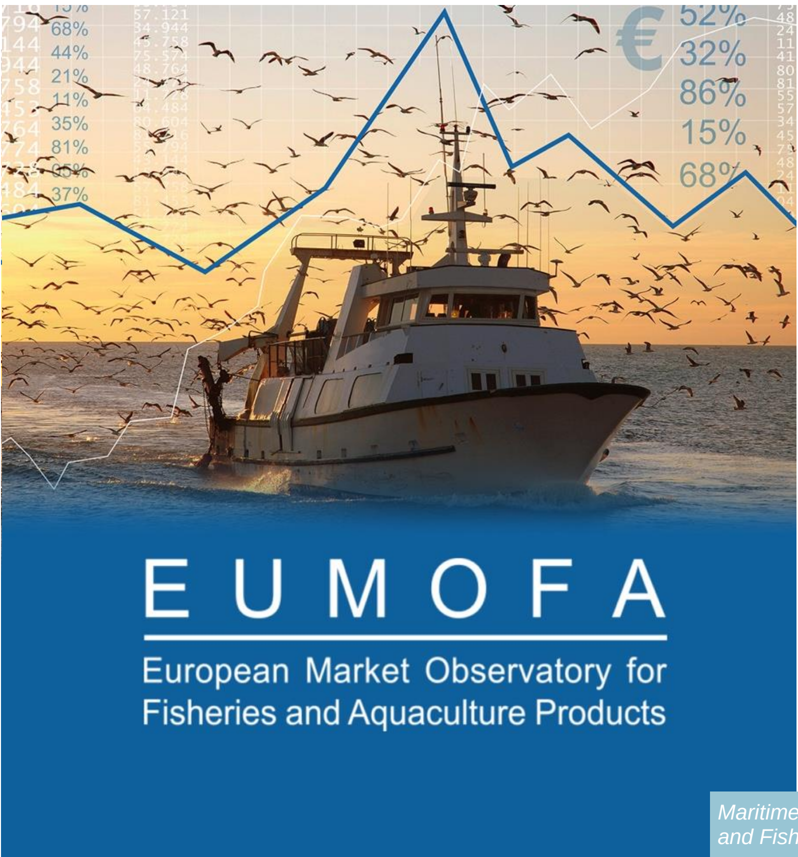
European Commission

CASE STUDY

COOKED SHRIMP IN FRANCE

PRICE STRUCTURE IN THE SUPPLY CHAIN



Maritime Affairs and Fisheries

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Contents

Summary

- The main characteristic of the cooked shrimp EU market is its total dependence on imports mainly from central and south America and Asia. Shrimps are mostly imported raw and frozen to be cooked next to consumption areas. Thus, shrimp cooking industry relies almost exclusively on tropical shrimp and especially *Penaeus* species.

- The French market for cooked shrimp amounts to 70.000 tonnes and is based at 90% on whiteleg shrimp (*Penaeus vannamei*).

- The cooked and chilled shrimp trade takes place especially between neighbour Member States but is very limited compared to the frozen shrimp trade.

- France is the largest importer of *Penaeus* shrimp in Europe with about 77 000 tonnes imported in 2015 and the EU imports about 7% of the total *Penaeus* species world production. Only a minor share of imports is directly sold frozen.

- In France, in 2015, Ecuador (41%) and India (12%) accounted for more than half of imports volume. Then comes Madagascar, with mostly *Penaeus monodon* (Giant tiger shrimp) and accounting for 6% of imports. Intra EU imports accounted for 16% of imports volume.

- French tropical shrimp market includes a large range of products segmented by several parameters (species, sizes, origins, presentation and preservation) but the main market is still the *Penaeus vannamei* marketed in bulk in the fresh fish counters of large-scale retailers and, to a lesser extent, in fishmongers' shops. However, prepacked, processed and prepared products as well as certified products have experienced recently significant increases in demand.

- World trade in tropical shrimp is a very tense market and has recently become very dependent on China's imports. However, in France, cooked shrimp household consumption is very dependent on price evolution. The consequence is that shrimp cooking industry can experience very tense context from on year to another with relatively low margin levels and high dependence on import prices.

- Regarding price structure in the supply chain:
  - As the processing added value is quite low (only cooking), margin levels are limited and totally dependent on raw material price evolution (import prices).
  - In France, the cooking processing phase represents only 10% of the retail price.

0 TASK REMINDER – Scope and content

0.1 Case study scope

Reminder

The scope of the case study, aiming to analyse the cooked whiteleg shrimp (*Penaeus vannamei*) price transmission and distribution of value in the French supply chain, is described in the table below.

Product	Origin	Characteristics	Market and price drivers
Cooked and chilled whiteleg shrimp (*Penaeus vannamei*)	Aquaculture	Growing production since 1990 Growing demand from the market especially China White spot epidemy in 2011-2013, price increase in 2015 Often used as a loss leader product in large-scale retailers.	Supply/demand balance (market stability) Size, presentation, certification Price of other cooked shrimp

Key elements of the analyses will concern:

Species - Products	Main MS (focus)	Other MS (overview)
Whiteleg shrimp (*Penaeus vannamei*), whole, cooked and chilled	France	Spain, Germany, United Kingdom

0.2 Content of the document

In conformity with the methodology developed within the EUMOFA, the document includes:

- A description of the product;
- Most relevant EU markets for cooked *Penaeus* shrimp, with a special focus on the French, Spanish, German and UK markets;
- An analysis of the price transmission along the supply chain in France.

1 DESCRIPTION OF THE PRODUCT

1.1 Biological and commercial characteristics

The case study focuses on cooked tropical shrimp sold chilled, in particular on the most common species produced and sold, the genus *Penaeus*. However, the price transmission analysis focuses on whiteleg shrimp (*Penaeus vannamei*), the most consumed shrimp in France and in Europe.

Case study product

Name: whiteleg shrimp (P*enaeus vannamei*)

FAO 3-alpha code: PNV

Presentation: Cooked and chilled

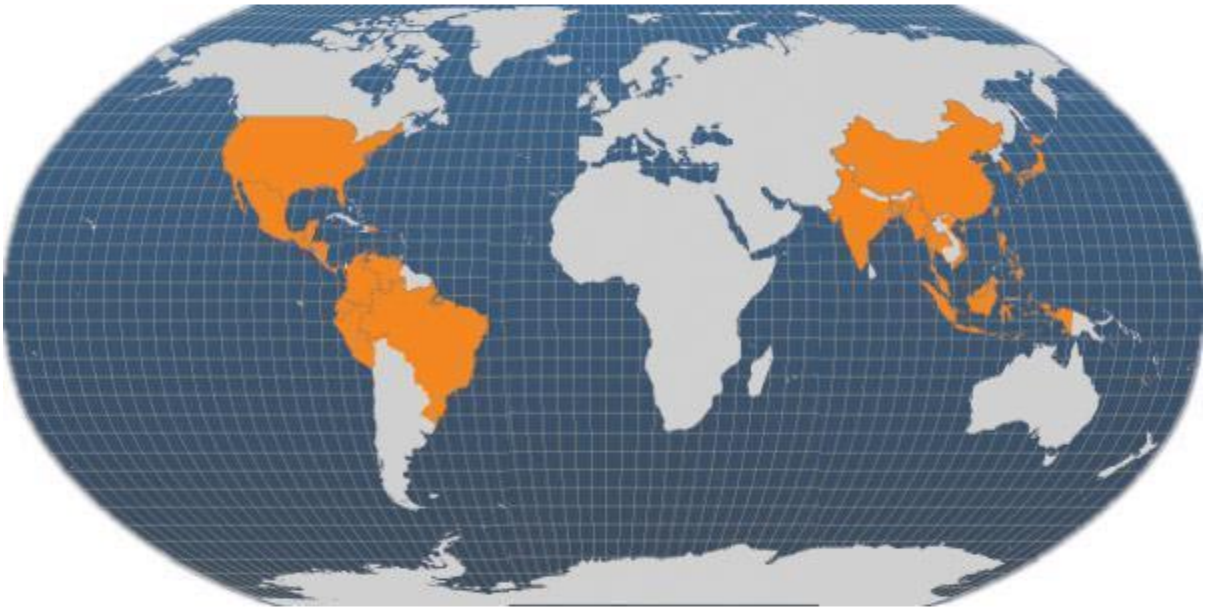
Commercial size:

Number of pieces in 1 kg, main sizes: 20/30, 30/40, 30/50, 40/60, 60/80, 80/100.

Biological parameters

Parameter	Characteristics
Temperature	>20°C
Habitat	Tropical marine habitats: coastal estuaries, lagoons or mangrove areas
Diseases in farming	White spot (WSD); Taura Syndrome (TS); Infectious Hypodermal & Haematopoietic necrosis (IHHNV), causing Runt Deformity Syndrome (RDS); Baculoviral Midgut Gland Necrosis (BMN); Vibriosis (bacteria);
Maturation	4-5 months
Diet in the wild	Larvae: phytoplankton and zooplankton and then benthic detritus, worms, bivalves and crustaceans.
Diet in farming	Juvenile phase: live feed and then low-protein feed
Juvenile phase	30 days
Grow-out	3-6 months
Distribution in the wild	Tropical Eastern Pacific coast from Sonora, Mexico in the North, through Central and South America as far South as Tumbes in Peru.
Farming	China, Thailand, Indonesia, Brazil, Ecuador, Mexico, Venezuela, Honduras, Guatemala, Nicaragua, Belize, Viet Nam, Malaysia, Taiwan P.C., Pacific Islands, Peru, Colombia, Costa Rica, Panama, El Salvador, the United States of America, India, Philippines, Cambodia, Suriname, Saint Kitts, Jamaica, Cuba, Dominican Republic, Bahamas.
Farming system	Ponds/lagoons, tanks: extensive (extensive, semi-extensive, intensive, super-intensive)

Figure 1 - Main producers of *Penaeus vannamei* in the world



Source: FAO

Related codes

Whiteleg shrimp is not distinguished in the Combined Nomenclature. The existing codes are for all *Penaeus* species for frozen products and for all shrimp other than *Pandalidae* and *Crangon* for chilled products:

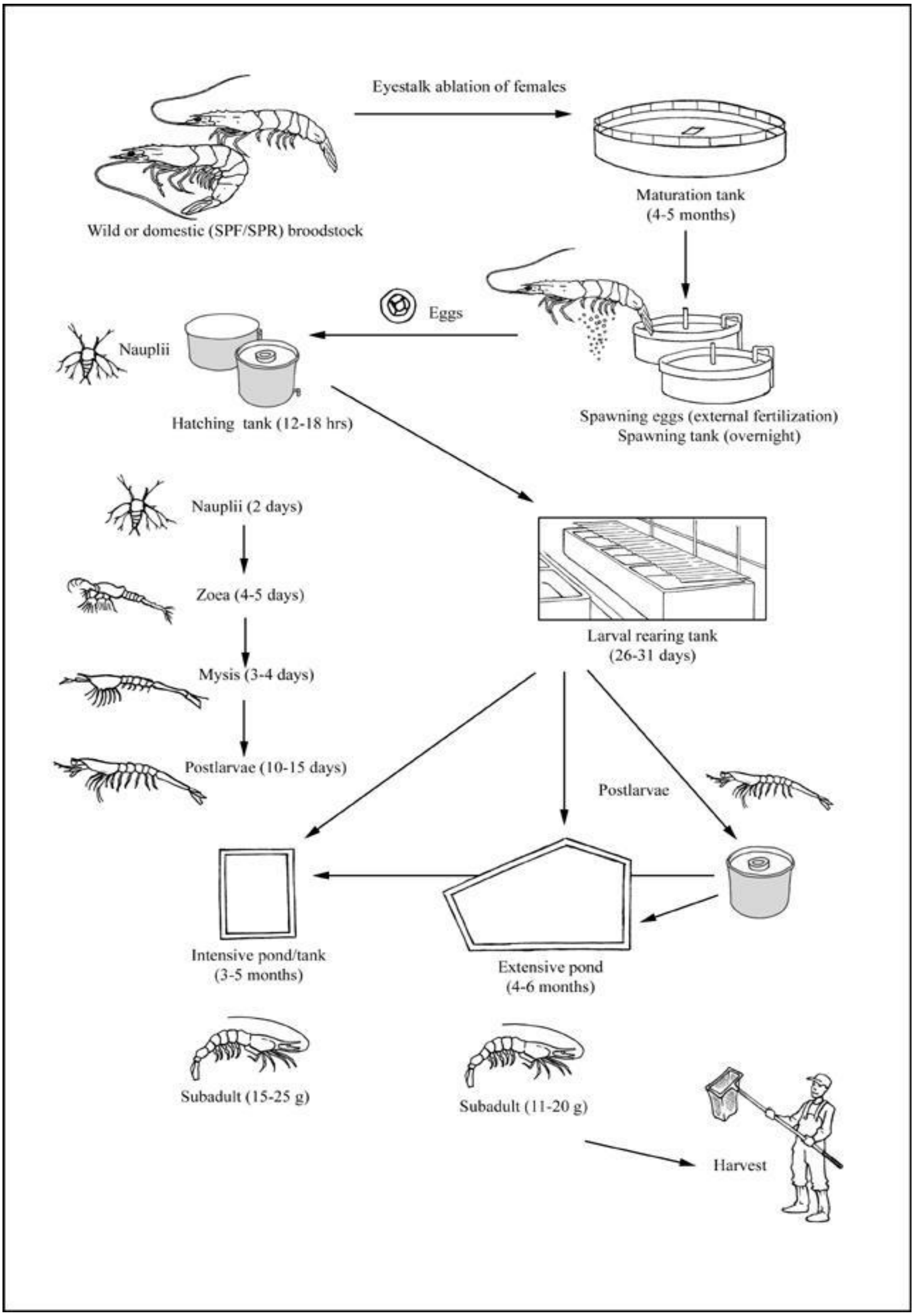
- **Frozen *Penaeus* spp. shrimp**: *frozen shrimps of the genus "penaeus", even in shell, incl. shrimps in shell, cooked by steaming or by boiling in water (excl. smoked)*
  - CN code 03 06 17 92: since 2012
  - CN code 03 06 13 50: between 2005 and 2012

For fresh and chilled shrimp, Penaeus species are not even mentioned. The CN code related concern all shrimp species (cold water shrimps not included).

- **Cooked and chilled shrimp**: *shrimps and prawns, even in shell, incl. shrimps and prawns in shell, cooked by steaming or by boiling in water (excl. smoked, frozen and "pandalidae" and "crangon")*
  - CN code 03 06 27 99: since 2012
  - CN code 03 06 23 90: between 2005 and 2012 including fresh and live shrimp: *shrimps and prawns, whether in shell or not, live, fresh, chilled, dried, salted or in brine, incl. shrimps in shell, cooked by steaming or by boiling in water (excl. "pandalidae" and "crangon").*

1.2 Production cycle of *Penaeus vannamei*

Figure 2 - *Penaeus vannamei* production cycle

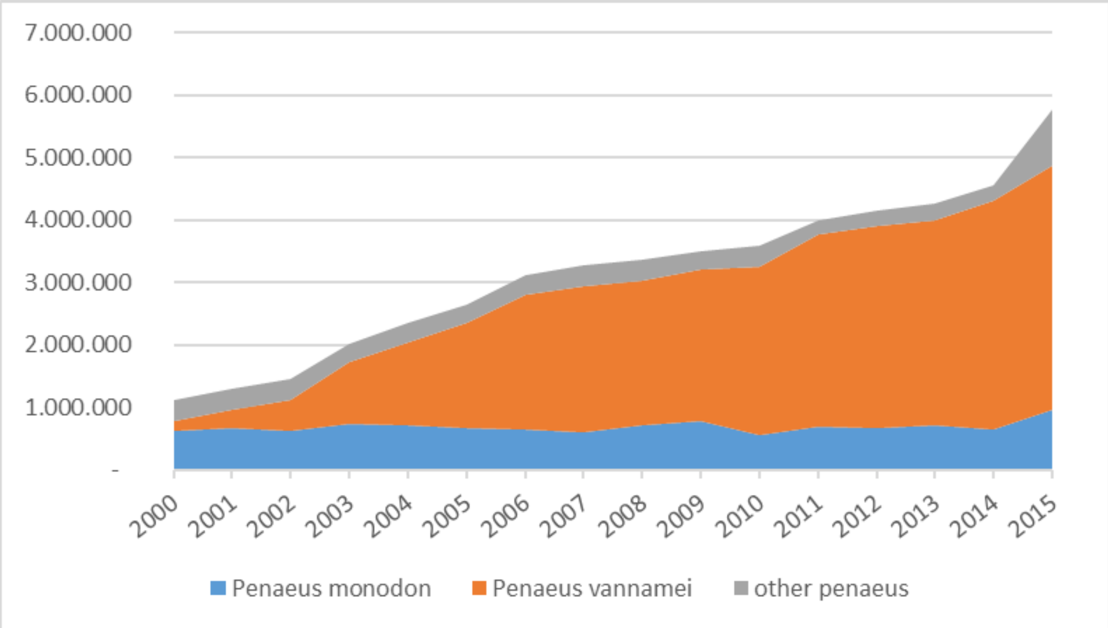


Source : FAO

1.3 Production and availability of *Penaeus* vannamei shrimp

Most farmed shrimp species are included in the genus *Penaeus*. The two main species produced are *P. vannamei* and *P. monodon*. From the early 2000s, particularly because of lower production costs and better disease control, Asian countries have started progressively developing *vannamei* production instead of *monodon* of which production has stayed rather stable since then (+0.6% from 2000 to 2014, averaging at 650 000 tonnes) although a significant increase in 2015 (+53% compared to 2014, reaching 970 000 tonnes). Thus, from 2000 to 2015, *vannamei* production has experienced a huge increase in volume, becoming by far the main farmed shrimp species. *P. vannamei*, which represented 14% of world production of *Penaeus* species in 2000, accounted for 68% in 2015.

Figure 3 - World production of *Penaeus* shrimp species (tonnes)



Source: FAO statistics

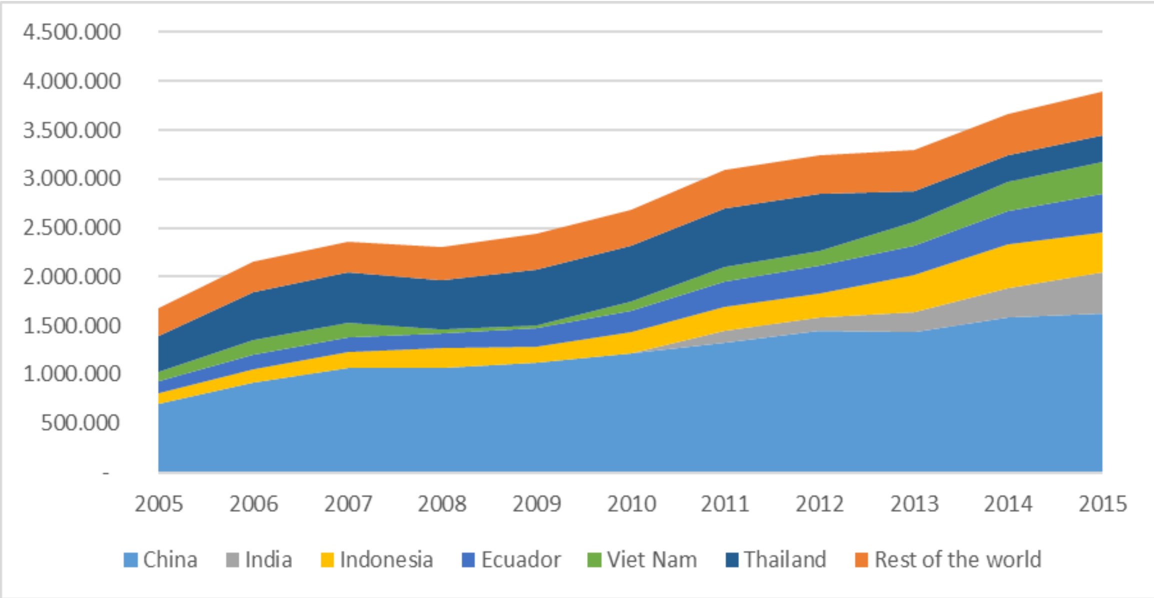
FAO statistics show that the total farmed production of *P. vannamei* increased steadily from 8 000 tonnes in 1980 to 194 000 tonnes in 1998. After a small decline in 1999 and a more significant decline in 2000 due to the arrival of WSSV (white spot) in Latin America, FAO data show a rapid increase in production to over 3 912 000 tonnes in 2015, due to the recent rapid spread of this species to Asia.[1]

Global production statistics are not available yet for 2015 and 2016 but other sources mention a decreasing trend in 2016 in production volumes in most of Asian producing countries due to both sanitary and weather issues, especially in China, Indonesia, Vietnam and South India. Only Thailand has reported an increasing production in 2016. That decreasing trend has led to higher prices on global markets.[2]

[1] http://www.fao.org/fishery/culturedspecies/Penaeus_vannamei/en

[2] http://www.franceagrimer.fr/content/download/49660/476351/file/NCO-NOT-MER-2017-02-01.pdf

Figure 4 - World production of *Penaeus vannamei* (tonnes)



Source: FAO statistics

The main producing countries in 2015 were: China (1 625 000 tonnes), India (416 000 tonnes), Indonesia (410 000 tonnes), Ecuador (403 000 tonnes), Vietnam (318.000 tonnes), and Thailand (280 000 tonnes). The main recent trends are the strong increase of production in India and in Vietnam from 2009 to 2014 and the strong decrease in Thailand over the same period (–51%).

Table 1 - World production of *Penaeus vannamei* (tonnes)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
China	702.484	918.337	1.065.644	1.062.765	1.118.142	1.223.277	1.325.549	1.453.241	1.429.929	1.576.893	1.624.643
India	-	-	-	-	1.730	-	125.000	136.300	211.200	305.251	416.347
Indonesia	103.874	141.649	164.466	208.648	170.969	206.578	246.420	238.663	376.189	442.379	409.899
Ecuador	118.500	149.200	150.000	150.000	179.100	223.313	260.000	281.100	304.000	340.000	403.000
Viet Nam	100.000	150.000	153.000	38.600	36.000	99.285	140.466	148.023	236.242	309.543	318.302
Thailand	374.487	480.061	508.446	501.394	571.189	561.075	603.227	588.370	310.705	264.709	280.070
Mexico	90.008	112.495	111.787	130.201	125.778	104.612	109.816	100.320	120.585	86.973	139.198
Brazil	63.134	65.000	65.000	70.251	65.188	69.422	69.266	75.000	64.669	65.018	69.860
Malaysia	-	-	-	-	52.927	69.084	60.322	48.992	45.474	57.181	48.284
Honduras	20.873	26.956	26.333	26.586	14.626	11.054	30.295	31.936	49.427	45.500	25.000
World	1.678.409	2.161.008	2.352.245	2.304.558	2.444.776	2.688.232	3.089.293	3.238.380	3.289.318	3.668.682	3.900.615

Source: FAO

2 THE EU MARKET FOR COOKED SHRIMP

2.1 Structure of the EU market

2.1.1 Apparent market by Member State

The main characteristic of the tropical shrimp EU market is its total dependence on imports, mainly from central and south America and Asia. Shrimp are imported raw and frozen to be cooked next to consumption areas. Only a limited share of imports is sold raw and frozen or even more rarely cooked and frozen. The cooked and chilled shrimp trade exists especially between neighbour Member States but is very limited compared to the frozen shrimp trade. One of the reasons is the very short consumption time after cooking and chilling.

For frozen *Penaeus* spp. the EU apparent market was 258.000 tonnes in 2015. The first two markets, France and Spain, account for 53% of the EU apparent consumption. The following main markets are Italy, the United Kingdom, Germany, the Netherlands, Portugal and Belgium.

Extra-EU trade remains limited: 1 910 tonnes exported to third countries in 2015 whereas total imports reached almost 260 000 tonnes.

Table 2 - Apparent market for frozen *Penaeus* species by Member State in 2015 (tonnes)

(tonnes)	Imports	Exports	Apparent market
FRANCE	77.158	6.445	70.713
SPAIN	66.157	15.726	50.431
ITALY	28615	424	28.191
UNITED KINGDOM	27.127	1.304	25.824
GERMANY	25.937	7.687	18.250
NETHERLANDS	30.422	20.686	9.737
PORTUGAL	9.718	1.459	8.259
BELGIUM	25.612	18.188	7.425

Source: COMEXT

Chilled and cooked shrimp[3] trade is very limited and concerns almost exclusively intra-EU trade. Extra EU trade deficit was 104 tonnes in 2015 with about 200 tonnes imported and 100 tonnes exported. Portugal and Germany have the largest trade deficit for chilled cooked shrimp with respectively 1 800 and 1 600 tonnes.

Table 3 -Trade balance for cooked and chilled shrimp by Member State in 2015 (tonnes), excluding *Pandalidae* and *Crangon* spp.

(tonnes)	Imports	Exports	Trade deficit
PORTUGAL	1.814	210	1.604
GERMANY	1.627	52	1.575
ITALY	279	50	229
SPAIN	327	115	213

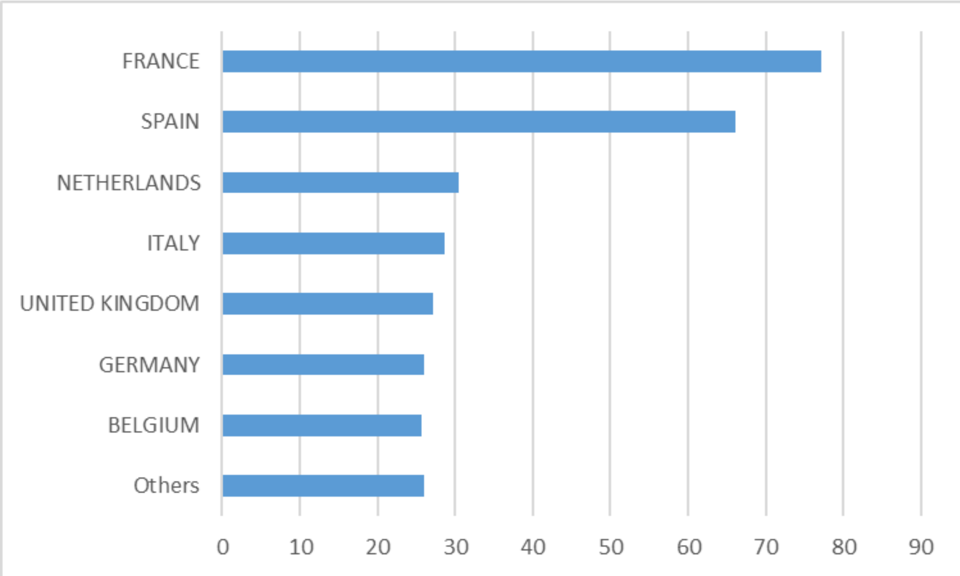
Source: COMEXT

[3] The CN code 03 06 27 99, corresponding to cooked and chilled shrimps, does not include cold-water shrimps nor *Crangon* shrimp, so it is supposed to include mostly cooked tropical shrimp and especially *Penaeus* shrimp.

2.1.2 Imports

The main importers of frozen *Penaeus* shrimp in the EU-28 are France and Spain (respectively 77 000 and 66 000 tonnes), and to a lesser extent the Netherlands, Italy, the United Kingdom, Germany and Belgium (all between 25 000 and 30 000 tonnes imported).

Figure 5 – Frozen Penaeus species: volume of imports by Member State of the EU-28 in 2015 (1000 tonnes)

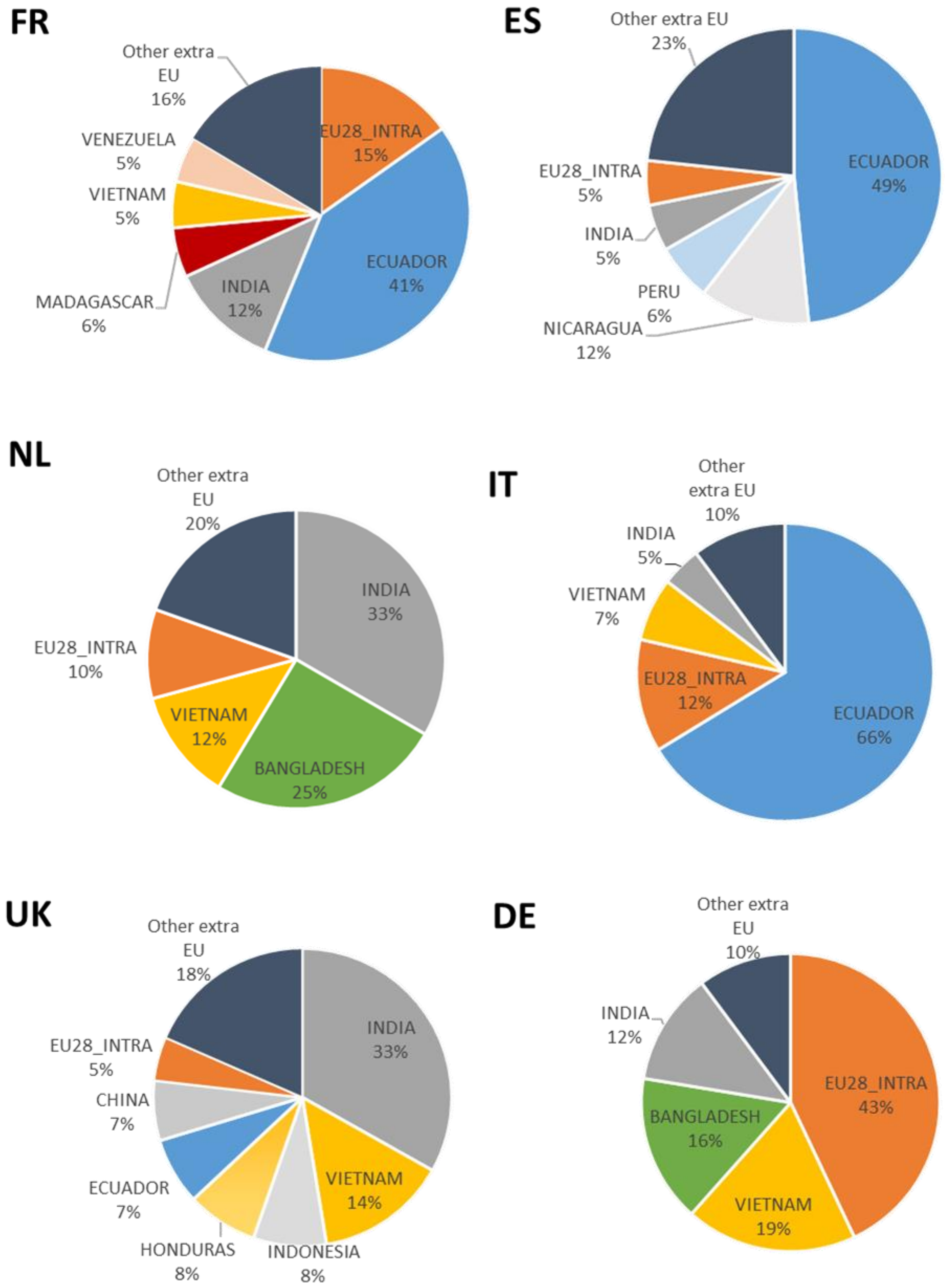


Source: COMEXT

The breakdown between the different origins of imports in the main Member States (2015) is displayed in the following section:

- In **France**, Ecuador (41%) and India (12%) accounted for more than half of imports volume. Then comes Madagascar, with mostly *Penaeus monodon* (Giant tiger shrimp) with 6% of imports. Intra EU imports accounted for 16% of imports volume.
- In **Spain**, almost half of imports come from Ecuador. Central and South American countries are very present in the imports compared to other main markets: Nicaragua (12%), Peru (6%), Venezuela (3%), Honduras (4%). Therefore, intra-EU imports are relatively limited: 5% of total imports.
- In the **Netherlands**, south-eastern Asia accounted for 75% of imports volume; Ecuador for only 6% and intra-EU imports for 10%.
- In **Italy**, Ecuador accounted for two thirds of total imports volume. Intra-EU imports reached 12% of total imports volume.
- In **Germany**, south-eastern Asia accounted for more 75% of imports volume; the main originality is that dependence to intra-EU imports is significantly high compared to other Member States (43%).

Figure 6 - Breakdown of frozen *Penaeus* imports by origin (2015)



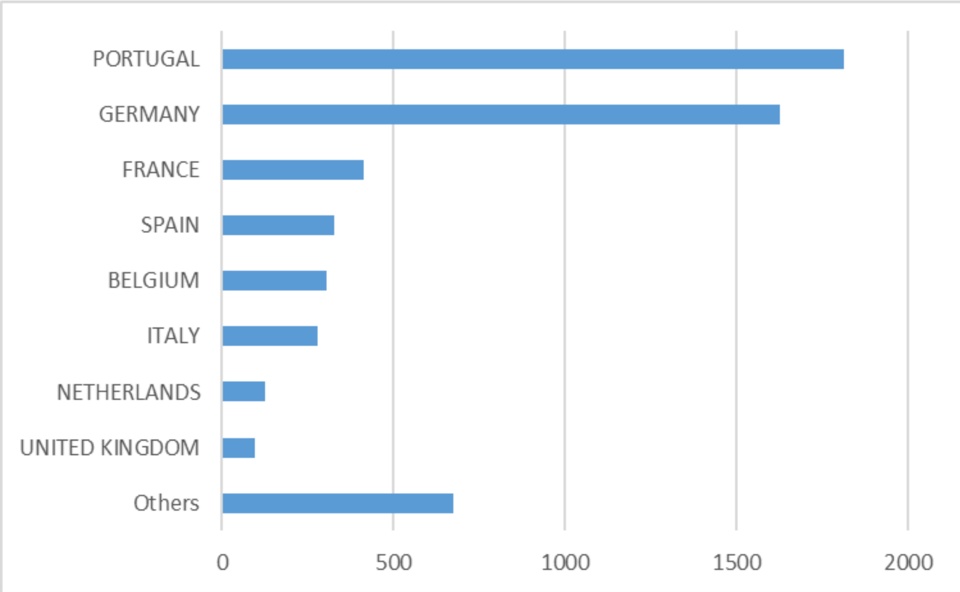
Source: COMEXT

For cooked and chilled shrimp, imports are rather limited, except for Portugal and Germany:

- Portugal imported almost 1 800 tonnes of chilled shrimps of which 98% from Spain.
- Germany imported more than 1 600 tonnes, almost exclusively from other EU Member States, of which 49% from the Netherlands and 35% from UK.

Chilled shrimp imports in other Member States were below 500 tonnes.

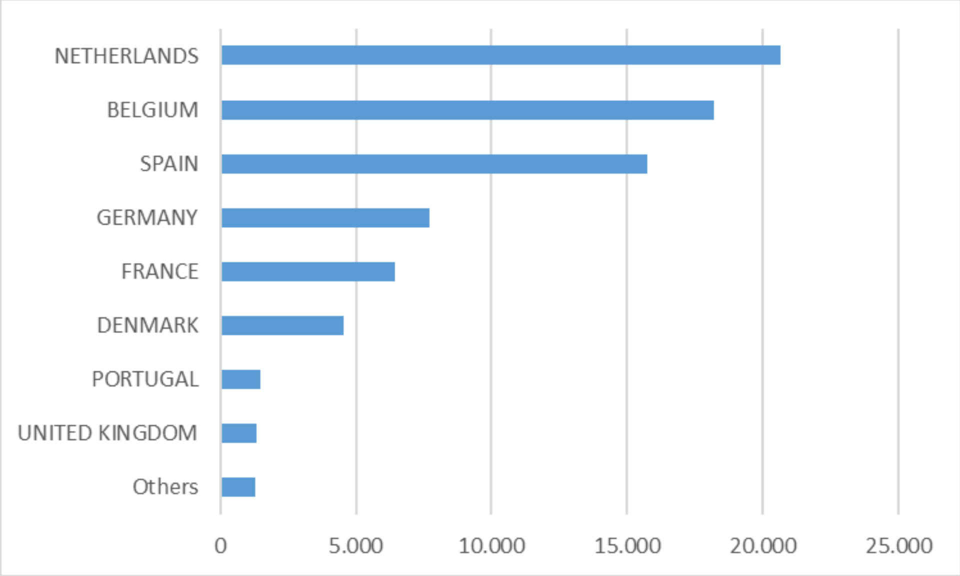
Figure 7 – Chilled shrimp: volume of imports by Member State of the EU-28 in 2015 (tonnes)



2.1.3 Exports

The main exporters of *Penaeus* shrimps in the EU-28 are the Netherlands (20 686 tonnes), Belgium (18 188 tonnes) and Spain (15 726 tonnes) and to a lesser extent Germany (7 687 tonnes) and France (6 445 tonnes).

Figure 8 – Frozen *Penaeus* species: volume of exports by Member State of the EU-28 in 2015 (tonnes)



Source: COMEXT

The breakdown between the different destinations of exports by main Member States (2015) shows that frozen *Penaeus* shrimp exports concerned almost exclusively intra EU trade. It is displayed in the following section:

The **Netherlands** exported 20 686 tonnes of frozen *Penaeus*, of which 37% went to Germany, 24% to Belgium and 15% to France. Extra EU exports accounted for only 1% of Dutch total exports.

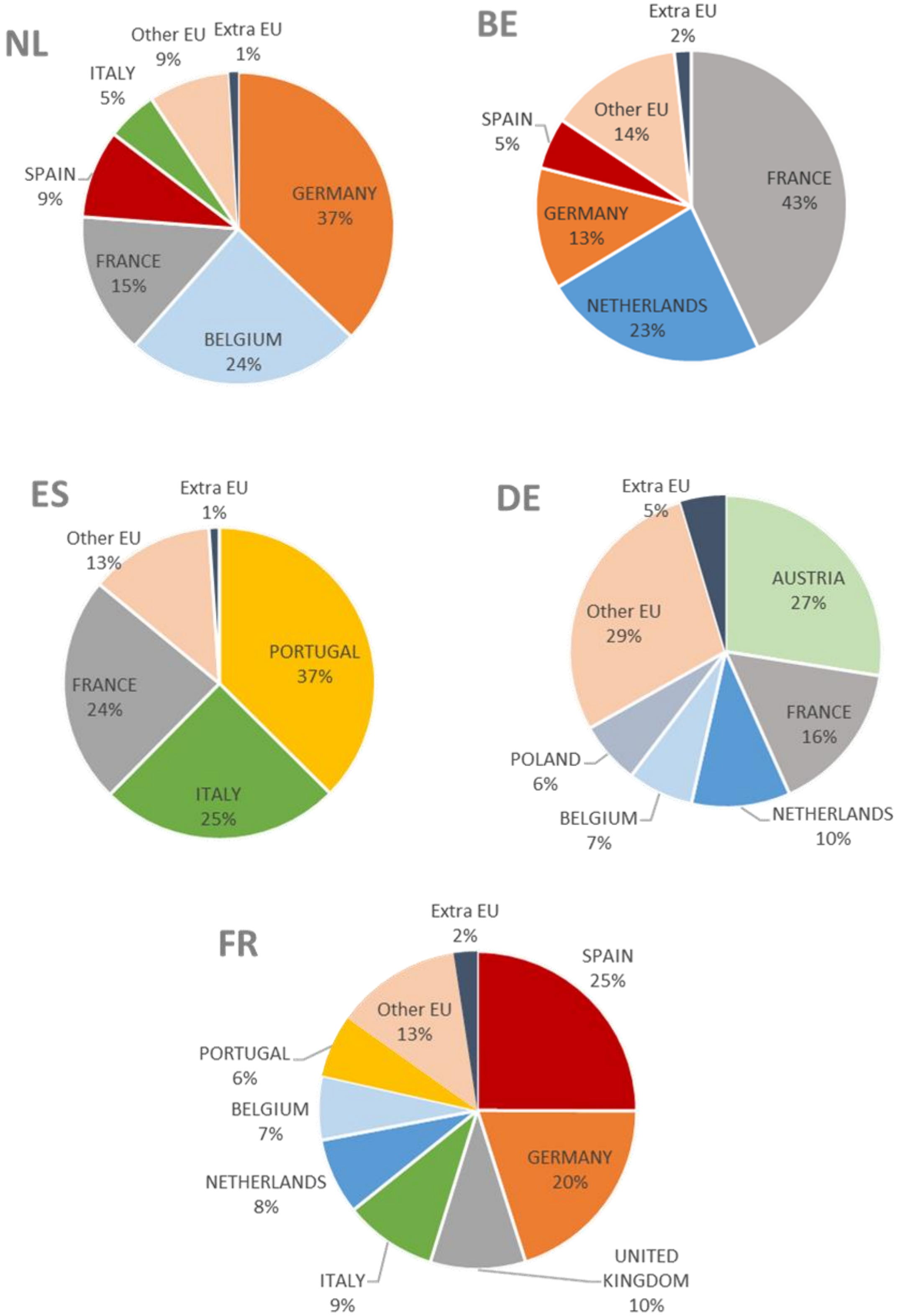
Belgium exported 18 188 tonnes of frozen *Penaeus* shrimp, of which 43% went to France, 23% to the Netherlands and 13% to Germany. Extra EU exports accounted for only 2% of Belgian total exports.

Spain exported 15 726 tonnes of frozen *Penaeus* shrimp, of which 37% went to Portugal, 25% to Italy and 24% to France. Extra EU exports accounted for only 1% of Spanish total exports.

Germany exported 7 687 tonnes of frozen *Penaeus* shrimp, of which 27% went to Austria, 16% to France and 10% to the Netherlands. Extra EU exports accounted for only 5% of German total exports.

France exported 6 445 tonnes of frozen *Penaeus* shrimp, of which 25% went to Spain, 20% to Germany and 10% to UK. Extra EU exports accounted for only 2% of French total exports.

Figure 9 - Breakdown of exports of frozen *Penaeus* shrimp by origin (2015)

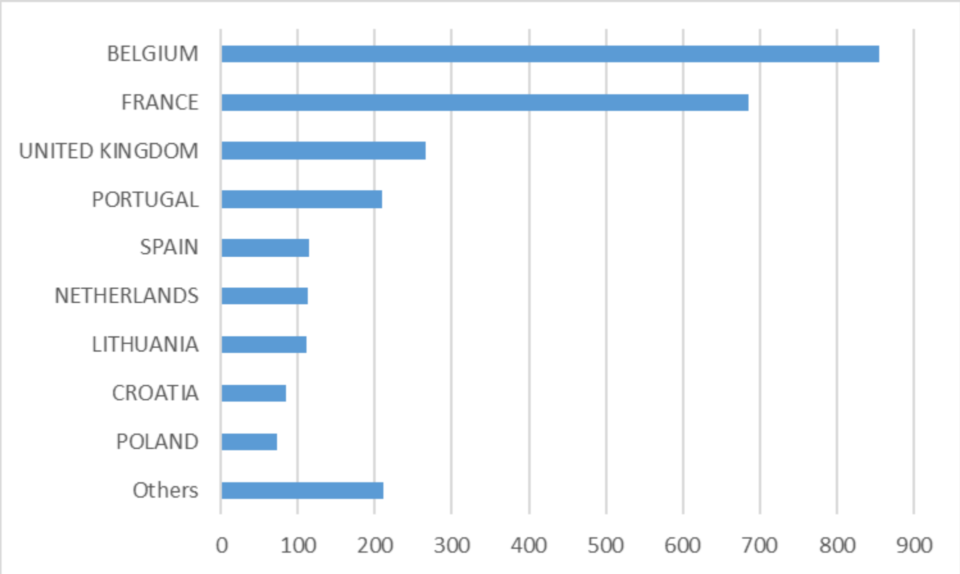


Source: COMEXT

For cooked and chilled shrimp, exports in 2015 were rather limited (below 900 tonnes). The main exporters were:

- Belgium (855 tonnes), exporting mostly to France (34%), Germany (29%), the Netherlands (18%) and UK (16%).
- France (686 tonnes) exporting mostly to Belgium (46%), the Netherlands (11%) and Germany (11%).

Figure 10 – Chilled cooked shrimp: volume of exports by Member State of the EU-28 in 2015 (tonnes)



Source: COMEXT

2.2 Market segmentation

There are different types of segment on the cooked shrimp market markets, based on:

- Category of size;
- Presentation and preservation;
- Certification.

2.2.1 Segmentation by size

Penaeus shrimp, and especially *P. vannamei*, can be found in retail in a large range of sizes, set in number of shrimp in 1 kg:

- Whole: 10-20; 20-30; 50-60; 60-70; 60-80; 70-80; 80-100; 100-120; 120-150;
- Headed (yield 65%), peeled (yield 80-85%): 31-35, 36-40, 41-50, 51-60, 61-70, 71-90, 91-110.

The most common size in large retailers for the *vannamei* is 60-80 but assessing breakdown of sizes in the market is very difficult as it is not recorded (when sold in bulk) and as this breakdown changes depending on imports' price evolution. Indeed, cooked and chilled shrimp consumption in volume relies strongly on retail prices and recent retail prices increases between 0.30 and 0.50 EUR/kg caused significant decrease of household consumption. For instance, the willingness to pay for cooked "small" *vannamei* is considered to be between 3 and 5 euros for one pack of shrimps (average pack weight: 200-300 g). As a consequence, large scale retailers cannot impact proportionally import prices fluctuations on retail prices and usually chose smaller shrimps supply when prices are high, in order to maintain purchase levels. Another strategy used by retailers to maintain prices close to the consumer's willingness to pay is to sell shrimp under special offers. According to stakeholders, 80% of cooked and chilled *vannamei* is sold under special offers.

2.2.2 Segmentation by presentation /preservation

The French shrimp market is segmented according to presentation and preservation:

- **Cooked and chilled / frozen**

Most of shrimps are marketed cooked and chilled. According to cooking industry experts, in 2015, over all shrimp product, 50 000 to 60 000 (70%) tonnes were marketed cooked and chilled and 25 000 to 30 000 tonnes (30%) were marketed frozen. So far, large scale retailers did not pay a lot of attention to frozen counters' attractiveness. However, prices and quality of products (especially for raw shrimps) can be very attractive. Experts consider that the market for frozen shrimps may increase in the future but needs important efforts in marketing strategies.

- **In bulk/packed**

Despite a slight decrease in the last 3 years, bulk remains the main presentation for cooked and chilled *vannamei*. According to Kantar World panel for France Agrimer, in 2015, out of 32 000 tonnes of cooked shrimp purchased by households, 25 000 tonnes (78%) were in fish counters and 7 000 tonnes packed (22%).

- **Whole / headed / peeled / prepared**

Most tropical shrimp are still marketed whole but new consumption habits and demand for easy-to-cook and convenience food products, as well as new value-adding processing strategies (often outsourced to developing countries) to face increasing import prices, have started to change the retail supply. Headed and peeled cooked and chilled shrimp as well as marinated shrimp products purchases have been increasing these past few years.

2.2.3 Segmentation according to certification

The shrimp farming sector, particularly in Asia, has received negative comments from Europe's media in the recent years. Aquaculture has been criticised for its negative impact on communities and the environment such as child labour and pollution of groundwater and agricultural land. In this context, consumers' awareness of the potential negative social and environmental impact of shrimp farming is increasing. European buyers are therefore seeking out shrimp suppliers able to prove the sustainability and responsibility of the products they buy.

While the organic and fair-trade markets are built on a set of certification requirements, in recent years sustainability certifications have become common in the mainstream market as well. This is especially true in the case of large supermarket chains in Northern and Western Europe. Currently, frequently required certificates are GlobalG.A.P. and Aquaculture Stewardship Council (ASC). Such certificates are the answer to the trend of increasing attention for food safety, sustainability and responsible sourcing.

These recent years organic and ecolabelled shrimp production has started in all major production regions (Madagascar, Vietnam, Honduras, Ecuador, etc.).

The first example has been *Penaeus monodon* from Madagascar, the first Label Rouge[4] and organic shrimp and is historically marketed on the French market.

Imports of organic seafood from outside Europe consist mainly of shrimps, but also include small volumes of organic tilapia and pangasius. While organic *vannamei* shrimps are mostly sourced from Ecuador, organic monodon is farmed in several countries (e.g. Bangladesh, Madagascar, India, Indonesia and Vietnam). According to experts interviewed, almost 2000 tonnes of organic shrimp are imported in France out of which 60% from Madagascar.

The availability of ASC-certified shrimp in Europe has grown fast recently. They became available in the Scandinavian market in late 2014, other countries in Northern and Western Europe followed in 2015. Worldwide, in recent years numerous shrimp farms have gained ASC certification. Examples are farms in Belize, Honduras and Bangladesh.

[4] French popular quality label.

2.3 The French market

The French market is the main EU market for cooked whiteleg shrimp, mostly purchased in bulk in supermarkets. According to interviews of the shrimp cooking industry stakeholders, there is not any proper substitute for this product as cooked shrimp is considered as a product consumed by opportunity (when prices are low) and not by need or habit on a regular basis. However, for peeled or prepared product, the substitute for *vannamei* can be cold-water shrimp (*Pandalus borealis*). Other tropical shrimp species (especially Giant tiger shrimp: *Penaeus monodon*) or Norway lobster cannot be considered as substitutes as prices are much higher.

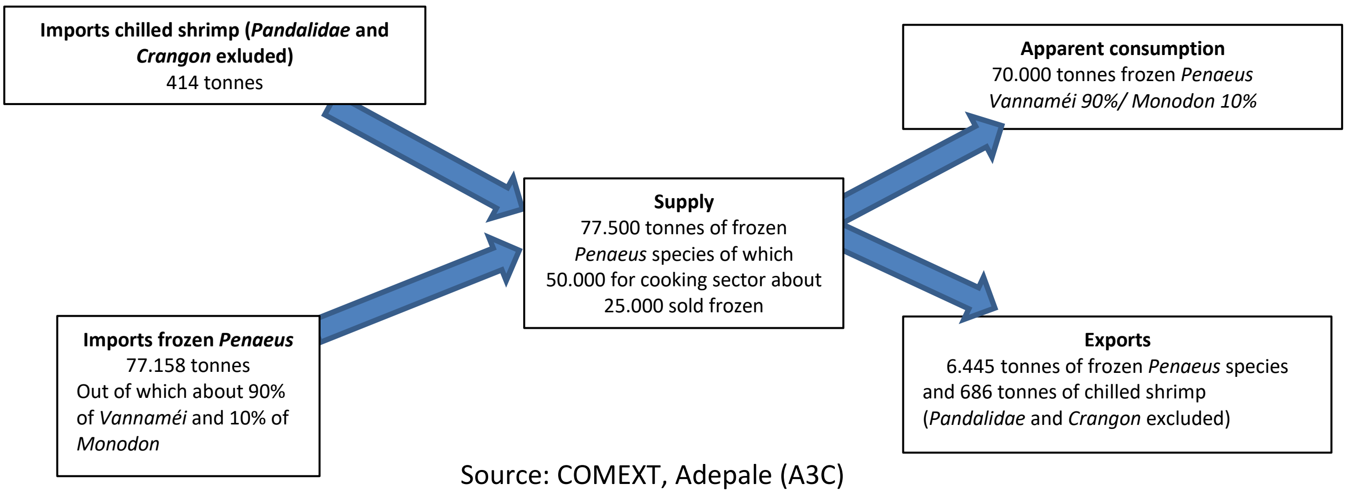
2.3.1 Supply balance

As the customs code for *Penaeus* shrimps (frozen or chilled) includes several species, it is difficult to set precisely the French supply balance for *vannamei* shrimp. Thus, the following section relies on both COMEXT data and interviews with cooking sector representatives and experts.

Apparent consumption of frozen *Penaeus* species in France was approximatively 70 000 tonnes in 2015, of which about 90% of *P. vannaméi* and 10% of *P. monodon*. Out of this consumption, 50 000 tonnes concerned cooked and chilled products and about 20 000 tonnes were sold frozen.

However, household consumption data indicated that 2015 household consumption of cooked and chilled shrimp would be only 32 000 tonnes, out of which 25 000 tonnes in bulk and 7 000 tonnes packed. Foodservice sector would concern only 1 500 tonnes of chilled and cooked shrimp (Kantar Worldpanel for France Agrimer). But declared data is likely to underestimate the real French consumption of cooked and chilled shrimp as it is mostly based on purchase in large scale retailers whereas a significant share of seafood products are sold in fish shops or open markets.

Figure 11 - Balance supply of Penaeus shrimp in France (2015)



Source: COMEXT, Adepale (A3C)

Over the last ten years, the French apparent consumption for *Penaeus* shrimp has been increasing from 2005 to 2010 (+70%) to 76 000 tonnes, has fluctuated between 70 000 tonnes and 76 000 tonnes from 2010 to 2013 and has stayed stable since then at 70 000 tonnes.

Table 3 - Supply balance of Frozen *Penaeus* shrimp in France between 2005 and 2015

Tonnes	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Imports	55.018	71.703	73.406	75.544	76.158	83.161	76.997	81.198	78.209	76.112	77.152
Exports	10.430	9.096	10.443	8.034	7.203	7.363	7.001	5.000	6.540	5.735	6.444
Apparent consumption	44.588	62.607	62.963	67.510	68.955	75.798	69.996	76.198	71.669	70.377	70.708

Sources: EUMOFA, FAO

As mentioned above, cooked and chilled shrimp trade has been very limited, below 1 000 tonnes, between 2012 and 2015. Over the period, imports decreased (–36%) and exports increased (+44%).

Table 4 - Supply balance of cooked and chilled shrimp in France between 2012 and 2015[5]

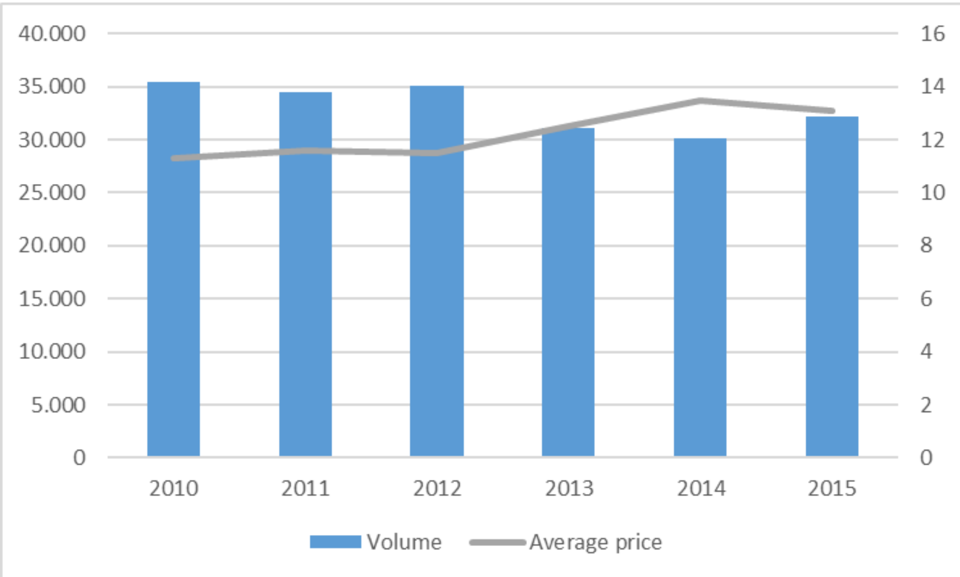
Tonnes	2012	2013	2014	2015
Imports	652	648	462	414
Exports	475	682	553	686
Balance	177	-34	-91	-272

Source: COMEXT

2.3.2 Household consumption and consumer price

According to Kantar World panel for France Agrimer, household consumption of cooked and chilled shrimp has fluctuated between 2010 and 2015. From 2010 to 2012 it stayed rather stable, reaching approximatively 32 000 tonnes, for an average price at 12,00 EUR/kg. From 2012 to 2014, average price increased from 11,50 EUR/kg to 13,50 EUR/kg (+17%); in the meantime, consumption volume declined from 35 000 tonnes to 30 000 tonnes (–14%). In 2015, purchase average price decreased at 13,10 EUR/kg (–3%), then purchase volume increased to 32 000 tonnes (+7%).

Figure 12 - Household purchase of cooked and chilled shrimp (2015)



Source: KANTAR World panel for France Agrimer

[5] This CN code has changed in 2012 excluding from then fresh and live shrimps.

2.3.3 Imports

French imports of frozen *Penaeus* species reached 77.158 tonnes and EUR 555 million in 2015. More than 40% of volume and 33% of value came from Ecuador.

Imports in France are linked to the availability of *Penaeus* species in the world. From 2005 to 2015 total import volume experienced a 40% increase. Imports volume peaked at 83 000 tonnes in 2010 and then declined in 2011 (because of white spot syndrome affecting a lot of shrimp farms in all main producing countries firstly in Asia); then increased again in 2012 and slightly decreased until 2014 because of China's increasing demand.

From 2005 to 2015, the breakdown of imports volume by main origin has been significantly modified. Imports from Ecuador experienced a 544% increase (+885% in value); +158% for imports from India (+266% in value); +231% for imports from Vietnam (+301% in value); whereas Imports from Madagascar experienced a –58% decrease (–51% in value).

According to FranceAgriMer, in 2016 French imports of frozen shrimp have been increasing compared to 2015 (+5%), with decreasing volume of imports from Ecuador (–2%) but offset by the increasing volumes of imports from Madagascar and Venezuela, where prices had decreased.[6]

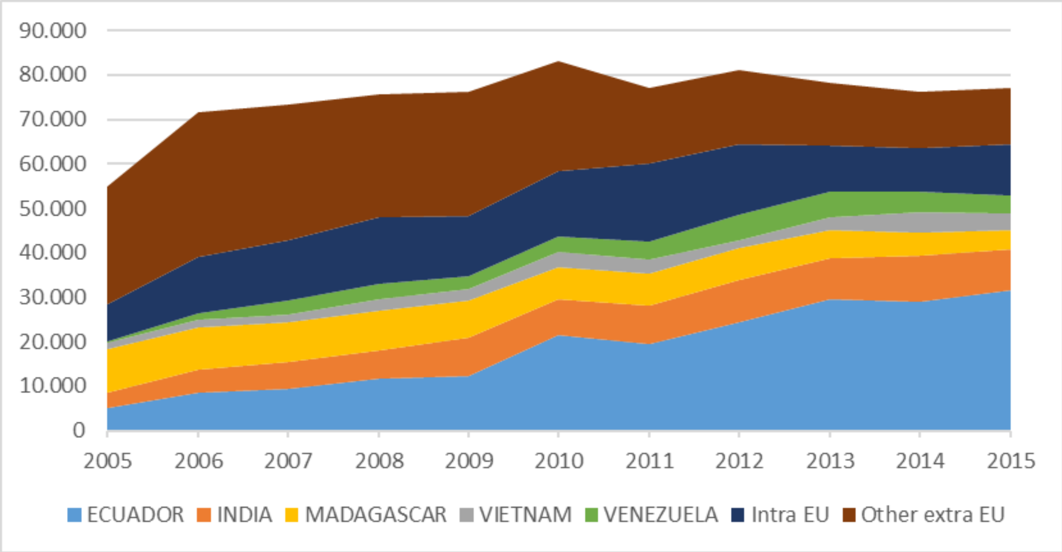
Table 5 - Evolution of the share of main partners in French imports (in volume) of frozen Penaeus shrimp

Partner/Period	2005	*2006*	2007	2008	2009	2010	2011	2012	2013	2014	2015
ECUADOR	9%	12%	13%	15%	16%	26%	25%	30%	38%	38%	41%
INDIA	6%	7%	8%	8%	11%	10%	11%	12%	12%	13%	12%
MADAGASCAR	18%	13%	12%	12%	11%	9%	9%	9%	8%	7%	5%
VIETNAM	2%	2%	2%	3%	3%	4%	4%	2%	4%	6%	5%
VENEZUELA	1%	2%	4%	5%	4%	4%	5%	7%	7%	6%	5%
Intra EU	15%	18%	19%	20%	18%	17%	23%	20%	13%	13%	15%
Other extra EU	49%	46%	42%	37%	37%	30%	22%	21%	18%	17%	16%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: COMEXT

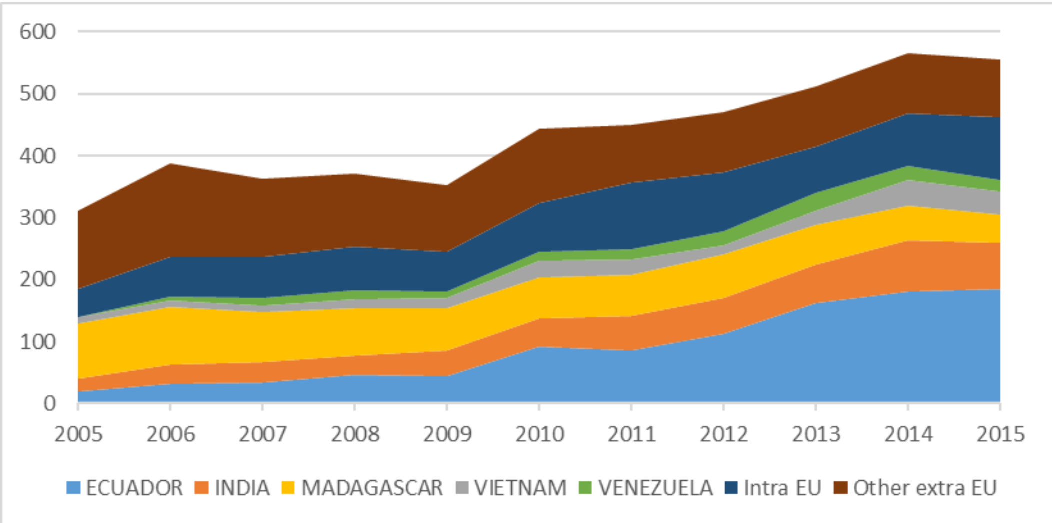
[6] http://www.franceagrimer.fr/content/download/49660/476351/file/NCO-NOT-MER-2017-02-01.pdf

Figure 13 - Volume of frozen *Penaeus* species imported in France between 2005 and 2015 by main origin (tonnes)



Source: COMEXT

Figure 14 - Value of frozen *Penaeus* species imported in France between 2005 and 2015 by main origin (tonnes)



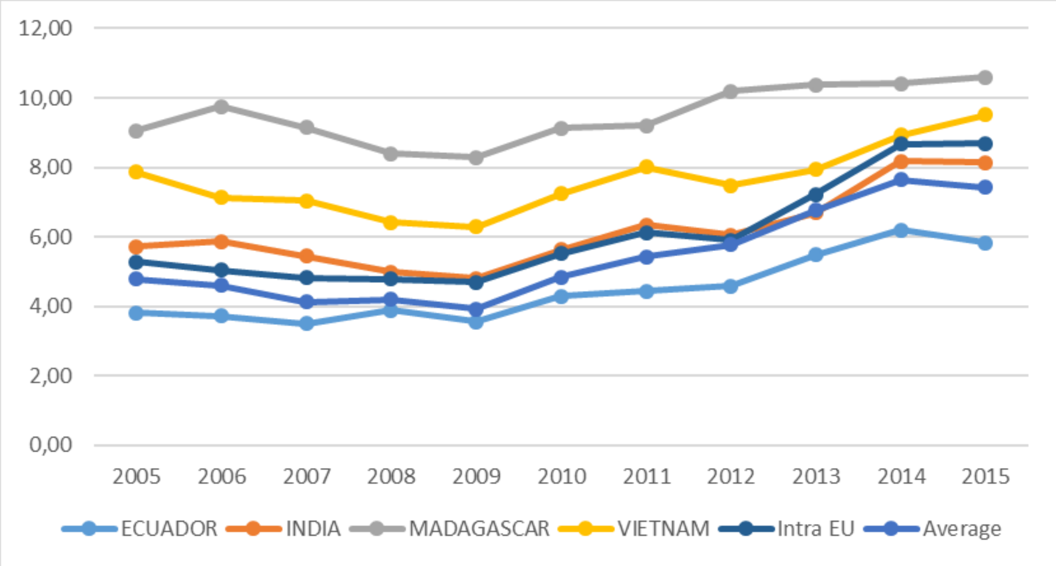
Source: COMEXT

In the meantime, import prices decreased from 2005 to 2009 (–18% for average imports price) and increased from 2009 to 2014 (+95%). This can be explained by several factors: increasing demand, more added value products, certification, white spot syndrome.

In 2015, import prices slightly decreased (–3% in average), stayed stable in India and in Intra EU trade, but kept increasing in Vietnam (+7%) and Madagascar (+2%).

The significant price differences between origins mostly rely on the share of *P. monodon,* much more expensive than the *P. vannamei,* in imports. Madagascar exports concern exclusively *P. monodon* (import price between 8,00 and 10,50 EUR/kg) whereas imports from Ecuador concerned mostly P. vannamei (import price between 4,00 and 6,00 EUR/kg).

Figure 15 - Price of frozen Penaeus imported in France between 2005 and 2015 by main origin (EUR/kg)



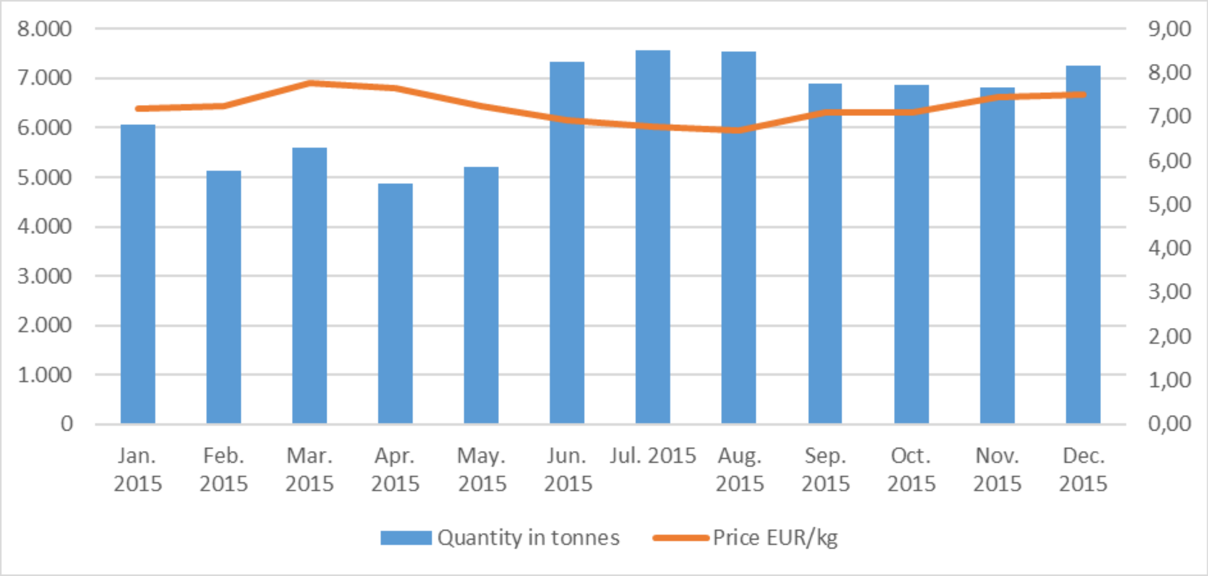
Source: COMEXT

Penaeus vannamei is under ATQ[7] in order to support the EU cooking sector. In 2016, the quota was 40 000 tonnes. Moreover, the high consumption periods are summer time and Christmas time for which consumption can be multiplied by ten. Processing companies have to plan their supply, knowing that the cost for storage of frozen products is estimated monthly at 0,5-0,6%. As a result, the imports cycle follows a pattern with two periods (that can vary from one year to the other):

- From January to May, imports under quota, averaging 5 000 tonnes monthly;
- From June to Christmas, imports increasing under quota and then out of quota (customs tax at 3,6% or 0% if in the framework of other trade agreements, for instance the EU-Andean Pact Agreement), averaging 7 000 tonnes monthly.

[7] Autonomous Tariff Quota. Starting in the 90's, the EU has adopted a number of regulations providing for autonomous tariff suspensions or tariff quotas (ATQs) for fisheries and aquaculture products the most in need by the EU processing industry, with the objective to ensure a steady supply of raw and semi-processed fishery and aquaculture products to the EU processing industry in order to support its growth and competitiveness.

Figure 16 - French monthly imports seasonnality (2015)



Source: COMEXT

2.3.4 Exports

French exports of frozen *Penaeus* species reached 6.444 tonnes and EUR 60 million in 2015.

Exports were on a decreasing trend between 2007 and 2012 (–52%) falling at 5 000 tonnes and EUR 38 million in 2012. Then exports increased and have been fluctuating around 6 000 tonnes and between EUR 52 million and EUR 60 million.

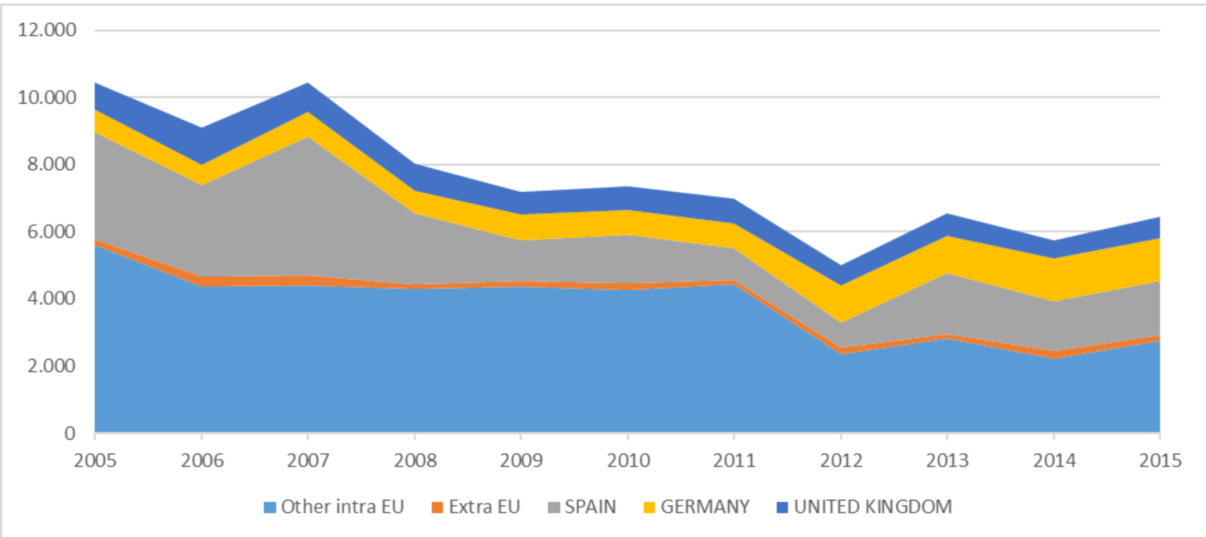
From 2005 to 2015, the breakdown of export volume by main destination has experienced changes. Exports to Spain have declined (–49% in volume and –51% in value) whereas exports to Germany have increased (+93% in volume and +140% in value). Exports to UK declined in volume (–21%) but experienced a slight increase in value (+1%). Extra EU exports experienced a 11% decrease in volume but a +94% increase in value.

Table 6 - Evolution of the share of main partners in French exports (in volume) of frozen Penaeus shrimp

Partner/Period	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
ES	31%	30%	39%	26%	17%	20%	13%	15%	28%	26%	25%
DE	6%	7%	7%	9%	11%	10%	10%	23%	17%	22%	20%
UK	8%	12%	8%	10%	10%	10%	11%	12%	10%	9%	10%
Other intra EU	54%	48%	42%	54%	61%	58%	63%	47%	43%	39%	43%
Extra EU	2%	3%	3%	2%	2%	3%	2%	4%	2%	4%	2%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

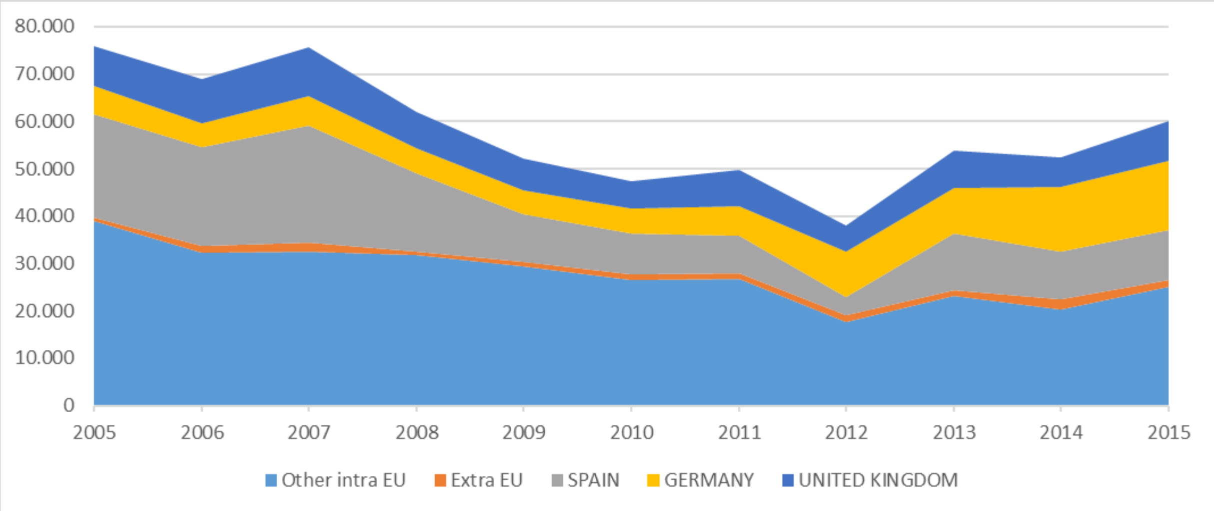
Source: COMEXT

Figure 17 - Volume of frozen *Penaeus* shrimp exported by France between 2005 and 2015 by main destination (tonnes)



Source: COMEXT

Figure 18 - Value of frozen *Penaeus* shrimp exported by France between 2005 and 2015 by main destination (1000 EUR)

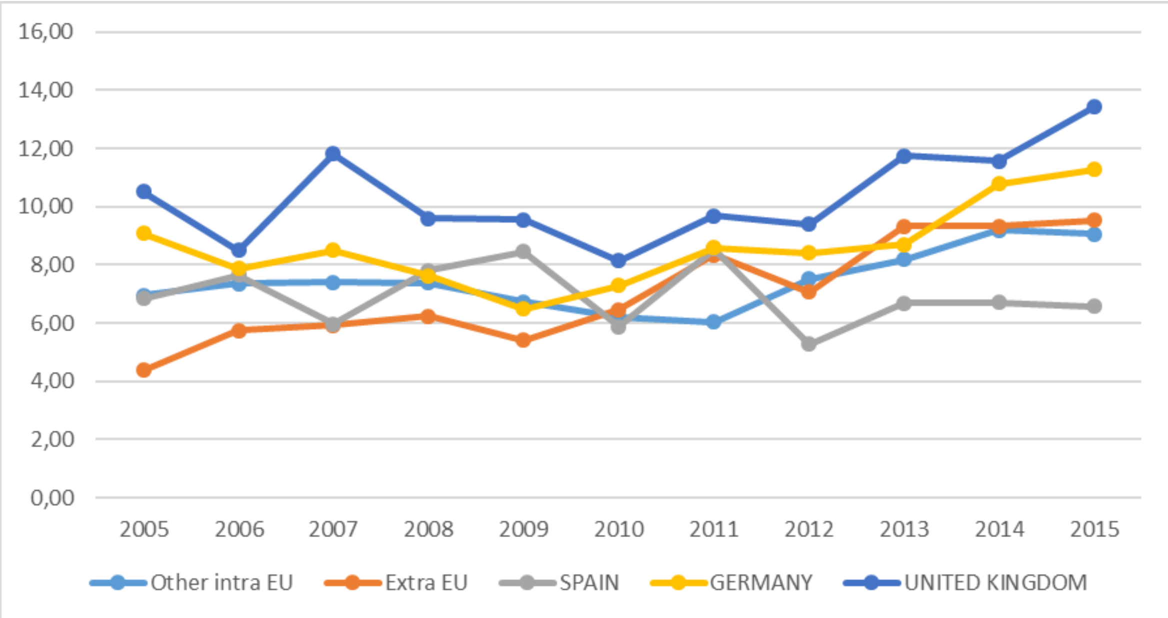


Source: COMEXT

In the meantime, export prices rather increased from 2005 to 2015 (+28% for average export price).

Between 2005 and 2015, export prices slightly decreased (–4%) to Spain, but increased for exports to Germany (+24%) and UK (+28%), and especially for exports to extra EU countries (+117%).

Figure 19 – French exports prices by main destination between 2005 and 2015 (EUR/kg)



Source: COMEXT

2.4 Overview of the main EU markets for frozen and chilled shrimp

2.4.1 Spain

Spain is the largest export market for France, which accounts for 2,4% of the volume of frozen *Penaeus* shrimp imported in Spain in 2015.

Table 6 - Balance supply of frozen *Penaeus* shrimp in Spain in 2015

Tonnes	Volume (tonnes)	Value (million euros)
Production	0	0
Import	66.157	423
Export	7.492	122
Trade balance	58.665	301

Source: COMEXT

Between 2005 and 2015, the exports from France to Spain decreased by 49% in volume and 51% in value. After a peak in 2007 at 4 124 tonnes and EUR 25 million, French exports to Spain decreased strongly to reach a minimum in 2012 at 739 tonnes and less than EUR 4 million. From 2013 to 2015, imports stabilized around 1 500 tonnes and between EUR 10 million and EUR 12 million.

In the meantime, export prices strongly fluctuated between a maximum of 8,55 EUR/kg (2011) and a minimum of 5,89 EUR/kg (2010). Since 2013, export prices stabilized around 6,60-6,70 EUR/kg.

Figure 20 - Volume and price of frozen *Penaeus* shrimp exported from France to Spain between 2005 and 2015

Source: COMEXT

2.4.2 Germany

Germany is the second export market for France, which accounts for 5% of the volume of frozen *Penaeus* shrimp imported in Germany in 2015.

Table 7 – Balance supply of frozen *Penaeus* shrimp in Germany in 2015

Tonnes	Volume (tonnes)	Value (million euros)
Production	0	0
Import	25.934	241
Export	7.681	77
Trade balance	18.253	164

Source: COMEXT

Between 2005 and 2015, the exports from France to Germany increased by 93% in volume and 140% in value. After a rather stable period between 2005 and 2011, when French exports fluctuated around 700 tonnes and EUR 5-6 million, French exports to Germany strongly increased in 2012 (+55% in volume and +52% in value) to reach 1 131 tonnes and EUR 9,5 million. In 2014, French exports kept on the increasing trend and reached almost 1 300 tonnes and EUR 15 million and remained stable in 2015.

In the meantime, export prices fluctuated between a maximum of 11,28 EUR/kg (2015) and a minimum of 6,48 EUR/kg (2009). The significant export price increasing trend since 2010 - in addition to global shrimp market price increasing trend - may be related to higher added value shrimp products (larger share of *P. monodon*, larger shrimps, processed products, etc.) than before.

Figure 21 - Volume and price of frozen *Penaeus* shrimp exported from France to Germany between 2005 and 2015

Source: COMEXT

2.4.1 United Kingdom

The United Kingdom is the third export market for France, which accounts for 2,3% of the volume of frozen *Penaeus* shrimp imported in United Kingdom in 2015.

Table 8 - Balance supply of frozen *Penaeus* shrimp in UK in 2015

Tonnes	Volume (tonnes)	Value (million euros)
Production	0	0
Import	13.887	261
Export	6.195	13
Trade balance	12.326	247

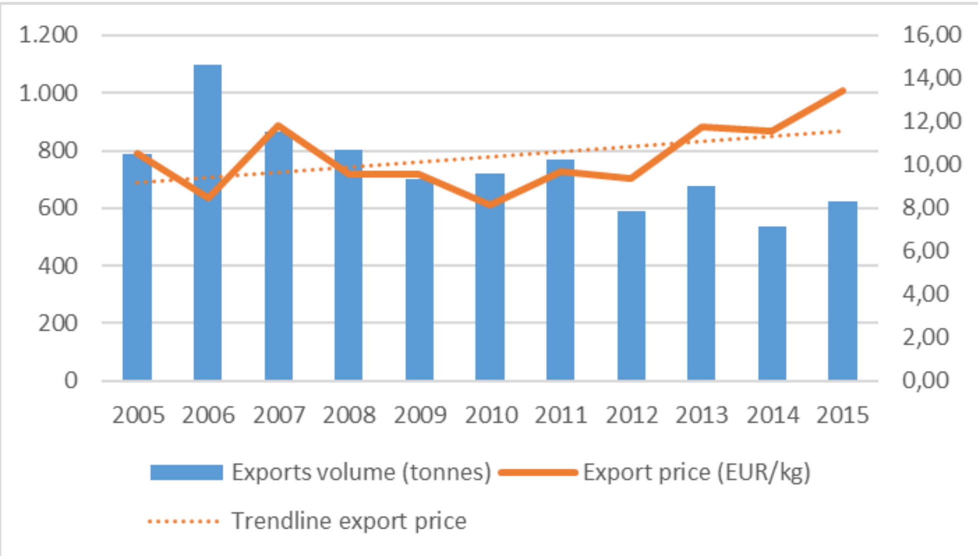
Source: COMEXT

Between 2005 and 2015, the exports from France to UK decreased by 21% in volume and but stayed stable in value (+1%). After a peak in 2006 at 1 096 tonnes and EUR 9,3 million, French exports to UK followed a decreasing trend in volume with a minimum over the period reached in 2014 with 538 tonnes and EUR 6,2 million.

In the meantime, export prices strongly fluctuated from a maximum of 8,55 EUR/kg (2011) and a minimum of 5,89 EUR/kg (2010). Since 2013, export prices stabilized around 6,60-6,70 EUR/kg.

In the meantime, export prices fluctuated between a maximum of 13,43 EUR/kg (2011) and a minimum of 8,15 EUR/kg (2010). As in Germany, there is a significant export price increase since 2011 - in addition to global shrimp market price increasing trend - may be related to higher added value shrimp products (larger share of P. monodon, larger shrimps, processed products, etc.) than before.

Figure 22 - Volume and price of frozen Penaeus shrimp exported from France to UK between 2005 and 2015



Source: COMEXT

3 PRICES DOWNSTREAM IN THE SUPPLY CHAIN

This chapter proposes to analyse prices and trends at the various stages of the cooked and chilled *P. vannamei* shrimp supply chain in France, with the objective to set the framework for price transmission analysis (chapter 4).

3.1 Price information sources

While chapter 4 relies on data gathered through direct interviews with stakeholders, chapter 3 lists the consistent sources regularly accessible and the content of the information provided by each of them.

Table 9 - Sources on prices

Supply chain stage	Type of price	Frequency	Source
Import / export	Import (Free On Board)/ export prices (Cost Insurance and Freight)	Monthly, yearly	COMEXT
Import	Import (Free On Board)	Monthly	GLOBEFISH
Retail	Retail price for cooked tropical shrimp	Yearly	France Agrimer

The following table displays the price (EUR/kg) of cooked and chilled tropical shrimp purchased in retail by French consumers.

Table 10 - Household purchase volume and price of cooked and chilled tropical shrimp in France between 2010 and 2015 (EUR/kg)

Household purchase	2010	2011	2012	2013	2014	2015
Volume	35.470	34.429	35.102	31.081	30.160	32.143
Average price (EUR/kg)	11,30	11,60	11,50	12,50	13,50	13,10

Source: Kantar World panel for France Agrimer

Table 11 - Import prices (Free On Board, August 2016)

Conservation	Presentation	Size (number of pieces in 1 kg)	Price (EUR/kg)	Origin
Frozen	Head-on, shell-on	30-40	7,26	South/Central America
Frozen	Head-on, shell-on	40-50	6,23	South/Central America
Frozen	Head-on, shell-on	50-60	5,92	South/Central America
Frozen	Head-on, shell-on	60-70	5,33	South/Central America
Frozen	Head-on, shell-on	70-80	5,02	South/Central America
Frozen	Head-on, shell-on	80-100	4,66	South/Central America
Frozen	Head-on, shell-on	>100	4,39	South/Central America

Source: GLOBEFISH

Table 12 - Import prices (Cost and Freight, August 2016)

Conservation	Presentation	Size (number of pieces in 1 kg)	Price (EUR/kg)	Origin
Frozen	Head-on, shell-on	20-30	8,96	Central America
Frozen	Head-on, shell-on	30-40	7,17	Central America
Frozen	Head-on, shell-on	40-50	6,18	Central America
Frozen	Head-on, shell-on	50-60	5,69	Central America
Frozen	Head-on, shell-on	60-70	5,29	Central America
Frozen	Head-on, shell-on	70-80	4,75	Central America
Frozen	Head-on, shell-on	80-100	4,62	Central America
Frozen	Head-on, shell-on	100-120	4,30	Central America
Frozen	Head-on, shell-on	120-140	3,76	Central America

Source: GLOBEFISH

In addition to statistical sources on prices, we provide below the results of a store check at several French retailers and some provided by interviews with stakeholders at wholesale level.

Table 13 - Retail prices (November 2016)

Conservation	Presentation	Size (number of shrimps in 1 kg)	Price (EUR/kg)	Origin
Cooked and chilled	Whole (packed)	30/50	15,30	Ecuador
Cooked and chilled	Whole (packed)	50/70	15,00	Ecuador
Cooked and chilled	Whole (bulk)	60/80	11,95	Ecuador

Source: survey by EUMOFA

4 PRICE STRUCTURE IN THE SUPPLY CHAIN

The following table provides the range of the various costs for whole cooked and chilled *Penaeus vannamei* shrimp sold in bulk in the fresh fish counters of French supermarkets (main channel for this product).

Table 14 - Costs and margins for chilled cooked *vannamei* shrimp in the large-scale retail in France (November 2016)

Costs and margins	Average (EUR/kg)
Raw material (import price)[8]	7,00
Energy	0,30
Labor	0,20
Other costs	0,20
Net margin (cooking industry)	0,30
Transport to platform	0,35
Delivered at the platform	8,35
Platform operating costs	0,12
Transport from platform to selling place	0,15
Losses (10%)	0,84
Distribution costs	0,85
Net margin of distribution (large scale retailer)[9]	1,00
Purchase price, VAT not included	11,30
VAT (5,5%)	0,62
Average purchase price	11,92

[8] COMEXT import prices are given under CIF incoterm (Cost, Insurance and Freight). Import price given here is DDP (delivered, duty paid).

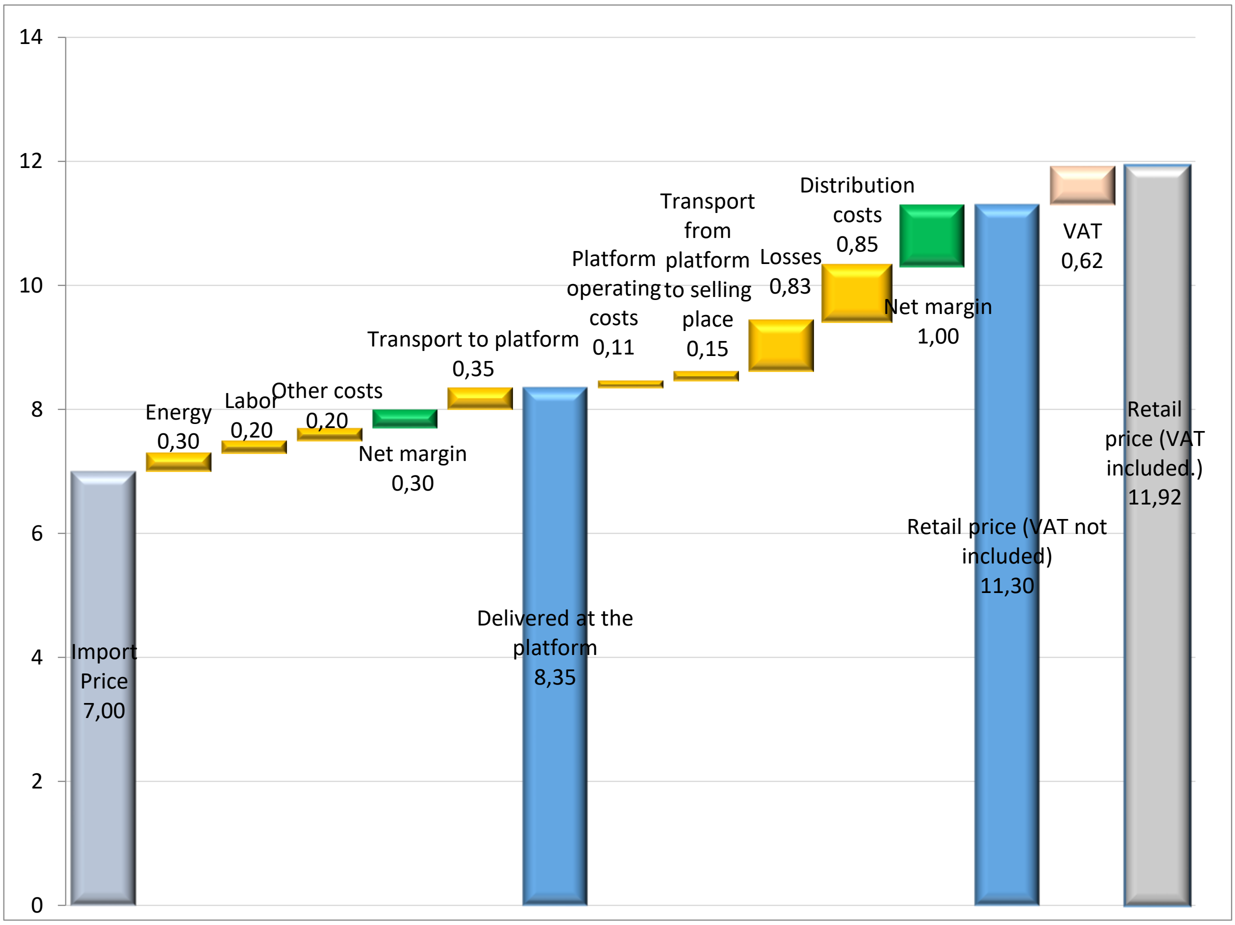
[9] In large scale retailers, margin levels for seafood are usually at 20-30 %, but as *vannamei* is generally sold under special offers (80%), retail margin is under 10%. When looking at traditional supply chain (cooking industry → wholesalers → fishmongers), net margin levels are much more important.

The following figure illustrates the price transmission in the supply chain for whole chilled cooked shrimp on the French market. This figure has been drawn up from interviews with French fish processors and a purchase manager of wholesale companies in October 2016.

The price reference for the fish at first sale stage is from price check in French supermarkets and interviews with processors and wholesalers in September-October 2016:

- Whole cooked and chilled shrimp, in bulk.
- No specific certification.

Figure 23 - Price transmission for whole chilled cooked *vannamei* shrimp on the French market (in EUR/kg)



4.1 ANNEXES

4.1.1 Sources used

- EUMOFA
- COMEXT, Eurostat
- FAO
- GLOBEFISH
- France Agrimer

4.1.2 Interviews

- ADEPALE (A3C: crustacean and shrimp cooking industry association)
- French stakeholders (processors, wholesalers).

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