agriculture OFAG – Bulletin du marché de la viande mars 2017.¹⁷⁵ Nielsen Switzerland.

22 Fisheries and aquaculture in Turkey

This case study is available in the
Monthly Highlights N° 7-2015

Turkey has an extensive coastline of 8.483 km, of which 20% (1.719 km) is on the Black Sea.

Turkey is a major player in the Mediterranean and Black seas fisheries and aquaculture. Its production reached 537.000 tonnes in 2014, with 56% of it supplied by fisheries and 44% by aquaculture. It is the second aquaculture producer after Italy, if shellfish is included. The sector, however, plays a limited role in the country's economy, contributing only 0,2% to GDP.

Thanks to its export of seabass, seabream, and trout, Turkey is a net exporter of fishery and aquaculture products, generating a surplus of EUR 360 million in 2014.

Domestic consumption followed a decreasing trend in the past decade, but is expected to grow significantly in the next years as a result of aquaculture development plans.

22.1 PRODUCTION

22.1.1 CATCHES

Turkey catches 27% of the total volume taken in the Mediterranean and Black seas. More than 70% occurs in the Black Sea.

With catches totalling 302.200 tonnes in 2014, a drop of 11% compared with 2013, Turkey is far ahead of Italy, Tunisia, and Algeria in these seas.

Table 22-1 MEDITERRANEAN AND BLACK SEA: VOLUME OF LANDINGS (2013) – MAIN COUNTRIES

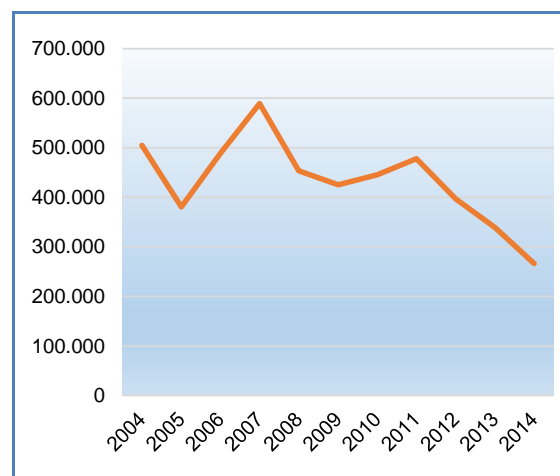
Rank	Countries	Thousand tonnes
1	Turkey	339
2	Italy	174
3	Tunisia	110
4	Algeria	100
5	Spain	82
6	Ukraine	78
7	Croatia	75
8	Egypt	63
9	Greece	62
	Other	155

Source: FAO.

22.1.2 MARINE FISHERIES

Catches have decreased markedly in past years, from 589.000 tonnes in 2007 to 266.000 tonnes in 2014.

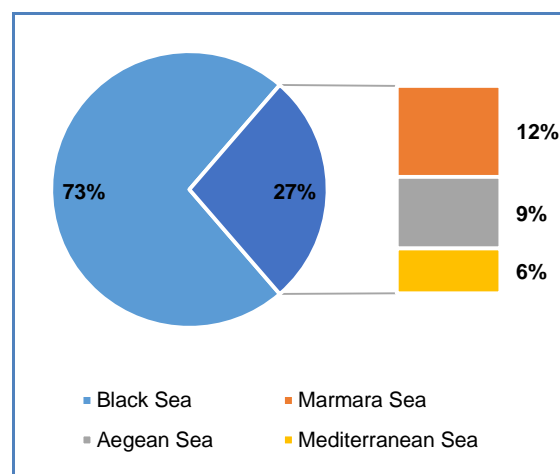
Figure 22-1 TURKEY: LANDINGS OF MARINE FISH (tonnes)



Source: Turkish Statistical Institute.

The main species caught are small pelagics. Anchovy (96.000 tonnes), sprat (42.000 tonnes), sardine (18.000 tonnes), and horse mackerel (12.000 tonnes) represent 73% of total landings. In 2014, landings of anchovy (-46%), sardine (-24%), and horse mackerel (-44%) decreased strongly. Conversely, sprat landings increased 400% in 2014, but remained far below previous levels (87.000 tonnes in 2011). Other most common species caught by the Turkish fleet are Atlantic bonito, whiting and bluefish.

Figure 22-2 TURKEY: LANDINGS OF MARINE FISH by sea basin (volume)



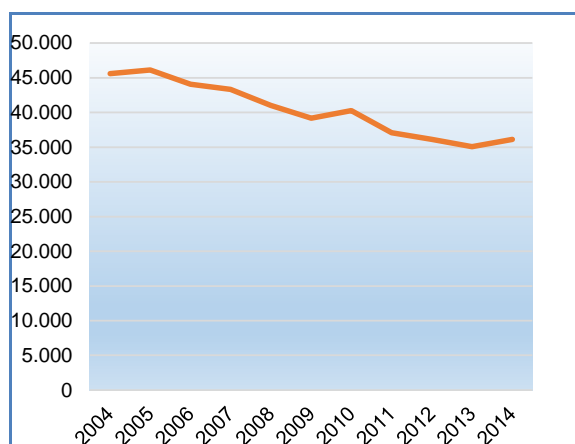
Source: Turkish Statistical Institute.

The fleet consists of approximately 13.700 vessels greater than 5 m, of which 11.400 are less than 10 m. Nearly 4.900 vessels fish the Black Sea, 4.500 fish the Aegean Sea, 2.500 fish the Marmara Sea, and 1.800 fish the Mediterranean Sea. The fleet employs 33.500 people, of whom 14.900 work on the Black Sea.

22.1.3 INLAND FISHERIES

Inland fishery production followed a steadily decreasing trend in the past ten years (–2,3% per year on average) to reach 36.000 tonnes in 2014.

Figure 22-3 TURKEY: LANDINGS OF INLAND FISH (tonnes)



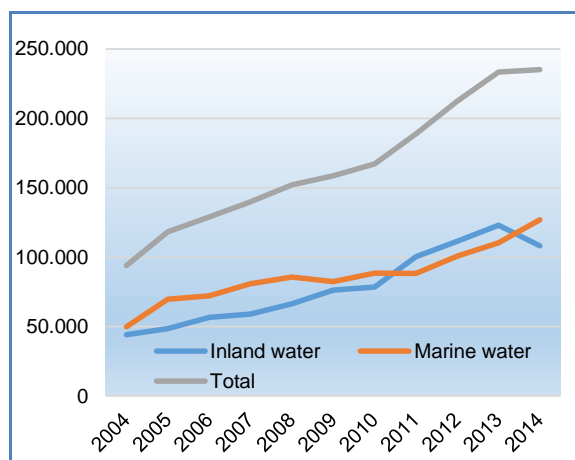
Source: Turkish Statistical Institute.

Main species are common carp, pearl mullet, sand smelt, and Gibel carp, covering 78% of total freshwater catches.

22.1.4 AQUACULTURE

The Turkish aquaculture grew vigorously in the past decade (+150%). Marine aquaculture increased steadily during the period, as did freshwater aquaculture, except for trout farming, which suffered a 12% decrease in the past year.

Figure 22-4 TURKEY: AQUACULTURE PRODUCTION (tonnes)



Source: Turkish Statistical Institute.

Turkish aquaculture is based on three species: seabass and seabream, both farmed in marine aquaculture, and trout, farmed mostly in freshwater. A few companies are also involved in tuna fattening. Ambitious targets have been set for aquaculture. According to the Ministry of Development, Turkey's aquaculture production will reach 600.000 tonnes by 2023 (including freshwater production), and aquaculture exports will grow to USD 1 billion (EUR 750 million) by 2023 (compared with EUR 428 million in 2013). After the development of a National Marine Aquaculture Development Plan in 2008 and the move of inshore marine farms to newly allocated offshore zones, conflicts between the marine aquaculture sector and other coastal users, such as the tourism industry, have been significantly reduced.

22.1.5 PROCESSING

The processing industry focuses mainly on fishmeal and fish oil production, which used 88.000 tonnes of fish in 2013 (down from 229.000 tonnes in 2011), canning, which used 29.000 tonnes in 2013 (up from 26.000 tonnes in 2011), and trout smoking. Major seabass and seabream farming companies are fully integrated and have their own processing and packaging facilities. Fish processing plants are concentrated in the Marmara Sea and Aegean regions. There are about 160 licensed fish processing plants nationwide, out of which 101 are approved to export to the EU.

22.2 TRADE

22.2.1 TURKEY'S TRADE BALANCE

OVERALL

Turkey's overall trade balance for fishery and aquaculture products is strongly positive: exports reached EUR 509 million in 2014, while imports amounted to EUR 150 million. Farmed seabream, seabass, and trout dominate exported fishery products and represent about 70% of total exports. Fresh bluefin tuna (7% of total exports in value) also generates good returns, reaching a unit export price higher than 14 EUR/kg. Main destinations are the EU, Japan, Russia, and Lebanon. The main products imported by Turkey are frozen mackerel (25% of total import value), fresh salmon (20%), frozen tuna for the canning industry (15%), frozen saithe fillets (10%), and frozen squid (7%). Main suppliers are Norway, the EU, Iceland, Morocco, and Guinea.

WITH THE EU

Turkey's trade balance for fishery products is also strongly positive with the EU, because EU exports to Turkey are low (EUR 25 million for less than 17.000 tonnes), and EU imports are significant (EUR 348 million for 69.000 tonnes) in 2014.

Table 22-2 TURKEY: EXPORTS BY MAIN PRODUCTS (2013)

Product	Tonnes	1000 EUR	EUR/kg
Fresh trout	3.461	9.017	2,61
Frozen trout	12.377	32.086	2,59
Fresh trout fillets	282	1.158	4,11
Frozen trout fillets	655	2.746	4,19
Smoked trout fillets	4.081	31.801	7,79
Fresh carp	8.525	4.855	0,57
Fresh bluefin tuna	2.035	28.537	14,02
Live seabass (juveniles)	115	741	6,44
Fresh seabass	16.902	68.855	4,07
Frozen seabass	1.140	5.039	4,42
Live seabream (juveniles)	186	1.916	10,30
Fresh seabream	18.037	61.411	3,40
Frozen seabream	3.846	15.187	3,95
Other fresh fish fillets*	5.001	42.538	8,51
Other frozen fish fillets*	2.717	24.962	9,19
Other	21.703	96.719	4,46
Total	101.063	427.568	4,23

Source: Turkish Statistical Institute.

*including seabass and seabream fillets

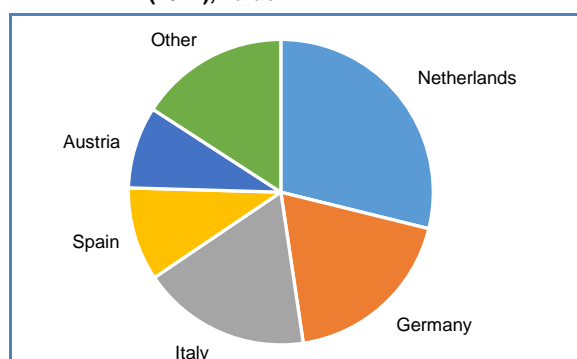
Table 22-3 TURKEY: IMPORTS BY MAIN PRODUCTS (2013)

Product	Tonnes	1000 EUR	EUR/kg
Fresh salmon	5.059	28.611	5,66
Live bluefin tuna (for fattening)	564	7.498	13,29
Frozen yellowfin tuna (for canning)	1.728	3.368	1,95
Frozen skipjack tuna (for canning)	10.168	17.753	1,75
Frozen bigeye tuna (for canning)	289	553	1,91
Frozen mackerel	28.838	35.441	1,23
Frozen saithe fillets	4.245	14.205	3,35
Frozen squid	3.608	9.856	2,73
Other	13.031	24.608	1,89
Total	67.530	141.895	2,10

Source: Turkish Statistical Institute.

22.2.2 EU IMPORTS FROM TURKEY

Turkey is the EU's 17th largest partner, providing 1,6% of total extra-EU imports to the EU in 2014. The Netherlands, Germany, Italy, and Spain are the main Member States importing from Turkey.

Figure 22-5 EU: IMPORTS OF FISHERY PRODUCTS FROM TURKEY by main member states (2014), value

Source: EUMOFA.

The EU imports mostly farmed fish (seabass, seabream, and trout) from Turkey. These products compete with EU-produced fish and enter the EU market at prices much lower than EU products.

Table 22-4 IMPORT PRICE OF SELECTED SPECIES BY ORIGIN (2014)

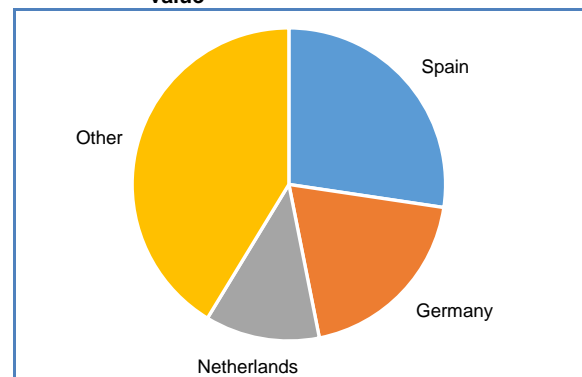
CN code	Product	Import price (EUR/kg)		
		Intra-EU	Turkey	Other extra-EU
03 02 84 10	Fresh seabass	5,52	4,93	7,05
03 02 85 30	Fresh Gilthead seabream	4,81	4,55	12,28
03 02 11 80	Fresh trout (< 1,2 kg)	3,53	3,08	3,98
03 03 14 90	Frozen trout (< 1,2 kg)	3,47	3,03	3,52
03 05 43 00	Smoked trout	10,05	7,99	12,66

Source: EUMOFA.

Following a complaint lodged by the Danish Aquaculture Association on behalf of several EU producers, who complained that Turkish trout producers were competing unfairly thanks to domestic subsidies, the European Commission decided to impose countervailing duties of between 6,7% and 9,5% on imports of portion-sized rainbow trout originating in Turkey (implementing Regulation 2015/309 of 26 February 2015).

22.2.3 EU EXPORTS TO TURKEY

EU exports to Turkey are very limited and concern mainly frozen fish (small pelagics, tuna, and cephalopods). Spain, Germany, and the Netherlands are Turkey's major partners, accounting for nearly 60% of total EU exports to Turkey.

Figure 22-6 EU: EXPORTS OF FISHERY PRODUCTS TO TURKEY by main member states (2014), value

Source: EUMOFA.

22.3 CONSUMPTION

Although the country is surrounded by seas, fish consumption in Turkey is only half of the world average and one third of the EU average. In 2013, per capita consumption of fishery and aquaculture products amounted to 6,3 kg.

Table 22-5 TURKEY: APPARENT CONSUMPTION (TONNES) OF FISHERY AND AQUACULTURE PRODUCTS (2013)

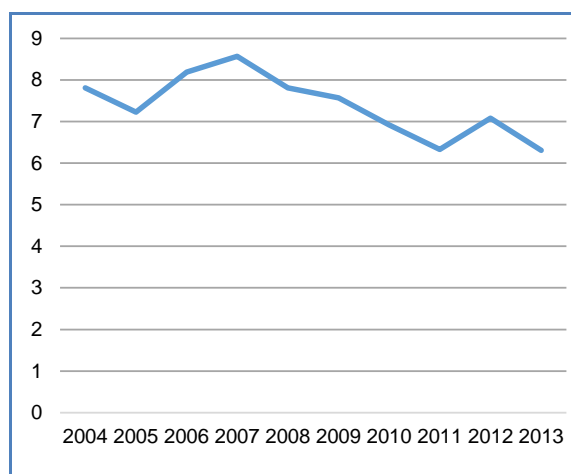
Production (fisheries + aquaculture)	607.500
Export	101.100
Import	67.500
Fish meal and oil factories	87.900
Not processed or consumed	6.400
Domestic consumption	479.600
Per capita consumption	6,3 kg

Source: Turkish Statistical Institute

Seafood consumption differs between the regions. In all, 70% of fishery production is consumed in the Black Sea region. Anchovy, rainbow trout, horse mackerel, and whiting are widely consumed and are typical for the Turkish seafood market. They can be considered as national species. Anchovy is the most popular fresh fish. Throughout Turkey, the most common way of consuming fish is whole and fresh, because cooled and frozen storage and processing of fishery products are not common practices.

Domestic consumption followed a decreasing trend in the past decade. Should the goals set for the aquaculture sector be achieved, the consumption per capita could almost double by 2023.

Figure 22-7 TURKEY: EVOLUTION OF PER CAPITA APPARENT CONSUMPTION (KG)



Source: Turkish Statistical Institute.

23 Seafood in food service in the UK

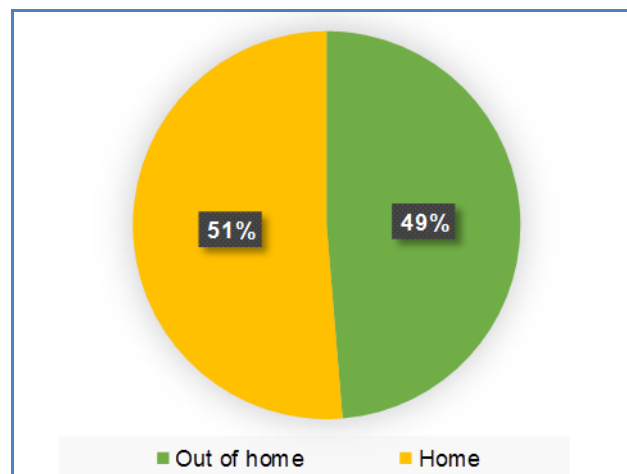
This case study is available in the
Monthly Highlights N° 4-2018

23.1 OUT OF HOME CONSUMPTION

The United Kingdom is the Member State with the highest share of out-of-home consumption in total seafood consumption: 49% of all seafood consumed in the UK is eaten out of home. In comparison, out-of-home consumption represents 13% of total seafood consumption in France¹⁷⁶, 20% in Poland and 35% in Germany¹⁷⁷.

In 2016, UK consumers purchased seafood worth GBP 6,12 billion (EUR 7,50 billion) of seafood, out of which GBP 3,14 billion (EUR 3,85 billion) was in retail outlets and GBP 2,98 billion (EUR 3,65 billion) in food service.

Figure 23-1 SEAFOOD CONSUMPTION IN THE UK IN 2016, IN VALUE



Source: Seafish (UK Seafood Value Chain 2016).

23.2 TYPE OF FOOD SERVICE OUTLETS

Quick service restaurants (including fish and chip shops) dominate the food service market and represent almost half of all seafood servings.

Table 23-1 SEAFOOD SERVINGS BY CHANNEL IN 2016 – 2017 (year ending in June 2017)

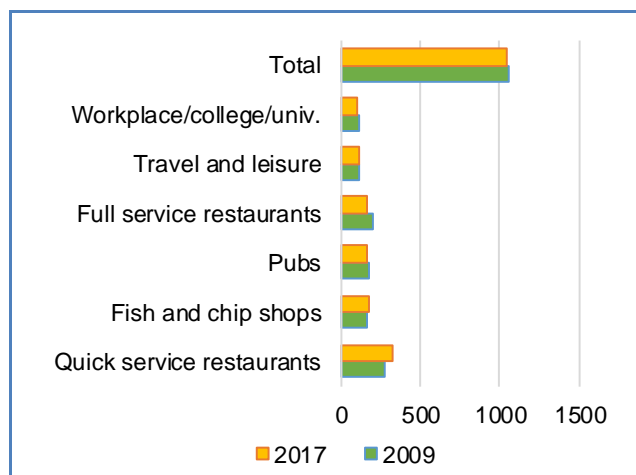
	Number of servings (in million)	% of servings
Quick service restaurants*	324	31%
Fish and chip shops	176	17%
Pubs	164	16%
Full service restaurants	164	16%
Travel and leisure	115	11%
Workplaces/colleges/universities	102	10%
Total out-of-home consumption	1.048	100%

Source: Seafish.

*Excluding fish and chip shops.

¹⁷⁶ Source: FranceAgriMer

¹⁷⁷ Source: «EU consumer habits regarding fishery and aquaculture products» (EUMOFA – January 2017).

Figure 23-2 SEAFOOD SERVINGS BY CHANNEL – COMPARISON BETWEEN 2009 AND 2017 (in million)

Source: Seafish.

Over the long term, the foodservice landscape has changed. Immediately after the economic crisis in 2007–2008, a lot of consumers ate out less often and those continuing to eat out switched to cheaper channels, shifting from more expensive full-service restaurants to quick-service restaurants. In the past eight years, from June 2009 to June 2017, seafood servings out of home remained almost stable (–0,8%) but have fallen significantly in most channels, with the exception of quick service restaurants.

Since 2015, seafood has performed quite well in food service. Overall seafood servings increased by 2,3% in 2016 and 4,1% in 2017.

23.3 TYPE OF SEAFOOD PRODUCTS CONSUMED IN FOOD SERVICE

Fried fish¹⁷⁸ is the most popular type of seafood product eaten out of home, representing 35% of total seafood servings, ahead of non-fried fish (25%), fish sandwiches (22%), shellfish sandwiches (7%), fish fingers (5%) and fish burgers (4%).

Over the long term, growth can be observed in the cheaper and convenience-focused seafood formats, such as fish sandwiches, fish fingers and fish burgers.

In the period 2016–2017, the fastest growing seafood dishes on menus were sushi, fish and egg dishes, crab sushi rolls and speciality seafood salads.

Compared to other sources of proteins, seafood is losing ground and ranks fourth in 2017 with a 14,5% share of total out-of-home protein servings, behind pork (28,9%), poultry (28,3%), and beef (22,3%)¹⁷⁹. In 2015, the share of seafood was 15,7%.

A seafood meal (on average GBP 6,27 or EUR 7,15 in 2017) is still relatively expensive compared to cheaper options such as poultry and pork. Seafood continues to be of greater interest to an older age group with over 60% of servings purchased by consumers aged over 35 (who represent only 56% of the total population). The development of new sushi chains for take-away and home delivery has opened a new growing distribution channel. Younger urban people dominate the sushi market.

23.4 SPECIES CONSUMED

23.4.1 MAIN SPECIES

Cod is the most consumed species in food service (18% of all seafood servings in 2016–2017), ahead of tuna (15%), shrimp (10%), salmon (7%) and haddock (6%).

In terms of white fish, haddock is the second best-selling species after cod in food service.

In terms of blue fish, tuna comes first. Small pelagics are little consumed in food service. Mackerel is the small pelagic species most consumed.

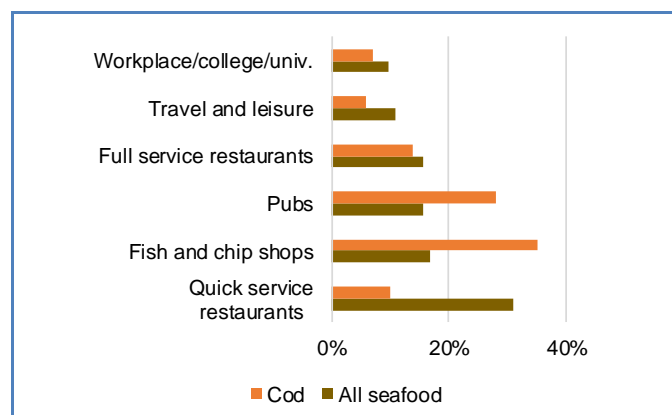
¹⁷⁸ «Fried fish» refers to any fish that has been prepared by frying, but usually designates fish that has been battered or breaded before being fried. In the typology used by Seafish, fish burgers, fish fingers and fishcakes are not included in «fried fish».

¹⁷⁹ Seafood trends in commercial food service (Seafish – September 2017).

23.4.2 THE EXAMPLE OF COD

Cod is the UK's most popular white fish and is the third top-selling fish after salmon and tuna¹⁸⁰. It is also the most popular fish eaten out of home, with fish and chips at the top of the list. In 2016, out-of-home consumption represented 53% of all cod units/servings consumed, with retail representing 47%. The breakdown by channel differs significantly from the general picture, especially as regards the share of fish and chip shops and pubs, where cod is overrepresented compared to the global out-of-home consumption pattern: in fish and chip shops cod represents 35% of seafood servings while it represents only 18% of total seafood servings in the entire food service (all channels included), and in pubs cod represents 28% of seafood servings while it represents only 16% of total seafood servings in the entire food service. At the opposite end, cod has a much lower representation in quick service restaurants (10% vs. 30%), workplaces and universities (7% vs. 9%) and travel and leisure (6% vs. 11%).

Figure 23-3 SEAFOOD FOOD AND COD SERVINGS BY CHANNEL IN 2016 (in % of total food service servings, in value)



Source: Seafish.

Table 23-2 EVOLUTION OF COD SERVINGS BY CHANNEL IN FOOD SERVICE (year ending in March 2017, compared to year ending in March 2016)

Fish and chip shops	+30%
Full service restaurants	+15,6%
Pubs	+8%
Quick service restaurants	+7,8%
Workplaces/colleges/universities	-6,3%
Travel and leisure	-19,8%

Source: Seafish.

In the last year, cod has experienced a very positive trend, with average annual servings increasing by 12% in value. This growth was mainly driven by fish and chip shops.

Cod also continues to appeal to older consumers: 49% of servings go to consumers over 50 years, whose share in the total food and drink out-of-home consumption is only 27%. The cod consumed in the UK food service is mainly of foreign origin. Ninety percent of the UK's annual cod supply is imported or landed into the UK by foreign vessels. However, in 2016, UK vessels increased their share of the supply. The main cod suppliers are Iceland (37% of total UK cod imports in value in 2016), China (16%), Germany (10%), Norway (9%) and Russia (8%). Total cod imports from EU Member States accounted for just over a fifth of all cod imports into the UK in 2016. In addition to Germany, the main EU suppliers were Denmark (4%), Poland (3%), Lithuania (2%) and Sweden (1%).

Table 23-3 UK COD SUPPLY IN 2015 AND 2016¹⁸¹

	2015					2016				
	Volume (tonnes)	Value (GBP million)	Value (EUR million)	Price (GBP/kg)	Price (EUR/kg)	Volume (tonnes)	Value (GBP million)	Value (EUR million)	Price (GBP/kg)	Price (EUR/kg)
Cod landings in the UK by UK vessel	15.364	29,51	40,65	1,92	2,65	20.747	38,11	46,53	1,84	2,24
UK imports	115.367	440,14	606,25	3,82	5,25	121.178	493,39	602,43	4,07	4,97
Total UK cod supply	130.731	469,65	646,90	3,59	4,95	141.925	531,5	648,96	3,74	4,57

Source: Seafish.

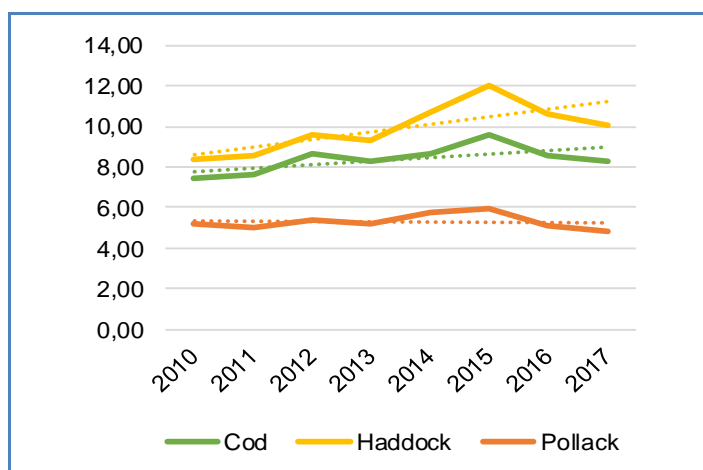
¹⁸⁰ Both out of home and home consumption included.

¹⁸¹ Cod landings in the UK by foreign vessels are very low (900 tonnes in 2016, i.e. 0,6% of total UK cod supply). They are not included in the table 14.

In recent years, cod followed the same price trend as other major white fish species. Cod, haddock and pollack followed an increasing trend from 2010 to 2015 and a decreasing trend thereafter.

However, over this period cod prices increased less strongly than haddock, while for pollack they remained stable.

Figure 23-4 EVOLUTION OF PRICES OF WHITE FISH SPECIES IN THE UK AT CONSUMPTION/RETAIL LEVEL



Source: EUMOFA/Europanel.

23.5 THE CASE OF FISH AND CHIP SHOPS

Fish and chip shops can be considered the pioneers of take-away food in the UK. Thought to have originated around the mid nineteenth century, it remains a hugely popular dish today¹⁸², often considered to be the national dish of the UK. There are currently around 10.500 specialized fish and chip shops in the UK¹⁸³. They clearly outnumber other fast food outlets: McDonalds has 1.200 outlets, Kentucky Fried Chicken, 900 outlets. The UK's fish and chip sector is dominated by individual shops. Chains have been developing a little in recent years but remain marginal. The largest chain, Fish'n'chick'n, has 24 franchise restaurants in the South of England. Traditional fish and chip shops remain the largest outlet for servings of fish and chips as a meal, taking 54% of servings. The other suppliers of fish and chips are mainly pubs (18%), full service restaurants (9%) and quick service restaurants (8%). The core age demographic for fish and chips remains the 50–64 and 35–49 age group consumers. Fish and chip shops differ from other food service channels in the importance of the dinner servings. Fish and chips as a meal is still mainly eaten for dinner but the importance of this mealtime has declined over the past two years, while both lunchtime consumption and snacking have increased.

Table 23-4 FISH AND CHIPS MEAL SERVINGS BY MEALTIME (IN %), IN 2016 AND 2017 (year ending in September)

	Total fish & chips	Pubs	Full service restaurants	Fish & chip shops	Quick service restaurants
Breakfast	0,4	0,1	1,2	0,0	2,1
Lunch	37,1	51,7	61,6	22,5	35,0
Dinner	58,3	45,8	34,4	75,5	50,0
Snacking	4,3	2,5	2,8	2,0	12,9

Source: Seafish.

Cod and haddock are the favourite species consumed in the fish and chip shops. But other species are used to a smaller extent, in particular whiting, pollock, plaice, hake, saithe, scampi, blue grenadier and dogfish

¹⁸² Seafish – Market insight factsheet « Fish & Chips in Foodservice », December 2017.

¹⁸³ National Federation of Fish Friers.

24 The US market for seafood product

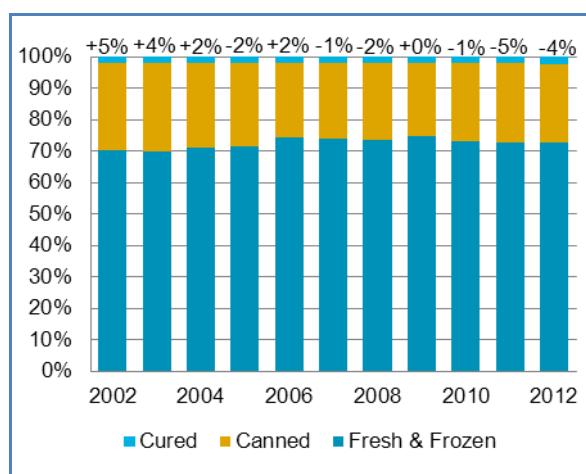
This case study is available in the
Monthly Highlights N° 1-2014

According to the FAO, the USA ranks as the third largest consumer market of seafood in the world after China and Japan, when compared on a single-country basis (average for 2008-2012). However, the size of the market represented by the European Union (all 27 Member States) is nearly twice as large as the US market. According to the US National Oceanic and Atmospheric Administration (NOAA), US consumers spent an estimated USD 82.6 billion on fishery products in 2012, including USD 55.2 billion at food service establishments, USD 26.8 billion in retail sales for home consumption, and USD 570 million for industrial fish products.

24.1 CONSUMPTION

In recent years, consumption of seafood in the USA has declined slightly. In 2012, the 313 million Americans consumed approximately 2 million tonnes of edible weight of seafood, according to an annual NOAA study. This is per capita consumption of 6.5 kgs, representing a 4% decline compared with 2011. Note that NOAA calculates seafood consumption in edible weight, a measure different from how FAO calculates per capita consumption, which is stated in live weight. The FAO average consumption in the US for the period 2008-2010 was 21,9 kg live weight, compared with an average of 22,8 kg consumed in the EU for the same period.

Figure 24-1 ANNUAL CHANGE PER CAPITA SEAFOOD CONSUMPTION OF COMMERCIAL FISH AND SHELLFISH

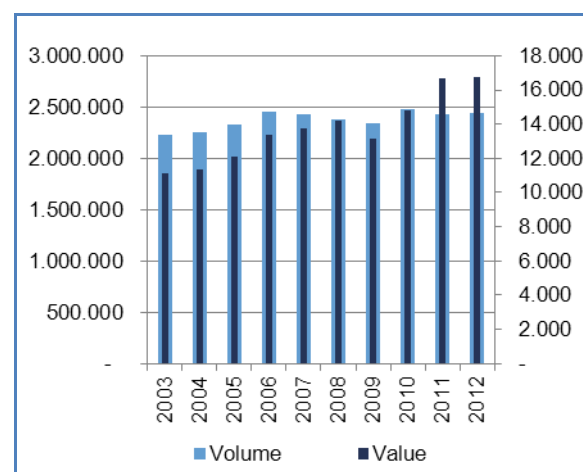


Source: National Oceanic and Atmospheric Administration (NOAA).

24.2 IMPORTS

US imports of edible fishery products in 2012 were valued at USD 16,7 billion, nearly the same as 2011. In 2012, edible imports consisted of approximately 2 million tonnes of fresh and frozen products, 311.000 tonnes of canned products, 43.000 tonnes of cured products, and 37.000 tonnes of other products.

Figure 24-2 US IMPORTS OF EDIBLE FISHERY PRODUCTS (volume in tonnes and value in million USD)



Source: National Oceanic and Atmospheric Administration (NOAA).

In 2012, shrimp accounted for almost 27% of the total import value of edible products. The 534.000 tonnes of shrimps imported to the US market constituted a value of USD 4,4 billion, although this was a 7% decrease in volume from 2011. Other important species imported in 2012 included salmon and tuna. Both fresh and frozen products were imported on a large scale in addition to canned products of these species. Imports of fresh and frozen salmon, including fillets, constituted ca. 255.000 tonnes in 2012, at a value of USD 1,8 billion.

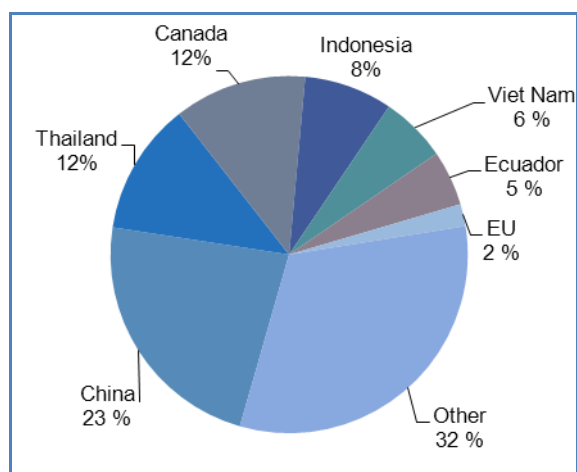
Table 24-1 US IMPORTS BY PRODUCT TYPE (volume in thousand tonnes, value in billion USD)

Product type	2011		2012	
	Vol.	Val.	Vol.	Val.
Fresh and frozen	2.019	14,41	2.052	14,25
Canned	341	1,78	311	1,92
Smoked, salted and dried	41	0,28	42	0,30

Source: National Oceanic and Atmospheric Administration (NOAA).

The USA is a net importer of edible seafood products. The trade deficit on seafood in 2011 and 2012 averaged close to USD 11 billion.

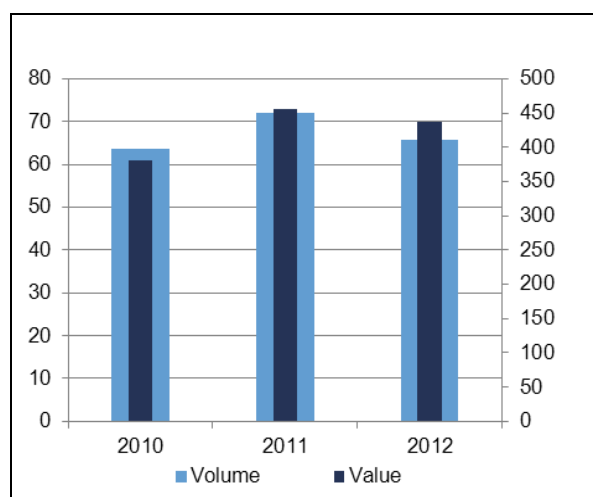
Figure 24-3 US IMPORTS BY COUNTRY OF ORIGIN (2012)



Source: National Oceanic and Atmospheric Administration (NOAA).

The EU is a minor supplier of seafood to the US market (2%). The major species exported are salmon from UK and herring from Poland. From 2011 to 2012, the export volume from the EU to the USA fell by 8,8% to 65.515 tonnes, and the export value fell by 4%. However, in the first three quarters of 2013, exports rose by 15% in volume and 14% in value.

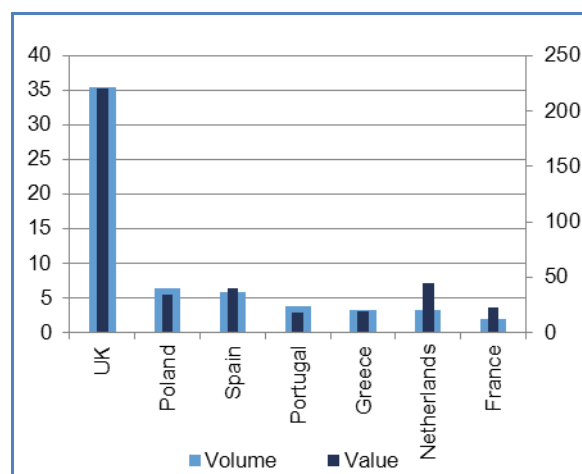
Figure 24-4 EU EXPORTS OF EDIBLE FISHERY PRODUCTS TO THE US (volume in thousand tonnes and value in million EUR)



Source: EUMOFA.

The UK is the largest EU supplier of seafood to the US market. In the first three quarters of 2013, 55% of the EU export volume to the USA was of UK origin, whereas the share of value was 50%. The main commercial species exported from the UK was farmed Atlantic salmon. Poland ranked second in 2013 with 9% of the export volume (mainly herring), followed by Spain (9%) and Portugal (8%).

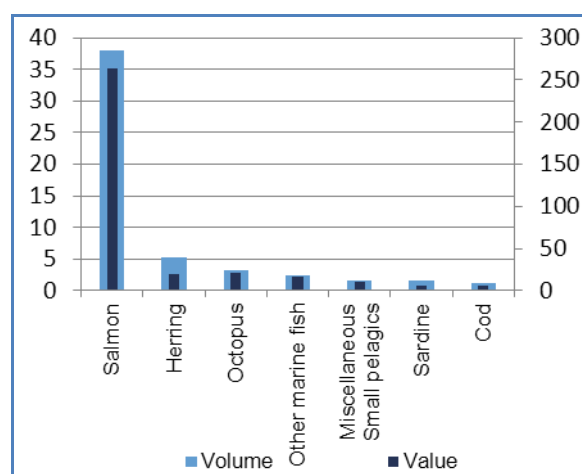
Figure 24-5 EU EXPORTS OF EDIBLE FISHERY PRODUCTS TO THE US BY MS (volume in thousand tonnes and value in million EUR)



Source: EUMOFA.

The most important species exported from the EU to the US market in 2012 was salmon. Exports of salmon amounted to EUR 220 million, representing 60% of the total value. In volume, salmon accounted for 58%. In the first nine months of 2013, the percentages remained relatively stable (volume 57% and value 60%). The main salmon product exported to the US market year-to-date was fresh whole salmon, which accounted for 90% of the volume and 80% of the value. The second most important commercial species exported from the EU to the US market was herring. Exports in 2012 totalled 5.201 tonnes, while exports year-to-date 2013 were 3.565 tonnes. Poland is the main EU exporter of herring to the US market, with a 69% share of EU herring exports to the USA in the period January–September 2013.

Figure 24-6 EU EXPORTS OF EDIBLE FISHERY PRODUCTS TO THE US BY MCS (volume in thousand tonnes and value in million EUR)



Source: EUMOFA.

24.3 PRODUCTION (LANDINGS)

In 2012, US landings from the Pacific trawl fleet decreased 1% in quantity and 4% in value compared with 2011. The total volume was 2,13 million tonnes with a value of USD 727,2 million. This includes Pacific cod, flounder, hake, Pacific Ocean perch, Alaska pollock, and rockfish. Catch volume of Alaska pollock and Pacific cod increased over 2011, but a 30% decrease in hake reduced the total catch. Crab decreased slightly in volume, but the value increased USD 30,4 million (5%); of the major species landed in the US, crab yields the most value.

Table 24-2 VOLUME OF LANDINGS IN THE US (2012)

Rank	Species	Thousand tonnes
1	Pollock	1.310
2	Menhaden	803
3	Cod	331
4	Flatfish	319
5	Salmon	288
6	Hakes	168
7	Crabs	167
8	Shrimp	137
9	Herring (sea)	122
10	Squid	122

Source: National Oceanic and Atmospheric Administration (NOAA).

Table 24-3 VALUE OF LANDINGS IN THE US (2012)

Rank	Species	Thousand USD
1	Crabs	680.654
2	Scallops	561.315
3	Shrimp	490.067
4	Salmon	489.125
5	Lobster	465.823
6	Pollock	356.465
7	Cod	208.788
8	Clams	193.071
9	Flatfish	176.576
10	Tuna	163.885

Source: National Oceanic and Atmospheric Administration (NOAA).

25 Fisheries in Vietnam

This case study is available in the
Monthly Highlights N° 6-2017

Vietnam is a large player in the global seafood industry. In 2015, it was the third largest aquaculture producer and exporter of seafood¹⁸⁴. Vietnamese export value of fish, crustaceans, molluscs and other aquatic invertebrates reached USD 4,19 billion. This was a 19% decrease from 2014¹⁸⁵.

Pangasius is the largest aquaculture species produced by Vietnam. It is exported to foreign markets as frozen whole. From 2007 to 2016, the export share of pangasius to the EU market shrank from 48% to 15%, for various reasons, e.g. the negative image of pangasius and its farming practices, competition with other producing countries (e.g. Myanmar), increased demand from China, the US and the Association of Southeast Asian Nations (ASEAN) countries.

At the same time, Vietnam has experienced radical economic and social growth, offering significant potential for EU businesses. This led in 2012 to negotiations for a free trade agreement (FTA) between the EU and Vietnam. Negotiations were concluded and the legal review of the negotiated text is currently on-going. The agreement is expected to enter into force in early 2018¹⁸⁶.

25.1 PRODUCTION

25.1.1 CATCH

Vietnam has an Exclusive Economic Zone (EEZ) of approximately 418.000 km² and four principal fishing grounds: (1) The Gulf of Tonkin in the north; (2) the South China Sea in the central and (3) south-eastern part and (4) the Gulf of Thailand to the southwest. The marine fisheries are mostly small-scale, multi-species and multi-gear with the majority of the fisheries taking place in the coastal waters¹⁸⁷.

Marine fisheries in Vietnam are required to follow the national fishery law to achieve sustainable and responsible fisheries, but a long trend of financial constraints, weak enforcement, and limited technical capacity to implement action has caused difficulties in achieving a desirable level of detail which can be observed in the reported landing data.

Reported landings in Vietnam are divided into six major groups. Data extraction by species is possible in certain groups (e.g. tuna, bonito, and billfish), whereas for other groups, e.g. marine fish NEI (not elsewhere included) this is difficult or impossible¹⁸⁸. In 2015, reported Vietnamese catches reached approximately 2,7 million tonnes. Most of the volume is made up of many species in the commodity group marine fish NEI. Of the tuna, bonito, and billfish, skipjack tuna accounted for approximately 70% of the volume in the period 2013–2015, ranging from 55.000 to 75.000 tonnes.

The domestic fleet consists of approximately 113.000 vessels, with 82% belonging to the coastal fleet and 28% to the offshore fleet. The number of vessels will be reduced to 95.000 by 2030, with a plan to increase efficiency, shift from wooden to steel vessels, and modernise receiving harbours¹⁸⁹.

Table 25-1 TOP SPECIES GROUPS CAUGHT BY THE VIETNAMESE FLEET (1000 tonnes)

Species groups	2010	2011	2012	2013	2014	2015
Marine fish NEI	1.620	1.670	1.751	1.802	1.889	1.954
Squid, cuttlefish, octopus	226	252	280	291	315	329
Shrimp, prawn	143	152	156	162	159	169
Tuna, bonito, billfish	43	51	68	83	85	111
Miscellaneous marine molluscs	36	47	45	47	46	48
Other	27	33	37	43	81	64
Total	2.094	2.205	2.337	2.429	2.575	2.675

Source: FAO.

¹⁸⁴ <http://www.fao.org/3/a-i5555e.pdf>

¹⁸⁵ <https://comtrade.un.org/data>

¹⁸⁶ <http://ec.europa.eu/trade/policy/countries-and-regions/countries/vietnam/>

¹⁸⁷ <http://fisheries.ubc.ca/node/4711>

¹⁸⁸ <http://fisheries.ubc.ca/node/4711>

¹⁸⁹ <http://www.opportunities-abroad.no/wp-content/uploads/2016/10/Vietnam-Marine-Sector-Innovation-Norway.pdf>

25.1.2 AQUACULTURE

In 2015, the production volume of pangasius accounted for 34% of the total volume produced reaching 1,17 million tonnes. Vietnam has been and remains the main producer of pangasius globally since 1940, when production started. Production occurs mainly in the Mekong River delta in southern Vietnam. Vietnamese pangasius is mostly “basa” (*Pangasius bocourti*) or “tra” (*Pangasius hypophthalmus*). In recent years, the sector has consolidated, resulting in more large-scale producers and the closing of several small-scale producers.

The three main on-growing monoculture systems are (1) earth ponds (ranging from 1.000 to 10.000 m²) with a simple design, sited near river tributaries; (2) net cages (ranging from 50 to 1.600 m³) also sited near tributaries of the Mekong River delta; and (3) net pens with a stocking density at 40–60/m². The small-scale, integrated-pond, polyculture system is being phased out¹⁹⁰. Vietnam is also a notable producer of warm-water shrimp, with a 2015 combined volume of 540.000 tonnes of whiteleg (*vannamei*) and giant tiger prawn (*monodon*). The production of tilapia has also increased steadily, making up for low volume growth in Pangasius over the past 3–4 years. In 2015, Vietnam was the third largest aquaculture producer globally, behind China and India. Most of the aquaculture production in Vietnam occurs in the interior (90%)¹⁹¹.

Table 25-2 TOP SPECIES PRODUCED BY VIETNAMESE AQUACULTURE (1000 tonnes)

Species	2010	2011	2012	2013	2014	2015
Pangasius	1.140	1.151	1.184	1.148	1.134	1.174
Cyprinids	469	490	450	406	446	317
Whiteleg shrimp	99	140	148	236	353	318
Tilapia	121	173	197	216	244	283
Giant tiger prawn	213	194	164	186	240	223
Other	647	711	960	1.028	1.108	1.134
Total	2.689	2.860	3.103	3.220	3.526	3.450

Source: FAO.

25.2 TRADE

Vietnam is a major seafood-exporting nation. In 2015 the country had a positive trade balance of USD 4,19 billion. In 2015 Vietnam was the third largest exporter of fish globally, behind China and Norway¹⁹².

Table 25-3 VIETNAMESE TRADE BALANCE FOR SEAFOOD (billion USD)

Trade flow	2012	2013	2014	2015
Export	5,24	5,49	6,21	5,25
Import	0,65	0,72	1,05	1,05
Balance	4,59	4,77	5,15	4,19

Source: UN Comtrade.

Approximately 49% of Vietnam’s seafood export value includes processed items such as frozen/fresh fillets (CN codes 0304/0305/1604); a large share (44%) of the import value includes fresh/frozen whole products (CN codes 0302/0303). This confirms Vietnam as a significant processing nation and, in light of the FTA with the EU, there is a great future potential for increased foreign investment in the processing industry. The FTA brings the EU a step closer to an agreement with other ASEAN members. Currently, the EU has also concluded negotiations with Singapore and negotiations are in progress with the Philippines and Indonesia. ASEAN represents the EU’s third largest trading partner outside Europe (after the US and China), with more than EUR 246 billion of trade in goods and services (2014). The EU is ASEAN’s second largest trading partner after China, accounting for approximately 13% of ASEAN trade¹⁹³. Because pangasius is the largest species in volume produced by aquaculture in Vietnam, it is naturally a significant export product (frozen fillets), with a total export value of USD 1,7 billion in 2016. Nearly 90% of pangasius production in Vietnam is exported. After harvest, live fish are processed in different forms.

In 2016, the US was the largest market for Vietnamese export (USD 387 million), followed by China/Hong Kong and the EU. The three markets represented 56% of total export value. The EU was the main market for Vietnamese pangasius in the mid-2000s, with a 48% market share in value in 2007. Since then, the market share shrank to 15% in 2016¹⁹⁴.

¹⁹⁰http://www.fao.org/fishery/culturedspecies/Pangasius_hypophthalmus/en

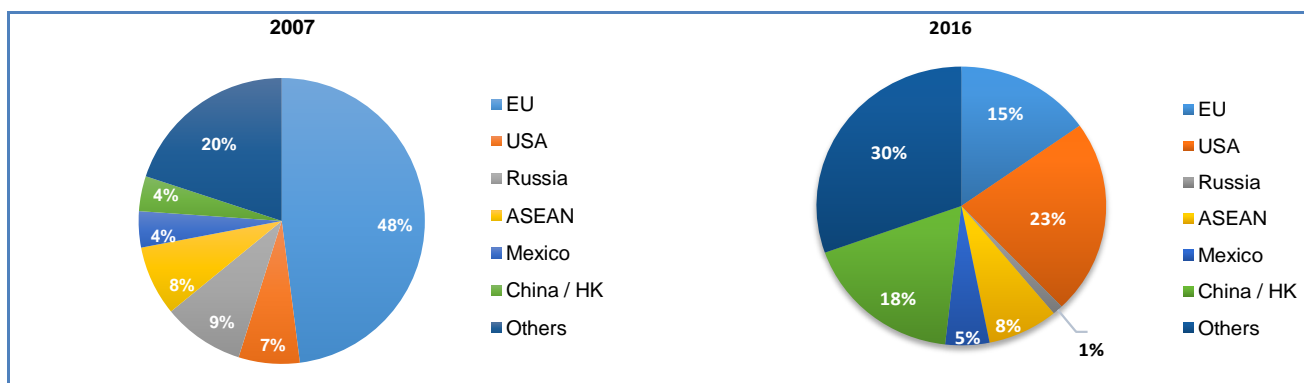
¹⁹¹<http://www.fao.org/3/a-i5555e.pdf>

¹⁹²<http://www.fao.org/3/a-i5555e.pdf>

¹⁹³<http://ec.europa.eu/trade/policy/countries-and-regions/countries/vietnam/>

¹⁹⁴VASEP.

Figure 25-1 SUPPLY SHARE DEVELOPMENT FOR VIETNAMESE PANGASIUUS



Source: VASEP.

25.2.1 VIETNAM AND THE EU

In 2016, EU import of Vietnamese seafood totalled slightly more than EUR 1 billion and 268.000 tonnes. The most important species imported were tropical shrimp (frozen whole), pangasius (frozen fillets), and clam. The main EU markets by value were the UK (18%), followed by the Netherlands (15%) and Germany (14%). The most important species in value imported to the UK was tropical shrimp, accounting for 25% of the value and 16% of the volume. Since 2010, the EU imports of pangasius have declined after a boost in the preceding years. From more than 215.000 tonnes in 2010, the 2016 volume was 105.320 tonnes. All major EU markets have seen a stable decrease, except for the UK, which increased 28% since 2010. The decrease in the recent years has been caused mainly by concern over the production cycle (proportion of pollution in fish farms). The image of pangasius in Europe and other countries has been negatively affected by media reports and by campaigns in individual markets. In general, the pangasius industry is viewed as massive, production-driven, and a cause of negative impacts on the environment. The latter were related to the unsanitary conditions of water in the Mekong River (pollution, bacteria, industrial effluents, toxins, etc.), inferior quality of fish feed, and exploitation of workers. Several large retailers in the EU are now withdrawing pangasius as a result.

Table 25-4 TOP EU MARKETS FOR SEAFOOD IMPORTS FROM VIETNAM (million EUR and 1000 tonnes)

Country	2014		2015		2016	
	Value	Volume	Value	Volume	Value	Volume
UK	126	27	172	28	182	30
The Netherlands	102	31	130	30	153	33
Germany	161	46	161	34	141	28
Italy	109	40	111	38	119	40
France	115	28	120	27	113	24
Other	317	126	324	110	322	113
Total	930	298	1.018	267	1.030	268

Source: EUMOFA.

Table 25-5 TOP MAIN COMMERCIAL SPECIES IMPORTED FROM VIETNAM (million EUR and 1000 tonnes)

Species	2014		2015		2016	
	Value	Volume	Value	Volume	Value	Volume
Tropical shrimp	202	25	222	25	244	28
Pangasius	235	131	250	113	222	108
Clam	32	22	36	21	40	26
Skipjack tuna	0	0	33	11	27	10
Yellowfin tuna	17	5	19	6	25	7
Other	444	115	457	91	472	89
Total	930	298	1.017	267	1.030	268

Source: EUMOFA.

In 2016, EU exports of seafood to Vietnam totalled EUR 224 million and 53.000 tonnes. The most important species exported by value were Greenland halibut (59%), salmon (12%), and trout (5%). In 2016, the main EU exporter was Denmark (47%), followed by Spain (16%) and Poland (10%). The most important seafood product exported from Denmark was Greenland halibut (whole frozen) and trout (whole frozen). Greenland halibut accounted for 85% of the Danish export value and 78% of the volume, while trout accounted for 8% of the value and 11% of the volume. Poland was the main supplier of salmon (frozen fillets) to Vietnam, accounting for 74% of the Polish export value and 66% of the volume.

Table 25-6 TOP EU MEMBER STATES EXPORTING TO VIETNAM (million EUR and 1000 tonnes)

Country	2014		2015		2016	
	Value	Volume	Value	Volume	Value	Volume
Denmark	56	13	72	15	106	20
Spain	39	9	48	12	36	7
Poland	23	5	23	6	22	5
UK	12	8	12	8	21	10
France	25	3	19	2	15	2
Other	12	10	17	6	24	9
Total	165	48	189	49	224	53

Source: EUMOFA.

Table 25-7 TOP MAIN COMMERCIAL SPECIES EXPORTED TO VIETNAM (million EUR and 1000 tonnes)

Species	2014		2015		2016	
	Value	Volume	Value	Volume	Value	Volume
Greenland halibut	84	18	100	18	132	23
Salmon	25	6	25	10	27	9
Trout	7	2	7	2	12	3
Toothfish	21	1	14	1	11	0
Horse mackerel	0	0	1	1	3	2
Other	28	21	42	17	39	16
Total	165	48	189	49	224	53

Source: EUMOFA.

25.3 FUTURE DEVELOPMENT

In order to strengthen the industry and boost production growth, the Ministry of Agriculture and Rural Development of Vietnam approved a five-year plan to increase the production of farmed pangasius to 1,6 million tonnes by 2020. Implementation of the plan began in 2015 with investments to expand infrastructure at farming areas, upgrade fish hatcheries, and improve the overall production chain. At the same time, the local pangasius sector aims to produce new value-added products and focus on the sustainability of the supply chain¹⁹⁵.

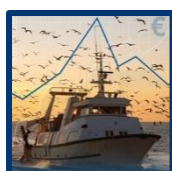
This year, the first container of Vietnamese oysters was exported to the EU, including Italy. With a production capacity of 30.000 tonnes, it has the potential of becoming a significant export to the EU market, targeting supermarkets and the HoReCa market. A key to establishing the export of such species, grown in northern Nam Dinh province, is meeting strict EU requirements and Italian regulations concerning health and environmental issues.

¹⁹⁵ <http://www.fao.org/in-action/globefish/market-reports/resource-detail/en/c/336908/>

EUM OFA

European Market Observatory for
Fisheries and Aquaculture Products

www.eumofa.eu



Publications Office
of the European Union

ISBN 978-92-79-82018-2
doi:10.2771/01182