

Fish and Seafood Markets in Central and Eastern Europe

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Abstract

The fish and seafood industry, which includes the production, processing, distribution and consumption of fish and seafood products, is an important part of the European blue economy. Europe is one of the largest consumers of fish and seafood in the world and, because of its diverse seafood preferences, it imports a considerable amount of seafood from other parts of the world. At the same time, there are significant differences between EU member states in terms of fish consumption and production levels. This study focuses on a group of six Central and Eastern European countries with the lowest levels of seafood consumption. The article reveals unique combinations of factors that determine demand for fisheries and aquaculture products, despite the presumed levelling effects of the single market and global supply chains. In this fragmented market, the main players are small and medium-sized enterprises that specialise in trading and processing broad groups of products and are able to integrate into complex supply chains. The overview of the seafood markets of Bulgaria, Czechia, Hungary, Romania, Slovakia and Slovenia serves as a step towards a better understanding of the interplay between global and local market forces.

Keywords: fish, seafood, consumption, trade, processing, Central and Eastern Europe

JEL Code: F14, F18, Q17, Q22, Q56

DOI: 10.56065/IJUSV-ESS/2023.12.1.123

Introduction

Global fisheries and aquaculture production reached a record 218 million tonnes in 2021. The industry is recognised as a major contributor to global food security and nutrition. Fish and seafood are traded more than any other food commodity, and are among the most nutritious and healthy foods with high quality animal protein and low-fat content. They contribute to around 17% of the animal protein consumed worldwide. Average per capita consumption of fish and seafood has more than doubled globally over the past six decades: consumption of seafood rose from an average of 9.9 kg in the 1960s to 20.2 kg in 2020. Increasing affluence and urbanisation, as well as advances in fish processing and dietary patterns, are expected to lead to a 15 percent increase in aquatic food consumption, reaching an average of 21.2 kg per capita in 2032, according to the Food and Agriculture Organization (FAO, 2022; OECD, FAO, 2023).

The European Union (EU) is an important producer and by far the largest single market for seafood imports in the world. Consumption of fishery and aquaculture products in the EU is met by a combination of domestic production and imports, with imports accounting for two thirds of the total supply (European Commission, 2023). Understandably, the focus of most market and academic research is on the major producer and consumer countries. This leaves the dynamics of minor markets outside the scope of most studies.

This paper focuses on Central and Eastern European EU members, which exhibit relatively low fish and seafood consumption. A selection criterion of per capita consumption below 50 percent of the EU average was applied. This results in six countries: three of them landlocked – Czechia, Hungary and Slovakia – and three with sea access – Bulgaria, Romania and Slovenia. The study applies a comparative approach to the state of six less explored fish and seafood markets in Central and Eastern Europe. It looks at the level of consumption, consumer preferences, as well as the trade, distribution and processing of seafood in each country. The data is derived mainly from Eurostat, FAO and OECD.

Fish and seafood include fresh, chilled, frozen, dried, smoked or salted fish and seafood (crustaceans, molluscs and other shellfish, sea snails, etc.) and other preserved or processed fish and

seafood, as well as their preparations, such as canned fish, caviar and other hard roes, fish fingers, battered or breaded seafood, etc. Fish, fishery products, seafood and aquatic food are used interchangeably in this paper.

1. Consumption of fish and seafood

A common approach to measuring the level of consumption of fisheries and aquaculture products is to assess the live weight of marine and freshwater fish, shellfish, crustaceans and cephalopods caught and farmed. It is presented in the food balance sheets for aquatic products maintained by the Food and Agriculture Organization (FAO, 2023). The concept of apparent consumption is calculated as the result of the total national production for human consumption, including catch and culture, in live weight, plus imports and minus exports of fish and fishery products, divided by the population of the country. The results are expressed in kilograms per capita on an annual basis. The EU average for 2021 is 23.71 kg per capita, and the results for the six Central and Eastern European countries are shown in Figure 1.

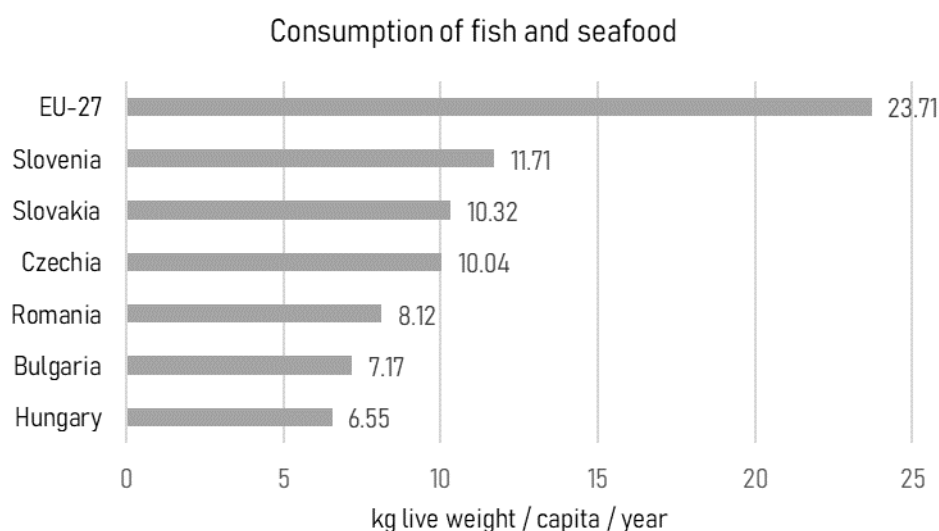


Figure 1. Per capita apparent consumption of fishery and aquaculture products in 2021, kg live weight

Source: European Commission, 2023

In all six countries, per capita consumption is less than half the average for the EU-27. However, even within this group there are significant differences: consumption in Slovenia is 1.8 times higher than in Hungary. There is no established set of factors behind the propensity to consume fish and fish products. In general, cultures oriented towards the sea and the oceans have a higher consumption of fish and seafood. It is therefore not surprising that landlocked countries are at the bottom of the per capita fish consumption rankings. The same is true, to a lesser extent, of countries with limited access to the sea or with a history of development based mainly on inland regions. In addition to geography, factors such as the social and cultural heritage of fishing, the availability of fish resources, social forces and political governance influence the demand for seafood. (Almeida, Karadzic and Vaz, 2015).

The data on per capita consumer expenditure on fish and seafood provide some support for the estimates of apparent consumption. In 2022, annual expenditure per person in Hungary is reported to be 17.5 euros, followed by 32.6 euros in Bulgaria, 48.7 euros in Czechia and 91.1 euros in Romania (Euromonitor International, 2023a). The apparent differences in expenditure between the four countries could be due to diverging consumption patterns, data completeness or other factors. No data is available for Slovakia and Slovenia.

A common concern is the relative adequacy of seafood consumption compared to existing dietary recommendations. The nutritional and health benefits of seafood consumption are associated with a lower risk of death from coronary heart disease and an adequate supply of fatty acids and micronutrients. There are no common guidelines at European level, and each country has developed its own food-based dietary recommendations over the past few decades, based on country-specific nutrient intakes and cultural patterns. The dietary recommendations for fish consumption issued by the national health authorities in the six countries range from 150 to 400 grams per week in Hungary and Czechia, respectively, while there is only qualitative guidance for Slovakia (Lofstedt, de Roos and Fernandes, 2021). Despite the variance in the national recommendations the levels of per capita consumption remain below the suggested dietary intake in the case of Bulgaria, Czechia, Hungary and Romania. The only country, in which the mean apparent consumption covers the endorsed consumption of fish is Slovenia, while for Slovakia it is not possible to make a judgement due to the lack of quantitative dietary recommendation by the country's health authorities.

As discussed, eating fish regularly is essential to gain health benefits. Therefore, it is useful to review the frequency of seafood consumption for both public health and market reasons. How often people eat fishery and aquaculture products has been surveyed in a special Eurobarometer on consumer habits (European Commission, 2021). The results on consumption at home are presented in Figure 2.

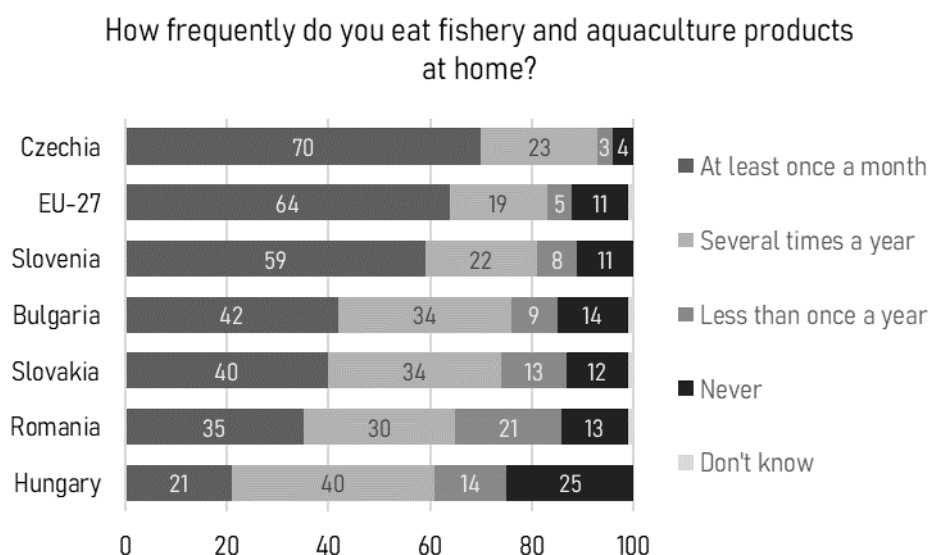


Figure 2. Frequency of consuming fishery and aquaculture products at home in 2021, percentage

Source: European Commission, 2021

It is not surprising that a quarter of respondents in the country with the lowest consumption level do not eat fish at all. In Hungary, only one in five people eat fishery products at least once a month. However, the frequency of eating seafood does not correspond to the ranking of consumption levels. Seventy percent of the Czech respondents say that they eat fish at least once a month, which is above the mean level in the EU, despite the country's total seafood consumption being less than half of the EU average. This has marked the highest increase in the EU by 23 percentage points, compared to three years earlier. Only further in Slovenia do more than half of the population eat fish at least once a month. In Romania and Bulgaria, the proportion of people putting fish on the dinner table at least once a month has fallen significantly, by 20 and 16 percentage points respectively over three years. One in five people in Czechia and Slovenia order fish at a restaurant at least once a month, as does the average EU citizen. Roughly half of the respondents would eat seafood out of home several times a year or less often. A third of Bulgarians and

Romanians say that they never eat fish at a restaurant and 45 percent of Hungarians declare the same (European Commission, 2021).

Regular consumers or those who eat fishery and aquaculture products at least once a month are mainly in the 25–39 and 40–54 age groups in Bulgaria, Czechia, Romania and Slovenia and in the EU as a whole. Slovakia is an exception, where young people in the 15–24 age group are the main consumers of seafood at least once a month.

The seafood industry relies on global sources of supply and an increasing degree of substitutability within many species groups. In addition, developments in processing technology, in particular the ability to freeze many product forms twice, have led to commoditisation or blurring of distinctive product attributes (Anderson, Asche and Garlock, 2018). Thus, in addition to the traditional reporting on supply and consumption by species of aquatic organisms, the market is categorised by type of product: fresh, frozen, processed (canned, smoked, battered, etc.) (Figure 3).

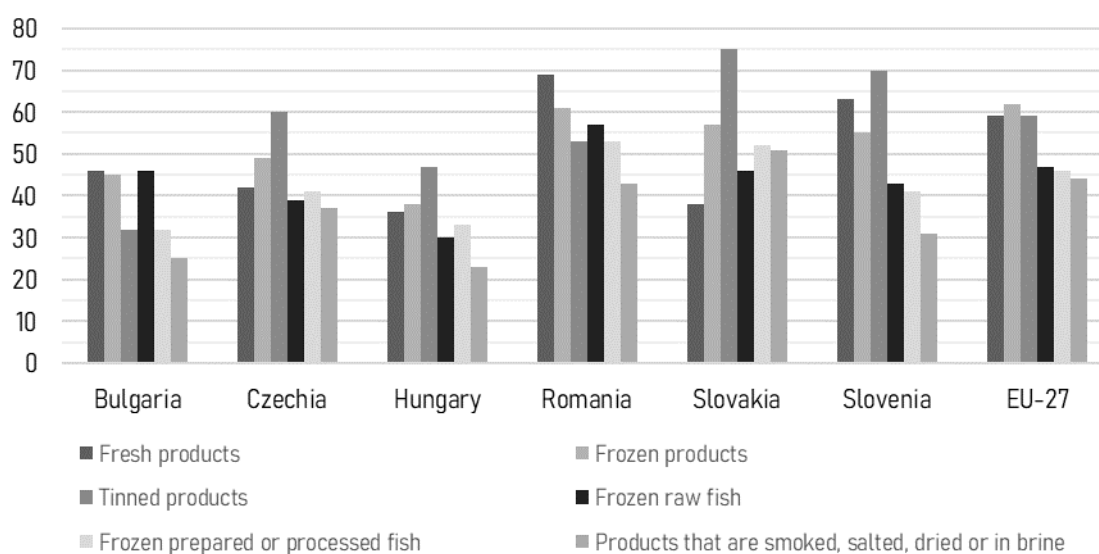


Figure 3. Consumption of fishery and aquaculture products at least once a month, by type of product, percentage

Source: European Commission, 2021

Overall, frozen products are consumed most often in the European Union, closely followed by fresh and canned products. This pattern is not replicated in Central and Eastern Europe. Tinned products are the most popular in Slovakia, Slovenia, Czechia and Hungary, while consumers in Romania and Bulgaria express a preference for fresh products. Regarding frozen products, households in Czechia, Slovakia and Hungary favour prepared or processed fish, while less than half of consumers in Bulgaria, Romania and Slovenia eat frozen raw fish at least once a month. Smoked, salted or dried products are relatively popular in Slovakia, Romania, Czechia and Slovenia.

2. Consumer preferences

The leading channels for buying fishery products are grocery stores, supermarkets and hypermarkets. Nearly eight out of ten buyers in Europe use buy their seafood in this way (Table 1). The second most often used approach is to visit a fishmonger or a specialist store, followed by buying fish at a street market. One in ten consumers in the EU on average would turn directly to a fisherman, fish harbour, auction or fish farm for a purchase. E-commerce remains a limited option with only two percent of EU respondents using it for fishery products.

Table 1. Consumer preferences for channels to purchase fish and seafood

| | <i>At a grocery store, supermarket or hypermarket</i> | <i>At a fishmonger or specialist store</i> | <i>At a street market</i> | <i>At a fish farm or from fisherman</i> | <i>Online</i> |
|-----------------|---|--|---------------------------|---|---------------|
| Bulgaria | 75 | 45 | 22 | 9 | 0 |
| Czechia | 88 | 26 | 3 | 10 | 4 |
| Hungary | 77 | 42 | 10 | 11 | 1 |
| Romania | 75 | 32 | 14 | 19 | 1 |
| Slovakia | 96 | 9 | 1 | 10 | 1 |
| Slovenia | 84 | 32 | 7 | 20 | 2 |
| EU-27 | 79 | 43 | 15 | 10 | 2 |

Source: European Commission, 2021

While these general trends apply to the group of countries surveyed, there is a room for variation. For example, Slovakia is the country in the European Union with the highest proportion of consumers buying fishery products in supermarkets, with 96 percent choosing this channel. Fishmongers in Bulgaria and Hungary are as popular as in the EU on average, with 45 and 42 percent of respondents respectively. In Bulgaria, people are more likely to buy fish from a street market than in the rest of CEE, with 22 percent choosing this route. Slovenia and Romania stand out in this group, with one in five buyers turning directly to a fisherman or fish farm for delivery. Online purchases of seafood are made by 4 per cent of Czech consumers, twice the EU average.

When asked about the main reasons for buying a fishery product, respondents in the EU typically emphasise the appearance of the product and its cost, with consideration of its origin coming at third place. Around a quarter of respondents believe that brand or quality labels and ease and speed of preparation are important, while one in six is concerned about the environmental, social or ethical impact of capture fisheries and aquaculture (Table 2).

Table 2. Purchasing factors

| | <i>Appearance of the product (freshness, presentation, etc.)</i> | <i>Cost of the product</i> | <i>Origin of the product</i> | <i>How easy and quick it is to prepare</i> | <i>Environmental, social or ethical impact</i> |
|-----------------|--|----------------------------|------------------------------|--|--|
| Bulgaria | 66 | 69 | 37 | 22 | 6 |
| Czechia | 62 | 52 | 43 | 26 | 8 |
| Hungary | 46 | 66 | 44 | 31 | 7 |
| Romania | 60 | 46 | 38 | 22 | 13 |
| Slovakia | 49 | 66 | 44 | 26 | 9 |
| Slovenia | 59 | 52 | 55 | 23 | 13 |
| EU-27 | 58 | 54 | 49 | 24 | 16 |

Note: The most common reason for purchase is highlighted for each country.

Source: European Commission, 2021

The cost of the product is the leading motive for two thirds of buyers in Bulgaria, Hungary and Slovakia. The freshness and presentation of seafood is most important in Czechia, Romania and Slovenia. The origin of the product is the second most frequently mentioned aspect influencing the buying decisions of Slovenian consumers, although not by much compared to the appearance and cost of seafood. Considerations about the environmental, social and ethical impacts of buying

seafood are important to one in ten consumers in Central and Eastern Europe and this is the least frequent purchasing factor as in the rest of the EU.

Almost one third of the seafood consumed in the EU is supplied by domestic and imported aquaculture (European Commission, 2023). Globally, aquaculture is already responsible for half of the total supply of aquatic food for human consumption and this trend is expected to increase (FAO, 2022). This makes the question of consumer preferences for wild versus farmed aquatic food relevant. Close to a third of EU consumers prefer wild products or have no preference regarding wild or farmed products (Table 3).

Table 3. Preferences for wild vs. farmed aquatic food

| | <i>Wild products</i> | <i>No preference</i> | <i>Depending on the product</i> | <i>Do not know if the products are wild or farmed</i> | <i>Farmed products</i> |
|-----------------|----------------------|----------------------|---------------------------------|---|------------------------|
| Bulgaria | 20 | 39 | 14 | 22 | 4 |
| Czechia | 21 | 18 | 20 | 35 | 6 |
| Hungary | 38 | 19 | 18 | 19 | 5 |
| Romania | 22 | 36 | 7 | 24 | 10 |
| Slovakia | 20 | 41 | 14 | 20 | 5 |
| Slovenia | 31 | 34 | 14 | 14 | 7 |
| EU-27 | 32 | 30 | 16 | 15 | 7 |

Note: For countries where the percentages do not add up to 100, the remaining one percent of respondents have answered “don’t know”.

Source: European Commission, 2021

In Slovakia, Bulgaria, Romania and Slovenia, more than a third of all consumers do not express a preference between wild and farmed seafood. Around a fifth of CEE buyers do not know whether the product is wild or farmed, while in the Czechia this group makes up 35 percent of all respondents. A clear preference for wild products is shown by 38 percent of Hungarian consumers, followed by 31 percent in Slovenia, while in the remaining four countries around a fifth of respondents choose this option. Despite the growing importance of both freshwater and marine aquaculture worldwide, farmed products are clearly preferred to wild products by less than one in ten consumers. It seems that the gap between the reality on the supply side and potentially polarised consumer preferences along the wild versus farmed axis is filled by the majority of consumers who do not take a clear position or do not distinguish between the two types of origin.

3. Production, trade and processing

The six CEE countries are minor producers of fishery and aquaculture products within the EU. They are all net importers of seafood. The most popular freshwater species farmed domestically are trout, carp and catfish. Salmon and tuna (mostly skipjack) feature prominently in the countries’ import lists, followed by mackerel and sea bream – in Bulgaria and Romania – fish preparations – in Hungary, Slovakia and Slovenia – and, to a lesser extent, shrimps, cod, hake Alaska pollock and squid (EUMOFA, 2023).

The fish processing industry in Central and Eastern Europe consists of small and medium enterprises that are well integrated into global supply chains. Some of them produce canned and prepared products for domestic and overseas markets, while others are mainly focused on secondary processing of high-value products for more lucrative markets in Europe and beyond. The Bulgarian processing sector comprises 41 companies, employing 1,430 people¹ and generated a turnover of 57 million euros in 2020. The fish processing industry in Czechia includes 20 companies with a total of

¹ The number of employees is calculated on a full-time equivalent basis.

764 employees and sales of 100 million euros. The Hungarian processing sector consists of 13 enterprises with 309 employees and a turnover of 12 million euros. In Romania the industry is made up of 37 companies with 1,223 employees and sales of 110 million euros in 2020. The Slovak processing sector consists of three companies, employing 357 persons with sales of 49 million euros. In Slovenia, six enterprises employed 101 persons and generated sales of 12 million euros (EUMOFA, 2023).

The total volume of processed seafood sold in the Bulgarian market, including chilled, frozen and shelf stable seafood, amounted to 6,200 tonnes. It had a value of 53 million euros in 2022 (Euromonitor International, 2023b). The volume of processed seafood in Hungary for the same year was 8 thousand tonnes, with a value of 97 million euros. The market is expected to benefit from the growing interest in healthier alternatives to meat, as it is rich in protein, omega-3 fatty acids and essential vitamins and minerals (Euromonitor International, 2023c). The Romanian market for frozen, chilled and canned seafood had a volume of 17,200 tonnes and a value of 176 million euros in 2022. The size of the market in Slovakia is comparable to that in Romania, with a volume of 16,800 tonnes and a value of 156.4 million euros. The processed seafood market in Slovenia, with a volume of 4,300 tonnes and a value of 61 million euros, has been supported by the perceived health benefits of the products, greater convenience and lower prices compared to fresh fish. The largest market for processed seafood is the Czech one, with a total volume of 42,700 thousand tonnes and a value of 410 million euros.

While environmental concerns and EU quality labels, such as Protected Geographical Indication and Protected Designations of Origin, are not among the top motivations for purchasing in CEE markets, they may play a greater role in other EU markets and supply chains. This explains why three CEE countries have registered geographical indications for freshwater species and products from them. Czechia has registered two types of carp, while Hungary and Romania have each registered four geographical indications for different fishery products (eAmbrosia, 2023).

Similarly, a producer of 3,000 tonnes of farmed mussels in Bulgaria has certified its production as organic. In Hungary, there were four organic aquaculture farms with a total production of 1,743 tonnes of carp species and predatory fish in 2020. Six companies are involved in organic aquaculture production in Romania, producing mainly carp and to a lesser extent trout. It is worth noting that production has decreased to 808 tonnes in 2020, which is only one sixth of the total five years earlier. Organic aquaculture in Slovenia produced 623 tonnes of mussels and 90 tonnes of finfish in 2020. No organic aquaculture has been reported in Czechia and Slovakia in 2020 (European Commission, 2022).

Certification endorsed by independent organisations, such as the Marine Stewardship Council (MSC) and the Aquaculture Stewardship Council (ASC) provides some indication of the level of involvement of trading and processing CEE companies in the global seafood market. The number of operators with valid chain of custody certification from the ASC, which ensures that seafood delivered to supply chain actors originates from a certified farm, is as follows: Bulgaria – 4 operators; Czechia – 23; Hungary – 7; Romania – 8; Slovakia – 11 and Slovenia – 3. These include different types of companies: from international retail chains, to distributors and processors of seafood for human and pet animal consumption (ASC, 2023). Likewise, the register of MSC certified suppliers covers companies involved in wholesale trade and distribution, hypermarkets, and processing companies working for domestic and export markets. The number of MSC certified suppliers in 2023 is the following: Bulgaria – 8; Czechia – 15; Hungary – 4; Romania – 8; Slovakia – 6 and Slovenia – 2 (MSC, 2023). This indirect indicator of the level of market sophistication is generally in line with the other characteristics of the CEE fish and seafood markets. The largest processed seafood market by value, Czechia, supports the largest number of MSC or ASC certified companies.

Conclusion

The review of Central and Eastern European seafood markets provides some insights into the current state of markets constrained by disparate consumer tastes and preferences. It is noteworthy that within the commoditised global fishery market and the EU single market, there are peculiar combinations of factors that determine the production, trade and demand for aquatic food products. While the consumption of canned tuna, filleted farmed salmon or Alaska pollock fish sticks may seem universal, the quantity, frequency, purchasing habits and motives for buying seafood come in all possible combinations, even in relatively small markets such as those studied. It is not intuitive that regular seafood consumers in Slovakia are mainly young, shop exclusively in supermarkets and buy mostly tinned products. Nor is it obvious why Hungarian consumers, the most modest in Europe, have a strong preference for wild fish, when the Romanian seasoned customers value mostly fresh fish with good appearance, without caring whether it is wild-caught or farmed.

Clearly, the unique combination of cultural determinants, geographical factors, public health policies, household budgets, social dynamics and many other aspects will continue to shape market development. This environment appears to favour small and medium-sized enterprises involved in trade and processing, and able to integrate into complex supply chains. This mixed picture leaves many questions open for further research about the forces at work in Europe's seemingly less important seafood markets.

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