



# STUDY ON THE CHALLENGES OF AQUACULTURE PRODUCTS IN FOOD OUTLETS



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European Market Observatory for  
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## List of acronyms

API	Associazione Piscicoltori Italiani
ASC	Aquaculture Stewardship Council
EU	European Union
EUMOFA	European market observatory for fisheries and aquaculture products
EMFAF	European Maritime, Fisheries and Aquaculture Fund
FAPs	Fishery and aquaculture products
FEAP	Federation of European Aquaculture Producers
FTE	Full-time equivalent
GI	Geographical indication
HORECA	Hotel, restoration and catering
LSR	Large-scale retailer
LWE	Live weight equivalent
MAC	Market Advisory Council
MAP	Modified atmosphere packing
MS	Member State
MSC	Marine stewardship council
PDO	Protected designation of origin
PGI	Protected geographical indication
PO	Producer organisation
RAS	Recirculating Aquaculture System
TSG	Traditional speciality guaranteed

## SUMMARY

The present study has been conducted by EUMOFA following a request from the Market Advisory Council (MAC) to explore the challenges faced by EU aquaculture products in sales outlets.

In 2021, the European Union (EU) aquaculture production accounted for 28% (1,13 million tonnes) of the total production of fishery and aquaculture products (FAPs) within the EU. In addition to the EU production, a large share of the EU supply was based on imports (69% of the supply). As a result, EU aquaculture production accounted for only 11% of the EU consumption of FAPs, which amounted to 10,60 million tonnes live weight equivalent (LWE) in 2021.

Main products farmed in the EU include shellfish (oyster, mussel and clams) as well as finfish (carp, trout, seabass, seabream and flatfish). On the market, EU farmed products compete with EU wild caught products and imported products, both farmed (in particular salmon, seabass and seabream) and wild caught fish.

Some farmed species, such as salmon, trout, seabream, seabass, mussel and carp are among the most consumed species in some Member States (MS). While there is a significant aquaculture production within the EU for most of these species, salmon stands out as a notable exception, with EU consumption relying almost exclusively on imports from third countries.

Consumption patterns and market trends vary significantly across MS and species. The present study covers eight species, including both shellfish and finfish, and eight MS, namely: Czechia, Denmark, Greece, Spain, France, Italy, Hungary and Poland. FAP consumption is high to very high in some MS, such as Spain, France and Italy; it is intermediate in Denmark and Greece and relatively low in Poland, Czechia and Hungary. Beyond these different consumption levels, there are significant differences in the types and diversity of species consumed. For instance, the top three species consumed fresh in Poland (mackerel, salmon and carp) account for 59% of the volume. In contrast, the top three fresh species consumed account for 27% in France (salmon, cod and saithe), 28% in Italy (salmon, seabream and mussel) and 30% in Spain (salmon, hake and sardine), which demonstrates a greater diversity of consumed species in these countries.

At EU level, the most common channel to purchase FAPs by EU consumer is “groceries, supermarkets and hypermarkets” (used by 79% of the consumers over the last 12 months), followed by fishmongers (43% of the consumers), street markets (15%), direct sales (10%) and online sales (2%). Strong differences between MS are observed with a great importance of fishmongers in Greece, Spain and Italy for instance.

Beyond these EU and national trends, different consumption patterns may be observed at sub-national level, specifically between urban and rural areas as well as coastal versus inland areas. Overall, purchasing power as well as fishmongers and fish counters’ density tend to be higher in urban areas. This leads to a greater diversity of items offered, in terms of species and types of products (prepared fish, larger fish with higher price...). In rural areas, consumption tends to be lower with less items available and less purchasing power. The offer of fresh fish tends to be lower, and the share of processed items (canned, frozen) tends to be higher. However, there are notable exceptions in rural areas when consumers are close to fish farms (for instance in carp or trout production areas). In coastal areas, consumption is also reported to be higher than in inland areas, with a preference for fresh and marine fish (local or imported, wild caught or farmed). In some MS, the number of points of sales may also be higher in coastal areas than in inland areas.

The market positioning of EU farmed products varies depending on species, the MS of production and market targeted. Some of the EU farmed products are in direct competition with imported products from third countries (such as seabass, seabream and trout). For other farmed products, markets are more national, such as oyster, mussel (to some extent), carp and flatfish. In this context, several types of strategies are implemented (at collective level or by individual companies) to differentiate the products. These differentiation strategies either aim to propose an innovative product and/or to

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develop a “story” relevant to clients and consumers (method of production, origin of products, healthy product, easy to cook...). These diversification strategies may be supported by an adequate certification or brand. To be effective, these strategies may require significant investment, for instance communication activities.

Several challenges have been identified for the farming sector to increase sales in the EU. These challenges are for both upstream and downstream stages of the value chain and may be interconnected:

- **Difficulties in increasing the volume of production:** the current administrative burden is recognised to be a bottleneck for releasing the potential of the aquaculture production in the EU. This includes both the establishment of new production sites as well as the growth of existing ones.
- **Adaptation to climate change and scarcity of the resources:** aquaculture sector, as all other economic sectors, faces more frequent and intense climatic events. In addition, the increase scarcity of resources (specifically water in the context of aquaculture) is a significant issue for the farming sector. Both climate change and scarcity of resources may require some adaptations to the production processes.
- **Increased production costs:** the recent inflation leads to increased production costs for the farming sector. Inflation impacts electricity, fuel and feed prices. This principally impacts finfish production with high share of feed in the production costs as well as land-based facilities (compared to off-shore ones), which use more energy.
- **Production and consumption seasonality:** synchronising production and consumption is a key challenge for aquaculture value chains. We observe some complementarities among the EU production areas (for instance mussel). However, for species with high seasonality of consumption, the challenge is to develop alternative sales opportunities throughout the year.
- **Higher logistical costs out of the main flows (rural areas):** logistical flows are well developed for the main markets and sales channels, namely in larger cities. However, there are challenges to reach remote areas with low FAP consumption, such as 1) the increased costs of transports (up to additional dozens of cents per kg) and 2) the lower demand which leads retailers to order a smaller range of items (with a focus on items with larger demand). This may exclude premium products (specific species, larger sizes) as the order of each point of sale may not reach the minimum number of pieces to order (for instance, one box).
- **Strong competition on the market, with an importance of price:** farmed products are on an international and open market, competing with other EU and third countries’ products (both farmed and wild caught products). Price, among other criterion, is a key point and differentiation strategies are crucial to face competition with third country-products, which may supply the market with lower prices. These strategies may be based on additional services provided (easy-to-use products), specific origins (local, national product), other quality criteria (organoleptic, new species,...) or other quality requirements (environmental and climatic footprint,...).
- **Low level of organisation in the sector:** the sector is composed of large number of small-scale companies. There is a low level of organisation (through producer organisations (POs) or co-operatives) which limits :
  - the bargaining power to access the market,
  - the capacity to invest (see next point).
- **Variable capacity for material and immaterial investments:** market segmentation and communication campaigns may require important means. The aquaculture sector is composed of large-scale operators which have the capacity to invest, but also of a large number of small-scale companies (often family owned) with limited resources to invest and develop these differentiation strategies in an effective way.



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- **Presence of fishmongers and fish counters to offer a diversity of products:** the presence of fish counter in large-scale retail and fishmongers is a key point to offer a wide range of species (including farmed species) and provide information to the clients. However, their presence varies. They are mainly concentrated in urban areas where the largest number of consumers are located as well as in coastal areas where consumption of FAPs is generally high. Coastal areas are close to landing places for wild caught products and close to production areas for marine aquaculture.
- **Consumer preferences for wild caught products, but this is a side criterion:** from a consumer perspective, the production method (farmed versus wild caught) is not among the main purchase criteria. However, when consumers are asked more in detail about their preference between these two methods of production, about two-thirds indicate that they do not have a clear preference (61%), about one-third indicate they prefer wild caught products (32%) and a small share prefer farmed products (7%).

The future evolution of farmed products sales in EU sales outlets is difficult to predict. However, based on the analyses conducted in the context of this study, some key points have been identified:

- **the evolution of FAP consumption** within the EU, which may be linked to both offer (volume of EU production, diversity of species farmed and imports) and demand (demography, diets, purchasing power) as well as other external factors (international stability...);
- **the capacity to maintain or develop the aquaculture production volume**, with significant challenges for producers, including administrative burden, local acceptability, adaptation to climate change, energy transition and resource scarcity, etc;
- **the capacity to develop relevant marketing strategies for each farmed product**, as different EU farmed product may target different market segments, depending on their production costs, period and place of consumption as well as their possible competitors;
- **the evolution of the number of fishmongers and fish counters, and their geographical distribution**, as these specialised points of sales play a pivotal role in offering a diverse range of FAPs and providing information to final consumers;
- **the capacity to adapt to consumer preferences and retailers' requirements**, as consumption trends shift rapidly (with sometimes contradictory requirements from consumers) and retailers' requirements are more demanding, especially regarding environmental aspects and the aquaculture sector (as well as the fishery sector) must continuously adapt to meet these expectations;
- **clear and relevant information provided to consumers on farmed products**, consumers get a lot of information on FAP labelling but only a limited amount is clear and relevant to them. A key challenge is to provide consumers with clear (easily understandable, without technical words) and relevant information (relevant for their purchase criterion) on farmed products. This information may be provided at the point of sales or through other media (internet...).
- **the structure and organisation of the sector**, while larger farming companies have the capacity to invest, the farming sector is composed of a high number of small-scale companies for which cooperation is key to address the present and coming challenges.



# 1. CONTEXT, OBJECTIVES AND METHODOLOGY

## Context and objectives

The present study follows a request from the Market Advisory Council (MAC). MAC highlighted that the market for the EU aquaculture remains not fully developed and that COVID-19 outbreak had an impact on the broad distribution of aquaculture products, especially to reach outlets in rural areas. In this context, MAC suggested that the study should focus on the marketing and sales channels for farmed products to better understand the flows.

The themes proposed to be covered were:

- the number of companies operating in the market, this has been undertaken based on statistics publicly available;
- the geographical mapping of distribution circuits, especially with regards to difficulties in reaching rural areas;
- complementarity of direct sales and online sales in relation to traditional sales to retailers;
- current difficulties in implementation of new outlets;
- benefits of quality labels, geographical indications, and promotion tools;
- trends and forecast.

## Methodology implemented

The approach implemented was based on desk research in addition to qualitative interviews:

- desk research covered:
  - statistics, notably from EUROSTAT and EUMOFA,
  - literature at EU and national levels: EUMOFA price transmission analyses, EUROBAROMETER surveys, national studies on the aquaculture sector, consumer behaviour or retail of FAPs;
- about 60 interviews have been conducted with stakeholders of the fishery and aquaculture sector at EU level and in the eight targeted MS: fish farmers, professional bodies, wholesalers and retailers, as well as public bodies.

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The present survey covers the main farmed species in the EU and the main MS in terms of production and market (in terms of volume). The detailed sectoral and geographical scope is detailed in the following table.

**Table 1: Geographical and sectoral scope of the study**

	Atlantic and Mediterranean				Central EU			Northern EU
	ES	FR	IT	EL	PL	CZ	HU	DK
Mussel	x	x	x					
Oyster		x						
Clams			x					
Carp					x	x	x	
Trout		x	x		x			x
Seabass	x		x	x				
Seabream			x	x				
Flatfish	x							

The present report provides:

- an overview of the farmed production and consumption at EU level;
- an analysis of the market for the main farmed products as well for the main MS, based on quantitative and qualitative information;
- an analysis of the role of certification schemes and collective brands in the aquaculture sector;
- a spatial analysis of the consumption;
- a review of existing literature on consumer preference for farmed products;
- an identification:
  - of the main challenges faced by the farming sector;
  - of the key factors to consider for the development of farmed products in sales outlets.

Specific insights on the markets of farmed products in the main MS are provided in annex (country sheets).

## 2. EU OVERVIEW: PRODUCTION AND CONSUMPTION

### 2.1 High socio-economic importance of the EU aquaculture sector

A total of 14.229 companies were involved in the aquaculture production in 2020, employing 34.581 full-time equivalents (FTE). Most of the companies are involved in shellfish production (47%) and freshwater farming (49%) while marine finfish production only accounts for 4% of the number of companies. The majority of these companies are less than 10 employees. The turnover of the EU farming companies was EUR 3,95 billion in 2020, from which 42% were for marine finfish, 30% for shellfish and 28% for freshwater finfish (STECF<sup>1</sup>). In comparison, the EU fishing fleet gathered 54.213 active vessels in 2021, employing 81.747 FTEs<sup>2</sup>. Landings in the EU reached 3,25 million tonnes in 2021 with a value of EUR 5,85 billion.<sup>3</sup>

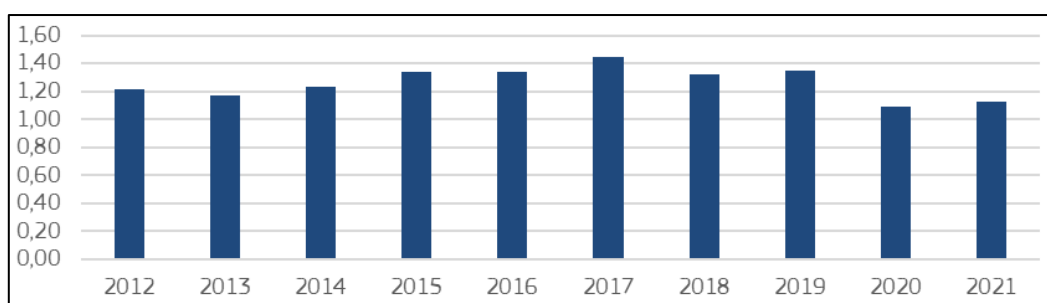
Several farming companies are involved in the first processing of the product: gutting, filleting and packing. They may also supply processing companies for packing and further processing such as smoking.

There were 3.219 processing companies involved in fishery and aquaculture products at EU level in 2021 (STECF<sup>4</sup>) They undertake processing of both farmed and wild-caught products. Wholesalers and retailers also handle both wild caught and farmed products.

### 2.2 EU aquaculture production

In 2021, EU aquaculture production reached a total of 1,13 million tonnes for a value of EUR 4,17 billion. This represented an increase of 4% in volume compared to 2020 and 11% compared to 2012. During the period between 2012 and 2021, most of the increase of EU aquaculture production was reported during the 2015-2017 period followed by a negative trend until 2021.

**Figure 1: Evolution of the aquaculture production in the EU in volume (million tonnes)**



Source: EUMOFA, based on EUROSTAT

<sup>1</sup> Economic Report on the EU aquaculture (STECF-22-17) - <https://publications.jrc.ec.europa.eu/repository/handle/JRC132648>

<sup>2</sup> The 2023 Annual Economic Report on the EU Fishing Fleet (STECF 23-07) - <https://stecf.jrc.ec.europa.eu/documents/d/stecf/stecf-23-07-aer-2023>

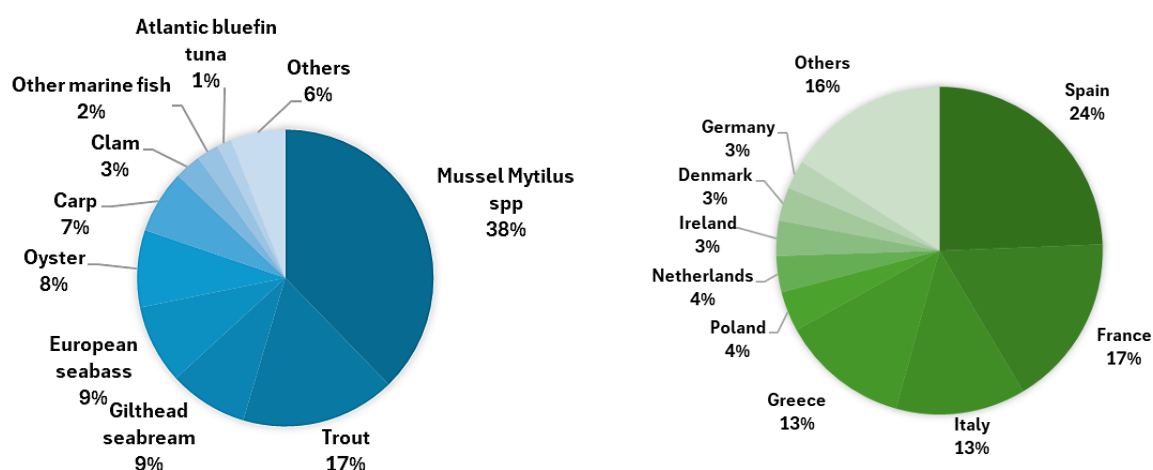
<sup>3</sup> EUMOFA – The EU fish market 2023

<sup>4</sup> Economic Report on the EU fish processing industry (STECF 23 -14) - <https://publications.jrc.ec.europa.eu/repository/handle/JRC136367>

## 2.3 Main producers and farmed species at EU level

The main species reared in the EU in 2021 were mussels, trout, gilthead seabream and European seabass, oysters and carps. All together, they accounted for 87% of the production volumes in 2021. Mussels alone contributed to 38% of the EU production, followed by trout with 17% of the production. Almost 70% of the EU production is concentrated in four MS (Spain, France, Italy and Greece). Shellfish production (mainly mussels and oysters) predominates in Spain, France and Italy, while Greece mainly produces seabass and seabream.

**Figure 2: EU aquaculture production by main commercial species (left) and by main producing Member States (right) in volume in 2021**



Source: EUROSTAT

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The following table provides an overview of the apparent consumption<sup>5</sup> across the EU of the species analysed in this study. The table provides, for each species 1) the total apparent consumption at EU level, 2) the ranking of the most consumed species in the EU in terms of volume and 3) the MS with the highest consumption. The details by species and MS are in the next section.

**Table 2: Overview of the apparent consumption of a selection of species across the EU (2021)**

Species	EU apparent consumption (tonnes, LWE)	Ranking	Top-3 EU largest markets
<b>Salmon</b>	2.325.084	1	France, Germany, Italy
<b>Mussels*</b>	558.554	5	Spain, France, Italy
<b>Trout</b>	439.932	8	Germany, France, Italy
<b>Shrimp, warmwater</b>	365.407	10	France, Spain, Italy
<b>Shrimp, miscellaneous</b>	327.060	11	Spain, Italy, Germany
<b>Clam</b>	167.245	17	Italy, Spain, Portugal
<b>Gilthead seabream</b>	140.303	19	Italy, Spain, Portugal
<b>European seabass</b>	110.673	26	Italy, Spain, France
<b>Oyster</b>	90.254	32	France, Italy
<b>Carp</b>	88.558	33	Poland, Hungary, Romania
<b>Turbot</b>	16.007	62	Spain, Italy, France

\* mussels include both *Mytilus* spp. and other mussel species  
Source: EUMOFA calculations based on Eurostat, FAO data.

## 2.4 Consumption of fishery and aquaculture products (FAPs)

### EU farmed products account for 11% of the EU FAP consumption

The EU supply of FAPs was estimated at 12,92 million tonnes in 2021 in live weight equivalent (LWE). This EU supply was made of:

- 69% of imported products (8,87 million tonnes) compared to 31% of EU products (4,05 million tonnes);
- 75% of products from wild caught fisheries (9,63 million tonnes) compared to 25% of farmed products (3,28 million tonnes).

Most of the EU supply was consumed at EU level (82%) and 18% were exported to third countries. Thus, the EU apparent consumption was estimated at 10,60 million tonnes. The EU farmed production accounted for 11% (1,13 million tonnes) of the EU apparent consumption. The largest share of the apparent consumption was for fishery products (71%, with 7,56 million tonnes) and 29% were farmed products (3,04 million tonnes). The share of farmed products registered a 2% increase between 2020 and 2021, a 3% decrease between 2016 and 2021 and a 1,5% increase between 2012 and 2021.

<sup>5</sup> Apparent consumption = production + imports – exports. It is calculated in live weight equivalent (LWE)

**Table 3: EU supply balance (2021, million tonnes Live weight equivalent)**

	Production	Imports	Supply	Exports	Apparent consumption
<b>Fishery &amp; aqua.</b>	<b>4,05</b>	<b>8,87</b>	<b>12,92</b>	<b>2,32</b>	<b>10,60</b>
<b>Fishery</b>	2,92	6,71	9,63	2,07	7,56
<b>Aquaculture</b>	1,13	2,15	3,28	0,24	3,04

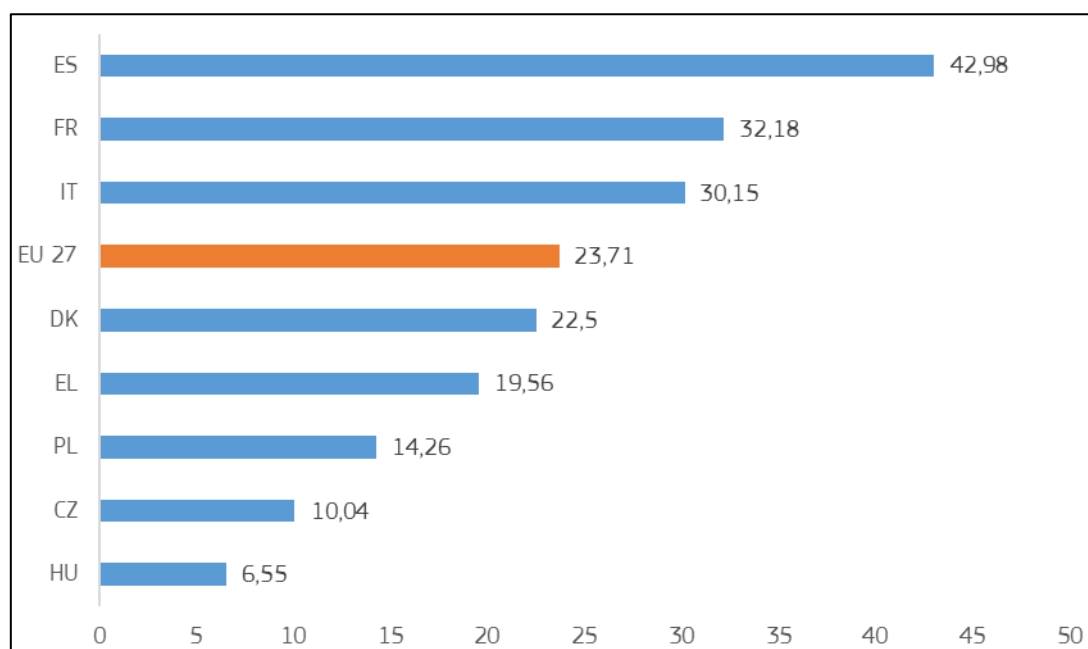
Source: EUMOFA calculations based on Eurostat, FAO data.

### Per capita consumption and main species consumed

Per capita consumption of FAPs was 23,71 kg in 2021 (farmed products accounted for the remaining 6,80 kg LWE)<sup>6</sup>, with strong difference among the MS covered by the study:

- High consumption in Spain, France and Italy with more than 30 kg/inhabitant;
- Medium consumption in Denmark, Greece and Poland (between 14,26 and 22,50 kg / inhabitant);
- Low consumption in Czechia and Hungary: from 6,55 to 10,04 kg/inhabitant.

**Figure 3: Per capita apparent consumption of FAPs by MS in 2021 (kg live weight / capita / year)**



Note: For Denmark, the data is an estimate made by the University of Copenhagen for the latest years, per capita apparent consumption is estimated between 20,00 and 25,00 kg LWE

Source: EU Fish market 2023 – EUMOFA

<sup>6</sup> EUMOFA - EU Fish market 2023

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The consumption concentration on a limited number of species tends to be lower in MS with high level of consumption of FAPs. In Spain, Italy and France, where the level of consumption is above 30 kg / inhabitant, the top 3 species in total FAP consumption account for a maximum of 25%. In Poland, Czech Republic and Hungary where the per capita consumption is lower, the three top species account for between 45% to 59% of the total FAP consumption. Salmon is one of the most consumed aquaculture species in most of these countries. Other farmed species in the top species in some MS include carp (Czechia and Hungary), freshwater catfish (Hungary), mussel (Spain) and seabream (Greece).

**Table 4: Share of the top three species in the total fresh consumption and list of the top three species**

	Share of the top 3 species in the total FAP consumption	Per capita consumption (kg LWE)	List of the top 3 species
<b>Czechia</b>	49%	10,04	Alaska pollock, <b>carp</b> , <b>salmon</b>
<b>Poland</b>	46%	14,26	Alaska pollock, herring, mackerel
<b>Hungary</b>	45%	6,55	<b>Carp</b> , <b>freshwater catfish</b> , skipjack tuna
<b>Greece</b>	27%	19,56	Squid, <b>gilthead seabream</b> , sardine
<b>France</b>	25%	32,18	<b>Salmon</b> , cod, skipjack tuna
<b>Spain</b>	25%	42,98	Hake, <b>mussel (<i>Mytilus spp.</i>)</b> , cod
<b>Italy</b>	21%	30,15	<b>Salmon</b> , yellowfin tuna, squid

*Species which are mainly from aquaculture are in bold*

*Note: data not available in Denmark*

*Source: EUMOFA calculations based on Eurostat and FAO data*



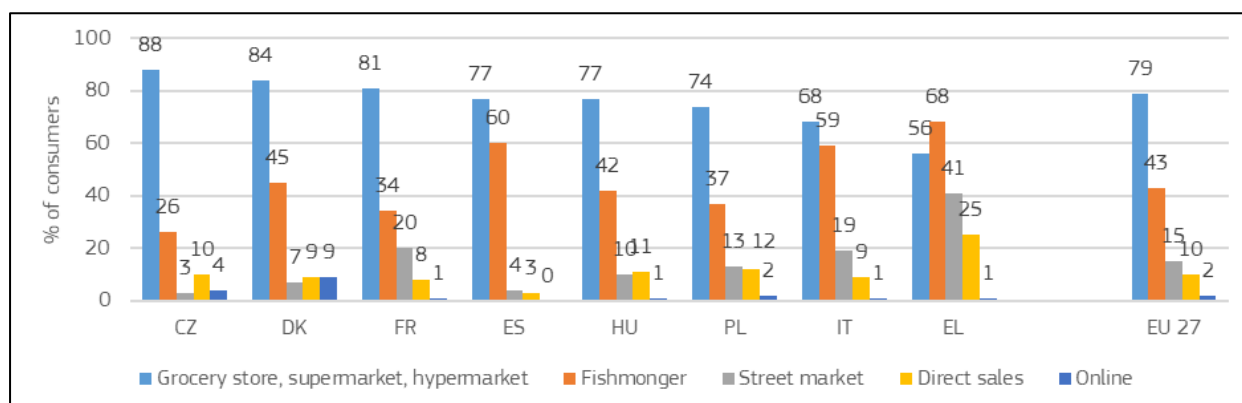
## 2.5 Sales channels for FAPs

At EU level, the most common sales channels for household consumption of FAPs are the groceries, supermarkets and hypermarkets (used by 79% of EU consumers), followed by fishmongers (used by 43% of the consumers), street markets (15%), direct sales (10%) and online sales (2%)<sup>7</sup>. Groceries, supermarkets and hypermarkets are significantly used in each MS but the importance of other sales channels is not homogeneous across all MS (in particular fishmongers and street markets).

In more detail:

- **Groceries, supermarkets and hypermarkets** are important in each MS, in particular in Czechia, Denmark and France with at least 81% of the consumers who purchased FAPs through this channel in 2021. In Spain, Hungary, Poland and Italy, it is used by 68% to 77% of the consumers. In Greece, groceries, supermarkets and hypermarkets are important but it is the second most used channel after fishmongers (68% of the consumers purchase at fishmongers and 56% in groceries, supermarkets and hypermarkets).
- **Fishmongers** are widely used in Mediterranean countries, such as Greece, Spain and Italy, with 59% to 68% of the consumers purchasing FAPs through this channel. It is also widely used in Denmark (45%) and Hungary (42%). The level is lower in France (34%) and Czechia (26%).
- **Street markets** are widely used in Greece (41% of the consumers) and to a lesser extent in France (20%) and Italy (19%). This is used by 3% to 13% of the consumers in other MS.
- Regarding **direct sales**, Greece also appears to be an exception compared to other MS, 25% of Greek consumers use this channel to purchase FAPs, while only 8% to 12% of the consumers do in other MS.
- **Online sales** remain limited in most MS (2% of the consumers maximum), with the exceptions of Denmark (9% of the consumers) and Czechia (4% of the consumers).

**Figure 4: Sales channels used by consumer in the last 12 months in each MS and at EU 27 level (2021)**



Source: Special Eurobarometer 515, 2021

<sup>7</sup> Special Eurobarometer 515, 2021 - EU Consumer Habits Regarding Fishery and Aquaculture Products - [Link](#)

## 2.6 Retailers' strategies

Retailers' strategies (large-scale retail and other types of retailers) are pivotal for the sales of FAPs, in terms of diversity of species proposed, production methods, presentation / preservation, origin... Retailers adapt their strategy to the products available and to their perception of consumer demand (in terms of price, quality, etc.).

### Coastal MS versus landlocked MS

Firstly, we observe strong differences in retailers' strategies based on the geographical location of the MS, with a higher share of farmed products (from inland aquaculture) in landlocked MS.

In Czechia and Hungary, interviewees confirmed the high share of farmed products and estimated that aquaculture products represented between 75% and 80% of the supply, including salmon which is imported from third countries but also carp and trout locally supplied. The remaining share (from 20% to 25% of the supply) consists of wild catches originating mainly from third countries.

At sub-national level, there may be high differences between 1) rural and urban areas and 2) coastal and inland areas. This is developed in section 5 of the present report.

### Wild caught or farmed products for retailers?

Several stakeholders interviewed reported consumers' preference for wild caught products even if some farmed products rank among the main species consumed, such as salmon (consumer attitude is developed in section 6 of the present report). However, beyond consumer preference, several stakeholders (wholesaler, retailers) indicated that farmed products allow to produce the desired range of products for consumers (in terms of size) and to maintain a stable volume of supply, as opposed to wild catches which vary depending on the season, stock availability and weather conditions.

### Lower range proposed in areas with lower consumption

In rural and inland areas, several stakeholders reported a lower demand for FAPs (less people, possible less interest in FAPs and less purchasing power). Thus, retailers may not supply with a large variety of FAPs and may exclude the most expensive products (specific species, higher sizes) due to 1) a minimum number of fish to order to fill in a box and 2) a risk of waste. In this context, retailers may also propose products with long shelf life (processed products).

### Procurement strategy for fishmongers – case in Spain

Spanish FAP market is highly oriented towards fishery products. According to FEDEPESCA (Spanish federation of fishmongers), the sourcing strategy regarding farmed products depends on the shops, varying between 10% to 30% of farmed products. Fishmongers rely to a high extent on products from Spanish captures or Spanish aquaculture farms (in particular mussel and seabass).

### Fish counter in large-scale retail – case in France

The presence of fish counter is a key issue in large-scale retail (LSR) to offer a large diversity of products (in terms of species, presentation...) and to provide information to consumers. Results from the French observatory of prices and margins transmission<sup>8</sup> shows that the net result of fish counters in large-scale retail is negative (-2% in 2021). According to the French observatory, this counter accounts for 9% of LSR sales. There are important costs related to this counter: raw material and labour costs. Based on qualitative feedback from retailers, these counters are maintained in the point of sales (even if they are not profitable) because they allow to attract consumers in the whole shop. The same reasoning is conducted for other shelves, such as bread and pastries (result at -3% in 2021).

The French observatory indicates that the net result for independent fishmongers is positive (5% in 2021).

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<sup>8</sup> Observatoire de la formation des prix et des marges, FranceAgriMer - [https://observatoire-prixmarges.franceagrimer.fr/sites/default/files/pictures/rapport\\_ofpm\\_2023\\_avec\\_couv\\_0.pdf](https://observatoire-prixmarges.franceagrimer.fr/sites/default/files/pictures/rapport_ofpm_2023_avec_couv_0.pdf)

### 3. FOCUS ON THE MAIN FARMED SPECIES

This section provides inputs for each of the main farmed species: a quantitative approach on production and consumption by MS and a market description for the different MS covered by the study. A more detailed market description is provided in annex: “Country sheets”.

#### 3.1 Mussel

##### Quantitative approach

The EU is one of the largest producers of mussels in the world, ranking second globally after China. In 2021, the EU mussel’s production reached 447.500 tonnes (95% from aquaculture). EU production has been stable over the last decade (between 2012 and 2021).

Spain was by far the main producing country within the EU, contributing to 45% of the EU production in 2021. The Mediterranean mussel (*Mytilus galloprovincialis*) is the largest species produced (75% of the Spanish mussel production in volume). The farming techniques are dominated by the traditional suspended rope culture, while long line systems have been developed over the last decades in different regions. Spain is also the largest market with an apparent consumption of 156.866 tonnes LWE. Mussel is the second most consumed species in Spain, after hake, representing 8% of the apparent consumption of fishery and aquaculture products in 2021.

France follows as the EU’s second largest producer and consumer. In 2021, it contributed to 15% of the EU mussel’s production. Blue mussel (*Mytilus edulis*) dominates the production, with 90% of the total French production, while the Mediterranean mussel only represents 10% of the total production. Blue mussels are cultivated on “*bouchot*” (wooden stakes) or on longline at sea, while the Mediterranean mussels are cultivated on tables in the Mediterranean lagoons or on longlines in open sea. “*Bouchot*” is the most important farming technique in France, accounting for 83% of the national mussel production<sup>9</sup>. France was also the second largest market for mussels in 2021 with an apparent consumption of 138.029 tonnes LWE. Mussel was the sixth most consumed species in France and represented 6% of the apparent consumption of FAPs. The French production is almost all absorbed by the internal market which also heavily depends on imports.

Italy was the third largest producer and consumer within the EU in 2021. It accounted for 14% of the EU mussel’s production. With an estimated apparent consumption of 123.567 tonnes LWE, Italy ranked third in terms of mussel’s consumption in the EU. Mussel in Italy was the fifth most consumed species, comprising 7% of the total apparent consumption of FAPs.

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<sup>9</sup> EUMOFA - Price transmission analysis - Mussel in the EU

**Table 5: Apparent consumption of mussels in the main EU markets (2021, in tonnes LWE)**

MS	Production	Import	Supply	Export	Apparent consumption	Share*
<b>Spain</b>	203.257	51.188	254.445	97.579	156.866	<b>8%</b>
<b>France</b>	66.444	79.424	145.868	7.839	138.029	<b>6%</b>
<b>Italy</b>	62.550	72.531	135.082	11.515	123.567	<b>7%</b>
<b>EU-27</b>	<b>447.466</b>	<b>125.531</b>	<b>572.997</b>	<b>14.443</b>	<b>558.554</b>	<b>5%</b>

\* Share in the total FAP apparent consumption

Source: EUMOFA elaboration of EUROSTAT-COMEXT and FAO Fish Stat

### Market description (see more details in annex: “country sheets”)

Mussel is widely produced and consumed in Spain, France and Italy. It is considered as an affordable product. In each MS, when national production is not available, it is complimented by imports. Mussel is widely sold in large-scale retail and HORECA. Direct sales play a limited role in each MS. The market share of fishmongers is also variable.

In each MS, specific quality schemes are registered: PDO “*Mejillon de Galicia*”, PDO “*Cozza di Scardovari*”; TSG “*Moules de Bouchot*”, PDO “*Moules de bouchot de la baie du Mont-Saint-Michel*”. Some of these schemes cover niche products with a price premium while other cover significant shares of the national production.

Mussel is mainly consumed fresh, however, there is a significant consumption of preserved mussel in Spain and pre-packed mussel is also important in Italy and France (growing trend). Some stakeholders also reported growing difficulties to export live products in the recent years. Thus, they tried to develop processed products for export markets.

## 3.2 Oyster

### Quantitative approach

The EU oyster production amounted to over 95.000 tonnes in 2021 (almost all from aquaculture). The Pacific cupped oyster (*Magallana gigas*) is by far the main produced species in the EU, with 97% of volumes in 2021. The EU production has remained stable over the period between 2012 and 2021 but has decreased by 12% since 2018. France is by far the main EU producer, accounting for 85% of the production. Oyster is reared in France according to three cultivation methods, on-bottom production being the most prevalent (95% of the production volume in 2021<sup>10</sup>). Other production methods include production in marchland ponds<sup>11</sup> and suspended production, representing together 5% of the production volume in 2021<sup>12</sup>.

<sup>10</sup> Source: AGRESTE – Enquête aquacole 2021 - [https://agreste.agriculture.gouv.fr/agreste-web/download/publication/publie/Chd2308/cd2023-8\\_Aqua2021.pdf](https://agreste.agriculture.gouv.fr/agreste-web/download/publication/publie/Chd2308/cd2023-8_Aqua2021.pdf)

<sup>11</sup> This production technique consists of ending the rearing of oysters by a temporary immersion in marshland ponds (« *claires* ») which provides a significant added-value to the final product.

<sup>12</sup> Source: AGRESTE – Enquête aquacole 2021 - [https://agreste.agriculture.gouv.fr/agreste-web/download/publication/publie/Chd2308/cd2023-8\\_Aqua2021.pdf](https://agreste.agriculture.gouv.fr/agreste-web/download/publication/publie/Chd2308/cd2023-8_Aqua2021.pdf)

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Ireland is the second largest producer but almost all the production is destined to export, with France being the primary market of destination.

The EU apparent consumption for oysters amounted to 90.254 tonnes LWE in 2021, placing it 32<sup>nd</sup> among the most consumed species. Oyster consumption accounted for only 1% of the apparent consumption of the FAPs in the EU. Oyster consumption is concentrated in just a few MS, mainly France, which stands as the largest market. France recorded a total apparent consumption of circa 75.000 tonnes LWE in 2021, making it the 10<sup>th</sup> largest consumed species in France. Oyster consumption in France represented 3% of the total apparent market for FAPs.

**Table 6: Apparent consumption of oysters in the main EU markets (2021, in tonnes of live weight equivalent)**

	Production	Import	Supply	Export	Apparent consumption	Share*
France	80.943	9.603	90.546	15.737	74.809	3%
Italy	454,9	9.189	9.644	305	9.339	1%
EU-27	95.396	2298	97.694	7440	90.254	1%

\* Share in the total FAP apparent consumption

Source: EUMOFA elaboration of EUROSTAT-COMEXT and FAO Fish Stat

### Market description (see more details in annex: “country sheets”)

Oyster is widely produced and consumed in France. In 2022, main sales channels for household consumption were general shops (mainly large-scale retailers) (57% of the volume), followed by outdoor markets (24%). Fishmongers and outdoor markets accounted for 9% and 6% of the sales volume<sup>13</sup>.

Oyster consumption is highly seasonal and is mostly associated with Christmas and New Year. Household consumption is below 2.500 tonnes/month from January to November and is about 8.000-10.000 tonnes in December. To decrease this seasonality, producers develop direct sales (at outdoors markets and on production sites) as well as export markets.

The origin of the production is often highlighted to final consumers (Normandy, Brittany, Pays-de-la-Loire Charentes-Maritime, Mediterranean area ...). Two PGIs are registered in the oyster sector in France:

- “Huîtres Marennes Oléron” which may be associated to the French quality scheme “Label Rouge”;
- more recently (2023), “Huître de Normandie”.

<sup>13</sup> FranceAgriMer - Consommation des produits de la pêche et de l'aquaculture 2022 - [https://www.franceagrimer.fr/fam/content/download/72643/document/STA\\_MER\\_CONSO\\_2022.pdf?version=2](https://www.franceagrimer.fr/fam/content/download/72643/document/STA_MER_CONSO_2022.pdf?version=2)

### 3.3 Clam

#### Quantitative approach

The EU production reached almost 104.000 tonnes in 2021. The EU production has increased by 24% between 2012 and 2021. This growth is attributable to the increase of catches by 58%. 31% of the EU production comes from aquaculture while 69% is supplied from fisheries. Italy, the Netherlands and Portugal were the top three producers (from both fisheries and aquaculture), contributing to 43%, 20% and 11% of the EU production respectively. Italy was by far the main aquaculture producer (72% of the EU aquaculture production), followed by Portugal (17%) and France (7%). Two types of technologies are used for aquaculture production in the EU: on-bottom (especially widespread in Italy and Portugal) and raft. The two main clam species cultured in the EU are Japanese carpet shell (*Ruditapes philippinarum*) and grooved carpet shell (*Ruditapes decussatus*).

The EU main markets for clams in 2021 were Italy, Spain and Portugal, with an apparent consumption of 63.429 tonnes, 55.192 tonnes and 24.605 tonnes LWE respectively. A significant share of the Italian supply of clams comes from domestic production, while Spain is mainly supplied with imports.

In 2021, clam was the 10<sup>th</sup> most consumed species in Italy (3% of the Italian apparent consumption of FAPs), the 12<sup>th</sup> most consumed species in Spain (3%) and the 8<sup>th</sup> most consumed species in Portugal (4%).

**Table 7: Apparent consumption of clam in the main EU markets (2021, in tonnes of live weight equivalent)**

MS	Production	Import	Supply	Export	Apparent consumption	Share*
Italy	44.601	29.992	74.593	11.164	63.429	3%
Spain	6.118	75.061	81.179	25.987	55.192	3%
Portugal	11.231	25.174	36.405	11.800	24.605	4%
EU-27	103.578	68.917	172.495	5.250	167.245	2%

\* Share in the total FAP apparent consumption

Source: EUMOFA elaboration of EUROSTAT-COMEXT and FAO Fish Stat

#### Market description (see more details in annex: “country sheets”)

Italy is the main clam producer in the EU and one of the main consumers, together with Spain and Portugal. Consumption of clams is very seasonal, from late winter to late spring.

Consumption is located mainly in coastal and urban areas. While consumers of coastal areas prefer fresh products, more frozen and canned clams are consumed in cities<sup>14</sup>.

Sales channels for clams are diversified, including large-scale retail, direct sales, HORECA. A large part of the production is also exported.

In terms of preservation forms, according to an interview with a “*Conorzio*” in Veneto, fresh clams are estimated to dominate the market (about 65%), followed by frozen clams for 20% and canned for 15%.

<sup>14</sup> Interview



According to stakeholders, brand and certifications significantly contribute to enhance brand image, improve access to markets, increase sales volume, and potentially benefit from a price premium. Mussels and clam's cooperatives generally refer to their regional origin on their packaging<sup>15</sup>.

### 3.4 Seabass

#### Quantitative approach

The EU production of European seabass (*Dicentrarchus labrax*) reached almost 102.000 tonnes in 2021, with aquaculture accounting for 96% of this total. The EU production has increased by 50% over the period 2012-2021. The aquaculture production has increased by 60% over the same period, while production from fishery has decreased by 35%. The bulk share of the aquaculture production comes from sea cage farming. Greece is the largest producer in the EU, representing 51% of the EU production in volume in 2021. Other EU significant producers include Spain (23% of the EU production), Croatia (9%) and Italy (7%). The EU production reached its highest level in 2021, primarily attributable to production increase in Greece (45%), Spain (59%) and to a lesser extent in Croatia and Italy.

The EU apparent consumption for seabass amounted to 110.674 tonnes LWE in 2021, ranking 26<sup>th</sup> among the most consumed species in the EU. Aquaculture production in the EU supplied up to 82% of the EU supply for seabass. The remaining is supplied with imports, all originating from Türkiye. Greece is a major player, but a relatively small market. Thus, a significant share of the Greek production is exported to other MS. Italy, despite not being a major producer, was the largest market for seabass in the EU with an apparent consumption of 35.223 tonnes LWE in 2021, followed by Spain with an apparent consumption of 34.092 tonnes LWE. The other main markets in the EU were France and Portugal.

**Table 8: Apparent consumption of European seabass in the main EU markets (2021, in tonnes LWE)**

	Production	Import	Supply	Export	Apparent consumption	Share*
<b>Italy</b>	7.501	31.301	38.802	3.579	35.223	2%
<b>Spain</b>	23.582	19.485	43.068	8.975	34.092	2%
<b>France</b>	5.148	7.890	13.038	1.422	11.615	1%
<b>Portugal</b>	1.548	7.003	8.551	154	8.398	1%
<b>EU-27</b>	101.639	21.594	123.233	12.559	110.674	1%

\* Share in the total FAP apparent consumption

Source: EUMOFA elaboration of EUROSTAT-COMEXT and FAO Fish Stat

#### Market description (see more details in annex: “country sheets”)

Seabass is a species widely consumed in several MS, particularly in Italy and Spain. It is generally consumed fresh with a specific market for portion seabass. However, fillets, pre-packed and frozen products are on a growing trend. A large share of the purchases is in large-scale retail, 71% of the

<sup>15</sup> Interview

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household consumption in Spain and 50% of the total volume in Italy (for Italian seabass). Fishmongers are also an important channel with 19% of the household consumption in Spain and 20% of the total consumption in Italy. HORECA is a significant channel in Italy, with 30% of total sales<sup>16</sup>.

Farmed seabass is in competition with wild caught seabass. However, the price positioning of farmed and wild caught seabass are distinct, with wild caught product being on a premium segment.

National productions from Spain and Italy are competing with imported products from the EU (Greece, Croatia) and Türkiye. While Italian production gets a price premium on its national market (due to national preference from consumers and perceived higher freshness and quality), Spanish seabass is relatively aligned with imported products in terms of price and market positioning. A key aspect is the percentage of national production in the total supply of each MS (the share is lower in Italy which allows this premium positioning):

- Italian production accounts for 19% of the Italian supply (2021 data);
- Spanish production accounts for 55% of the Spanish supply (2021 data).

## 3.5 Seabream

### Quantitative approach

The EU production of gilthead seabream was about 100.500 tonnes in 2021. Greece was by far the leading producer in the EU, accounting for 67% of the EU production for a total production of over 67.000 tonnes. Other major producers in the EU include Italy and Croatia, with 9% and 8% of the EU production respectively. The EU production has significantly increased by 20% over the period 2012 and 2021.

The EU market for gilthead seabream is estimated to 140.303 tonnes LWE. Seabream was the 19<sup>th</sup> most consumed species in the EU, and it is mostly concentrated in a few MS, mainly Italy, Spain, Portugal, France, Greece, and Germany.

Italy was by far the largest market, with an apparent consumption of almost 41.000 tonnes LWE. The Italian market is mostly supplied by imports (83% of the supply in 2021). Spain was the second largest consumer, with almost 16.000 tonnes LWE. Similar to the Italian market, the Spanish market is mainly supplied by imports (89% of the supply in 2021). In 2021, Portugal was the third market, with an apparent consumption of almost 16.000 tonnes LWE.

Even though Greece is the largest producer, it was the fifth largest market in 2021, with over 12.500 tonnes LWE. Seabream was the third most consumed species in Greece in 2021, accounting for 6% of the total consumption of fishery and aquaculture products.

**Table 9: Apparent consumption of seabream in the main EU markets (2021, in tonnes LWE)**

MS	Production	Import	Supply	Export	Apparent consumption	Share*
Italy	8.613	40.860	49.474	8.529	40.945	2%
Spain	2.123	17.479	19.602	3.638	15.964	1%

<sup>16</sup> EUMOFA – Price transmission analysis on seabass

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<b>Portugal</b>	3.580	13.326	16.906	1.170	15.736	3%
<b>France</b>	3.015	11.887	14.902	905	13.997	1%
<b>Greece</b>	67.683	9.017	76.700	64.127	12.574	6%
<b>EU-27</b>	100.521	46.592	147.113	6.810	140.303	1%

\* Share in the total FAP apparent consumption

Source: EUMOFA elaboration of EUROSTAT-COMEXT and FAO Fish Stat

### Market description (see more details in annex: “country sheets”)

In Greece, retail accounts for only 20% of the seabass and seabream market shares, the Greek market for seabass and seabream being mainly oriented towards HORECA (80% of the market shares).

On the Italian market, seabass is mainly retailed fresh. Large scale retail is very important for seabream, with over 70% of market share, compared to 30% for HORECA<sup>17</sup>. Online sales are rising, especially since the COVID-19 pandemic, so are direct sales<sup>18</sup>. National production tends to be sold at a higher price than imported products, due to low volume available from Italian production, preference for local products and perceived higher quality and freshness.

## 3.6 Trout

### Quantitative approach

The EU is the second largest producer of trout globally (after Iran), with a total production of 193.759 tonnes in 2021, representing an 11% increase over the period 2012-2021. 98% of the EU production originates from aquaculture and rainbow trout is the dominant species reared (99% of the EU production). Rainbow trout is the main freshwater species farmed in the EU and almost all rainbow trout on the EU market comes from aquaculture.

Italy was the largest producer, accounting for 22% of the EU production in 2021. The same year, Italy was followed by France, Spain and Poland, representing respectively 18%, 10% and 10% of the EU production. Among these MS, Denmark is known to have the most widespread production in recirculating aquaculture systems (RAS).

The same year, Germany was the largest market, with over 65.000 tonnes LWE, representing 7% of the German apparent consumption of FAPs. Trout was the fifth most consumed species in Germany in 2021.

France was the second largest market, with almost 40.000 tonnes LWE. Trout consumption in France accounted for 2% of the total consumption of FAPs in 2021. It was the 18<sup>th</sup> most consumed species.

Italy was the third largest market with an apparent consumption of over 33.000 tonnes LWE, representing only 2% of the Italian consumption of fishery and aquaculture products. It was the 17<sup>th</sup> most consumed species in Italy.

Most of national supply came from domestic production in Italy (91% of the supply) and France (72%), while imports were significantly dominant in Germany (88% of the supply).

<sup>17</sup> Interview API

<sup>18</sup> Interview API, interview producer

**Table 10: Apparent consumption of trout in the main EU markets (2021, in tonnes LWE)**

MS	Production	Import	Supply	Export	Apparent consumption	Share*
<b>Germany</b>	8.727	63.414	72.140	6.961	65.179	<b>7%</b>
<b>France</b>	34.426	13.491	47.917	8.151	39.766	<b>2%</b>
<b>Italy</b>	41.875	4.087	45.962	12.939	33.023	<b>2%</b>
<b>EU-27</b>	193759	37993	231.752	11786	219.966	<b>2%</b>

\* Share in the total FAP apparent consumption

Source: EUMOFA elaboration of EUROSTAT-COMEXT and FAO Fish Stat

### Market description (see more details in annex: “country sheets”)

The trout market is divided into three segments: portion trout under 0,5 kg, medium trout from 0,5 to 1-1,2 kg and large trout over 1-1,2 kg.

Portion trout and medium sized trout are mainly retailed fresh, in HORECA, large-scale retail and fishmonger. A significant share of the volume may be sold for angling activities in some MS, such as Italy. The volume produced at EU level was 111.476 tonnes in 2022<sup>19</sup>.

Smoked trout is mainly produced with large trout, for which production has been increasing at EU level up to 2020 and has decreased in 2021 and 2022. The production of large trout was 63.674 tonnes in 2022 at EU level<sup>20</sup>.

## 3.7 Carp

### Quantitative approach

The EU produces around 90.000 tonnes carp annually. Over the period 2012-2021, the EU production has been relatively stable (-1%). Most of the production is concentrated in Central and Eastern Europe. Czechia, Poland and Hungary are the top three EU producers making up two-thirds of the total carp production in 2021. Carp is mainly reared in ponds in extensive or semi-intensive systems. Common carp is the most important carp species that is reared in the EU, but other carp species are also reared such as bighead carp, silver carp and grass carp. Carp is produced primarily for domestic markets, except for Czechia (the only MS with significant exports).

The EU market for carps is estimated to almost 89.000 tonnes LWE in 2021, which represented only 1% of the total EU consumption of FAPs.

However, the consumption of carp is significant in a few MS. Poland was the largest market for carps in 2021, with an apparent consumption of 20.300 tonnes LWE. Carp was the 12<sup>th</sup> most consumed species in the country, as in Poland many other species are consumed. The Polish market is primarily supplied with domestic production. Hungary, Czechia and Romania are also large consumer countries where the carp consumption represented a significant share of the total FAP consumption, with respectively 22%, 12% and 8%. In 2021, carp was the most consumed species in Hungary and the second most consumed species in Romania and Czechia.

<sup>19</sup> FEAP - <https://feap.info/wp-content/uploads/2024/01/2024-01-19-production-report-2023-v1.pdf>

<sup>20</sup> FEAP - <https://feap.info/wp-content/uploads/2024/01/2024-01-19-production-report-2023-v1.pdf>

**Table 11: Apparent consumption of carp in the main EU markets (2021, in tonnes of live weight equivalent)**

MS	Production	Import	Supply	Export	Apparent consumption	Share*
<b>Poland</b>	19.106	1.659	20.765	461	20.304	4%
<b>Hungary</b>	16.108	172	16.280	2.622	13.659	22%
<b>Romania</b>	8.776	4.708	13.484	55	13.429	8%
<b>Czechia</b>	21.422	158	21.580	9.423	12.158	12%
<b>EU-27</b>	86.438	3.106	89.544	986	88.558	1%

\* Share in the total FAP apparent consumption

Source: EUMOFA elaboration of EUROSTAT-COMEXT and FAO Fish Stat

### Market description (see more details in annex: “country sheets”)

From a market perspective, carp is widely produced in Hungary, Czechia and Poland where it is traditionally consumed during the Christmas period. Carp is locally produced in fish farms in these MS.

Carp consumption is highly seasonal as it is linked to Christmas in the three MS. However, it is also increasingly consumed at the beginning of spring with the harvest of wintering pond. Carp tends to be consumed mostly by older generations as it requires preparation skills that the younger lack.

Carp is mainly purchased live fresh directly from fish farms and fishmongers, and from large-scale retailers to a smaller extent.

In each MS, specific quality schemes are registered: PDO “*Akasztói szikiponty*”, PGI “*Balatoni hal*” and PGI “*Szegedi tükörponty*” registered in Hungary, PDO “*Pohořelický kapr*” and PGI “*Třeboňský kapr*” in Czechia, PDO “*Karp zatorski*” in Poland.

Carp is mainly consumed live fresh, and gutted and filleted to a smaller extent. The demand for carp fillets is increasing because consumers lack the skills to prepare this product.

## 3.8 Turbot

### Quantitative approach

The EU production of turbot consists mainly of aquaculture (76% of the EU production, while the remaining is supplied from fisheries). Turbot is mainly farmed in Spain and Portugal, the only MS that produce turbot in aquaculture (a few farms exist also in France, albeit inactive for some years). Together, Spain and Portugal contributed to 77% of the EU turbot production (fisheries and aquaculture) in 2021. Over the period from 2012 to 2021, there has been a significant decline in turbot fisheries production. In 2021, the MS with significant fisheries production were The Netherlands and to lesser extent Denmark and France (together contributing to 72% of the fisheries production of turbot in 2021 and 18% of the total EU production). Regarding aquaculture, while Portuguese production has decreased by 20% between 2012 and 2021 (with a downward trend until 2017 followed by an upward trend), the Spanish production has increased by 10% over the same period. Turbot farming primarily takes place in tanks, in central regions of Portugal and in Galicia (Spain).

The EU apparent consumption for turbot amounted to 16.000 tonnes LWE in 2021, which represented only 0,2% of the total EU apparent consumption of FAPs (ranking 62<sup>nd</sup> in terms of the most consumed species in the EU). Spain was the largest market for turbot in the EU in 2021, with an apparent consumption of 8.726 tonnes LWE. The Spanish market is mainly supplied with domestic production (almost 60% of the Spanish supply). The same year, Italy and France followed, with respectively 2.534 tonnes LWE and 1.216 tonnes LWE.

**Table 12: Apparent consumption of turbot in the main EU markets (2021, in tonnes of live weight equivalent)**

MS	Production	Import	Supply	Export	Apparent consumption	Share*
Spain	8.605	6.399	15.004	6.278	8.726	0,5%
Italy	72	2.625	2.697	163	2.534	0,1%
France	528	1.064	1.592	376	1.216	0,2%
EU-27	15.839	690	16.529	522	16.007	0,2%

\* Share in the total FAP apparent consumption

Source: EUMOFA elaboration of EUROSTAT-COMEXT and FAO Fish Stat

### Market description (see more details in annex: “country sheets”)

Flatfish is mainly produced in Spain, accounting for 74% of the EU turbot production. Spanish households are the largest turbot consumer in EU; however, a large share of the turbot production is exported. Turbot is consumed all-year-long in Spain. It is mainly distributed through HORECA channels, as well as through fishmongers to a smaller extent. Purchase through large-scale retailers and at-home consumption has been increasing since the COVID-19 pandemic. Turbot is mainly consumed fresh whole or gutted. It is considered a high-end product even though farmed turbot is less expensive than wild turbot.

## 4. ROLE OF CERTIFICATION SCHEMES AND COLLECTIVE BRANDS

### 4.1 EU quality schemes: PDO / PGI / TSG

Several quality schemes may be used in the aquaculture sector: protected designation of origin (PDO), protected geographical indication (PGI) and traditional specialty guaranteed (TSG)<sup>21</sup>. There are 28 PGI/PDO/TSG registered in EU Member States (see table in annex) for aquaculture products including:

- nine for carp (two of them include carp and other species);
- five for mussel;
- three for oyster;
- three for trout;
- five for other species.

Based on publicly available information,

- some of these schemes are large-scale with 15.000 tonnes to 27.000 tonnes: “*Mejillón de Galicia*”, TSG “*Moule de bouchot*”, and “*Huîtres Marennes Oléron*”;
- some are medium scale such as: “*Moules de Bouchot de la Baie du Mont-Saint-Michel*” with 9.760 tonnes produced ;
- and some other are small-scale with less than 500 tonnes: “*Trote del Trentino*” and “*Cozza di Scardovari*”.

Several objectives may be pursued and achieved with quality schemes:

- intellectual property of a specific protected name;
- market segmentation and differentiation on the market with a specific name and logo, with the objective to achieve a better price or a higher demand in terms of volume,

Other possible impacts which may be observed include quality management and better coordination between stakeholders. From a general perspective, the involvement in a quality scheme is well-perceived by retailers in terms of 1) communications (possibility to highlight a specific logo on the point of sale) and 2) quality management.

Based on desk research and interviews:

- PDO “*Akasztói szikiponty*” registered in Hungary since 2020 (carp) has allowed producer to improve the image of the product and to reach a price premium (based on interview with a farm). The registration under PDO has been a driver for a positioning on the premium market.
- PDO “*Pohořelický kapr*” (carp) in Czechia is considered by some producers interviewed as a key point in the communication strategy. In addition, producers consider that it helps to access some market in the large-scale retail. For a general perspective, the two PDOs on carp (“*Pohořelický kapr*” and “*Třeboňský kapr*”) have been mentioned several times by interviewees as positive signals on the market, that consumer may look for.
- TSG “*Moule de Bouchot*” (mussel): the objective is to highlight the national origin of the French mussel on the market, through the use of the term “*bouchot*” which is specific method

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<sup>21</sup> [https://agriculture.ec.europa.eu/farming/geographical-indications-and-quality-schemes/geographical-indications-and-quality-schemes-explained\\_en#geographicalindications](https://agriculture.ec.europa.eu/farming/geographical-indications-and-quality-schemes/geographical-indications-and-quality-schemes-explained_en#geographicalindications)



conducted in France. A large share of the French “*bouchot*” production is under the TSG scheme but no price premium is observed compared to other methods of production.

- PDOs “*Cozza di Scardovari*” and “*Moules de Bouchot de la Baie du Mont-Saint-Michel*” (mussels) cover specific areas and the qualities of the products are different from the quality of mussel produced in other areas, with a high meat to shell ratio. These PDOs allows to develop a differentiation strategy and a price premium is observed<sup>22</sup>
- PGI “*Huîtres de Marennes Oléron*”, the PGI may be used jointly with the French scheme “Label Rouge”. The PGI and Label Rouge allow a market segmentation with different designations: for instance: “*Fines de claires*” and “*Pousses en claires*”. Certification schemes are not widely used by producers in direct sales (producers provide explanations on their method of production directly to their clients) and the scheme is mainly used when the product is sold through large-scale retail or fishmongers. The protected name “*Marennes Oléron*” is widely known by consumers in France.

## 4.2 Organic scheme

The rules for organic production are set in Regulation (EU) 2018/848<sup>23</sup>. This includes among other requirements: rules for inputs used in finfish production (feed, medicine) and the quality of water for shellfish. Organic scheme accounted for 9% of the EU aquaculture production in 2020<sup>24</sup>; this was mainly mussel (from Italy, the Netherlands, Germany, Denmark and Ireland) and salmon from Ireland. Regarding shellfish, the main producers have a limited involvement in the organic scheme (namely Spain and France).

The EU market for organic products has highly increased over the last decade<sup>25</sup>, it reached EUR 45 billion at retail stage in 2022 (2,8 times more than in 2010). We observe strong differences among MS in terms of percentage of organic products in the food consumption at retail stage: 12% in Denmark, Austria, 5% to 8% in Luxembourg Sweden, Germany, France, Estonia and below 5% in other MS (even below 1% in a few MS)<sup>26</sup>.

The EU organic market has been growing up to 2021 (with annual growth up to +17% in 2020) but met a decrease in 2024 (-2,8%). However, the market in 2022 was still at a higher level than in 2020<sup>27</sup>. This recent decrease is related to the inflation context which limits the market for premium products such as organic seafood.

The EUMOFA study on organic aquaculture<sup>28</sup> identified several drivers for growth:

- the growing organic market (at least up to 2021, the organic market is more stable now or even decreasing in some MS);

<sup>22</sup> <https://www.franceagrimer.fr/content/download/67062/document/ETU-MER-moule-bouchot.pdf>

<sup>23</sup> Regulation (EU) 2018/848 of the European Parliament and of the Council of 30 May 2018 on organic production and labelling of organic products and repealing Council Regulation (EC) No 834/200.

<sup>24</sup> [https://eumofa.eu/documents/20178/432372/Organic+aquaculture+in+the+EU\\_final+report\\_ONLINE.pdf?](https://eumofa.eu/documents/20178/432372/Organic+aquaculture+in+the+EU_final+report_ONLINE.pdf?)

<sup>25</sup> Source: Based on FiBL data

<sup>26</sup> 12% in Denmark and Austria, 8% in Luxembourg and Sweden, 6% in Germany and France, 5% in Estonia, 4% in the Netherlands, Belgium and Italy, 3% in Ireland and Spain, 2% in Croatia, Finland, Slovenia, Czechia and Latvia, 1% in Bulgaria, Lithuania, and Poland, less than 0,5% in Hungary, Greece, Portugal and Romania.

<sup>27</sup> Source: Based on FiBL data

<sup>28</sup> EUMOFA – Organic aquaculture in the EU  
[https://eumofa.eu/documents/20178/432372/Organic+aquaculture+in+the+EU\\_final+report\\_ONLINE.pdf?](https://eumofa.eu/documents/20178/432372/Organic+aquaculture+in+the+EU_final+report_ONLINE.pdf?)

- the price premium for some organic products (shellfish);
- the possibility to implement market segmentation.

However, several barriers have also been identified:

- lack of articulation between farmed and wild caught products on the information provided to consumers. Wild caught and farmed products are retailed on the same shelf in the shop but are not eligible to the same schemes, in particular the organic scheme covers farmed product only and wild caught products are not eligible (there is no public scheme comparable to organic for wild caught products and the main scheme used is MSC);
- low added value of the organic production for shellfish, as the non-organic production is extensive and doesn't use any feed or antibiotics (the certification is mainly based on the quality of waters);
- technical barriers:
  - higher costs of production for finfish;
  - low availability of organic feed;
  - interdiction of some methods of production (recirculating aquaculture system (RAS) and polyculture.

### 4.3 Ecolabels, other certification schemes and collective brands

Several other schemes and brands are used by stakeholders. Different types may be identified:

- Ecolabel dedicated to farmed products: ASC, Friends of the Sea;
- Quality management standards: GLOBAL G.A.P.;
- National certification schemes: Label Rouge, etc.
- Collective trademarks / certification trademarks.

In addition, new schemes are emerging with possible use in the schemes on environment and nutrition such as: “*Nutriscore*” or other scorings linked to environment and climate. These schemes are in development and may rapidly scale up in the agri-food and seafood sectors.

Based on stakeholders' feedback, there are several potential positive aspects for certification schemes:

- image enhancement: certifications significantly enhance the company's image among both professional clients and consumers;
- market access: certifications facilitate entry into specific markets;
- sales volume: several stakeholders reported a positive correlation between certifications and increased sales volume (in relation to the previous point on market access);
- price premium: this last aspect is more variable.

#### Czechia

In addition to PDOs and PGIs, several schemes may be used by stakeholders in Czechia: the national brand “*Český kapr*” (Czech Carp) owned by the national professional body<sup>29</sup>, regional brands highlighting a specific origin, Omega 3 carp and “*Klasa*” certification owned by the Ministry of Agriculture. A new scheme has been created in 2023: “*Sustainable fish farming*”. This new scheme

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<sup>29</sup> Rybářské sdružení České republiky (Czech fish farmer association) - <http://www.cz-ryby.cz/>

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has been developed by the Fishermen's Association of the Czech Republic and Mendel University in Brno. Two producing companies are involved at this stage, and they supply one retail company. Other retailers should be involved in the future.

Feedback from stakeholders is nuanced on the impact of such schemes. Some mention this is a support for communication and allows to develop a “story” for consumers. Some others consider this is not relevant for carp on their market or that communication efforts have not been sufficient. A Czech fishmonger interviewed indicated his willingness to supply certified fish from Czechia, but he considers the availability in volume is low.

### Denmark

Two schemes have been identified on Danish market: organic and ASC. The observed impacts of the schemes are:

- to improve the product image;
- to access and secure some markets;
- to get, to some extent, a price premium.

Stakeholders indicated that certification schemes are more important than brands on the Danish market. They also consider that a “good story” about the production stage and the relation to nature is a good promotion.

### France

The public certification scheme “*Label Rouge*” is widely used in finfish and shellfish sector. This scheme is well-known by French consumers and used in other sectors (such as poultry, ham, fruits and vegetable). It generally identifies a premium segment in large-scale retail and specialised shops. Several other schemes have been developed in the finfish sector, such as “*Aquaculture de nos régions*” or “*Fumé en France*”. In the shellfish sector, almost each producing area has developed a collective brand which may be used in complementarity with public schemes (PDO, PGI, TSG, organic, Label Rouge). These trademarks are generally owned by regional professional bodies (in particular « *comités régionaux de la conchyliculture* » (CRC)). We can mention, for instance, « *Huitres Vendée Atlantique* », « *Huître de Bretagne* », « *Breizhmer* », « *Huitre de Méditerranée sur corde* », « *Moule de méditerranée sur corde* », ... The importance of regional brands in the French oyster sector is related to the large number of areas of production (Channel, Atlantic and Mediterranean coasts), these may be touristic areas. Thus, highlighting the areas of production is a signal for local products (for inhabitants and tourists) and for a specific origin (some consumers may prefer a specific region, from where they belong or which they visited for instance).

### Greece

Greek sector is highly export oriented, with a strong demand for certification from large-scale retail and HORECA/wholesale sector. This notably covers international standards such as Global G.A.P., ASC or Friends of the Sea. The professional body HAPO developed a certification (“Fish from Greece”) which covers 70% of the national certification. From a general perspective, HAPO considers that consumers do not give the certification scheme high importance but focus more on price and origin of the product, other stakeholders also highlight the importance of freshness.

The impact on price is far from being systematic. The main benefit is to have access to the market. An interviewee summarised that certifications provide a “right to play”, not a “right to win”.

On the Greek market, the demand for certification schemes is low, even if it is increasing.

## Hungary

Collective brands are commonly used for carp. Furthermore, national or regional brands are often backed by quality standards and controls that suggest to consumers that the product is original, high quality and safe.

A stakeholder reported some attempt to develop brands for carp products. This was not successful, and no price premium could be reached with this strategy. The conclusion of the company is that the market is highly price driven.

## Italy

Italian stakeholders have a significant interest in certification schemes and collective branding. Different certification schemes are used in addition to geographical indications and organic, in particular Global G.A.P., Friend of the Sea, ASC and a recent national scheme “*Sistema di qualità nazionale acquacoltura sostenibile*” (“national scheme for sustainable aquaculture”) initiated in 2020<sup>30</sup>. Several regional brands or labels (such as “*allevato in Italia*”) have also been developed to highlight the origin of the products.

A professional body from Emilia-Romagna (Consorzio Mitilicoltura Emilia Romagna) reported an improvement over the past five years on products branding to highlight quality and origin of the product. However, consumer recognition varies and targeted communication is essential. Another professional body (Consorzio in Veneto area) confirms the uptake of branding and estimates that about 30% of farmed products are under collective or individual brands. In other areas (“*Cozza tarantina*”), there is a limited use of certifications, with an estimated share of 10% of the volume. A wholesaler reported that brands may have positive impacts on the market as brand can support the product storytelling. However, this branding shall be supported by relevant communication and educational campaigns.

## Poland

A few actions are implemented to support farmed fish in Poland, such as the brand “*Polski karp*” (from the national producer organisation) which is recognised by about 20% of the Polish consumers (according to an interview). Polish carp producers comply with a code of good practices and some stakeholders indicated that there was a room to increase the uptake of a national / regional certification scheme if this provides a benefit on the market.

There is a limited development of individual branding by companies. Some large-scale retailers also developed action to promote Polish carp at Christmas period and Polish trout. Specific campaign “our trout” has been implemented and has been mentioned positively by some people interviewed.

A few stakeholders mentioned a growing demand for certification schemes by some retailers on trout, for instance ASC, however the producer also reported a low recognition by end consumers.

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<sup>30</sup> <https://www.politicheagricole.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/15812>

## Spain

Certification schemes are highly used in large-scale retail. A large-scale retailer interviewed indicated that all suppliers of farmed products were certified. Several certifications are used (GLOBAL G.A.P., ASC, etc.) with some increasing requirements to include animal welfare, deforestation and social aspects.

The national scheme “*Crianzas Mares y Rios de España*” (“farmed in Spanish seas and rivers”) is highly used by Spanish fish farmers. According to the professional body FEDEPESCA (representative of fishmongers), almost all Spanish seabass and seabream sold by fishmongers are labelled by this scheme.

## 4.4 Requirements from retailers on certifications

Annual reports from retail companies inform on their procurement strategies and their requirements on certifications. While “responsible fishing and aquaculture practices” is frequently mentioned in their procurement strategies, this may cover different types of practices.

The German retailer **Lidl**, operating in several European countries including France, Spain, Czechia, Hungary, Greece, Denmark and Poland, has developed cross-countries requirements for products (including fishery and aquaculture products) to be met by the suppliers. These requirements set minimum shares of marketed products that must be certified under marine stewardship council (MSC) and aquaculture stewardship council (ASC): minimum 50% in 2023 and 100% in 2026<sup>31</sup>.

The Danish retailer **Salling Group** supports its suppliers in their accreditation under the Global Seafood Sustainability Initiative (GSSI) and has developed the Salling Group’s Responsible Procurement System to ensure sustainable sourcing of seafood products<sup>32</sup>.

To ensure FAPs from sustainable practices, the Norwegian retailer operating in Denmark, **Rema 1000**, requires its suppliers to comply with the International Fish Meal and Fish Oil Responsible Supply Standard (IFFO RS standard). In addition, trout and salmon supplies are subjected to the Animal Protection Act<sup>33</sup>. The retailer has also decided not to sell fishery products appearing on the Norwegian red list. (threatened species)

In Czechia, the cash and carry brand **Makro** is favouring local producers (including in the fish sector) through the Local Supplier project.

In 2022, the French retailer **Carrefour** relied on local French supply for oysters, mussels, a part of the seabream and seabass supply (the supply being completed by imports), and trout. Salmon was the only aquaculture product whose supply relied on imports (exclusively from Norway). In 2022, 34,5% of the FAPs from national brands and Carrefour brands were certified under a sustainability scheme<sup>34</sup>. The retailer aims to reach 50% of FAPs from sustainable production by 2025.

**Intermarché** (France) has developed a plan to reach sustainable fishery by 2025 and a chart to ensure sustainable supply of seafood products. Similarly, **Leclerc** (France) has developed a rating

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<sup>31</sup> Lidl, 2023 - <https://corporate.lidl.fi/pdf/show/83561>

<sup>32</sup> Salling Group, 2020 - [https://storage.sallinggroup.com/media/2690/sustainable-seafood-policy\\_general\\_vjune-2020\\_v3.pdf](https://storage.sallinggroup.com/media/2690/sustainable-seafood-policy_general_vjune-2020_v3.pdf)

<sup>33</sup> <https://www.rema.no/ansvar-i-rem-1000/dyrevelferd/dyrevelferd-for-fisk-og-sjomat/>

<sup>34</sup> Carrefour, 2022 - <https://www.carrefour.com/sites/default/files/2023-06/Agir%20pour%20une%20op%20eche%20et%20une%20aquaculture%20responsable%20Carrefour%202022.pdf>

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system to evaluate its seafood suppliers according to a sustainable supply guide and to monitor those with an insufficient score to establish a progress plan<sup>35</sup>.

Several retailers require that the aquaculture products are supplied from GMO-free farms or antibiotics-free farms such as the Italian retailers **Conad** and **Coop**.

In Spain, the retailer **Mercadona**<sup>36</sup> aims to ensure sustainable fishing and aquaculture practices by implementing a sustainable fishing policy guaranteeing traceability, legal fishing, good practices, and the promotion of local supply.

The table hereinafter provides an overview of the requirements of large-scale retail companies and cash & carry companies for FAPs.

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<sup>35</sup> Leclerc, 2022 - [https://www.mouvement.leclerc/sites/default/files/2022-05/Tous%20engagés%20pour%20un%20Mouvement%20responsable%20-%20Rapport%20RSE%202021%2025Mo\\_1.pdf](https://www.mouvement.leclerc/sites/default/files/2022-05/Tous%20engagés%20pour%20un%20Mouvement%20responsable%20-%20Rapport%20RSE%202021%2025Mo_1.pdf)

<sup>36</sup> <https://info.mercadona.es/en/lets-protect-the-planet/our-actions/this-is-the-responsible-policy-behind-mercadona-fish/news>

**Table 13: Requirements of a selection of large-scale retail and cash & carry companies for FAPs**

MS	Retailer	National supply	Imports	Certification	Commitment / objectives
Czechia	Metro (cash and carry)				Local Supplier project: nearly 200 local suppliers across all food categories
Poland	Lidl			MSC (minimum 50% of the wild-caught fish and shellfish), ASC (minimum 50% of the aquaculture products sold)	All wild-caught fish and shellfish sold must be MSC certified by 2026. All the aquaculture products sold must be ASC certified by 2026
Denmark	Salling Group			GSSI (Global Seafood Sustainability Initiative)	
	REMA 1000		Trout (Norway), salmon (farmed, Norway)	MSC, ASC Debio-certified organic salmon fillets	Salmon and trout farming subject to the Animal Protection Act
France	Carrefour	Oysters, mussels, seabream, seabass and trout	Salmon	MSC (salmon), ASC (shrimps), TSG (mussels), PDO (mussels), PGI (oysters)	50% of the FAPs sold (under its brand name or national brands) originating from responsible fishing/aquaculture practices by 2025
	Intermarché	37% of the wild-caught products supplied by Scapêche <sup>37</sup>		MSC	Sustainable fishery plan for 2025, Elaboration of a sustainable supply chart
	Leclerc				Rating of the suppliers according to a sustainable supply guide
Italy	Conad		Salmon (Norway), yellowtail kingfish (farmed in Germany), amberjack (Netherlands)	"Percorso qualita"	FAPs form controlled farms, GMO-free feed
	Coop	Seabass, seabream, trout, and perch	Turbot (Spain and Portugal), salmon (Scotland)		No antibiotics 6 months prior to capture of farmed seabass, seabream, trout, perch, and salmon
Spain	Mercadona			ASC (farmed salmon) Global Good Aquaculture Practice (farmed salmon)	Sustainable fishing, Fishing Products Purchasing Policy (PCPP) Support of local fishing

Source: EUMOFA elaboration, see list of sources used in annex

<sup>37</sup> Intermarché' subsidiary, part of vertical integration strategy of the company

## 5. SPATIAL ANALYSIS: HIGHER CONSUMPTION IN URBAN AND RURAL AREAS

### Czechia

Differences are observed between the different geographical areas. In urban areas, consumers purchase fish in supermarkets and in fishmongers' shops, and ask for prepared/processed fish (gutted, filleted, smoked, salads...). In rural areas, purchasing power is lower than in urban areas and production sites are closer. Many consumers prefer to pay a lower price and purchase live fish (which is killed at the point of sale) and people prepare the fish at home. In rural areas, there is space for this, and people have the know-how to prepare the fish. Stakeholders reported a lower outlet density, and some considered that the offer was less important in large-scale retail, mainly with frozen and marine fish.

However, in terms of seasonality of consumption, stakeholders interviewed do not identify significant differences in urban and rural areas: carp is mainly consumed at Christmas period in triple wrap (flour, egg, breadcrumbs). However, a few interviewees reported that this tradition was stronger in rural areas.

These differences in purchasing power have an impact on logistics. A stakeholder reported that the minimum shipment was a box of three fishes. For large and expensive fish, this is easily reached by fishmongers / retailers in largest town. However, in rural areas where there are less opportunities to sell expensive species, retailers may not make order for these expensive fish.

### Denmark

There is a correlation between the population density and the density of sales outlets. In addition, the offer tends to be more diversified in largest shops and in largest cities. In rural areas, where there is less density of inhabitants, some mobile fishmongers sell the fish (shops on trucks).

Furthermore, consumers in coastal areas tend to request marine fish more than freshwater fish. However, most of the consumption of trout products is in cities.

In this context, there is a lower offer of trout product in rural outlets, although consumption of trout products tends to increase when people are close to a farm.

### France

Strong differences are observed in terms of FAP consumption in the different regional areas in France. The present analysis is based on data from FranceAgriMer, elaborated with Kantar World panel data for household consumption<sup>38</sup>. There were eight sub-national areas identified in the analysis, they are detailed in the annex (the areas are different from the French administrative regions).

Consumption of fresh products is particularly high in Paris area with high purchasing power and high density of sales outlets. The consumption is specifically high for fresh finfish. In 2022, this area accounted for 19% of the population and for 22% of the purchase of fresh finfish.

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<sup>38</sup> FranceAgriMer - Consommation des produits de la pêche et de l'aquaculture 2022 - [https://www.franceagrimer.fr/fam/content/download/72643/document/STA\\_MER\\_CONSO\\_2022.pdf?version=2](https://www.franceagrimer.fr/fam/content/download/72643/document/STA_MER_CONSO_2022.pdf?version=2)



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In the western part of France, which is mostly coastal, the consumption of fresh FAPs is high. It is specifically high for fresh crustaceans, fresh shellfish and fresh finfish. This area accounted for 20% of the population and 57% of the consumption of fresh crustaceans, 27% of the fresh shellfish consumption and 22% of the fresh finfish consumption.

In the south-east part of France (13% of the population), which is largely coastal, a strong consumption of fresh cephalopods (30%) was observed, as well as frozen (16%) and canned products (14%).

In the south-west of France (10% of the population), consumption is significant for fresh finfish (10%), fresh cephalopods (11%) and processed products (11% for canned, 11% for delicatessen and 11% for frozen products).

At the opposite, the consumption of fresh products is particularly low in eastern parts of France, far from the coast. The share of canned and frozen products tends to be higher in these areas. Eastern France accounted for 9% of the population and 9% of frozen products; East-Centre area accounted for 14% of the population and 14% of frozen products and 15% of canned products.

In 2020<sup>39</sup>, there were 2.563 specialised fishmongers in France, in addition to 1.110 companies operating in outdoor markets. This number is increasing, they were 2.356 fishmongers in 2015 and 1.046 operating in outdoor markets. However, most recent data on the registration of new companies is decreasing in 2022 (192 new registration in 2022 compared to 217 in 2021).

The average density of specialised fishmonger by 100.000 inhabitants is 3,9 at national level. However, there are stark differences between territories, with higher density in coastal areas where several “*Départements*” (NUTS 3 area) have more than 6 or 8 specialised fishmongers / 100.000 inhabitants. This higher density of sales outlets concerns all sea basin: Channel, Atlantic and Mediterranean. In inland areas, the density is below 2 specialised fishmongers / 100.000 inhabitants is several areas. The exception is for the largest urban areas, such as Paris (with high density of population and high purchasing power), Lyon (south-east), Lille (north).

Specialised fishmongers are highly represented in areas between 5.000 and 200.000 inhabitants. These areas gather 29% of the French population and 45% of the sales outlets.

There is a low density of specialized fishmongers in areas with less than 5.000 inhabitants, which gather 30% of the French population and 20% of the fishmongers.

In Paris area, which accounts for 16% of the French population<sup>40</sup>, there are 13% of the fishmongers.

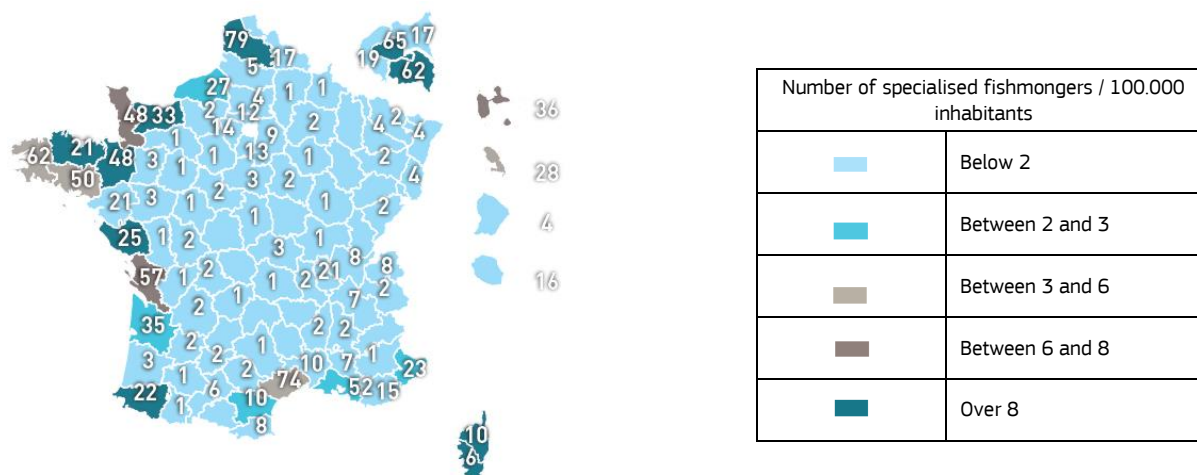
Most of the fishmongers are located in urban areas (90%) and 10% are located in rural areas. City centres are the main location (43%), followed by suburbs (32%) and isolated cities (15%).

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<sup>39</sup> Source: Observatoire de l'alimentation du détail – Poissonneries – Tableaux de bord 2023 - <https://www.observatoire-metiers-alimentation.fr/etudes-et-publications>

<sup>40</sup> The detailed list of municipalities considered in “Paris area” differs between “FranceAgriMer / Kantar World panel” and “Observatoire de l'alimentation du détail”

**Figure 5: Density and number of specialised fishmonger by geographical area in France in 2020 (NUTS 3 level)**



Source: Observatoire de l'alimentation du détail – Poissonneries - Tableaux de bord 2023

## Greece

Some stakeholders interviewed reported a higher density of sales outlets in large cities compared to rural areas and islands. In some rural outlets there may be a high share of frozen products. Due to the importance of tourism, the diversity of products is higher during summer.

Based on qualitative interviews, seafood consumption tends to be higher in urban areas and islands. For seabass and seabream, which are highly produced in Greece, the product is mainly retailed fresh.

## Hungary

Fish consumption is not homogeneous among the different Hungarian regions. Carp is more highly consumed in southern part of Hungary. Thus, carp is more frequent in the retail outlets in these areas. In addition, stakeholders interviewed reported strong differences between urban and rural areas in terms of consumption:

- In urban areas: There are more fish shops as the population is denser and the demand may be higher. Usually, a wider range of products is available as shops may offer a wider range of fish products including processed and fresh fish, ready meals etc.
- Consumers in urban areas eat fresh and processed fish. The demand for processed fish tends to be higher (such as frozen fish, fish fillets, prepared meals), the demand for marine fish is also higher than in rural areas.
- Consumers in rural areas tend to ask more for live fish or freshwater fish, people may cook fish in more traditional ways. There is a higher focus on price in rural areas, where the purchasing power tends to be lower than in largest cities.

A stakeholder interviewed highlighted the huge difference between selling fish in urban and rural areas. In this context, the company has set up mobile outlets to reach the countryside.

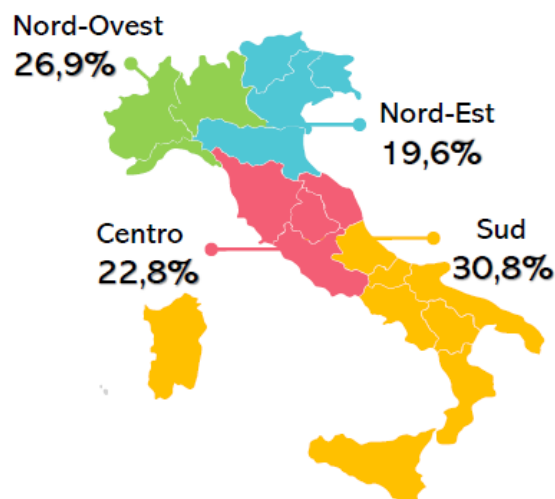
## Italy

There are important geographical differences in Italy on consumption patterns due to strong regional cultures. Overall, interviewees reported a higher demand for fresh products in coastal areas and easy-to-cook products in cities. In rural areas, the demand is more balanced between the different types of products.

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A specific survey has been conducted in 2022 by UnionCamere on seafood consumption in Italy, with specific analysis by geographical areas and a distinction between coastal and non-coastal consumers<sup>41</sup>. The geographical areas considered in the analysis are detailed in the following map. The survey is based on a sample of 2.002 consumers, with a breakdown detailed in the map below.

**Figure 6: Geographical areas considered in the analysis from the Unioncamere study**



Source: *La conoscenza e i comportamenti d acquisto dei prodotti dell'acquacultura e della pesca sostenibile – UnionCamere – 2022*

<sup>41</sup> Source: *La conoscenza e i comportamenti d acquisto dei prodotti dell'acquacultura e della pesca sostenibile – UnionCamere – 2022*

### Study on the challenges of aquaculture products in food outlets

Based on this study, nationally the main retail channels for seafood are supermarkets and specialised fishmongers (for 47% of the consumers) and supermarkets (for 38% of the consumers). Outdoor markets and direct sales have a lower importance (mentioned respectively by 11% and 4% of the consumers). In terms of geographical differences:

- there is higher preference for supermarkets in central Italy (preference for 47% of the consumers), followed by fishmongers (37%);
- there is a higher preference for specialised fishmonger in southern Italy (for 62% of the consumers), followed by supermarkets (26%);
- there is a balanced preference for supermarkets and specialised fishmonger in northern Italy (both north-east and north-west) (41% to 44% preference for each channel in each area).

A difference is also reported between coastal and non-coastal areas:

- consumers in coastal areas have a preference toward specialised fishmongers (it is the main retail channel for 52% for coastal consumers, compared to 46% for non-coastal);
- the preference for supermarkets is higher in non-coastal areas, it is the preferred retail channel for 41% of non-coastal consumers compared to 31% of coastal consumers;
- the level for outdoor markets is comparable for coastal and non-coastal (respectively 12% and 11%);
- direct sales have a higher preference for coastal consumers but remains at a low level (preferred channel for 6% of coastal consumers compared to 3% for non-coastal).

Half (50%) of the Italian consumers declare that wild caught fish or farmed products is not a criterion when purchasing a fish. However, for consumers for whom this is a criterion, the preference goes to wild caught fish (38% declare to purchase only wild caught fish compared to 3% declaring to preferred farmed products). We observe a slight difference between coastal and non-coastal: 47% of coastal consumers declare this is not important, compared to 51% for non-coastal. Thus, there is a higher preference for wild caught products by some consumers (this is not a criterion for half of the consumers), and this is emphasized in coastal areas.

The preference for national products is higher in coastal areas: this is mentioned by 44% of coastal consumers compared to 37% of non-coastal consumers.

## Poland

There are no statistics on sales outlets for FAPs in Poland, this is based on qualitative feedback from interviews. Hypermarkets are located only in largest cities; supermarkets are located both in urban and rural areas. There are more small fishmongers in rural areas. Overall, there is higher density of point of sales in urban areas compared to rural areas, with a higher variety of products in urban shops.

For fishmongers, the supply with national farmed production is easier when the retail shop is close to producing areas, if not, the logistic costs increase.

The demand for FAPs tends to be higher in cities as it is considered expensive products, demand for carp is higher in rural areas. Carp is also more popular in southern part of Poland. However, over the Christmas period, most families will consume carp. Interviewees reported a higher consumption of trout in coastal areas (Northern Poland) and in the capital city.

Due to differences in purchasing power (higher in cities), consumers in cities tend to ask for larger fish (2 kg/fish) compared to consumer in rural areas (1,5 kg/fish). In addition, the demand for sea fish tends to be higher in coastal areas, even if the fish is not local.

## Spain

From a qualitative point of view, FEDEPESCA (professional body for fishmongers) and ASEDAS (professional bodies for large-scale retailers) highlighted that the variety of species is more limited in rural areas compared to urban and coastal areas as the logistic is more complicated (even if retailers in rural area also have a fish counter). Furthermore, consumers don't buy fish every day and as it is a very perishable product, fishmongers cannot keep stocks. In urban areas, the higher purchasing power is a driver for seafood consumption.

On the coast, fishmongers rely more on local products with a higher presence of wild caught products. Professional bodies interviewed highlighted the importance of seafood consumption from wild caught fish in several coastal areas, such as Galicia, Valencian Community, Andalusia and Basque country. There are no detailed data on the density of sales outlets, a website ("*La Pescaderia Artesanal*"<sup>42</sup>) provides a mapping of the fishmongers but this is not comprehensive and only a sample of areas are covered. FEDEPESCA estimates there is no higher density of fishmongers on the coast compared to inland areas. However, the density is assessed to be higher in cities compared to rural areas.

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<sup>42</sup> <https://www.lapescaderiartesanal.es/es-ES/mapa>

## 6. CONSUMER PREFERENCES FOR FARMED PRODUCTS

### Importance of appearance, price and origin for consumers

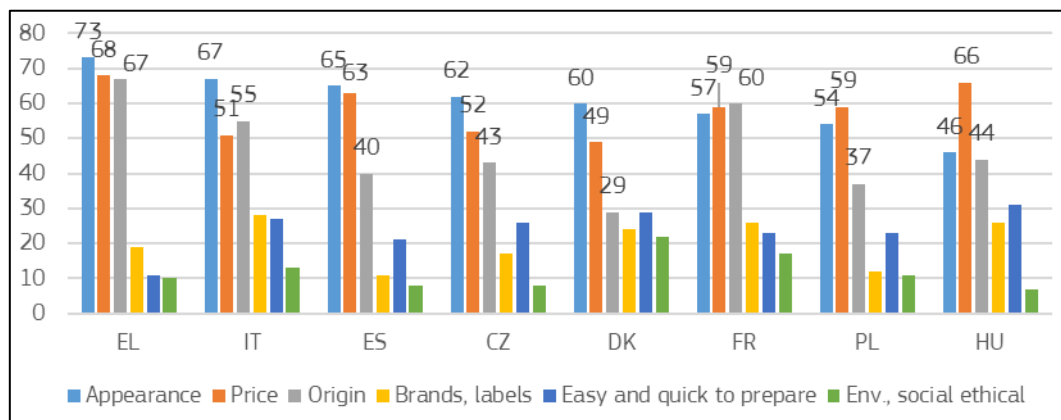
At EU level (2021)<sup>43</sup>, when FAP consumers are asked for their purchase criteria when buying fish, their answers are: product appearance (freshness, presentation) (for 58% of the consumers), price (54%) and origin (49%). By comparison with 2018, appearance and price remain relatively stable (respectively -1 point and +2 points) but origin has significantly increased (+8 points).

Three other criteria are highlighted to a lesser extent, namely the brands or quality labels (for 26% of the consumers), how easy and quick it is to prepare (24%) and the environmental social or ethical impacts (16%).

Some specific patterns are identified at MS level:

- product appearance is by far the 1<sup>st</sup> criterion in Mediterranean countries (important for 65% to 73% of the consumers in Greece, Italy and Spain), where the diversity of species and the importance of fishmongers is also high;
- the price is particularly important in Greece (68%), Hungary (66%, this is the 1<sup>st</sup> criteria in Hungary, which is a MS with low FAP consumption) and Spain (63%). By contrast, this criterion is relatively low in Denmark;
- the origin is a key criterion in three Mediterranean MS: Greece (67%), France (60%) and Italy (55%), it is below 45% in other MS.

**Figure 7: Main criteria when purchasing FAPs, in a selection of MS (2021)**



Source: Special Eurobarometer 515 "EU consumer habits regarding fishery and aquaculture products"

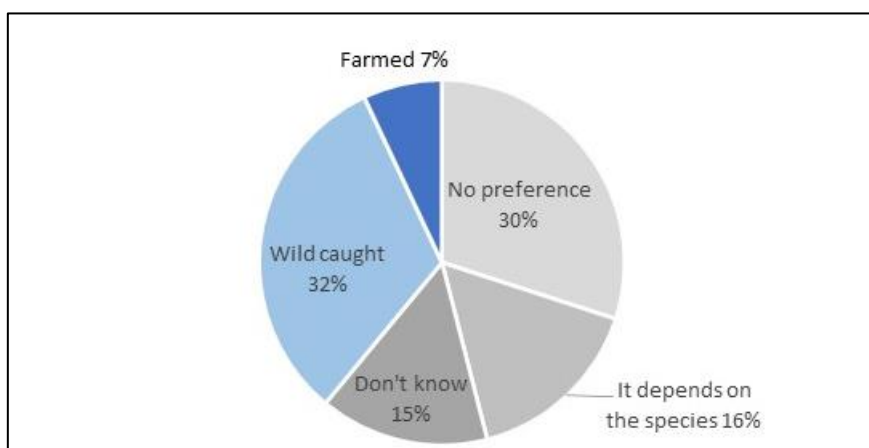
<sup>43</sup> Special Eurobarometer 515 "EU consumer habits regarding fishery and aquaculture products". <https://europa.eu/eurobarometer/surveys/detail/2271>

### Farmed or wild caught products?

When people are asked whether they have a preference between wild caught or farmed products (2021):

- 61% don't have a clear preference:
  - they have no preference for 30%;
  - it depends on the type of products for 16%;
  - they don't know for 15%;
- 32% prefer wild products;
- 7% prefer farmed.

**Figure 8: Preference of consumers toward wild or farmed products in a selection of MS (2021)**



Source: EUMOFA elaboration based on special Eurobarometer 515 "EU consumer habits regarding fishery and aquaculture products"

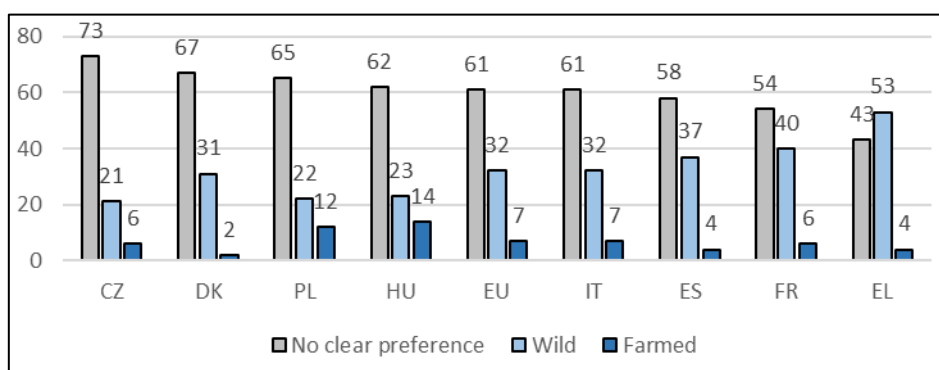
The comparison with 2018 data shows an increased share of people with no clear preference (+4 points for both "it depends on the type of products" and "you don't know if the product is wild or farmed"). By contrast, we observe -3 points for people preferring wild and -2 points for people preferring farmed products. Thus, it appears that:

1. wild caught or farmed products is not a key criterion for most consumers, compared with appearance, price and origin;
2. this criterion asks for some minimal knowledge on FAPs for consumers (15% don't know if they purchase farmed or wild products and 30% have no preference, suggesting that they do not necessarily perceive the pros and cons of each producing method);
3. this question is not necessarily simple to answer as it depends on the species: some species are not available from aquaculture (cod, mackerel, sardine, hake...) and some other with very limited volume or high price from fisheries (oyster, seabass...);
4. for the people who have a preference (39% of the EU consumers), wild caught products have a better image than farmed ones.

The preference at EU level is confirmed at the national level. It is worth noting that:

- the share of consumers with no clear preference ranges from 43% in Greece up to 73% in Czechia;
- the preference for farmed products is higher in Hungary and Poland, which are MS with low FAP consumption and significant farmed production (respectively 14% and 12% of the consumers prefer farmed products);
- the preference for wild products is higher than “no clear preference” in only one MS covered by the study: Greece. This MS is a large aquaculture producer, but this production is highly exported.

**Figure 9: Preference of consumers toward wild or farmed products at EU level and in a selection of MS (2021)**



Source: EUMOFA elaboration based on special Eurobarometer 515 “EU consumer habits regarding fishery and aquaculture products”

A study conducted in Italy<sup>44</sup> showed that the preference of Italian consumers for wild caught fish was higher for coastal consumers compared to non-coastal consumers. This study shows that the preference for farmed fish is low, but the share is also higher in coastal areas than in non-coastal areas. Thus, coastal consumers tend to make choices with higher consideration to production methods, suggesting a better knowledge of the fishery and aquaculture sector. In more details from this Italian study:

- Coastal consumers:
  - 47% purchase both wild and farmed fish;
  - 42% purchase only wild fish;
  - 4% purchase only farmed fish.
- Non-coastal consumers:
  - 51% purchase both wild and farmed fish;
  - 37% purchase only wild fish;
  - 3% purchase only farmed fish.

<sup>44</sup> La conoscenza e i comportamenti d acquisto dei prodotti dell’acquacultura e della pesca sostenibile – UnionCamere – 2022 – Survey based on the answer of 2.002 Italian consumers



### Study on the challenges of aquaculture products in food outlets

A recent study conducted in France<sup>45</sup> also highlighted that, for consumers, the information whether products were wild or farmed was important (for 85% of the consumer), even if only 23% of them indicated that they check for this information while shopping. This study also highlights a greater preference for wild caught products for coastal consumers. The rationale for this preference being the freshness, the taste and the natural aspect of wild caught products compared to farmed products on which consumers have limited knowledge of the production method (even if consumers admit they don't have a good understanding of the production methods for wild caught products either). For some French consumers interviewed, the aquaculture production may be associated to a negative image of Norwegian salmon due to TV reports. Other origins have a better image (for instance Scotland). In this context, the labelling of the country of origin for farmed products is important for consumers.

This French study also highlighted that consumers have a low understanding of the information provided on seafood, with the exception of the name of the species. This suggests that detailed and technical information does not necessarily reach its target, as it requires from the consumers 1) specific skills on the fishery and aquaculture sector (understanding on the method and areas of production) and 2) time in the shop to read each label.

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<sup>45</sup> Étude des attentes des consommateurs en matière d'étiquetage des produits aquatiques en grande distribution et poissonniers artisans, Mer Conseils and Scaning, for FranceAgriMer - <https://www.franceagrimer.fr/fam/content/download/72129/document/SYN-MER-Etiquetage%20des%20produits%20aquatiques.pdf?version=3>

## 7. KEY CHALLENGES FACED BY EU FARMED PRODUCTS

Key challenges faced by the farming sector to increase their sales on the EU market have been identified. These factors may be interconnected and related to either upstream stages (production, processing) of the value chain or downstream stages (retail).

### Difficulties to increase the production volume

Administrative burden has been recognised as one of the bottlenecks for releasing the potential of the aquaculture production in the EU. This was explicitly addressed in the first 2013 strategic guidelines for sustainable aquaculture development<sup>46</sup> and is still a central topic in the new 2021 version<sup>47</sup>. In both versions, administrative burden was recognised to inhibit both the installation of new sites of production and the expansion of new ones. A report of the European Court of Auditors<sup>48</sup> mentioned that the Commission recognised that lengthy procedures for obtaining licences needed to start an aquaculture activity and their uncertain outcome are deterrent to investments. The same report indicated that there is no clear improvement in the duration of licensing procedure since the implementation of the Commission guidelines.

### Climate change and scarcity of resources

Climate change and scarcity of resources are affecting the EU aquaculture sector. Some effects can already be observed, such as heat waves, water availability, increased water temperature, harmful algal bloom, etc.

In this context, biological cycles are disturbed, and farmers face more frequent and intense climatic events. Consequently, the implementation of the production processes on farm may be impacted, as well as the availability of inputs, their quality and price: feed, water, energy, juveniles...

### Increased production costs

Energy accounts for a significant share of the production costs in aquaculture. This rise in energy prices impacts the price of inputs (feed and juveniles) as well as the production process itself.

Energy and fuel prices have risen in 2022 since Russia's war of aggression against Ukraine. The latest economic report on EU aquaculture from the STECF<sup>49</sup> estimated that in 2022, price of electricity increased by 70%, fuel by 60% and 55% for feed.

This has had a direct impact on both energy and feed costs for farming companies. In finfish production, the impact is particularly high for feed which accounts for a large share of the costs. STECF estimates that feed accounted for 36% of total production costs for seabass and seabream

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<sup>46</sup> Strategic Guidelines for the sustainable development of EU aquaculture (COM(2013) 229 final) - <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013DC0229&from=EN>

<sup>47</sup> Strategic guidelines for a more sustainable and competitive EU aquaculture for the period 2021 to 2030 (COM(2021) 236 final) - <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2021:236:FIN>

<sup>48</sup> European Court of Auditors. 2023. EU aquaculture policy: Stagnating production and unclear results despite increased EU funding. [https://www.eca.europa.eu/ECAPublications/SR-2023-25/SR-2023-25\\_EN.pdf](https://www.eca.europa.eu/ECAPublications/SR-2023-25/SR-2023-25_EN.pdf)

<sup>49</sup> [https://stecf.jrc.ec.europa.eu/reports/economic/-/asset\\_publisher/d71e/document/id/52597154?inheritRedirect=false&redirect=https%3A%2F%2Fstecf.jrc.ec.europa.eu%2Freports%2Feconomic%3Fp\\_p\\_id%3D101\\_INSTANCE\\_d71e%26p\\_p\\_lifecycle%3D0%26p\\_p\\_state%3Dnormal%26p\\_p\\_mode%3Dview%26p\\_p\\_col\\_id%3Dcolumn-2%26p\\_p\\_col\\_pos%3D1%26p\\_p\\_col\\_count%3D2](https://stecf.jrc.ec.europa.eu/reports/economic/-/asset_publisher/d71e/document/id/52597154?inheritRedirect=false&redirect=https%3A%2F%2Fstecf.jrc.ec.europa.eu%2Freports%2Feconomic%3Fp_p_id%3D101_INSTANCE_d71e%26p_p_lifecycle%3D0%26p_p_state%3Dnormal%26p_p_mode%3Dview%26p_p_col_id%3Dcolumn-2%26p_p_col_pos%3D1%26p_p_col_count%3D2)

## Study on the challenges of aquaculture products in food outlets

in 2022 (compared to 27,1% in 2020), this accounted for 44,9% in RAS system for trout (compared to 35,7% in 2020).

Energy costs also experienced a significant increase from 7% to 60% depending on the production type. In 2022, energy costs accounted for 10% of the costs for mussel production (compared to 6,6% in 2020), 7% of RAS trout production costs (compared to 5% in 2020) and 0,2% of seabass and seabream production costs (compared to 0,1% in 2020).

**Table 14: Share of feed and energy in the production costs in three farming system in the EU and evolution between 2020 and 2022**

		2020	2022
Seabass and seabream	Feed	27,1%	36,2%
	Energy	0,1%	0,2%
Trout RAS system	Feed	35,7%	44,9%
	Energy	5,2%	7,2%
Mussel	Energy	6,6%	10,1%

Source: Economic report on EU aquaculture, STECF

Overall, the present situation has led to increased costs for all agri-food sectors, including the fishery and aquaculture sector in 2022. Indeed, the rise of energy costs also impacted wild caught products (in particular trawlers with high energy consumption) and the meat production in the agricultural sector (high importance of feed and energy in some production systems). However, this increase in costs has had a specific impact on the production systems that are the most dependant on energy, particularly land-based finfish facilities.

### Production and consumption seasonality

Several seafood products have a seasonal production and consumption. This seasonality may be more predictable for farmed products than for fishery products (which is more dependent on natural conditions), thus price evolution is also more stable for farmed products than for wild caught ones. The challenge for producers is to synchronise as much as possible production and consumption seasons and to avoid too strong peaks of consumption (low sales in other periods and concentration of risk in a specific period). Overall, we may observe some complementarities in the season between different sub-national areas and between MS:

- For mussel, the production is mainly from March to October in France, as well as the consumption. Ireland and the Netherlands produce mussel in the winter period and supply (among other MS) France in the off-season. In Spain, local production is completed by French from August to October.
- For oyster, the production is all-year-long with a consumption peak during Christmas period. In order to limit this peak of consumption, producers develop direct sales (out-door markets or on the site of production with a peak in the summer period) and export.
- For carp, it is predominantly consumed over the Christmas period. Due to the production cycle, producers generally don't have the higher sizes of fish during summer period.
- For trout, the peak of production may depend on climatic conditions. It generally occurs during spring period (when temperature of water increases). However, if winter temperatures are mild, consumption may begin earlier in the year.

### Higher logistical costs out of the main flows (rural areas)

In long supply chains (delivery to wholesaler markets or large-scale retailer warehouses), logistics can be streamlined and transportation costs ultimately account for a few dozens of cents/kg.

Out of these main sales channels, logistics may be more complex due to lower volumes. For instance, several stakeholders indicated that:

- In areas where fish consumption is relatively low, the order from fishmongers and retailers were for a lower diversity of fish (in terms of species or size);
- For some isolated producers, logistical costs could be higher (compared to areas with higher density of producers);
- Where live fish are transported (with specific transportation conditions), as this is requested on some markets, such as carp in the eastern EU.

### Strong competition on the market and importance of price

Overall, farmed products compete with a wide range of products, including other seafood producers, whether farmed or wild caught, as well as meat products. Beyond this general consideration, each farmed product is on a specific seafood market with specific competitors: products from other species or other origins. While some species are international products, widely consumed all year round with high volumes traded (salmon, seabass, sea bream, trout), some others are more specific in terms of period of consumption (for instance carp and oyster highly consumed at Christmas period) or more limited in terms of volume (for instance turbot).

With regards to the species studied in the present report, the competitors identified are as follows:

- Trout: there are intra EU flows of trout, in particular large trout used in the smoking industry. This species is in direct competition with salmon imported from Norway and the UK and with trout imported from Türkiye. The competition encompasses both fresh and smoked products;
- Seabass and seabream:
  - there is strong competition from Türkiye, with significant imports to the EU market;
  - there is strong competition among EU Member States, especially from Greece, which is an important producer and exporter;
  - Seabass and seabream are also in direct competition with other farmed species (trout and salmon) as well as wild-caught fish, in the same price range such as cod or hake.
- Flatfish: farmed flatfish (turbot) is in competition with other premium marine fish (including wild caught turbot);
- Carp: there is no direct competitor for carp at Christmas period due to its traditional consumption. However, outside of this period, carp competes with other wild caught and farmed species, both from freshwater and sea;
- Mussel: mussels from different EU provenances may compete with each other, they may also be complementary in terms of seasonality (mussels from other EU MS may be imported during the off-season of the nationally produced mussel). There are some distinct markets with PDOs in Spain and France and a TSG in France (highlighting the “*Bouchot*” method).
- Oyster: production and consumption are highly centralised in France.

Price plays a very important role in accessing various markets, especially considering the rising inflation since 2022. Several stakeholders reported that fresh fish had difficulties to access some markets such as canteens, due to their high prices. Factors influencing prices at consumer level include differentiation, additional services provided, etc. Specifically, the following factors have been identified to potentially influence prices positively (even if this is not systematic):

## Study on the challenges of aquaculture products in food outlets

- local origin; for instance, the price for Italian seabass is higher on the Italian market than imported seabass; in Spain, Spanish seabass has a comparable price to the imported one sold on the Spanish market);
- specific preservation or presentation: fresh product, fillet, salad, long-shelve life, ...
- specific branding (with relevant communication investment on the brand);
- quality schemes: organic, PDO, PGI, TSG or private schemes, even if the price premium is not systematic and must be considered in balance with additional costs.

In this context of high competition on prices, differentiation is a key point (to expect higher prices), as well as the ability to retain the lowest possible production costs.

### Low level of organisation in the sector

The aquaculture sector is composed of a large number of small-scale companies with a low level of collective organisation. There are some exceptions with the establishment of producer organisations and co-operatives in some areas. This low level of collective organisation is a limit to access the market due to a limited bargaining power. This also limits investments as well as research and development (see following point).

### Variable capacity for material and immaterial investments

Market may require specific types of products in terms of presentation and preservation in order to increase freshness, convenience, shelf-life and alignment with emerging consumers preferences and habits (innovation). The adaptation to consumer demand and the differentiation on the market are related not only to technical aspects but also to communication and promotional activities.

In this context, stakeholders have variable capacities to invest in specific equipment to provide new presentation and preservation types (e.g. filleting, modified atmosphere...). Furthermore, the effectiveness of such strategy can be questioned, particularly when competing with fish imported from third countries. For instance, stakeholders involved in the carp value chain reported that investments for carp processing would lead to higher price for final consumer than fish imported from third countries (catfish).

In addition, the success of labelling projects is dependent on the relevance of such labelling (relevance of the message provided to the targeted consumers) and the investments made in communication and promotion.

### Presence of fishmongers and fish counters to offer a diversity of products

Except in a few MS (for instance mussels in Spain, carp in Hungary), EU farmed products are not among the most consumed species. Thus, their availability in sales outlets depends on the assortment of products offered at those points of sale. In this context, the present share of fish counters is a key point for the diversity of species available and thus the presence of locally farmed products at the points of sale.

### Consumers' preference for wild caught products, although this is a side criterion for consumers

With regards to consumer preference (source: Eurobarometer), when they are asked what their criteria are when purchasing FAPs, they mention product appearance first (e.g. freshness, presentation), price and origin.

When asked whether they prefer wild caught or farmed products, about two-thirds of consumers (61%) indicate they don't have a clear preference (they don't know, it depends on the species), one-third prefer wild caught (32%) and 7% prefer farmed products.

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Thus, it appears that this preference for wild or farmed seafood is in fact secondary for most of the consumers. This is confirmed by the significant share of some farmed products in the EU consumption (salmon, mussel, sea bream, seabass).

Several stakeholders involved in the aquaculture sector reported a reluctance of consumers towards farmed products. However, in these statements, there may be a confusion between the difficulties faced by fish farmers on their production sites (administrative requirements, access to licences, possible local conflicts with neighbours) and actual consumer demand. In addition, consumer preferences shall be balanced by the type of farmed products (finfish, shellfish) and the consumers profile: which purchase criteria for each consumer? Which level of knowledge on FAPs? Location on the coast or inland? However, detailed insights on consumer preference by species are missing.

However, on the whole the information available tends to show that many consumers have a low level of knowledge on the FAP value chains and the differences among the diverse types of production (farming methods, differences among different fishing gears). Their knowledge may be highly influenced by a few TV reports which may not give a comprehensive overview of the sector. In this context, the challenge for the aquaculture sector is to provide clear and relevant information to the consumers on the method of production, origin and provenance of the products, nutrition and health, animal welfare, impact on environment and climate, etc.....

## 8. KEY FACTORS FOR THE FUTURE DEVELOPMENT OF FARMED PRODUCTS IN SALES OUTLETS

Several factors are identified to have an impact on the development of farmed products in sales outlets in the EU. The identification of these factors is based on the analysis conducted in the context of this study and on megatrends identified by the EU competence centre on foresights<sup>50</sup>. The megatrends considered in this section include aggravating resource scarcity, changing security paradigm, continuing urbanisation and growing consumption.

The key factors related to the evolution of farmed products in sales outlets are:

- evolution of FAP consumption;
- capacity to increase the volume of production in the EU;
- the capacity to establish a relevant market positioning for each farmed product;
- evolution of the number of fishmongers and fish counters in large-scale retail, as well as their geographic distribution;
- capacity of stakeholders to meet consumers' demands and retailers' requirements;
- organisation of the sector.

Some of the identified factors are interrelated. For instance, the evolution of FAP consumption is related to several other factors such as the volume of production and product types, retailer strategies regarding FAPs, communication campaigns...

### Evolution of FAP consumption

The FAP consumption was 10,6 million tonnes LWE in the EU in 2021. This is a low level compared to the average of the last 10 years (evolutions were -6% in 2020 and + 0,2% in 2021)<sup>51</sup>. COVID outbreak likely had a significant impact, causing logistic disruptions and HORECA closure. Data for 2022 and 2023 are not available at EU level, but initial indicators are negative due to the context of high inflation. Prospects in the coming years are difficult to establish and will depend on:

- the supply:
  - o evolution of aquaculture production in the world and the EU;
  - o evolution of catches in the world and the EU (TACs and quotas at EU level),
- the demand:
  - o demographic evolution and growing consumption (consumer class is expected to grow by 1,3 billion people worldwide by 2030);
  - o the evolution of consumer diets: demand for animal protein and more specifically fish protein;
- external factors:
  - o international stability: impact on trade and prices;
  - o exchange rates (impact on trade).

### Capacity to maintain or increase the volume of production

Several factors play a significant role in the sector's capacity to maintain or develop the production volume:

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<sup>50</sup> [https://knowledge4policy.ec.europa.eu/foresight/tool/megatrends-hub\\_en](https://knowledge4policy.ec.europa.eu/foresight/tool/megatrends-hub_en)

<sup>51</sup> EUMOFA - EU Fish market 2023

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- The current administrative framework (at EU, national and local levels) which strictly controls the establishment of new farms and the growth of existing farms. The evolution of the sector on the long-term will depend on the evolution of this administrative framework and the capacity of the sector to develop within these rules;
- The local acceptability of production sites, and their integration in the landscapes;
- The adaptation to energy transition, with the implementation of a production system less demanding in energy and using more renewable energy;
- The adaptation to climate change (with more frequent and intense climatic events and impact on biological cycles) and scarcity of resources (in particular scarcity of water for inland farms). The evolution of the sector will depend on the capacity of the sector to adapt to these changes and to innovate.

### Development of relevant marketing strategies for each farmed product

EU farmed products are composed of a set of products with different market positioning and competition fields. The different EU farmed products may be positioned:

- on international markets, in direct competition with imported products (from other MS or from third countries), such as Greek and Spanish seabass and seabream,
- as local production, with consumers showing preference for national products over imported products, as is the case for seabass in Italy, mussels and oysters in France and carp in Czechia, Hungary and Poland, or even trout compared to imported Salmon from Norway or the UK.

For each of these species, a more in-depth assessment should be conducted (at product, MS and sales channel level) to understand the competition landscape as well as the assets and weaknesses of each product compared to its competitors.

Thus, several objectives shall be defined:

- maintain a price competitiveness to narrow the gap between EU production and imports;  
and/or
- develop differentiation strategies for products with higher production costs. This differentiation could be done through emphasising local origins, distinct quality attributes, new species, specific packaging (pre-packed products), reduced impact on the environment, etc. Such differentiation may be highlighted by an EU quality scheme (GIs, TSG, organic) or a commercial brand (collective or individual).



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However, it is important to mention that the use of a certification scheme does not necessarily result in clear differentiation on the market. For instance:

- the organic scheme in shellfish sector may offer a limited differentiation from conventional products;
- the impact on the market of the registration of a GI or a TSG depends on the recognition of the designation registered on the market (for instance the protected designation “*Huîtres Marennes Oléron*” may be better known than the “PGI” scheme);
- the involvement in ecolabels tends to be a condition to access some markets (in particular large-scale retail) and may not enable reaching a price premium.

### Evolution of the number of fishmongers or fish counters in large-scale retail

The number of fishmongers and fish counters, as well as their geographic distribution, are key points to enable the presence of large number of items in sales outlets. This evolution depends on:

- FAP consumption (a high level of consumption enables maintaining a large number of shops);
- consumer preference regarding sales channels also plays a significant role. While large-scale retail is predominant, fishmongers and outdoor markets remain significant in several MS;
- large-scale retailers’ strategies regarding the presence of fish counters.

In a context of growing urbanisation, the access to a diverse offer of fish species in remote areas (rural areas) may pose a significant challenge in the future.

### Capacity to adapt to consumer preferences and retailer requirements

We observe strong evolution of the preferences from consumers and retailers over the past decade, with an acceleration of the trends due to the COVID outbreak. These evolutions are not homogenous across MS as there are different consumption and market patterns in each MS and for the different species.

In more details:

- there is a growing demand for easy-to-use and processed products (in particular in urban areas where there is high purchasing power);
- there is a growing demand for lower prices with the recent inflation context;
- there are growing requirements for environmental and climatic issues, alongside with retailer requirements in terms of sustainable certification.

In this context, farmed products must meet these different requirements, which may sometimes be contradictory, for instance the demand for low prices and also easy to use products and lower impact on the environment. Meeting these demands may require significant investments in terms of:

- adaptation of the farming practices (to lower environmental and climatic footprint);
- marketing studies;
- upgrading processing facilities;
- implementing communication campaigns.

### Clear and relevant information provided to consumers on farmed products

While a lot of information is provided to consumer on FAP labelling, the available studies show a limited understanding from consumers of this information. Overall, consumers may not be aware of the different farming methods, the different fishing gears... Thus, some labelling may be confusing for consumers, for instance which requirements are behind the organic scheme for finfish or for shellfish? What is the difference between an ASC or MSC certified fish? What does “*bouchot*” mean for mussel? And some key questions may not have simple answers for consumers: what is the

### Study on the challenges of aquaculture products in food outlets

environmental and climate footprint of the farmed products? Do farmers use feed and medicine for farmed shellfish? Is there a difference compared to wild caught products? What are the differences among the different origins?

In this context, an assessment of the relevant information to provide to consumers shall be assessed.

A key challenge is that these messages shall be clear and understandable for consumers, as:

- consumers may not have a lot of time to dedicate to get this information (a few seconds while they are shopping);
- consumers may not have a strong technical knowledge on FAPs (technical terms should be avoided).

This information may be provided at the point of sales (on the labelling, by the fishmongers) and also by other media such as internet or TV.

### Structure and organisation of the sector

The aquaculture sector's value chain is both composed of small-scale companies, often family owned, and international players. Compared to small-scale companies, large-scale companies have larger capacities to invest and have a better bargaining power on the market. Several identified challenges may not be tackled by individual small-scale companies and may request a coordinated effort at the sector level. For instance, differentiation strategies may be implemented at the scale of individual companies (development of new products, ...) but may also be implemented at a collective level.

Several actions may be implemented collectively, for instance:

- research, development and innovation;
- planification of the volume marketed, for instance through co-operatives or producer organisations;
- development of quality schemes or collective brands;
- studies on the environmental and climatic footprint of the farmed products;
- consumer surveys, marketing studies and communication campaigns.

More broadly, the aquaculture sector would benefit from reinforced structuring through the creation of POs. This would be an effective way to increase bargaining power and mutualise resources of small-scale producers. This shortcoming is known by the European Commission and MS competent authorities, who usually planned specific measures to support the sector in their national EMFAF programmes.

## 9. ANNEXES

### 9.1 Annex 1 – Country sheet - Czechia

#### Farmed products at retail stage

In 2021, per capita consumption of FAP in Czechia was estimated at 10,04 kg (+4% compared to 2020)<sup>52</sup>. The main preservations for processed products sold were shelf stable (40%), chilled (33%) and frozen (27%)<sup>53</sup>. Two farmed species are included in the top three species consumed in Czechia, namely Alaska pollock, carp and salmon.

The aquaculture production in Czechia amounted to 21.000 tonnes of freshwater fish in 2021<sup>54</sup> and consisted mainly of carp (89% with 18.700 tonnes)<sup>55</sup>. Live carp is the most important aquaculture product sold domestically and is also a significant export product<sup>56</sup>.

Large-scale retail is by far the most frequent distribution channel for fisheries and aquaculture products in Czechia, used by 88% of the Czech consumers in 2021<sup>57</sup>. 26% of the consumers declared purchasing fisheries and aquaculture products from fishmongers and specialist shops, 10% directly from fishermen and fish farms, and 3% from markets<sup>58</sup>.

**Table 15: Apparent consumption of the top-10 most consumed species in Czechia in 2021 (volume in tonnes LWE)**

	Apparent consumption	Share
Alaska pollock	13.585	18%
<b>Carp</b>	<b>12.158</b>	<b>16%</b>
<b>Salmon</b>	<b>11.625</b>	<b>15%</b>
Herring	9.742	13%
Mackerel	5.414	7%
Hake	5.410	7%
<b>Warmwater shrimp</b>	<b>1.477</b>	<b>2%</b>
Saithe (=Coalfish)	1.469	2%
<b>Freshwater catfish</b>	<b>1.263</b>	<b>2%</b>
Miscellaneous shrimp	1.088	1%

*In bold, the species with a significant farmed production  
Source: EUMOFA calculations, based on Eurostat and FAO*

<sup>52</sup> EUMOFA - The EU fish market, 2023

<sup>53</sup> EUMOFA - The EU fish market, 2023

<sup>54</sup> EUMOFA - Organic Aquaculture in the EU, 2022  
<https://eumofa.eu/documents/20178/432372/Organic+aquaculture+in+the+EU+final+report+ONLINE.pdf?>

<sup>55</sup> EUMOFA - The EU fish market, 2023

<sup>56</sup> FAO Fishery and aquaculture country profiles - Czechia, 2024 (last updated in 2013)  
<https://www.fao.org/fishery/en/facp/cze?lang=en>

<sup>57</sup> Eurobarometer, in EUMOFA country profile - Czechia, 2023

<sup>58</sup> EUMOFA country profile - Czechia, 2023

## Carp in Czechia

The main season for carp consumption is from November to January, with the highest sales during Christmas week. To a lesser extent, Easter is also a traditional period for carp consumption.

The share of sales by different types of outlets also varies depending on the season. During winter, and especially over Christmas week, most of the sales to final consumers are made by fishmongers or directly by the fish farm. Outside the main season, fish is mainly bought in supermarkets. Carp sales are characterized by shorter supply chains than other FAPs, and less processing. According to stakeholders, direct sales account for 5 to 20% of the production. Sales by traditional fishmongers and large-scale retail are also significant, while market share of HORECA is limited. Half of the production is exported, mainly to Poland, Slovakia and Germany.

According to stakeholders, exports tend to mobilize smaller fishes (1,5-2 kg) while domestic sales, especially at the Christmas period, consist of bigger sizes (over 2 kg). Larger fish (3,3 kg) is among the most popular product for Christmas.

Consumers buy from fish farms and fishmongers mostly freshly killed and gutted whole fish; sometimes they have it cut up or filleted. Guts and soups are also sold over the Christmas period. Consumers buy from supermarkets fresh or chilled processed fish (fillets, halves, steaks). Fish is rarely sold smoked or frozen. A significant share of sales from farms also consists in live fish for restocking fishing areas. According to stakeholders, processed fish represents 10-15% of the Czech carp market.

Due to little processing on this market, no clear segmentation is identified by the stakeholders. In rural areas, consumer tend to buy unprocessed or freshly killed and gutted fish while in urban areas, consumers with more purchasing power tend to buy processed products, especially fillets. Carp is the only fishery and aquaculture product to benefit from a protected quality scheme (both DPO and a PGI)<sup>59</sup>.

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<sup>59</sup> EUMOFA - The EU fish market, 2023

## 9.2 Annex 2 – Country sheet - Denmark

### Farmed products at retail stage

In 2021, Danish apparent consumption of fishery and aquaculture products was estimated by the University of Copenhagen between 20 and 25 kg per capita. Main species consumed (fresh and processed) in Denmark are herring, salmon and mussel<sup>60</sup>.

Trout is mainly consumed smoked in Denmark and fresh consumption is quite limited. With regards to consumption of fresh fish, salmon, which is mainly imported from third countries, was by far the most consumed fresh species in 2023, amounting to 3.778 tonnes. Salmon average prices amounted to 28,51 EUR/kg. Trout was the second fresh species most consumed by Danish households, accounting for 4% of the total fresh consumption (11.128 tonnes). Trout prices reached 24,33 EUR/kg in 2023. Mussels were also among the most consumed fresh species in Denmark, representing 3% of the total households' fresh consumption (289 tonnes) in 2023. Mussels were sold at the average price of 4,10 EUR/kg in 2023<sup>61</sup>.

The Danish distribution network for food products is largely dominated by large-scale retailer. The retail sector is also composed of specialised fishmongers which may be shops or mobile point of sales (trucks).

### Trout in Denmark

In 2020, Denmark was the third trout producer in the EU with 29.479 tonnes (16% of the EU production), the first trout importer in the EU with 31.965 tonnes and the first trout exporter. Thus, Denmark was only the 14<sup>th</sup> EU country in terms of apparent consumption, with approximately 2.400 tonnes. In addition to the local production, significant imports of trout in Denmark (4.458 tonnes) are processed and reexported.<sup>62</sup> Actors of both retail and farming are relatively concentrated in Denmark compared to other countries, while the processing sector includes more actors.<sup>63,64</sup>

Salmon is the top supply aquaculture species for FAP buyers, it comes from outside the EU (Norway, Faroe, Iceland). Farmed trout account for a much less significant amount of their supply and comes both from Danish production and imports.<sup>65</sup> Trout face a difficult competition with salmon products, the price difference is low, and the Danish consumer has a clear preference for salmon.<sup>66</sup>

In urban areas, trout is mainly sold by large scale retailers, and to a lesser extent by fishmongers. Coastal areas have more small shops, with a limited selection of trout products. There are few fishmongers in rural areas, mainly with mobile point of sales (trucks). Orders thanks to internet and delivery by supermarkets to end consumer's homes exist but are not easy to quantify.<sup>67</sup>

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<sup>60</sup> EUMOFA country profile, Denmark

<sup>61</sup> Source: based on Europanel data in EUMOFA

<sup>62</sup> EUMOFA – Price structure analysis - portion trout

<sup>63</sup> Nielsen et al. Restructuring European freshwater aquaculture from family-owned to large-scale firms – lessons from Danish aquaculture, 2016.

<sup>64</sup> Interviews

<sup>65</sup> Interviews

<sup>66</sup> Interviews

<sup>67</sup> Interviews

### Study on the challenges of aquaculture products in food outlets

Apart from the distinction between urban, rural and coastal areas, there is little regional patterns for trout consumption. Wholesalers, fishmongers and large-scale retailers selling trout are spread all over the country. Its consumption mainly occurs in urban areas. Trout sales in rural areas are low. They are also limited to small areas close to fish farms, mostly located in the Jutland region.<sup>68</sup> No clear seasonality of sales could be identified. As for other fish species, most regular consumers of trout belong to older age groups (over 40 years old). Younger people are eating less fish than elsewhere in Europe.<sup>69</sup>

The trout supply chain usually includes three to four stakeholders, from the farm to the final consumer. Farmers and traders sell mostly fresh trout (or more rarely frozen) to processors, and trout is mostly sold smoked to the final consumer. Sales of wild caught trout exist but are very rare.<sup>70</sup>

Aquaculture Stewardship Council (ASC) and organic certifications are widely used for trout on the Danish market. They are deemed useful for sales to both professional clients and consumers. According to stakeholders, certification is the third criterion for a consumer to buy trout, after the price and the size of the product. Some stakeholders reported a price premium for certified trout. The effect of brands is deemed insignificant compared to the distinction based on certifications. The Danish consumer is sensitive to the environment and to the storytelling about the relation between trout production and nature. Only consumers with knowledge of the sector will tend to choose wild caught over farmed trout.<sup>71</sup>

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<sup>68</sup> Interviews

<sup>69</sup> Eurofish International Organisation, Member countries - Denmark, 2021. <https://eurofish.dk/member-countries/denmark/>

<sup>70</sup> Interviews

<sup>71</sup> Interviews

## 9.3 Annex 3 – Country sheet - France

### Farmed products at retail stage

In 2021, French apparent consumption of FAPs amounted to 32,18 kg per capita<sup>72</sup>, slightly decreasing compared to 2020 (-1%) but remaining above the EU average (23,71 kg per capita per year)<sup>73</sup>.

In 2022, farmed products represented one-third of the apparent consumption in France, 22% for farmed finfish and 11% for farmed shellfish and crustaceans. Wild caught products accounted for 67% of the apparent consumption (mainly finfish)<sup>74</sup>.

The first species consumed is salmon (mainly supplied by imports). Other farmed species in the top 10 species consumed are shrimps, mussels and oysters.

**Table 16: Apparent consumption of the top-10 most consumed species in France in 2021 (volume in tonnes LWE)**

	Apparent consumption	Share
<b>Salmon</b>	<b>260.953</b>	12%
<b>Cod</b>	151.773	7%
<b>Skipjack tuna</b>	145.558	7%
<b>Alaska pollock</b>	144.791	6%
<b>Warmwater shrimp</b>	<b>109.203</b>	5%
<b>Mussel Mytilus spp</b>	<b>103.223</b>	5%
<b>Yellowfin tuna</b>	98.420	4%
<b>Surimi</b>	92.087	4%
<b>Scallop</b>	78.483	4%
<b>Oyster</b>	<b>74.809</b>	3%

*In bold, the species with a significant farmed production  
Source: EUMOFA calculations, based on Eurostat and FAO*

Smoked salmon and trout are widely consumed in France, respectively 17.644 tonnes and 7.083 tonnes in 2022 for household consumption. Smoked trout consumption has been growing over the past years (+43% in volume between 2017 and 2022, household consumption). This increase is related to a high difference in price between smoked salmon and trout (smoked trout being 4,00 to 5,00 EU/kg cheaper than smoked salmon before 2020), however, average prices are now closer (1,60 EUR/kg difference in 2022).

Among the top five fresh species consumed by French households in 2023, three were farmed products (salmon, trout and seabream; other species were cod and saithe)<sup>75</sup>. Trout and seabream accounted each for 3% of the total volume of fresh consumption, amounting to 5.567 tonnes and

<sup>72</sup> EUMOFA country profile, France 2023 - <https://eumofa.eu/en/france>

<sup>73</sup> EUMOFA - EU Fish market 2023

<sup>74</sup> Chiffres-clés des filières pêche et aquaculture en France en 2023 - [https://www.franceagrimer.fr/fam/content/download/72218/document/CC\\_p%C3%A0che\\_2023\\_FR.pdf?version=14](https://www.franceagrimer.fr/fam/content/download/72218/document/CC_p%C3%A0che_2023_FR.pdf?version=14)

<sup>75</sup> Europanel data in EUMOFA

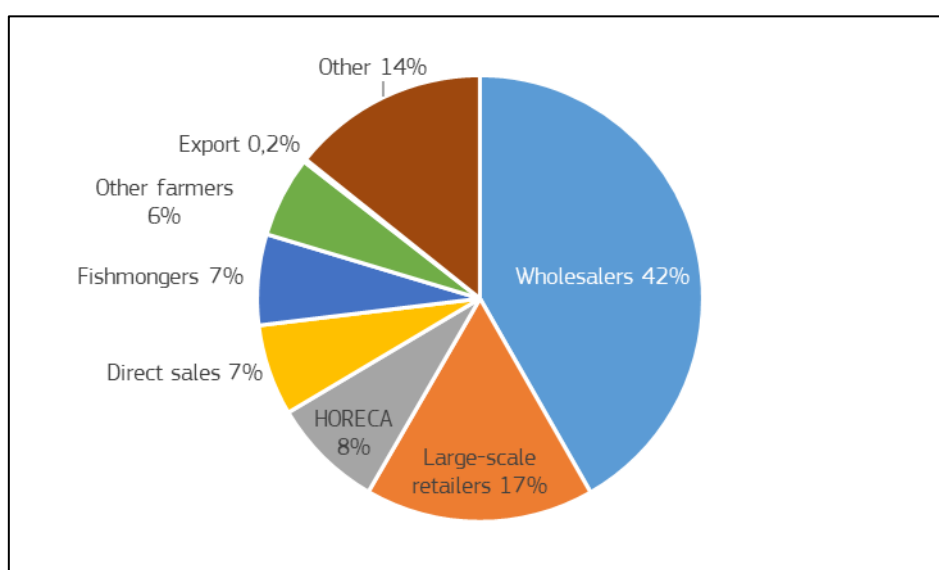
5.205 tonnes respectively. Trout average prices reached 17,79 EUR/kg in 2023, and seabream prices amounted to 12,36 EUR/kg. Salmon, was by far the most consumed fresh species, representing 15% of the fresh consumption volume in 2023 for an average price of 21,48 EUR/kg.

In France, 64% (in volume) of the fresh FAPs were retained in large-scale retailers in 2022<sup>76</sup>. Large-scale retailers represented the main distribution channel for fresh trout, mussels, seabream and seabass, accounting for respectively 78%, 77%, 64% and 60% of the total market values of each species.

### Mussel in France

At first sale stage, wholesalers play a pivotal role as they account for 42% of the sales from mussel farmers (in value), followed by large-scale retailers (17%), HORECA (8%), direct sales (7%) and fishmongers (7%)<sup>77</sup>.

**Figure 10: First sales of mussels – breakdown by channels in 2021 (in value)**



Source: AGRESTE – Enquête aquacole 2021

French consumption both relies on national production and imports (a little over half of import and a little under half of national production) and wholesalers may supply several types of clients: HORECA, fishmongers and large-scale. Thus, there are high differences between the breakdown at first sale level and at consumer level.

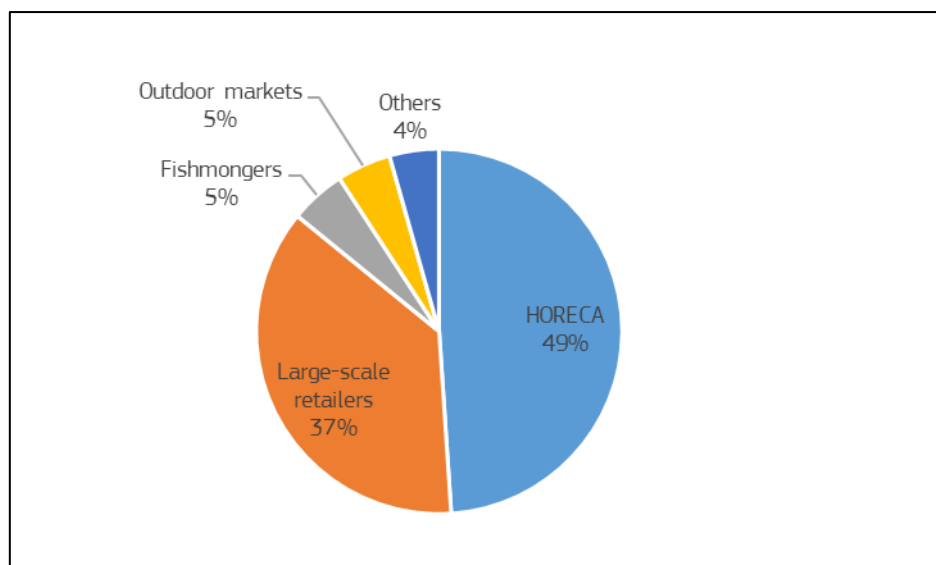
At the final stage of the value chain (2020 data), HORECA was the first channel with 49% of the sales volume (43.772 tonnes), followed by large-scale retailers with more than a third of the sales (37%, 33.033 tonnes). Each other channel accounted for about 4.000 t.

<sup>76</sup> FranceAgriMer -

[https://www.franceagrimer.fr/fam/content/download/72643/document/STA\\_MER\\_CONSO\\_2022.pdf?version=2](https://www.franceagrimer.fr/fam/content/download/72643/document/STA_MER_CONSO_2022.pdf?version=2)

<sup>77</sup> Source: AGRESTE – Enquête aquacole 2021 - [https://agreste.agriculture.gouv.fr/agreste-web/download/publication/publie/Chd2308/cd2023-8\\_Aqua2021.pdf](https://agreste.agriculture.gouv.fr/agreste-web/download/publication/publie/Chd2308/cd2023-8_Aqua2021.pdf)



**Figure 11: Estimated volumes of fresh mussels by marketing channel in France, 2020**

Source: Price structure analysis on mussel – EUMOFA elaboration of EUROSTAT-COMEXT, Estimates based on KANTAR data and FranceAgriMer

Mussel is mainly consumed fresh (33.708 tonnes for household consumption in 2022) and to some extent frozen (12.397 tonnes). Mussel is consumed all year long with a peak from June to September, when the national production is available and in the summer period with tourism. Mussel is specifically consumed in HORECA with the fries “moule frite”. French consumers purchase fresh mussels on average 2,6 times a year and frozen mussels 1,7 times a year. The penetration rate (percentage of households purchasing the product) is rather low, at 0,3% for fresh and 5% for frozen mussel. These data for fresh mussel (number of purchase and penetration rate) are comparable with fresh finfish but are clearly below those for processed products (79% of penetration rate for smoked fish and 83% for frozen products).

Mussel is both retailed fresh at the fish counter and pre-packed. Pre-packed products of French origin are mainly supplied by the largest stakeholders<sup>78</sup>. Pre-packed products are also supplied by imports.

A specific production is conducted in France, the “Bouchot” method with wooden pole. This specificity is highlighted to the consumer with the quality scheme “traditional speciality guaranteed” (TSG) on “*Moule de bouchot*”. Another quality scheme is registered in the French mussel sector: the “protected designation of origin” (PDO) “*Moules de bouchot de la baie du Mont-Saint-Michel*”. The TSG production is spread in several regions where “Bouchot” method is conducted, namely Atlantic and Channel Sea basins. The PDO covers a specific area in Normandy and Brittany regions, with a premium positioning.

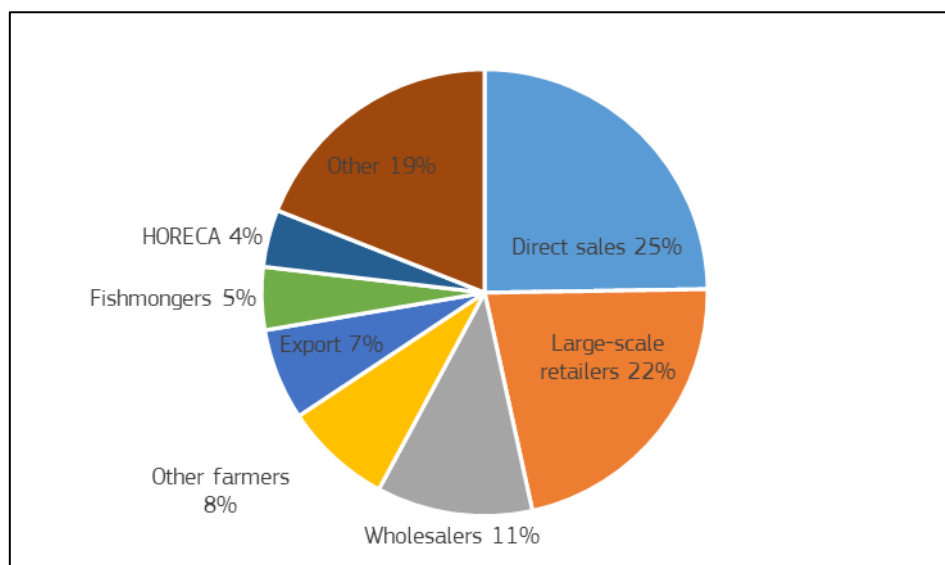
## Oyster in France

At first sale stage, direct sales and sales to large-scale retail (by the producer) play a significant role with respectively 25% and 22% of the sales value. Following clients are wholesalers (11%), other

<sup>78</sup> Le marché de la moule fraîche en France et spécifiquement sur la filière française moule de bouchot – AND International pour FranceAgriMer, 2021 - <https://www.franceagrimer.fr/content/download/67062/document/ETU-MER-moule-bouchot.pdf>

farmers (8%), exports (7%), fishmongers (5%) and HORECA (4%). A category “other” is significant, accounting for 19% of the sales value<sup>79</sup>.

**Figure 12: First sales of oyster – breakdown by channels in 2021 (in value)**



Source: AGRESTE – Enquête aquacole 2021

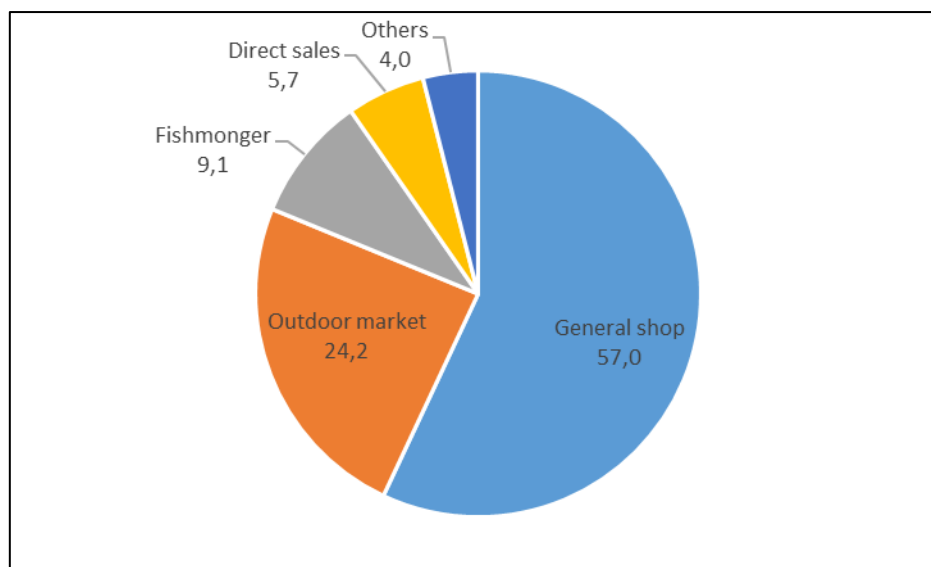
Household consumption of oyster reached EUR 152,77 million and 19.495 tonnes in 2022, this is the lowest level since 2017 (peak in 2017 at EUR 201,88 million and 27.690 tonnes). The final price was 7,80 EUR/kg in average, at a higher level than previous years (between 7,00 EUR/kg and 7,30 EUR/kg)<sup>80</sup>.

The consumption of oyster is highly seasonal: it is below 2.500 tonnes / month from January to November and is about 8.000-10.000 tonnes in December. In order to decrease this seasonality, direct sales are widely implemented across outdoors markets and on production sites. As oyster producing areas are generally located in touristic areas, direct sales may target tourists during the holiday season.

Main retail channels are general shops (mainly large-scale retail) and outdoor markets, followed by fishmongers and direct sales (see following figure).

<sup>79</sup> Source: AGRESTE – Enquête aquacole 2021 - [https://agreste.agriculture.gouv.fr/agreste-web/download/publication/publie/Chd2308/cd2023-8\\_Aqua2021.pdf](https://agreste.agriculture.gouv.fr/agreste-web/download/publication/publie/Chd2308/cd2023-8_Aqua2021.pdf)

<sup>80</sup> Kantar Worldpanel in FranceAgriMer - Consommation des produits de la pêche et de l'aquaculture 2022 - [https://www.franceagrimer.fr/fam/content/download/72643/document/STA\\_MER\\_CONSO\\_2022.pdf?version=2](https://www.franceagrimer.fr/fam/content/download/72643/document/STA_MER_CONSO_2022.pdf?version=2)

**Figure 13: oyster sales volume by channel for household consumption**

Source: Kantar worldpanel in FranceAgriMer

In terms of profiles, consumption is specifically high for consumer over 50 years old. In terms of geographical area, consumption is specifically high in western France, south-east, south west and Paris area. Consumption is lower in inland regions.

Oyster is mainly produced on the Channel and Atlantic coasts. There is also a significant production in Mediterranean area. Two PGIs are registered in the French oyster sector: “Huître Marennes Oléron” which is highly known on the French market, with large volume. Another PGI has been registered in 2023: “Huître de Normandie”.

### Trout in France

Trout was among the top four species consumed in France in 2023. Trout apparent consumption in 2020 was 41.510 tonnes (EUMOFA) and large trout apparent consumption was 21.694 tonnes for the same year.

Trout consumption in France consists mainly of fresh trout (6.350 tonnes consumed by French households in 2022 representing 30% of the market shares in value) and smoked trout (7.083 tonnes consumed in 2022, 70% of the market shares in value) (FranceAgriMer). Fresh trout consumption is the highest in Southern France as well as in the Centre region and in Paris region. Regarding smoked trout, there is no significant consumption difference based on the geographical location. Consumers of trout products (fresh and smoked) are mostly people of the elderly categories (above 50 years old), belonging to the upper and middle economic class (Kantar WordPanel in FranceAgriMer).

Fresh trout is consumed all-year long, consumption volumes fluctuated between 350 tonnes (October) and 750 tonnes (January) in 2022 (FranceAgriMer 2022). Smoked trout consumption is more seasonal as it is related to Christmas and New Year season during which smoked trout is consumed as an alternative to the traditional but more expensive smoked salmon. However, smoked trout is available all-year long and its consumption has been stagnating around 500 tonnes per month for the past two years, except for December and Christmas period during which trout consumption has more than doubled and reached over 1.000 tonnes (FranceAgriMer).

Large-scale retailers are the main distribution channels of fresh and smoked trout, accounting respectively for 79% and 71% of the volumes consumed by French households in 2022. Specialised distribution channels account for the last 21% of the fresh trout volume (FranceAgriMer). Concerning

### Study on the challenges of aquaculture products in food outlets

smoked trout, hard discount accounted for 11% of the volume sold while other distribution channels (including fishmongers, specialist shops and markets) accounted for the last 18% in 2022.

Fresh trout products consist of trout fillets, trout steak as well as portion trout. Processed trout products are mainly smoked trout but other processed products such as trout eggs or “rillettes” can also be purchased.

Prices of fresh trout products are relatively moderate, they reached to 16,1 EUR/kg in 2022 (compared to 19,9 EUR/kg for salmon) while smoked trout considered a premium product is more expensive and reached 34,3 EUR/kg in 2022 (compared to 35,9 EUR/kg for smoked salmon)<sup>81</sup>.

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<sup>81</sup> Kantar World Panel / FranceAgriMer - [https://www.franceagrimer.fr/fam/content/download/72643/document/STA\\_MER\\_CONSO\\_2022.pdf?version=2](https://www.franceagrimer.fr/fam/content/download/72643/document/STA_MER_CONSO_2022.pdf?version=2)

## 9.4 Annex 4 – Country sheet – Greece

### Farmed products at retail stage

In 2021, apparent consumption of fishery and aquaculture products in Greece amounted to 19,56 kg per capita<sup>82</sup>.

According to the Eurobarometer 2021<sup>83</sup>, distribution trends for FAPs are different from the other EU member states' trends. Fishmongers and specialist shops were the most frequent distribution channel for purchasing fisheries and aquaculture products (68% of the consumers purchased FAPs in the last 12 months, against 43% at EU scale), followed by large-scale retailers (56% in Greece against 79% at EU scale), outdoor markets (41%) and direct sales from fishermen and fish farms (25%).

Seabass and seabream are among the top 10 species consumed, respectively 2<sup>nd</sup> and 8<sup>th</sup>. Other main species include squid, sardine, cod, hake and octopus.

**Table 17: Apparent consumption of the top-10 most consumed species in Greece in 2021 (volume in tonnes LWE)**

	Apparent consumption	Share
Squid	19.316	9%
<b>Gilthead seabream</b>	<b>12.574</b>	<b>6%</b>
Sardine	12.380	6%
Cod	9.435	5%
Hake	9.376	5%
Octopus	9.223	4%
Skipjack tuna	7.904	4%
<b>European seabass</b>	<b>7.118</b>	<b>3%</b>
Anchovy	6.963	3%
<b>Warmwater shrimp</b>	<b>6.350</b>	<b>3%</b>

*In bold, the species with a significant farmed production  
Source: EUMOFA calculations, based on Eurostat and FAO*

### Seabass and seabream in Greece

Greek production of seabass and seabream are mainly export-oriented. Consumption of seabream and seabass in Greece was estimated at 12.574 tonnes LWE and 7.118 tonnes LWE respectively in 2021.

Seabass and seabream are consumed all year. Consumption increases in summer during the touristic season. Most of the consumption occur in coastal areas and islands. Sales outlets are also common close to central markets of Athens, Thessaloniki and Patras<sup>84</sup>.

<sup>82</sup> EUMOFA country profile, Greece

<sup>83</sup> Special Eurobarometer 515, 2021 - EU Consumer Habits Regarding Fishery and Aquaculture Products

<sup>84</sup> Interview wholesaler

### Study on the challenges of aquaculture products in food outlets

Most seabass (85-90%) is sold in retail and the HORECA sector<sup>85</sup>. Online sales are not significant<sup>86</sup>.

The market mainly consists of fresh whole fish. However, there is an increasing demand for more elaborated products. Some fish farms have developed an offer of seabass fillet packaged in recyclable trays. Specifically, seabass segmentation is mostly based on fish size and fish quality. The HORECA sector requires whole big fish, and the retail requires small fishes (400-600 g). Bigger fishes can be used for the increasing segment of elaborated products. The market can be divided into 3 quality segments based on fish size, freshness and shape: premium products, standard products and discounted products. The Greek market is also characterized by low segmentation based on certifications. Less than 1% of the national production is organic. The Hellenic Aquaculture Producers Organisation has developed a collective brand "Fish from Greece". However, according to interviews, this brand is only used by a small number of producers<sup>87</sup>.

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<sup>85</sup> EUMOFA - Price structure analysis - Fresh seabass in the EU, 2024

<sup>86</sup> Interview

<sup>87</sup> EUMOFA - Price structure analysis - Fresh seabass in the EU, 2024

## 9.5 Annex 5 – Country sheet - Hungary

### Farmed products at retail stage

In 2021, Hungarian apparent consumption of fishery and aquaculture products was estimated at 6,55 kg per capita<sup>88</sup>, far behind the EU average (23,71 kg per capita per year)<sup>89</sup>.

The most consumed species in Hungary in 2021 was carp<sup>90</sup>. In 2021, Hungary was among the leading countries for carp consumption at EU level with an annual consumption of 1,40 kg per capita (source: EUMOFA calculations based on Eurostat and FAO).

**Table 18: Apparent consumption of the top-10 most consumed species in Hungary in 2021 (volume in tonnes LWE)**

	Apparent consumption	Share
<b>Carp</b>	<b>13.659</b>	<b>22%</b>
<b>Freshwater catfish</b>	<b>8.718</b>	<b>14%</b>
skipjack tuna	5.970	9%
Hake	5.775	9%
<b>Salmon</b>	<b>3.107</b>	<b>5%</b>
Miscellaneous tuna	2.821	4%
Herring	1.922	3%
Alaska pollock	1.782	3%
Sardine	1.299	2%
<b>Trout</b>	<b>985</b>	<b>2%</b>

*In bold, the species with a significant farmed production  
Source: EUMOFA calculations, based on Eurostat and FAO*

### Carp in Hungary

Carp is the most consumed fish by Hungarian consumers according to a 2020 survey<sup>91</sup>(online survey on fish consumption in Hungary), it was consumed by 56% of the respondents. Other popular species included hake, tuna, catfish, and salmon, consumed respectively by 48%, 45%, 41% and 33% of the respondents. However, fish consumption in Hungary is limited, only 10% of the respondents declared consuming fish on a weekly basis.

Carp consumption is very seasonal in Hungary: one-third of the Hungarian fish supply is consumed around Christmas; carp represents 65% of the volume consumed during this period<sup>92</sup>. Carp is also increasingly consumed at the beginning of spring with the harvest of wintering pond.

<sup>88</sup> EUMOFA - Country profile Hungary 2023

<sup>89</sup> EUMOFA - EU Fish market 2023

<sup>90</sup> EUMOFA - Country profile Hungary 2023

<sup>91</sup> <https://enet.hu/eating-rarely-though-healthy-big-hungarian-fish-consumption-facts/>

<sup>92</sup> EUMOFA - Price structure analysis for fresh carp in Central Europe, 2016

### Study on the challenges of aquaculture products in food outlets

The highest carp consumption in Hungary is among men above 60 years old whose consumption is ten times the Hungarian average<sup>93</sup>. Most of carp consumers in Hungary get their products by recreational fishing<sup>94</sup>. Consumers who do not fish, prefer getting carp from fishmongers and specialist shops and markets. Large-scale retailers are not a popular distribution channel, unlike in other EU member states. Carp is mostly sold live and consumed fresh, thus reducing the intermediaries between producers and consumers, and resulting in high levels of direct sales from fish farms. Processed carp (small part of the production) include frozen carps, sliced, filleted or processed products for fish soup (interviews with Hungarian carp processors).

Carp benefits from a protected quality scheme in Hungary (PDO “*Akasztói szikiponty*”, PGI “*Balatoni hal*” and PGI “*Szegedi tükörponty*”) allowing carp products to reach a price premium and a premium market. However, it is worth noting that carp is not considered a premium fish in Hungary and consumers are very price sensitive. In this context, the price premium may be limited.

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<sup>93</sup> Kasza *et al.* (2020), Assessment of Dietary Exposure and Risk of DDT Concerning Freshwater Fish Aquaculture, Applied Sciences

<sup>94</sup> Kasza *et al.* (2020), Assessment of Dietary Exposure and Risk of DDT Concerning Freshwater Fish Aquaculture, Applied Sciences



## 9.6 Annex 6 – Country sheet - Italy

### Farmed products at retail stage

In 2021, Italian apparent consumption of fishery and aquaculture products amounted to 30,15 kg per capita<sup>95</sup>.

There is a high consumption of fresh products<sup>96</sup>, accounting for 49% of the household consumption in 2020, followed by frozen (20%), canned (22%) and smoked (9%).

Salmon and mussel are among the main species consumed (considered both fresh and processed products).

With regards to fresh fish, farmed products are among the most consumed by Italian households. Five of the top six consumed species were aquaculture products in 2023, accounting for 37% of the fresh consumption in volume in 2023. Seabream and mussels were the main species, representing respectively 12% and 9% of the total fresh consumption (30.281 tonnes and 21.666 tonnes). Seabream prices reached 9,92 EUR/kg in 2023 while mussels were sold at 4,12 EUR/kg. This is followed by seabass and clams, accounting respectively for 5% and 4% of the total fresh consumption in 2023 (13.150 tonnes and 10.560 tonnes). Their prices amounted, respectively, to 11,58 EUR/kg and 9,62 EUR/kg in 2023. Salmon, mainly imported from third countries, accounted for 7% of the total volume of fresh consumption and was sold for the average price of 19,17 EUR/kg<sup>97</sup>.

**Table 19: Apparent consumption of the top-10 most consumed species in Italy in 2021 (volume in tonnes LWE)**

	Apparent consumption	Share
<b>Salmon</b>	<b>144.260</b>	8%
<b>Yellowfin tuna</b>	133.314	7%
<b>Squid</b>	120.130	6%
<b>Cod</b>	99.434	5%
<b>Mussel Mytilus spp</b>	<b>95.701</b>	5%
<b>Tuna, skipjack</b>	90.246	5%
<b>Hake</b>	78.727	4%
<b>Miscellaneous shrimp</b>	<b>73.914</b>	4%
<b>Octopus</b>	66.827	4%
<b>Clam</b>	<b>63.429</b>	3%

*In bold, the species with a significant farmed production  
Source: EUMOFA calculations, based on Eurostat and FAO*

According to the Italian Ministry, there are about 150 wholesalers involved in the seafood sector at the national level. They play a pivotal role in distributing large quantities of seafood to retailers and

<sup>95</sup> EUMOFA - Country profile, Italy 2023

<sup>96</sup> Consumi ittici a più di un anno dall'inizio dell'emergenza Covid19 - I consumi domestici dei prodotti ittici - Ismea/Nielsen Consumer panel - <https://www.ismeamercati.it/flex/cm/pages/ServeAttachment.php/L/IT/D/1%252F1%252Ff%252FD.4448f68f99f7a5eab04e/P/BLOB%3AID%3D11584/E/pdf?mode=inline>

<sup>97</sup> EUROPANEL data in EUMOFA

processors. Furthermore, about 300 importers / exporters and over 1.000 processors are involved in the value chain.

### Mussel in Italy

Italy is one the main EU producer of mussels. Production is located in several region, with the main area of production being the Northern Adriatic coast.

The level of consumption of mussel in Italy is high. Mussel is considered a cheap seafood, and is used in several Italian dishes. The market is mainly for fresh mussels, it is supplied by national production from April and September and completed by imports from October to March (in particular from Spain and Greece). Frozen products are also imported, mainly from Spain and Chile.

At retail stage, mussels are mostly sold live to be cooked and consumed at home or at restaurants. Mussels may also be found live and packaged in trays under protective atmosphere, cleaned (byssus removed), and mixed with other shellfish (clams), ready to be cooked. The EUMOFA study on the price structure of mussel (2022) also reported a growing trend for frozen cooked mussels in trays, in modified atmosphere packing (MAP).

Household consumption is highly seasonal with peaks 1) from June to August, the demand grows due to tourism and when national production is available and 2) in December, national production is not available, and consumption is based on imports (in particular from Spain). In 2020, mussels accounted for 50% of the molluscs' consumption in volume due to lower average prices than clams and squids. The penetration rate for household consumption of fresh mussels was high, at 19% in 2020<sup>98</sup>.

HORECA accounts for a large share of the national consumption, especially during summer in touristic areas<sup>99</sup>. However, no detailed information is available on this market. During the COVID-19 crisis, the closing of HORECA sector (in Italy and France) transferred part of the fish products volumes to the supermarkets, generating a large increase in sales in this channel, particularly in 2021.

The origin of the product is a key aspect for the market segmentation of fresh mussel, with a preference for national origin when available. Italian mussel is generally sold at a higher price than imported products. The regional or local origin may also have a role in the market segmentation, for instance mussels grown in Arborea area (in Sardinia) have the best quality reputation and benefit from a high price premium, due to specific environmental conditions and a good organoleptic quality. A PDO is also registered in the North-Est of Italy: "*Cozza di Scardovari*", volumes are limited (below 100 tonnes each year but producers report a price premium).

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<sup>98</sup> Annuario sul settore ittico – 2020, Borsa Merci Telematica Italiana

<sup>99</sup> EUMOFA – Price transmission analysis on mussel

## Clams in Italy

Italy is the main clam producer in the EU and one of the main consumers, together with Spain and Portugal. A significant share of the national production is also exported to Spain.

Consumption of clams is very seasonal, similarly to mussels<sup>100</sup>. The main season for clams is from late winter to late spring.

Based on interviews, most of the sales are close to producing areas of Veneto and Emilia-Romania. Consumption is located mainly in coastal and urban areas. Stakeholders notice significant differences between these two markets. While consumers of coastal areas prefer fresh products, more frozen and canned clams are consumed in cities<sup>101</sup>.

Sale channels for clams are diversified (as illustrated in the table below with two examples of sales breakdown of co-operatives involved in clam sales), including large-scale retail, direct sales, HORECA. A large part of the production is also exported. As for other shellfish (notably mussels), the clams market has seen an increase of direct sales and a decline of sales by traditional fishmongers, especially since the COVID-19 pandemic. Online sales have also been on the rise over the past years<sup>102</sup>.

**Table 20: Sale channels for clams and mussels from two Italian co-operative**

	Clams (North of Italy)	Clams and mussels (South of Italy)
Direct sales	30% (including 5% for online sales)	Data not available
Large-scale retail	40%	5%
HORECA	20%	50%
Fishmongers	15%	45%

Source: EUMOFA study – interviews

In terms of preservation forms, according to an interview with a “*Consorzio*” in Veneto, fresh clams are estimated to dominate the market (about 65%), followed by frozen clams for 20% and canned for 15%. Stakeholders report diverse demands in terms of packaging weight, depending on the sale channel. Fishmongers prefer large packs (5 kg) while large-scale retailers prefer smaller packs<sup>103</sup>.

According to stakeholders, brand and certifications significantly contribute to enhance brand image, improve access to markets, increase sales volume, and potentially benefit from a price premium. Mussels and clams cooperatives generally refer to their regional origin on their packaging<sup>104</sup>.

Stakeholders use diverse communication tools and methods for product promotion (social media, collaborative marketing initiatives, educational campaigns). This allows to foster awareness and understanding of the product and its production method.

<sup>100</sup> Interview wholesaler

<sup>101</sup> Interview

<sup>102</sup> Interview

<sup>103</sup> Interview

<sup>104</sup> Interview

## Trout in Italy

Italy is both a large producer country and consumption market for trout. In 2021, the apparent consumption was estimated at approximately 27.000 tonnes LWE. Both a significant share of trout produced in Italy is exported and a significant share of trout consumed in Italy comes from imports<sup>105</sup>. The trout market in Italy is divided into 3 segments: portion trout under 0,5 kg, medium trout from 0,5 to 1-1,2 kg, and large trout over 1-1,2 kg. Most of the Italian production is made of portion and medium sized trout (27.800 tonnes in 2022)<sup>106</sup>, with an estimate of 40% for portion trout and 60% medium-sized trout<sup>107</sup>. The production of large trout is limited (1.200 tonnes in 2022)<sup>108</sup>.

Most trout sold are rainbow trout, whose flesh colour can vary from white (mainly portion trout) to pink (mainly pink trout) depending on the way the fish is fed.

Portion trout is mainly white, the markets are as follows<sup>109</sup>:

- 25-30% for HORECA;
- 20-25% for large-scale retail;
- 25% for angling;
- 25% for export, mainly to Austria, Poland, Germany and Romania.

For large trout<sup>110</sup>, a large share of the production is processed (about 50%), smoked or filleted. About 40% are sold on the HORECA market and the 10% remaining are sold on other channels, in particular leisure fishing on export markets. About 90% of the large trout is pink (and about 10% is white).

According to stakeholders, the COVID-19 pandemic had a strong negative impact on sales in HORECA and from traditional fishmongers. On the contrary, sales in large-scale retail remained stable and direct sales increased<sup>111</sup>. Some stakeholders witness a rising demand for processed products, in particular in coastal areas<sup>112</sup>.

Several certifications are used for trout sold in the Italian market, including Global GAP, ASC, 100% Antibiotic-Free, and Friends of the Sea. Certifications are deemed useful by stakeholders, to enhance the industry's image both among professional clients and consumers<sup>113</sup>. The Italian production also include a PGI "*Trote del Trentino*", with a limited volume produced: 300 tonnes in 2022 (1% of the national production) accounting for EUR 4,37 million<sup>114</sup>. Regional branding of trout products is also developing in some areas<sup>115</sup>. Imports to Italy are limited.

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<sup>105</sup> Interview with wholesaler

<sup>106</sup> FEAP - <https://feap.info/wp-content/uploads/2024/01/2024-01-19-production-report-2023-v1.pdf>

<sup>107</sup> EUMOFA – Price structure analysis for portion trout

<sup>108</sup> FEAP - <https://feap.info/wp-content/uploads/2024/01/2024-01-19-production-report-2023-v1.pdf>

<sup>109</sup> EUMOFA – Price structure analysis for portion trout

<sup>110</sup> EUMOFA – Price structure analysis for large trout

<sup>111</sup> Interview with producer

<sup>112</sup> Interview with wholesaler

<sup>113</sup> Interview with producer

<sup>114</sup> ISMEA - <https://www.ismeamercati.it/flex/FixedPages/IT/QualidoScheda.php/L/IT/ID/739/BL/aHR0cDovL3d3dy5pc21lYW1lcmNhdGkuYXQvZmxleC9GaXhlZFBhZ2VzL0lUL1F1YWxpZG9WZXRyaW5hLnBocD9wPTE0JmM9JmNhdD0tMSZ0PS0xJnJnbj0tMQ==>

<sup>115</sup> Interview with producer

## Seabass and seabream in Italy

Seabass and seabream are among the most popular fisheries and aquaculture products in Italy<sup>116</sup>. Italian consumption of seabass and seabream were estimated at respectively 31.130 tonnes LWE (2021)<sup>117</sup> and 39.449 tonnes LWE (2019)<sup>118</sup>. Approximately 80% of the Italian supply comes from imports, mainly from Greece and Turkey<sup>119</sup>. Both Italian seabass and seabream face an increasing competition from imported products on the domestic market<sup>120121</sup>.

Seabream and seabass are consumed all year long, with bigger sales in the HORECA sector in the summer months due to the touristic season<sup>122</sup>.

According to the *Associazione Piscicoltori Italiani* (API), 50% of the Italian seabass is sold in large-scale retail. This channel is highly supplied by imported products. 30% are sold in the HORECA sector and 20% by fishmongers. Large scale retail is even more important for seabream, with over 70% of market share, compared to 30% for HORECA<sup>123</sup>. Online sales are rising, especially since the COVID-19 pandemic, so are direct sales<sup>124</sup>.

Seabass and seabream are mostly sold fresh. There is a rising demand for smaller sizes of fishes, as these products are easier to cook<sup>125</sup>. Retail sector mainly sell small sizes (400-600 g). Specialized fishmongers require sizes from 600-800 g to over 1 000 g. The bigger sizes, from 600 g up to 2 000 g, are mostly sold in restaurants<sup>126</sup>.

The main segmentations for seabass and seabream are production method, size, origin and quality. The national origin of the product, with specific labelling (*Allevato in Italia* and *Prodotto Italiano*) or even certification schemes such as "*Sistema di qualità nazionale acquacoltura sostenibile*", are particularly important on the Italian market<sup>127</sup>. Domestic production is positioned on higher value products than imported products, a large share of those are sold to the HORECA sector<sup>128</sup>. Seabass and seabream imported from Greece and Türkiye are positioned on lower-value segments<sup>129</sup>. Several certification schemes are used in the market, mainly for seabass produced in Italy. The main schemes used are Global G.A.P., Friends of the Sea, ASC, private labels and the national scheme for sustainable aquaculture<sup>130</sup>.

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<sup>116</sup> Eurofish country profile, Italy 2023 - <https://eurofish.dk/member-countries/italy/>

<sup>117</sup> EUMOFA - Price transmission analysis - Fresh seabass in the EU, 2024.

<sup>118</sup> EUMOFA - Price transmission analysis - Fresh seabream in the EU, 2022.

<sup>119</sup> EUMOFA - Price transmission analysis - Fresh seabass in the EU, 2024.

<sup>120</sup> Interview API

<sup>121</sup> EUMOFA - Price transmission analysis - Gilthead seabream in Italy, 2017.

<sup>122</sup> EUMOFA - Price structure analysis - Fresh seabass in the EU, 2024.

<sup>123</sup> Interview API

<sup>124</sup> Interview API, interview producer

<sup>125</sup> Interview wholesaler

<sup>126</sup> EUMOFA - Price structure analysis - Fresh seabass in the EU, 2024.

<sup>127</sup> Interview wholesaler

<sup>128</sup> Interview API

<sup>129</sup> Interview producer

<sup>130</sup> EUMOFA - Price structure analysis - Fresh seabass in the EU, 2024.

## 9.7 Annex 7 – Country sheet - Poland

### Farmed products at retail stage

In 2021, Polish apparent consumption of FAPs was estimated at 14,26 kg per capita (a 7% increase compared to 2020)<sup>131</sup>.

Main species consumed in 2021 (both fresh and processed) were wild caught species: Alaska pollock, herring and mackerel. The first farmed species consumed is salmon (29.123 tonnes LWE) and ranks at the 6<sup>th</sup> position.

With regards to consumption of fresh FAPs, trout and carp were among the top four fresh species the most consumed by the households in 2023, accounting both for 12% of the total volume of fresh consumption, amounting to 5.242 tonnes and 5.175 tonnes respectively. Trout prices amounted to 7,20 EUR/kg in 2023 while carp prices reached 9,31 EUR/kg. Mackerel and salmon (mainly imported) were by far the most consumed fresh species by Polish households, representing half of the total volume in 2023. Mackerel was sold 5,28 EUR/kg in average in 2023 and the price of salmon reached 16,37 EUR/kg<sup>132</sup>.

**Table 21: Apparent consumption of the top-10 most consumed species in Poland in 2021 (volume in tonnes LWE)**

	Apparent consumption	Share
<b>Alaska pollock</b>	114.671	20%
<b>Herring</b>	98.776	17%
<b>Mackerel</b>	47.296	8%
<b>Sprat (=Brisling)</b>	41.545	7%
<b>Cod</b>	34.417	6%
<b>Salmon</b>	<b>29.123</b>	<b>5%</b>
<b>Saithe (=Coalfish)</b>	28.831	5%
<b>Blue whiting</b>	25.991	5%
<b>Grenadier</b>	22.800	4%
<b>Skipjack tuna</b>	20.932	4%

*In bold, the species with a significant farmed production  
Source: EUMOFA calculations, based on Eurostat and FAO*

### Carp in Poland

Carp is a popular species among older Polish people, they account for the majority of the sales (based on interviews with carp producers and fishmongers in Poland). Actors of the Polish carp sector are promoting this aquaculture product among younger generations, but the effects of these activities are slow. Significant differences in consumption pattern can be observed between geographical locations: high consumption in southern Poland, moderate consumption in Eastern Poland, and low carp consumption in northern Poland.

<sup>131</sup> EUMOFA - Country profile – Poland

<sup>132</sup> EUROPANEL data in EUMFOA

## Study on the challenges of aquaculture products in food outlets

Carp consumption is highly seasonal as it is related to the Christmas season during which it is traditionally consumed. Carp is available all year long in fishmongers and large-scale retailers but Christmas period accounts for 95% of the total carp sales of large-scale retailers. Direct sales from fish farms account for an important share of carp sales (32% of carp consumers preferred buying their carp products from this distribution channel) but large-scale retailers still represent the majority of the carp market, around 60% of all-carp products sales and they are the preferred outlets for 33% of consumers<sup>133</sup>. Fish shops and market are preferred distribution channels for respectively 25% and 7% of the consumers. Direct sales have been increasing since the COVID-19 crisis, as well as online sales with the development of online stores.

Presentation and preservation forms of carp products differ between the distribution channels. Direct sales from fish farms consist mainly of live carp, as well as gutted carp to a smaller extent. Carp purchased from large-scale retailers can be whole chilled, gutted and filleted. According to interviews with Polish carp producers and fishmongers, customers increasingly want carp fillets rather than whole fish. Two thirds of the consumers prefer fresh fish while 28% prefer carp fillet, and the other 12% prefer smoked, frozen, or prepared carp products<sup>134</sup>. Outside the Christmas season, carp is not sold in the popular stores and retailers, therefore it has to be purchased directly from fish farms, resulting in a rather low consumption. In addition, many Polish consumers (mostly the younger generations) lack the skills to prepare the fish. Carp in Poland benefits from a protected quality scheme: PDO “Karp zatorski”.

### Trout in Poland

Apparent consumption of trout was 19.989 tonnes live weight equivalent in 2021<sup>135</sup>; mainly consisting of portion trout. Trout is among the most consumed fresh species in Poland, accounting for 12% of the volume of Polish households' consumption of FAPs in 2023 (Europanel in EUMOFA).

Trout products are available all-yearlong in Poland and its consumption is not particularly related to any tradition or holiday period. In 2019, 18% of Polish consumers declared consuming trout several times a year, and 20-24% consumed trout on a yearly basis<sup>136</sup>. There is no significant difference in trout consumption patterns related to geographical location, but consumers in cities are more likely to buy trout products as they are more expensive product than other FAPs. The share of direct sales and traditional trade is higher in rural areas.

In Poland, discount chains are estimated to be the leading distribution channels for fresh and smoked trout with a market share of 59% in 2019 (in value)<sup>137</sup>. Fish shops accounted for 16% of the trout retail sales in value, while hypermarkets and supermarkets represented 14% of the total trout share and food shops accounted for 4%. Other distribution channels (including markets and direct sales) accounted for 6% of the trout retail sales in value.

Trout in Poland is mainly consumed fresh gutted, filleted, smoked gutted or smoked filleted<sup>138</sup>. The fishmonger interviewed estimated that gutted trout accounted for 70% of the sales, smoked trout

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<sup>133</sup> Raftowicz M. (2022) Prospects for the Development of the Demand for Carp in Poland among Young Consumers. Int J Environ Res Public Health.

<sup>134</sup> Raftowicz M. (2022) Prospects for the Development of the Demand for Carp in Poland among Young Consumers. Int J Environ Res Public Health.

<sup>135</sup> EUMOFA - Price structure in the supply chain, Portion trout in the EU, 2021

<sup>136</sup> EUMOFA - Price structure in the supply chain, Portion trout in the EU, 2021

<sup>137</sup> EUMOFA - Price structure in the supply chain, Portion trout in the EU, 2021

<sup>138</sup> EUMOFA - Price structure analysis, Portion trout in the EU

### Study on the challenges of aquaculture products in food outlets

for 20%, and trout fillets for 10%. Contrary to carp, trout is almost not sold fresh whole unprocessed, excepts in direct sales from fish farms or local delivery for catering services, but rather processed (95% of the volume). Trout market was traditionally based on portion trout in Poland, but it has been shifting towards trout chilled fillets and smoked fillets with the increasing offer of processed large trout. When purchased at fishmongers, trout is usually presented fresh gutted or smoked. In large-scale retailers, trout is mainly presented packed gutted, filleted, smoked and sometimes it can be sold fresh whole (rarely).

Offer differs in the variety of trout products available depending on the geographical location. Expectations of processed and convenient products are higher in cities compared to non-urban areas. In direct sale (ex-farm) consumers expect whole fish and only sometimes gutted fish and smoked trout, they want ultra-fresh trout. In large-scale retail, consumers expect gutted fish, packed gutted fish or fillets. Trout quality in most retailers is lower than trout purchased in direct sales (interviews with trout producers and retailers in Poland). Although trout products are popular, they were considered expensive by two-thirds of the Polish consumers in 2014 (CAPI survey 2014<sup>139</sup>). Trout prices were relatively stable before increasing in 2022/2023 following the inflation. Prices are moderate compared to other fish (such as salmon) but they are higher than other sources of animal proteins and especially poultry (interview with trout producers in Poland).

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<sup>139</sup> EUMOFA - Price structure analysis, Portion trout in the EU



## 9.8 Annex 8 – Country sheet - Spain

### Farmed products at retail stage

In 2021, Spanish apparent consumption of fishery and aquaculture products was estimated at 42,98 kg per capita<sup>140</sup>, far above the EU average (23,71 kg per capita per year)<sup>141</sup> although it has decreased by 3% compared to 2020.

In Spain, aquaculture products accounted for one-fifth of both the total volume and the total value of seafood consumption in 2022 (amounting to 174.860 tonnes and EUR 1,783 billion)<sup>142</sup>. Mussel is the 2<sup>nd</sup> most consumed species and salmon is the sixth. Main other species (wild caught) are hake, cod and yellowfin tuna.

**Table 22: Apparent consumption of the top-10 most consumed species in Spain in 2021 (volume in tonnes LWE)**

	Apparent consumption	Share
<b>Hake</b>	210.971	11%
<b>Mussel Mytilus spp</b>	<b>145.128</b>	7%
<b>Cod</b>	135.547	7%
<b>Yellowfin tuna</b>	120.128	6%
<b>Squid</b>	118.672	6%
<b>Salmon</b>	<b>106.945</b>	5%
<b>Skipjack tuna</b>	104.740	5%
<b>Surimi</b>	98.612	5%
<b>Warmwater shrimp</b>	<b>82.036</b>	4%
<b>Sardine</b>	81.681	4%

*In bold, the species with a significant farmed production  
Source: EUMOFA calculations, based on Eurostat and FAO*

In terms of sales channels:

- large-scale retailers were by far the main distribution channels of aquaculture products, accounting for 76% of the sales value in 2022 (EUR 1,36 billion);
- fishmongers represented 13% of the aquaculture products sales (EUR 232 million);
- specialised frozen channels accounted for 2% (EUR 43 million);
- direct sales accounted for 2% (EUR 37 million);
- other distribution channels accounted for 6% (EUR 107 million).

In Spain in 2022, fresh fish accounted for 428% of the total volume of fish consumed (against 43% in 2021) and for 39% of the fish in value<sup>143</sup>. Large-scale retailers with fish counters are by far the main distribution channels for aquatic products, representing 62% of the volume of fresh aquatic products sold in 2022. Fishmonger and specialist shops represented 23% of the fresh aquatic sales and hard discount channels accounted for 10% of the volume sold in 2022 (APROMAR).

<sup>140</sup> EUMOFA country profile, Spain

<sup>141</sup> EUMOFA - EU fish market 2023

<sup>142</sup> Source: MAPA data

<sup>143</sup> Aquaculture in Spain, 2023, Apromar

Salmon, seabream and seabass are among the top six fresh species consumed by Spanish households in 2023, respectively 10%, 7% and 5% of the volume. Seabream accounted for 7% of the total volume for fresh consumption in 2023 (32.035 tonnes) and seabass represented 5% of the total fresh consumption volume (22.696 tonnes). Their average prices reached 8,93 EUR/kg and 10,50 EUR/kg respectively. Salmon prices reached 13,59 EUR/kg<sup>144</sup>.

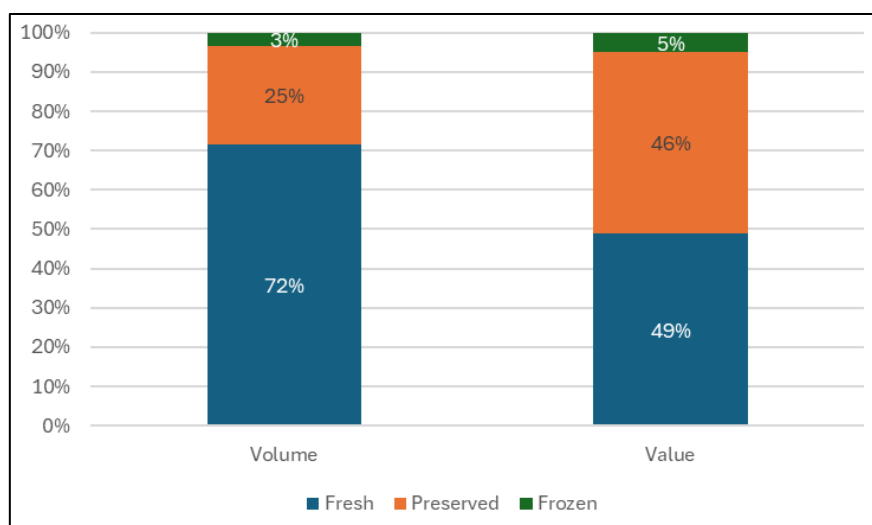
## Mussel in Spain

Spain is both a high producer, importer, consumer and exporter of mussel. There is an important processing activity for mussel, with about 15.000 tonnes of production of canned mussel each year. Wholesalers play an important role in the supply chain, especially for the marketing of fresh mussels to fishmongers and HORECA. A previous EUMOFA publication<sup>145</sup> estimated that they marketed between 45% and 55% of fresh mussels consumed in Spain both at home and out of home.

The image of mussel is good in Spain. It is considered a healthy and affordable product.

Household consumption was 47.104 tonnes in 2022 (in product weight) and EUR 261 million, with a 29% decrease in volume since 2018 and +1% increase in value thanks to a significant growth in price. Mussel is mainly consumed fresh and preserved, respectively 72% and 25% (in product weight), frozen mussels account for 3% of the sales volume. In value, the breakdown is more balanced with 49% for fresh, 46% for preserved and 5% for frozen mussels.

**Figure 14: Breakdown of preservation state for household consumption of mussel in Spain (2022)**



Source: EUMOFA elaboration based on Food Consumption Panel of the Ministry of agriculture, fisheries, and food for home consumption

At retail stage, mussels are mainly sold in large-scale retail and fishmongers' shops (respectively 73% and 15% of the sales volume in 2022). Sales have significantly decreased in large-scale retail compared to 2018 (-39% in volume and -7% in value, the decline concern both fresh and preserved) but has increased in fishmongers (+2% in volume and +26% in value).

<sup>144</sup> EUROPANEL in EUMOFA

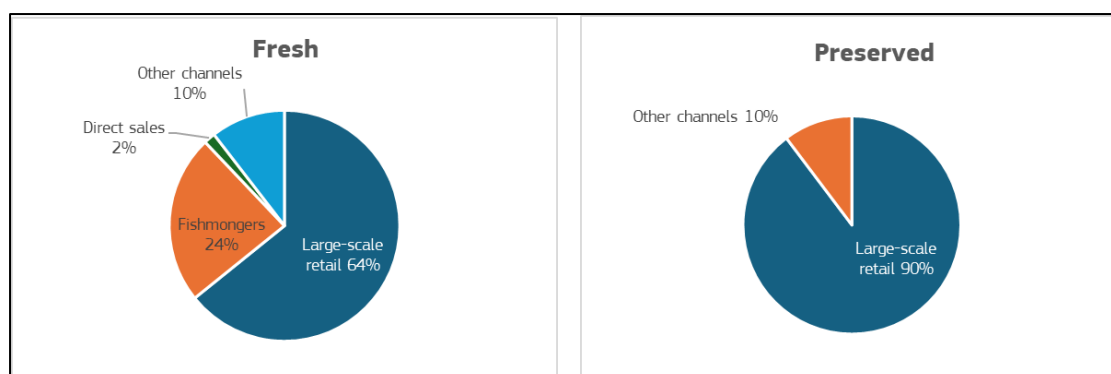
<sup>145</sup> EUMOFA - Price structure analysis – Mussel in the EU

## Study on the challenges of aquaculture products in food outlets

Fresh mussels (33.694 tonnes for household consumption in 2022) are mainly purchased in large-scale retail and fishmongers (respectively 69% and 21% of the volume). In 2022, the average price was 0,76 EUR/kg higher in fishmonger compared to large-scale retail (respectively 4,30 EUR/kg and 3,54 EUR/kg). This price difference is linked to market segmentation as fishmongers tend to sell mussels with the largest size. Direct sales are very limited, with 1% of the volume at a price comparable to the one in fishmongers (4,37 EUR/kg). The demand varies among regions, in central and northwestern regions, consumers tend to prefer largest mussels, while in the Mediterranean, they traditionally purchase the normal category. Penetration rate is high and on a growing trend over the last years: 9,5% in fishmongers and 27,9% in supermarkets (compared to 2,8% and 10,5% in 2018).

Preserved mussels (11.769 tonnes for household consumption in 2022) are mostly purchased in large-scale retail (90% of the volume in 2022). We observe a decline of sales volume for preserved mussel, with 11.769 tonnes in 2022 (-13% compared to 2018), even if the sales volume increased by 5% thanks to a growth in price (10,23 EUR/kg in 2022, +21% compared to 2018). The market segmentation of processed mussels is based on the size, the composition of the covering liquid, the sauce and the regional preferences of consumers. Preserved mussels are mostly consumed as “*mejillón en escabeche*” (pickled mussels) (about 80%-90% of the consumption of processed mussels). They are traditionally consumed as appetizer, at-home or in bars. As for fresh mussel, penetration rate is high and has increased over the last years: 9% in 2018 in supermarkets and 37% in 2022.

**Figure 15: Sales channels for fresh and preserved mussel for household consumption in Spain (in volume, 2022)**



Source: EUMOFA elaboration based on Food Consumption Panel of the Ministry of agriculture, fisheries, and food for home consumption

We estimate there were around 15.000 – 20.000 tonnes of mussels consumed out of home in 2022<sup>146</sup>, this accounted for 25-30 % of total mussel consumption (in product weight).

### Seabass in Spain

Seabass apparent consumption has been increasing in recent years, it amounted to 26.265 tonnes live weight equivalent in 2016<sup>147</sup> and reached 36.700 tonnes lwe in 2022<sup>148</sup>. Similarly, Spanish national data on household consumption indicates an increase of 43% of seabass consumption

<sup>146</sup> Based on data from the annual report on out-of-home consumption, Kantar panel, 2020, MAPA, [Consumo alimentario extracomunitario \(mapa.gob.es\)](https://www.mapa.gob.es/consumo-alimentario-extracomunitario)

<sup>147</sup> EUMOFA - Price transmission analysis - Seabass in the EU - 2019

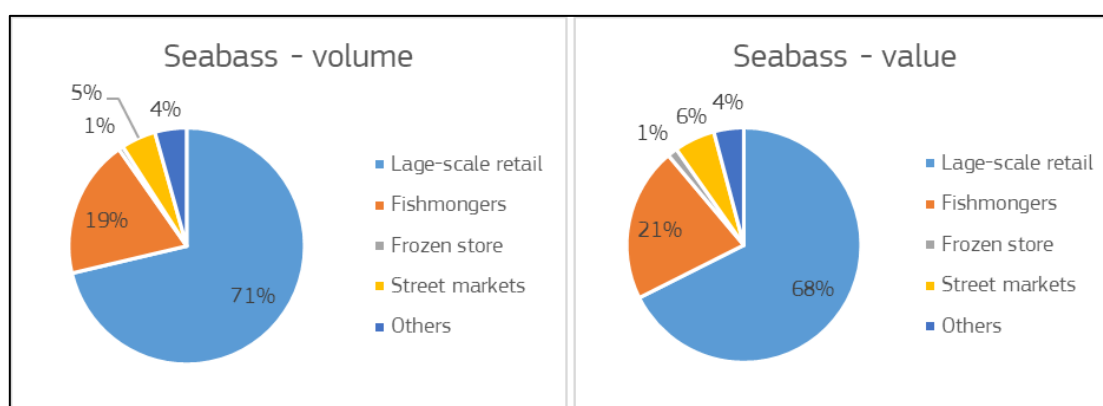
<sup>148</sup> EUMOFA - Price transmission analysis - Seabass in the EU - 2024

between 2012 and 2022<sup>149</sup>. At-home consumption accounted for approximately 80% of the Spanish seabass consumption in 2022, the remaining 20% consisting in HORECA consumption (Hospitality, Restoration and Catering)<sup>150</sup>.

Seabass consumption does not significantly differ depending on the geographical location according to interviewees. However, they pointed that consumption in rural areas was more limited due to logistic issues of fish conservation and that consumers tended to be older people. In addition, there was a higher density of fishmongers in cities as well as more purchasing power.

Seabass products are available all-year long. Large-scale retailers (supermarket and large stores) are the main distribution channels, accounting for 71% of the sales volume and 68% of the sales value in 2022<sup>151</sup>. Fishmongers are the second distribution channels for seabass, accounting for 19% of the sales volume and 21% of the sales value for the same year. Interviews confirm that seabass represents a smaller share of the sales for fishmongers, but it represents a higher share online.

**Figure 16: Breakdown of seabass consumption at home by sales channel (2022)**



Source: MAPA, annual consumption data<sup>152</sup>

Seabass is almost exclusively sold fresh, accounting for 98% of the sales volume in large-scale retailer and in fishmongers and specialist shops in 2022. Seabass is mainly sold whole, and consumers can choose the desired size (portion seabass: 300 to 400 g; medium 400 to 600 g; and large: above 600 g) and preparation (whole, gutted, filleted). Seabass offer has started to diversify in recent years with the growth of internet sales and the arrival of new products on the shelves such as fileted seabass<sup>153</sup>.

Frozen seabass for home consumption remains mainly sold through specialised frozen food shops.

Seabass market in Spain is segmented according to the production method, the size of the product, and the origin (EUMOFA price transmission analysis). Seabass from aquaculture, grown in sea cages account for the largest share of the Spanish market for household consumption and in HORECA channels. Seabass grown in estuaries are mainly sold in local fisheries and supermarkets.

<sup>149</sup> <https://www.mapa.gob.es/es/alimentacion/temas/consumo-tendencias/panel-de-consumo-alimentario/series-anuales/default.aspx>

<sup>150</sup> Aquaculture in Spain, 2023, Apromar

<sup>151</sup> Food Consumption Panel of the Ministry of Agriculture, Fisheries, and Food, 2022

<sup>152</sup> [2022datos anuales del panel de consumo alimentario en hogares\\_tcm30-649661.xlsx \(live.com\)](#)

<sup>153</sup> EUMOFA - Price transmission analysis - 2024 - European Seabass

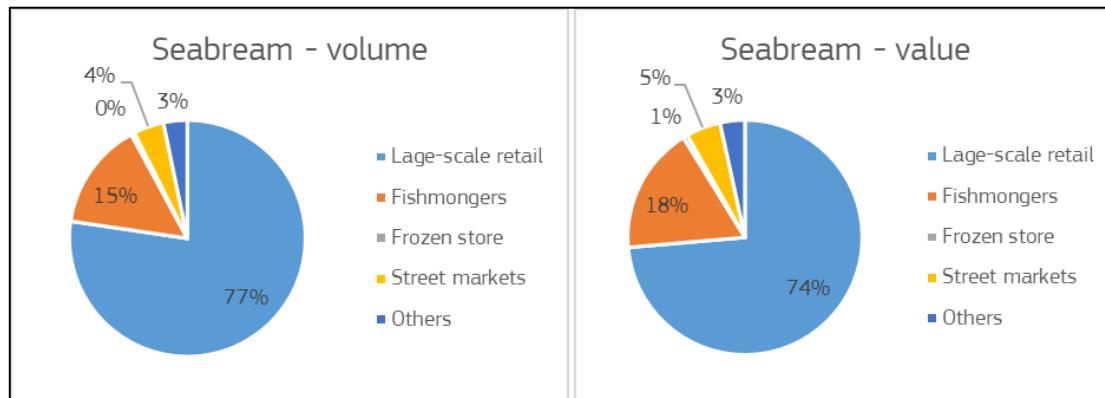
## Seabream in Spain

Seabream apparent consumption differ between information sources, and amounted to 15.736 tonnes in 2021 according to an EUMOFA estimate<sup>154</sup> while it amounted to 30.495 tonnes the same year according to the Food Consumption Panel of the Ministry of agriculture, fisheries and food<sup>155</sup>. This difference is explained by a gap in import data between the sources, APROMAR estimating that almost half of the seabream supply in Spain originated from national production. At-home consumption of seabream has increased by 40% between 2016 and 2020 (EUMOFA). Household consumption of seabream in Spain amounted to 36.400 tonnes in 2021 and it was estimated that the consumption per capita amounted to 0,67 kg (APROMAR).

Consumption patterns of seabream are similar to those of seabass: consumption does not significantly differ based on geographical location but consumption in rural areas is more limited due to logistic issues of fish conservation and that consumers tend to be older people. Density of fishmongers is higher in cities, where the purchasing power is higher. At-home consumption of seabream accounted for approximately 80% of the Spanish consumption in 2020, the remaining 20% consisting in HORECA consumption<sup>156</sup>.

Seabream is available all-year long. Large-scale retailers represent the main distribution channels, accounting for 77% of the seabream sales in volume and 77% of the sales value in 2022. Fishmongers accounted for 15% of the sales volume and 18% of the sales value, while street markets represented 4% and 5% of the sales volume and sales value respectively (EUMOFA). Similarly to seabass, seabream accounts for a smaller share of the sales for fishmongers but it represents a higher share of sales online.

**Figure 17: Seabream sales channels breakdown in 2022, in volume (left) and value (right)**



Source: EUMOFA elaboration based on MAPA<sup>157</sup>

Seabream is mainly consumed fresh whole. It can be prepared (gutted and filleted) at the fish counter of large-scale retailers or at fishmongers.

Seabream market is segmented based on two criteria: the production method and the size. Consumers can choose between portion seabream (300 to 400g), medium (400 to 600g), and large

<sup>154</sup> Source: EUMOFA calculations based on EUROSTAT and FAO

<sup>155</sup> Aquaculture in Spain, 2023, Apromar - <https://apromar.es/wp-content/uploads/2021/12/Aquaculture-in-Spain-2020.pdf>

<sup>156</sup> Aquaculture in Spain, 2020, Apromar - <https://apromar.es/wp-content/uploads/2021/12/Aquaculture-in-Spain-2020.pdf>

<sup>157</sup> [2022datos anuales del panel de consumo alimentario en hogares\\_tcm30-649661.xlsx](https://datos.anual.es/delpaneldeconsumoalimentarioenhogares_tcm30-649661.xlsx) (live.com)

seabream (above 600g) from aquaculture in sea cages, aquaculture in estuaries or from catches. Wild seabream from fishery captures and large seabream are mostly consumed in restaurants, whereas portion and medium seabream are sold to consumers through large-scale retailers.

### Flatfish in Spain

Spanish turbot apparent consumption was estimated around 6.000 tonnes in 2020<sup>158</sup>. Spanish households were by far the largest consumers of flatfish in EU with an annual consumption reaching 0,137 kg per capita in 2015 while the second largest consumers (Italian households) amounted to 0,042 kg per capita<sup>159</sup>. However, turbot consumption by Spanish households has been decreasing by 26% between 2020 and 2021, amounting to 5.122 tonnes in 2021<sup>160</sup>.

Farmed turbot is available all-year long. HORECA are the main distribution channels in Spain. Fishmongers are the second distribution channels to purchase turbot while turbot sales through large-scale retailers are increasing following the shift from HORECA consumption to at-home consumption during the COVID-19 pandemic (APROMAR). As Spain is producing 74% of the EU farmed turbot, a large share of the production is exported, unlike seabass and seabream (APROMAR).

Turbot is mainly consumed fresh whole or gutted, it can also be filleted at the fish counter upon consumer's demand. Turbot market in Spain is segmented based on the production method (although there is no significant difference in taste and quality): turbot from fishery captures and farmed turbot. Farmed turbot is less expensive and more stable in terms of price, availability and quality (EUMOFA). Turbot is considered a high-end product in supermarket fish counters and one of the most expensive fish species

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<sup>158</sup> Fernández-González *et al.* (2022) Production strategies, productivity changes and innovation: An analysis of European turbot aquaculture from 2009 to 2020, *Reviews in Aquaculture*, DOI: 10.1111/raq.12747

<sup>159</sup> EUMOFA - Price transmission analysis - 2018 - Turbot in the EU

<sup>160</sup> Aquaculture in Spain, 2022, Apromar

## 9.9 Annex 9 - List of PDOs / PGIs / TSGs for aquaculture products in the EU 27

Designation	MS	Type	Year registration	Volume certified
<b>Carp</b>				
Oberpfälzer Karpfen	DE	PGI	2002	n.a.
Pohořelický kapr	CZ	PDO	2007	n.a.
Třeboňský kapr	CZ	PGI	2007	n.a.
Karp zatorski	PL	PDO	2011	n.a.
Aischgründer Karpfen	DE	PGI	2012	n.a.
Fränkischer Karpfen / Frankenkarpfen / Karpfen aus Franken	DE	PGI	2012	n.a.
Oberlausitzer Biokarpfen	DE	PGI	2015	n.a.
Akasztói szikiponty	HU	PDO	2020	n.a.
Szegedi tükörponty	HU	PGI	2021	n.a.
Balatoni hal*	HU	PGI	2021	n.a.
Salată tradițională cu icre de crap*	RO	TSG	2021	n.a.
Peitzer Karpfen	DE	PGI	2022	n.a.
<b>Mussel</b>				
Mejillón de Galicia; Mexillón de Galicia	ES	PDO	2007	27.110 tonnes in 2022
Moules de Bouchot de la Baie du Mont-Saint-Michel	FR	PDO	2011	9.760 tonnes in 2018
Cozza di Scardovari	IT	PDO	2013	76 tonnes in 2022
Moules de Bouchot	FR	TSG	2014	24.786 tonnes in 2018
Bohusläns blåmusslor	SE	PDO	2023	n.a.
Novigradska dagnja	HR	PDO	2023	n.a.
<b>Oyster</b>				
Huîtres Marennes Oléron	FR	PGI	2009	16.158 tonnes in 2021/22
Malostonska kamenica	HR	PDO	2020	
Huitre de Normandie	FR	PGI	2023	n.a.
<b>Trout</b>				
Schwarzwaldforelle	DE	PGI	2000	n.a.
Trote del Trentino	IT	PGI	2013	300 tonnes in 2022
Szilvásváradi pisztráng	HU	PGI	2020	n.a.
<b>Other species</b>				
Αυγοτάραχο Μεσολογγίου / Avgotaracho Messolongiou (mullet roes)	GR	PDO	1996	n.a.
Clare Island Salmon	IE	PGI	1999	n.a.
Tinca Gobba Dorata del Pianalto di Poirino (tench)	IT	PDO	2008	n.a.
Salmerino del Trentino (char)	IT	PGI	2013	n.a.
Escavèche de Chimay (several species)	BE	PGI	2021	n.a.

*n.a.: not available*

*\* Carp and other freshwater species*

*Sources: EUMOFA elaboration based on EU and national sources (see hereinafter)*

## Study on the challenges of aquaculture products in food outlets

### Sources used:

- EU level: GI View: <https://www.tmdn.org/giview/>
- Italy: ISMEA: <https://www.ismeamercati.it/flex/FixedPages/IT/QualidoVetrina.php?p=0&c=&cat=-1&t=8&rgn=-1/L/IT>
- Spain: MAPA: [https://www.mapa.gob.es/es/alimentacion/temas/calidad-diferenciada/informedopigp2022\\_tcm30-660757.pdf](https://www.mapa.gob.es/es/alimentacion/temas/calidad-diferenciada/informedopigp2022_tcm30-660757.pdf)
- France:
  - FranceAgriMer study: <https://www.franceagrimer.fr/content/download/67062/document/ETU-MER-moule-bouchot.pdf>
  - EUMOFA study on the price transmission in the oyster value chain: [https://eumofa.eu/documents/20124/58126/PTAT+Oyster\\_EN.pdf/385bcceb-50f5-4f80-04a1-227416522434?t=1668076669628](https://eumofa.eu/documents/20124/58126/PTAT+Oyster_EN.pdf/385bcceb-50f5-4f80-04a1-227416522434?t=1668076669628)

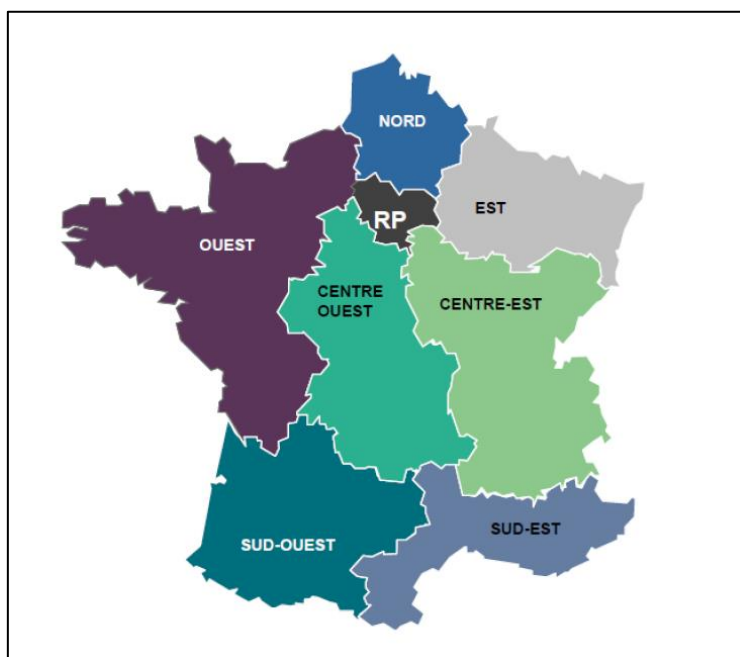


## 9.10 Annex 10 – list of sources used in the table on the retailers requirements

The sources used for the previous table are:

- Makro - <https://www.makro.cz/udrzitelnost/inspirace-zakazniku-a-partneru>
- Lidl, 2023 - <https://corporate.lidl.fi/pdf/show/83561>
- Salling Group - [https://storage.sallinggroup.com/media/2690/sustainable-seafood-policy\\_general\\_vjune-2020\\_v3.pdf](https://storage.sallinggroup.com/media/2690/sustainable-seafood-policy_general_vjune-2020_v3.pdf)
- REMA - <https://www.rema.no/ansvar/baerekraftig-fisk-og-sjomat/>
- Carrefour - <https://www.carrefour.com/sites/default/files/2023-06/Agir%20pour%20une%20pêche%20et%20une%20aquaculture%20responsable%20Carrefour%202022.pdf>
- Mousquetaire:
  - <https://www.mousquetaires.com/wp-content/uploads/2023/06/230628-dp-plan-engage-pour-une-peche-durable.pdf>
  - [https://www.mousquetaires.com/wp-content/uploads/2021/01/rapport\\_dd\\_2020\\_mousquetaires.pdf](https://www.mousquetaires.com/wp-content/uploads/2021/01/rapport_dd_2020_mousquetaires.pdf)
- Leclerc, 2022 - [https://www.mouvement.leclerc/sites/default/files/2022-05/Tous%20engagés%20pour%20un%20Mouvement%20responsable%20-%20Rapport%20RSE%202021%2025Mo\\_1.pdf](https://www.mouvement.leclerc/sites/default/files/2022-05/Tous%20engagés%20pour%20un%20Mouvement%20responsable%20-%20Rapport%20RSE%202021%2025Mo_1.pdf)
- CONAD:
  - Fishfarming expert - <https://www.fishfarmingexpert.com/conad-store-chain-italy-the-kingfish-company/kingfish-co-strikes-italy-store-chain-deal/1243170>
  - <https://chisiamo.conad.it/sosteniamo-il-futuro/ambiente-e-risorse/prodotti/benessere-animale>
- COOP - <https://www.greatitalianfoodtrade.it/en/progress/coop-italia-fish-without-antibiotics/>
- Mercadona - <https://info.mercadona.es/en/lets-protect-the-planet/our-actions/this-is-the-responsible-policy-behind-mercadona-fish/news>

## 9.11 Annex 11 - Sub-national areas considered for household consumption of FAPs in France



"Ouest": West; "Nord": North, "Est": East, "Centre-Est": Center-East, "Sud-Est": South-East, "Sud-Ouest": South-West, "Centre-Ouest": Center-West, RP: Paris area.

Source: FranceAgriMer - Consommation des produits de la pêche et de l'aquaculture 2022 - [https://www.franceagrimer.fr/fam/content/download/72643/document/STA\\_MER\\_CONSO\\_2022.pdf?version=2](https://www.franceagrimer.fr/fam/content/download/72643/document/STA_MER_CONSO_2022.pdf?version=2)

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