AQUATIC FOOD CONSUMPTION IN SOUTHEASTERN EUROPE: TRADE AND SUSTAINABILITY DIMENSIONS

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Abstract

Consumption of aquatic food has increased worldwide in recent decades. Although most countries in Southeastern Europe have a much lower per capita demand for fish and fishery products compared with global and European levels, they are following the general trends. Domestic production is insufficient to meet existing demand, and the region is integrated into the global seafood market. The paper outlines the links between human consumption of aquatic organisms in the region and the global seafood trade. The supply of internationally sourced products has environmental impacts beyond the countries studied, raising questions about the sustainability of the sector and its environmental footprint. The study also examines the gap between domestic supply and demand for seafood and its impact on the region's trade and environmental position.

Key words: fish, seafood, international trade, sustainability, Southeastern Europe

JEL: F14, F18, Q22, Q56

Introduction

In recent decades, the fisheries and aquaculture sector has been increasingly recognised for its essential contribution to global food security and nutrition. Seafood has been traded more than any other food commodity and is one of the most nutritious and healthy foods, with high quality animal protein and low-fat content. It contributes up to about 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. Aquatic food consumption rose from an average of 9.9 kg in the 1960s to a peak of 20.5 kg in 2019, before falling slightly to 20.2 kg the following year. Increasing affluence and urbanisation, as well as advances in post-harvest practices and dietary patterns, are expected to lead to a 15 per cent increase in fish and seafood consumption, reaching an average of 21.2 kg per capita in 2032, according to the Food and Agriculture Organizaton (FAO, 2022; OECD, FAO, 2023). Regional and national trajectories vary over the longer term, but generally follow the increasing trend in consumption of aquatic organisms. The present paper examines the development in Southeastern Europe since the beginning of the 21st century.

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It outlines the regional dimensions of the overall shift from capture fisheries to aquaculture and examines the contribution of trade to securing demand for seafood. The findings reveal clear patterns in contemporary aquatic food consumption in a group of countries stretching from the Danube to the Mediterranean, and highlight potential sustainability issues both domestically and internationally.

Consumption patterns in Southeastern Europe

The study focuses on a contiguous region of fourteen countries located between the Pannonian Basin and the eastern Mediterranean, which can be loosely referred to as Southeastern Europe (SEE). The list includes Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Greece, Hungary, Moldova, Montenegro, North Macedonia, Romania, Serbia, Slovenia and Turkey. As the main data source – FAO Fishery and Aquaculture Statistics – does not report data for Kosovo, the country is not included in the sample, although it is part of the region. The terms fish, seafood, aquatic products and their derivatives are used as synonyms within the paper.

Apparent consumption, regional production and international trade

The FAO food balance sheets for aquatic products provide the basis for assessing fish and seafood consumption. They cover the capture and farming of marine and freshwater fish, shellfish, crustaceans and cephalopods. The concept of apparent consumption is derived from 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 (Figure 1).

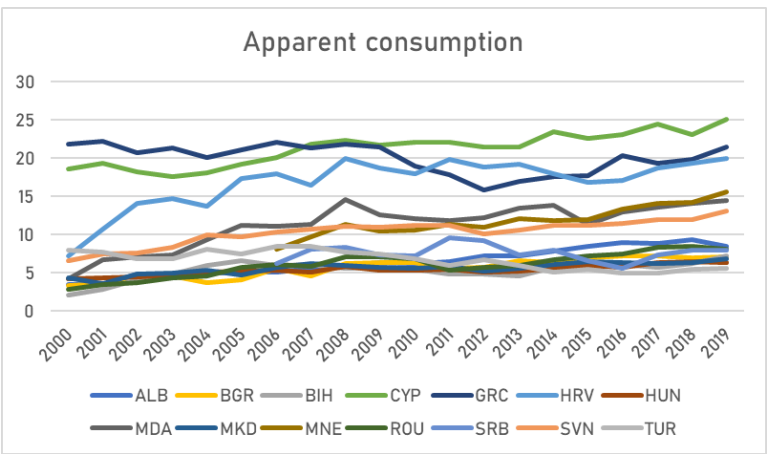

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Figure 1: Apparent consumption of aquatic food, kg per capita

The largest group of eight countries has an average per capita consumption of 7.1 kg in 2019. The general trend in the first two decades of the century is characterised by a compound annual growth rate of 2.9 per cent for the group as a whole. While there are similarities, individual countries can follow different trajectories. For example, Bosnia and Herzegovina started with 2 kg per capita in 2000 and reached 7.2 kg by the end of the period, while apparent consumption in Turkey fell from 7.9 to 5.6 kg per capita between the beginning and the end of the period. Bulgaria is part of the same group and its seafood consumption increased from 3.3 to 7 kg per capita over the twenty years, with a local peak of 7.2 kg in 2016.

By 2019, a second group of countries with higher consumption levels has emerged, even though they started as part of the majority of the SEE region. It includes Montenegro and Slovenia with access to the Adriatic Sea and, somewhat unexpectedly, landlocked Moldova. The average consumption of fishery products in this second group is 14.3 kg per capita.

The highest levels of consumption are observed in Cyprus and Greece. Croatia broke away from the majority of SEE countries at the beginning of the century to join the two Mediterranean countries. The average per capita consumption in this cluster is 22 kg per capita, with the highest level reported by Cyprus – 25 kg. In fact, the latter group is closest to the world average, while the majority of the SEE region has a consumption level that is about one third of the world average of 20.2 kg per capita.

In general, countries with access to the sea have a greater propensity to consume seafood than landlocked countries, with even higher levels of fish consumption in coastal 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 demand for aquatic products (Almeida, Karadzic and Vaz, 2015).

The growing consumption of seafood in Southeastern Europe has been only partially met by an increase in production. Total production in the region has grown from 940 thousand tonnes of aquatic organisms in live weight in 2000 to 1.264 million tonnes in 2019, with a slight decline from this level in 2020 and 2021 due to the covid pandemic (Figure 2).

Catch in both inland and marine waters has decreased over the period, while freshwater and marine aquaculture have compensated for the decline. The smallest component over the whole period is capture from rivers and lakes, which has fluctuated from a peak catch of 68 thousand tonnes in 2003 to a minimum of 46 thousand tonnes in 2018, following a general decline. Inland aquaculture has consistently been the more important part of freshwater production, from 84 thousand tonnes in 2000 to 216 thousand tonnes by 2021.

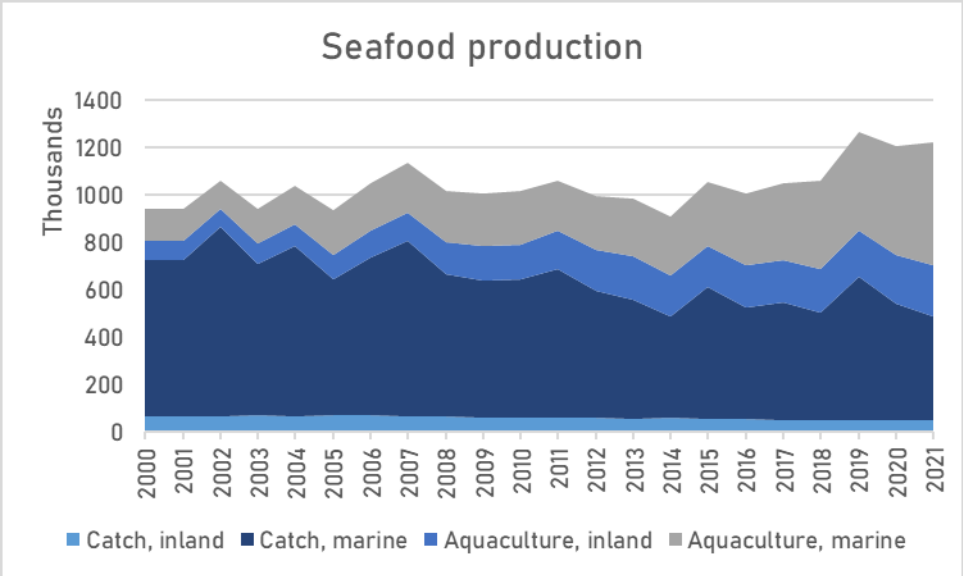

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Figure 2: Seafood production in Southeastern Europe, tonnes live weight

Historically marine catch has supplied the bulk of seafood for human consumption, however due to overexploitation and declining fish stocks in the Mediterranean and the Black Sea there has been a decrease from 798 thousand tonnes in 2003 to 436 thousand tonnes in 2021. The gradual growth of sea-based farming has led to the prevalence of aquaculture in SEE total production in the years 2018, 2020 and 2021. This confirms the transition from wild catch to aquaculture in Southeastern Europe, which follows the global trend in recent years. The growing demand for seafood coupled with the scarcity of fish stocks, provides a strong stimulus for the expansion of the aquaculture industry in both inland and marine waters. This turning point in production patterns has been reached in the region as a whole. Despite the increase in total production due to aquaculture, the regional supply remains inadequate. Even the relatively low demand for seafood in SEE by European and world standards cannot be met by locally produced aquatic organisms.

The gap between local supply and demand is filled by imports from international markets. There may also be a mismatch between local production and consumers' dietary preferences. The Bulgarian seafood trade is a prime example: while the country exports sea snails and clams, it imports fish species such as sea bass, sea bream and salmon, and processes shrimps and prawns for re-export to European markets. Such a complex picture exists in many SEE countries and contributes to the integration of the region into the international seafood trade.

A rough measure of the divergence between domestic supply and demand is the net export of aquatic products in live weight. It is expressed as the difference between exports and imports for each country (Figure 3).

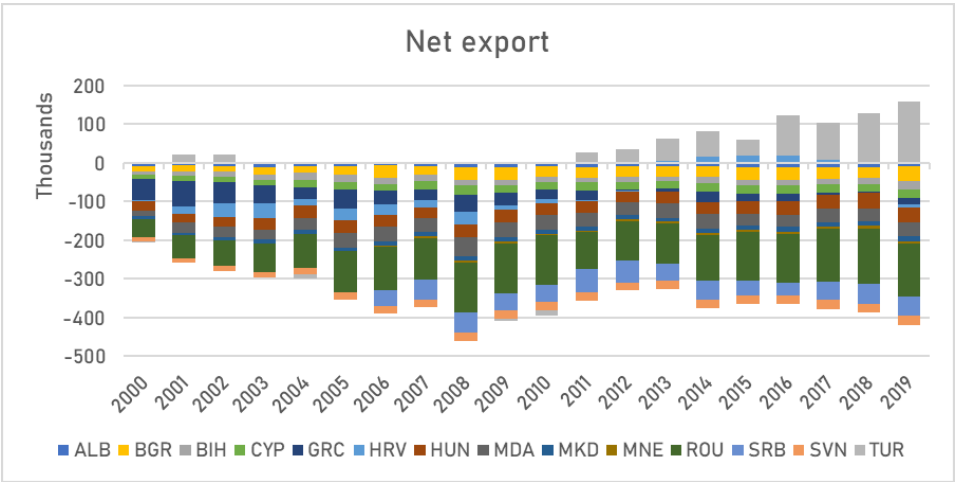

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Figure 3: Net export of fish and seafood in SEE countries, tonnes live weight

The region as a whole is a net importer of seafood. The exception is Turkey, which exported more seafood than it imported throughout the period, except for four years. The increase in exports was more pronounced in the second decade of the century. The other country that has been a net exporter for a shorter period is Croatia in 2013–2018. It is noteworthy that even Greece, the second largest producer in the region after Turkey, is not able to satisfy its domestic consumption without importing additional quantities of seafood.

Net imports in the SEE region increased until 2008 and then declined in the following years, presumably due to the fall in demand caused by the Great Recession. The volume of net import of seafood did not recover to 2008 levels by the end of the period, and Turkey and Croatia became net exporters. Consumption, however, was not negatively affected, largely due to the increase in local aquaculture production in the second half of the 2010s.

Sustainability dimensions

The consumption of seafood in Southeastern Europe raises several issues related to the sustainability of the sector. A frequently cited concern is the adequacy of seafood consumption compared to existing dietary recommendations. Another issue arising from the production and trade of seafood is the footprint of

the industry and its impact on the environment. Finally, the economic aspects of production, processing and distribution cannot be underestimated.

The dietary recommendations for fish consumption issued by the national health authorities in SEE countries range from 100 to 375 grams per week in Bosnia and Herzegovina and Greece, respectively. Recommendations tend to be lower in landlocked countries and higher in countries with a tradition in fish eating. 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. None of the SEE countries are able to meet the suggested levels of fish consumption, with Croatia being the only exception, largely due to the relatively low national dietary recommendation of 150 g per week (Lofstedt, de Roos and Fernandes, 2021). Achieving adequate levels of seafood consumption may be directly linked to Sustainable Development Goal (SDG) 3, Good health and well-being.

SEE countries rely on a combination of domestic production and imports to meet their demand for aquatic food. This means that consuming countries bear responsibility for the sustainability of the global seafood supply, which can be expressed in terms of the seafood consumption footprint (Guillen et al., 2019). In order to avoid negative environmental impacts of the international seafood trade on often distant parts of the world, the sources used to supply seafood must meet sustainability criteria. This nexus between trade and the environment directly touches on SDG 14 Life below water.

Finally, the production, processing and distribution of freshwater and marine organisms provide economic opportunities and jobs for thousands of people, often in areas with limited employment alternatives. The marine living resources sector is an integral part of the blue economy of the EU (European Commission, 2023) and other countries in the SEE region (Kuleli, 2015). The economic activities driven by seafood consumption are linked to SDG 8 Decent work and economic growth and SDG 9 Industry, innovation and infrastructure.

In summary, the consumption of fish and seafood brings together several issues related to sustainability: human health and well-being in SEE countries, environmental footprint in the countries of origin of imported food, and expectations for innovative blue growth in domestic production and processing.

Conclusion

The review of aquatic food consumption in fourteen Southeastern European countries reveals three clusters with close apparent consumption levels of fish and seafood. The group with the highest apparent consumption is in line with global and European averages. The second group has a per capita consumption level of about two-thirds of the world average, while the majority of eight countries consume just over one-third of the world average. Despite the apparently low

levels of consumption, the region as a whole has experienced a growing demand for fish since the beginning of this century.

This demand has been met by a growing domestic supply, driven entirely by advances in inland and marine aquaculture production. In fact, there has been a transition from production based on capture to one relying on farming of aquatic organisms, a pattern that has been observed globally and also in the SEE region. Although regional production has increased over the last two decades, it has never been sufficient to meet existing consumption demand. All countries, except Turkey and for a few years Croatia, are net importers.

This has a number of implications for the sustainability of the production, processing and distribution of aquatic living resources in the SEE region. Fish and seafood have important health and nutritional benefits, but hardly any of the countries surveyed meet the consumption levels recommended by their own health authorities. There appears to be a need for supportive measures to bring consumption levels in line with dietary recommendations to improve public health. The fact that even this moderate consumption depends to a large extent on sourcing seafood from other regions, often from remote oceans, places additional responsibility on importers and consumers with regard to the sustainability of fishing or rearing seafood. Finally, this specialised sector is engaged in a delicate balancing act between satisfying evolving consumer preferences, providing jobs, often in small coastal communities, and investing in new technologies to farm an increasing number of aquatic species.

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