# EUMOFA

European Market Observatory for Fisheries and Aquaculture Products

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# MONTHLY HIGHLIGHTS

CONTENTS



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In January–March 2017, first-sales value and volume increased in Denmark, France, Latvia, Norway, and Portugal over January–March 2016. First-sales value of sole decreased in Belgium, Italy, and the UK. Herring first-sales volume increased in Denmark, Latvia, and Norway and decreased in Estonia, Lithuania, and Sweden. In March 2017, hake first-sales prices increased 19% in France and decreased 5% in the UK, compared with March 2016. At the same time, scallop prices increased 15% in the UK and decreased 3% in France.

In January–March 2017, clam average unit prices increased in Italy and Portugal (+16% and +7%, respectively) and decreased in France (−5%) and the UK (−32%), compared with January–March 2016. Brill first-sales value decreased 11% in France, but increased in Belgium, Denmark, and the UK. In the same period, first-sales prices decreased 11% in France and increased in Denmark (+5%) and Belgium and the UK (both +1%).

A Sustainable Fisheries Partnership Agreement has been initialled between the EU and the Republic of Mauritius. It will allow EU tuna fishing vessels to fish in Mauritian waters for four years.

In 2016, EU imports from third countries reached EUR 24,4 billion, a 9% increase over 2016 and a 6% increase in average import prices. Exports to third countries grew 5%, reaching EUR 4,7 billion, led by an average price 8% higher than in 2015. Trade between EU Member States was valued at EUR 25,2 billion, 9% higher than a year earlier.

In 2015, EU mussel production amounted to 545.000 tonnes. Spain was by far the most important producer in the EU accounting for 41% of the EU mussel production in volume. Other important producers were France (14%), Italy (12%), the Netherlands (10%), and Denmark (9%). In 2016, trade between EU Member States reached more than 200.000 tonnes and EUR 315 million, of which 65% were fresh products. On the intra-EU trade market, the Netherlands and Spain are the main mussel suppliers, and Belgium and France are the main destinations of exports.

In January–February 2017, the retail price of fresh dab for household consumption in Denmark was 15,67 EUR/kg and grew 39% over January–February 2016.

# 1. First sales in Europe

In **January–March 2017**, ten EU Member States and Norway reported first-sales data for 11 commodity groups[1]. Compared to January–March 2016, first-sales increased in both value and volume for Denmark, France, Latvia, Norway, and Portugal.

In **Belgium** in **January–March 2017**, first sales decreased in both value (−6%) and volume (−5%), compared with January–March 2016. The species most responsible for the decreases were cuttlefish (−21% in value and −46% in volume), plaice (−14% in value and −11% in volume), and sole (−16% in value and −7% in volume). In **March 2017**, the same species caused the first-sales value and volume decreases compared to March 2016. Of these, sole decreased most in value (−23%), and cuttlefish decreased most in volume (−63%). Except for sole (−7%) and turbot (−6%), the other major species experienced higher average prices, especially gurnard (+58%) and cuttlefish (+37%).

In **Denmark** in **January–March 2017**, first sales increased in both value and volume over January–March 2016. First sales of herring (+45%) and plaice (+11%) were the main contributors to the increase in value. Herring (+85%) and cockle (1.046 tonnes, which accounts for 95% of the volume of "other molluscs and aquatic invertebrates") caused the increase in volume. In **March 2017**, first-sales value (−12%) and volume (−20%) experienced decreases compared with March 2016. The value decrease was due mainly to herring (−62%) and Norway lobster (−53%); herring was also the main contributor to volume decrease (−59%). Among the main species, average prices increased for cod (+16%) and Shrimp *Crangon* (+27%) and decreased for Norway lobster (−17%), saithe (−23%), herring and sole (both −7%).

In **January–March 2017**, **Estonia** saw substantial decreases in both first-sales value and volume from the same period a year before. Herring (−12% in value and −7% in volume) and sprat (−35% in value and −32% in volume) caused the decreases. In **March 2017**, the decreasing trend continued in value, compared with March 2016. This was also caused by sprat (−26%) and European perch (−31%). By contrast, volume increased led by herring (+29%). Except for European perch whose average price increased 10%, the prices of the remaining species experienced an opposite trend: herring (−11%) and sprat (−8%).

In **France** in **January–March 2017**, first-sales value and volume increased 4% and 15%, respectively, over January–March 2016. Squid had the greatest increase in value (+81%) followed by scallop (+10%) and monk (+5%). Squid also experienced the greatest increase in volume (+123%). Other species contributing to the increase in volume were saithe (+51%), sardine (+27%), monk (+12%), and scallop (+8%). In **March 2017**, first-sales value increased, whereas volume experienced an opposite trend, compared with March 2016. The increase in value was mostly linked to hake (+15%), saithe (+60%), and squid (+53%), whereas the decrease in volume was attributable to cuttlefish (−22%), gurnard (−37%), megrim (−30%), pollack (−37%), and whiting (−20%). Among the top species landed, prices increased for European seabass and hake (+19% and +12%, respectively). They decreased most for squid (−31%) and monk (−16%), as well as for Norway lobster (−4%), scallop (−3%), and sole (−8%).

In **Italy** in **January–March 2017**, first sales decreased in both value and volume from the same period in 2016. Anchovy (−15%) and clam (−32%) were the main species contributing to the decrease in value. Other species responsible for the decrease were deep-water rose shrimp (−10%), sole (−11%), swordfish (−44%), and squillid (−26%). Clam (−41%), sardine (−12%), and squillid (−31%) were also responsible for the decrease in volume. In **March 2017**, both first-sales value and volume experienced increases from March 2016. Miscellaneous shrimps (+43%), anchovy (+15%), and sardine (+50%) were the species with the largest increases in value. Anchovy (+45%) and sardine (+18%), increased most in volume. Prices decreased for anchovy (−21%) and deep-water shrimp (−17%), and increased for sardine (+27%) and clam (+13%).

**Latvia** experienced increases in both first-sales value and volume (+7% and +1%, respectively) in **January–March 2017** over January–March 2016. Cod (+123% in value and +98% in volume) was mostly responsible for the increase. An increase in volume was also caused by herring and smelt (+6% and +3%, respectively). In **March 2017**, both first-sales value and volume experienced significant increases over March 2016. The increase in value was attributable to cod (+133%) and sprat (+20%). Volume increased also because of sprat (+29%) and herring (+16%). The price of cod increased 14%, while herring, smelt, and sprat prices decreased 9%, 19%, and 7%, respectively.

In **Lithuania** in **January–March 2017**, first sales increased significantly in value and decreased in volume. Cod was the main factor of the increase (+104%) and herring for the decrease (−51%). In **March 2017**, first sales experienced greater value and lower volume, compared with March 2016. The increase in value was caused by smelt (+62%), while the decrease in volume was attributable to herring (−25%). Prices increased 34% for herring, and 10% for smelt. They remained unchanged for cod.

In **Norway** in **January–March 2017**, first-sales value increased because of cod (+8%), haddock (+17%), herring (+8%), and mackerel (+31%). Volume increased mainly because of herring (+28%) as well as blue whiting (+8%). In **March 2017**, both first-sales value and volume increased over March 2016. The increase in value was attributable to cod (+23%) and haddock (+11%). In addition to cod (+9%) and saithe (+13%), volume increased mainly because of blue whiting (+19%). Prices increased for cod (+13%), and haddock (+32%), and experienced an opposite trend for blue whiting (−50%) and saithe (−23%).

In **Portugal** in **January–March 2017**, first sales increased in both value and volume over January–March 2016. This was mainly the result of anchovy, which reached EUR 4,1 million at 1.143 tonnes. Octopus increased significantly in value: EUR 10,5 million (+21%). At the same time, horse mackerel and blue whiting registered significant volume increases: +17% and +117%, respectively. In **March 2017**, the first-sales increase was attributable also to anchovy and horse mackerel (both value and volume), over March 2016. In addition, value increased for octopus (+6%). Except for

European seabass (−6%) and horse mackerel (−3%), prices increased for all top species: anchovy (+24%), cuttlefish and octopus (both +11%), mackerel (+64%), and sole (+5%).

In **January–March 2017** in **Spain** (sample of 28 most significant ports), landings of fresh fish (48.445 tonnes) decreased slightly (−1%) from January–March 2016[2]. This trend was reversed in **March 2017**, when Spain landed 25.673 tonnes of fresh fish, 14% and 2% more than in March 2016 and March 2015, respectively. Of these, 5.459 tonnes were landed in the port of Vigo (−10% from March 2016 and +1% over March 2015).

In **Sweden**, the significant decrease in both value and volume in **January–March 2017**, from January–March 2016, was caused by herring (−43% in value, −50% in volume) and sprat (−55% in value and −51% in volume). In addition, value also decreased because of Norway lobster (−28%) and Northern prawn (−20%). This trend continued in **March 2017**, compared to March 2016. Values decreased for herring (−43%), Norway lobster (−41%), northern prawn and sprat (both −45%). Volumes decreased mainly for herring and sprat (−45% and −41%, respectively). First-sales prices increased for most species: cod and herring (both +13%) and northern prawn (+35%). They decreased for Norway lobster (−23%) and sprat (−10%).

In the **UK** in **January–March 2017**, several species contributed to lower first sales (both value and volume): blue whiting, crab, saithe, and scallop. In addition, hake (−38%), Norway lobster (−28%), and sole (−27%) contributed to the overall decrease in value, whereas mackerel (−11%) and whiting (−28%) were responsible for the volume decrease from the same period of the previous year. In **March 2017**, the same trend was confirmed, compared with March 2016. Blue whiting, Norway lobster, scallop, and sole, contributed most to the decrease in value. The decrease in volume was caused mostly by blue whiting, crab, saithe, and scallop. Average prices increased significantly for cuttlefish (+47%), as well as cod (+9%), scallop (+15%), and whiting (+25%). They decreased for Norway lobster (−14%) and hake (−5%).

The most recent first-sales data for **April 2017** available on EUMOFA can be accessed here.

Table 1. **JANUARY–MARCH FIRST-SALES OVERVIEW OF THE REPORTING COUNTRIES** (volume in tonnes and value in million EUR)

| Country | January–March 2015 | | January–March 2016 | | January–March 2017 | | Change from January–March 2016 | |
|---|---|---|---|---|---|---|---|---|
| | Volume | Value | Volume | Value | Volume | Value | Volume | Value |
| **Belgium** | 5.084 | 17,98 | 4.876 | 17,56 | 4.652 | 16,43 | **−5%** | **−6%** |
| **Denmark** | 55.961 | 60,27 | 43.630 | 69,02 | 53.778 | 75,10 | **23%** | **9%** |
| **Estonia** | 22.002 | 4,80 | 21.776 | 4,82 | 17.610 | 3,77 | **−19%** | **−22%** |
| **France** | 48.401 | 162,31 | 47.841 | 159,08 | 48.514 | 164,66 | **1%** | **4%** |
| **Italy*** | 18.360 | 68,68 | 16.614 | 66,60 | 15.644 | 61,81 | **−6%** | **−7%** |
| **Latvia** | 19.362 | 4,80 | 19.544 | 4,24 | 20.891 | 4,30 | **7%** | **1%** |
| **Lithuania** | 549 | 0,43 | 565 | 0,46 | 546 | 0,62 | **−3%** | **37%** |
| **Norway** | 930.244 | 658,33 | 921.030 | 746,49 | 951.078 | 758,32 | **3%** | **2%** |
| **Portugal** | 15.877 | 36,35 | 14.171 | 36,42 | 15.227 | 44,04 | **7%** | **21%** |
| **Sweden** | 57.214 | 24,13 | 46.278 | 22,83 | 23.646 | 14,68 | **−49%** | **−36%** |
| **United Kingdom** | 109.008 | 171,92 | 126.204 | 202,74 | 107.899 | 178,00 | **−15%** | **−12%** |

Table 2. **MARCH FIRST-SALES OVERVIEW OF THE REPORTING COUNTRIES** (volume in tonnes and value in million EUR)

| Country | March 2015 | | March 2016 | | March 2017 | | Change from March 2016 | |
|---|---|---|---|---|---|---|---|---|
| | Volume | Value | Volume | Value | Volume | Value | Volume | Value |
| **Belgium** | 1.735 | 6,77 | 1.592 | 6,55 | 1.272 | 5,56 | −20% | −15% |
| **Denmark** | 16.520 | 19,48 | 14.406 | 24,61 | 11.455 | 21,58 | −20% | −12% |
| **Estonia** | 7.266 | 1,68 | 5.982 | 1,52 | 6.336 | 1,35 | 6% | −11% |
| **France** | 18.112 | 59,34 | 17.474 | 55,08 | 17.173 | 56,89 | −2% | 3% |
| **Italy*** | 6.831 | 24,30 | 5.524 | 24,13 | 6.064 | 24,94 | 10% | 3% |
| **Latvia** | 7.322 | 1,81 | 6.438 | 1,40 | 8.005 | 1,67 | 24% | 19% |
| **Lithuania** | 304 | 0,19 | 249 | 0,17 | 224 | 0,20 | −10% | 18% |
| **Norway** | 407.397 | 278,10 | 400.566 | 283,78 | 433.414 | 293,10 | 8% | 3% |
| **Portugal** | 6.740 | 14,74 | 5.378 | 13,84 | 6.540 | 15,15 | 22% | 9% |
| **Sweden** | 21.718 | 8,96 | 14.760 | 7,82 | 8.814 | 4,94 | −40% | −37% |
| **United Kingdom** | 25.843 | 49,51 | 31.653 | 56,29 | 23.946 | 44,39 | −24% | −21% |

*Source: EUMOFA (updated 17.05.2017); volume data is reported in net weight.*
**Partial data. First-sales data for Italy covers 229 ports (approximately 50% of the total landings).*

## 1.1. FOCUS ON CLAM AND BRILL IN SELECTED COUNTRIES

### 1.1.1. CLAM

Clam is a bivalve which lives in brackish waters, in sheltered bays, estuaries and lagoons. The species tends to bury itself in sand, muddy gravel, and clay. It is found at water temperatures from temperate (15°C preferred) to tropical[3].

Unlike other bivalve, clam is of either sex (male or female). Reproduction takes places mainly during summer in the wild, and/or in hatcheries. In spring, reproduction can be artificially conditioned by higher temperatures and abundant food[4].

Clam reaches sexual maturity, depending on the substrate it lays, between 23 and 28 mm. The minimum marketing size is set at 40 mm[5].

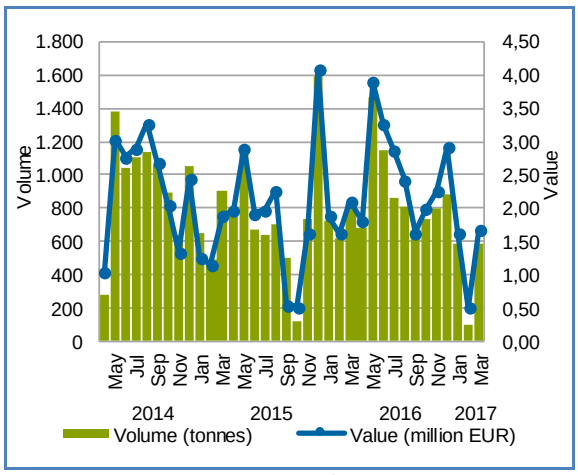
The endemic European species of clam (*Ruditapes decussatus)*, also named as grooved carpet shell is the most common species caught, although other species may be significant in local markets (e.g. Manila clam, Adriatic clam, American clam). It is distributed in the Eastern Atlantic: from Norway to the United Kingdom, France, Spain, Portugal, east of Africa, as well as in the Mediterranean Sea[6].

Clam can be fished by dredging from a vessel, or by hand, with a hand-dredge, or by diving. For instance, in France, approximately 1.300 fishermen are registered as professional fishermen allowed to harvest shellfish on foot. In Portugal, clams are mostly seeded and hand-harvested in the shallow lagoons, where dedicated individual concessions are allocated. In Italy (mostly in the Adriatic) and the UK, clams are mostly harvested by dredging in shallow lagoons and estuarine areas. This activity is often managed at the regional level using measures including annual fishing licenses, temporal and special restrictions, limitations on the fishing gear and number and/or fishing effort (e.g. size of the hand-dredge) and minimum length sizes. Water quality is also a important consideration. The species is most available from April to September[7].

Clam is very popular in southern Europe. It is found on the market typically fresh (with or without shell), frozen (shell-off), and to a lesser extent prepared and canned.

In **Italy** in January–March 2017, the first sales reached EUR 3,79 million and 1.272 tonnes. They decreased in both value and volume (−32% and −41%, respectively) from January–March 2016. Compared with January–March 2015, the trend was maintained, decreasing in both value and volume (−12% and −38%, respectively).

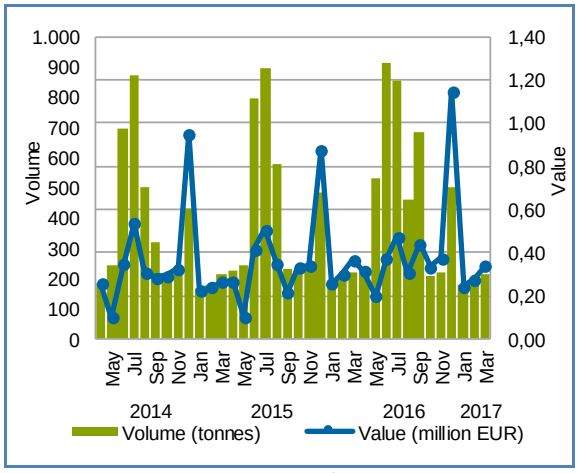
Figure 1. **CLAM: FIRST SALES IN ITALY**




*Source: EUMOFA (updated 17.05.2017*).

In January–March 2017, the **French** first sales of clam decreased from January–March 2016: −7% in value (EUR 0,86 million) and −2% in volume (590 tonnes). Compared with January–March 2015, the first-sales value and volume experienced an opposite trend: +18% and +5%, respectively.

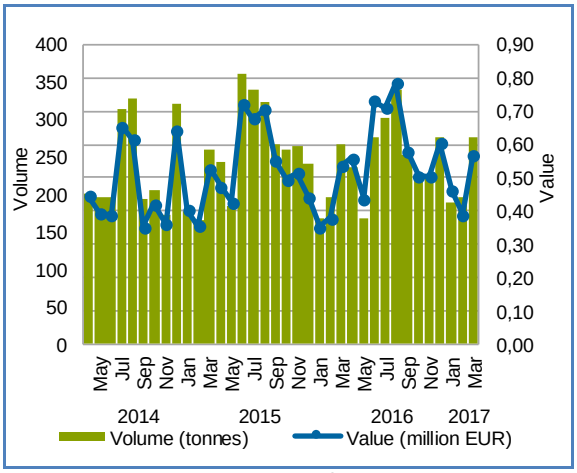
Figure 2. **CLAM: FIRST SALES IN FRANCE**




*Source: EUMOFA (updated 17.05.2017*).

In **Portugal** in January–March 2017, the first sales reached EUR 1,42 million and 661 tonnes. They increased in both value and volume (+12% and +5%, respectively) over January–March 2016. Compared with January–March 2015, first sales experienced a similar trend in both value and volume (+11% and +10%, respectively).

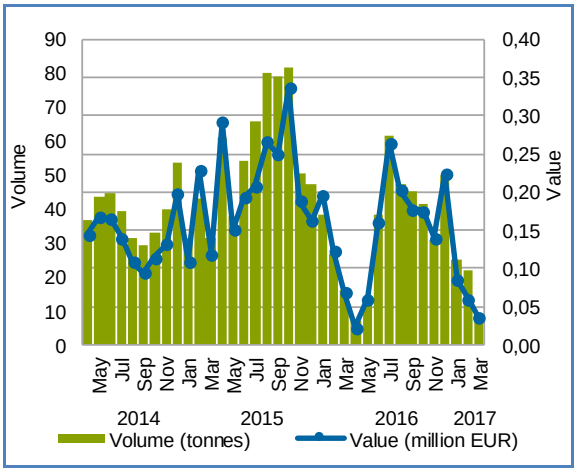
Figure 3. **CLAM: FIRST SALES IN PORTUGAL**




*Source: EUMOFA (updated 17.05.2017).*

In the **UK** in January–March 2017, the first sales reached EUR 0,18 million and 55 tonnes. They decreased significantly in both value and volume (−54% and −31%, respectively) from January–March 2016. Compared with January–March 2015, the trend was maintained, decreasing in both value and volume (−61% and −48%, respectively).

Figure 4. **CLAM: FIRST SALES IN THE UK**

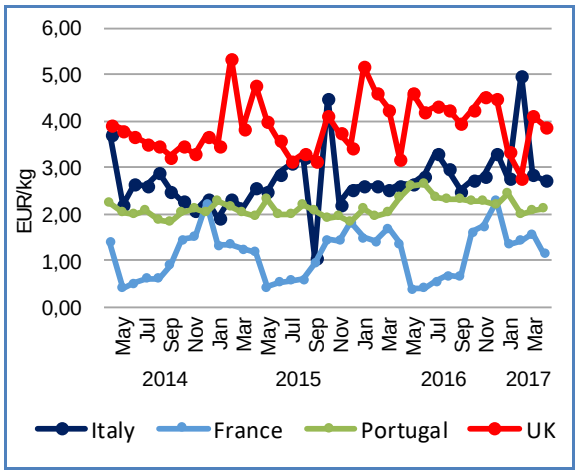



*Source: EUMOFA (updated 17.05.2017).*

In the past three years, first-sales prices of clam ranged from 0,38 EUR/kg in France to more than 5,00 EUR/kg in the UK. Prices peaked in February 2015 (5,35 EUR/kg in the UK), June 2016 (2,65 EUR/kg in Portugal), December 2016 (2,27 EUR/kg in France) and February 2017 in Italy (4,99 EUR/kg). Overall, prices demonstrated an increasing trend in the selected countries.

In January–March 2017, the average unit prices increased substantially in Italy (+16%), and moderately in Portugal (+7%) compared with January–March 2016. At the same time, prices decreased 5% in France, and 32% in the UK. Compared with January–February 2015, except for the UK (–25%), opposite trends occurred for Italy (+42%), France (+12%), and Portugal (+1%).

Figure 5. **CLAM: FIRST–SALES PRICE IN SELECTED COUNTRIES**




*Source: EUMOFA (updated 17.05.2017).*

We have covered **clam** in previous *Monthly Highlights*:

Consumption: Italy, Portugal (10/2016)

### 1.1.2. BRILL

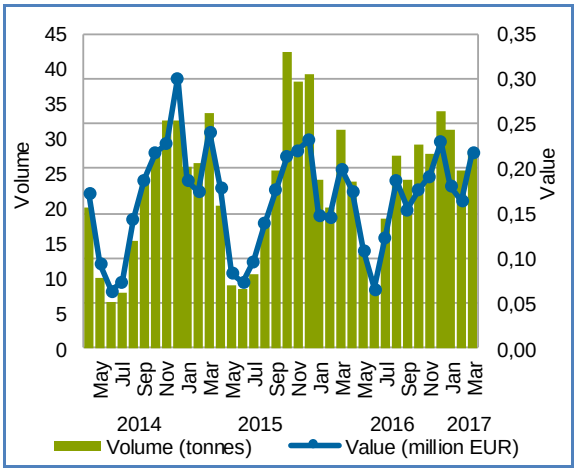
Brill (*Scophthalmus rhombus*) is a flatfish that lives on sandy or mixed bottoms and feeds on bottom-living fishes and larger crustaceans. It grows quite slowly, and can reach up to 75 cm long, for a longevity of six years. It is found at depths between 5 and 50 m. The species moves inshore in spring to spawn in shallow water. Brill can be found throughout the North East Atlantic, from Iceland to Morocco, predominantly in the North Sea, Skagerrak and Kattegat, and the English Channel[8].

The spawning period is April–August at depths of 10–20 m. Fisheries occur throughout the year with the main season in November–April. Two of the most frequently used gears are gillnets and fixed nets. Brill is mainly caught with mid and large-size beam trawlers. It is also caught by otter trawls and static nets (gill and tangle nets). Brill is marketed fresh and frozen[9].

The brill fisheries in the Norwegian and the North seas are subject to annual Total Allowable Catches (TACs). The TAC is set jointly with turbot. For 2017, the TAC is 4.937 tonnes, 10% more than in 2016. The brill quotas are shared between Belgium, Denmark, Germany, France, Sweden, the UK and the Netherlands. The latter has the highest share (55%).

In **Belgium** in January–March 2017, the first sales of brill increased from January–March 2016: +14% in value (EUR 0,56 million) and +12% in volume (85 tonnes). Compared with January–March 2015, the first-sales value and volume had an opposite trend, decreasing 6% and 1%, respectively.

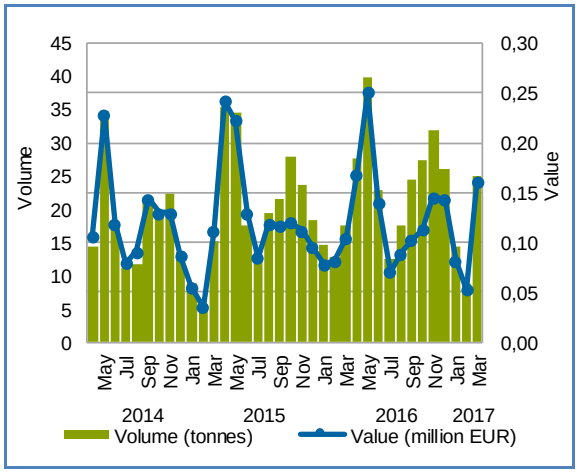
Figure 6. **BRILL: FIRST SALES IN BELGIUM**




*Source: EUMOFA (updated 17.05.2017).*

In January–March 2017, the first sales of brill in **Denmark** reached EUR 0,30 million and 48 tonnes. They increased in both value and volume (+12% and +6%, respectively) over January–March 2016. Compared with January–March 2015, first-sales value and volume maintained the trend, and registered remarkable increases: +46% and +62%, respectively

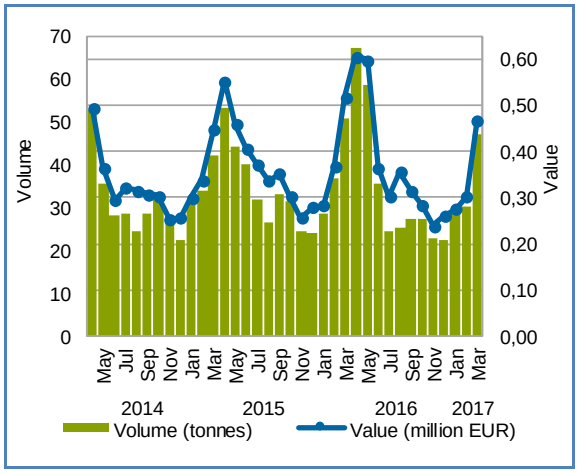
Figure 7. **BRILL: FIRST SALES IN DENMARK**




*Source: EUMOFA (updated 17.05.2017).*

In **France** in January–March 2017, the first sales of brill decreased 11% in value and 9% in volume, from January–March 2016, ending at EUR 1,05 million and 106 tonnes. Compared with January–March 2015, the trend was maintained: first-sales value and volume were 4% and 2% lower, respectively.

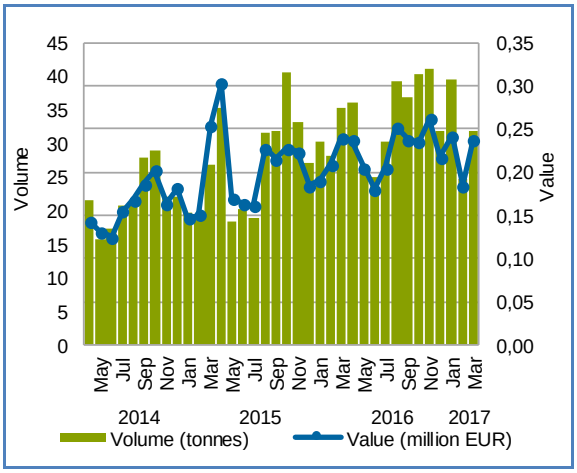
Figure 8. **BRILL: FIRST SALES IN FRANCE**




*Source: EUMOFA (updated 17.05.2017).*

In the **UK** in January–March 2017, the first sales of brill increased from January–March 2016: +4% in value (EUR 0,66 million) and +3% in volume (96 tonnes). Compared with January–March 2015, the first-sales value and volume maintained the trend, increasing remarkably, 21% and 48%, respectively.

Figure 9. **BRILL: FIRST SALES IN THE UK**




*Source: EUMOFA (updated 17.05.2017).*

In general, prices peak in the summer months when the species is less abundant and therefore lower volume of fish is caught. They are lower in autumn (October-November), when volume is highest.

Overall, the average prices of brill ranged from 4,16 EUR/kg (October 2016, Denmark) to 14,07 EUR/kg (August 2016, France). Except for France, prices showed a decreasing trend in the countries surveyed.

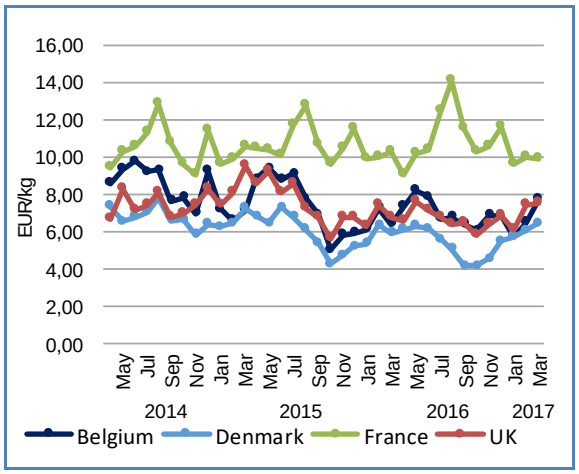
In Belgium in January–March 2017, the average unit price was 6,63 EUR/kg, showing a slight increase (+1%) from January–March 2016. Compared with January–March 2015 price was 5% lower. The highest price was 9,80 EUR/kg (June 2014), when the lowest volume (7 tonnes) was registered.

In Denmark, the highest price was reached in August 2014 (7,82 EUR/kg), corresponding to 12 tonnes. In January–March 2017, the average unit price was 6,17 EUR/kg, +5% and –9% compared to January–March 2016 and January–March 2015, respectively.

In France in January–March 2017, the average unit price was 9,87 EUR/kg, –11% from January–March 2016. Compared with January–March 2015 price was 9% lower. The highest price (14,07 EUR/kg) was observed in August 2016 and corresponded to 25 tonnes.

In the UK, the highest price was in March 2016, at 9,42 EUR/kg and 27 tonnes. In January–March 2017, the average unit price was 6,90 EUR/kg, showing a slight increase (+1%) compared with January–March 2016 and a remarkable decrease (−18%) from January–March 2015.

Figure 10. **BRILL: FIRST-SALES PRICE IN SELECTED COUNTRIES**




*Source: EUMOFA (updated 17.05.2017).*

We have covered **brill** in previous *Monthly Highlights*:

First sales: Belgium (2/2016)

# 2. Global Supply

**Resources / EU**: New rules to conserve fishery resources and protect marine ecosystems, referred as "technical measures," have been agreed by the Agriculture and Fisheries Council. They are meant to protect juveniles and spawning aggregations. The rules determine how and where fishermen may fish. They cover the taking and landing of fish, the specifications and operation of fishing gear, and measures to mitigate their impact on sensitive species or areas[10].

**EU / Mauritius / Sustainable Fisheries Partnership Agreement**: A protocol to the Sustainable Fisheries Partnership agreement between the EU and the Republic of Mauritius has been established. It allows EU tuna vessels to fish in Mauritian waters for four years. In return, the EU will pay Mauritius EUR 570.000 per year. Owners of fishing vessels will pay fees as well. For the first time, the agreement includes specific provisions and financial incentives to support the development of the ocean economy in Mauritius[11].This protocol will come into force in the coming months, after the completion of adoption procedures on both sides.

**EU / Sri Lanka / Trade Agreement**: The European Union has granted Generalized System of Preferences (GSP+) status to Sri Lanka, allowing better access to the EU market for the country's exports, including fish and seafood products. In 2016, Sri Lankan seafood imports to the EU totalled 2.581 tonnes, valued at EUR 31,4 million[12].

**Fisheries / Finland**: In 2016, catches by marine fishing vessels registered in Finland increased to 157.000 tonnes for a value of EUR 40 million (compared with 148.000 tonnes and EUR 34 million in 2015). Most of the catch consisted of Baltic herring (137.000 tonnes, +5%) and sprat (17.000 tonnes, +40%). One-third of the Baltic herring catch and two-thirds of the sprat catch were landed in Sweden, Estonia, and Denmark. Herring and sprat fishing was very concentrated, with ten trawlers producing approximately half of the catch. Other species (perch, whitefish, pike-perch, salmon, and pike) are fished with gillnets or trapnets in the coastal areas. Their catches remained at the same low level as in the previous year (around 3.000 tonnes)[13].

**Fisheries / Iceland**: The total catch for Icelandic vessels in April 2017 was 109.305 tonnes, 5% more than in April 2016. The increase is mostly attributable to blue whiting, which ended at 66.566 tonnes (+19% over March 2016). On a year-to-year basis (May 2016–April 2017), the total catch decreased 5% from the same period a year before[14].

**Fisheries / USA**: More than 204 million Alaska wild salmon are expected during the harvest season, which began on 18 May. The day marks the natural return of wild salmon from the North Pacific to Alaskan rivers and streams[15].

**Production / Trade / Mexico**: From 2013 to 2016, octopus production increased 56%, reaching 14.038 tonnes. The fisheries focus mainly on two species: *Octopus maya*, or the Mexican four-eyed octopus, and the common octopus (*Octopus vulgaris*), which are found on the shores of the Gulf of Mexico and in the Caribbean Sea. In 2016, Mexico exported 10.801 tonnes of octopus, mainly to the EU (9.000 tonnes), of which 5.300 tonnes were exported to Italy[16].

**Certification / Sprat / Baltic Sea fisheries**: The Latvian National Fishermen's Producers Organization has achieved Marine Stewardship Council (MSC) certification for their sprat fishery in the central Baltic Sea. Sprat is one of several stocks included in a multi-annual management plan for the Baltic Sea. In 2016, the 11 Latvian member organisations landed 16.437 tonnes of sprat, representing approximately 8% of the EU quota for sprat in the Baltic Sea. The species are used almost exclusively for canning[17].

**Consumption sector / France**: French purchases of fishery and aquaculture products for home consumption decreased almost 2% from 2015 to 644.000 tonnes in 2016. The downward trend observed since 2010 continues, with chilled delicatessen (*produits traiteurs*) the only segment remaining dynamic in the long term. However, the value of household purchases reached its highest level in eight years (+1% over 2015), the result of increased producer prices passed on to retailers. Salmon in particular suffered from the significant increase in world prices. Consumers shifted mainly to cod, as well as products from French fisheries and aquaculture (saithe, trout, etc.)[18].

**Aquaculture / Russia**: The Russian aquaculture sector contributed approximately 4% of Russia's total fishery and aquaculture production in 2016. Aquaculture production reached 172.100 tonnes in 2016, an 11% increase over 2015. Freshwater aquaculture accounts for almost 85% of production and mariculture for 15%. Carp dominates freshwater aquaculture (77%), followed by sturgeon and salmon. Salmon species (75%) lead mariculture production, followed by molluscs (17%). Locally produced salmon became more popular following Russia's restrictions on imports of salmon from Norway, the major supplier of salmon to Russia. Russia's share of world aquaculture production is estimated at only 0,2%. The government continues to push for the sector's further development; however, lack of investment, outdated equipment and production technologies, as well as scarcity of feed and brooding stock, are major constraints to further development[19].

# 3. Case studies

## 3.1. EU TRADE IN 2016

Trade in fisheries is significant for the EU, as a leading import market for fisheries and aquaculture products in the world. The EU accounts for 38% of the world imports value, followed by the USA and Japan (accounting together for 25% of the total)[20]. In 2016, the overall demand for fisheries and aquaculture products has been growing, driven by the economic recovery of the EU market. This is reflected in the EU trade, which in 2016 has reached EUR 54,3 billion, +9% over 2015.

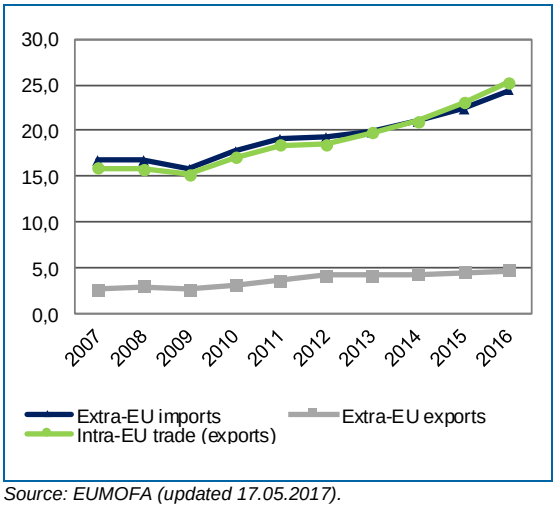
In 2016, imports from third countries were EUR 24,4 billion, a 9% increase over the previous year. This increase was due to the rise of both the average import price at 4,06 EUR/kg (+6% over 2015), and to a lesser extent to the volume imported (+3%).

Trade between EU Member States was EUR 25,2 billion, 9% higher than in 2015.

EU exports to third countries increased 5% in value, reaching EUR 4,7 billion. This was due to the average price of fisheries products exported by the EU which increased 8% compared with 2015.

The trade balance deficit (exports minus imports) of 2016 was the largest since 2007: EUR 5,56 billion, confirming the EU as a net importer of fisheries and aquaculture products. It was 7% higher than the previous year.

Figure 11. **EU TRADE FLOW (billion EUR)**



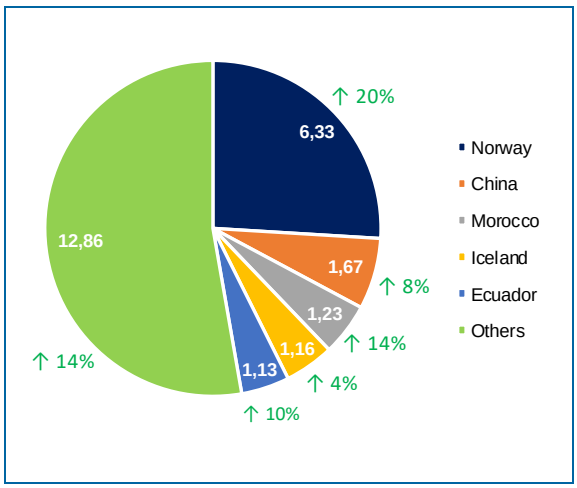

*Source: EUMOFA (updated 17.05.2017).*

### 3.1.1. TRADE WITH THIRD COUNTRIES

EU trade in fisheries and aquaculture products is fuelled by the processing sector and driven by high demand, in the context of a globalised environment. Examples include the imports of fresh Atlantic salmon (to meet the needs of the consumer market and processing industry), or exports to countries that play an important role in processing (e.g. China, Morocco).

The import ban of the Russian Federation continued to affect both the EU and international trade. Exports of fisheries and aquaculture products intended for the Russian market were redirected to other markets, including the EU.

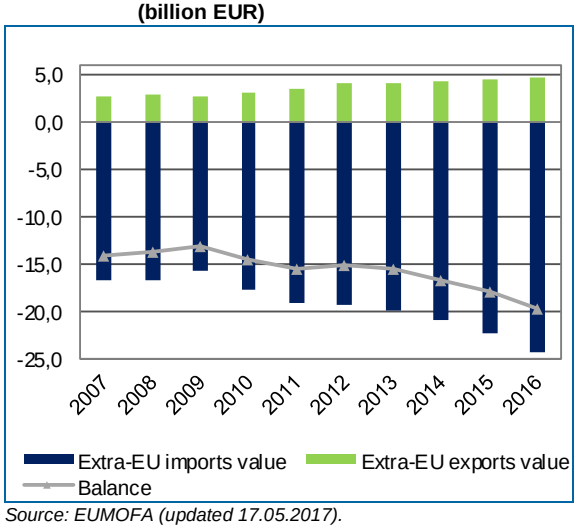
Figure 12. **EXTRA-EU IMPORTS: MAIN PARTNERS (billion EUR)**




*Source: EUMOFA (updated 17.05.2017). Percentages represent changes from 2015.*

EU imports from Norway were up 20% in 2016 compared with 2015. Imports of fisheries products from Morocco and Ecuador increased 14% and 10%, respectively.

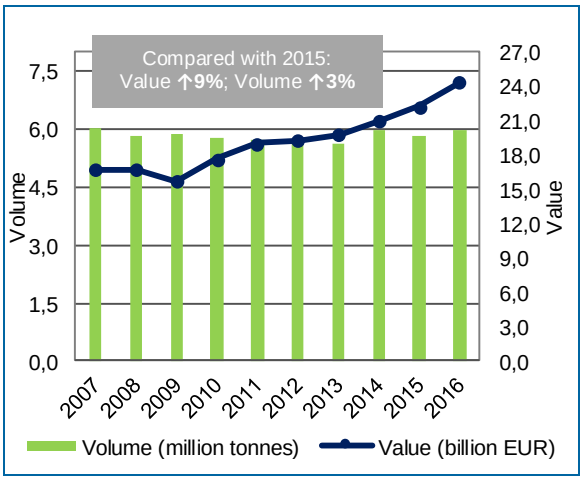
Figure 13. **EXTRA-EU TRADE BALANCE (billion EUR)**




*Source: EUMOFA (updated 17.05.2017).*

**EXTRA-EU IMPORTS:** In 2016, crustaceans (EUR 4,7 billion), groundfish (EUR 4,2 billion), and salmonids (EUR 5,7 billion) were the main commodity groups, representing 60% of extra-EU import value. Salmonids (+26%) were by far the main contributors to the overall increase in the EU's import net value compared to 2015. Other commodity groups contributing positively were cephalopods (+27%), other marine fish (+10%), groundfish (+3%) and small pelagics (+14%). At 6,0 million tonnes, extra-EU import volume was 3% higher than in 2015. Of the total volume imported, frozen products are predominant (50%), followed by fresh (18%) and prepared or preserved products (15%).

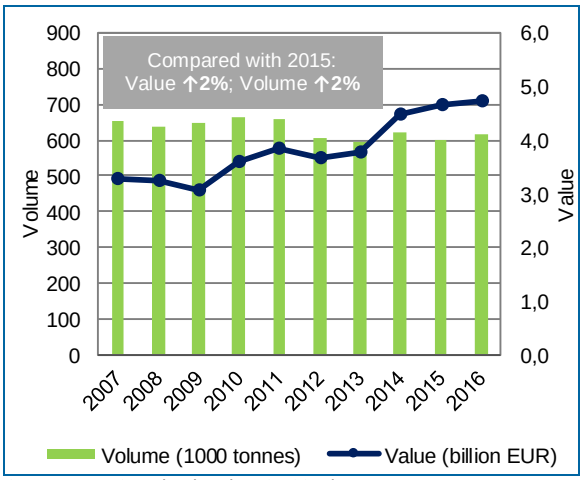
Figure 14. **TREND OF EXTRA-EU IMPORTS**




*Source: EUMOFA (updated 17.05.2017).*

**Crustaceans** was the second largest commodity group in value imported by the EU from third countries (EUR 4,7 billion), at approximately 615.000 tonnes. It exhibited a moderate increase in both value (+EUR 69 million, +1,5%) and volume (+12.600 tonnes, +2,1%) compared to 2015. Shrimps (all species) are predominant in the crustaceans, accounting for 87% of the group's value. Of these, three main commercial species: tropical shrimps, other coldwater shrimps and miscellaneous shrimps have the highest import values.

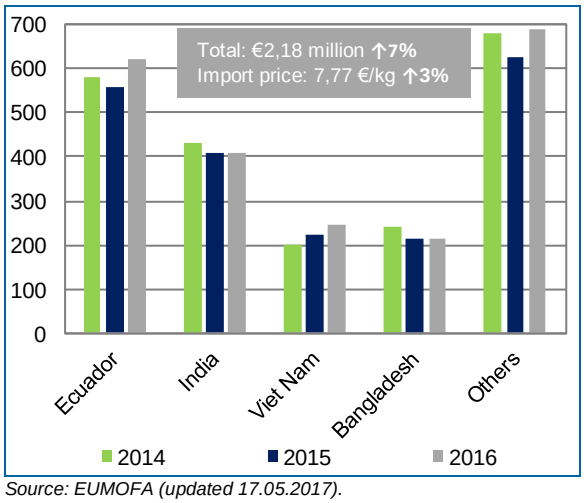
Figure 15. **CRUSTACEANS: EXTRA-EU IMPORTS**




*Source: EUMOFA (updated 17.05.2017).*

**Tropical shrimps** is the most important main commercial species, accounting for 53% of the value and 49% of the volume of all shrimps imported by the EU from third countries. In 2016, tropical shrimps (280.000 tonnes) was 4% higher and was worth EUR 2,18 million, based on an average price of 7,77 EUR/kg, 3% higher than in 2015. The major EU markets for tropical shrimps are Spain (EUR 492 million; +7%), France (EUR 490 million; +8%), and the UK (EUR 287 million; +16%). Tropical shrimps is imported only frozen, mainly from Ecuador (EUR 621 million), India (EUR 407 million), and Viet Nam (EUR 244 million). Imports from Ecuador and Viet Nam have increased significantly: +11% and +10% respectively, over 2015.

Figure 16. **TROPICAL SHRIMPS: EXTRA-EU IMPORTS by country of origin (million EUR)**




*Source: EUMOFA (updated 17.05.2017).*

We have covered **tropical shrimps** in previous *Monthly Highlights*:

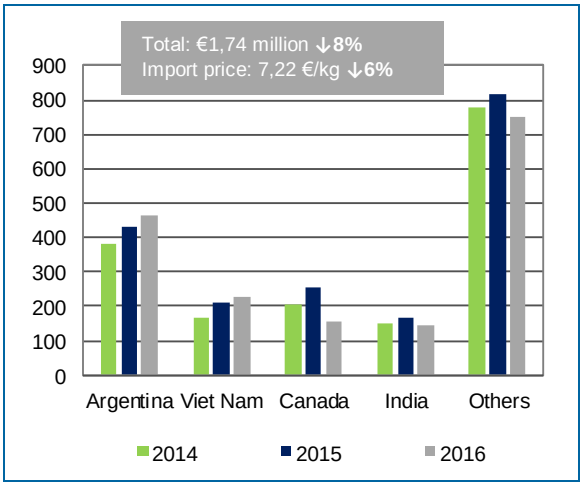
Trade: extra-EU imports (4/2015)

Case study: (6/2014)

**Miscellaneous shrimps** accounts for 42% of all shrimps import value and volume. It is imported frozen. Spain (EUR 433 million, −2% from 2015) and Italy (EUR 149 million, +6%) were the main markets of miscellaneous shrimps, which is imported at an average price of 6,00 EUR/kg.

Overall, imports decreased 8% in value in 2016, whereas prices decreased 6%. Argentina and Viet Nam were the main suppliers, providing 78.000 and 25.000 tonnes of miscellaneous shrimps to the EU worth EUR 463 million and EUR 225 million, respectively. Imports from both countries increased 7% compared with 2015. By contrast, imports from Canada and India decreased 40% and 13%, respectively.

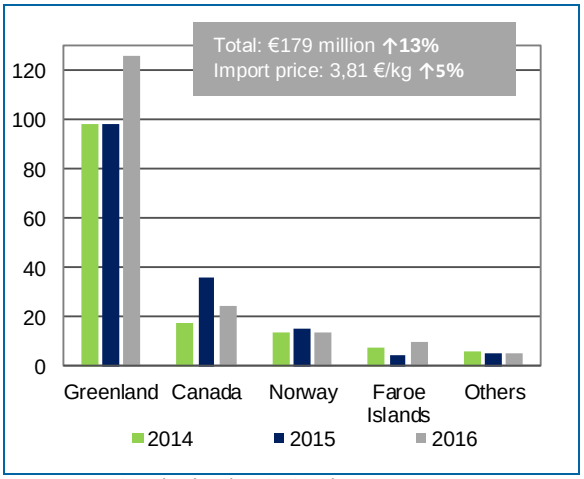
Figure 17. **MISCELLENEAOUS SHRIMPS: EXTRA-EU IMPORTS by country of origin (million EUR)**




*Source: EUMOFA (updated 17.05.2017).*

Imports of **other coldwater shrimps** (which exclude shrimp *Crangon*) reached EUR 179 million and 47.000 tonnes, an increase in both value (+13%) and volume (+8%), compared to 2015. Almost all other coldwater shrimps imported by the EU is frozen (93%). Denmark is by far the largest EU market for the species, accounting for 87% of the total import value. In 2016, Denmark's imports of other coldwater shrimps reached EUR 156 million, 18% more than in 2015, at an average price of 3,61 EUR/kg. Greenland was the main supplier of other coldwater shrimps, accounting for 70% of total import value. EU imports from Greenland ended at EUR 126 million (+28% over 2015). Canada was the second largest supplier to the EU (EUR 24 million) with imports decreasing 32% from 2015.

Figure 18. **OTHER COLDWATER SHRIMPS: EXTRA-EU IMPORTS by country of origin (million EUR)**



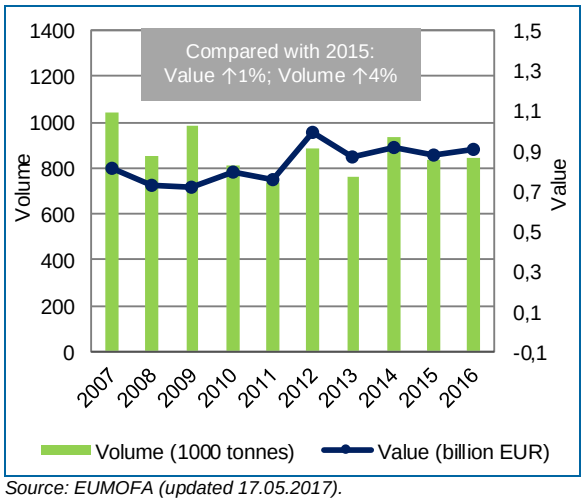

*Source: EUMOFA (updated 17.05.2017).*

We have covered **other coldwater shrimps** in previous *Monthly Highlights*:

First sales: Sweden (11/2016)

**Non-food use** commodity group accounts for 4% of the value and 14% of the volume of extra-EU imports. In 2016, imports reached EUR 912 million (+4%) and 844.000 tonnes (+1%), compared with 2015. Fish oil, fishmeal, and other non-food use are included in the group. Fishmeal is the largest commodity (42% of total value), followed by fish oil (33% of total value). Norway (18%) and Peru (15%) are the biggest suppliers of the non-food use category to the EU.

Figure 19. **NON-FOOD USE: EXTRA-EU IMPORTS**

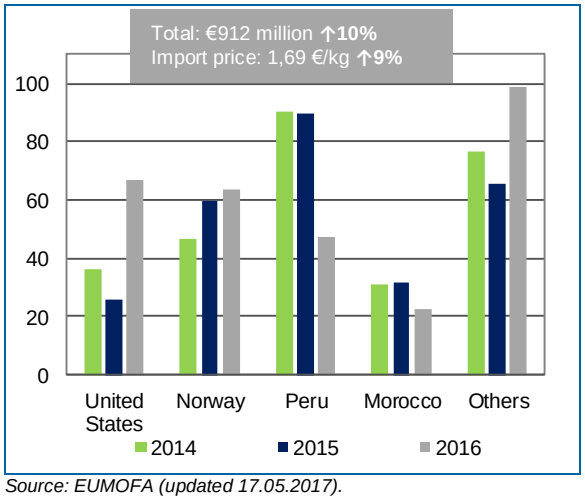



*Source: EUMOFA (updated 17.05.2017).*

**Fish oil** imported by the EU represented 33% of the value and 21% of the volume of the non-food use imported. It ended at EUR 299 million (+10%) for 177.000 tonnes (+1%). Fish oil imports were the biggest contributor to the overall non-food use group increase in value, compared to 2015. This was mainly because of the average import price which increased 9%, reaching 1,69 EUR/kg. Denmark was the largest importer, accounting for 48% of both value and volume of EU fish oil exports.

The US, Norway and Peru were the largest exporters. EU imports from the US increased 160% in 2016, reaching almost EUR 67 million.

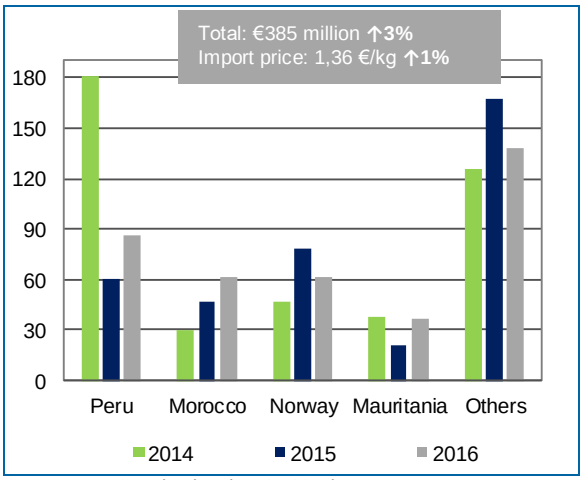
Figure 20. **FISH OIL: EXTRA-EU IMPORTS by country of origin (million EUR)**




*Source: EUMOFA (updated 17.05.2017).*

**Fishmeal** imported by the EU ended at EUR 385 million (+3%) for 283.700 tonnes (+2%), at an average price of 1,36 EUR/kg. Peru and Morocco were the largest suppliers, with exports values of EUR 87 billion (+44%), corresponding to 63.700 tonnes, and EUR 62 billion (+33%), corresponding to 50.600 tonnes. Import prices were lower for Morocco at 1,22 EUR/kg and decreased 7% from 2015, while import prices from Peru were higher (1,36 EUR/kg) and experienced an opposite trend (+3%). Germany was the largest importer accounting for 47% of both value and volume of EU fishmeal imports.

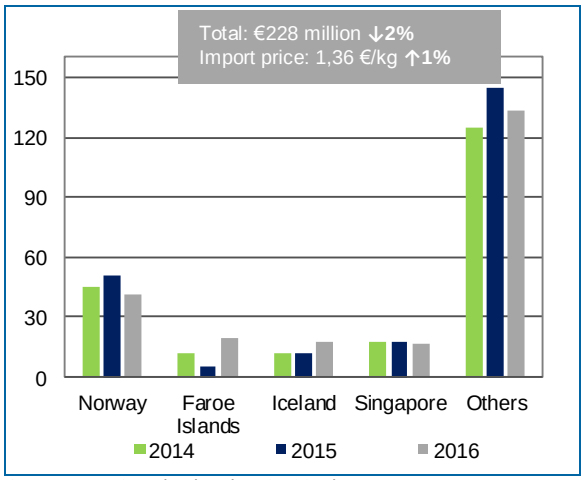
Figure 21. **FISHMEAL: EXTRA-EU IMPORTS by country of origin (million EUR)**




*Source: EUMOFA (updated 17.05.2017).*

**Other non-food use** includes ornamental fish, roes intended for processing by the chemical industry, other products, such as fish waste which is not suitable for human consumption, seaweeds and other algae. Products of fish and crustaceans (not fit for human consumption), including fish waste, account for 49% of the value and 80% of the volume of other non-food use imports. Overall, imports reached EUR 228 million, a slight decrease (−2%) from 2015, while volume remained almost unchanged at 382.800 tonnes. Norway is the largest supplier of other non-food use products, at EUR 41 million and 181.900 tonnes. Denmark, France and Germany are the biggest EU markets with imports of EUR 70 million, 24 million and 21 million, respectively.

Figure 22. **OTHER NON-FOOD USE: EXTRA-EU IMPORTS by country of origin (million EUR)**

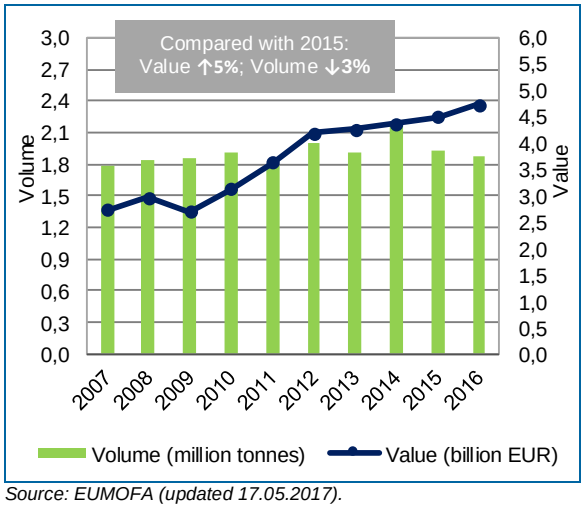



*Source: EUMOFA (updated 17.05.2017).*

**EXTRA-EU EXPORTS:** Salmonids, tuna and tuna-like species (both +12%) as well as crustaceans (+18%) were the main contributors to the overall increase in extra-EU export value in 2016. Volume decreased because of small pelagics: 629.300 tonnes (−11%) and non-food use: 338.000 tonnes (−4%).

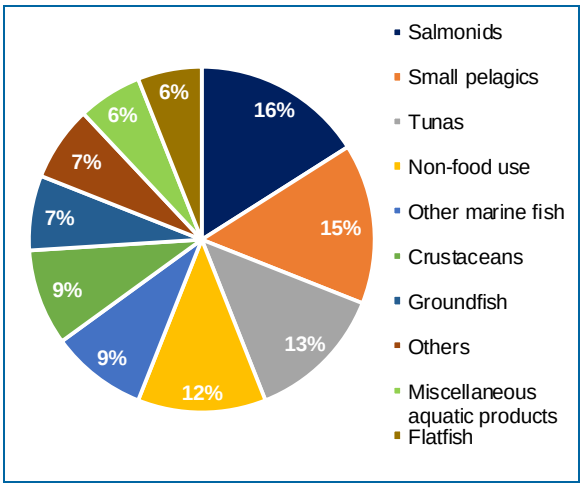
Non-food use (EUR 552 million), salmonids (EUR 754 million), small pelagics (690 million), tuna and tuna-like species (EUR 628 million) represent 56% of the value and 71% of the volume of all extra-EU exports.

Figure 23. **TREND OF EXTRA-EU EXPORTS**




*Source: EUMOFA (updated 17.05.2017).*

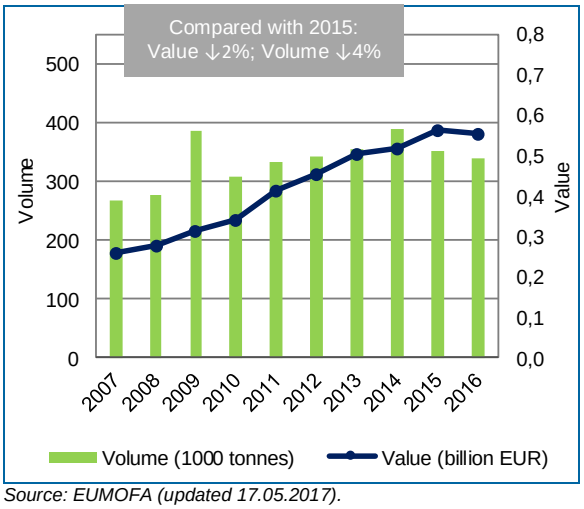
Figure 24. **EXTRA-EU EXPORTS: CONTRIBUTION OF MAIN COMMODITY GROUPS (BY VALUE)**




*Source: EUMOFA (updated 17.05.2017).*

**Non-food use** extra-EU exports to third countries ended at EUR 552 million (−2%) and 338.000 tonnes (−4%) in 2016. Fish oil was the only product in the group which experienced increases in both value and volume, however, it was offset by the two remaining product categories (fishmeal and other non-food use) which registered important decreases.

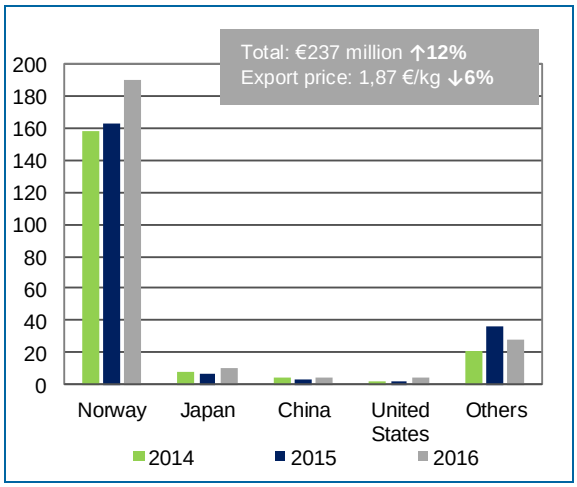
Figure 25. **NON-FOOD USE: EXTRA-EU EXPORTS**




*Source: EUMOFA (updated 17.05.2017).*

**Fish oil** experienced increases in both value: EUR 237 million (+12%) and volume: 127.000 tonnes (+20%). In 2016, fish oil extra-EU exports went mainly to Norway: EUR 191 million (+17%) for 114.000 tonnes (+24%), and to a lesser extent to Japan: EUR 10 billion (+52%) and China: EUR 5 billion (+52%). Exports to the US grew three times, reaching EUR 4 million. Average export price was 6% lower compared to 2015 and it ended at 1,87 EUR/kg.

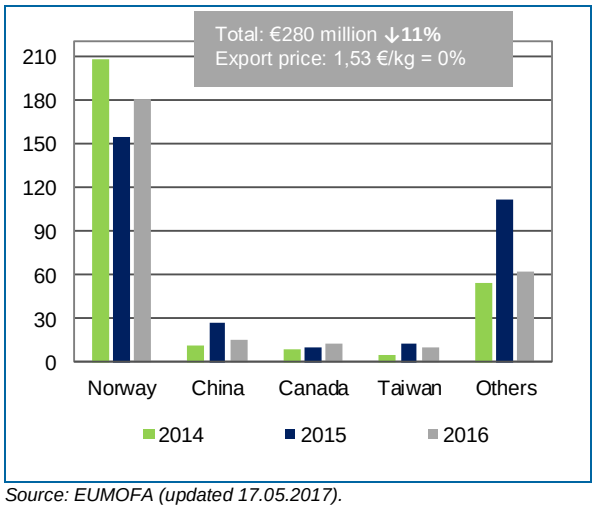
Figure 26. **FISH OIL: EXTRA-EU EXPORTS by country of destination (million EUR)**




*Source: EUMOFA (updated 17.05.2017).*

**Fishmeal** exports decreased 11% in both value and volume compared to 2015, and ended at EUR 280 million and 182.500 tonnes. However, the average export price remained unchanged, at 1,53 EUR/kg. The largest market for fishmeal is Norway, at EUR 181 billion (+18%) and 119.400 tonnes (+12%), followed by China: EUR 15 million (−44%). Denmark is the largest EU Member State exporter accounting for 50% of all extra exports value.

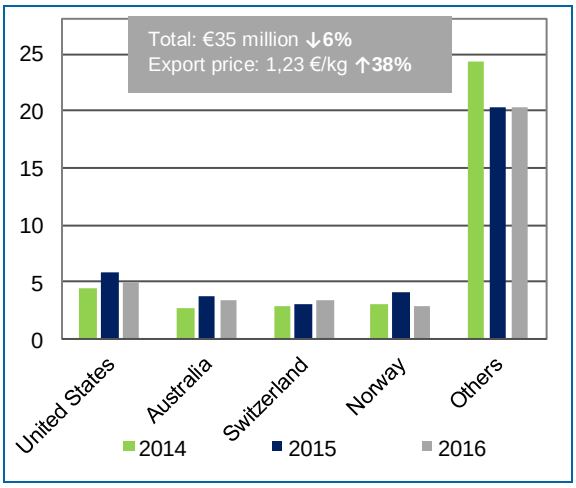
Figure 27. **FISHMEAL: EXTRA-EU EXPORTS**




*Source: EUMOFA (updated 17.05.2017).*

**Other non-food use** products reached EUR 35 million (−6%) for 28.500 tonnes (−32%). They are exported mainly to the US: EUR 5 million (−15%) for 3.900 tonnes (−30%), followed by Australia and Switzerland (about EUR 3 million each). Exports decreased to all main destinations. By contrast, the average export price increased 38%, reaching 1,23 EUR/kg.

Figure 28. **OTHER NON-FOOD USE: EXTRA-EU EXPORTS by country of destination (million EUR)**




*Source: EUMOFA (updated 17.05.2017).*

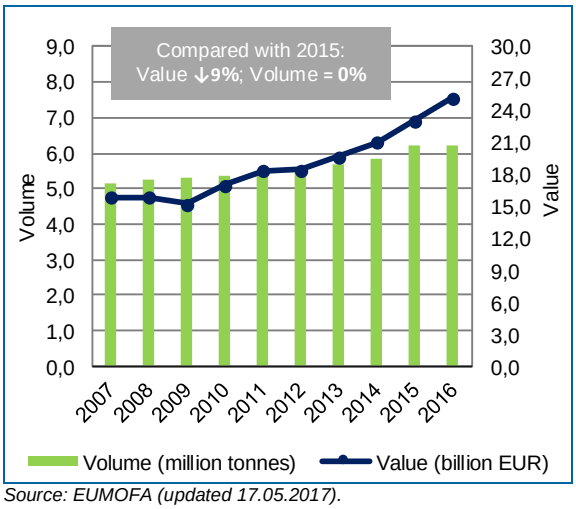
## 3.1.2. INTRA-EU TRADE

Trade between EU Member States (intra-EU exports) has increased 9% in value and remained stable in volume, compared to 2015. In 2016, over 6,2 million tonnes were traded, of which 34% products were fresh, 28% frozen and 21% were prepared or preserved.

The value increase was mainly due to cephalopods (+14%), groundfish (+7%), salmonids (+20%), and tuna and tuna-like species (+12%) commodity groups. Other commodity groups contributing to the increase in value included crustaceans (+3%), and other marine fish (+4%).

Crustaceans (EUR 3,0 billion), groundfish (EUR 3,2 billion), salmonids (EUR 7,8 billion) and other marine fish (EUR 2,4 billion) made up 65% of value and 45% of volume of total trade between Member States in 2016.

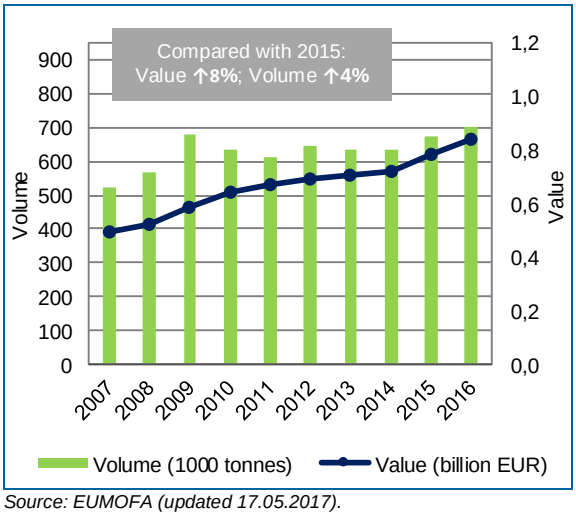
Figure 29. **TREND OF INTRA-EU TRADE**




*Source: EUMOFA (updated 17.05.2017).*

**Non-food use** has one of the lowest values among the commodity groups traded between EU Member States. However, in terms of volume, it is the fourth largest group. In 2016, non-food use intra-EU exports ended at EUR 844 million (+8%) and 700.000 tonnes (+4%).

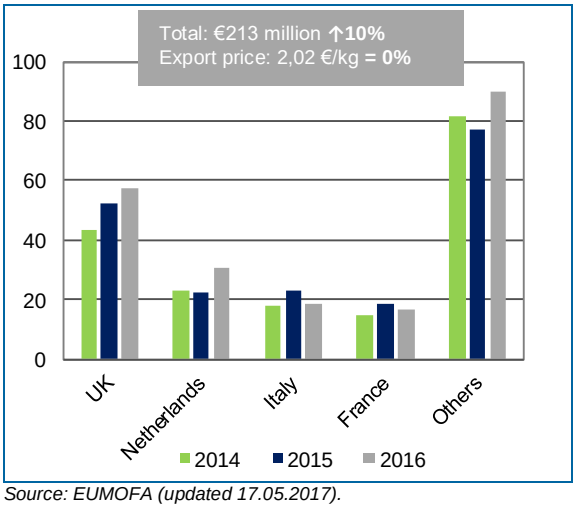
Figure 30. **NON-FOOD USE: INTRA-EU TRADE**




*Source: EUMOFA (updated 17.05.2017).*

**Fish oil** exports increased 10% in both value and volume, reaching EUR 213 million for 105.600 tonnes. Average export price remained unchanged compared to 2015 and it ended at 2,02 EUR/kg. The UK, the Netherlands, and Italy were the main markets, accounting for 50% of the fish oil traded within the EU. The Netherlands experienced the largest increase in export value (+37%), while exports to Italy decreased 20%.

Figure 31. **FISH OIL: INTRA-EU TRADE by country of destination (million EUR)**

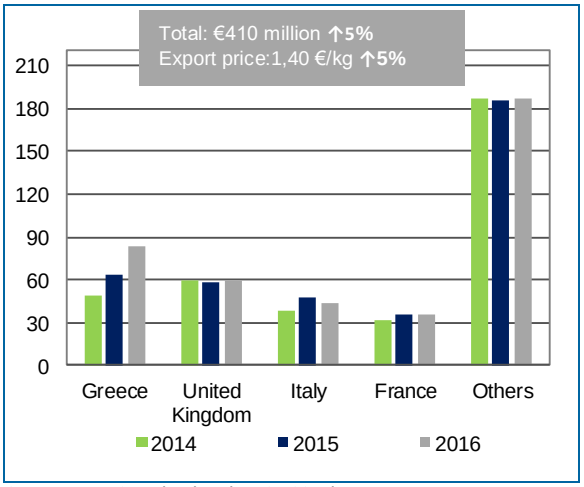



*Source: EUMOFA (updated 17.05.2017).*

**Fishmeal** was the most valuable product traded within the non-food use group, with an export value of EUR 410 million (5% more than the previous year). Volume, however, decreased slightly, at 292.000 tonnes. At 1,40 EUR/kg, the average price of fishmeal increased 5% over 2015.

Greece is the largest EU market, accounting for 20% of the fishmeal traded within the EU (EUR 84 million) and it experienced the largest increase in export value (+31%). Other important markets are the UK (14%) and Italy (11%), at EUR 59 million and EUR 44 million, respectively. Exports to the UK increased slightly (+1%) and decreased 9% to Italy.

Figure 32. **FISHMEAL: INTRA-EU TRADE by country of destination (million EUR)**



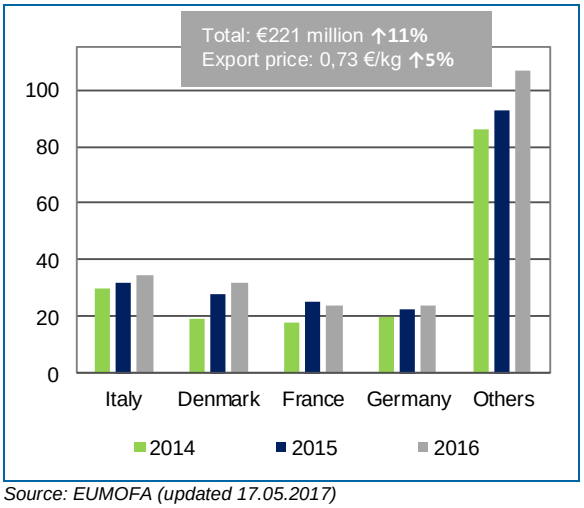

*Source: EUMOFA (updated 17.05.2017).*

We have covered **fishmeal** in previous *Monthly Highlights*:

Trade: extra-EU exports (11/2016)

**Other non-food use** products reached EUR 221 million (+11%) for 302.500 tonnes (+5%). The average price also increased (+5%), ending at 0,73 EUR/kg. The main EU markets for other non-food use products are Italy: EUR 35 million (+16%) for 8.000 tonnes, Denmark: EUR 32 million for 112.600 tonnes, France and Germany (about EUR 24 million each) for 14.400 tonnes and 51.100 tonnes, respectively. Except for France, exports increased to all main markets, especially Denmark (+15%).

Figure 33. **OTHER NON-FOOD USE: INTRA-EU TRADE by country of destination (million EUR)**

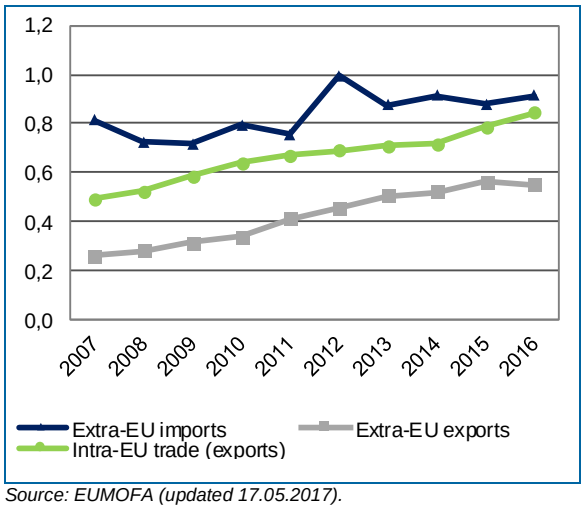



*Source: EUMOFA (updated 17.05.2017)*

In the past decade, the overall **EU trade flow** in the **non-food use** commodity group increased, led by imports from third countries, which accounted for 44% of the total value. In 2016, **extra-EU imports** were 4% higher than in 2015, mainly because of a higher average import price, which reached 1,08 EUR/kg (+3%).

Non-food use **extra-EU exports** accounted for 12% of the total value of EU exports to third countries. Non-food use was the fourth largest commodity group exported by the EU. In 2016, both value and volume decreased, despite a higher average export price (1,63 EUR/kg or +2%). **Intra-EU exports** of non-food use increased in value, resulting from a higher volume exported at a higher price (1,21 EUR/kg or +4%).

Figure 34. **EU TRADE FLOW: NON-FOOD USE (billion EUR)**




*Source: EUMOFA (updated 17.05.2017).*

Fishmeal is the predominant product traded within the non-food use commodity group, accounting for 42% of the import value and 51% of the export value of EU trade with third countries. Between EU Member States, fishmeal accounted for 49% of the value and 49% of the volume of the non-food use.

Peru is the largest fishmeal supplier, and Peruvian imports increased remarkably in both value (+44%) and volume (+49%). Norway is the main destination of fishmeal exported by the EU. In 2016, export value to Norway increased, led by higher volume (+12%) and a higher price (+5%).

The value of fishmeal traded between Member States increased because of a higher price (+4%), despite a slight decrease in volume. Denmark is the EU's largest exporter of fishmeal, and Greece is the main EU destination. In 2016, despite a higher price (1,49 EUR/kg, +11%) Danish exports decreased in value caused by lower volume (−11%).

## 3.2. MUSSEL IN THE EU

Mussel is a major aquaculture product in several EU Member States. Imports of the popular seafood species accounted for approximately 7,5% of the EU supply in volume in 2016. However, seasonality of supply and consumption patterns, as well as new certification opportunities, can lead to significant variability in retail prices among Member States.

## 3.3. BIOLOGY, RESOURCES, AND EXPLOITATION

### BIOLOGY

Mussel is the common name used for members of several families of bivalve molluscs, from saltwater and freshwater habitats.

Mussels are found in a wide variety of habitats, from tidal areas to fully submerged zones, with a broad range of temperatures and salinities. They feed on phytoplankton and organic matter by constantly filtering seawater and are therefore always farmed in areas that are rich in plankton. Water quality is an important factor in mussel rearing.

Specific characteristics of mussel is its high fecundity and a mobile larval phase, allowing for widespread distribution. Usually between March and October, depending on the latitude, mussels produce larvae that are carried by currents. In less than 72 hours, the larvae fatten and develop to a stage where they can no longer float. They settle and attach themselves to various substrata[21].

Unlike oysters, the larvae do not attach themselves directly to the support but use filaments known as byssus. The most common means of collecting the seed (spat) is a rope placed at a location chosen for currents and availability of micro-organisms. Between May and July, these ropes are collected and transferred to mussel farms. In cold water, mussel seed cannot be collected, and so the juvenile mussels are collected from natural deposits.

### RESOURCE, EXPLOITATION, AND MANAGEMENT IN THE EU

In the EU, commonly caught and farmed mussels include the blue mussel *Mytilus edulis* and the Mediterranean mussel *Mytilus galloprovincialis*. However, several other species are caught and farmed around the world, and some of them consumed in the EU. These main species are: Chilean mussel *Mytilus chilensis* farmed in Chile, and New Zealand mussel *Perna canaliculus.*

Mussel culture has a long history, and mussel farming represents a much larger production in most producing regions (94% of the total world production in 2015 according to FAO).

However, mussel fishing (hand-gathering, dredging, etc.) still represents a significant share of the production in a few major producing countries, e.g. Indonesia (100%), Denmark (97%), and to a lesser extent Brazil (21%) and Germany (15%). In 2015, mussel harvesting accounted for 10% of EU total mussel production, reinforced by Danish production.

Rearing until harvest takes approximately one year. Four methods are used in European coastal areas:

- **On plots or by spreading** (primarily in the Netherlands): The juveniles are spread over plots in shallow water, generally in bays or sheltered areas and they attach to the ground. The mussels are harvested by dredging with specially fitted vessels.
- **On stakes** (known as *bouchots* in France): This culture uses rows of wooden stakes driven into intertidal ground. Three to five metres of collecting rope or tubing filled with spat are wrapped around the stake and attached. A net is then placed over the whole structure to keep the mussels from falling as they fatten on the stake. The mussels are harvested by manual or mechanical scraping to detach the clump of mussels from its wooden support.
- **On ropes**: The mussels are attached to ropes that are suspended vertically in the water from a fixed or floating structure. This technique is suitable for seas with weak tides like the Mediterranean and is widely used in the protected bays of the Atlantic Ocean, notably in the *rias* of Galicia. Offshore mussel farming, which recently developed in several Member States, such as France, Ireland, Portugal, the UK, and Belgium, also uses this technique. The mussels are harvested by raising the ropes out of the water and removing the clusters.
- **On trestles**: In some places, mussels are grown using the same technique as for oysters, in mesh bags on trestles set up on intertidal ground, or directly on the ground.

## 3.4. PRODUCTION

### PRODUCTION

Global production of mussels, all species included, amounted to almost 2 million tonnes in 2015.

China is by far the leading producer, providing 42% of the total world production in 2015, followed by the EU (27%). Other major producers are Chile (11%), Thailand (6%), New Zealand (4%), and the Republic of Korea (3%). Over the past decade (2006–2015), world production has experienced a 13% increase mostly attributable to China (+57%) and Chile (+66%). However, significant decreasing trends have occurred in Thailand (−48%), Korea (−32%), and New Zealand (−21%).

According to FAO, EU production amounted to 545.000 tonnes in 2015, providing approximately 27% of the world supply. Spain (41% of EU production), France (14%), and Italy (12%) were the main producers. Other important EU producers are the Netherlands and Denmark. According to FAO, however, blue mussel accounted for 40% of EU production, and Mediterranean mussel for 60%.

The EU production remained stable in the period 2006−2015, averaging 521.000 tonnes yearly, despite a few noticeable drops in 2008, 2010 and 2013. Among the top-three producing Member States, France and Italy experienced relatively stable productions: –1% and +3%, respectively, from 2006 to 2015. By contrast, Spain experienced remarkable fluctuations: in 2008, production dropped 21% from 2006; in 2011, it increased 16% over 2008; in 2013 production decreased 22% from 2011 and in 2015 it increased +39% over 2013 (reaching almost the 2006 level).

However, different trends are noticeable among main producing Member States. Over the period 2006–2015, the largest production increase has been observed in the Netherlands (+73%). In the meantime, significant decreasing trends have been experienced in the UK (−39%), Greece (−35%), and Denmark (−16%).

Furthermore, EU mussel producers have the choice of a range of labelling options, possibilities for certification, and values to promote:

- **Organic labelling:** Ireland is by far Europe's main producing Member State for organic mussels, and reached about 9.000 tonnes of organic certified blue mussel in 2015. EU organic mussel production is currently estimated at 20.000 tonnes. More information on organic aquaculture is available here.
- **Eco-labelling** standards set criteria for the environmental responsibility of the producer or the sustainability of the stock that is being fished. In January 2010, Denmark's Limfjord mussel industry was the world's first mussel fishery to receive Marine Stewardship Council (MSC) certification. This fishery comprises 27 fishing vessels that produce about 30.000 tonnes of mussels annually. Since then, an additional ten mussel fisheries have received this certification[22].
- **Collective labels and brands:** in Europe, several collective brands dedicated to mussels, promote a higher quality based on a combination of attributes; such as rigorous production practices, fishing technique, particular area of production, or even country of production (e.g. *Moules de la Baie du Mont St Michel* in France or *Mexillón de Galicia* in Spain).

Table 3. **WORLD PRODUCTION OF MUSSEL SPECIES** (volume in tonnes)

| Country | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|
| **China** | 539.957 | 448.667 | 479.902 | 637.373 | 702.157 | 707.401 | 764.395 | 747.077 | 805.583 | 845.038 |
| **EU-28** | 562.714 | 553.604 | 501.136 | 534.756 | 494.958 | 529.108 | 510.920 | 454.434 | 524.188 | 544.629 |
| **Chile** | 131.886 | 166.573 | 193.926 | 170.478 | 228.566 | 295.550 | 250.029 | 251.940 | 245.435 | 219.366 |
| **Thailand** | 229.746 | 228.250 | 203.213 | 193.626 | 166.927 | 126.616 | 103.203 | 127.919 | 117.013 | 118.775 |
| **New Zealand** | 97.403 | 99.700 | 100.282 | 90.002 | 95.321 | 101.423 | 86.605 | 83.762 | 97.510 | 76.982 |
| **Republic of Korea** | 88.210 | 107.638 | 75.379 | 65.802 | 67.935 | 80.163 | 69.602 | 41.456 | 57.939 | 59.612 |
| **Brazil** | 14.421 | 13.350 | 16.683 | 17.261 | 15.839 | 21.286 | 26.878 | 21.741 | 24.612 | 23.174 |
| **Indonesia** | 1.515 | 420 | 14 | 30 | 447 | 2.867 | 3.353 | 8.067 | 4.024 | 22.930 |
| **Canada** | 24.027 | 24.153 | 19.962 | 21.515 | 25.725 | 25.938 | 29.036 | 26.145 | 25.233 | 22.725 |
| **USA** | 12.086 | 9.984 | 11.498 | 15.838 | 18.276 | 13.224 | 11.653 | 12.416 | 11.910 | 17.716 |
| **Philippines** | 19.722 | 20.143 | 23.045 | 19.965 | 20.906 | 22.471 | 25.686 | 22.920 | 18.785 | 15.970 |
| **Other** | 50.367 | 39.700 | 50.069 | 61.338 | 50.773 | 38.511 | 36.386 | 35.103 | 33.596 | 30.427 |
| **Total** | **1.772.054** | **1.712.182** | **1.675.109** | **1.827.984** | **1.887.830** | **1.964.558** | **1.917.746** | **1.832.980** | **1.965.828** | **1.997.344** |

*Source: FAO Fishstat.*

Table 4. **EU PRODUCTION OF MUSSEL SPECIES** (volume in tonnes)

| Country | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Spain** | 228.840 | 209.671 | 180.273 | 198.784 | 189.313 | 208.849 | 203.891 | 162.117 | 220.518 | 225.447 |
| **France** | 78.724 | 76.032 | 81.697 | 79.235 | 71.499 | 69.098 | 81.660 | 77.958 | 80.853 | 78.212 |
| **Italy** | 61.928 | 58.479 | 67.239 | 76.800 | 64.256 | 79.520 | 63.257 | 64.235 | 63.700 | 63.700 |
| **Netherlands** | 31.300 | 43.731 | 36.082 | 45.618 | 56.227 | 36.700 | 40.000 | 37.112 | 54.100 | 54.100 |
| **Denmark** | 55.219 | 58.284 | 36.819 | 40.003 | 28.541 | 34.980 | 39.963 | 38.301 | 43.173 | 46.529 |
| **United Kingdom** | 34.336 | 30.318 | 36.849 | 35.380 | 35.405 | 35.769 | 34.331 | 24.388 | 20.593 | 21.029 |
| **Greece** | 28.522 | 22.653 | 21.362 | 23.091 | 17.377 | 17.239 | 16.679 | 18.720 | 16.752 | 18.645 |
| **Ireland** | 33.976 | 38.168 | 27.800 | 26.802 | 22.999 | 22.671 | 20.615 | 18.949 | 12.222 | 16.250 |
| **Germany** | 3.670 | 10.539 | 6.896 | 3.600 | 4.905 | 20.830 | 6.933 | 5.036 | 5.280 | 12.738 |
| **Other** | 6.199 | 5.729 | 6.119 | 5.443 | 4.436 | 3.452 | 3.591 | 7.618 | 6.997 | 7.979 |
| **EU-28** | **562.714** | **553.604** | **501.136** | **534.756** | **494.958** | **529.108** | **510.920** | **454.434** | **524.188** | **544.629** |

*Source: FAO Fishstat.*

Table 5. **EU PRODUCTION: BREAKDOWN BY SPECIES IN 2015** (volume in tonnes)

| Country | Blue mussel | Mediterranean mussel |
|---|---|---|
| **Spain** | 139 | 225.308 |
| **France** | 63.956 | 14.256 |
| **Italy** | 0 | 63.720 |
| **Netherlands** | 54.100 | 0 |
| **Denmark** | 46.529 | 0 |
| **United Kingdom** | 21.029 | 0 |
| **Greece** | 0 | 18.645 |
| **Ireland** | 16.250 | 0 |
| **Germany** | 12.738 | 0 |
| **Other** | 1.800 | 6.298 |
| **Total** | 216.541 | 328.227 |

*Source: FAO Fishstat.*

### PROCESSING AND MARKETING

Mussels are sold in several presentations, preservation states, and packagings. They may be sold loose, in prepacked mesh bags, or in chilled, ready-to-use vacuum packs.

In Spain, the larger Mediterranean mussel is frequently canned without their shells. Mussels are now being presented pre-cooked, with a range of dressings in durable vacuum packs.

## 3.5. Trade

### EU TRADE

In 2015, the EU had a mussel trade deficit of EUR 118 million. The deficit is attributable mainly to the imports of frozen and preserved mussel from Chile and New Zealand. Extra-EU imports of fresh mussel are limited (EUR 0,3 million for 112 tonnes in 2016).

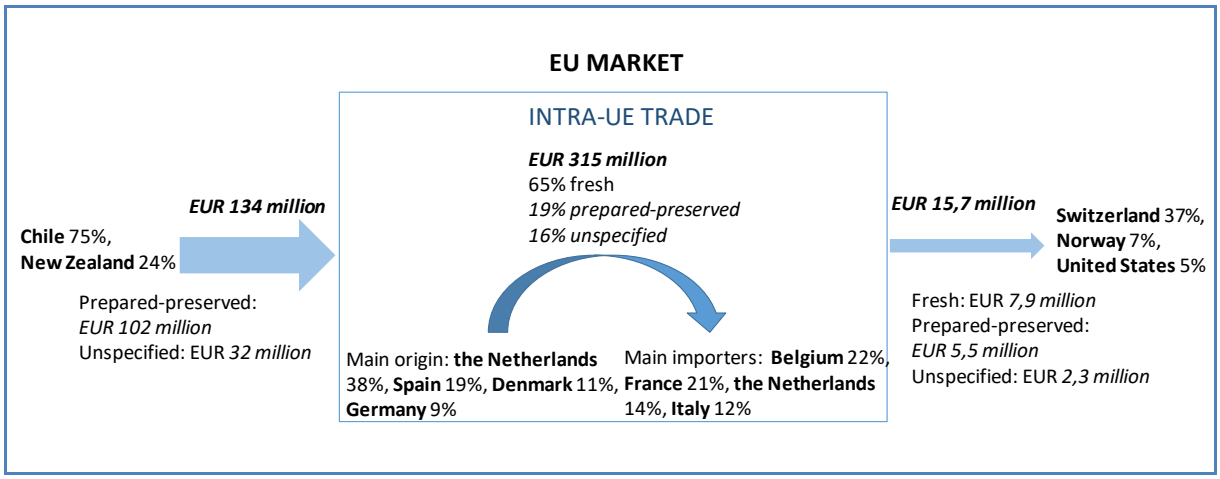
For prepared and preserved mussel, the main extra-EU supplier is Chile (38.000 tonnes in 2016). The other main supplier is New Zealand (5.500 tonnes) for which imports are recorded under unspecified preservation states but are likely to be frozen.

Intra-EU trade is active for each of the preservation states and dominated by fresh mussel products. In 2016, intra-EU total exports reached more than 200.000 tonnes and EUR 315 million, of which 65% were fresh products.

The Netherlands and Spain are the main mussel suppliers, and Belgium and France are the main destinations of exports on the intra-EU trade market.

The volume of extra-EU exports is relatively low (551 tonnes in 2016), and the main destinations for fresh and frozen mussel are neighbouring countries, mostly Switzerland and to a lesser extent Norway.

Figure 35. **EU MUSSEL TRADE MARKET IN 2016**




*Source: EUMOFA.*

## 3.5. Household mussel consumption

Mussels are generally eaten cooked, but can also be eaten raw, like oysters. They are sold mostly live, but can also be sold as processed products, tinned, or in a marinade (particularly in Spain)[23].

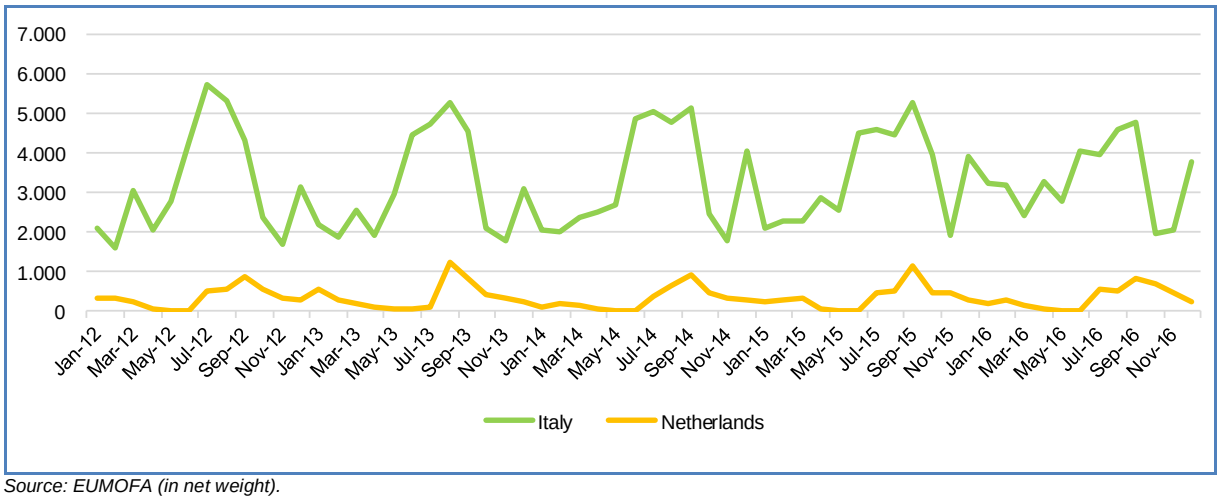
Monthly patterns of household consumption appear to be similar between Italy and the Netherlands, with strong seasonality and high consumption levels during summer and, to a lesser extent, the Christmas season.

In Italy, monthly consumption averages approximatively 3.500 tonnes (following a slightly increasing trend since 2012), but almost doubles in July–August. However, consumption peaks seem to become lower but longer in the period 2012–2016 (reaching "only" 5.000 tonnes but lasting until September), whereas Christmas consumption peaks seem to follow the opposite trend.

In the Netherlands, monthly household mussel consumption averages 350 tonnes (following a slightly increasing trend since 2012), but the seasonality is even stronger with almost no consumption before July and a strong peak in summer (1.000–1.200 tonnes monthly) and a smaller one in the period December–January (300–400 tonnes).

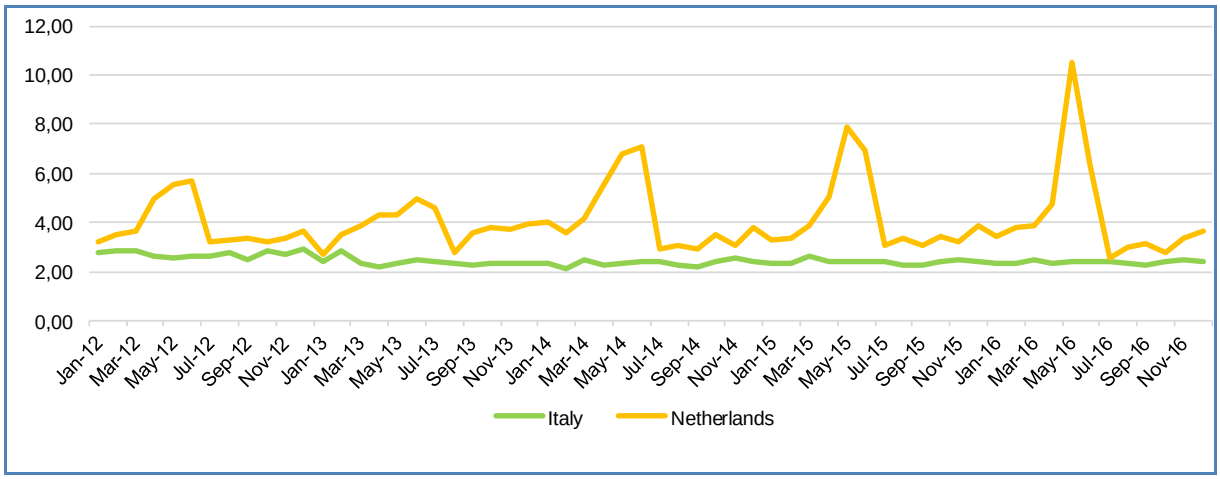
Mussel purchase prices averaged 2,50 EUR/kg in Italy, following a slightly decreasing trend over the four-year period, but staying stable on an annual basis. In the Netherlands, mussel retail prices experienced greater monthly fluctuations, averaging 4,00 EUR/kg, but reaching more than 10,00 EUR/kg in May 2016 and falling to 2,57 EUR/kg in July 2016.

Figure 36. **MUSSEL (*MYTILUS* SPECIES) HOUSEHOLD CONSUMPTION IN ITALY AND THE NETHERLANDS** (1.000 tonnes)




*Source: EUMOFA (in net weight).*

Figure 37. **MUSSEL (*MYTILUS* SPECIES) HOUSEHOLD CONSUMPTION PRICES IN ITALY AND THE NETHERLANDS** (EUR/kg)




*Source: EUMOFA.*

# 4. Consumption

## HOUSEHOLD CONSUMPTION IN THE EU

In February 2017, the volume and value of fresh fisheries and aquaculture products consumed increased in Ireland (+4%), Italy (+11%), and the Netherlands (+5%) relative to February 2016. In France, value increased (+1%); however, volume decreased (−4%). In the rest of the Member States analysed, volume and value decreased.

Compared with the same month a year earlier, the largest drop in volume in February 2017 was observed in Sweden (−27%), followed by Poland (−21%). However, compared with the previous month, volume decreased in Sweden (−3%) and increased in Poland (+16%).

In February 2017, the greatest decrease in consumption value was observed in Hungary (−23%) compared with February 2016. Compared with the first month of 2017, value in Hungary increased substantially (+65%).

Table 6. **FEBRUARY OVERVIEW OF THE REPORTING COUNTRIES (**volume in tonnes and value in million EUR)

| Country | Per capita consumption 2014* (live weight equivalent) Kg/capita/year | February 2015 | | February 2016 | | January 2017 | | February 2017 | | Change from February 2016 to February 2017 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Volume | Value | Volume | Value | Volume | Value | Volume | Value | Volume | Value |
| Denmark | 22,1 | 717 | 10,95 | 753 | 10,87 | 736 | 11,25 | 629 | 9,78 | -16% | -10% |
| Germany | 13,3 | 5.748 | 73,44 | 6.169 | 84,66 | 6.123 | 78,39 | 5.821 | 80,07 | -6% | -5% |
| France | 34,4 | 16.917 | 180,35 | 17.100 | 193,37 | 15.747 | 184,43 | 16.501 | 194,39 | -4% | +1% |
| Hungary | 4,6 | 451 | 1,94 | 368 | 1,97 | 153 | 0,92 | 269 | 1,52 | -27% | -23% |
| Ireland | 23,0 | 1.253 | 15,10 | 1.176 | 15,67 | 1.119 | 15,72 | 1.218 | 16,64 | +4% | +6% |
| Italy | 28,9 | 24.806 | 222,46 | 26.756 | 239,98 | 28.955 | 265,02 | 29.654 | 269,52 | +11% | +12% |
| Netherlands | 22,6 | 1.802 | 23,50 | 1.897 | 25,25 | 1.724 | 24,00 | 1.987 | 25,48 | +5% | +1% |
| Poland | 13,0 | 5.890 | 30,38 | 5.755 | 29,30 | 3.795 | 20,42 | 4.408 | 24,16 | -23% | -18% |
| Portugal | 55,3 | 4.695 | 27,38 | 5.210 | 30,69 | 4.005 | 27,54 | 4.140 | 27,61 | -21% | -10% |
| Spain | 46,2 | 53.573 | 378,94 | 56.332 | 406,00 | 50.810 | 397,16 | 51.842 | 385,83 | -8% | -5% |
| Sweden | 33,2 | 644 | 7,96 | 813 | 10,45 | 609 | 9,31 | 590 | 8,49 | -27% | -19% |

*Source: EUMOFA, based on Europanel (updated 16.05.2017).*
** Data on per capita consumption of all fish and seafood products for all EU Member States can be found at:*
*http://www.eumofa.eu/documents/20178/77960/The+EU+fish+market+-+2016+Edition.pdf*

Generally, in February in the past three years, consumption increased in volume and value in three Member States: Germany, Italy, and the Netherlands; it decreased in Denmark, Hungary, and Poland. In the rest of the Member States surveyed, consumption decreased in volume; however, value increased.

In February, the household consumption in volume and value of fresh fish products was below the yearly average for the past three years in most Member States analysed, except for Germany (+10% and +14% in volume and value, respectively), Ireland (+28% in both volume and value, registering the highest above-average volumes and values since 2014), and Italy (+8% and +20% in volume and value, respectively). In France, the household consumption in February in volume was below the yearly average since 2014 (−12% or 18.761 tonnes), however, value remained 2% above average.

In Hungary, on a three-year basis, volumes and values were 47% and 28%, respectively, below average, the lowest registered for the period.

The most recent consumption data available on EUMOFA for **March 2017** can be accessed here.

## 4.1. Dab

**Habitat:** A demersal species living mainly on sandy bottoms, from a few metres to approximately 150 m depth[24].
**Catch area:** Northeast Atlantic Ocean - from the Bay of Biscay to Iceland and Norway, the Barents and White seas, and the Baltic Sea[25].
**Main producing countries in Europe:** the Netherlands, Denmark, Germany[26].
**Production method:** Caught.
**Main consumers in the EU:** the Netherlands, Denmark, Germany, France, Belgium, the UK.
**Presentation:** Whole, fillets.
**Preservation:** Fresh, frozen, more rarely dried-salted, smoked[27].
**Ways of preparation:** Steamed, fried, baked, boiled[28].

### GENERAL OVERVIEW OF HOUSEHOLD CONSUMPTION IN DENMARK

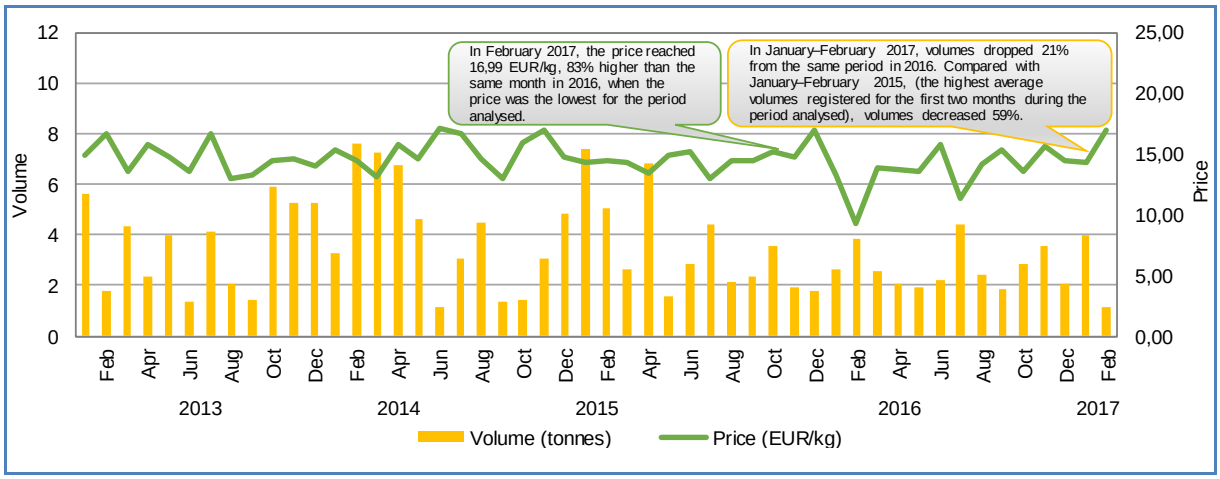
Overall, per capita consumption in Denmark is below average in the EU. Denmark's per capita consumption of fish and seafood products in 2014 was 22,1 kg and decreased −7% from 2013. It was 13% lower than the EU average per capita consumption (25,5 kg), and 60% lower than the highest per capita consumption in the EU, 55,3 kg, which was registered in Portugal. See more on per capita consumption in the EU in Table 6.

### CONSUMPTION TREND IN DENMARK

**Long-term trend, January 2013–February 2017:** decreased in price and volume.
**Average price:** 14,59 EUR/kg (2013), 15,18 EUR/kg (2014), 14,59 EUR/kg (2015), 13,59 EUR/kg (2016).
**Total consumed volume:** 43 tonnes (2013), 49 tonnes (2014), 42 tonnes (2015), 32 tonnes (2016).

**Short-term trend, January–February 2017:** decreased in value and increased in volume.
**Average price:** 15,67 EUR/kg.
**Total consumed volume:** 5 tonnes.

Figure 38. **RETAIL PRICE AND VOLUME OF FRESH DAB IN DENMARK**

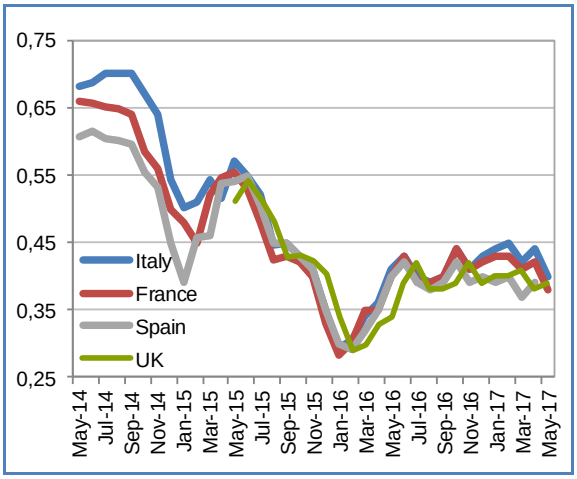



*Source: EUMOFA (updated 16.05.2017).*

# 5. Macroeconomic context

## 5.1. MARINE FUEL

Figure 39. **AVERAGE PRICE OF MARINE DIESEL IN ITALY, FRANCE, SPAIN, AND THE UK (EUR/LITRE)**




*Source: Chamber of Commerce of Forlì-Cesena, Italy; DPMA, France; Spain; ARVI (January 2013–March 2015); MABUX (June 2015–May 2017).*

In May 2017, the fuel price in the French ports of Lorient and Boulogne was 0,38 EUR/litre and decreased 10% from April 2017. It decreased 5% from May 2016.

In the Italian ports of Ancona and Livorno, the average price of marine fuel in May 2017 was 0,40 EUR/litre. It decreased 9% from the previous month and 2% from May 2016.

The price of marine fuel in the ports of A Coruña and Vigo, Spain, in May 2017, decreased 8% to 0,36 EUR/litre. It decreased 10% over May 2016.

The fuel price observed in the UK ports of Grimsby and Aberdeen was 0,37 EUR/litre in May 2017 and decreased 5% from both the previous month and the same month a year ago.

## FOOD AND FISH PRICES

In April 2017, annual EU inflation was 2,0%, up from 1,6% in March 2017. A year earlier, the rate was 0,2%. In April 2017, the lowest annual rates were recorded in Romania (+0,6%), Ireland (+0,7%), and Slovakia (+0,8%), while the highest annual rates were registered in Estonia (+3,6%), Lithuania (+3,5%), and Latvia (+3,3%).

Compared with March 2017, annual inflation rose in 19 Member States, remained stable in 3, and fell in 6 (Czech Republic, Greece, Hungary, Malta, Slovenia and Slovakia).

In April 2017, prices of both food and non-alcoholic beverages and fish and seafood decreased slightly 0,1%, compared with March 2017.

Compared with the same month a year ago, both food and fish prices increased 1,6% and 3,4%, respectively. Compared with April 2015, fish and seafood prices increased 6,0%, while food and non-alcoholic beverages increased 1,5%.

Table 7. **HARMONISED INDEX OF CONSUMER PRICES IN THE EU (2015 = 100)**

| HICP | Apr 2015 | Apr 2016 | Mar 2017 | Apr 2017 |
|---|---|---|---|---|
| **Food and non-alcoholic beverages** | 100,46 | 100,40 | 102,08 | **101,97** |
| **Fish and seafood** | 99,48 | 101,98 | 105,55 | **105,43** |

*Source: Eurostat.*

## 5.2. EXCHANGE RATES

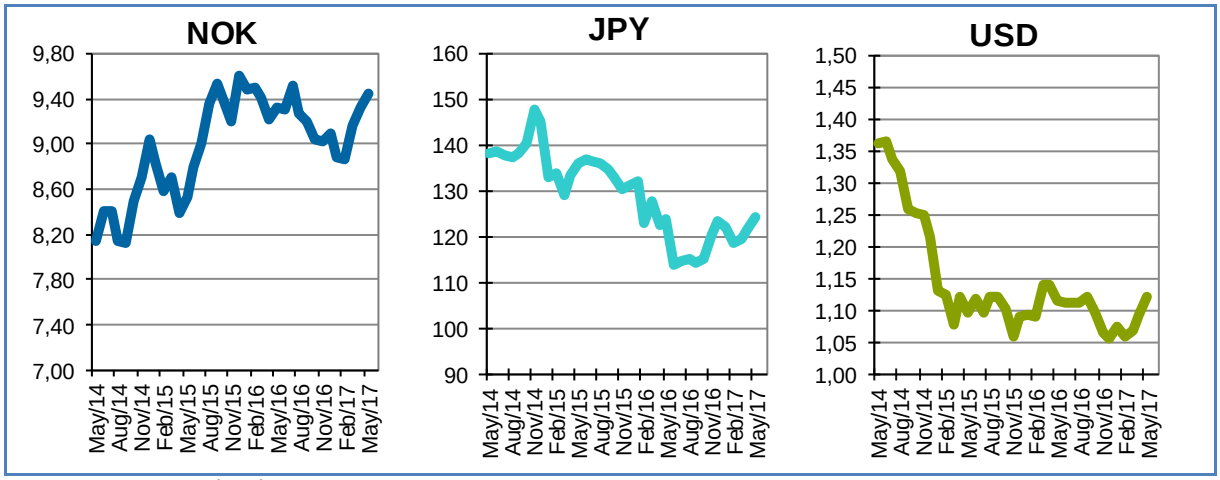
In May 2017, the euro appreciated against the Norwegian krone (+1,2%), the Japanese yen (+2,2%), and the US dollar (+2,7%), compared with April 2017. For the past six months, the euro has fluctuated around 1,08 against the US dollar. Compared with May 2016, the euro has appreciated 1,3% against the Norwegian krone, 0,5% against the Japanese yen, and 0,6% against the US dollar.

Table 8. **THE EURO EXCHANGE RATES AGAINST THREE SELECTED CURRENCIES**

| Currency | May 2015 | May 2016 | Apr 2017 | May 2017 |
|---|---|---|---|---|
| **NOK** | 8,5360 | 9,3200 | 9,3243 | **9,4388** |
| **JPY** | 135,95 | 123,83 | 124,40 | **124,40** |
| **USD** | 1,0970 | 1,1154 | 1,0930 | **1,1221** |

*Source: European Central Bank.*

Figure 40. **TREND OF EURO EXCHANGE RATES**




*Source: European Central Bank.*

## 5.3. EUROPEAN UNION ECONOMIC OVERVIEW

In the first quarter of 2017, seasonally adjusted GDP rate increased 0,5% compared with the previous quarter. In the fourth quarter of 2016, GDP grew 0,6%. Compared with the first quarter of 2016, seasonally adjusted GDP rose 2,0% in January−March 2017, after +1,9% in the previous quarter.

In the EU Member States, in January−March 2017, seasonally adjusted GDP increased the most in Romania (+1,7%), over October-December 2016. Other countries which experienced increases were Finland (+1,6%), Latvia (+1,5%), Lithuania (+1,4%), the Czech Republic and Hungary (both +1,3%). A deceleration of the seasonally adjusted GDP was observed in Greece (−0,1%).

Compared with January−March 2016, seasonally adjusted GDP accelerated the most in Romania (+5,6%), Poland and Lithuania (both +4,1%), Latvia (3,9%) and Hungary (+3,7%)[29].

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**THIS REPORT HAS BEEN COMPILED USING EUMOFA DATA AND THE FOLLOWING SOURCES:**

**First sales:** EUMOFA; Puertos del estado. Data analysed refers to March 2017.

**Global supply:** EUMOFA; European Commission; Statistics Iceland; Natural Resources Institute, Finland; Alaska Seafood Marketing Institute; Comisión Nacional de Acuacultura y Pesca, Mexico; Marine Stewardship Council; FranceAgriMer; USDA Foreign Agricultural Service.

**Case studies:** EUMOFA; FAO; DG MARE.

**Consumption:** EUMOFA; EUROPANEL; FAO Fishstat; http://fishbase.org/.

**Macroeconomic context:** EUROSTAT; ECB; Chamber of Commerce of Forlì-Cesena, Italy; DPMA, France; ARVI, Spain; MABUX.

The underlying first-sales data is available in a separate Annex on the EUMOFA website. Analyses are made at aggregated (main commercial species) level.

The **European Market Observatory for Fisheries and Aquaculture Products (EUMOFA)** was developed by the European Commission, representing one of the tools of the new Market Policy in the framework of the reform of the Common Fisheries Policy. [Regulation (EU) No 1379/2013 art. 42].

As a **market intelligence tool**, EUMOFA provides regular weekly prices, monthly market trends, and annual structural data along the supply chain.

The database is based on data provided and validated by Member States and European institutions. It is available in 24 languages.

EUMOFA website is publicly available at the following address: www.eumofa.eu.

# 6. Endnotes

[1] Bivalves and other molluscs and aquatic invertebrates, cephalopods, crustaceans, flatfish, freshwater fish, groundfish, miscellaneous aquatic products, other marine fish, salmonids, small pelagics, tuna and tuna-like species.

[2] Data refer to 28 government-owned ports. http://www.puertos.es/en-us/estadisticas/Pages/estadistica_mensual.aspx

[3] http://www.sealifebase.org/summary/Ruditapes-decussatus.html

[4] https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/clam_en.pdf

[5] http://www.guidedesespeces.org/fr/palourde-grise

[6] http://www.sealifebase.org/summary/Ruditapes-decussatus.html

[7] http://www.guidedesespeces.org/fr/petits-coquillages ; http://pdm-seafoodmag.com/guide/mollusques/details/product/Palourde.html

[8] http://www.fishbase.org/summary/529

[9] http://www.seafish.org/media/Publications/SeafishSpeciesGuide_Brill_201401.pdf

[10] http://www.consilium.europa.eu/press-releases-pdf/2017/5/47244658678_en.pdf

[11] https://ec.europa.eu/fisheries/new-protocol-sustainable-fisheries-partnership-agreement-between-eu-and-mauritius_en

[12] http://trade.ec.europa.eu/doclib/press/index.cfm?id=1663 , EUMOFA.

[13] http://stat.luke.fi/en/commercial-marine-fishery-2016_en

[14] http://www.statice.is/publications/news-archive/fisheries/fish-catches-in-april-2017/

[15] http://www.alaskaseafood.org/wild-alaska-salmon-season-begins/

[16] http://www.gob.mx/conapesca/articulos/mexico-tercer-productor-mundial-de-pulpo-un-manjar-de-los-mares?idiom=es ; EUMOFA.

[17] https://www.msc.org/newsroom/news/first-baltic-sea-sprat-fishery-certified

[18] http://www.franceagrimer.fr/content/download/51209/492240/file/20170517-SCOM-CSFranceAgriMer-PecheAqua-17%20mai%202017.pdf

[19] https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Aquaculture%20Production%20Update_Moscow_Russian%20Federation_3-20-2017.pdf

[20] http://www.fao.org/3/a-i5716t.pdf

[21] https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/mussels_en.pdf

[22] http://www.fao.org/in-action/globefish/fishery-information/resource-detail/es/c/338588/

[23] https://ec.europa.eu/fisheries/marine_species/farmed_fish_and_shellfish/mussels_en

[24] http://www.fao.org/fishery/species/3361/en

[25] http://www.fishbase.org/Summary/SpeciesSummary.php?ID=695&AT=dab

[26] FAO Fishstat.

[27] http://www.fao.org/fishery/species/3361/en

[28] http://www.fao.org/fishery/species/3361/en

[29] http://ec.europa.eu/eurostat/documents/2995521/8026125/2-16052017-AP-EN.pdf