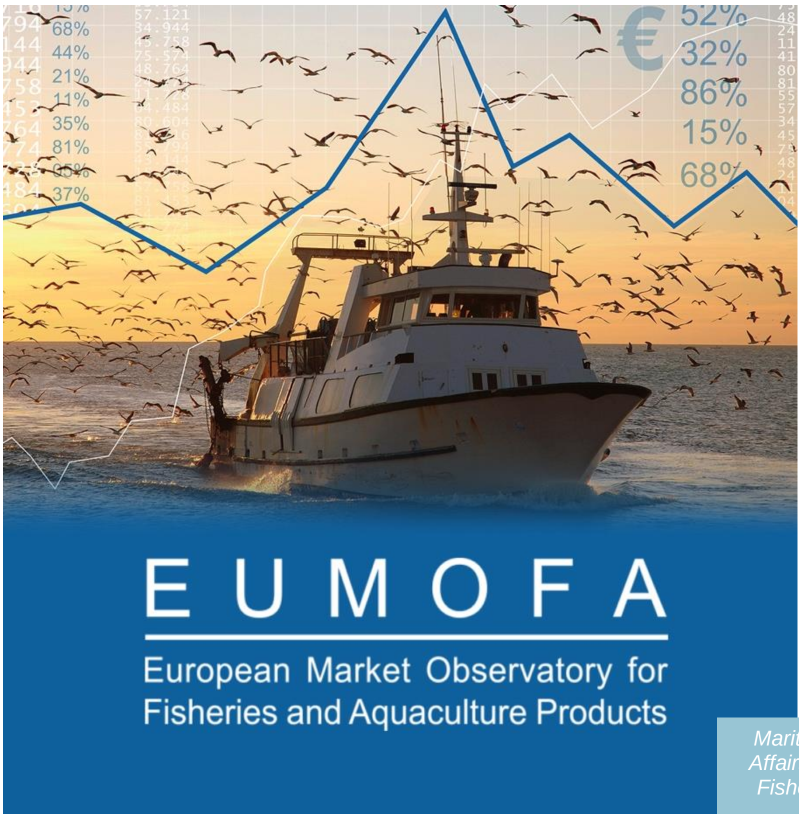
European Commission

CASE STUDY

FRESH MUSSEL IN THE EU



PRICE STRUCTURE IN THE SUPPLY CHAIN

FOCUS ON DENMARK, GERMANY AND ITALY

JULY 2019

Maritimes Affairs and Fisheries

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Summary

- Globally, production of mussels was on an upward trend in the period from 2007 to 2016, exceeding 2 million tonnes for the first time in 2016. 94% of the total is supplied by aquaculture.

- With 522.000 tonnes, the European Union is the second largest producer after China (879.000 tonnes in 2016). EU production has been on a stagnating trend from 2007 to 2016, whereas China has almost doubled its production over that same period.

- Spain produces more than 200.000 tonnes a year (except in 2013, when red tide or algae blooms caused production to drop) and is the largest EU producer, followed by Italy, France, the Netherlands, Denmark and Germany.

- In 2016, the EU apparent consumption of mussels amounted to 577.000 tonnes, which are mostly consumed fresh. The top-3 markets of Spain, France and Italy represent 75% of total EU consumption.

- The Danish market is export oriented. Farmed mussels are going to the fresh market, while wild mussels are mainly supplying the processing sector. Domestic consumption is very low (100 to 200 tonnes/year). In 2018, the retail price (VAT excluded) of the wild fresh mussel in the supermarkets was 4,32 EUR/kg. Logistic costs (1,22 EUR/kg) represent almost twice the cost of raw material (0,68 EUR/kg).

- Most of the mussels produced in Germany go directly to Yerseke in the Netherlands. Most of the mussels consumed in Germany are imported, either from Denmark or from the Netherlands. In 2016, the German apparent consumption amounted to 12.400 tonnes. In the autumn of 2018, the most frequent retail price, VAT excluded, was 3,73 EUR/kg.

- With 120.000 tonnes of apparent consumption (10 times the size of the German market and 1.000 times the size of the Danish market), Italy is the largest of the three markets analysed. As in Germany, HORECA accounts for a large share of the consumption. The price paid to the farmer (0,70 EUR/kg) is approximately the same as the first sale price in Denmark (0,68 EUR/kg) but the retail price, VAT excluded, is much lower (2,17 EUR/kg), due to lower transport and processing costs, as the mussel is mostly distributed loose in Italy and packaged in Denmark.

List of acronyms

AMA: Associazione Mediterranea Acquacoltori

BLE: Bundesanstalt für Landwirtschaft und Ernährung

CN: Combined Nomenclature

EU: European Union

FAO: Food and Agriculture Organization of the United Nations

LLUR: Landesamt für Landwirtschat, Umwelt und ländliche Räume

MIPAAF: Ministero delle politiche agricole alimentari e forestali

MSC: Marine Stewardship Council

VAT: Value Added Tax

0 Scope and content

0.1 Case study scope

The rationale for the choice of fresh mussel to analyse price structure and distribution of value in the Danish, German and Italian value chains is described in the table below.

Products	Origin	Characteristics	Market and price drivers
Fresh mussel (whole)	Aquaculture and catches (EU)	Fresh product Broadly farmed in the EU, in both Northern and Southern Member States Large intra-EU trade flows Development of packaging of live mussels Development of organic production	Supply/demand balance (stability of the market) Method of production Differentiation strategies (size, origin, MSC, organic)

Key elements of the analyses concern:

Species – Products	Main Member States (focus)
Fresh mussel (whole), farmed and wild	Denmark, Germany, Italy

0.2 Content of the document

In conformity with the methodology developed within the EUMOFA project and published on its website (http://www.eumofa.eu/price-structure), this document includes:

- A description of the product;
- An analysis of production and market trends at EU level;
- An analysis of the price structure along the supply chain in Denmark, Italy and Germany.

1 DESCRIPTION OF THE PRODUCTS AND MARKETS

1.1 Biological and commercial characteristics

Case study product

The case study focuses on fresh mussel.

Name: Blue mussel (*Mytilus edulis*) – producers: Canada, Denmark, France, Ireland, Netherlands and United-Kingdom.

FAO 3-alpha code: MUS

Presentation: Fresh whole

Commercial size: Around 6 cm (maximum mussel size is approximately 10 cm; however, in low-salinity and brackish water, it is much smaller).

Other main species:

Some of the main globally cultured mussel species and their main producing countries are listed below:

- Green Mussel (*Perna viridis*) - producers: Thailand and the Philippines
- Chilean Blueshell Mussel (*Mytilus chilensis*) - producer: Chile
- Mediterranean Mussel (*Mytilus galloprovincialis*) - producers: Spain, France, Greece, Italy
- New Zealand Green Mussel (*Perna canaliculus*) - producer: New Zealand
- Korean Mussel (*Mytilus coruscus*) - producer: Korea.

Related codes in the product nomenclature (COMEXT)

The Combined Nomenclature (CN)[1] distinguishes mussels "live, fresh or chilled" from "others". From 2012, the CN has identified smoked mussels through a new code: "smoked, whether in shell or not, whether or not cooked before or during the smoking process, not otherwise prepared". Other prepared and preserved mussels are identified under two codes until 2011 and other two codes between 2012 and 2016.

Live, fresh or chilled mussels - Conversion ratio = 1,00 (source: EUMOFA)

- 03073110: *Mytilus spp*.
- 03073190: *Perna* spp.

Other - Conversion ratio = 2,61 and 4,5 (source: EUMOFA)

- 03073905: Smoked, whether in shell or not, whether or not cooked before or during the smoking process, not otherwise prepared.

  Conversion ratio = 2,61 (source: EUMOFA)
- 03073910: Other *Mytilus spp*., frozen, dried, salted or in brine, even in shell (excl. smoked)

  Conversion ratio = 4,5 (source: EUMOFA)
- 03073990: Other *Perna spp*. Frozen, dried, salted or in brine, even in shell (excl. smoked)

  Conversion ratio = 4,5 (source: EUMOFA)

[1] CN is a tool for designating goods and merchandise which was established to meet simultaneously the requirements both of the Common Customs Tariff and of the external trade statistics of the EU. The basic regulation is Council Regulation (ECC) n°2658/87; an updated version of the Annex I is published every year as a Commission regulation (latest version: Commission implementing Regulation (EU) n°2017/1925).

- 03073210: Mussels « *Mytilus spp.* » frozen, even in shell (2017)

  Conversion ratio = 4,5 (source: EUMOFA)

- 03073290: Mussels « *Perna spp.* » frozen, even in shell (2017)

  Conversion ratio = 4,5 (source: EUMOFA)

Prepared or preserved mussels (2007-2011) - Conversion ratio = 2,61 (source: EUMOFA)

- 16059011: Mussels of the species *Mytilus* and of the species *Perna,* prepared or preserved, in airtight containers.
- 16059019: Mussels of the species *Mytilus* and of the species *Perna,* prepared or preserved *(*excl. in airtight containers).

Prepared/preserved mussels (2012-2017) - Conversion ratio = 2,61 (source: EUMOFA)

- 16055310: Mussels, prepared or preserved, in airtight containers (excl. merely smoked)
- 16055390: Mussels, prepared or preserved (excl. in airtight containers and merely smoked).

Biological parameters

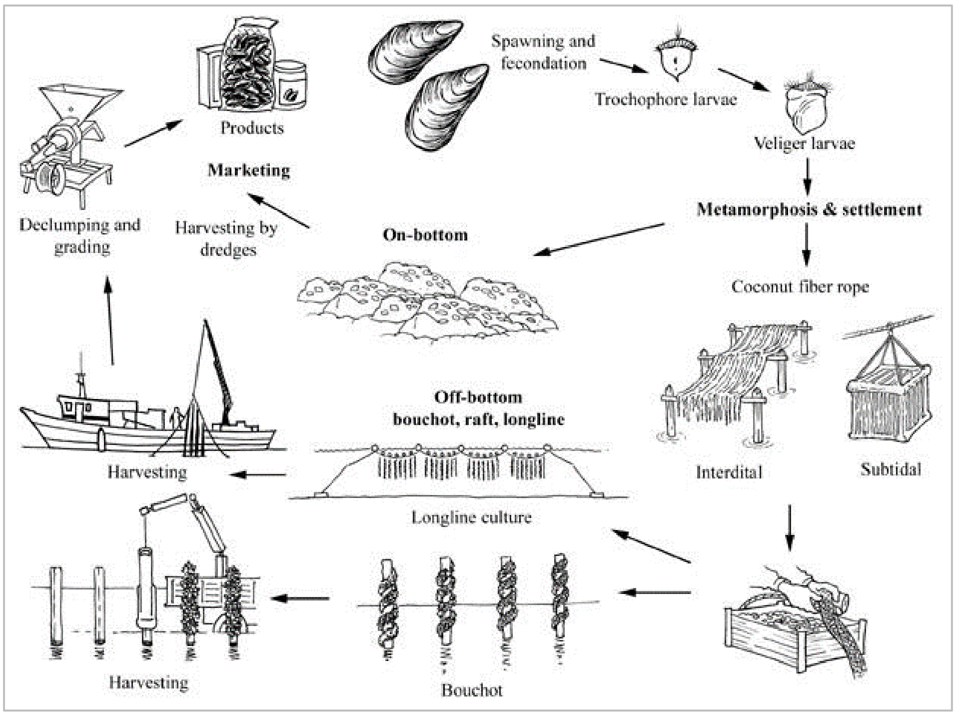
Parameter	Characteristics
Temperature	Between 5 and 20°C for *Mytilus edulis* and 10-20°C for *Mytilus galloprovincialis.*
Habitat	Mussels are found in a wide variety of habitats, from tidal areas to fully submerged zones, with a broad range of temperatures and salinities.
Diseases in farming	*Mytilus edulis:* Protozoan (*Marteilia maurini*), virus (*Picornaviridae-like virus*), bacteria (*Vibrios, Rickettsia-like organisms, Chlamydia-like organisms*), micro-sporidian (*Steinhausia mytilovum*), sponge (*Cliona*), Bucephalid trematode (*Prosorhynchus sp.*), Polychaete annelid (*Polydora ciliata*), Crustacean (Pinnotheres pisum), Copepods (*Mytilicola intestinalis*; *Mytilicola orientalis*) *Mytilus galloprovincialis*: Protozoans (*Marteilia maurini*; *M. refringens*), Copepod (*Mytilicola intestinalis*)
Diet in the wild and in farming	Mussels feed on phytoplankton and organic matter by constantly filtering seawater.
Juvenile phase	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. 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.
Grow-out	Rearing until harvest takes approximately one year
Distribution in the wild	Specific characteristics of mussel are its high fecundity and a mobile larval phase, allowing for widespread distribution. *Mytilus edulis* is widely distributed in European waters, extending from the White Sea, Russia as far as south as the Atlantic coast of Southern France. *Mytilus galloprovincialis* is present in the Mediterranean area and produced in Northern part of Spain, South Africa and China.
Catches	Fishing takes place year-round, with peaks in March–June and September–December.
Farming systems	Four methods are used in European coastal areas: • on plots or by spreading (primarily in the Netherlands and Germany), the juveniles are spread over plots in shallow water. 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; • on ropes (in Spain and the Mediterranean): 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. Offshore mussel farming also uses this technique; • On trestles (in France, mainly in Brittany and in the Thau lagoon): mussels are grown using the same technique as for oysters, in meshbags on trestles set up on intertidal ground, or directly on the ground.

Source: FAO

1.2 Production cycle

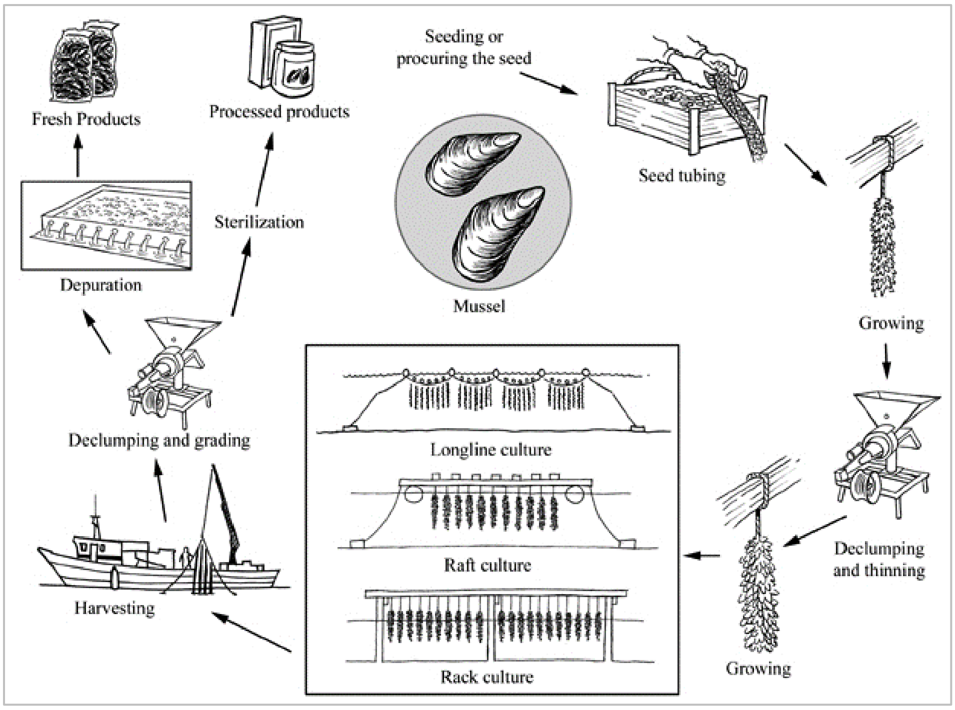
The stages of production are identified in the following figures for both *Mytilus edulis* and *Mytilus galloprovincialis.*

Figure 1: Production cycle of *Mytilus edulis*



Source: FAO

Figure 2: Production cycle of *Mytilus galloprovincialis*



Source: FAO

1.3 World production of fresh mussels

1.3.1 Evolution of aquaculture and catches

World production of mussel reached 2,14 million tonnes in 2016, with a 35% increase since 2007. Most of the production is farmed (94%), wild caught mussels accounting for 6% of the volumes.

Table 1 – World production of mussel (tonnes)

Year	Aquaculture	Capture	Total	*% aquaculture*	*% capture*
2007	1.598.339	113.843	**1.712.182**	*93%*	*7%*
2008	1.585.316	89.793	**1.675.109**	*95%*	*5%*
2009	1.729.425	98.559	**1.827.984**	*95%*	*5%*
2010	1.799.590	87.734	**1.887.324**	*95%*	*5%*
2011	1.867.687	96.506	**1.964.193**	*95%*	*5%*
2012	1.814.276	103.130	**1.917.406**	*95%*	*5%*
2013	1.736.267	96.836	**1.833.103**	*95%*	*5%*
2014	1.858.911	90.119	**1.949.030**	*95%*	*5%*
2015	1.856.801	102.612	**1.959.413**	*95%*	*5%*
2016	2.007.507	128.453	**2.135.960**	*94%*	*6%*

Source: FAO

1.3.2 Evolution by main producing countries

The largest world producer of mussels is China with 879.000 tonnes in 2016, its production having almost doubled since 2007. EU-28 is the second-largest world producer (522.000 tonnes in 2016) with production declining since 2007 by 6%. China and the EU-28 accounted for 67% of global mussel production in 2016.

Chile, Thailand, New Zealand and Republic of Korea are the four next largest producers (respectively 313.607 tonnes, 115.000 tonnes, 94.000 tonnes and 64.000 tonnes in 2016). The production in each other country is below 30.000 tonnes.

Some countries experienced a large increase of production between 2007 and 2016, generally in relation to an increase in demand. China, which accounts for 42% of the world's reported mussel production, almost doubled its production over the period (+96%) to meet huge domestic demand. In Chile, the increase of the production (+88%) was largely export-driven. In the US, the mussel industry is quite new and developed rapidly (+73%) to respond to a fast-growing domestic market.

Over the same period, production decreased in Thailand and Korea (-49% and -40% respectively), driven by pollution issues and disease outbreaks. In particular the red tide phenomenon often occurs in the Gulf of Thailand, caused by the presence of chemical contaminants such as phosphates-phosphorus and nitrates-nitrogen[2].

Production in Italy, Denmark and Germany ranged between 44.000 and 64.000 tonnes in 2016. Together, these three Member States account for 28% of total EU production (see details in the following section).

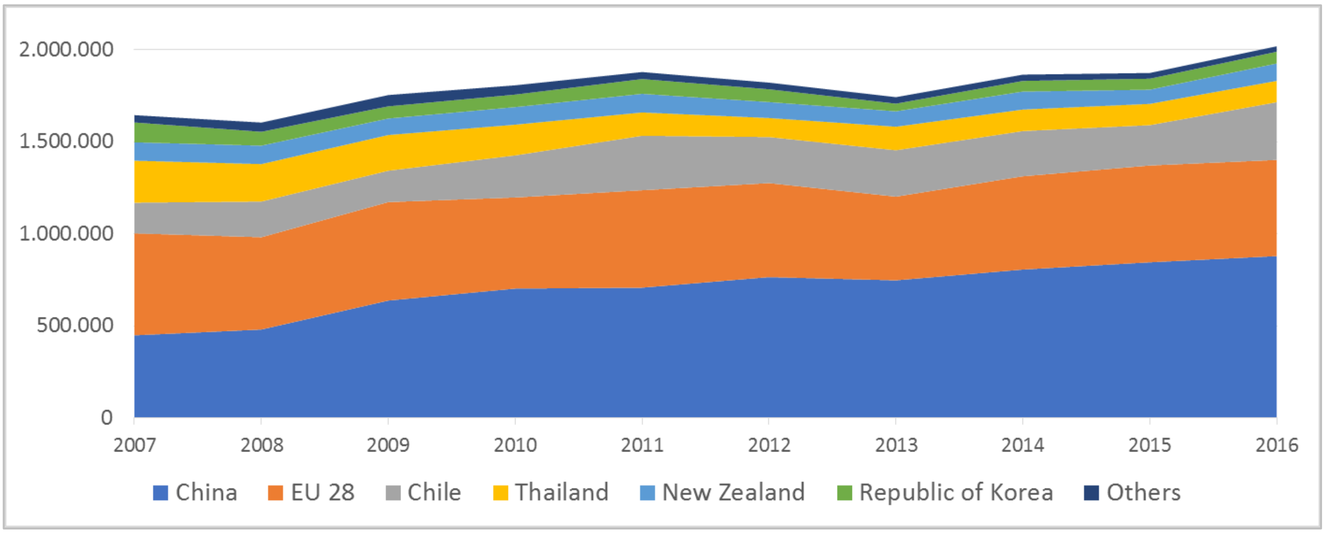
[2] Thailand State of Pollution Report 2015, Ministry of Natural Resources and Environment.

Table 2 – Production of mussels by main producing countries (tonnes)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	*Evol. 2007-2016*
WORLD TOTAL	**1.712.182**	**1.675.109**	**1.827.984**	**1.887.324**	**1.964.193**	**1.917.406**	**1.833.103**	**1.949.030**	**1.959.413**	**2.113.718**	*+24%*
China	448.667	479.902	637.373	702.157	707.401	764.395	747.077	805.583	845.038	878.771	*+96%*
EU-28	553.604	501.136	534.756	494.957	529.108	510.919	454.434	506.721	525.535	522.358	*-6%*
Chile	166.573	193.926	170.478	228.566	295.550	250.029	251.940	245.435	219.366	313.607	*+88%*
Thailand	228.250	203.213	193.626	166.927	126.616	103.203	127.919	117.013	115.544	115.494	*-49%*
New Zealand	99.700	100.282	90.002	95.321	101.423	86.605	83.762	97.510	76.982	94.284	*-5%*
Rep. of Korea	107.638	75.379	65.802	67.935	80.163	69.602	41.456	57.939	59.612	64.069	*-40%*
Canada	24.153	19.962	21.515	25.725	25.938	29.036	26.145	25.233	22.725	24.584	*+2%*
Brazil	13.350	16.683	17.261	15.839	21.286	26.878	21.741	24.629	23.210	23.010	*+72%*
Philippines	20.143	23.045	19.965	20.906	22.471	25.686	22.920	18.785	15.970	18.798	*-7%*
USA	9.984	11.498	15.838	18.276	13.224	11.653	12.416	11.910	17.716	17.245	*+73%*
Indonesia	420	14	30	447	2.867	3.353	8.067	4.024	6.701	11.997	*+2.756%*
Other	39.700	50.069	61.338	50.268	38.146	36.047	35.226	34.248	31.014	29.501	*-26%*
Italy	58.479	67.239	76.800	64.256	79.520	63.257	64.235	63.700	63.700	63.700	*+9%*
% IT in EU28	*11%*	*13%*	*14%*	*13%*	*15%*	*12%*	*14%*	*13%*	*12%*	*12%*	
Denmark	58.284	36.819	40.003	28.541	34.980	39.963	38.301	43.173	46.529	45.130	*-23%*
% DK in EU28	*11%*	*7%*	*7%*	*6%*	*7%*	*8%*	*8%*	*9%*	*9%*	*8%*	
Germany	10.539	6.896	3.600	4.905	20.830	6.933	5.036	5.280	12.738	44.506	*+322%*
% DE in EU28	*2%*	*1%*	*1%*	*1%*	*4%*	*1%*	*1%*	*1%*	*2%*	*8%*	

Source: FAO

Figure 3 - Production of mussels by main producing countries (tonnes)



Source: FAO

2 STRUCTURE OF THE EU MARKET

2.1 EU production of mussels

2.1.1 Evolution of EU production by main producing Member States

Table 3 - EU production by main producing Member State (tonnes)

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Spain total	**209.671**	**180.273**	**198.784**	**189.313**	**208.849**	**203.891**	**162.117**	**220.518**	**225.447**	**215.948**
Aquaculture	*209.633*	*180.265*	*198.531*	*189.090*	*208.583*	*203.664*	*162.012*	*220.449*	*225.308*	*215.855*
Catches	*38*	*8*	*253*	*223*	*266*	*227*	*105*	*69*	*139*	*93*
Italy total	**58.479**	**67.239**	**76.800**	**64.256**	**79.520**	**63.257**	**64.235**	**63.700**	**63.700**	**63.700**
Aquaculture	*58.479*	*67.239*	*76.800*	*64.256*	*79.520*	*63.257*	*64.235*	*63.700*	*63.700*	*63.700*
Catches	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
France total	**76.032**	**81.697**	**79.235**	**71.499**	**69.098**	**81.660**	**77.958**	**63.386**	**59.914**	**57.960**
Aquaculture	*72.760*	*78.526*	*76.823*	*70.339*	*65.021*	*77.139*	*74.138*	*57.633*	*56.802*	*57.300*
Catches	*3.272*	*3.171*	*2.412*	*1.160*	*4.077*	*4.521*	*3.820*	*5.753*	*3.112*	*660*
Netherlands total	**43.731**	**36.082**	**45.618**	**56.227**	**36.700**	**40.000**	**37.112**	**54.100**	**54.100**	**54.000**
Aquaculture	*43.731*	*36 082*	*45.618*	*56.227*	*36.700*	*40.000*	*37.112*	*54.100*	*54.100*	*54.000*
Catches	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Denmark total	**58.284**	**36.819**	**40.003**	**28.541**	**34.980**	**39.963**	**38.301**	**43.173**	**46.529**	**45.130**
Aquaculture	*949*	*1.737*	*2.556*	*669*	*537*	*537*	*810*	*1.810*	*1.229*	*2.221*
Catches	*57.335*	*35.082*	*37.447*	*27.872*	*34.443*	*39.426*	*37.491*	*41.363*	*45.300*	*42.909*
Germany total	**10.539**	**6.896**	**3.600**	**4.905**	**20.830**	**6.933**	**5.036**	**5.280**	**12.738**	**22.264**
Aquaculture	*10.539*	*6.896*	*3.600*	*4.905*	*20.830*	*6.933*	*5.036*	*5.280*	*12.738*	*22.264*
Catches	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Greece total	**22.653**	**21.362**	**23.091**	**17.377**	**17.239**	**16.679**	**18.720**	**16.752**	**18.645**	**23.360**
Aquaculture	*22.179*	*21.078*	*22.383*	*17.064*	*17.193*	*16.612*	*18.638*	*16.678*	*18.628*	*23.289*
Catches	*474*	*284*	*708*	*313*	*46*	*67*	*82*	*74*	*17*	*71*
UK total	**30.318**	**36.849**	**35.380**	**35.405**	**35.769**	**34.331**	**24.388**	**20.593**	**20.233**	**16.302**
Aquaculture	*25.669*	*28.247*	*31.929*	*30.212*	*26.158*	*26.021*	*22.480*	*20.023*	*19.254*	*14.685*
Catches	*4.649*	*8.602*	*3.451*	*5.193*	*9.611*	*8.310*	*1.908*	*570*	*979*	*1 617*
Ireland total	**38.168**	**27.800**	**26.802**	**22.999**	**22.671**	**20.615**	**18.949**	**12.223**	**16.250**	**15.121**
Aquaculture	*37.435*	*27.060*	*26.802*	*22.234*	*22.671*	*15.188*	*15.360*	*11.375*	*16.015*	*15.121*
Catches	*733*	*740*	*0*	*765*	*0*	*5.427*	*3.589*	*848*	*235*	*0*
Other total	**5.729**	**6.119**	**5.443**	**4.436**	**3.452**	**3.591**	**7.618**	**6.996**	**7.979**	**8.573**
Aquaculture	*5.547*	*5.999*	*5.323*	*4.324*	*3.201*	*3.280*	*7.369*	*24.186*	*26.661*	*7.952*
Catches	*182*	*120*	*120*	*112*	*251*	*311*	*249*	*277*	*412*	*621*
TOTAL EU-28	**553.604**	**501.136**	**534.756**	**494.957**	**529.108**	**510.919**	**454.434**	**524.188**	**544.629**	**522.358**
Aquaculture	***486.921***	***453.129***	***490.365***	***459.319***	***480.414***	***452.630***	***407.190***	***475.234***	***494.435***	***476.387***
Catches	***66.683***	***48.007***	***44.391***	***35.638***	***48.694***	***58.289***	***47.244***	***48.954***	***50.194***	***45.971***

Source: FAO

From 2007 to 2016, EU production of mussels (catches and aquaculture) has been stable, with a yearly average output of 517.000 tonnes. Total production reached almost 522.400 tonnes in 2016, including 91% from aquaculture and 9% from catches.

Spain is by far the largest producer with 41% of EU production in 2016. The main Member States after Spain are Italy, France, the Netherlands, Denmark and Germany, with 8 to 12% of the EU production each.

According to FAO statistics, mussel production comes from aquaculture in most countries except for Denmark where catches account for a significant part of the production: 95%. In Italy, in the Netherlands and in Germany, the whole production is recorded under aquaculture.

Denmark, Germany and Italy, which will be the subject of further examination in the following chapters, accounted for 25% of the EU production in 2016.

2.1.2 Breakdown by main mussel species

The following table shows the main species of mussels produced in the different EU countries.

The Mediterranean mussel (*Mytilus galloprovincialis*) is the most common species in the EU-28, representing 61% of the total mussel production. This species is farmed in the Mediterranean countries (Italy, Greece, France, Spain, Bulgaria, Croatia, Slovenia) as well as in Galicia (Atlantic coast of Spain).

The blue mussel (*Mytilus edulis*), also known as common mussel, is the most common species in the non-Mediterranean countries, especially in the Netherlands, Denmark Germany, Ireland, as well as in France. Its production represents 38% of the EU production of mussel.

Table 4 – EU production of mussel: breakdown by main species (2016, tonnes)

	Blue mussel	Mediterranean mussel	Sea mussels nei
Spain	93	215.855	
France	47.394	10.566	
Italy		63.700	
Netherlands	54.000		
Denmark	45.130		
United Kingdom	11.617		4.685
Greece		23.360	
Ireland	15.121		
Germany	22.264		
Other	2.776	5.424	374
TOTAL EU-28	**198.395**	**318.905**	**5.059**

Source: FAO

2.2 Apparent consumption by Member State

The following table presents the apparent consumption in the main EU Member States and in the EU-28 as a whole. Overall there were 577.000 tonnes of mussels consumed in the EU in 2016, mainly fresh. Consumption is highly concentrated in Spain, France and Italy, which represent 75% of the EU apparent consumption.

Table 5 – Apparent consumption for mussels in the EU-28 in 2016 (volumes in tonnes live weight equivalent)

	Aquaculture	Catches	Imports	Exports	Apparent consumption
Spain	215.855	93	46.533	97.814	164.667
France	57.300	660	92.501	3.753	146.708
Italy	63.700	-	70.974	14.417	120.257
Netherlands	54.000	-	39.766	68.038	25.728
Denmark	2.221	42.909	5.171	47.993	2.307
United Kingdom	14.685	1.617	14.171	4.364	26.109
Greece	23.360	71	5.174	11.885	16.720
Ireland	15.121	-	155	12.351	2.925
Germany	22.264	-	21.253	31.117	12.400
Other	7.952	621	67.270	16.353	59.489
TOTAL EU-28	**476.387**	**45.971**	**362.968**	**308.087**	**577.240**

Sources: FAO; Comext; Eumofa

NB for Denmark:
according to the stakeholders interviewed, prepared and preserved products are mainly without shell. Conversion ratio applied is 4,5 and not 2,61 as suggested by EUMOFA.

2.2.1 The main EU markets' trade in fresh mussels

Overview of the trade for all mussels in 2017

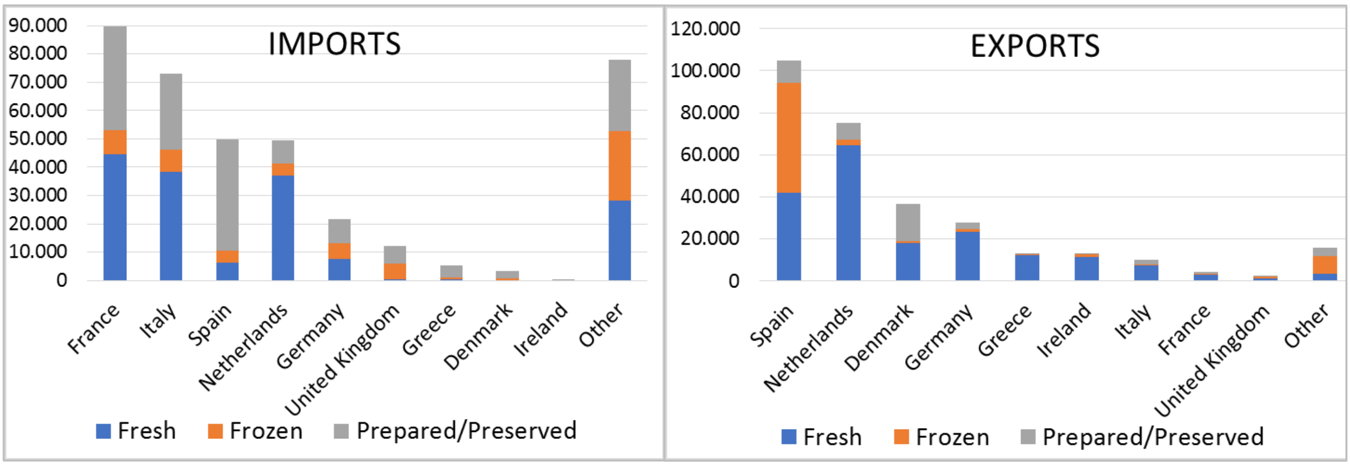
The two figures below present the EU trade of all mussels (fresh, frozen and prepared/preserved) in 2017.

Imports amounted to 383.000 tonnes (live weight equivalent): 43% fresh mussels; 41% prepared/preserved mussels; 16% frozen mussels. France was the largest EU importer of mussels (23%), followed by Italy (19%), Spain (13%), the Netherlands (13%), Germany (6%), and the United Kingdom (3%). France and Italy imported mainly fresh and prepared/preserved mussels, whereas Spain imported a most important share of prepared/preserved mussels and the Netherlands a larger share of fresh mussels.

Exports amounted to 303.000 tonnes (live weight equivalent): 62% fresh mussels; 23% frozen; 15% prepared/preserved mussels. Spain, the Netherlands and Denmark accounted for 72% of EU exports (Spain for 35%, the Netherlands for 25% and Denmark for 12%). These three main exporting countries are followed by Germany (9%), Greece (4%) and Ireland (4%).

Spanish exports were mainly fresh and frozen; the Netherlands exported mainly fresh mussels and Denmark exported fresh and prepared/preserved mussels.

Figure 4 – Imports and exports of mussels in the main EU countries in 2017 (tonnes live weight equivalent)



Source: Comext

Supply of EU markets for fresh mussels

Between 2008 and 2017, EU imports of fresh mussels increased by 30% to reach 163.000 tonnes in 2017.

The EU trade of mussels is mainly intra-EU. France, Italy and the Netherlands represented 74% of total EU-28 imports of mussels in 2017. Between 81% and 94% of their imports are intra EU-trade. Germany is the fourth-largest Member State in terms of imports with 7.600 tonnes of mussels imported in 2017.

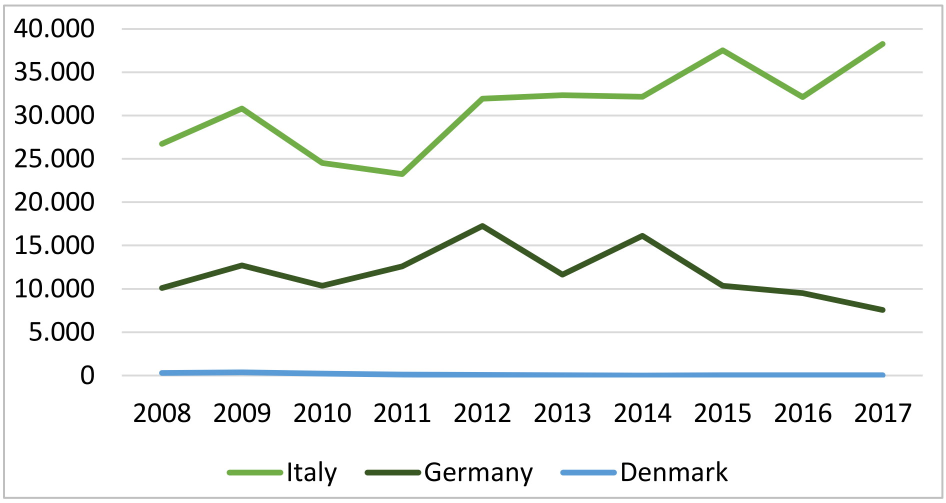
Table 6 – Imports of fresh mussels in the EU (tonnes)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
France	32.346	39.082	46.027	40.003	37.267	37.047	37.845	39.440	42.919	44.728
Italy	26.751	30.796	24.545	23.250	31.949	32.364	32.181	37.537	32.138	38.279
Netherlands	23.689	19.179	19.347	30.857	23.029	21.595	14.913	18.952	31.566	37.114
Germany	10.103	12.713	10.336	12.582	17.251	11.650	16.135	10.336	9.524	7.575
Spain	3.220	3.516	4.008	2.998	4.009	6.460	6.413	5.681	8.300	6.353
Greece	292	1.790	474	158	356	34	115	697	497	305
United Kingdom	152	187	144	239	449	516	304	80	161	282
Denmark	274	379	207	102	63	28	5	22	22	20
Ireland	1.453	1.454	365	311	409	23	376	100	17	16
Other	27.116	29.162	29.356	28.065	27.943	26.859	28.249	27.915	28.180	28.128
TOTAL EU-28	**125.395**	**138.256**	**134.811**	**138.565**	**142.724**	**136.576**	**136.535**	**140.760**	**153.323**	**162.801**

Source: Comext

The following figure presents the evolution of imports of fresh mussels in the three Member States analysed. From 2008 to 2017, Italy increased its imports by 43% whereas Germany has been on a decreasing trend (-25%). Danish imports were slightly higher until 2011 (between 100 and 400 tonnes of annual imports) but decreased to 20 tonnes in 2017.

Figure 5 – Imports of fresh mussels in Italy, Germany and Denmark (tonnes)



Source: Comext

<u>Main exporting countries for fresh mussels within the EU</u>

Between 2008 and 2017, EU exports of fresh mussels increased by 44% to reach 187.000 tonnes in 2017. The Netherlands, Spain, Germany and Denmark exported almost 80% of this volume. Almost the whole volume of exported fresh mussels are sold intra-EU.

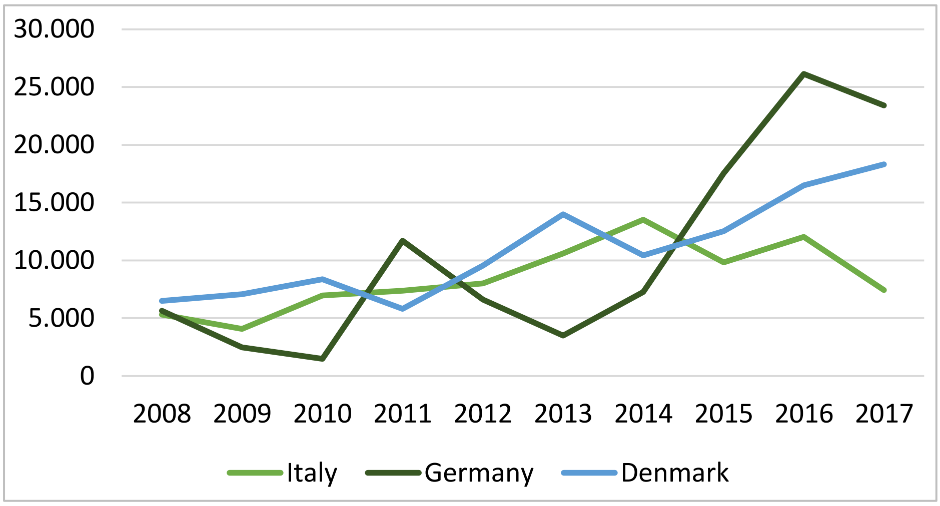
Table 7 – EU exports of fresh mussels (tonnes)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Netherlands	33.667	35.206	44.030	40.737	30.870	31.296	44.316	56.946	57.869	64.657
Spain	39.398	40.421	37.172	32.355	35.600	36.153	37.152	43.194	35.176	41.849
Germany	5.654	2.477	1.485	11.693	6.604	3.494	7.265	17.534	26.140	23.403
Denmark	6.495	7.071	8.372	5.794	9.550	13.980	10.423	12.523	16.505	18.315
Greece	13.814	13.469	8.449	10.100	9.832	10.757	10.623	10.175	10.978	12.201
Ireland	9.862	11.323	12.729	13.479	14.890	11.799	6.927	10.320	10.229	11.666
Italy	5.321	4.058	6.957	7.384	7.998	10.588	13.517	9.837	12.034	7.435
France	2.413	3.456	4.365	2.884	2.467	3.046	2.478	1.829	1.916	3.168
United Kingdom	12.333	14.159	9.149	8.831	11.513	7.188	2.902	4.333	2.882	1.253
Other	723	611	669	526	704	640	719	741	2.605	3.296
TOTAL EU-28	**129.679**	**132.249**	**133.377**	**133.784**	**130.026**	**128.941**	**136.321**	**167.429**	**176.333**	**187.243**

Source: Comext

Exports of fresh mussels have increased in the three Member States analysed: +314% in Germany; +182% in Denmark and +40% in Italy. Their trade is mainly intra-EU.

Figure 6 – Exports of fresh mussels from Italy, Germany and Denmark (tonnes)



Source: Comext

The following chapters describe the market structure and analyse the price structure of fresh mussels in Denmark, Germany and Italy.

3 The Danish market

3.1 Structure of the supply chain for fresh mussels in Denmark

Wild mussels

The Danish blue mussel (*Mytilus edulis*) is harvested in the Limfjord on the East coast of Jutland, the Wadden Sea, and the Isefjord. Here, mussels form stabilised beds of interconnected mussels and dead shells. A small mussel fishery is also located in the southern Kattegat and the Belt Sea. All mussel fisheries in Denmark are ecolabel certified. In Limfjord, approximately 37 certified vessels dredge mussels[3].

The blue mussel fishery in Danish waters is subject to a number of requirements to ensure that the fishing activity complies with the EU environmental directives[4]. The Danish Mussel Policy, adopted in June 2013, contains specific requirements for the protection of eelgrass, reefs (stone reefs and biogenic reefs) and other marine habitats and species.

Fishing takes place year-round, with peaks in March-June and September-December. Mussel is sold shelled, cooked and frozen, or as whole live. Most of the landings are exported as fresh, frozen or canned products to the rest of Europe.

National Danish statistics estimate that, in 2016, volumes of mussels landed reached 48.820 tonnes for EUR 12 million[5].

Farmed mussels

The production of farmed mussels, which is organic certified, is quite limited currently (around 2.000 tonnes a year) but growing fast: organic farming of line mussels has a significant foot print in the development of the Danish Aquaculture sector, targeting 10% of the production being organic by 2018. Currently, nine production units have been approved for a total production of some 2.200 tonnes/year.

The Danish production of line mussels takes place in the “Limfjorden” (North West Jutland), where the main producer is Seafood Limfjord, which works in cooperation with the mussel processing company Vildsund Blue in Nykøbing Mors (around 1.000 tonnes a year). The line mussels are farmed on lines and in big socks, and, due to the fact that they are reared higher in the water column than wild mussels, more feed is available for their growth. It takes about one year for them to reach market size (the “wild” on the seabed needs two years to reach the same market size).

At present, the production and the market of organic mussels are small and still have a limited importance compared to the conventional production. Nevertheless, there is a growing market demand.

The diagram below presents the overall production steps for wild and farmed mussels. It relies on qualitative data collected through the field work. The organic production is completely different from the conventional one; however, the activities on shore, after harvest, are similar.

[3] EUMOFA – Monthly Highlights 9/2017.
[4] Habitats Directive and Birds Directives.
[5] http://fiskeriforening.dk/om-fiskeriet/fiskeriet-i-tal/fiskearter/

Figure 7 – Overview of the production steps for wild and farmed mussels in Denmark

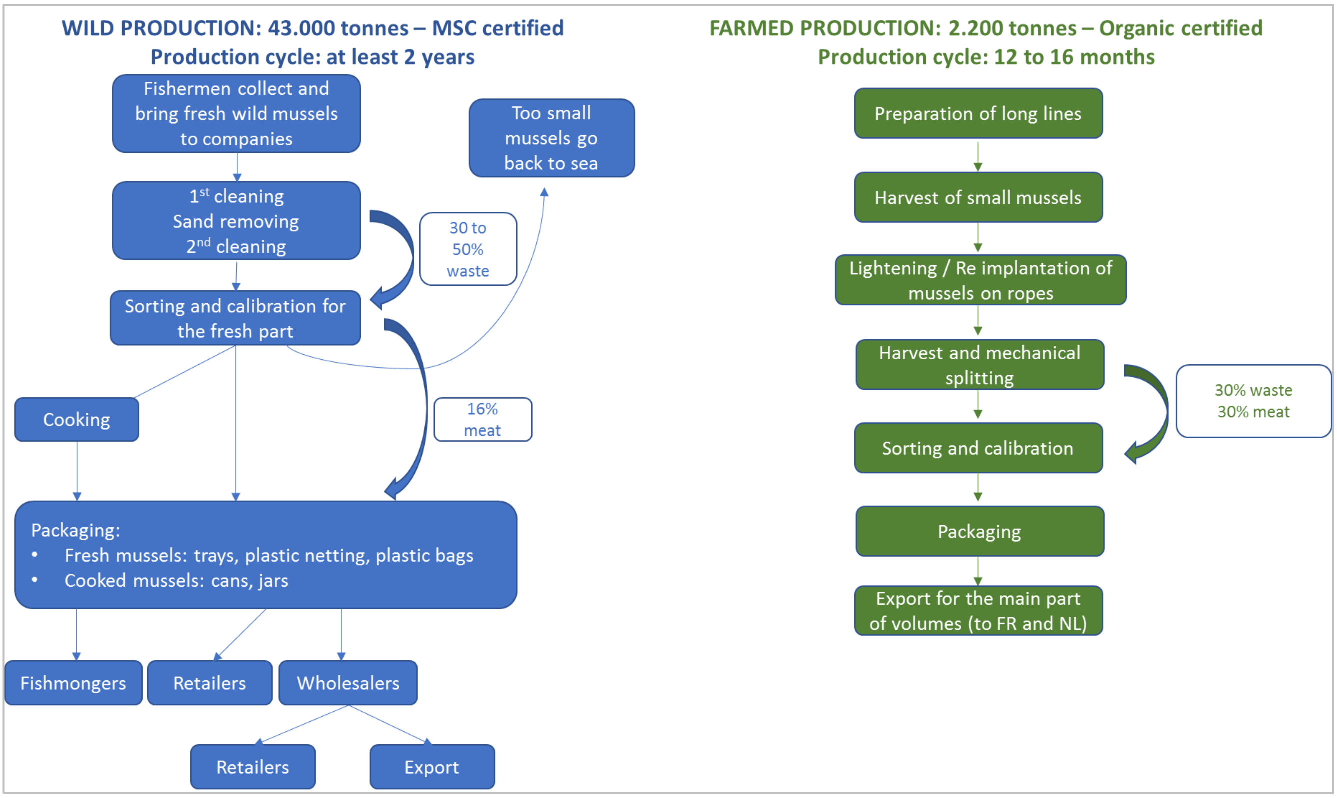


Table 8 – Calibration of fresh and cooked mussels

Fresh mussels	Cooked mussels
50-70 mussels / kg	100-200 mussels / kg
70-90 mussels / kg	200-300 mussels / kg
	300-500 mussels / kg
	500-800 mussels / kg

Source: EUMOFA survey

Trade

Denmark has been importing between 5.000 and 10.000 tonnes of mussels per year since 2010, with a decreasing trend between 2013 and 2017 (-21%). In 2017, Denmark imported 5.500 tonnes of mussels, including 4.900 tonnes of prepared/preserved mussels (live weight equivalent) and 600 tonnes of frozen mussels (live weight equivalent).

Since 2012, between 98 and 100% of the volume of mussels imported have been prepared or preserved, mainly from Chile (72% in 2017) and New Zealand (9% in 2017). The remaining amount is from Ireland, Netherlands, Germany and Belgium.

Table 9 – Danish imports of mussels in 2017 by main country of origin (tonnes, live weight equivalent)

	Fresh	Frozen	Prepared/Preserved	TOTAL
Chile	0	0	3.991	**3.991**
New Zealand	0	500	0	**500**
Ireland	0	0	333	**333**
Netherlands	12	5	89	**107**
Germany	0	37	36	**73**
Belgium	0	0	23	**23**
Other	8	21	485	**514**
TOTAL	**20**	**564**	**4.958**	**5.541**

Source: COMEXT

Imports of fresh mussels are very limited and strongly decreased between 2011 and 2017 (-80%). Only 20 tonnes of fresh mussels have been imported in 2017, mainly from the Netherlands.

Table 10 – Danish imports of fresh mussels by main country of origin (tonnes)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Netherlands	42	27	34	90	54	19	2	1	18	12
Germany	5	18	10	5	2	4	0	0	0	0
Norway	191	324	152	0	0	2	0	2	0	0
Other	36	10	12	7	6	4	3	18	3	8
TOTAL	**274**	**379**	**207**	**102**	**63**	**28**	**5**	**22**	**22**	**20**

Source: COMEXT

Between 2007 and 2017, Danish exports reached their peak in 2007 at 70.000 tonnes and their lowest amount in 2011 at 33.000 tonnes.

The Netherlands and Germany are the main destinations: both countries represented 62% of the mussels exported by Denmark in 2017, mainly consisting of fresh and prepared/preserved mussels. That same year, Sweden, France and Ireland imported between 1.600 and 4.100 tonnes each.

37% of mussels exported in 2017 were fresh mussels, 61% were prepared/preserved mussels and 2% were frozen mussels.

Table 11 – Danish exports of mussels in 2017 by main country of destination (tonnes, live weight equivalent)

	Fresh	Frozen	Prepared/Preserved	TOTAL
Netherlands	11.350	57	11.060	**22.467**
Germany	4.003	110	4.221	**8.335**
Sweden	596	110	3.413	**4.119**
France	347	73	2.847	**3.267**
Ireland	1.538	0	59	**1.597**
Other	468	432	8.742	**9.642**
TOTAL	**18.302**	**782**	**30.343**	**49.427**

Source: COMEXT

In 2017, Danish exports of fresh mussels have increased compared with 2008 to exceed 18.000 tonnes (+182%). Fresh mussels mainly went to the Netherlands (62%) and to a lesser extent to Germany (22%), Ireland (8%), Sweden (3%) and France (2%).

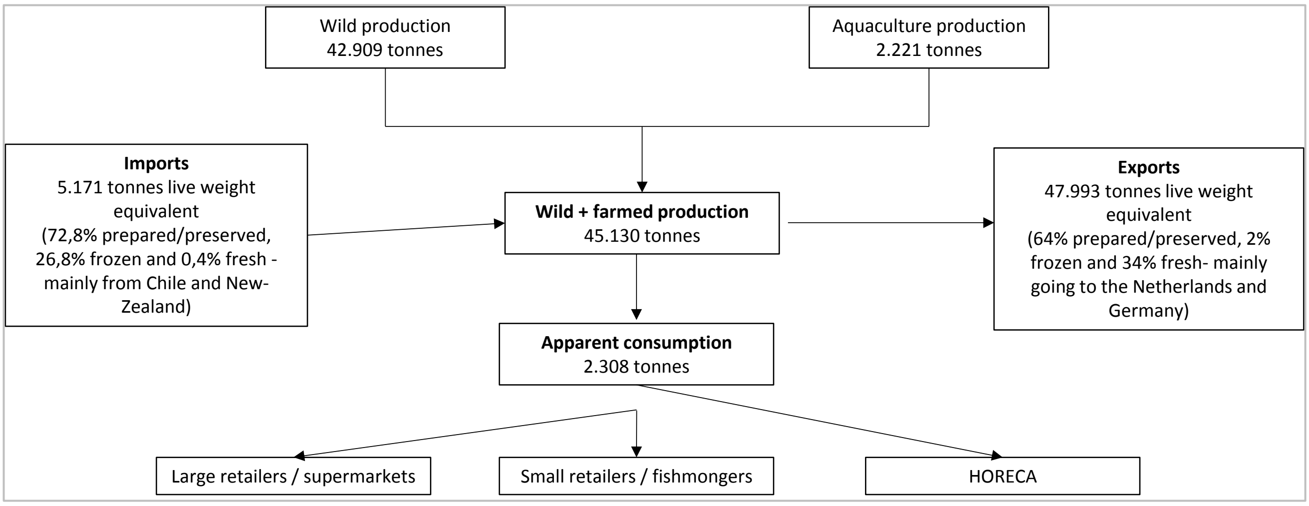
Table 12 – Danish exports of fresh mussels by main country of destination (tonnes)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Netherlands	4.214	2.946	3.441	2.980	6.519	7.420	5.567	6.448	8.160	11.350
Germany	1.890	3.390	3.986	1.966	1.950	2.610	1.654	2.619	5.104	4.003
Ireland	0	0	35	3	0	1.891	1.122	1.039	1.220	1.538
Sweden	31	144	379	340	440	808	822	1.009	987	596
France	319	529	320	338	387	168	523	547	527	347
Other	42	62	210	168	254	1.083	734	862	506	468
TOTAL	**6.495**	**7.071**	**8.372**	**5.794**	**9.550**	**13.980**	**10.423**	**12.523**	**16.505**	**18.302**

Source: COMEXT

The following diagram presents the overall structure of the Danish supply chain. It relies on various secondary sources: FAO for production, Comext for trade, and interviews with stakeholders for the structure of the domestic market.

Figure 8 – Supply chain in Denmark (data from 2016)



Sources: FAO, Comext, EUMOFA

3.2 Characteristics of the Danish market and consumption

3.2.1 Characteristics of the Danish market

The Danish market for fresh mussels is not large and is highly interconnected. More than 95% of the production is made up of wild mussels and the market is export-oriented, with France and the Netherlands as main destinations.

Organic mussel farming, which developed more recently, is also export-oriented, mainly to Scandinavia, Germany, the Netherlands and France. The organic certification is a differentiating factor with an increasing demand. Nevertheless, on the French and Dutch markets, organic farmed mussels are required more for their high level of meat (due to their rope growing) than for their organic certification. In Denmark, the organic certification is almost free, and the additional work is mainly administrative. The private certification scheme for wild production is more expensive than the organic certification.

The main differentiating factors for the Danish market are:

- the quality (grading, high level of meat content);
- the sustainability (MSC certification).

Wild mussels produced in Denmark are mainly going to the processing industry. The fresh market only attracts 5 to 10% of the whole production. Farmed mussels are at 100% going to the fresh market.

One of the main strengths of the Danish market is its capacity to produce and deliver fresh mussels all the year: farmed mussels (grown on ropes) between July and August and wild mussels all along the year.

Mussel farming is not developing that fast even if demand is growing. The trend of the wild production is similar, with production going up and down over the past years.

According to people interviewed, the main challenges to face are the availability of raw material and the difficulty in forecasting harvest volume and quality.

3.2.2 Consumption

Fresh fish sales in supermarkets are increasing, while sales of canned, frozen and fish ready meals are decreasing[6].

In Denmark, supermarkets offer door-to-door service for fresh fish, in addition to fresh fish counters. Fresh fish has become more easily accessible thanks to the development of home delivery by online fish retailers and delivery of fish boxes to households[7].

However, the domestic consumption of fish is very low although domestic demand is slowly growing. The domestic consumption is characterised by its seasonality with peaks in March-June and September-December.

The table below presents data from EUMOFA on household yearly consumption in Denmark between 2010 and 2017. In 2017, 7.160 tonnes of fresh seafood have been consumed including only 81 tonnes of mussels (for EUR 248.000). Over the last years, consumption of mussels rose from 82 to 204 tonnes between 2010 and 2013 but has been decreasing since 2015.

[6] EUMOFA (2017), EU consumer habits regarding fishery and aquaculture products.

[7] EUMOFA (2017), EU consumer habits regarding fishery and aquaculture products.

Table 13 – Household consumption of fresh products in Denmark

	2010	2011	2012	2013	2014	2015	2016	2017
	Volume in tonnes (net weight)							
Total fresh seafood	7.071	7.809	8.900	9.076	9.275	8.907	8.349	7.160
of which fresh mussels	26	32	66	204	140	200	115	81
	Value in 1.000 EUR							
Total fresh seafood	100.710	110.034	120.998	122.813	134.938	132.338	125.603	111.915
of which fresh mussels	82	110	207	582	385	546	276	248

Source: EUMOFA based on EUROPANEL

Consumer habits are slow to change despite the marketing and communication work undertaken to grow fish consumption.

Consumption of farmed organic mussels is very low. According to the stakeholders interviewed, 200 to 300 tonnes of the national production are going to the domestic market. Consumption of organic mussels is growing at a pace of 20-25% per year. According to the stakeholders interviewed, the main barrier is the high price of this product as Danish people are used to eating low-cost seafood.

3.3 Price structure in the supply chain in Denmark

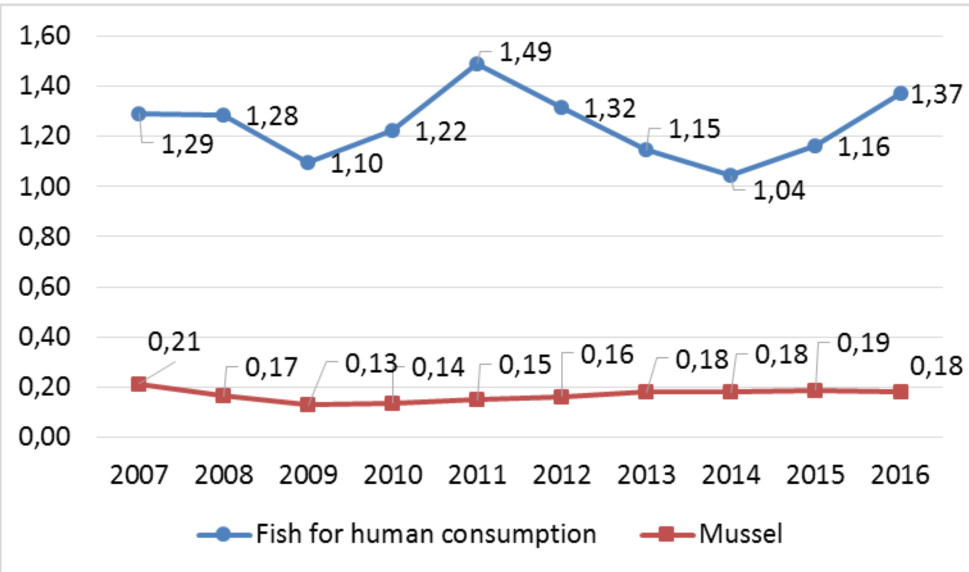
3.3.1 Price of raw material

According to the Danish National statistics, the average price of fish for human consumption has been 1,24 EUR/kg during 2007-2016.

According to the same source, the mussel price has averaged at 0,17 EUR/kg, which seems very low compared to the data collected through investigations. It is supposed that this price refer to all types of mussels, including those going to the fish feed and poultry market (mini-mussel production).

The selling price of mussels used as raw material for processing fish and poultry meal is around 0,10 EUR/kg while for mussels destined to human consumption, the price is from 0,60 to 0,80 EUR/kg.

Figure 9 – Price of raw material in Denmark (EUR/kg)



Source: Danish National statistics (Fiskeri I tal 2017 – Danmarks Fiskeriforening)

3.3.2 Retail prices

The following table displays prices of fresh blue mussels and prepared and preserved mussels surveyed on LSR online stores in 2017.

Table 14 – Prices of fresh and prepared/preserved blue mussels in Denmark

FRESH BLUE MUSSELS					
Product	**Producer**	**Presentation**	**Price DKK/kg**	**Price EUR/kg**	**Retailer**
Blue mussels	Fiskehallen Tvilling A/S	Pre-packaged	DKK 55,00	EUR 7,39	mad.COOP.dk (LSR online)
Blue mussels (washed)	Jacob Kongsbak Lassen	Pre-packaged	DKK 33,30	EUR 4,48	Nemlig.com (LSR online)
Mussels organic farmed	Jacob Kongsbak Lassen	Pre-packaged	DKK 69,95	EUR 9,40	Nemlig.com (LSR online)
PREPARED-PRESERVED BLUE MUSSELS					
Product	**Producer**	**Presentation**	**Price DKK/kg**	**Price EUR/kg**	**Retailer**
Danish Blue mussels	Coop	Pre-packaged	DKK 140,79	EUR 18,92	mad.COOP.dk (LSR online)
Mussels in water	Dit valg	Pre-packaged	DKK 187,50	EUR 25,20	mad.COOP.dk (LSR online)
Mussel meat, hot smoked	Fiskehuset.com	Loose	DKK 213,33	EUR 28,67	Fiskehuset.com (fishmonger)
Mussel meat, hot smoked	Fiskehuset.com	Loose	DKK 200,00	EUR 26,88	Fiskehuset.com (fishmonger)
Blue mussels in water	VilsundBlue	Pre-packaged	DKK 99,75	EUR 13,41	Nemlig.com (LSR online)

Source: EUMOFA, prices surveyed on online food shops in 2017

According to the stakeholders interviewed in April 2018, average retail prices for fresh mussels are the following (considering that the main part of the volumes is sold by large retailers):

- Wild fresh mussels: 25,00 DKK/kg or 3,35 EUR/kg (supermarkets) to 55,00 DKK/kg or 7,40 EUR/kg (fishmongers).
- Organic farmed mussels: 40,00 DKK/kg or 5,40 EUR/kg (supermarkets) to 70,00 DKK/kg or 9,40 EUR/kg (fishmongers).

Retail price is stable along the year, although the whole Danish market is highly depending on the French and Dutch markets.

3.3.3 Price structure

Wild mussels

This section focuses on the supply chain of fresh and wild blue mussels, produced in Denmark and sold in supermarkets. According to the trade association for the Danish aquaculture industries Dansk Akvakultur, this product is considered the most representative of the Danish market.

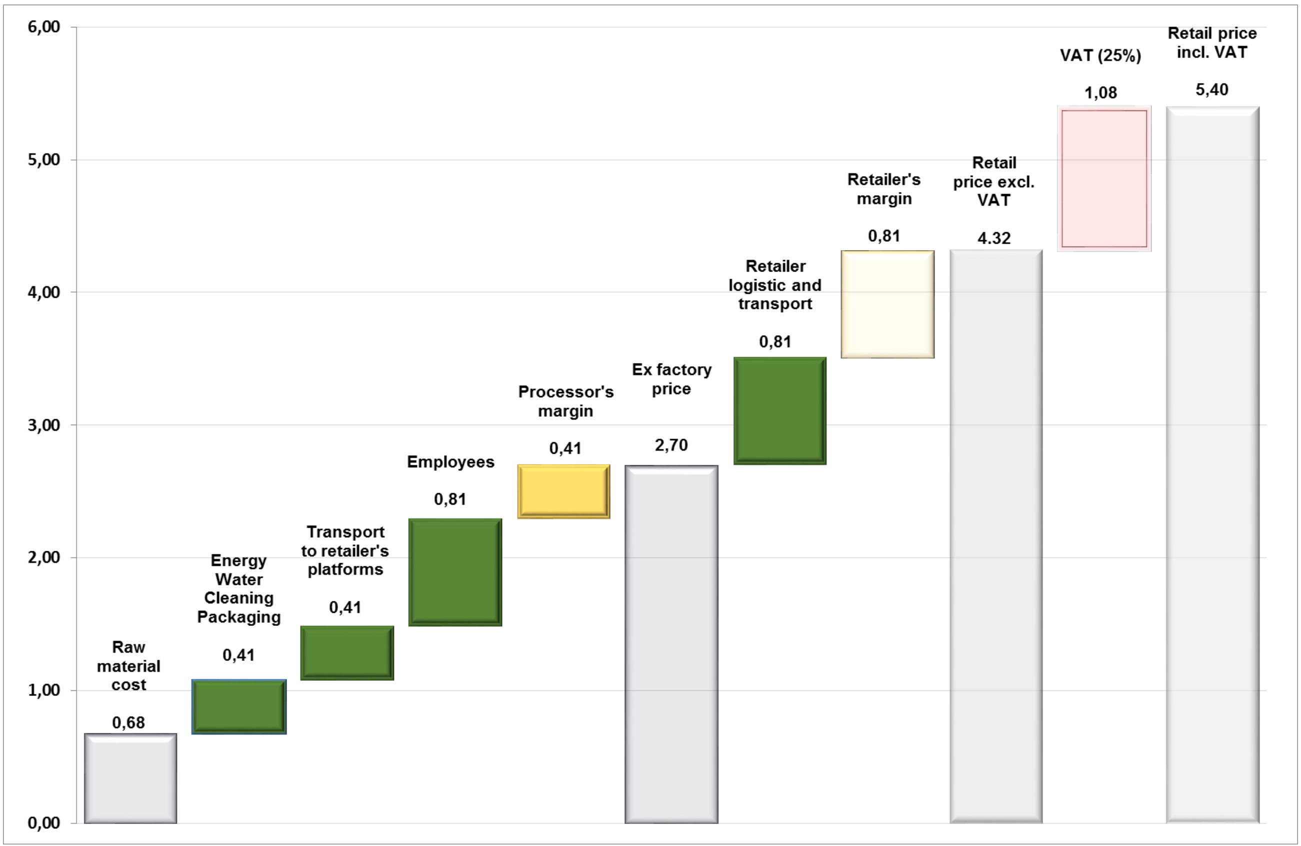
Fishmongers' retail prices are estimated 40 to 50% higher mainly because of transport which is much more expensive as volumes are smaller. Moreover, most of the volume is sold in supermarkets. Analyses are based on qualitative interviews with stakeholders of the supply chain.

Table 15 – Costs and price structure in Denmark for supermarkets (2018)

	EUR/kg	% of the retail price
Raw material cost	**0,68**	**16%**
Energy/water/cleaning/packaging	0,41	9%
Transport to retailers' platforms	0,41	9%
Employees	0,81	19%
Processor's margin	0,41	9%
Ex-factory price	**2,70**	**62%**
Retailer logistic and transport	0,81	19%
Retailer's margin	0,81	19%
Retail price excl VAT	**4,32**	**100%**
VAT (25%)	1,08	
Retail price incl VAT	**5,40**	

Source: EUMOFA survey

Figure 10 – Costs and price structure in Denmark for supermarkets (2018)



Source: EUMOFA survey

According to this analysis, intermediary costs represent 84% of the retail price, including 38% between the ex-factory price and the retail price. For processing companies, wages are the largest single cost item.

Vilsund Blue is the only company which cooks mussels. According to the director, this diversification in its activities is a competitive strategy as it allows economies of scale.

Farmed mussels

Dansk Akvakultur numbers 160 members including feed companies, breeders in fish farming, aquaculture, fish exporters and processing plants.

The table below presents their economic data on their shellfish farms, whose production is made up almost exclusively of mussels. In 2016, costs represented 76% of the gross outputs of these farms.

The main costs are wages (34%) and maintenance (17%).

Table 16 – Gross output and cost of shellfish farms

	2009	2010	2011	2012	2013	2014	2015	2016
Number of farms	21	17	11	11	11	11	12	12
Production (tonnes)	**2.354**	**1.325**	**1.031**	**1.076**	**851**	**1.566**	**1.758**	**1.696**
Gross output (1.000 EUR)	1.759	672	495	1.105	933	1.382	1.240	1.381
Costs	2.289	892	406	1.081	991	679	706	1.049
Wages	*745*	*264*	*92*	*65*	*233*	*202*	*228*	*361*
Maintenance	*375*	*216*	*80*	*121*	*163*	*124*	*119*	*180*
Adm., sales, distribution	*156*	*46*	*16*	*80*	*57*	*37*	*32*	*35*
Other variables	*636*	*227*	*193*	*195*	*272*	*257*	*255*	*373*
Depreciation	*377*	*139*	*26*	*620*	*267*	*60*	*72*	*99*

Source: Dansk Akvakultur

4 The German market

4.1 Structure of the supply chain for fresh mussels in Germany

The German supply chain for mussel is characterized by two main facts:

- More than 90% of the mussels produced in Germany go directly to Yerseke in the Netherlands (with a small part of them re-exported to Germany after cleaning and packing). Only the mussels with low meat content, which are difficult to sell on the fresh market, are processed in Germany (the main mussel meat freezing company in Schleswig-Holstein also belongs to a Dutch company).
- More than 90% of the mussels consumed in Germany are imported, either from Denmark or from the Netherlands.

Significant flows of fresh mussels entirely situated in Germany, from the producer to the final consumer, do not exist. Limited quantities of mussels grown in Germany (mostly in Schleswig-Holstein) are sold directly on the German market:

- in the island of Sylt (located in the main production area), mussels produced by members of the local Producer Organisation (Sylter Muscheln) are sold to retailers or restaurants in this tourist island, but most of locally-produced mussels go the export markets (Netherlands, Belgium, France) and the mussels most marketed in Sylt come from Denmark (Limfjord);
- a farm established in 2014 in the Baltic sea basin, Kieler Meeresfarm, produces from October to March a few tonnes of mussels (5-10 tonnes/year) which are sold in local supermarkets (Citti), at events organized by the region or directly on the farm. Due to the low level of production in terms of volumes, these mussels can reach a first-sale price of 8,00 EUR/kg which is higher than average market prices.

4.1.1 Production

There are significant discrepancies between the different statistical sources available, as can be seen in the table below. This is mainly due to the fact that the farmed production is made from wild mussels, which are registered under fishery production. The fishery production cannot be added to the aquaculture production figures as most wild mussels are seed mussels which are placed on the seabed for on-growing. At harvest they are registered in aquaculture production.

Table 17. Production of mussels in Germany (tonnes)

	Aquaculture production			Fishery production		
Source	EUMOFA/ EUROSTAT	FAO	DESTATIS	EUMOFA/ EUROSTAT	FAO	BLE
2010	4.905	4.905		3.532	0	4.905
2011	20.830	20.830	20.830	16.076	0	19.194
2012	6.933	6.933	6.933	6.781	0	6.950
2013	5.036	5.036	5.036	4.721	0	5.228
2014	5.280	5.280	5.280	6.308	0	6.915
2015	10.875	10.875	7.907	11.897	1.863	12.738
2016	22.264	22.264	13.077	21.261	22.242	22.242
2017	n.a.	16.856	16.856	n.a.	0	18.557

Mussel production takes place in two federal states bordering the North Sea: Lower Saxony and Schleswig-Holstein.

Table 18. Mussel landings by German vessels (tonnes)

	Schleswig Holstein	Lower Saxony	Abroad	Total landings
2010	1.962,9	1.568,7	1.373,9	**4.905,5**
2011	11.877,4	4.198,7	3.117,4	**19.193,5**
2012	5.221,0	1.560,1	169,0	**6.950,1**
2013	4.102,4	679,1	446,3	**5.227,8**
2014	5.184,2	1.171,6	559,6	**6.915,4**
2015	8.078,2	3.926,1	733,5	**12.737,8**
2016	20.072,9	1.360,3	767,3	**22.200,5**
2017	14.735,8	3.196,8	624,0	**18.556,6**

Source: BLE (Bundesanstalt für Landwirtschaft und Ernährung)

Schleswig-Holstein is by far the main federal state for mussel production. According to DESTATIS (Federal Statistical Office), in 2017 more than three quarters (77%) of aquaculture production came from Schleswig-Holstein (13.039 tonnes) and the remaining 23% from Lower Saxony (3.817 tonnes).

This activity takes place in the German part of the Wadden Sea around Schleswig-Holstein and Flensburger Innenforde. Eight vessels harvest blue mussels (*Mytilus edulis*) from inside the Schleswig-Holstein Wadden Sea National Park, with one working outside conservation areas. The harvest extends from July to February each year. Two production systems are used:

- seed mussels are dredged from wild mussel beds and then relayed to culture plots to grow;
- spat/seed collectors are used as artificial settlement substrates for larval mussels which are then also relayed to culture plots.

Mussels are harvested by using dredges. The mussel harvesting activity is capital intensive, highly mechanized and almost entirely performed by Dutch companies.

The price paid to producers does not depend exclusively on the level and quality of the German production, but is mainly driven by the market conditions prevailing in Yerseke.

Table 19. Harvest of blue mussels by Schleswig-Holstein vessels

Year	Tonnes	1000 EUR	EUR/kg
2010	1.510	1.249	0,83
2011	12.906	17.854	1,38
2012	4.864	5.541	1,14
2013	3.126	6.745	2,16
2014	3.428	8.254	2,41
2015	6.145	6.719	1,09
2016	20.137	23.213	1,15
2017	14.384	20.278	1,41

Source: LLUR

On a monthly basis, the first-sale price is high in the beginning of the harvesting season and remains firm during the major production months.

Table 20. Harvest of blue mussels by Schleswig-Holstein vessels in 2016

Month	Tonnes	1.000 EUR	EUR/kg
January	845	532	0,63
February	361	154	0,43
March	231	81	0,35
April	0	0	-
May	0	0	-
June	3.354	4.219	1,26
July	3.643	4.686	1,29
August	3.937	4.740	1,20
September	3.695	4.540	1,23
October	2.193	2.756	1,26
November	1.061	965	0,91
December	817	539	0,66
Total 2016	**20.137**	**23.212**	**1,15**

Source: LLUR

In Lower Saxony, commercial mussel fisheries harvest seed mussels or "spats" in the wild. These young mussels are then grown on cultivation plots. Wild spats are collected in the Wadden Sea, using either a traditional mussel dredge or a trawl net. Mussel seeds can also be collected from spat collectors, i.e. ropes or nets that are suspended in the water column. The mussel seeds are placed on mussel plots on the seabed for on-growing. Once they reach a favourable size for consumers, they are fished again using the same dredging or trawling gear.

4.1.2 Trade

In 2017, Germany imported EUR 29 million of mussels and exported EUR 35 million. The German trade balance in mussels is positive thanks to the purchase by Dutch stakeholders of nearly the whole German production.

Table 21. German imports of mussels in 2017 (1000 EUR)

Live/fresh	13.348
Frozen	5.794
Prepared/preserved	9.898
TOTAL	**29.040**

Source: COMEXT

Imports are mostly composed of fresh mussels. These mussels come primarily from the Netherlands (mussels of Dutch or German origin cleaned and prepared for export by operators in the area of Yerseke) and from Denmark. Small quantities are also imported from Southern Member States (Spain, Italy and France).

Table 22. German imports of live /fresh mussels (*Mytilus spp*.) in 2017 by main country of origin

	Tonnes	1.000 EUR	EUR/kg
Netherlands	5.967	9.482	1,59
Denmark	1.249	2.390	1,91
Spain	140	428	3,06
Italy	101	280	2,77
France	57	207	3,63
Other EU	49	165	3,37
Intra-EU total	*7.563*	*12.952*	*1,71*
Extra-EU total	-	-	
TOTAL	**7.563**	**12.952**	**1,71**

Source: COMEXT

Table 23. German imports of live /fresh mussels (*Perna spp.*) in 2017 by main country of origin

	Tonnes	1.000 EUR	EUR/kg
Netherlands	22	104	4,73
Italy	13	133	10,23
Other EU	28	159	5,68
Intra-EU total	*63*	*396*	6,29
Extra-EU total	-	-	
TOTAL	**63**	**396**	**6,29**

Source: COMEXT

German imports of frozen mussels primarily consist of green mussels from New Zealand, imported directly or through Dutch or Belgian importers, generally in half shells[8].

Table 24. German imports of frozen mussels (*Mytilus spp*.) in 2017 by main country of origin

	Tonnes	1.000 EUR	EUR/kg
Netherlands	135	506	3,75
Denmark	60	240	4,00
Belgium	67	182	2,72
Ireland	51	191	3,75
Other EU	86	339	3,94
Intra-EU total	*399*	*1.458*	*3,65*
Extra-EU total	-	-	
TOTAL	**399**	**1.458**	**3,65**

Source: COMEXT

Table 25. German imports of frozen mussels (*Perna spp*.) in 2017 by main country of origin

	Tonnes	1.000 EUR	EUR/kg

[8] Usually the mussels imported from New Zealand come into the European market in the form of frozen meat in the half shell, unlike mussels of other origins (e.g. Chile), which are only frozen meat (no shell at all).

Netherlands	258	1.260	4,88
Belgium	66	365	5,53
Other EU	23	112	4,87
Intra-EU total	*347*	*1.737*	*5,01*
New Zealand	513	2.599	5,07
Extra-EU total	*513*	*2.599*	*5,07*
TOTAL	**860**	**4.336**	**5,04**

Source: COMEXT

Almost 3.300 tonnes of prepared mussels have been imported in 2017, mostly from the Netherlands (37%), Chile (26%) and Denmark (25%).

Table 26. German imports of prepared or preserved mussels in 2017 by main country of origin

	Tonnes	1.000 EUR	EUR/kg
Netherlands	1.228	2.905	2,37
Denmark	818	2.402	2,94
Spain	176	680	3,86
Other EU	210	1.406	6,70
Intra-EU total	*2.432*	*7.393*	*3,04*
Chile	861	2.503	2,91
Extra-EU total	*861*	*2.503*	*2,91*
TOTAL	**3.293**	**9.898**	**3,01**

Source: COMEXT

Exports mainly consist of live mussels, which represent more than 80% of total German exports of mussel products in value.

Table 27. German exports of mussels in 2017 (1.000 EUR)

Live/fresh	28.486
Frozen	1.449
Prepared/preserved	5.350
TOTAL	**35.285**

Source: COMEXT

As already mentioned, almost all mussels produced in Germany are purchased by Dutch stakeholders and go to Yerseke, where local operators clean and pack them. The Netherlands import thus 99,3% by volume of all German exports of fresh mussels (*Mytilus*).

Table 28. German exports of live /fresh mussels (*Mytilus spp*.) in 2017 by main country of destination

	Tonnes	1.000 EUR	EUR/kg
Netherlands	23.195	27.848	1,20
Austria	73	169	2,32
Denmark	47	121	2,57
Poland	18	63	3,50
Other EU	36	112	3,11
Intra-EU total	*23.369*	*28.313*	*1,21*
Extra-EU total	*1*	*21*	*21,00*
TOTAL	**23.370**	**28.334**	***1,21***

Source: COMEXT

Table 29. German exports of live /fresh mussels (*Perna spp.*) in 2017 by main country of destination

	Tonnes	1.000 EUR	EUR/kg
Austria	16	88	5,50
Other EU	12	64	5,33
Intra-EU total	*28*	*152*	5,43
Extra-EU total	-	-	
TOTAL	**28**	**152**	**5,43**

Source: COMEXT

German exports of frozen mussels include both exports of *Mytilus* mussels and re-exports of *Perna* mussels (about 150 tonnes each in 2017).

Table 30. German exports of frozen mussels (*Mytilus spp*.) in 2017 by main country of destination

	Tonnes	1.000 EUR	EUR/kg
Netherlands	55	260	4,73
Austria	52	233	4,48
Poland	28	105	3,75
Other EU	12	55	4,58
Intra-EU total	*147*	*653*	*4,44*
Extra-EU total	*1*	*4*	*4,00*
TOTAL	**148**	**657**	***4,44***

Source: COMEXT

Table 31. German exports of frozen mussels (*Perna spp*.) in 2017 by main country of destination

	Tonnes	1.000 EUR	EUR/kg
Austria	71	395	5,56
Belgium	20	125	6,25
Other EU	36	221	6,14
Intra-EU total	*127*	*741*	*5,83*
Extra-EU total	*14*	*51*	*3,64*
TOTAL	**141**	**792**	***5,62***

Source: COMEXT

The main destinations for German exports of prepared or preserved mussels are Italy, France and Switzerland.

Table 32. German exports of prepared or preserved mussels in 2017

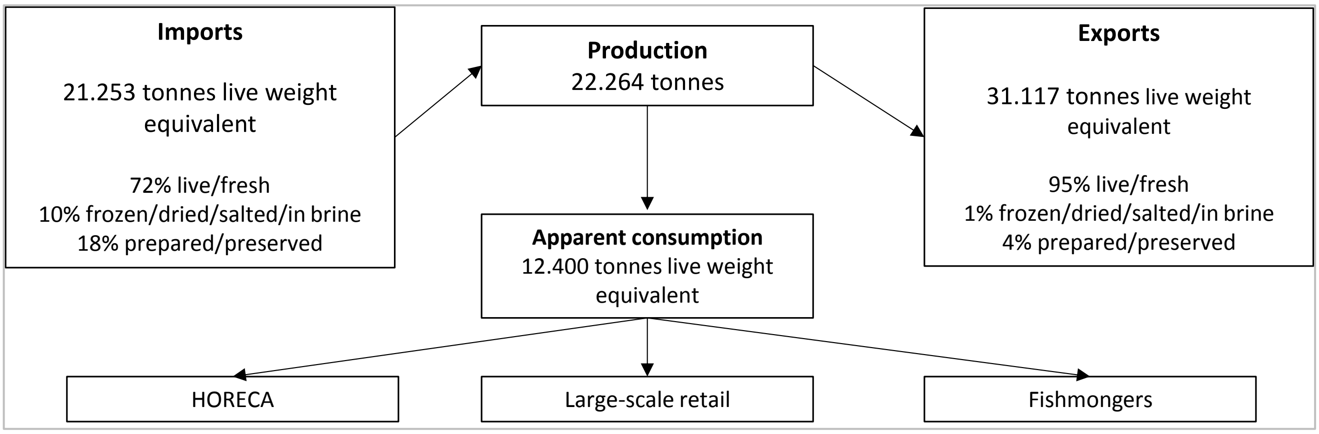
	Tonnes	1.000 EUR	EUR/kg
Italy	555	1.365	2,46
France	205	1.380	6,73
Poland	88	295	3,35
Other EU	210	1.233	5,87
Intra-EU total	*1.058*	*4.273*	*4,04*
Switzerland	111	957	8,62
Extra-EU total	*139*	*1.077*	*7,75*
TOTAL	**1.196**	**5.350**	***4,47***

Source: COMEXT

4.1.3 Supply chain

In 2016, the apparent consumption for mussels (all preservation states included) amounted to 12.400 tonnes (live weight equivalent). It is mainly composed of live/fresh mussels: in 2016 the apparent consumption of fresh mussels was 5.646 tonnes.

Figure 11. Supply chain for mussel in Germany (data from 2016)



Retailers and restaurants share the market. Household consumption has been the following over the past few years:

Year	Tonnes
2015	5.644
2016	5.489
2017	5.987

Source: EUMOFA based on EUROPANEL

The German market is very peculiar and it gives more importance to price than to quality.

A cultural tradition of mussel consumption exists in the Ruhr, along the Rhine, in particular in restaurants. In the other regions of Germany, the image of the product is often less positive and consumption is much lower.

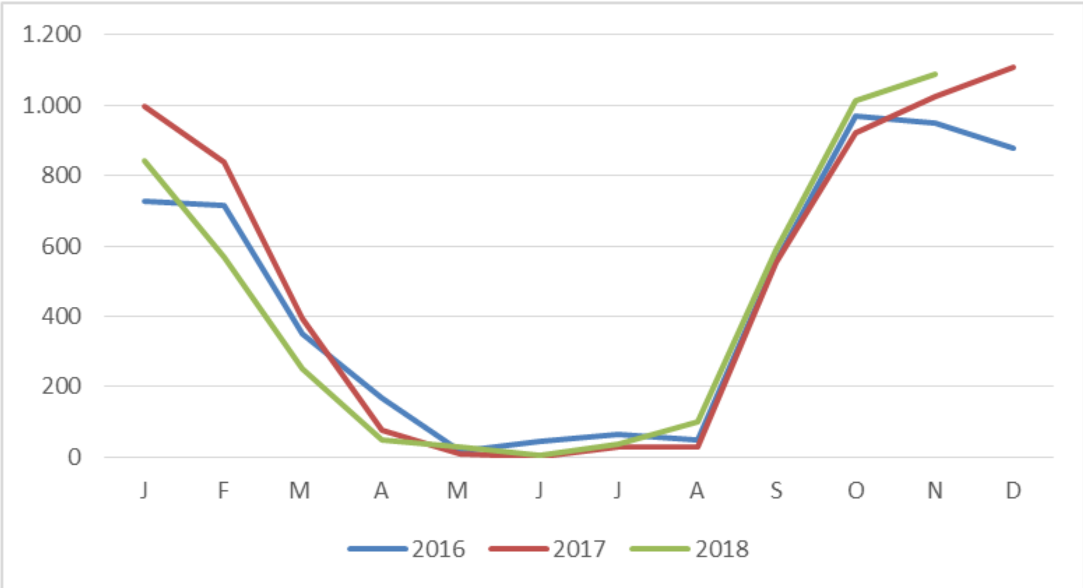
Anyhow, the market seems capable of development, mostly through packaged mussels which better meet the demand and became more easily available in recent years.

4.2 Characteristics of the German market and consumption

The household consumption of fresh mussels is close to 6.000 tonnes for a total value of EUR 20 million (source: EUMOFA based on EUROPANEL). The consumption fluctuates quite a lot from one year to the other; it increased by 9% in 2017 compared with 2016 and decreased by 6% in 2018[9] compared with 2017.

Consumption is highly seasonal, in relation with the harvest season, and takes place from September to March. The five months in which the consumption is higher (January, February, October, November and December) covered 77% of the total yearly consumption in 2016 and 82% in 2017.

Figure 12. Monthly household consumption of mussels in Germany between 2015 and 2018 (tonnes)



Source: EUMOFA based on EUROPANEL

4.3 Price structure in the supply chain in Germany

As already stressed, almost all mussels produced in the country go to Yerseke in the Netherlands, and almost all mussels consumed in Germany are imported from the Netherlands or Denmark. It is thus difficult to find a supply chain entirely located in Germany.

4.3.1 Cost of raw material

The German mussel farming sector is profitable, as reflected from the Economic Report of the EU Aquaculture sector (JRC/STCF, 2018), based on DCF/EUMAP data.

The growing rate in Schleswig-Holstein is much more favourable than in Lower-Saxony, because of some human activities; in particular the massive ocean dumping from rivers like Elbe, Weser and Ems and harbours is seen as negative for the mussel growing rate.

The fluctuation in the economic development of the German mussel sector is accompanied in the recent years by an almost stable structure of inputs.

[9] First 11 months of the year, compared to the same period in 2017.

Table 33. Economic performance of the German mussel segment

Variable	Unit	2008	2009	2010	2011	2012	2013	2014	2015	2016
INCOME										
Income	million EUR	9,8	5,1	4,1	27,8	9,5	8,7	15	13,8	**25,3**
EXPENDITURES										
Wages and salaries	million EUR	3,1	2,9	2,9	3,6	3,2	3,0	3,3	2,6	**3,5**
Imputed value of unpaid labour	million EUR	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,3	**0,7**
Energy costs	million EUR	1,2	0,5	0,3	2,2	1,9	0,3	0,4	0,8	**0,7**
Repair and maintenance	million EUR	0,6	0,3	0,4	0,8	0,7	0,8	1,0	1,0	**3,8**
Livestock costs	million EUR	0,0	0,4	0,0	0,0	0,0	0,0	0,0	2,4	**2,6**
Other operational costs	million EUR	1,4	1,1	0,9	1,8	1,8	2,0	4,2	1,2	**3,7**
Total operating costs	million EUR	6,3	5,3	4,4	8,3	7,5	6,1	8,9	8,3	**15,1**
CAPITAL COSTS										
Depreciation of capital	million EUR	1,5	0,4	1,1	2,9	2,9	2,4	2,4	1,0	**1,5**
Financial costs, net	million EUR	0,3	0,2	0,1	0,3	0,3	0,2	0,2	0,1	**0,6**
Extraordinary costs, net	million EUR	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	**0,0**
CAPITAL VALUE										
Total value of assets	million EUR	14,7	14,3	11,8	25,5	24,0	22,5	21,0	16,0	**44,9**
Net investments	million EUR	0,5	0,1	0,0	1,5	0,4	0,9	1,8	1,3	**12,8**
Debt	million EUR	4,0	2,9	2,7	5,5	5,0	5,4	4,9	2,6	**9,3**
PERFORMANCE INDICATORS										
Gross Value Added	million EUR	6,6	2,7	2,5	23,1	5,2	5,6	9,3	8,3	**14,4**
Operating cash flow	million EUR	3,5	-0,2	-0,3	19,5	1,9	2,6	6,0	5,4	**10,2**
Earning before interest and tax	million EUR	2,0	-0,6	-1,4	16,6	-1,0	0,2	3,6	4,4	**8,7**
Net profit	million EUR	1,7	-0,8	-1,5	16,3	-1,2	0,0	3,4	4,4	**8,1**
Capital productivity	%	45,1	18,7	21,5	90,6	21,6	24,7	44,5	52,2	**32,0**
Return on investment	%	13,6	-4,1	-11,8	65,1	-4,0	0,9	17,3	27,8	**19,4**

Source: JRC – Economic Report of the EU Aquaculture sector, 2018

Very successful years like 2011 and 2016 can overcompensate years of lower income.

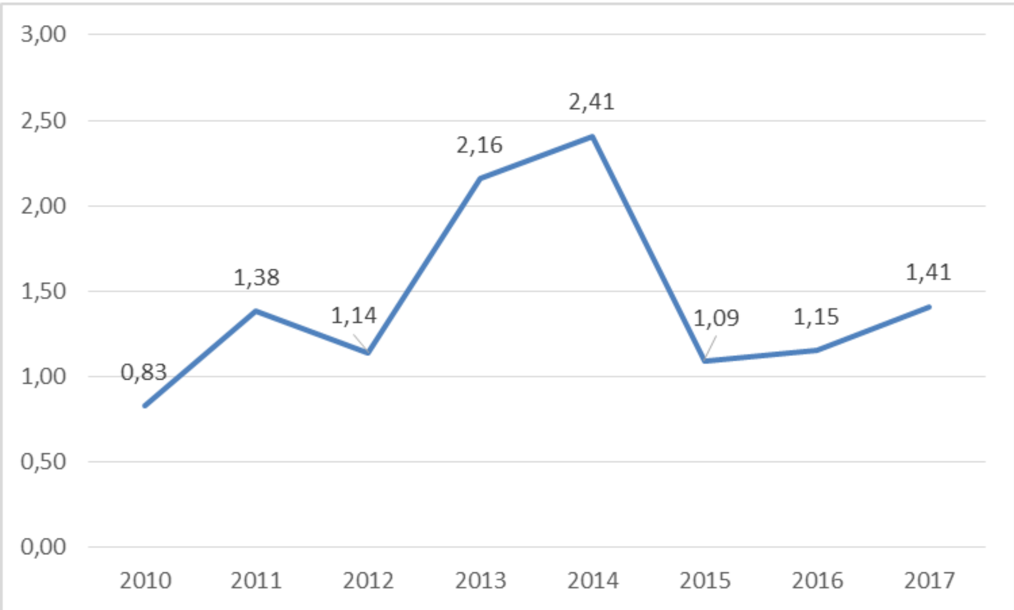
Costs are quite stable, as the number of licenses in the mussel sector is fixed as well as most cost items (diesel is not a main cost driver due to short distances from ports to mussel cultures). Like in other producing countries, wages and salaries, repair and maintenance, and other operational costs are the drivers of mussel farming in Germany.

4.3.2 First-sale prices

Prices vary a lot according to quality (meat content) and volume. Very high prices have been reached in 2013 and 2014 due to very low production levels in Schleswig-Holstein (3.100 tonnes and 3.400 tonnes respectively).

The price paid to producers does not depend exclusively on the level and quality of the German production but is mainly driven by the market conditions prevailing in the Dutch auction market of Yerseke, which dominates the trade of mussels in Northern Europe.

Figure 13. Fist-sale price of mussels in Schleswig-Holstein (EUR/kg)



Source: LLUR

In spite of huge volumes harvested, prices were slightly higher in 2016 and 2017 (compared to 2015) but have not reached the standard of the years 2013-2014 because the high supply met an almost unchanged demand.

4.3.3 Wholesale prices

In the autumn 2018, METRO[10] was selling three kinds of fresh mussels, but none of them was of German origin. Depending on the season METRO also offers mussels from Denmark and Italy.

Table 34. Range of fresh mussels in METRO markets in Germany (September 2018)

Product	Country of origin	Production method	Size	Packaging	Unit price (EUR)		Price per kg (EUR/kg)	
					excl. VAT	incl. VAT	excl. VAT	incl. VAT
Blue mussels	Netherlands	Aquaculture	Extra1	1 kg	2,99	3,20	2,99	3,20
Blue mussels	Netherlands	Aquaculture	Super2	1 kg	3,99	4,27	3,99	4,27
Blue mussels	Netherlands	Aquaculture	Super2	2 kg	7,99	8,55	4,00	4,28
Blue mussels "bouchot"	France	Aquaculture	Various sizes	1,4 kg MAP[11]	6,99	7,48	4,99	5,34

1 *Extra: 80+ pc/kg, meat content: 200-250 g/kg.*

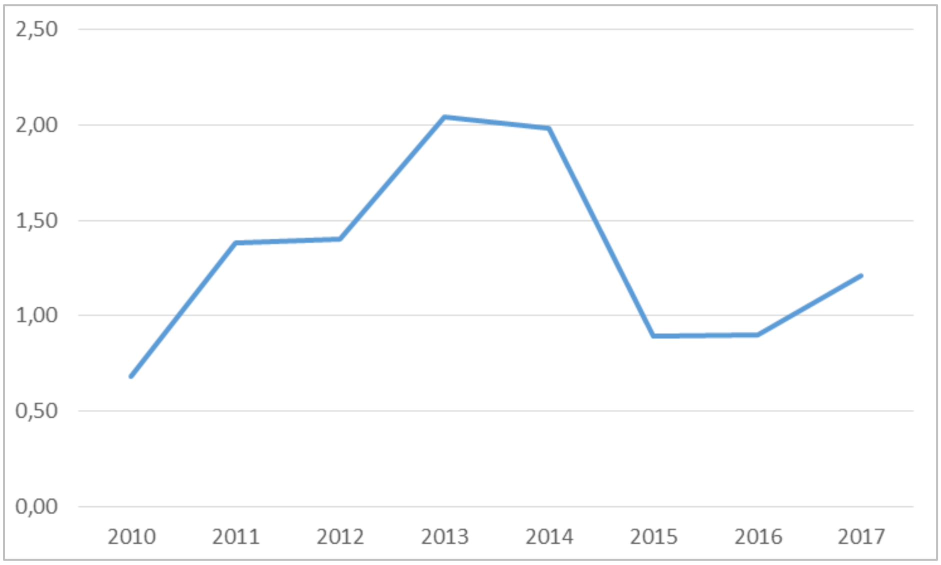
2 *Super: 65-80 pc/kg, meat content: 220-260 g/kg.*

Source: METRO

4.3.4 Export prices

Export prices of fresh mussels follow the same trend of first-sale prices.

Figure 14. Export price of fresh mussels (EUR/kg) – CN 03073110



Source: COMEXT

[10] METRO is a German retail and wholesale group (sales 2017: EUR 13,7 billion), including 103 cash-&-carry and 280 REAL supermarkets. METRO is the leading food wholesaler in Germany and is among the top-five food retailers, behind Schwarz (Lidl, Kaufland), Aldi (Aldi Nord, Aldi Süd), Edeka (Edeka, Netto, Marktkauf) and Rewe (Rewe, Penny, Karstadt).

[11] MAP: "Modified Atmosphere Packaging".

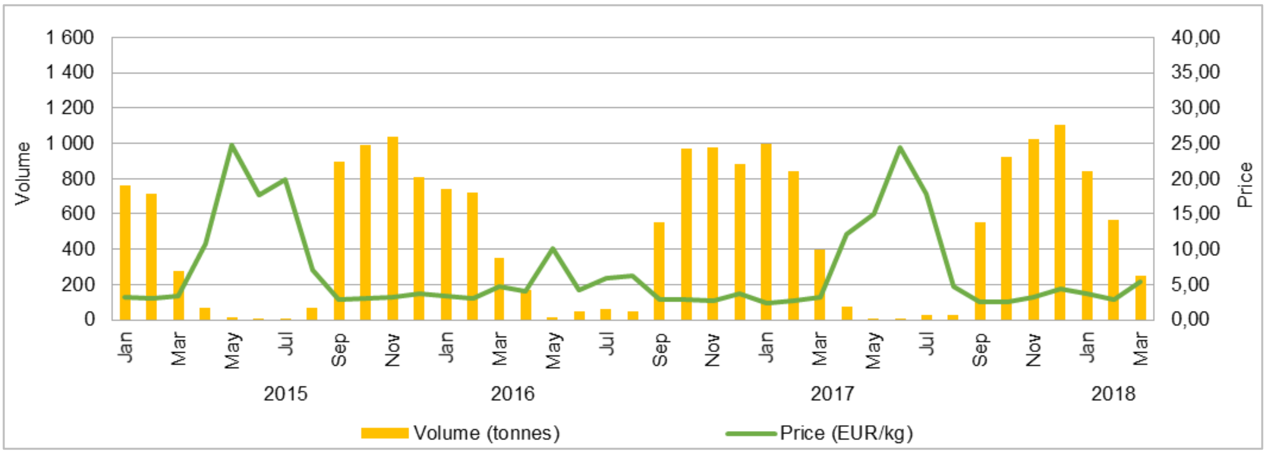
4.3.5 Price for household consumption

Average yearly prices for household consumption of fresh mussels have been quite stable in the last years, with a slight downward trend:

Year	EUR/kg
2015	3,42
2016	3,34
2017	3,26

Source: EUMOFA based on EUROPANEL

Figure 15. Prices for household consumption of fresh mussels in Germany



Source: EUMOFA based on EUROPANEL

The mussel season generally runs from September to April. The peaks observed during the summer months, up to 25,00 EUR/kg according to EUROPANEL, correspond to very small volumes (e.g. 1 tonne in June 2017) and cannot be considered as representative, if we consider that, in this summer period, imports of fresh mussels took place: e.g. in June 2017 Germany imported 46,5 tonnes of fresh mussels (at an average price of 2,85 EUR/kg) according to Comext.

In October 2018, retail prices at around 4,00 EUR/kg could be observed. For instance, the CITTI supermarkets in North Germany offer fresh blue mussels (loose, farmed in the Netherlands) at 3,99 EUR/kg, and EDEKA offers organic blue mussels from Sylt in 1 kg-packages at the same price.

4.3.6 Example of price structure

Examples of price structure can be very different in Germany, depending on whether one is considering low quality wild mussels imported from Denmark and sold on street markets, medium/high quality mussels harvested in the Wadden Sea and sold in supermarkets or fishmonger's shops (generally after a trip to Yerseke for cleaning/packaging) or organic mussels farmed in a plant close to Kiel in the framework of the Baltic Blue Growth project[12] and sold directly to the consumer.

The example below regards mussels harvested in Schleswig-Holstein and sold in supermarkets of Northern Germany (average values for 2017).

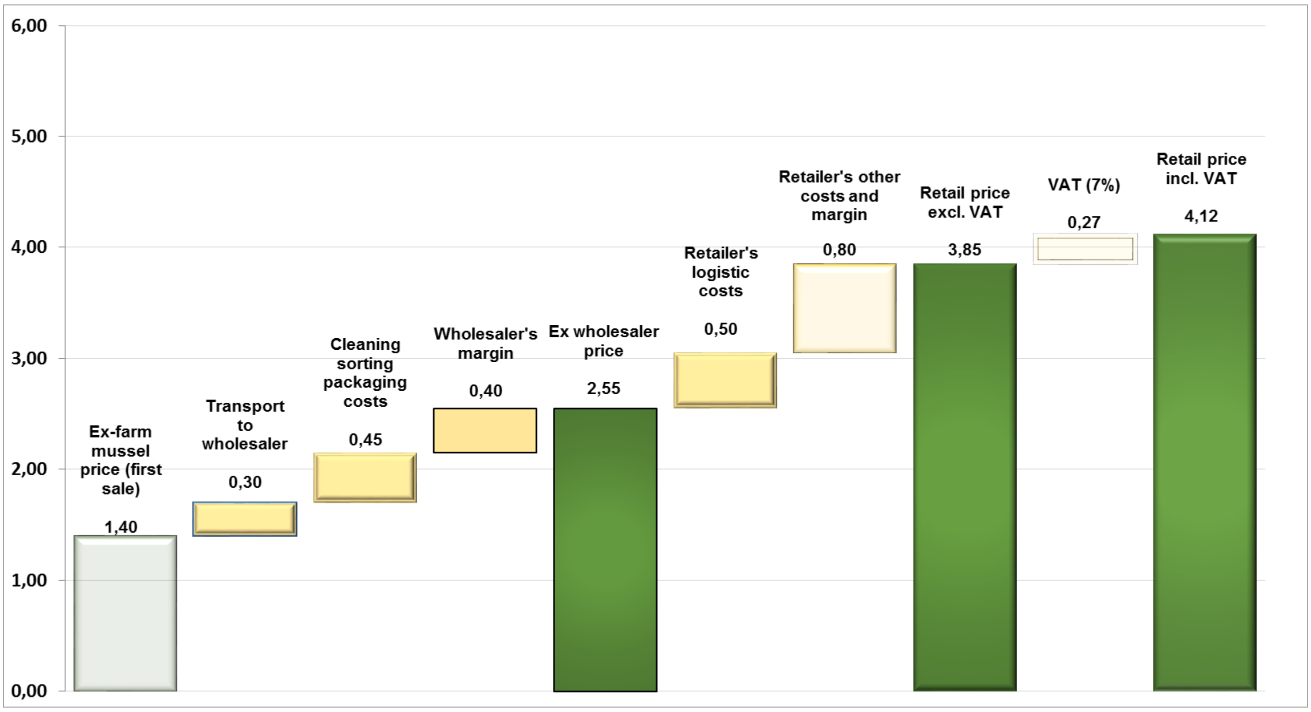
[12] The Baltic Blue Growth project, financed by the European Regional Development Fund, aims at establishing fully operational mussel farms to counteract eutrophication and create new blue growth opportunities. Six farms in different parts of the Baltic Sea form the basis of the project.

Table 35. Price structure for fresh mussel in large-scale retail in Germany in 2017

	EUR/kg
Ex-farm mussel price (first-sale)	**1,40**
Transport to wholesaler	0,30
Cleaning/sorting/packaging costs	0,45
Processor-wholesaler's margin	0,40
Ex-wholesaler price	**2,55**
Retailer's logistic cost	0,50
Retailer's other costs and margin	0,80
Retail price excl VAT	**3,85**
VAT (7%)	0,27
Retail price incl VAT	**4,12**

Source: EUMOFA

Figure 16. Price structure for fresh mussels in large-scale retail in Germany in 2017 (EUR/kg)



Source: EUMOFA

Compared to Denmark and Italy, the price structure in Germany is closer to the Danish one, but with lower logistic costs and a better price paid to the farmer (in relation with quality).

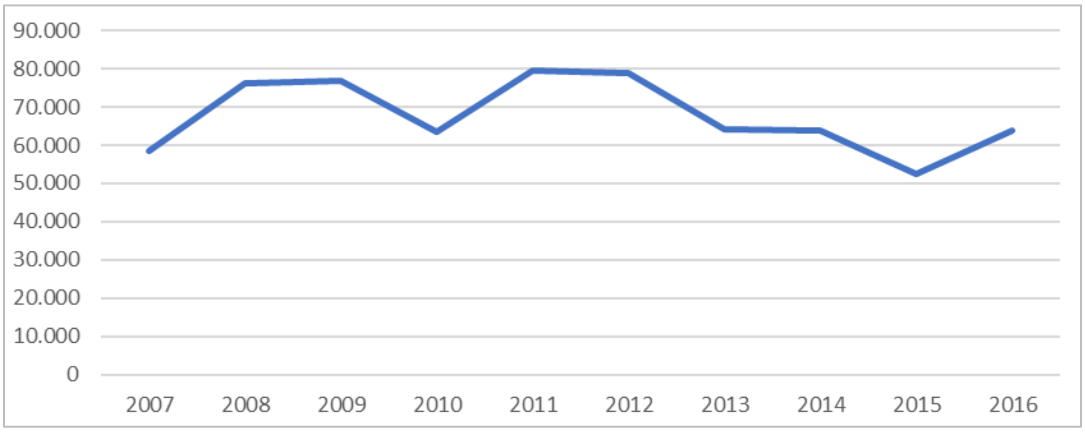
The farmed mussel supply chain appears to generate fair margins at all stages (producer, wholesaler, and retailer) and to reach the consumer at a reasonable price.

5 The Italian market

5.1 Structure of the supply chain for fresh mussels in Italy

Between 2007 and 2016, the Italian production of mussels ranged from 52.526 tonnes (minimum reached in 2015) to 79.520 tonnes (maximum reached in 2011)[13]. The production in 2016 was 63.700 tonnes.

Figure 17 - Evolution of mussel production in Italy



Source: EUMOFA

The national sector is composed of 245 sites in 2016, with more than 90% of production located in six regions: Emilia-Romagna, Veneto and Apulia account for the largest share of the volume produced (72%), the following regions are Friuli-Venezia-Giulia, Sardinia and Liguria. Emilia-Romagna is the largest region in terms of production (34% of the volume) with 21.601 tonnes in 2016. Sardinia is a significant producer and also a large importer of mussels from other Italian regions and other EU Member States. Mussels locally produced or imported to Sardinia are mainly sold to other Italian regions. Based on interviews, the sales from Sardinia (local sales and sales in other areas) are about 15.000 tonnes/year (compared to 4.100 tonnes of production in 2016). This high level of sales is due to favourable natural conditions for production and maturation of mussels, high level of local consumption due to tourism and the development of marketing activities through commercial brands. Some of the volume is produced and marketed under the organic scheme. There is no price premium for organic mussels: this strategy is implemented by stakeholders to develop their markets, in particular for exports to France.

Table 36 – Breakdown of the number of sites and % of mussel production by region in Italy in 2016

	% No of sites	% volume prod.
Emilia Romagna	12%	34%
Veneto	11%	22%
Friuli Venezia Giulia	10%	8%
Apulia	24%	16%
Sardinia	16%	7%
Campania	15%	3%
Other	12%	10%
TOTAL	100%	100%

Source: Associazione Mediterranea Acquacoltori (AMA) based on MIPAAF-Unimar

[13] FAO data used in section 1 indicate the same volume of production between 2014 and 2016: 63.700 tonnes of mussels produced in Italy each year.

Mussels are sold by mussel farmers in two forms: ropes ("treccia") and bulk ("sfuso"). The ropes contain impurities (small mussels, other shellfish, algae) whereas bulk mussels are cleaned. Based on interviews, there is about a 40% loss between ropes and bulk. This percentage may decrease until 20% when mussel farmers implement additional stages of handling of the ropes during the farming.

There are no data on the share of ropes and bulk, thus, there is an uncertainty on the actual mussel volume of production in Italy. Based on an interview with the professional organisation in Emilia-Romagna, the share of ropes / bulk differs in each region. At national level the estimate is about 40% of the volume under ropes and 60% bulk.

The ex-mussel farmer price differs for ropes and bulk (see section on price structure).

Trade

The Italian imports of mussels reached 73.066 tonnes in 2017 (live weight equivalent) for EUR 61 million. Half of the volume is composed of fresh mussels (52%), mainly from Spain and, to a lesser extent, from Greece. Prepared/ preserved mussels account for 37% of the total (mainly from Chile) and frozen mussels account for 11% (mainly from Spain).

Table 37 – Italian imports of mussels in 2017 by main country of origin (tonnes, live weight equivalent)

	Fresh	Prepared / Preserved	Frozen	TOTAL
Spain	24.325	2.138	5.156	31.619
Chile	0	22.711	0	22.711
Greece	8.706	147	29	8.883
Germany	7	1.532	24	1.563
Ireland	371	105	720	1.196
New Zealand	0	0	1.195	1.195
Others	4.869	300	729	5.898
TOTAL	**38.279**	**26.934**	**7.853**	**73.066**

Source: COMEXT

Imports of fresh mussels accounted for 38.279 tonnes and EUR 28 million in 2017. Spain is the largest supplier with 64% to 82% of the volume imported to Italy between 2008 and 2017 (+32% in volume over the period). The second largest supplier is Greece with 23% of the volume imported in Italy. The average import price is 0,74 EUR/kg for the Spanish product and 0,65 EUR/kg for the Greek mussel.

Table 38 – Italian imports of fresh mussel by main country of origin (tonnes)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Spain	18.844	21.978	20.046	16.524	24.399	23.440	21.314	27.939	21.179	24.325
Greece	6.705	7.405	3.659	5.963	6.926	7.317	9.456	7.219	8.625	8.706
Others	1.203	1.413	841	764	623	1.608	1.410	2.380	2.334	5.248
TOTAL	**26.751**	**30.796**	**24.545**	**23.250**	**31.949**	**32.364**	**32.181**	**37.537**	**32.138**	**38.279**

Source: COMEXT

Total export of mussels account for 9.940 tonnes (live weight equivalent) and EUR 17,4 million. Most of the volume is composed of fresh mussels (75%), followed by prepared/preserved mussels (22%) and frozen mussels (3%). Most of the exports are sent to France (37% of volume) and Spain (27%).

Table 39 – Italian exports of mussels in 2017 by main country of destination (tonnes, live weight equivalent)

	Fresh	Frozen	Prepared/Preserved	TOTAL
France	3.388	37	227	3.652
Spain	1.941	0	710	2.652
UK	106	0	492	598
Netherlands	476	0	14	491
Malta	183	82	103	369
Germany	124	5	205	333
Others	1.217	228	401	1.846
TOTAL	**7.435**	**352**	**2.153**	**9.940**

Source: COMEXT

Exports of fresh mussels reached 7.435 tonnes in 2017 (+9% since 2007) and EUR 13,4 million. France accounted for almost half of the export in volume (46%) in 2017 and Spain for a quarter (26%). Exports peaked in 2013 at 13.517 tonnes. Export prices to France were 0,89 EUR/kg in 2017 and 0,66 EUR/kg to Spain.

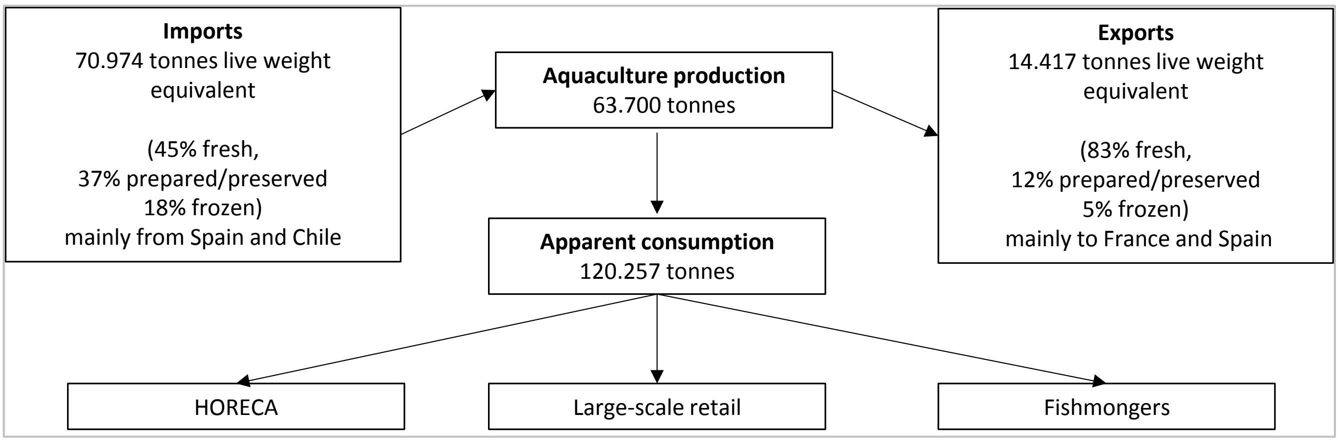
Table 40 – Italian exports of fresh mussels by main country of destination (tonnes)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
France	2.610	1.857	4.356	3.459	3.397	5.085	7.415	5.112	6.550	3.388
Spain	1.630	1.459	1.510	2.573	3.174	3.887	4.335	3.014	3.552	1.941
Netherlands	166	0	211	429	193	289	365	286	326	476
Other Member States	915	741	879	923	1.234	1.328	1.403	1.425	1.606	1.630
Extra EU	121	54	59	186	366	417	436	491	548	510
TOTAL	**5.321**	**4.058**	**6.957**	**7.384**	**7.998**	**10.588**	**13.517**	**9.837**	**12.034**	**7.435**

Source: COMEXT

Apparent consumption of mussels was 120.257 tonnes (live weight equivalent) in 2016. The supply is relatively balanced between national production (47% of volume) and imports (53%). Exports are limited compared to the national supply (11%).

Figure 18 – Supply chain in Italy (2016 data)



Source: FAO, Comext, EUMOFA

5.2 Characteristics of the Italian market and consumption

Household consumption of mussels was 42.750 tonnes in 2017 for a total of EUR 102 million (this volume covers fresh mussels and prepared mussels and may not be compared to the apparent consumption which is indicated in live weight equivalent)[14]. Household consumption slightly decreased between 2009 and 2013 and is now on an increasing trend (highest consumption in 2009 with 45.189 tonnes and EUR 122 million, lowest point in 2013 with 37.594 tonnes and EUR 93 million).

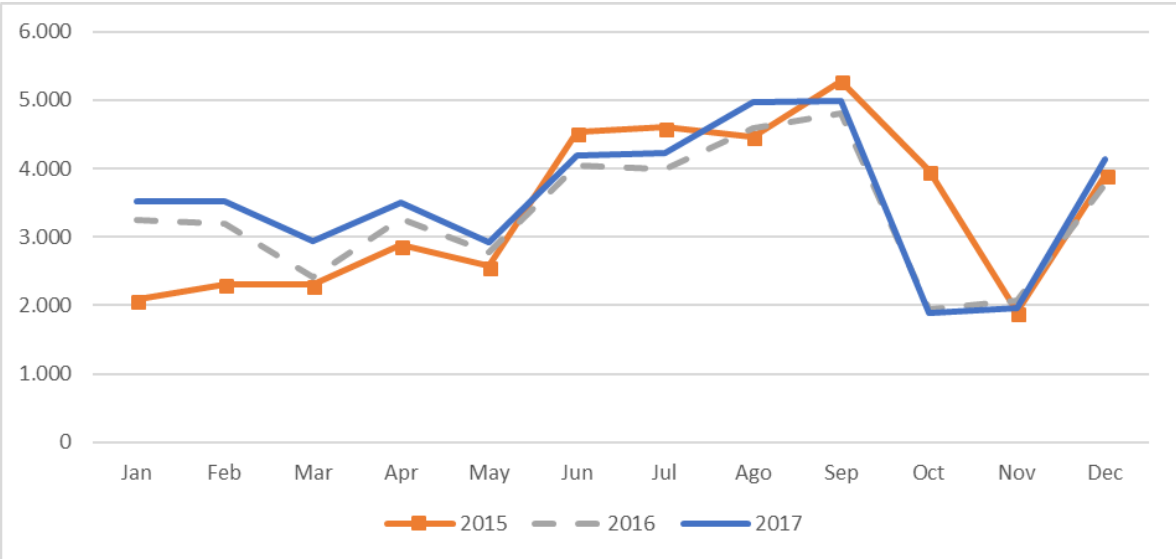
The consumption is highly seasonal with peaks:

- during summer: between 4.000 and 5.000 tonnes consumed each month by households between June and September, when the demand grows due to tourism and when national production is available;
- in December, with about 4.000 tonnes consumed in the month, national production is not available and consumption is based on imports (in particular from Spain).

The monthly household consumption ranges between 2.000 and 3.500 tonnes/month.

Based on interviews, HORECA accounts for a large share of the national consumption, in particular during summer in tourist areas. However, no detailed information is available on this market.

Figure 19: Monthly consumption of mussels by household in Italy (tonnes)



Source: EUMOFA based on EUROPANEL

[14] EUMOFA based on EUROPANEL.

5.3 Price structure in the supply chain in Italy

5.3.1 Price of raw material

Ex-farm stage

The mussel price at the production stage differs in function of the type of products:

- Mussel under ropes ("treccia"): 0,50 to 0,70 EUR/Kg;
- Bulk ("sfuso"): 0,70 to 1,20 EUR/kg for bulk in most of the country. The price may be higher in Sardinia and Sicily (up to 3,10 EUR/kg based on MIPAAF-UNIMAR data).

Price at mussel farm stage was monitored by MIPAAF-UNIMAR until 2011. The national price was stable over the years, ranging from 0,70 to 0,80 EUR/kg between 2008 and 2011. There are high differences between regions, in function of:

- The type of presentation (ropes / bulk);
- The flesh content of the mussel (between 24 and 30%);
- The level of impurities for ropes (between 20 and 40% of weight loss between ropes and bulk).

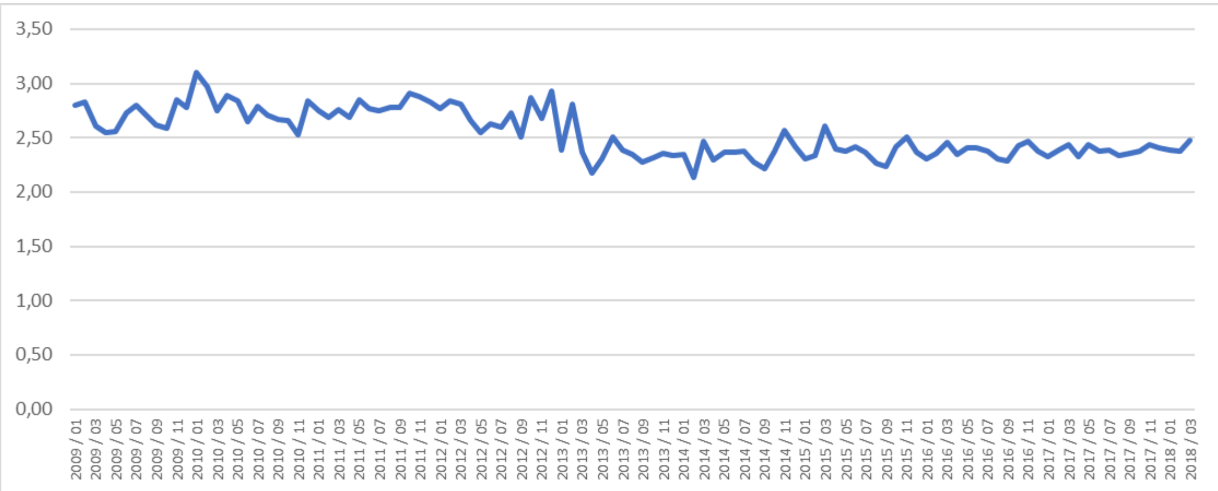
Thus, the average yearly price between 2008 and 2011 was as follows (source: AMA based on MIPAAF-UNIMAR data):

- stable in Emilia Romagna at 0,60 EUR/kg (about two-third of the production is sold under ropes as estimated by local stakeholders);
- ranged between 1,30 and 1,50 EUR/kg in Sicily;
- ranged between 1,80 EUR/kg and 2,70 EUR/kg in Sardinia, with a large share of bulk mussels;
- ranged between 0,50 and 0,80 EUR/kg in most of the other regions.

Price for household consumption

For household consumption, the average price has ranged between 2,13 EUR/kg and 2,61 EUR/kg since 2013. This price was higher before 2013, as it ranged from 2,50 to 3,10 EUR/kg between 2009 and 2012. The average price may differ in function of the presentation/preservation form, but no detail is available on these aspects.

Figure 20: Price for household consumption of fresh mussels in Italy (EUR/kg)



Source: EUMOFA based on EUROPANEL

Based on interviews with stakeholders, the retail price may range between 2,00 EUR/kg and 3,50 EUR/kg, the highest prices being observed for products from Sardinia. This highest price is achieved by the high quality of the product, its good image for consumers and transport costs to mainland Italy.

5.3.2 Price structure

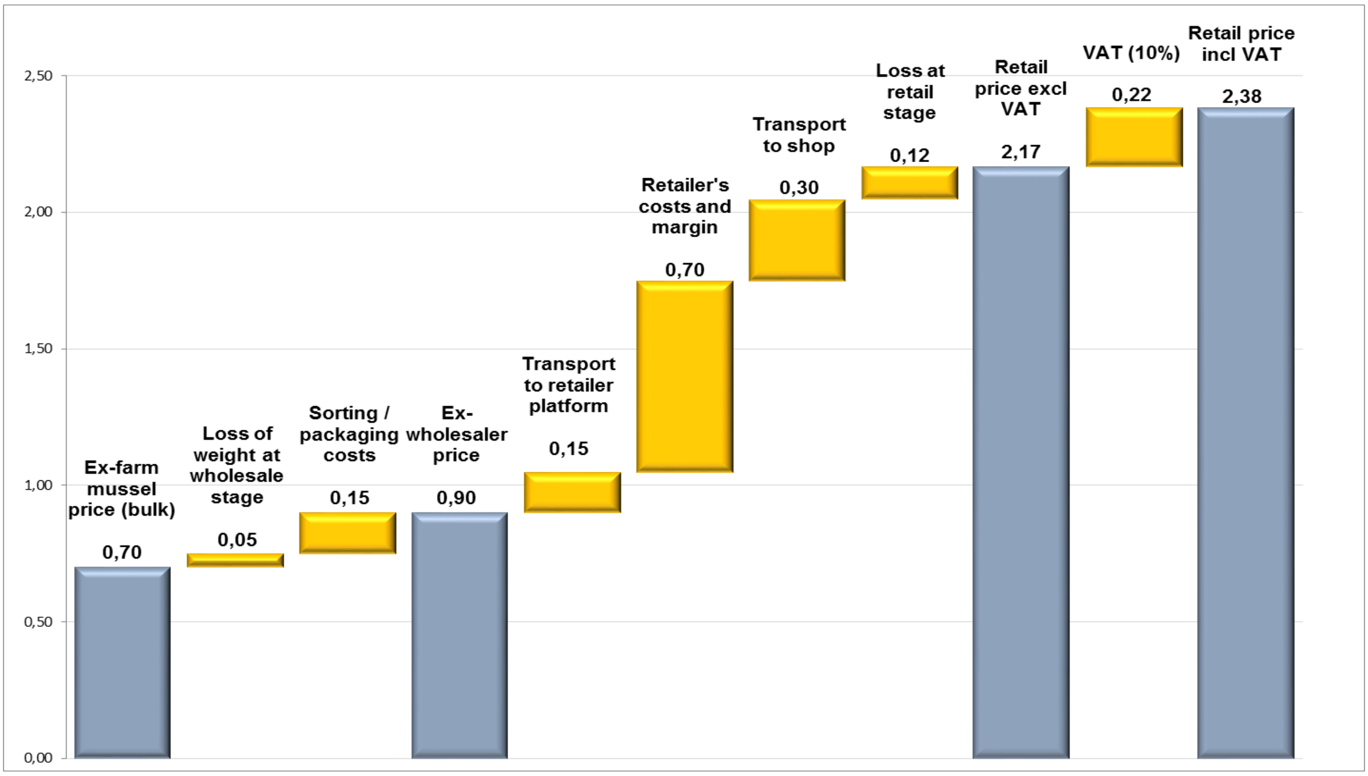
The following table details the price structure from the raw material (bulk mussel) to household consumption in large-scale retail. The price at retail stage is 2,38 EUR/kg[15]. Based on our field survey, the price at retail stage ranges between 2,00 and 3,50 EUR/kg.

Table 41: Price structure for fresh mussels in large-scale retail in Italy

	Prices and costs (EUR/kg)
Ex-farm mussel price (bulk)	**0,70**
Loss of weight at wholesale stage	0,05
Sorting / packaging costs	0,15
Ex-wholesaler price	**0,90**
Transport to retailer platform	0,15
Retailer's costs and margin	0,70
Transport to shop	0,30
Loss at retail stage	0,12
Retail price excl VAT	**2,17**
VAT (10%)	0,22
Retail price incl VAT	**2,38**

Source: EUMOFA

Figure 21: Price structure for fresh mussels in large-scale retail in Italy



Source: EUMOFA

[15] Average price for household consumption in 2017 (EUMOFA based on EUROPANEL).

6 ANNEX

6.1 Contacts

The following contacts have been made in the context of the study:

Denmark

- Dansk Akvakultur
- Vilsund Blue A/S, Nykøbing Mors.

Germany

- BLE (Bundesanstalt für Landwirtschaft und Ernährung)
- LLUR (Landesamt für Landwirtschat, Umwelt und ländliche Räume – Schleswig-Holstein)
- Erzeugerorganisation Schleswig-Holsteinischer Muschelfischer
- Processing company.

Italy

- Consorzio Mitilicoltori dell'Emilia-Romagna
- Cooperativa La Fenice, Cervia
- Cooperativa GEOMAR, Mezzano
- Consorzio dei molluschicoltori di Olbia
- Wholesaler.

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