

Study on market positioning

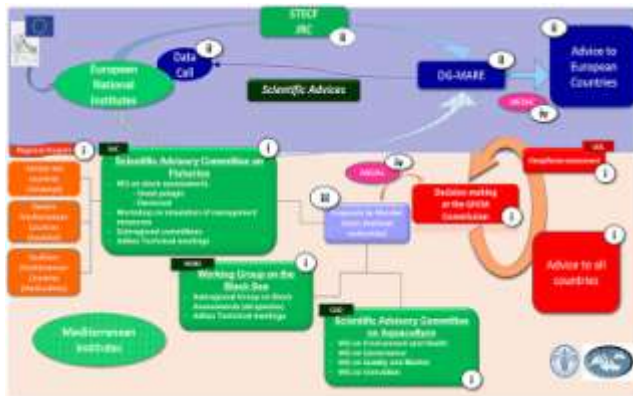
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Activity 5.3	Market positioning and long term strategies
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Priority Axis: Blue innovation

ITACA
Innovative tools to increase competitiveness and sustainability of small pelagic fisheries

SMALL PELAGIC FISHING IN ADRIATIC

MARKET POSITIONING AND LONG TERM STRATEGY



FINAL TECHNICAL REPORT

(JUNE 2022)

SMALL PELAGIC FISHING IN ADRIATIC
MARKET POSITIONING AND LONG TERM STRATEGY
(ACTIVITY 5.3)
(D5.3.2 STUDY ON MARKET POSITION)

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This Report has been prepared within the context of ITACA Project funded by the Italy-Croatia CBC Program that is EU financial instrument for supporting the cooperation of the two European Members States in the Adriatic Sea Region.

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From FAO. 2020. *The State of Mediterranean and Black Sea Fisheries 2020*. General Fisheries Commission for the Mediterranean. Rome. <https://doi.org/10.4060/cb2429en>

FOREWORD

ITACA Project is funded by the Italy-Croatia Interreg CBC Programme that is the financial instrument supporting the cooperation among the two European Members States territories overlooking the Adriatic sea (¹).

Interreg is one of the key instruments of the European Union (EU) that supports the cooperation across borders through project funding. It aims to jointly tackle common challenges and find shared solutions in social, economic and ecology fields, such as health, environment, research, education, transport, and sustainable energy.

The Adriatic Region shows several patterns, featuring the sea basin, coastal landscapes, green but also urban areas and, according to the EU vision requires more efforts to accomplish collaboration aims related with the cross-border integration of economic, educational and labour markets.

Fishery is an important sector in the Adriatic Sea; it is one of the most productive systems in the Mediterranean and one of the most important fishing fleets operate on both bottom, and pelagic species.

Small pelagic fishes include a variety of shoaling species. Anchovies and sardines form the largest biomasses and, hence, are one of the main targets in Adriatic, and represent a significant share of income for the sector.

The ecological and fisheries importance of these two species, which essentially coexist in a relatively small area, is remarked by several studies and researchers on reproduction, migrations, feeding, schooling, behaviour, growth, mortality and genetic variability.

In Adriatic, anchovy landings by weight are dominated by Italy (54%) and Croatia (41%) which account for 95% of all landings in the GFCM sub region, followed by Albania (4%) Montenegro (0.5%) and Slovenia (0.1%) (²).

ITACA aims at strengthening the competitiveness of the Adriatic fisheries enterprises, by matching research findings and tools to business needs, promoting a more sustainable and efficient exploitation of Adriatic resources.

This document is a “*Study on market position*” (Activity D5.3.2) aimed to draw a long term strategy for the CLUSTER proposed by the ITACA Project.

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¹ <https://www.italy-croatia.eu/home>

² (FAO, 2018. The state of the Mediterranean and Black Sea Fisheries. GFCM, 172 pp)

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ABBREVIATIONS AND ACRONYMS

CBC	Cross Border Cooperation
CIHEAM	International Centre for Advanced Mediterranean Agronomic Studies Bari
CFP	Common Fishery Policy EU
CREA	Consiglio per la Ricerca in Agricoltura e l’analisi dell’economia agraria
DG-MARE	The Directorate-General for Maritime Affairs and Fisheries
ERDF	European Regional Development Fund.
EU	European Union
FAO	Food and Agriculture Organization
GSA 17	Geographical Sub-Areas 17 (North and Central Adriatic)
GSA18	Geographical Sub-Areas 18 (Southern Adriatic).
GFCM	General Fishery Commission for Mediterranean and Black Seas
MSFD	Marine Strategy Framework Directive.
MCS	Monitoring, Control, and Surveillance.
MEDAC	Mediterranean Advisory Council
NUTS	Nomenclature of territorial units for statistics
NUTS 3	Small regions for specific diagnoses
RFMO	Regional Fisheries Management organization
SAC	Scientific Advisory Committee on Fisheries..
SRC-AS	GFCM Sub Regional Committee for the Adriatic Sea
STEC	Scientific and Technical and Economic Committee for Fisheries/EU
SPF	Small Pelagic Fish

EXECUTIVE SUMMARY

This report is the “Study on market position” of the ITACA Cluster, prepared within the context of the Italy-Croatia CBC Program, the EU financial instrument for supporting the cooperation of the two European Members States in the Adriatic Sea Region. Interreg is one of the two goals of the EU Cohesion Policy in the 2014-2020 period and it is funded by the European Regional Development Fund (ERDF).

The CBC Programme is contributing to exchange knowledge and experiences, to develop and implement pilot action products and services, to support investments by creation of new business models, to test the feasibility of new policies, having as the final aim the improvement of the life quality and conditions of more than 12.4 MIO citizens living in the Area.

The study (Activity D5.3.2) aims to draw a long term strategy for the CLUSTER proposed by ITACA.

The Adriatic Sea is one of the most productive systems in the Mediterranean, represented by largest catches of small pelagic fish species and by one of the most important fishing fleets in the Mediterranean. According to GFCM the total number of fishing vessels authorized to fish for small pelagic stocks and registered in harbours located in GSAs 17 and 18 (or operating in GSA 17 and 18) are 315 (December 2021).

Anchovy are mainly fished by pelagic trawlers and purse seiners belonging to Italy and Croatia and, to a much smaller extent, Slovenia, Albania and Montenegro. The Italian catches of anchovy represent the majority of them; however, since 2000, catch from the eastern side, mainly Croatia and Albania, have significantly increased. In the Adriatic Sea landings by weight are dominated by Italy (54%) and Croatia (41%) which account for 95% of all landings in the GFCM sub region, followed by Albania (4%) Montenegro (0.5%) and Slovenia (0.1%).

In the Adriatic Sea, sardine (72,400 tons, 39.4%), and european anchovy (34,000 tons, 18.5%), are of major importance for Adriatic fisheries, accounting together, for approximately 41% of total Adriatic marine catches and constituting extremely important shared fisheries resources.

Fishery stakeholders must consider marketing of products as one of their major challenges in sector. Currently fishery enterprises are able to identify poor prices, lack of transport, lack of ready market, and high post-harvest losses as the challenges, but they are often poorly equipped to identify potential solutions.

Successful marketing requires learning new skills, new techniques and new ways of obtaining and using the information appropriately.

This Report aims to draw a market positioning and long term strategy for the CLUSTER proposed by the ITACA Project, remarking that market positioning refers to the ability to influence consumer perception regarding a brand or product. The objective of market positioning is to establish the image or identity of a brand or product so that consumers perceive it in a certain way. This is the guidelines of this Report for the two species anchovy and sardine.

The main difficulties the fisheries sector is facing are related to the reduction in fishing opportunities, made necessary by the CFP objectives, and to the increase in operating costs, in particular fuel prices.

In relation to the analysis carried out as part of the ITACA Project, new strategies are needed to reposition supply in the initial marketing and product valorisation phase by acting on the elements that, along the entire value chain, contribute to the formation of the final price to the consumer.

The analysis leads to the identification of five key goals to develop marketing strategies, aimed to identifying the business' unique value in relation to competitors.

As already remarked, market positioning strategy requires focus and a commitment to a specific niche, idea, or target audience for creating a positive image of products and service in the customers' minds, claiming the position in the competitive market landscape.

Goal 1: Marketing management improvement
Objective: CONCENTRATION OF SUPPLY AND ORGANISATION OF SEA FOOD MARKET
<p>Recommendation:</p> <p>Associations and aggregations such as Producers' Organisations (POs) are demonstrating enormous potential in terms of enhancing the value of the catch, which can be achieved by conferring added value to a raw material that would otherwise be poorly appreciated from a commercial point of view (horizontal co-ordination with reunification within a single decision-making unit of 'equal' phases of production processes previously carried out by autonomous enterprises. POs can be a key element in the organisation of the seafood market because it is through POs that the industry seeks to organise and stabilise the market. The main advantage of these organisations is that they allow the producers themselves to adapt production to market demand. However, investments in technology and skilled labour are often required and in these cases, the aggregation of supply can create economies of scale in the absence of which, production costs (labour) costs would make the investment unprofitable.</p> <p>This recommendation is coherent with the Agenda 2030 for sustainable development (General Assembly resolution of 25 September 2015):</p> <ul style="list-style-type: none"> • Goal 1. End poverty in all its forms everywhere; • Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture • Goal 5. Achieve gender equality and empower all women and girls; • Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all; • Goal 12. Ensure sustainable consumption and production patterns; • Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development. <p>This recommendation is also coherent with the GFCM 2030 Strategy:</p> <ul style="list-style-type: none"> ➤ Thriving communities and better livelihoods right along the value chain, through new ways for improving revenues, increasing the value of catches and diversifying activities for making fisheries sustainable in the long term. On shore, greater involvement in local management decisions and stronger social protection structures will both contribute to making fisher livelihoods more secure.

Goal 2: Optimum utilisation and equitable distribution
Objective: MARKET COORDINATION
<p>Recommendation</p> <p>Vertical coordination allows alignment of distinct and contiguous phases of the production process through more or less close agreements between autonomous decision-making units. Through vertical co-ordination POs could perform one or more 'new' functions 'upstream' (e.g. co-management of resources, negotiating tables, sources of financing; promotional campaigns; equipment and maintenance) and 'downstream' (e.g. processing), so as to improve the co-ordination of the different phases of a given production-industrial process. Horizontal and vertical co-ordination can be merged in circular co-ordination, whereby the same phases are brought into alignment with the previous and/or next phase. An example of vertical integration is given by a group of fishing enterprises that unitedly realise and manage a processing plant, where before this realisation the individual enterprises individually sold the fishery products to other processors. POs are in a strategic position between production and the market and can implement measures for rational resource management, add value to fish products and contribute to market stability. Giving POs more responsibility for self-regulation in the management of available resources helps to ensure better compliance with market requirements and less pressure on stocks. In order to conserve fish stocks and remain competitive, producers must anticipate market requirements in</p>

terms not only of quantity but also of regularity of supply. The POs on the other hand must be ready to face the challenges of quality, which is an important factor in product differentiation and increasing the variety of supply, which in turn contributes to increasing the ability to better meet market requirements and better match consumer preferences .

This is also in line and coherent with the SDG's, as follows:

- Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all;
- Goal 12. Ensure sustainable consumption and production patterns;
- Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

This recommendation is also coherent with the GFCM 2030 Strategy:

- The 2030 Strategy takes an integrated approach towards the many threats to the marine environment, working to conserve biodiversity and provide maximum sustainably yields, on the basis of enhanced oriented research and data collection in support of science-based fisheries management plans.
- Bringing together a hugely diverse range of actors, from governments and fishers to academia and NGOs, all of whom have important contributions to make to shared objectives..

Goal 3: Marine fleet management

Objective:

QUALITY IMPROVEMENT

Recommendation

Quality is thus determined by the correspondence of attributes to the specific needs of the process and the type of service incorporated in the product, just as for organised distribution, quality is based on the guarantee of uniform standards, the services incorporated and the distinctiveness demanded by the consumer. At this stage, product quality is understood as a means of differentiation and segmentation to meet consumer needs. For the latter, quality is identified with the judgement expressed towards the set of attributes that characterise the product, whether they are material such as nutritional, organoleptic, hygienic and sanitary characteristics, or immaterial such as ease of use, the label, the packaging, the mode of consumption. As a marketing tool, it attributes specificity and reputation vis-à-vis the consumer and reduces substitutability with competing products and increases their unit value.

This approach is coherent with the SDG's, as follows:

- Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all;
- Goal 12. Ensure sustainable consumption and production patterns;
- Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

This recommendation is also coherent with the GFCM 2030 Strategy:

- Thriving communities and better livelihoods right along the value chain. The GFCM is supporting new ways to help fishers improve their revenues, for increasing the value of their catches, diversifying their activities and for making fisheries sustainable in the long term.

Goal 4: Value chain improvement
Objective: TRACEABILITY AND TRASPARENCY
<p>Recommendation:</p> <p>The mismatch between the degree of quality expected by the consumer and that reported by the producer reduces the exchange and leads to additional costs for the consumer and producer and consequences for food safety. Crucially, the aim is to protect the consumer by increasing market transparency by regulating the flow of information from producer to consumer through the definition of quality standards, certifications, controls, definition of collective brands, labelling standards</p> <p>This approach is coherent with the SDG's, as follows:</p> <ul style="list-style-type: none"> • Goal 12. Ensure sustainable consumption and production patterns; • Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development <p>This recommendation is also coherent with the GFCM 2030 Strategy:</p> <ul style="list-style-type: none"> ➤ Thriving communities and better livelihoods right along the value chain. The GFCM is finding new ways to help fishers improve their revenues, from increasing the value of their catches to diversifying their activities and by making fisheries sustainable in the long term, the revenues will be sustainable too. On shore, greater involvement in local management decisions and stronger social protection structures will both contribute to making fisher livelihoods more secure.

Goal 5: Value added and market management
Objective: BRAND POLICIES
<p>Recommendation:</p> <p>Brand policies qualify and differentiate products, and are based on communication and information between companies and consumers. It is crucial to increase the transparency and quality of communication with consumers. The objective is to expand the market and increase its price, as well as to reduce the elasticity of substitution of demand with respect to competing products, safeguarding the specificities of products to ensure a competitive advantage in the markets and to increase the added value achievable by producers. This instrument accentuates the process of differentiation and increases transparency and information on the market and cohesion between partners. A valid solution for producers to implement a differentiation strategy and increase the profitability of the sector is the valorisation of the product through sustainability certification. It should be pointed out that adherence to the standard by operators is the result of a balance between benefits and expected commitments. It is therefore a question of assessing how adherence to this form of coordination between operators for the implementation of the collective private standard will develop. The assessment of the strategic interest of operators in adhering to the label therefore requires an analysis of the expected benefits and commitments associated with its implementation.</p> <p>This approach is coherent with the SDG's, as follows:</p> <ul style="list-style-type: none"> • Goal 12. Ensure sustainable consumption and production patterns; • Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development <p>This recommendation is also coherent with the GFCM 2030 Strategy:</p> <ul style="list-style-type: none"> ➤ Thriving communities and better livelihoods right along the value chain. The GFCM is finding new ways to help fishers improve their revenues, from increasing the value of their catches to diversifying their activities and by making fisheries sustainable in the long term, the revenues will be sustainable too. On shore, greater involvement in local management decisions and stronger social protection structures will both contribute to making fisher livelihoods more secure.



1. PROJECT INTRODUCTION

ITACA is funded by the Italy-Croatia CBC Programme that aims to support the cooperation among the two member States paying attention to the resilience and to the sustainable development in several fields related to health, environment, research, education, transport, and energy.

1.1 The INTEREG Program

Interreg is one of the two goals of the EU Cohesion Policy in the 2014-2020 period ⁽³⁾ and it is funded by the European Regional Development Fund (ERDF) ⁽⁴⁾.

According to EU the Adriatic Sea Region requires more efforts to accomplish collaboration for achieving the cross-border integration of economic, educational and labour markets.

The whole Interreg Programme area comprises parts of the territory of Italy and Croatia, spreads over 85.562 km². According to the last census (2011), its population is 12.465.861 inhabitants. In total, the cross-border cooperation area is made up of 33 statistical NUTS III territories: 25 provinces in Italy and 8 counties in Croatia) ⁽⁵⁾.

The CBC Programme effort is contributing to exchange knowledge and experiences, to develop and implement pilot action products and services, to support investments by creation of new business models, to test the feasibility of new policies, having as the final aim the improvement of the life quality and conditions of more than 12.4 MIO citizens living in the Area

1.2 ITACA Project objective

The approved project proposal focuses on one of the most important sector of the Adriatic blue economy, the overall objective of the ITACA project is the following:

“Strengthening the competitiveness of the Adriatic SP fisheries enterprises, by matching research findings and tools to business needs, to finally promote a more sustainable and efficient exploitation of Adriatic resources”.

³ ‘Cohesion policy’ is one of the policies of the European Union funding hundreds of thousands of projects all over Europe from the European Regional Development Fund, the European Social Fund and the Cohesion Fund. It is the policy under which thousands of Interreg cooperation projects also get funding to tackle specific challenges hroughout the European Union

⁴ The European Regional Development Fund (ERDF) is a fund allocated by the European Union aiming to help to redress the main regional imbalances in the Union. It aims to allow less advantageous regions to start attracting private sector investments, and create jobs on their own

⁵ <https://www.italy-croatia.eu/home>

ITACA aims to introduce of innovation in fishery sector for improving the sustainability of natural resource exploitation, focusing on, anchovy and sardine target species because represent a significant income for the Adriatic context, and that, currently, needs to improve competitiveness and planning.

Despite the importance of SP fisheries in quantitative terms, its value to its producers is low and highlights the need to implement appropriate measures to optimize the value of the catch from the beginning of supply chain.

The achievement of profitable fishing campaigns and performance is now depending by the increasing of the level of catches. Sector enterprises work on a day-to-day basis, according to presence of fish stocks as well as their size, and do not have any guarantee in advance on the capacity of the market to absorb the fish landings. This natural resources management approach can generate sometimes a surplus in fish landings, a decrease of selling price and, also, the overexploitation of stocks.

Therefore there is a need to increase the business planning capacities of fisheries SMEs, by providing the enterprises with tools and mechanisms allowing matching the fishing effort with market needs, ensuring prices level and income and, finally, preserving the stocks from overexploitation.

ITACA project aims to develop cross border cooperation among research bodies and fisheries SMEs, testing in 7 pilot location innovative tools oriented to increase the competitiveness of SP fisheries, establishing an enterprises Cluster for a sustainable co-management of resources and common market strategies.

Sardines and anchovy fisheries have interesting potential in terms of coordinated cross-border intervention, due to several factors:

- The species constitute shared stocks, spread in the whole Adriatic basin and their fisheries are practiced in all the Adriatic regions by a large number of enterprises, adopting different catch systems and different enterprise business models.
- The stocks migrate according to their stages of growth (juveniles and adults live in different areas of Adriatic Sea) and according to seasons.
- Fisheries in the Adriatic Sea are governed by several players and legal frameworks at regional, national, EU and international level, based primarily on limitation of fishing effort and capacity, coupled with several additional measures such as spatio-temporal closures and minimum landing sizes of catches.
- The most recent scientific studies and advices indicate that small pelagic species stocks in the Adriatic Sea are still being overexploited, although the strict regulations. At this regards, the EU Commission recently adopts a common multiannual management plan for the stock in the whole Adriatic basin (COM(2017) 97),

1.3 Specific objectives

According to the approved Project document:

- i) ITACA is oriented to set up, test and introduce at wide scale innovative tools to enable the competitiveness of Adriatic SP fisheries enterprises in the international

scenario, contributing positively to the growth of one of relevant sector of the Adriatic blue economy. Indeed, being strongly compliant with the specific objective of the PA1 and IP 1b of the IT-HR Programme, the project sets up a working team composed by research bodies (LP, PP1 and PP6) and SP fisheries enterprises (strongly involved by the whole partnership), together responsible to deploy an innovative econometric model that allows to match three variables: research findings on SP stock status and their preservation, enterprises catches and market demand. Factually, it predicts in a fast manner how much the fishermen should fish, to maintain a good price at producers in the market, halting the over-reduction of prices due to exceeding of landings and at the same time tuning a sustainable fishing effort. The utilisation of the econometric model by SP fisheries enterprises leads to an improved business capacity of operators in terms of ability to forecast, plan and distribute the fishing effort in time, also allowing the adoption of long terms business strategies in the market.

- ii) ITACA aims at further stimulating the creation of a cluster among the SP fisheries operators in order to support the positioning of fisheries producers in the SP fish product chains. In fact, the fragmentation of offer by SP producers affects negatively the commercial power of the same fishermen, determining low producers prices, discontinuity of the presence and the quantity of SP fish product in the market and a scarce capacity of interaction with fish processing industry and the seafood chain. Even if many Organisation of Producers (according to Reg. 1379/2013) for the SP fisheries are active in the Adriatic scenario (n. 6 in Italy and one recently established also in Croatia), ITACA project is intended to upscale the clustering of SP fisheries enterprises at a wider scale, since the ichthyic resource (i.e. the SP stocks) is shared at basin level, to boost its market position and the competitiveness at EU and international level. The establishment of the cross-border cluster in ITACA (WP5) is supported, besides the use of an impartial tool such as the econometric model, also by an articulated training and education of SP fisheries SMEs in order to overcome constraints linked to the low attitude of operators towards shared mechanism of management of the fishing activities.
- iii) By the introduction of the econometric model as well as by promoting the establishment of a SP fisheries enterprises cluster, ITACA project addresses the environment sustainability of fishing effort. Indeed, the model is based on the principle of adapting the level of catches not only to the economic viability of the SP fisheries enterprises, but also to the maintenance of the good status of SP stocks and their preservation on a long term perspective. Moreover, the adhesion to the cluster by SP fisheries enterprises implies also the acceptance of shared modalities for the management of the SP stocks (i.e. co-management of SP stock by the operators), that consist in a shared planning of catches based on the adoption on common measure to protect the ichthyic resources. To this purpose and to generally raise the awareness of SP fisheries operator towards sustainability of the fishing effort, ITACA sets up an education programme of SP fisheries SMEs.

1.4 Expected results

According to the approved proposal/Project document ITACA leads to:

- 1) Competitive advantage obtained for the Adriatic SP fisheries enterprises in the international scenario: thanks to the innovative SMEs-oriented tools developed by the

project, SP fisheries enterprises could improve the management of enterprise business, by having the possibility to plan on a long term perspective the fishing activities and the incomes, also contributing to the stability of the sector.

- 2) Increased positioning of the SP fisheries enterprises (producers) in fish products chains: acting as a sole commercial subject, the SMEs cluster is able to maintain a strong position and to exploit a strengthened commercial power towards the food processors and buyers.
- 3) Increased business and environmental knowledge and capacities of the SP fisheries enterprises: thanks to training and education activities, fishermen not only improve their know-how in the business management also understanding the benefit induced by the participation in the cluster, but also raise their awareness towards environmental sustainability of fishing activities.
- 4) Improved environmental sustainability of SP fisheries: SMEs-oriented tools orient the fishing effort and the quantity of catches in a way to maintain the vitality and the good quality of SP stocks in Adriatic, promoting the stocks conservation and halting the overexploitation.
- 5) Reinforced cooperation among enterprises and research: innovative tools matches the research findings with enterprises' needs.

1.5 Outputs

1. Long term durability

The wide participative approach applied by ITACA, in involving the main project target groups will ensure the ownership of its main outputs and results. In this scenario, the PPs will jointly appoint a "Cluster management body" that will be an independent body either will be establish inside an existing subject and will be responsible, with own resources both in financial and in managerial (i.e. staff, seat, organisation, etc.) terms, of all the aspects linked to the ordinary running of the same cluster, bearing the long lasting effects of a shared governance of SP resources in the ordinary running of the same cluster, bearing the long lasting effects of a shared governance of SP resources in the competitiveness of SP fisheries enterprises and in the sustainability of fishing effort.

2. Transferability

It is mostly ensured by the strong participative approach adopted by ITACA, by which the SP fisheries enterprises have the possibility to tailor project outputs to their needs. Cluster (O5.1), as well as its tools (O3.1 and O4.4) are highly transferable to a large part of ichthyic species spread in Adriatic having a sufficient distribution and commercial importance in the fish markets as well as to other scenarios characterized by small and fragmented producers. They represents a privilege modality to apply the provisions set out by the EU institutions in matters of governance of ichthyic resources based on the principle of co-management of resources as well as on a rationalisation and sustainability of fishing effort.

2. DESCRIPTION OF CLASS OF FISHING ACTIVITY

Global total marine catches increased from 81.2 million tonnes in 2017 to 84.4 million tonnes in 2018, but were still below the peak catches of 86.4 million tonnes in 1996. The FAO global marine capture database includes catches for more than 1,700 species, of which finfish represent about 85% of total marine capture production, with small pelagic as the main group ⁽⁶⁾.

Anchovies, sardines, herrings and other small pelagic clupeids are very important species for both direct human consumption and for fishmeal and fish oil used by feed industry, making small pelagic fish significant for global food security.

The high inter-annual variability of SPF biomass, their sensitivity to climate variability, and the occurrence of productivity regimes are difficult to predict in terms of onset and duration and pose challenges to the sustainable management efforts aimed to prevent overfishing.

For instance catches of “anchoveta “ (*Engraulis ringens*) by Peru and Chile accounted for most of the increase in catches in 2018, made it the top species, at over 7.0 million tonnes per year, after relatively lower catches recorded in recent years. Catches of “anchoveta” in Peru and Chile are substantial yet highly variable because of the influence of El Niño events.

2.1 The Mediterranean Sea

The semi-enclosed, temperate Mediterranean Sea has a complex topography. The whole region is classified as a Large Marine Ecosystem, but considerable east-to-west and north-to-south gradients exist in biological productivity and patterns of biodiversity.

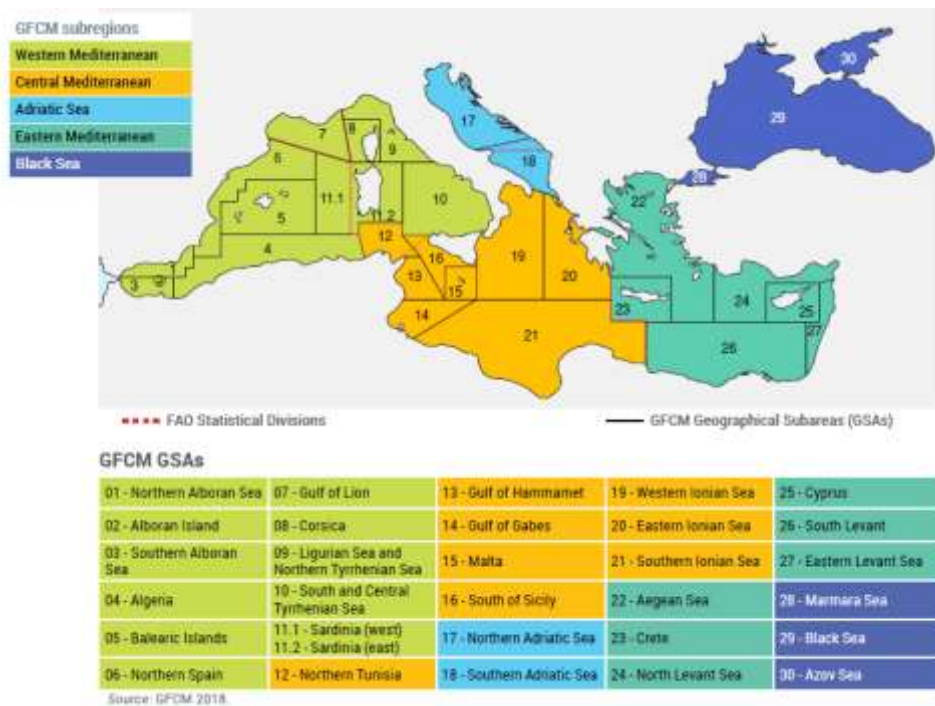
Differences in topography, river discharge, temperature and upwelling have created several important sub-regions supporting productive SPF populations: Aegean Sea, Gulf of Lions and Catalan Coast, Alboran Sea, Straits of Sicily/Tunisian Coast, and Adriatic Sea. Changes in the strength of bottom-up control are clearly associated with climate variability and climate change.

According to FAO ⁽⁷⁾ the species group of anchovy, sardines and herrings constitute the main caught species in the Mediterranean and Black sea area (576,341 tons in 2016 for the 48.7% of the total production in the area). European anchovy (270,000 tons) and sardine (189,500) are still the main landed species in the GFCM area.

Trends in landings over the period 1970–2018 reveal a variety of dynamics: landings of European anchovy, for example, climbing from 275,100 tons in 1970 to 338,800 in 2018, with a collapse between 1989 and 1992 (reaching a minimum of 161 300 tons in 1991), followed by an irregular trend. Sardine landings fluctuate from 144 700 tons (1970) to 185 700 tons (2018) with a peak of 287,300 tons in 1987.

⁶ FAO. 2020. The State of World Fisheries and Aquaculture 2020. Sustainability in action. Rome. <https://doi.org/10.4060/ca9229en>

⁷ (FAO, 2018; The state of the Mediterranean and Black Sea Fisheries. GFCM, 172 pp)



In terms of species contribution in the different subregions, sardine is the main capture species in the Adriatic Sea (72,400 tonnes, 39.4 %), in the western Mediterranean (65,400 tons; 24.7%), in the central Mediterranean (16,700 tons, 10.3%) and in the eastern Mediterranean, (26,500 tons, 14.7%)⁸

European anchovy is the predominant species in the eastern Mediterranean (28,600 tons, 15.8%) and in the Black Sea (222.200 tonnes, 57.3%). In the western Mediterranean (39,300 tonnes, 14.8%) and in the central Mediterranean (9,200 tonnes, 5.7%) European anchovy is also important

Just to have a synthesis, in the eastern Mediterranean the main captured species is European anchovy (15%) followed strictly by sardine (12%). In the Black sea the main captured species is European anchovy (43%).

In the Adriatic Sea the main captured species is sardine (42%), followed by European anchovy (19%).

2.2 Adriatic context

The Adriatic Sea is a semi-enclosed basin within the Mediterranean Sea. It is characterised by the largest shelf area of the Mediterranean, which extends over the Northern and Central parts where the bottom depth is no more than about 75 and 100 m respectively, with the exception of the Pomo/Jabuka Pit (200-260 m) in the Central Adriatic.

⁸ FAO, 2018; The state of the Mediterranean and Black Sea Fisheries. GFCM, 172 pp

The Southern Adriatic has a relatively narrow continental shelf and a marked, steep slope; it reaches the maximum depth of 1,223 m. In the Adriatic Sea all types of bottom sediments are found, muddy bottoms are mostly below a depth of 100 m, while in the Central and Northern Adriatic the shallower sea bed is characterized by relict sand.

The Eastern and Western coasts are very different; the former is high, rocky and articulated with many islands, the Western coast is flat and alluvial with raised terraces in some areas.

The hydrograph of the region is characterized by water inflow from the Eastern Mediterranean (entering from the Otranto channel along the Eastern Adriatic coast) and fresh water runoff from Italian rivers. These features seasonally produce both latitudinal and longitudinal gradients in hydrographical characteristics along the basin.

The Adriatic Sea is one of the most productive systems in the Mediterranean, represented by largest catches of small pelagic fish species and by one of the most important fishing fleets in the Mediterranean.

Several studies confirm that in many fishing areas, the pelagic resources in their complex (status of populations, reproduction, recruitments, composition by species), are subject to wide variations in time and space linked to impact of both environmental/external factors (physical, chemical and biological) and internal factors (interaction/competition among species). This is why an effort is currently in progress to find possible relations between abundance estimates and oceanographic parameters.

While small pelagic fishes include a variety of shoaling species, anchovies and sardines form the largest biomasses and, hence, are the targets of harvests not only in Adriatic but also in many warm temperate areas (FAO, 2018). Stocks of these two fishes are depleted in many areas because of over-fishing, but also because of environmental shifts.

In the Adriatic Sea the main captured species is sardine (42%), followed by European anchovy (19%).

2.3 GFCM data production

In the whole GFCM area of application, European anchovy (*Engraulis encrasicolus*) and sardine (*Sardina pilchardus*) continue to be the main species captured (333,340 tons and 185,700 tonnes on average, respectively), followed by European sprat (*Sprattus sprattus*) (57,400 tons) ⁹.

In accordance with GFCM gathers information related to 2013, 558 vessels (around 32,000 GT) were authorized to operate in Adriatic sea (Albania, Croatia, Italy, Montenegro and Slovenia) ¹⁰.

⁹ FAO, 2018; The state of the Mediterranean and Black Sea Fisheries. GFCM, 172 pp

¹⁰ Recommendation GFCM/37/2013/1 on a multiannual management plan for fisheries exploiting small pelagic stocks in geographical subarea 17 (northern Adriatic Sea) and on transitional conservation measures for fisheries of small pelagic stocks in geographical subarea 18 (southern Adriatic Sea).

On 2021, according to GFCM the total number of fishing vessels (single trawlers and pair trawlers; purse seiners and surrounding nets without purse line) authorised to fish for small pelagic stocks were 315.

The vessels are registered in harbours located in GSAs 17 and 18 or operating in GSA 17 and/or 18, although registered in harbours located in other GSA (December 2021) (¹¹) (Albania, Croatia, Italy, Montenegro, and Slovenia).

Vessels are single and pair trawlers, purse seiners and those using surrounding nets without purse lines authorized to fish for small pelagic stocks and either Croatia and Italy account for around 61% and 26% of the fleet, respectively (i.e. 87% of the total fleet).

Anchovy are mainly fished by pelagic trawlers and purse seiners belonging to Italy and Croatia and, to a much smaller extent, Slovenia, Albania and Montenegro. The Italian catches of anchovy represent the majority of them; however, since 2000, catch from the eastern side, mainly Croatia and Albania, have significantly increased.

In the Adriatic Sea landings by weight are dominated by Italy (54%) and Croatia (41%) which account for 95% of all landings in the GFCM sub region, followed by Albania (4%) Montenegro (0.5%) and Slovenia (0.1%) (¹²).

In the Adriatic Sea, four species, namely sardine (72,400 tons, 39.4%), European anchovy (34,000 tons, 18.5%), striped venus clam (13 900 tons, 7.6%) and European hake (4 600 tons, 2.5%) account for 68% of the landings.

Anchovy and sardines are of major importance for Adriatic fisheries, accounting together, for approximately 41% of total Adriatic marine catches and constituting extremely important shared fisheries resources.

¹¹ GFCM - List of all trawlers (single and pair trawlers), purse seiners and surrounding nets without purse line authorised to fish for small pelagic stocks and registered in harbours located in GSAs 17 and 18 or operating in GSA 17 and/or 18 although registered in harbours located in other GSA. Recommendation GFCM/37/2013/1 on a multiannual management plan for fisheries on small pelagic stocks in the GFCM-GSA 17 (Northern Adriatic Sea)

¹² FAO, 2018; The state of the Mediterranean and Black Sea Fisheries. GFCM, 172 pp

BOX
GFCM AREA OF APPLICATION FISHERY DATA

Total capture fisheries production in the GFCM area of application increased irregularly from about one million tons in 1970 to almost 1,788,000 tons in 1988. Total landings remained relatively stable during most of the 1980s, before declining abruptly in 1990 and 1991, largely due to the collapse of pelagic fisheries in the Black Sea.

In the Mediterranean Sea, landings continued to increase until 1994, reaching 1,087,000 tons, and subsequently declined irregularly to 760,000 in 2015, with production increasing over the following three years and reaching 805,700 tons in 2018. In the Black Sea, landings have varied considerably from one year to another since 1990, showing a generally increasing trend between 1992 and 1995, followed by a decreasing trend in the period 1996–1998, then fluctuations until 2018, when the total reported landings in the Black Sea were 324,100 tons.

The combined average landings for Mediterranean and Black Sea (2016–2018 period) amount to 1,175,700 tons (787,900 tons in Mediterranean (67%), and 387,800 tons in the Black Sea).

This value is slightly higher (2.7%) than the catch from the 2014–2016 period, with an increase of 2.9 %, in the Mediterranean Sea and 2.1 percent in the Black Sea.

In the GFCM area, Turkey is the main producer (274,000 tons, 23.3 % of the total), followed by Italy (178,000 tons, 15.2%) and Algeria (103,000 tons, 8.8%), which has grown to be the third largest producer from being the fourth in the period 2014–2016. Other countries that contribute at least 5% of the total catch are Tunisia (96,300 tons, 8.2%), Spain (78,500 tonnes, 6.7%), Greece (73,000 tons, 6.2%), Georgia (70,800 tonnes, 6%), Croatia (70,000 tons, 6 %) and the Russian Federation (70,000 tons, 6%).

In the Mediterranean, Italy continues to be the main producer (22.7%), followed by Algeria (13.1%), Tunisia (12.2%), Spain (10%), Greece (9.3%), Croatia (8.9%), Egypt (6.9%), and then Turkey (6.4%) The highest percentage increase in the Mediterranean Sea is shown by Turkey (50 770 tons, + 20.4%); by contrast, the greatest decrease is represented by Morocco (23 200 tons, - 10.6%).

Spain (78,500 tons and 6.5%), now becoming the fifth largest producer in the GFCM area of application and the fourth in the Mediterranean Sea. In contrast, Croatia's landings decreased by around 6.4 % (70,000 tons) and the country now ranks as the eighth largest producer (it was the fifth in the period 2014–2016) In the Black Sea, Turkey dominates the catch (57.6%), although it accounts for a lower percentage compared to the period 2014–2016, when it brought in 67.6%. The other countries are Georgia (18.3%), the Russian Federation (18.1%), Bulgaria (2.2%), Romania (2.1%) and Ukraine (1.9%). The most evident increase compared to the period 2014–2016 is shown by Georgia (accounting for 70,900 tons in 2018, + 78.9%), whose landing statistics largely depend on the fluctuating catch of anchovy and have been subject to an important review. Fish and fishery products are some of the most highly traded food commodities in the world by value. The Mediterranean and Black Sea region is no exception and the total value of traded fish products (imports plus exports) in the GFCM area of application is USD 41.7 billion, over 11 times the revenue at first sale.

ANCHOVY AND SARDINES FISHERY IN GFCM APPLICATION AREA ¹³

Main fishing areas	Sardine (tons and %)	Anchovy (tons and %)
Adriatic sea	72.400 (39.4%)	34.000 (18.5%)
Western Mediterranean	65.400 (24.7%)	39.300 (14.8%)
Central Mediterranean	16.700 (10.3%)	9.200 (5.7%)
Easter Mediterranean	26.300 (14,7%)	28.600 (15,8%)
Black sea		222.200 (57.3%)

ANCHOVY AND SARDINES FISHERY IN GFCM APPLICATION AREA ¹⁴

Main fishing areas	Sardine (tons and %)	Anchovy (tons and %)
Mediterranean	787,900.00	67%
Black sea	387,800.00	33%
Total	1,175,700.00	100%

MAIN PRODUCERS COUNTRIES GFCM AREA

Turkey	274.000.00 (23.3%)
Italy	178,000.00 (15.2%)
Tunisia	96,300 (8.2%)
Spain	78,500(6.7%)
Greece	73.000 (6.2%) ⁹
Georgia	70.800 (6%)
Russia	70.000 (6%)

MAIN PRODUCERS COUNTRIES IN MEDITERRANEAN

TOTAL TONS	787,900.00
Italy	22.7%
Algeria	13.1%
Spain	10.0%
Greece	9.3%
Croatia	8.9%
Egitto	(6.9%)
Turkey	6.4%

MAIN PRODUCERS COUNTRIES IN BLACK SEA

TOTAL TONS	387,800.00
Turkey	57.6%
Georgia	18.3%
Russia	18.1%
Bulgaria	2.2%
Romania	2.1%
Ukraine	1.9%

According to GFCM and the CPCs (Albania, Croatia, Italy, Montenegro, and Slovenia) the total number of fishing vessels (single trawlers and pair trawlers; purse seiners and surrounding nets without purse line) authorised to fish for small pelagic stocks and registered in harbours located

¹³ FAO, 2018; The state of the Mediterranean and Black Sea Fisheries. GFCM, 172 pp

¹⁴ FAO, 2018; The state of the Mediterranean and Black Sea Fisheries. GFCM, 172 pp

in GSAs 17 and 18 or operating in GSA 17 and/or 18 although registered in harbours located in other GSA are 315 (December 2021) (¹⁵).

2.3.1 Ecological difference between Adriatic GSA 17 and GSA 18

For the purpose of fisheries management the Adriatic basin is divided in two Geographical Sub-Areas:

- GSA 17 (North and Central Adriatic)
- GSA 18 (Southern Adriatic).

Croatia, Bosnia-Herzegovina, Italy and Slovenia border the GSA 17 (North and Central Adriatic). The upper and middle Adriatic Sea (GSA 17) is characterised by an extensive continental shelf with sandy or muddy bottoms. The area is very productive due to the strong inflow of nutrients from the rivers, and also receives a periodic input of Mediterranean waters.

Albania, Italy (South-Eastern coast) and Montenegro are included in the GSA 18. The lower Adriatic Sea (GSA 18), on the other hand, is characterised by a limited extension of the continental shelf and by the presence of high depths (over 1,000 metres) between the western and eastern coasts, which could suggest a different dynamic of the movement of anchovy and sardine stocks in this area, with exchanges between the two coasts more at the level of eggs and larvae than of adults.

The basin of the southern Adriatic is connected to the Northern Ionian Sea through the Otranto Channel, which represents, according to several studies, the area in which an annual inflow of water masses of 35 million m³ is conveyed.

The circulation of water masses is typically cyclonic. In the basin flow the Dense Waters of the Northern Adriatic (NADW), the Deep Waters of the Adriatic (ADW) and the Intermediate Waters Levantine (LIW). The NADW Dense Waters (cold waters) flow from north to south along the western continental shelf, the deep waters originate in the lower Adriatic basin, while the warmer and salty Levantine intermediate waters enter the northern Ionian through the Otranto Channel and flow in a south-north direction along the eastern coasts of the Adriatic.

These water masses characterize the eastern part of the southern basin by higher aline and thermal regimes respect to the western part (Artegiani et al., 1997). Instead, the superficial current present along the western coasts pushes the water masses from the Adriatic to the Ionian Sea.

Thanks to the presence of these flows, the basin of the Southern Adriatic is characterized by the mixing of the cooler and less salty Adriatic waters and the Ionian waters, with higher temperatures and salinity (Vilicic et al., 1995). As for the bathymetry, the maximum depth of the southern Adriatic is 1,233 m in the so-called 'Bari pit'.

¹⁵ GFCM - List of all trawlers (single and pair trawlers), purse seiners and surrounding nets without purse line authorised to fish for small pelagic stocks and registered in harbors located in GSAs 17 and 18 or operating in GSA 17 and/or 18 although registered in harbors located in other GSA. Recommendation GFCM/37/2013/1 on a multiannual management plan for fisheries on small pelagic stocks in the GFCM-GSA 17 (Northern Adriatic Sea)

This depression has rather asymmetrical contours with the steepest eastern escarpment. The western area shows substantial differences in the two northern and southern portions; the first, where the Gulf of Manfredonia is located, has a wide continental shelf (distance between the coast line and the 200 m of depth equal to 45 nautical miles) and a slightly steep slope; the second one 200 m depth are reached about 8 miles from Capo d'Otranto.

The presence and distribution of marine flora and fauna, as well as the main ecological characteristics of the basin are linked to environmental and morphological differences.

The open area is dominated by the biocoenoses of offshore and debris funds. Furthermore, in accordance with the Convention on Biological Diversity (CHM, 2017), the southern Adriatic and Ionian Strait are considered as significant EBSA areas (EBSA: Ecologically or Biologically Significant Areas).

These areas contain important habitats for marine mammals such as *Ziphius cavirostris*, a species of Annex II of the Protocol concerning Protected Areas and Biological Diversity in the Mediterranean (SPA / BD Protocol) under the Barcelona Convention and significant densities of other iconic species such as *Mobula mobular*, *Stenella coeruleoalba*, *Monachus monachus* and *Caretta Caretta*, (Annex II to the SPA / BD Protocol).

Biocenosis of batial mud and white corals are present on hard substrates (BLUFISH PROJECT Stage 1.b – Deeper mapping/Annex IV – GSA 18 14) The southern Adriatic Sea is considerably deeper than the northern basin. Its average depth is 900 m, and its deepest part is the 1,300 m deep Adriatic pit.

Through the Strait of Otranto the basin is connected to the Mediterranean Sea. Despite this, the productivity of this basin is quite high when compared with other Mediterranean areas having a similar geomorphology. The reasons for this situation have been understood thanks to the oceanographic studies carried out in the Adriatic dating back to the last century.

The most important feature of the Mediterranean waters that enter the Adriatic (in the middle layer) is their high salinity. This high salinity is characteristic of the Levantine basin, which has one of the highest salinities of all the seas in the world (> 39 psu).

The temperature of the Levantine waters is higher than that of the Adriatic waters, so that the "income" is also reflected on the temperature. Referring to these phenomena and to certain climatic factors, it has been stated that the most important factor that enhances the water exchange between the two basins is the horizontal pressure gradient in the eastern Mediterranean.

A large number of studies show that the intensity of water exchange between the Adriatic and the Ionian Seas is the most important factor in long-term production fluctuations, both in the central and southern Adriatic. Their results confirm that the increase in primary biological production is related to the intensified influx of Mediterranean water into the Adriatic.

2.3.2 Fishery ecology

Nutrient input in the Adriatic is dominated by the Po River and other rivers flowing down from the Alps, whose waters when entering the Adriatic are forced by the Coriolis force to flow along

the Italian coast. On the eastern side there are upwelling phenomena induced by winds (Agostini and Bakun, 2001, Cushman-Roisin et al., 2001).

These two characteristics of the Adriatic oceanography are very important for the ecology of anchovy and the sardine.

These fish also play a pivotal role in marine food webs by acting as conduits of energy from lower to upper trophic levels. Anchovies and sardines are ecologically important, because their large biomass is a link in coastal food-webs, transferring the energy in plankton and small organisms to other species. Mid-trophic forage fishes greatly influence the health of higher trophic guilds; yet, few regional stocks are managed using ecosystem-based strategies.

Anchovy is the most sought after species. In general, anchovies are caught by the Italian fleet mainly in the west in less saline and more productive waters, while sardines have historically been the target of fishermen on the east coast of the Adriatic, and are generally more abundant in these more saline and less productive waters.

From both an ecological and a social point of view, it is essential to understand factors and processes that drive changes in the productivity to avoid also overexploitation. According to several researches environmental changes appear to impact the survival, spawning activity and growth of these species, and hence their overall population abundance.

BOX
EUROPEAN ANCHOVY FISHERY ECOLOGY

European anchovy is a pelagic species found in the eastern Atlantic and Mediterranean, Black, and Azov Seas. Anchovy forms large schools, descending in winter to 100 to 150 m depth in the Mediterranean. The species tolerates salinities from 5 to 41‰ and in some areas can enter into lagoons, estuaries or lakes, especially in the warmer months during the spawning season. The species has a tendency to extend into more northern waters in summer and generally to move into the surface layers, retreating and descending in winter.

According to EU fishery data and statistics, European anchovy is one of the most commercially important small pelagic species in the Mediterranean.

FAO (2018) remarks that catch in this region have varied from 260,627 t to 765,827 t since 2001. Within the Mediterranean Sea, the highest catches occur in the North and Central Adriatic Sea (by Italy, Croatia, and Slovenia). Currently around 5% (563,000 tons) of worldwide anchovy catches come from the Mediterranean and Black Seas.

High catches occur also in the Aegean Sea off eastern Greece (14,000-24,000 t) and Northern Spain (8,000-10,000 t). Lower catches occur in the Alboran Sea, the Gulf of Lion, the Strait of Sicily, the Liguria and North Tyrrhenian Seas, and the Ionian Sea.

In the Black Sea, Turkey accounts for the majority of European anchovy catches, with a range from 138,569 t to 385,000 t between 2000 and 2011, followed by Georgia, with catches ranging from 927 t to 39,857 t.

From 2009- 2011, the countries catching the most Atlantic Sardine in the Mediterranean/Black Sea region have been Croatia (30,000-46,000 t), Turkey (28,000-35,000 t), and Algeria (31,000-55,000 t). Other important countries catching sardine include Tunisia (15,000-20,000 t), Spain (15,000-20,000 t) and Italy (~15,000 t) (FAO, 2018).

Anchovy reproduces mainly in the western part of the Adriatic. This area covers the shallow waters of the northern Adriatic and the areas along the western coast, up to the Gargano peninsula, and corresponds to the areas with the highest nutrient input and productivity.

Spawning period is from April to November, with peaks usually in the warmest months, the limits of the spawning season are dependent on temperature and thus more restricted in northern areas. Eggs are ellipsoidal to oval, floating in the upper 50 m, hatching in 24-65 hours.

There are other spawning areas along the east coast but the intensity of this spawning is substantially lower. The anchovy spawns from April to October with peaks between May and September, and in general egg production begins first offshore and then in coastal waters.

Juvenile anchovies are concentrated in the autumn months along practically the entire western coast of the upper and middle Adriatic (and in some bays and estuaries of the eastern coast).

BOX
MEDITERRANEAN SARDINE FISHERY ECOLOGY

Sardines are distributed from the Coasts of eastern North Atlantic, from Iceland (rare) and North Sea, southward to Bay de Goree in Senegal. In Mediterranean the species is common in western part and in the Adriatic, rare in eastern part, Sea of Marmara and Black Sea. The species is coastal, pelagic, moving usually between 25 to 100 m.

This species breeds at 20 to 25 m, near the shore or as much as 100 km out to sea from April/June to August (North Sea, also Black Sea), September to May (off European coasts of Mediterranean) and November to June (off African coasts of Mediterranean). Feeding is constituted mainly by planktonic crustaceans.

The Mediterranean sardine spawns from autumn to spring in a temperature range of 9 to 15 °C offshore in the Adriatic (Gamulin and Hure, 1955). There are two main breeding areas: a northern one between Ancona and Dugi Otok; and a southern one in the area of Pelagosa Island (Palagruza) (Regner et al., 1987).

These two areas are located in oligotrophic areas and, the temperature range could act as a limiting factor, preventing the sardine from spawning in the nutrient-rich but colder western waters in winter.

The only known area of massive concentration of sardines juveniles is the Gulf of Manfredonia, although young sardines can be found practically anywhere in the spring months.

Species	Reproductive Period	Reproductive piks	Main Fishery season
Anchovy	April /October	May /September	April November
Sardine	November/March	January/March	March/May

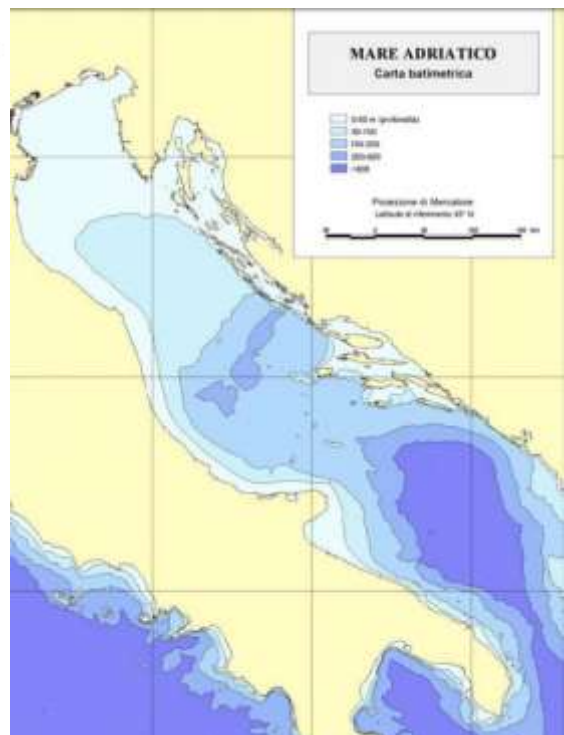
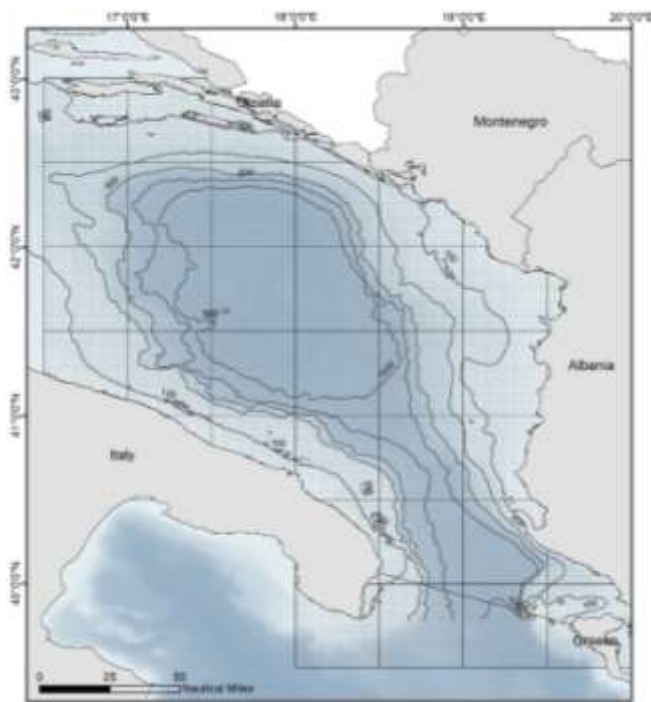


Figure 1- GSA 18 and GSA17

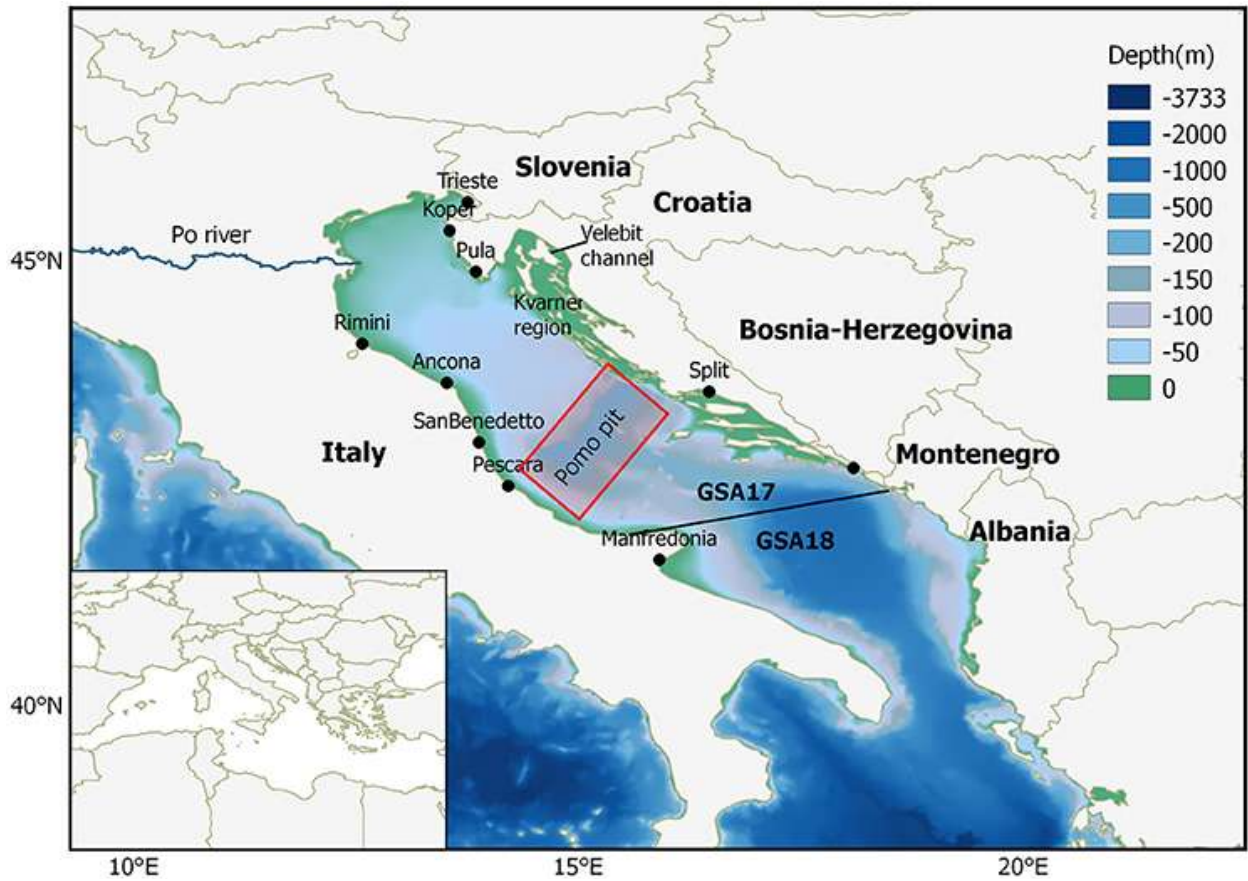


Figure 2 - Map of the Adriatic area (in relation to the Mediterranean region). Countries and GSA boundaries and main ports. (The saga o the management of fisheries in the Adriatic Sea; history, flaws, difficulties, and successes toward the application of the Common Fisheries Policy in the Mediterranean. <https://www.frontiersin.org/articles/10.3389/fmars.2017.00423/full>)

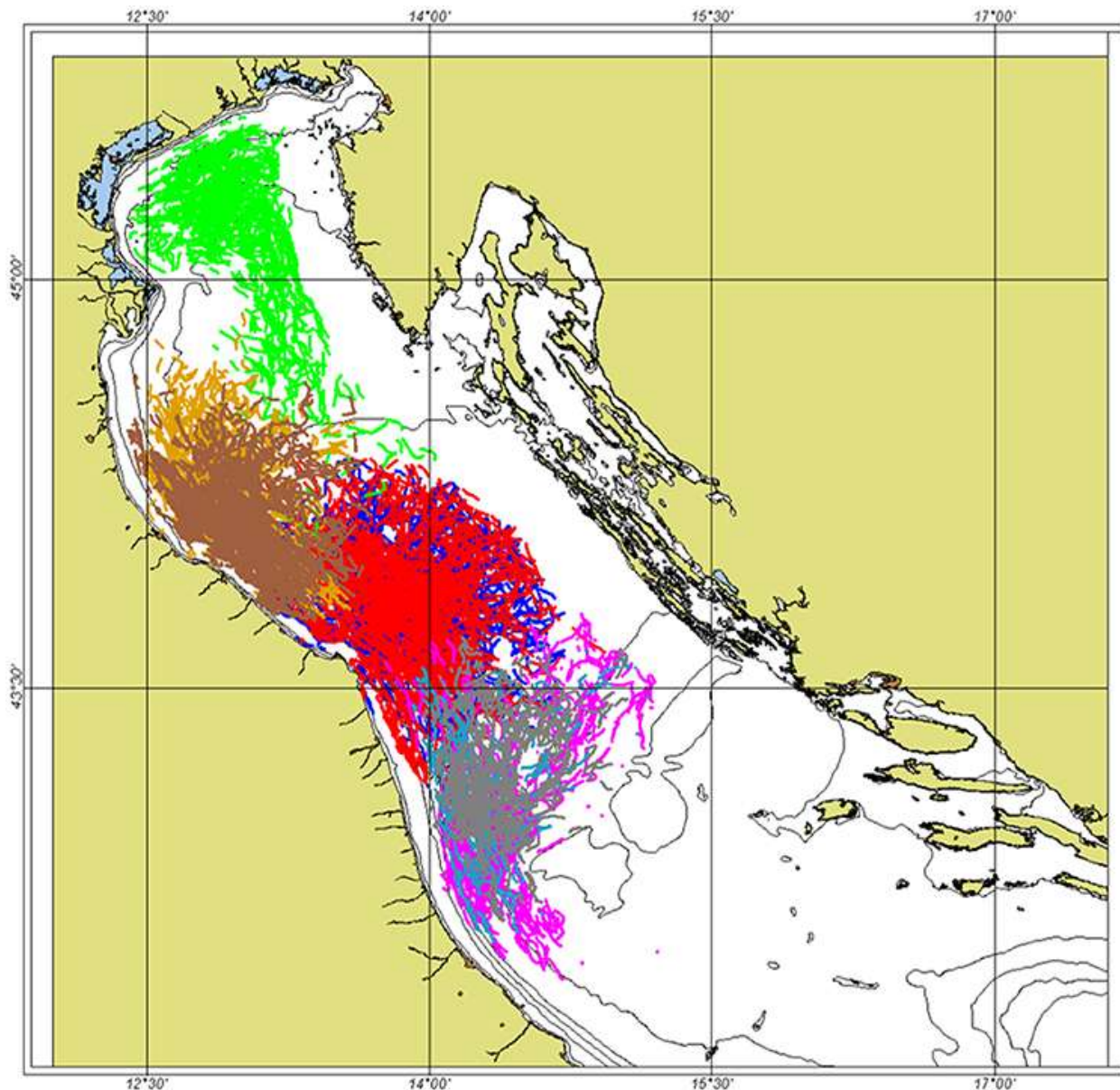


Figure 3- Haul tracks of Italian pelagic trawlers and purse seiners (gray and purple tracks) monitored through a Fishery Observing System (Carpi et al., 2014). The maps represent 5 years of data for eight vessels belonging to the main Italian ports targeting small pelagics. The saga o the management of fisheries in the Adriatic Sea; history, flaws, difficulties, and successes toward the application of the Common Fisheries Policy in the Mediterranean. <https://www.frontiersin.org/articles/10.3389/fmars.2017.00423/full>.

2.4 Stock management and main players

The main players of the management of marine stock in the Mediterranean Sea can be divided in four big entities ¹⁶:

- the Food and Agriculture Organization (FAO) with its own Regional Fisheries Management organization (RFMO);

¹⁶ The saga o the management of fisheries in the Adriatic Sea; history, flaws, difficulties, and successes toward the application of the Common Fisheries Policy in the Mediterranean. <https://www.frontiersin.org/articles/10.3389/fmars.2017.00423/full>

- the GFCM, as well as its Scientific Advisory Committee on Fisheries (SAC) and regional projects,
- the European Commission (EC) and its bodies (i.e., STECF and JRC),
- the national authorities;
- fisheries associations coordinated by the Mediterranean Advisory Council (MEDAC)

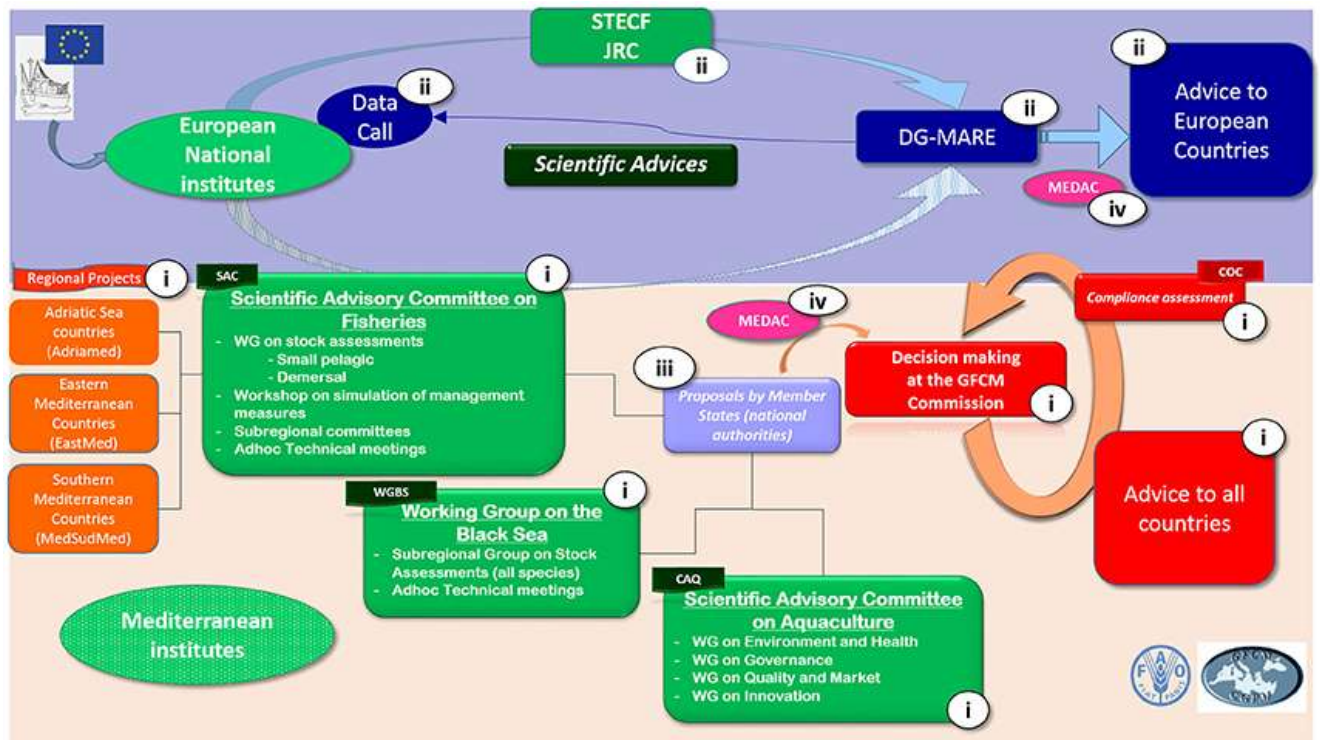


Figure 4 - Management process in the Mediterranean Sea. Roman numbers match the order used in the text. Coloring: green boxes refers to scientific bodies; red boxes refer to FAO bodies; blue boxes refer to EU bodies; pink boxes refer to stakeholders.

The GFCM, established in 1949, is the official RFMO of the Mediterranean and Black Sea and it is part of FAO. The main purpose of GFCM is to promote the development, conservation and rational management of marine fishery resources in the Mediterranean and the Black Sea, creating a common ground for discussion for European and non-European countries.

In 1997, it became a Commission and since then it has the authority to adopt binding recommendations for fisheries conservation and management in its area of application, and plays a critical role in fisheries governance in the region.

The recommendations of the GFCM become compulsory for each individual Member State once they have notified. The GFCM receives scientific input from the SAC whose mandate is to provide independent advice on the technical and scientific basis for decisions related to fisheries conservation and management.

The FAO regional projects operate in the Mediterranean to connect countries and sub-regions to promote and support the conservation of marine resources. In the Adriatic Sea, the main player is

the AdriaMed regional project: born in 1999, it has now a catalytic role in encouraging cooperation aimed at fisheries management in the area.

The Directorate-General for Maritime Affairs and Fisheries (DG-MARE) is the right arm of the European Commission when it comes to the implementation of the CFP and the Integrated Maritime Policy. DG-MARE receives scientific inputs to implement the common fisheries policy from EC scientific forum and operate in all the areas under EU control, including the Mediterranean.

The national authorities (such as ministries and port authorities) have the main role of implementing the regulations established by the GFCM and the EU. In Italy and Croatia, the fisheries directorates under the Ministry of Agriculture are responsible for carrying out this task. These are the competent authorities for Monitoring, Control, and Surveillance (MCS).

The governments regularly convene the sector to inform them of the resolutions and changes that affect or may affect the fishery. The fisheries sector participates in the MEDAC. The MEDAC is made up of European and national organizations representing the whole fisheries sector and other interest groups (such as environmental organizations, consumer groups, and sports/recreational fishery associations) which operate in the Mediterranean area within the framework of the CFP.

The role of MEDAC includes the preparation of opinions on fisheries management and socio-economic aspects in support of the fisheries sector in the Mediterranean. Such opinions are submitted to the Member States and the European institutions in order to facilitate the achievement of the objectives of the CFP; MEDAC also proposes technical solutions and suggestions, such as joint recommendations (ex. Art. 18 Reg.1380 / 2013) at the request of the Member States.

Currently, in the Mediterranean, the stock assessment process includes all Mediterranean riparian countries and not just EU Member States, at the level of the GFCM-SAC Working groups.

The FAO regional projects help with the process, coordinating the member states, easing the availability of the data among countries, and supervising the assessment process to make sure that an agreement is reached before presenting the results to the dedicated GFCM working group.

Full flexibility is given to the experts in matter of data and assessment methods used toward obtaining the best possible outcome, given the information available and the scientific assumptions considered acceptable for the species in question.

The working group is then charged of critically revising the assessment in terms of data used, assumptions made and results obtained and ensure that the assessment is correct from a scientific point of view.

Finally, the results of the working group are presented to and approved (or not) by the SAC before arriving on the GFCM Commission table. The GFCM then, on the basis of what has been recommended by the SAC, together with the national authorities and including the EU, which is a Contracting Party, decides on the specific measures to be taken.

Assessments of EU Member State stocks are also carried out by the STECF through working groups specifically devoted to the Mediterranean Sea. The process is similar to that adopted by

the GFCM-SAC in that the STECF calls on experts (hired to act as consultants) to carry out the assessment of selected species for which official data—which have been prepared following the specific guidelines decided by DG-MARE—are provided at the time of the meeting.

The whole group is then called to evaluate the work done, resulting in the assessments being accepted or not. If accepted, the assessments proceed to the table of the STECF plenaries where they are scrutinized by STECF members, which are very often the same experts who carried out the assessments. The scientific advice of the STECF is then available for EU managers and can be used in a wide framework of policy actions [from the balance of fishing capacity and fishing opportunities, to the Marine Strategy Framework Directive (MSFD)].

The process as it is should be enough to efficiently respond to the need for a proper management of the resources. However, complications arise because the two bodies (i.e., GFCM and STECF) find themselves in charge of the same pieces of work (often producing different assessment and advice for the same stock), overlapping with each other's mandate, without a clear distinction of their respective roles; this situation is very delicate and requires strong actions, new agreements and coordination from all sides, conditions not always easy to achieve.

As a matter of fact, the current lack of coordination between GFCM-SAC and STECF-DGMARE-JRC has hindered the assessment of some Mediterranean stocks fuelling the difficulties related to the already complex process of aligning management in the Mediterranean with the CFP and the MSY target.

In addition, the specific requirements of the CFP and in general of the whole management process, are becoming more and more complicated: this increased complexity not only demands for new and more advanced stock assessment approaches to be used (e.g., integrated assessment, ecosystem models and management strategy evaluation), but also require enormous amounts of data (i.e., genetic, movements, fleet based information, estimates of natural mortality, and growth etc.), not always equally available throughout the area, while concurrently demanding more and more expertise from the scientists.

One of the shortcomings of the approach adopted by the European Commission so far has been the poor involvement of non-EU countries in matters of common interests, such as shared stocks: the contribution of non-EU countries to the overall exploitation of the stocks can be substantial, but this has not helped to move from a European-centric to a Mediterranean-centric management.

This has been true especially for Croatia (before joining the EU), Albania and Montenegro in the Adriatic where the lack of engagement—notably in the past—fuelled a general sense of mistrust and bitter feelings toward every action.

2.5 GFCM Recommendation 2019/2020 GS17 and GS18

In the case of Adriatic Sea small pelagics, the entire dataset used in the assessment was revised through a number of workshops and working groups supported by the FAO regional projects; these working groups also involved the participation of external experts and were organized with the main objective of arriving prepared to the first benchmark assessment proposed and guided by the GFCM.

2.5.1 Background

In light of the poor status of both stocks, a management plan (MP), which included a Harvest Control Rule (HCR), was proposed and adopted in 2012.

This MP had its flaws (e.g., a harvest control rule of little use since it was going from no measures to a drastic reduction of effort when biomass is below Btrigger) but was a first important step in the right direction.

The multiannual management plan for small pelagic fisheries in the Adriatic Sea was adopted in 2013, establishing management measures and harvest control rules for fisheries targeting sardine (*Sardina pilchardus*) and European anchovy (*Engraulis encrasicolus*) in the northern Adriatic Sea (GSA 17), and transitional conservation measures for small pelagic fisheries in the southern Adriatic Sea (GSA 18).

In order to achieve its requirements, extra emergency measures had to be taken in 2013, 2014, and 2015 by both Italian and Croatian administrations, reducing the number of days at sea allowed (even though the efficacy of this measure is doubtful since the number of days remained still really high), closing areas inside the 6 miles during the spawning period, and adding extra days of closure to the canonical closure period.

In 2015, under request of the EC, the GFCM initiated a process to perform a Management Strategy Evaluation (MSE) on small pelagics in the Adriatic Sea.

The process involved stakeholders from both countries, external experts from Spain, the FAO regional projects and the scientists: a stakeholder consultation was carried out to help defining harvest control rules to be tested, and one technical working group was entirely dedicated to the MSE procedure. Finally, the results were discussed at the GFCM Sub Regional Committee for the Adriatic Sea (SRC-AS).

2016 has seen the establishment of the first tentative quota system for anchovy and sardine in the Mediterranean Sea: despite the value of this quota still being too high, it marks the starting point for future updates and is the first example of this kind in the Mediterranean Sea.

In 2017, the EC adopted the proposal for a multiannual management plan for small pelagic stocks in the Adriatic Sea which has followed several consultations with stakeholders, scientists and the public.

Concurrently, the stock assessment process has been improving, and reference points based on FMSY have been estimated: these have implicitly replaced those included in the MP and have been used in the advice for anchovy and sardine in 2015. and 2016.

Since then, additional recommendations have been adopted, establishing supplementary precautionary and emergency measures for this fishery in both GSAs 17 and 18 for 2017–2018 and for 2019–2021.

2.5.2 Level of catches

In 2019, 2020 and 2021, contracting parties and cooperating non-contracting parties (CPCs) shall not exceed the level of catches for small pelagics exerted in 2014 as reported in accordance with

Recommendation GFCM/33/2009/3 on the implementation of the GFCM Task 1 statistical matrix and repealing Resolution GFCM/31/2007/1.

This provisions shall not apply to CPCs with catches below 2 500 tonnes in 2014 and these CPCs shall not exceed catches of 2 500 tonnes in any of the three years covered by this recommendation.

In addition, in 2019, 2020 and 2021, the CPCs with declared catches over 2 500 tonnes in 2014 shall implement a progressive 5 percent reduction each year starting from the level of catches of small pelagic in 2014, as reported in Recommendation GFCM/33/2009/3. If the catch limit set in is exceeded in any given year, the GFCM shall recommend appropriate management measures compensating the over catch.

2.5.3 Fishing days

Notwithstanding the fishing effort established under paragraph 27 of Recommendation GFCM/37/2013/1 and under Recommendation GFCM/38/2014/1, CPCs shall ensure that their fishing vessels targeting small pelagic species shall not exceed 180 fishing days per year, with a maximum of 144 fishing days targeting sardine and of 144 fishing days targeting anchovy.

2.5.4 Temporal closure

In 2019, 2020 and 2021, CPCs shall apply specific temporal closures at the fleet level (even if not simultaneous for purse seiners and pelagic trawlers) in view of protecting stocks during spawning periods. Such closures shall cover the entire distribution of small pelagic stocks in the Adriatic Sea and affect all fleets targeting small pelagic, for periods of no less than 30 continuous days per fleet segment.

Vessels belonging to fleets subject to closure shall be prohibited to change gear for targeting small pelagic (purse seine to/from pelagic trawl) during the closure period. Such closures shall take place during the following timeframes: - for sardine, from 1 October to 31 March - for anchovy, from 1 April to 30 September 10.

By way of derogation such temporal closures may be implemented for periods of no less than 15 continuous days for national fleets of less than 15 purse seiners and/or pelagic trawlers actively fishing for small pelagic stocks. CPCs shall notify to the GFCM Secretariat, not later than 31 December 2018, the set of closure dates and areas of application.

CPCs shall apply spatial closures to vessels over 12 m length overall for no less than 7 months in 2019, 8 months in 2020 and 9 months in 2021. Such closures shall cover 30 percent of the territorial or inner waters identified as important for the protection of early age classes of fish.

In order to protect small pelagic species, in 2019, 2020 and 2021 fishing activity with purse seiners and pelagic trawlers targeting anchovy or sardine shall be prohibited in the area of Pomo ⁽¹⁷⁾.

¹⁷ Recommendation GFCM/42/2018/8 on further emergency measures in 2019-2021 for small pelagic stocks in the Adriatic Sea (geographical subareas 17 and 18)

2.5.5 List of vessels and capacity

CPCs shall communicate to the GFCM Secretariat, not later than 30 November 2018, the list of all pelagic trawlers (single or pair trawlers) and purse seiners actively fishing for small pelagic stocks in 2014.

CPCs shall ensure that the overall fleet capacity of trawlers and purse seiners actively fishing for small pelagic stocks, in terms of gross tonnage (GT) and/or gross registered tonnage (GRT), engine power (kW) and number of vessels, as recorded both in national and GFCM registers, does not exceed the fleet capacity for small pelagic in 2014.

The national fleets with of less than ten purse seiners and/or pelagic trawlers actively fishing for small pelagic stocks can increase the capacity of active fleets by not more than 50 percent in number of vessels and in terms of GT and/or GRT and kW.

2.5.6 GFCM Scientific Advisory Committee

The Scientific Advisory Committee on Fisheries shall suggest alternative solutions to ensure the availability of the results of hydro acoustic surveys of the previous year not later than 31 January of a given year including the implementation of additional winter surveys

The SAC shall give mandate to the Workshop on the assessment of management measures (WKMSE) to carry out a management strategy evaluation (MSE) in order to test alternative management approaches to be implemented starting from 2022 for harvest control rule [HCR] for anchovy and sardine in the Adriatic Sea using different effort and/or catch-based management strategies and reference points operating on the basis of fixed values of fishing mortality and biomass.

The WKMSE may propose and test other appropriate management scenarios for small pelagics fisheries in the Adriatic based on the ecosystem approach and to evaluate the impact of the different HCR on the socio-economic aspects of the concerned fleets and related industries (processing and tuna farming).

In order to facilitate the monitoring of catches, all catches shall be landed, with the exception of those catches which may be discarded in accordance with existing national legislation.

2.5.7 Voluntary observation and inspection program

Upon request of CPCs, with the assistance of the GFCM Secretariat, a pilot project shall be established in 2019 with a view to establishing a voluntary observation and inspection programme, in order to ensure compliance with the conservation and management measures of this recommendation.

Such voluntary observation and inspection program, to be implemented in 2019, 2020 and 2021, shall comprise, inter alia, the following elements:

- i) Inspections at sea;

- ii) Procedures for an effective investigation of alleged violations of the conservation and management measures contained in this recommendation, and for reporting to the GFCM on the actions taken, including procedures for exchanging information;
- iii) Provisions for appropriate action to be taken when inspections reveal serious violations as well as for the expedient and transparent follow-up of such actions in order to uphold the flag state's responsibility within the intended programme;
- iv) Port inspections;
- v) Monitoring of landings and catches, including statistical follow-up for management purposes;
- vi) Specific monitoring programmes, including boarding and inspection.

2.5.8 GFCM 2030 Strategy

The General Fisheries Commission for the Mediterranean of the Food Organization of the United Nations and all its members are working together to build a new strategy for Mediterranean and Black Sea fisheries (and aquaculture), that is proposed to cover a ten-year span and run until 2030. ⁽¹⁸⁾

Fisheries and aquaculture have a particularly important role to play in building responsible food systems, because in the Region the demand for fish protein is high and it is also evident the intense pressure on marine ecosystems.

According to GFCM, the new 2030 Strategy is in alignment with blue transformation, a pillar of FAO's new Strategic Framework and comes with the backing of many inter-governmental and non-governmental organizations and marks the beginning of a critical decade of development for the two sectors.

The new FAO Strategic Framework for the next decade provides a clear path to sustainably transform all agri-food systems (including fisheries) to make them more efficient, inclusive, resilient and sustainable.

The 2030 Strategy clearly defines aims and is rooted in practical actions that fall under the following targets (for fishery and aquaculture):

- Productive fisheries in healthy seas: The 2030 Strategy takes an integrated approach towards the many threats to the marine environment, working to conserve biodiversity and provide maximum sustainably yields, on the basis of enhanced oriented research and data collection in support of science-based fisheries management plans.
- Good fisheries management needs effective compliance and enforcement mechanisms, and these are the focus of the second of the targets. The Strategy lays the ground for GFCM members to take strong action against illegal, unreported and unregulated (IUU) fishing, stamping out crime and ensuring only legal products reach the market. Centralized monitoring, control and surveillance technology, with joint compliance and enforcement policies transposed into national laws, create a level playing field for legitimate fishers.

¹⁸ FAO. 2021. *GFCM 2030 Strategy for sustainable fisheries and aquaculture in the Mediterranean and the Black Sea*. Rome. <https://doi.org/10.4060/cb7562en>

- Meanwhile aquaculture has its own unique requirements, and these inform the third target. While creating long-term governance and responsible investment frameworks, the Strategy promotes new technology and best practices through the GFCM’s regional knowledge-sharing hubs and aquaculture demonstration centres. Their work will further strengthen sector resilience and sustainability against a backdrop of continued growth, and encourage community involvement in its development.
- Thriving communities and better livelihoods right along the value chain – particularly in small-scale fisheries, the backbone of the industry – are the fourth target. The GFCM is finding new ways to help fishers improve their revenues, from increasing the value of their catches to diversifying their activities – and by making fisheries sustainable in the long term, the revenues will be sustainable too. On shore, greater involvement in local management decisions and stronger social protection structures will both contribute to making fisher livelihoods more secure.
- Finally, one of the GFCM’s greatest strengths is the way in which it brings together a hugely diverse range of actors, from governments and fishers to academia and NGOs, all of whom have important contributions to make to shared objectives. The fifth target is focused on using GFCM expertise and convening power to build capacity and provide technical support at the national and sub regional levels to ensure policy commitments made by the GFCM Membership are met, establishing a level playing field across the region.

The GFCM 2030 Strategy aims to offer a common vision and guiding principles for the achievement of sustainable fisheries and aquaculture in the region. GFCM acts as the driving force behind regional cooperation and partnerships, bringing together different stakeholders, working in synergy with existing strategies at the national and sub regional levels and promoting a multidisciplinary approach.

The 2030 Strategy foresees interventions tailored to local needs and specificities through a sub regional approach, organizing local action, sharing expertise and coordinating technical assistance work.

The GFCM 2030 Strategy is expected to support the 2030 Agenda for Sustainable Development and in particular:

- Sustainable Development Goals 17 aiming to end poverty, achieve food security, fight inequality and injustice, and tackle climate change by 2030.
- Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

The GFCM 2030 Strategy has the following international reference points:

- the objectives of the United Nations Decade of Ocean Science for Sustainable Development (2021–2030);
- the post-2020 Global Biodiversity Framework of the Convention on Biological Diversity;
- the 2021 United Nations Food Systems Summit towards more inclusive, resilient and sustainable food systems;
- the 2021 Declaration for Sustainable Fisheries and Aquaculture, endorsed by the FAO Committee on Fisheries that is a renewed call for action to achieve the sustainable management of aquatic resources.

The target to achieve food security is enshrined in the FAO Strategic Framework 2022–2031 and captured in the four betters (Better Production, Better Nutrition, a Better Environment and a Better Life), as well as in the FAO Code of Conduct for Responsible Fisheries.

This Strategy includes also the Blue Transformation programme aiming to achieve better production of quality wild captured and farmed fish through integrated, sustainable and socio-economically sensitive processes.

The strategy is supported by an action plan detailing the activities to be executed to achieve its objectives. According to GFCM this document is expected to be regularly updated by the GFCM contracting parties and cooperating non-contracting parties, who are both the strategy's main stakeholders and direct beneficiaries.

The SWOT analysis and this document are coherent with both the GFCM indications and vision and with the Agenda 2030 for sustainable development (General Assembly resolution of 25 September 2015).

BOX**Small pelagic fisheries and main existing rules on fisheries in the Adriatic Sea****Multiannual plan for small pelagic fish stocks in the Adriatic Sea.****European Parliament/EU Legislation in progress)**

Small pelagic fish usually live in dense shoals, making gear such as mid-water pelagic trawls and purse seines particularly efficient for their capture. The vast majority of small pelagic fisheries in the Adriatic target European anchovy and European sardine (counting for over 97 % of small pelagic catches). These fisheries may also catch other small pelagic species, such as mackerel and horse mackerel, but these are landed in small amounts. Valued at about €74 million, small pelagic landings account for almost one fifth of the total fish production in the Adriatic (2013). For fisheries management purposes, the Adriatic Sea is usually divided in two geographical subareas (GSA), namely GSA 17 for the northern part and GSA 18 for the southern part, according to the sea partitioning system adopted by the GFCM. Small pelagic shoals are most often largely composed of the same species, but given the practicalities involved, fisheries for anchovy and sardine cannot be isolated from one another. More than 95 % of anchovy and sardine catch takes place in the Northern part of the Adriatic: anchovy represent a larger part of the total catch along the western coasts, while catches of sardines are more important on the eastern side. Nearly all fisheries of anchovy and sardine in Adriatic are conducted by Italian and Croatian vessels (around 200 Italian pair trawlers and purse seiners and about the same number of Croatian purse seiners, the majority of these fleets being over 18 metres in length). Slovenia, with four vessels (all over 12 m) engaged in the fishery, accounts for less than 1 % of the catches on these stocks. Albania and Montenegro also take around another equally small fraction of catches. Anchovy and sardine stocks are in a rather poor state since a long time and another decline in abundance and biomass for both species has been reported by the scientific surveys between 2013 and 2015.

International cooperation takes place particularly under the auspices of the GFCM to which the EU is a contracting party. GFCM recommendations are binding on the parties and may require subsequent transposition of measures into law applicable under each party's jurisdiction. In 2013, the GFCM adopted a multiannual management plan for small pelagic fisheries in the Adriatic, covering international waters, based primarily on regulation of fishing effort (number of vessels, number of fishing days...). Further emergency measures were adopted by the GFCM for 2015 and 2016 (reduction in fishing effort, closures to protect nursery and spawning grounds). In 2016, the GFCM again adopted additional emergency measures for small pelagic stocks in the Adriatic, to be applied in 2017 and 2018 (Recommendation GFCM/40/2016). Among other management measures, this recommendation introduced catch limits, which could not exceed the 2014 level, and effort limits of maximum 180 fishing days per year. The GFCM established a new series of measures in October 2018 for the 2019-2021 periods, maintaining the same catch and effort limits for small pelagic stocks (Recommendation GFCM/42/2018/8). At EU level, fisheries management uses a combination of different approaches. Some rules, such as those on the fisheries control system and

on national fleet capacity ceilings, apply across the board; others are designed for regionalised or fisheries-specific application. The 'Mediterranean Regulation' 1967/2006 represents one of the main EU legislative frames for the management of fishing activities in the area. This regulation establishes some technical measures, such as specifications on the gear that may be used (as an example, for trawl nets targeting sardine and anchovy, the minimum mesh size shall be 20 mm, and for surrounding nets the minimum mesh size must be 14 mm), and such as minimum size limits for fish (notably 9 cm for anchovy and 11 cm for sardine). The Mediterranean Regulation was notably amended in this regard, in consideration of some new features of the 2013 CFP Basic Regulation, particularly the obligation to land all catches of given species, including undersized fish. Also in the pursuit of CFP reform, the Commission adopted a three-year discard plan for certain small pelagic fisheries in the Mediterranean Sea (1392/2014), which provided for derogation to the landing obligation, by allowing the discard of small amounts of sardine and anchovy. The discard plan expired at the end of 2017, and was replaced by Delegated Regulation 2018/161, applicable until the end of 2020. The CFP Basic Regulation envisages that such types of measures concerning discards should be incorporated in multiannual plans. Furthermore, according to requirements established in the Mediterranean Regulation (Article 19), Italy (in 2011), Croatia and Slovenia (in 2014), adopted national management plans in their respective territorial waters for fisheries using specific gear, notably trawls and seines (and other surrounding nets). These separate national plans set different measures concerning sardine and anchovy fisheries, aiming at limiting effort in the traditional way of managing fisheries in the Mediterranean (e.g. total fishing capacity or number of fishing days), and adding some technical restrictions, e.g. through various closure periods. Based on GFCM decisions, requirements for fishing capacity management in small pelagic fisheries in the Adriatic were also incorporated into EU law in 2015 (by amending Regulation 1343/2011 on certain provisions for fishing in the GFCM agreement area). In contrast to long established practices for many stocks in the Atlantic and the Baltic Sea, fisheries in the Mediterranean have never been managed through the setting of maximum catch limits for given stocks (with the exception of bluefin tuna and swordfish). However, in December 2016, for the first time, the Council agreed on setting a catch limit for small pelagic species in the Adriatic Sea for 2017 (namely 112,700 tons of anchovy plus sardine (Annex II of Regulation 2017/0127). The same catch limit was agreed for the 2018 fishing opportunities (Annex II of Regulation 2018/120). Subsequently, the Council has continued setting catch limits for 2019 to 107.065 tons (Annex II of Regulation 2019/124) and for 2020 – 101.711 tones (Annex II of Regulation 2019/2236). These fishing opportunities are limited to Croatia, Italy and Slovenia. However, except for an indication that the catch for Slovenia should not exceed 300 tons, the Council did not define the share (quotas) of the total catch between the Member States concerned. As highlighted in the preamble of these regulations, the introduction of catch limits was motivated by GFCM decisions taken for 2017-2018 (GFCM/40/2016/3) and 2019-2021 (GFCM/42/2018/8), but the maximum catch limits were fixed exclusively for the respective years and without prejudice to any other measures in the future.

3. ADRIATIC PRODUCTION

Fonte: STECF UE

CROATIA ANCHOVY PRODUCTION

YEAR	Kg Live weight	VALUE of landing Euro
2012	9.025.810,74	6.442.446,85
2'13	10.059.959,97	8.859.137,64
2'14	10.122.848,59	7.746.565,31
2015	12.785.111,42	10.821.425,35
2016	8.235.780,24	7.784.576,73
2017	10.880.350,03	10.027.391,60
2018	13.250.810,88	11.486.854,81
2019	7.994.602,47	7.261.219,83
2020	9.781.239,97	9.225.547,30

CROATIA SARDINES PRODUCTION

YEAR	Kg Live weight	VALUE of landing Euro
2012	46.643.893,30	17.793.434,04
2'13	56.898.981,26	22.867.032,36
2'14	60.974.451,35	23.650.292,05
2015	51.729.582,40	19.517.758,67
2016	54.368.331,58	20.777.047,72
2017	48.333.439,75	18.196.907,39
2018	46.267.107,64	19.527.871,81
2019	45.134.107,90	20.048.428,62
2020	50.133.503,76	21.838.822,08

ITALY ANCHOVY PRODUCTION

YEAR	Kg Live weight	VALUE of landing Euro
2008	45.038.860,86	77.200.024,96
2009	54.387.652,67	87.799.901,40
2010	54.095.123,98	75.953.911,70
2011	46.236.877,80	78.434.703,67
2012	42.799.925,15	75.606.926,81
2'13	29.664.218,48	55.361.851,68
2'14	31.842.337,38	52.394.006,44
2015	37.510.820,91	63.190.434,31
2016	37.968.966,48	65.830.743,73
2017	39.038.602,00	75.499.621,00
2018	36.330.532,42	67.532.001,75
2019	31.067.661,79	71.165.197,19
2020		

ITALY SARDINES PRODUCTION

YEAR	Kg Live weight	VALUE of landing Euro
2008	12.025.156,54	12.971.600,62
2009	15.636.774,83	12.693.760,42
2010	16.274.244,36	12.881.678,07
2011	14.376.956,05	12.664.205,55
2012	19.947.144,66	16.426.090,39
2013	22.605.679,67	16.554.246,64
2014	25.728.563,98	18.535.248,39
2015	28.864.929,27	22.558.486,97
2016	28.789.840,00	22.280.689,93
2017	22.700.100,00	13.844.034,00
2018	26.132.758,75	25.413.387,41
2019	23.317.184,76	30.259.349,20
2020		

Species/volume	CROATIA kg	ITALY kg	Year
Anchovy	7.994.602,47	31.067.661,79	2019
Sardine	45.134.107,90	23.317.184,76	2019

Species/Value	CROATIA EURO	ITALY EURO	Year
Anchovy	7.261.219,83	71.165.197,19	2019
Sardine	20.048.428,62	30.259.349,20	2019



4. ITACA CLUSTER

Despite the importance of fisheries in quantitative terms, its value for producers is low and highlights the need to implement appropriate measures to optimize the value chain.

Producers do not have complete control over the quantities they catch and have to schedule on a day-to-day basis, according to presence of fish stocks as well as their size. Also enterprises do not have any guarantee in advance on the capacity of the market to absorb the fish landings and therefore fishery lack on planning capability neither on a short nor on a long term perspective.

Always, incertitude on the market response leads fishermen to increase the level of catches, generating possible surplus in fish landings that finally can cause a decrease of selling price and, on the other hand, overexploitation of stocks. One of the requisite to ensure sustainable fisheries links to the capacity of the fishing fleet to catch the needed quantity of resources, according to market demand, avoiding surplus in fishing effort.

Anchovies and sardines fisheries have very interesting potential in terms of coordinated cross-border intervention, due to several factors:

- The stocks are a unique resource (in terms of common stocks), spread in the whole Adriatic basin and their fisheries are practiced in all the Adriatic regions, by a large number of fisheries enterprises, nevertheless adopting different catch systems and different enterprise business models.
- Stocks migrate according to their growth stages (juveniles and adults live in different areas of the Adriatic Sea) and according to seasons, generating periodical local advantages in catches that however negatively affect other fishing areas.
- Different catch systems and business models can generate disparities in the market positioning of the fisheries enterprises that rise down the commercial power of the overall production segment in relation to buyers.
- Fisheries in the Adriatic Sea until today have been governed by several legal frameworks, at regional, national, EU and international level, all based primarily on limitation of fishing effort and capacity, coupled with several additional measures such as spatio-temporal closures and minimum landing sizes of catches.
- Having a single stock managed under different rules in different parts of its range is less effective; the most recent scientific advice indicates indeed that stocks of the Adriatic Sea are still being overexploited, although the strict regulations.

4.1 Cluster approach

ITACA aims at stimulating the creation of a Cluster among the SP fisheries operators in order to support the positioning of fisheries producers in the SP fish product chains.

ITACA aims to improve the fishery management of enterprise business, by having the possibility to plan on a long term perspective the fishing activities and the incomes, for contributing to the stability of the sector.

From products chains, the Cluster can maintain a strong position and to exploit the strengthened commercial power towards the food processors and buyers.

At this regards the Project aims to improve the environmental sustainability of SP fisheries, orienting the fishing effort and the quantity of catches to maintain the vitality and the good quality of SP stocks in Adriatic, promoting the stocks conservation and halting the overexploitation.

ITACA is oriented to set up, test and introduce an innovative econometric model that allows matching three variables: research findings on SP stock status and their preservation, enterprises catches and market demand. The utilisation of the econometric model by SP fisheries enterprises leads to an improved business capacity of operators in terms of ability to forecast, plan and distribute the fishing effort in time, also allowing the adoption of long terms business strategies in the market.

The fragmentation of offer by SP producers affects negatively the commercial power of the same fishermen, determining low producers prices, discontinuity of the presence and the quantity of SP fish product in the market and a scarce capacity of interaction with fish processing industry and the seafood chain.

ITACA project intends to upscale the clustering of SP fisheries enterprises at a wider scale, since the ichthyic resource (i.e. the SP stocks) is shared at basin level, to boost its market position and the competitiveness at EU and international level.

The establishment of the cross-border cluster in ITACA (WP5) is supported, besides the use of an impartial tool such as the econometric model, also by an articulated training and education of SP fisheries SMEs in order to overcome constraints linked to the low attitude of operators towards shared mechanism of management of the fishing activities.

By promoting the establishment of a SP fisheries enterprises Cluster, ITACA project addresses the environment sustainability of fishing effort. The model is based on the principle of adapting the level of catches not only to the economic viability of the SP fisheries enterprises, but also to the maintenance of the good status of SP stocks and their preservation on a long term perspective.

The adhesion to the Cluster by SP fisheries enterprises implies the acceptance of shared modalities for the management of the SP stocks (i.e. co-management of SP stock by the operators), that consist in a shared planning of catches based on the adoption on common measure to protect the ichthyic resources. To this purpose and to generally raise the awareness of SP fisheries operator towards sustainability of the fishing effort, ITACA sets up an education programme of SP fisheries SMEs.

PPs will jointly appoint a "Cluster management body" that will be an independent body either will be establish inside an existing subject and will be responsible, with own resources both in financial and in managerial (i.e. staff, seat, organisation, etc.) terms, of all the aspects linked to the ordinary running of the same cluster, bearing the long lasting effects of a shared governance of SP resources in the ordinary running of the same cluster, bearing the long lasting effects of a shared governance of SP resources in the competitiveness of SP fisheries enterprises and in the sustainability of fishing effort.

There is a need, therefore, of a coordinated intervention at policy level for sharing the governance. For instance EU Commission recently adopts a common multiannual management plan for the SP stock in the whole Adriatic basin (COM(2017) 97), the setting up of common tools for the co-management of the SP stocks.

Several Organisation of Producers (according to Reg. 1379/2013) for the SP fisheries are active in the Adriatic scenario (n. 6 in Italy and one recently established also in Croatia).

The concept of maritime clusters has proven to be successful in a number of countries. For example, in Iceland, the Ocean Cluster in Reykjavik, the New England Ocean Cluster, in Seattle in the United States, in Portland Maine in the United States, and the Ethekewini Maritime Cluster in Durban in South Africa.

The CLUSTER has to be developed as the instrument to implement innovation at social and technological levels in the fisheries of small pelagic species, in order to provide social and economic benefits for the whole stakeholders involved in the sardine (*Sardina pilchardus*) and anchovies (*Engraulis encrasicolus*) value chain.

CLUSTER can be in the best position to explore new fields of cooperation, to recommend the improvement of the management of fishing ports and value chain, to recognise the various roles played by different sections of the community, including women, in the fisheries sector, to ensure the achievement of high quality standards with regard to fishery products, to support the sustainable development of the fisheries sector, and to prevent or reduce conflicts in the fisheries sector.

CLUSTER activity has to be dedicated to the achievement of the Management Plan goals:

- Goal 1: Maintain harvest of anchovies and sardines at ecologically sustainable levels
- Goal 2: Optimum utilisation and equitable distribution
- Goal 3: Protect and conserve aquatic resources, habitats and ecosystems
- Goal 4: Cost effective and consultative co-management of the fishery

Clusters approach aims to provide a platform for collaborative engagement between different levels of government, state-owned enterprises, and the maritime community to implement programs of common interest supporting growth and improving the competitiveness of the maritime industry.

At this regards, several stakeholder categories can participate to the CLUSTER: owners of fishing vessels, crew members, input suppliers involved in fish trading or the supply of inputs and services necessary for fishing, such as traders, fishing gears services, maintenance services, the fishing port authorities, research Institutes and, finally the National and local Institutions involved in the sector (fishery, environment protection etc).

4.2 Project lead applicant and partners

Lead Applicant

VENETO REGION'S AGENCY FOR THE INNOVATION IN THE PRIMARY SECTOR -
VENETO AGRICOLTURA

Project Partner	FISHERY OPERATOR
PP1 – CNR CONSIGLIO NAZIONALE DELLE RICERCHE - ISTITUTO PER LE RISORSE BIOLOGICHE E LE BIOTECNOLOGIE MARINE – CNRIRBIM OF ANCONA	OP Abruzzo Pesca soc. Coop Organizzazione Produttori Pesce azzurro Ancona Soc. Coop
PP2 – IAMB ISTITUTO AGRONOMO MEDITERRANEO DI BARI INTERNATIONAL CENTRE FOR ADVANCED MEDITERRANEAN AGRONOMIC STUDIES.	Soc.Coop. Pescatori Salentini Società Enea snc Società Di Tullio e Mastrapasqua snc Società Mastrapasqua e Abbrescia snc Coop. Pescatori La Folgore (south) Eredi di dell'Olio Laura S.n.c.
PP3 – RERA JAVNA USTANOVA RERA S.D. ZA KOORDINACIJU I RAZVOJ SPLITSKO DALMATINSKE ŽUPANIJE. ŽUPANIJE PUBLIC INSTITUTION RERA SD FOR COORDINATION AND DEVELOPMENT OF SPLIT DALMATIA COUNTY	ZORAN ARKOVIĆ (single boat) JOŠKO MADAREVIĆ (single boat) DARISLAV KUSTURA (single boat) Cooperativa FRIŠKA RIBA
PP4 – AZZRI AZRRI – AGENCIJA ZA RURALNI RAZVOJ ISTRE D.O.O. PAZIN, CROATIA	Juran Ante (single boat) PAVLOVIĆ SINIŠA (single boat) Paris Valter Paris Dante
PP5 – CONF COOPERATIVE CONF COOPERATIVE UNIONE REGIONALE DEL VENETO. CONF COOPERATIVE REGIONAL UNION OF THE VENETO ITALY PADOVA	OP Chioggia OP Pila OP Pila Mare Pescatori Cesenatico OP Porto Garibaldi
INSTITUT ZA OCEANOGRAFIJU I RIBARSTVO. LABORATORY OF FISHERIES SCIENCE AND MANAGEMENT OF PELAGIC AND DEMERSAL RESOURCES . CROATIA SPLITSKO- DALMATINSKA	

5. MARKETING

The marketing of products is one of major challenges of fishery stakeholders. Currently fishery enterprises are able to identify poor prices, lack of transport, lack of ready market, and high post-harvest losses as the challenges, but they are often poorly equipped to identify potential solutions.

Successful marketing requires learning new skills, new techniques and new ways of obtaining and using the information appropriately.

Marketing approach must be considered as part of the producer's target for the following reasons:

:

- Price analysis and evaluation for the products;
- Analysis of earning income for recovering the money spent for both fixed and variable cost during the production or purchasing process.
- Identification of actions for increasing the level of performance both from economy and ecology point of view.
- Identification of types of fish highly preferred by the consumers.
- Analysis of export opportunities, establishing international relationship with other countries of the world
- Determination of the forms in which fish should be processed, stored, sorted, graded and sold to consumers.
- Developing of packaging that makes fish attractive and appetizing to consumers.
- Additional employment opportunities.

5.1 Nutritional level of sardine and anchovy

It is quite clear that fishing finds its legitimacy in the quality of the products it offers to consumers; sardines and anchovies in this respect are no exception and constitute products of high nutritional quality (¹⁹) and, also organoleptic (²⁰) quality.

Currently there is a new perception from the consumers about the consumption of fishery products and their high nutritional level. These products are a unique source of the essential long-chain omega-3 fatty acids, important for optimal brain and neurodevelopment in children (DHA) and vascular health (EPA).

¹⁹ The chemical nutritional quality of food is given by its content of proteins, fats and carbohydrates and is, therefore, the nutritional capacity of the food itself. The nutritional quality can be understood from the quantitative aspect given by the amount of chemical energy it provides and the qualitative aspect, which is given by the combination of nutrients it contains. The nutritional quality must be guaranteed at every level of the production process, starting with the choice of raw materials. Certain treatments can affect the nutritional content of a food, for instance can denatures proteins, resulting in a loss of their biological properties.

²⁰ Organoleptic quality is the evaluation of certain characteristics of the food, such as appearance, aroma and texture, perceived through the sense organs (sensory quality). With sight, the food is assessed for its color, shape, size and also for the way it is presented. By smell, the aroma and smell of a food is perceived, which can be pleasant or unpleasant. By touch, the texture (firmness, hardness, density, etc.) of a food product is perceived and, in the case of fresh food, the state of preservation and/or maturation/seasoning. Taste is used to perceive the bitterness, saltiness, sweetness and acidity of a foodstuff; hearing is used to perceive particular characteristics that may indicate the freshness,

Although many vegetable oils contain omega-3 fatty acids this is in the form of alpha-linolenic acid (ALA), which must be converted metabolically by chain length extension to EPA and DHA.

However, the conversion from ALA into EPA and DHA is not very efficient in humans, making it difficult to rely only on vegetable oil during the most critical periods of life. Omega-3 fatty acids in the form of DHA rather than ALA are needed to secure an optimal brain and neural system development in neonates and infants.

This is particularly important during pregnancy and the first two years of life (the 1000 day window). Fish consumption also provides health benefits to the adult population. There is strong evidence that fish, in particular oily fish, lowers the risk of coronary heart disease (CHD) mortality by up to 36% due to a combination of EPA and DHA.

In addition to the health benefits of these macro-nutrients fish is also an important provider of a range of micro-nutrients not widely available from other sources in the diets of the poor. More and more attention is being given to fish products as a source of vitamins and minerals.

This is in particular true for small sized species consumed whole, with heads and bones, which can be an excellent source of many essential minerals such as iodine, selenium, zinc, iron, calcium, phosphorus and potassium, but also vitamins such as A and D, and several vitamins from the B-group.

At this regards the CREA web site on Food Composition Tables (2019), is a very useful scientific reference because collect most of the experimental and compilation data that CREA (Centro Alimenti e Nutrizione) has produced and selected in recent years on the most commonly consumed foods in Italy. The data can be freely consulted from the site by all interested parties, and if used for scientific, educational or commercial purposes we ask that you respect intellectual property rights and report the original source (²¹).

Sardines and anchovies are full of omega-3 fatty acids and source of high in quality protein, healthy fats, vitamin B12, vitamin D (which enhances calcium absorption), vitamin E, iron, calcium, magnesium, potassium, and zinc.

These products do not contain carbohydrates, fibre, and sugar. The oils in sardines are high in omega-3 fatty acids, which are commonly referred to as "healthy fats."² A serving of 5 small sardines canned in oil has 7 grams of total fat.

The omega-3 fatty acids in sardines protect the heart in several ways. Omega-3s reduce LDL ("bad") cholesterol and increase HDL ("good") cholesterol. They lower blood pressure; prevent abnormal heart rhythms, and decrease hardening of the arteries and blockages. Increased sardine intake in people with diabetes has been shown to reduce inflammation and cardiovascular risks. Omega-3s are essential for a healthy pregnancy, especially when it comes to the baby's brain and vision development. For this reason, women of childbearing age are advised to consume two or three servings of fish per week.

Sardines and anchovies are sold fresh or canned. Canned varieties are packed in liquid such as water, oil, mustard sauce, or tomato sauce. However, since the bones are such a good source of

²¹ <https://www.alimentinutrizione.it/tabelle-di-composizione-degli-alimenti>. Tabelle di composizione degli alimenti, Aggiornamento 2019

calcium and the skin is such a good source of omega-3s, sardines are most nutritious when eaten with them.

5.2 Post harvest, packaging and labelling

There are very important components without which marketing of fish may not be successful. The major elements of marketing fish include processing, packaging and labelling.

Food safety rules for both sardines and anchovy are the same as for any other type of fish. Fresh sardines and anchovy must be stored at properly cold temperatures (below 4°C) and packed on ice. Fresh sardines should smell fresh and not overly fishy. The eyes should be clear and shiny.

Canned sardines and anchovy should be eaten once opened or must be placed in a covered plastic or glass container and stored in the refrigerator for consumption within a couple of days.

Canned sardines and anchovy are usually pretty flavourful on their own, as they are usually preserved in salt. They can be eaten cold in salads, on top of crackers, warmed in pasta dishes, or even grilled as a main course.

Packaging is the process of putting and wrapping of fish products in materials and containers (bag, cans, nylons, cartons). It is the loading of fish products into any of the containers in readiness for storage or sale. Packaging makes fish products attractive for marketers or consumers and also aids handling during transportation.

Quality assurance is strictly linked to the suitability of packaging materials and methods because, if the requirements are not reached, all the efforts made during processing could be of little avail, resulting in serious economic losses.

In order to maintain good quality of fish products during transportation, packaging materials made of suitable materials ought to be used.

Marketing approach must give particular attention to food quality and to the materials and methods used in packing of fish to:

- Protect from physical injury and from contamination with spoilage organisms;
- Increase of shelf life;
- Easier distribution;
- Make the product attractive for the customers;

In this context, labelling aims to preserve and to identify the products, describing and giving instructions about the consumption. Labelling provides consumers with necessary information about the raw material used, method of preparation and form of consumption, shelf life of the packaged fish among others.

Labelling of packaged fish has to give information like:

- Common name of the fish in accordance with accepted scientific taxonomy.
- method used in processing the fish like smoking, salting, drying, smoke-drying, salt-smoking, brine-smoking among others;
- number of fish in the cartons;
- net weight of the contents distinctly printed;
- shape of the fish such as bent, cut or otherwise;

- Batches of product. This makes it easier to withdraw the batch from commodity turnover in the case of health hazard; and
- Full name and business address of the processor or packer.

The labelling regulations can be very detailed and are aimed at protecting the health of the consumer and providing the best information. These requirements enable the consumer to decide which products to buy. A label placed on the product should inform the consumer about the raw material used, method of preparation and form of consumption, shelf life, etc.

However, packaging and labelling may not provide all the information needed such as nutritive and energetic values (kcal or kJ/100g or 100ml), percentage of recommended daily intake of protein, vitamin A and C, iron, calcium, the amount of basic ingredients and nutritive compounds such like proteins, and vitamin content.

For this reason, advertisements aim to publicize and making fish products supplied to the market known to the public. It creates awareness to the public about the availability, quality, prize and other necessary important issues. This could be carried out through personal contact, radio, television, bulleting, newspapers among others.

5.3 Challenges to marketing of fish Products

The main challenges include the followings:

- **Sardines and anchovies are high perishable** and can easily get spoiled within a very short time if not handled properly. This condition forces the fishermen to sell of their products as soon as possible.
- **Inadequate storage and poor processing facilities**, that sometimes are not readily available and not adequate where available.
- **Poor quality fish products:** sometimes the products supplied to the market could be contaminated.
- **Inadequate transportation system** that results in loss of fish products along the marketing chain.
- **Inadequate marketing information and lack of marketing facilities**, like telephone, internet gadgets that could be useful to sell products and for price negotiations
- **Instability of market prices:** The prices of fish products are unstable and have never remained same for one full year without any fluctuation.
- **Policy in marketing of fish products:** marketing needs to be carried out within a supportive policy, legal, institutional, macro-economic, infrastructural and bureaucratic environment.
- **Value chain organisation** must be considered properly because it has great impact on marketing, costs, commission charges and market margins received by the intermediaries.

6. METHODOLOGY

The economic value of sardines and anchovy is low and highlights the need to implement appropriate measures to optimize the income of the catch. For instance a value chain channel is considered good or efficient if it makes the produce available to the consumer at the cheapest price and also ensures the highest share to the producer.

The cost of fish products is directly proportional to the length of the value chain, because its organisation can increase the cost to make profit. Value chain, on the contrary, is a good approach for food safety and to create income and employment opportunities.

Currently, as ITACA remarked, Adriatic fisheries enterprises do not have complete control over the quantities they catch and have to schedule on a day-to-day basis, according to presence of fish stocks as well as their size.

Also, they do not have any guarantee in advance on the capacity of the market to absorb the fish landings and therefore lack on planning capability neither on a short or long terms perspective.

Incertitude on the market response leads fishery enterprises to increase the level of catches, generating always surplus in fish landings (that can causes a decrease of selling price) and the overexploitation of stocks.

This marketing study aims to draw a market positioning and long term strategy for the CLUSTER proposed by the ITACA Project.

6.1 Market and competitors analysis guidelines

Market Positioning refers to the ability to influence consumer perception regarding a brand or product relative to competitors. The objective of market positioning is to establish the image or identity of a brand or product so that consumers perceive it in a certain way.

Marketing strategies aims to identifying the business' unique value in relation to competitors. Market positioning strategy requires focus and a commitment to a specific niche, idea, or target audience for creating a positive image of products and service in the customers' minds, claiming the position in the competitive market landscape, as follows:

- Determine company uniqueness by comparing to competitors to compare and contrast differences between competitors to identify opportunities. Focus on your strengths and how they can exploit these opportunities.
- Competitor positioning analysis to identify the conditions of the marketplace and the amount of influence each competitor can have on each other.
- Current position to identify target and current position in the market and solution offered to your customer's problem, associating brand/product with certain characteristics or with certain beneficial value.
- Product price to identify competitive pricing

- Product quality, associating brand/product with high quality
- Product use and application, Associating brand/product with a specific use
- Competitors, making consumers think that brand/product is better than that competitors

A competitor analysis is important to identify competitors in the sector and researching different marketing strategies. It is a point of comparison to identify strengths and weaknesses relative to each competitor.

By studying how competitors are perceived by value chain and consumers is it possible to know brand's strengths and weaknesses and acquire useful elements on positioning in the market, on the image of products and services that is necessary to offer to be competitive. It's essential to clearly communicate to potential customers why your product or service is the best choice of all those available.

Knowing the competitors are is the first step to surpassing them. Conducting a thorough assessment of what your competitors offer may also help to identify areas the market is underserved to know the gaps between what competitors offer and what customers want, to satisfy those unmet customer needs.

Competitor analysis it is a tool that can be used at every stage of the business life cycle. Periodically revisiting and updating the competitor analysis, or conducting one from scratch, will help to identify new trends in the market and maintain a competitive advantage over other companies.

Advertisements are usually the first place business positions themselves. Hence, it's imperative to communicate to <https://www.carminecloak.com/types-of-customers/> the consumer the whole vantage of the offered products and services.

6.2 SWOT for developing strategy

SWOT is the part of the process that really considers competition and competitive set and is absolutely necessary prior to creating brand positioning and marketing strategy, aimed also to increase the contribution of the fisheries sector to the economic development by improving the management and protection of fishery resources.

At this regards, fishery competent Institutions and administration have to play a decisive and crucial role aimed to encourage of investments to improve the performance of fishing fleet and to increase the protection of marine resources.

The SWOT approach has been used since the 1980s to support public policy choices by analysing alternative development scenarios, and today this technique has been extended to territorial diagnostics and the evaluation of plans and programmes.

Fishery sector SWOT analysis is used to evaluate the sector competitive position and to contribute to develop a strategic planning. SWOT analysis assesses internal and external factors, as well as current and future potential.

The proposed SWOT analysis evaluates the internal strengths and weaknesses, and the external opportunities and threats.

The internal analysis identifies resources, capabilities, competencies and competitive advantages, using a functional approach to review finance, management, infrastructure, procurement, production, distribution, marketing, reputational factors and innovation. The internal analysis aims to identify the source of competitive advantage remarking actions that need to be developed in order to remain competitive.

The external analysis identifies market opportunities and threats by looking at the competitors' environment. The external environment is analyzed in terms of political, economic, social, cultural, technological, ecological, demographic, ethical, and regulatory implications.

Strengths

Strengths describe what the fishery sector excels such as strong brand, loyal customer base, a strong balance sheet, unique technology, and so on. Strengths are things that the sector does particularly well, or in a way that distinguishes from competitors. Any aspect of fishery sector can be considered strength if brings a clear advantage.

Weaknesses

Weaknesses stop the sector from performing at its optimum level. They are areas where the sector needs to improve to remain competitive. Weaknesses, like strengths, are inherent features of the sector, focus on people, resources, systems, and procedures.

Opportunities

Opportunities refer to favourable external factors that can give a competitive advantage, for instance changes in government policy related to sector and changes in social patterns, population profiles, and lifestyles can all throw up interesting opportunities. .

Threats

Threats refer to factors that have the potential to harm the sector. For example, overfishing is a threat that can destroy or reduce the natural resources. Other common threats include things like rising costs for materials, increasing competition, labour cost. Threats include anything that can negatively affect the fishery market, such as supply-chain problems, shifts in market requirements, or a shortage of recruits. It's vital to anticipate threats and to take action against them. For instance, if quality standards for fishery products are changing this can be a kind of threat that can seriously damage the fishery sector.



The SWOT matrix is the graphical representation that focuses on the main salient points linked to the programme/project. It generally consists of four squares:

- at the top internal factors (strengths, weaknesses)
- at the bottom, external factors (opportunities, threats)
- on the left are the positive elements (strengths and opportunities)
- on the right the unavoidable internal and external obstacles (weaknesses and threats)

The following matrix shows the contribution that the SWOT analysis can give to prepare a sector strategy that has to be oriented as follows:

- take advantage of opportunities to avoid weakness;
- use strengths to make use of opportunities;
- minimise the weakness to avoid threats;
- use strengths to avoid threats

SWOT MATRIX APPROACH AND GUIDELINES

STRATEGY	WEAKNESSES	STRENGTHS
OPPORTUNITIES	Strategies that take advantage of opportunities to avoid weaknesses (WO)	Strategies that use strengths to make use of opportunities (SO)
THREATS	Strategies that minimise the effect of weaknesses and overcome or avoid threats (WT)	Strategies that use strengths to overcome or avoid threats (ST)

INTERNAL FACTORS	
<p style="font-size: 2em;">S</p>	<p style="font-size: 2em;">W</p>
<p style="font-size: 2em;">O</p>	<p style="font-size: 2em;">T</p>
EXTERNAL FACTORS	

7. ELEMENTS FOR SECTOR ANALYSIS

As already remarked in this document, according to FAO (²²) this are the most important elements of the sector:

- anchovy, sardines and herrings constitute the main cached species in the Mediterranean and Black sea area (576,341 tons in 2016 for the 48.7% of the total production in the area). European anchovy (270,000 tons) and sardine (189,500) are the main landed species in the GFCM area.
- Considering the sub regional capture by species, the main species in the western Mediterranean area are sardines (26%) and European anchovies (13%); in the central Mediterranean the main captured species is sardine (12%); in the Adriatic Sea the main captured species is sardine (42%), followed by European anchovy (19%).
- The Italian catches of anchovy represent the majority of them; however, since 2000, catch from the eastern side, mainly Croatia and Albania, have significantly increased. In the Adriatic Sea landings by weight are dominated by Italy (54%) and Croatia (41%) which account for 95% of all landings in the GFCM sub region, followed by Albania (4%) Montenegro (0.5%) and Slovenia (0.1%).
- In the Adriatic Sea, sardine (72,400 tons, 39.4%), and european anchovy (34,000 tons, 18.5%), are of major importance for Adriatic fisheries, accounting together, for approximately 41% of total Adriatic marine catches and constituting extremely important shared fisheries resources (²³) (²⁴).
- On 2021, according to GFCM the total number of fishing vessels (single trawlers and pair trawlers; purse seiners and surrounding nets without purse line) authorised to fish for small pelagic stocks were 315. The vessels are registered in harbours located in GSAs 17 and 18 or operating in GSA 17 and/or 18 although registered in harbours located in other GSA (December 2021) (²⁵) (Albania, Croatia, Italy, Montenegro, and Slovenia).
- Vessels are single and pair trawlers, purse seiners and those using surrounding nets without purse lines authorized to fish for small pelagic stocks and either Croatia and Italy account for around 61% and 26% of the fleet, respectively (i.e. 87% of the total fleet).
- Anchovy are mainly fished by pelagic trawlers and purse seiners belonging to Italy and Croatia and, to a much smaller extent, Slovenia, Albania and Montenegro. The Italian catches of anchovy represent the majority of them; however, since 2000, catch from the eastern side, mainly Croatia and Albania, have significantly increased.
- In the Adriatic Sea landings by weight are dominated by Italy (54%) and Croatia (41%) which account for 95% of all landings in the GFCM sub region, followed by Albania (4%) Montenegro (0.5%) and Slovenia (0.1%) (²⁶).

²² (FAO, 2018; The state of the Mediterranean and Black Sea Fisheries. GFCM, 172 pp)

²³ FAO. 2021. *GFCM 2030 Strategy for sustainable fisheries and aquaculture in the Mediterranean and the Black Sea*. Rome. <https://doi.org/10.4060/cb7562en>

²⁴ FAO, 2018; The state of the Mediterranean and Black Sea Fisheries. GFCM, 172 pp

²⁵ GFCM - List of all trawlers (single and pair trawlers), purse seiners and surrounding nets without purse line authorised to fish for small pelagic stocks and registered in harbours located in GSAs 17 and 18 or operating in GSA 17 and/or 18 although registered in harbours located in other GSA. Recommendation GFCM/37/2013/1 on a multiannual management plan for fisheries on small pelagic stocks in the GFCM-GSA 17 (Northern Adriatic Sea)

²⁶ FAO, 2018; The state of the Mediterranean and Black Sea Fisheries. GFCM, 172 pp

- In the Adriatic Sea, four species, namely sardine (72,400 tons, 39.4%), European anchovy (34,000 tons, 18.5%), striped venus clam (13 900 tons, 7.6%) and European hake (4 600 tons, 2.5%) account for 68% of the landings.
- Anchovy and sardines are of major importance for Adriatic fisheries, accounting together, for approximately 41% of total Adriatic marine catches and constituting extremely important shared fisheries resources.



8. VALUE CHAIN

The fish supply chain is characterised by the presence of numerous actors and a considerable heterogeneity of structures, relationships and strategic behaviour. Before reaching the final consumer (household, catering, canteens or restaurants), the various products (fish, crustaceans, molluscs) go through a series of intermediate steps, in different numbers and configurations for each product category.

The main actors involved in the supply chain are basically four: fishermen/farmers, fish markets, wholesalers and consumer distribution (formed by traditional distribution - catering, fishmongers and hawkers, and large-scale organised distribution). The distribution system is characterised by a considerable complexity of relationships between all these figures who, within the different supply chain processes, display very uneven behaviour, making it more difficult to achieve an appreciable level of process integration.

The main problems associated with the primary phase of fishing concern, in addition to the seasonality of catches and the marked variability naturally associated with production, the pulverisation of the production structure. The landing points are in fact numerous and highly differentiated in terms of catch capacity, species and sizes, with a consequent reduced ability to relate effectively to market demands.

The results of interviews conducted with fishing enterprises at the local level on first marketing sales flows show that the largest percentages of sales involve fish markets and mainly private wholesalers. In this context, there is a tendency to place catches in the phase immediately following landing, without however seeking opportunities to stabilise supply relationships or to achieve a higher valorisation of their products (Mulazzani et al., 2011).

An important role in the context of seafood marketing is played by wholesale fish markets for the collection and distribution functions of fresh and frozen products. Located close to landing centres, markets are public interest facilities that operate mainly through inputs from producers active in the local area and play an institutional reference function for the purposes of certifying hygienic-sanitary conditions and in price formation.

However, despite the undisputed centrality assumed by wholesale markets in the marketing of fish products, and in particular for small pelagics, only a minority share of catches transits through them. In some cases, in fact, it is the fishermen themselves who take care of the marketing of their products through preliminary verbal agreements with wholesalers and modern distribution buyers.

Given the low quantitative significance of product flows in transit on wholesale markets, it is in fact the wholesalers who convey most of the volumes marketed. They source directly from producers, not only locally, but also nationally and abroad.

In addition, it should be borne in mind that distribution to the final consumer also has its own supply channels and receives its goods mainly from wholesalers, but also buys directly from producers and markets, albeit to a lesser extent.

In the final analysis, the structural characteristics of the supply chain, together with the behaviour adopted by the operators, determine a considerable push towards the segmentation of the distribution channels, so much so that the path of the fish product from catch to consumption is by no means univocal, nor is it possible to identify a standard length.

Value chain analysis is useful to identify and understand the elements to achieve greater market competitiveness through reconfiguration of the various steps (De Blasi et al., 2012).

The reconfiguration or structural changes in the value chain refer to activities such as new primary production processes (such as refrigeration or fish-packing), new distribution channels or a different sales approach, such as a 'shortening' of the chain through the adoption of alternative forms of sale or the verification of the possibility of carving out new market shares.

The fishing value chain is characterised by a large number of 'steps' and appears to be driven by the needs and bargaining power of the main buyers. This is a rather common phenomenon when compared to the broader European seafood context where a process of value concentration in the retail segment and related bargaining power is observed. Indeed, retail chains impose their preferences on producers by demanding a continuous supply of a standardised product with a stable price (Success, 2018).

At the same time, consumer demands multiply and become much more complicated. In fact, the market demands multi-attribute products (varied, fresh, healthy, safe, certified, rich in service, etc.), supplied at a reasonably low cost, presented at the right times and places and offered in the most appropriate quantities and ways.

Therefore, it is now a fact that achieving satisfactory levels of profitability for businesses, especially small ones and those with low levels of capital, requires abandoning a subjectivist perspective and instead adopting integrated development strategies.

In this sense, companies must assess their position in relation to a plurality of actors and factors, as well as their competitors (Porter, 2011). In particular, it becomes crucial to assess the possible forms of coordination or integration in the upstream supply and downstream marketing and promotion phases, with respect to the stage in which they operate.

This change of perspective, which is far from easy to accomplish, while representing a necessary step in the changed competitive environment, cannot be considered as a sufficient element in itself to guarantee companies that adopt it higher profitability conditions than their competitors

According to Porter the competitive advantage is determined by 3 factors:

1. The first factor, decisive in determining the competitive advantage of enterprises, is the protection and enhancement of available resources. With reference to the fisheries sector, resources are primarily represented by the reference environment and fish stocks. Alongside biological resources (so-called basic factors), other 'key' production factors, such as skilled labour, technology and infrastructure (advanced factors) must also be considered.
2. The second factor is the organisational strategy and structure of enterprises. In this respect, we highlight the role of competition in the internal market as an incentive to seek organisational and structural solutions that are appropriate in the changed supply chain context, such as the creation of cooperative, consortium or other coordination relationships to compensate for the reduced size of companies.
3. The third factor is evident in the decisive ability to respond to consumer demands by providing innovative solutions at both process and product level. The new and complex demands of consumers must act as a stimulus for improvement in quality (fishing techniques, preservation, processing, etc.) to achieve competitive advantages that can be exploited in ever wider markets.

From this perspective, the strategic orientations and necessary investments to be undertaken by companies can be grouped into three strategic directions:

- i) Size and coordination are the first key variables for development. The most effective and efficient strategies to be able to respond to the stresses to which modern agrifood systems are subjected are represented by the intensification of the processes of aggregation of actors and competences and by increasing levels of integration, through supply chain coordination activities and district or 'network' type organisational models on the part of enterprises. Such systems, based on the sharing of common objectives and the enhancement of complementarity between the parties, are the most successful in facing the complex and changing challenges at hand.
- ii) The second strategic guideline is differentiation. In the presence of an increasingly segmented market, and as a consequence of the socio-economic diversification of consumers who are increasingly demanding in terms of quality, differentiation becomes the fundamental strategy for maintaining positions within increasingly competitive supply chains and markets. Product differentiation requires a greater push towards innovation and research through new technologies and more efficient production processes.
- iii) Finally, in the age of communication and the development of information technology, maintaining and improving competitiveness requires repositioning companies in relation to organisational and logistics systems, in terms of production techniques, control and certification systems, and the relationship with the service system. The logistics function plays a fundamental role in this system as it is capable of offering rapid, adequate and efficient responses to consumer demands and to the actions of competitors.

To summarise, even in the fisheries sector, the crucial factors of development can be traced back to size and coordination strategies, supply differentiation and process and product innovation.



9. SWOT NARRATIVE

The following SWOT analysis draws a picture of the economic and commercial situation of the small pelagic sector.

Weaknesses

- Fragmentation of supply due to the increasing difficulty demonstrated by the major associations in representing the needs of their member producers.
- Poor foreign market penetration capacity due to product quality (e.g. Spain, size and post-catch quality of anchovies).
- Lack of clear commercial strategies in production.
- Strong price competition for processed products from Morocco, Albania and Tunisia.
- Strong concentration of purchases among a few traders.
- Product not recognisable as origin.
- Lack of attention to post-capture processing and treatment.

Strengths

- Strong presence of the co-operative system.
- High heritage of professional and entrepreneurial skills and experience of the local system.
- Large-scale distribution in double-digit growth in the seafood sector, in terms of number of stalls and quantities sold.
- Quality control initiatives also effectively undertaken by wholesale operators in the sector.

Opportunities

- Awareness of creating forms of supply concentration to enable economies of scale in investments in infrastructure and support services.
- Growing push by producers towards dynamisation of local fish markets to cope with new pressures from buyers
- Steady growth in demand for fresh
- Increasing demand for processed product
- Growing demand for greater 'traceability' of fish product, from producers, processors and distributors and from consumers.
- Good opportunities for diversification towards fishing-tourism, ichthyic-tourism, fishing environmental excursions.
- The seafood product is increasingly becoming a value-added product incorporating a growing component of services (processing, transport, logistics, packaging, trade promotion, consumer education and information campaigns).

Threats

- Financial resources (European, national and local) for investment in the sector are insufficient to act decisively.
- Inefficiency of producer organisations that POs mainly carry out administrative and non-commercial activities, thus exercising a scarcely active role.
- Foreign product more competitive also due to better organisation of transport - logistics.
- The large-scale retail trade favours price over product quality.
- The profitability of fishing activity seems to be declining.
- Technological innovation concentrates on production equipment, which, however, has the effect of producing increased pressure on resources.
- Verticalisation of distribution on wholesale traders (threat of market conditioning in the concentration of services).

9.1 Phase 1 SWOT preliminary templates

The following preliminary matrix remarks the internal factors (strengths and weaknesses) that it is opportune to consider for indentifying strategic actions for sector improvement.

SWOT ANALYSIS TEMPLATE INTERNAL STRENGTHS AND WEAKNESSES			
INTERNAL ENVIRONMENT	Strengths	Weaknesses	Strategy action
Association and offer of products	Strong presence of the co-operative system in the sector)	Fragmentation of supply and increasing difficulty demonstrated by the major associations in representing the needs of their member producers.	Cluster development for demand/offer management
Human resources	High heritage of professional and entrepreneurial skills experience gained in the local system.	Poor foreign market penetration capacity due to product quality (e.g. Spain, size and post-catch quality of anchovies)..	Cluster development for implementing international relationships
Human resources	Fishermen knowledge on fishing gear ecology and environmental impact	Lack of professional training for fishermen on administrative and legal issues.	Implementation of training for fishery enterprises on legal, issues by public Institutions .
Market and distribution	Large-scale distribution in double-digit growth in the seafood sector.	Lack of clear commercial strategies in production	Plan for development dedicated market and marketing according to HACCP/EU standard regulation
Innovation	Quality control initiatives also effectively undertaken by wholesale operators in the sector.	Strong price competition for processed products from Morocco, Albania and Tunisia.	Brand and quality certification process on voluntary bases. Institutional strengthening of food safety to ensure compliance with EU legislation on market.
Innovation	Fishery system in Adriatic scientific research	Limited research and monitoring capacity and an insufficient knowledge on stocks for implementation of management plans	Support to scientific research in cooperation with international Institute
Finance	EU/National fund for fishery support	Low level of economic enterprises resources. High management cost (fuel) and inflation rate in EU	Producers Association for bank credit system loans

The following preliminary matrix remarks the external factors (opportunities, threats) that it is opportune to consider for strategic actions for the fishery sector improvement.

SWOT ANALYSIS TEMPLATE			
EXTERNAL OPPORTUNITIES AND TREATHS			
EXTERNAL ENVIRONMENT	Opportunities	Threats	Strategy action
Market and distribution	Awareness of creating forms of supply concentration to enable scale economies in investments, infrastructure, services.	Financial resources (European, national and local) for investment in the sector are insufficient to act decisively.	Cluster development and PO partnerships
Cluster and PO relationships	Growing push by producers towards dynamisation of local fish markets to cope with new pressures from buyers	Inefficiency of producer organisations on administrative and non-commercial activities, thus exercising a scarcely active role.	Cluster development for supporting PO
Consumer demand	Steady growth in demand for fresh	Foreign product more competitive also due to better organisation of transport - logistics.	Training action on international labels
Marketing	Increasing demand for processed product	The large-scale retail trade favours price over product quality.	Vertical integration
Processing marketing	Growing demand for greater 'traceability' of fish product, from producers, processors and distributors and from consumers.	The profitability of fishing activity seems to be declining.	Vertical integration
Market and distribution	High demand for fishery products from consumers and industry	Lack of knowledge on fishery product benefit for people, women and children	Education actions on Mediterranean diet and fishery products benefit
Finance	EU and national support vs covid pandemic and Ukraine crisis	EU inflation rate and high Bank interest. Cost of fuel	EU/National policy to accelerate the financial support Policy for credit line in terms of interest rate and timeline.
Managerial	Involved Institutions and sector players	Lack of capacity for sector policy analysis to assist decision-making regarding management of resources.	Coordination and planning between several involved Institutions and institutional sector

			players
Innovation	Institutional Co management of natural resources	Overfishing	Development Plan according to Institutional players
Political	Competent Institution attention to the sector	Lack of coordination between involved Institution	Coordination between Involved Institutions
Economic	Good market in coastal area and tourism seasons	High cost for fuel and vessel maintenance	Bank support to the industry
Socio cultural	Coastal communities culture and sea environment knowledge	Negative impact of fishing practices. allowed size (juveniles), non-fishing periods , harvesting of prohibited species,	Media action for sector support and consumption increasing

9.2 Phase 2 SWOT Matrix synthesis and priorities

SWOT		
INTERNAL FACTORS	STRENGTHS <ul style="list-style-type: none"> • EU funds. • Scientific Institute and network • Strong presence of the co-operative system (associating almost all production enterprises in the sector) • High heritage of professional and entrepreneurial skills and experience in the local system. • Large-scale distribution in double-digit growth in the seafood sector, in terms of quantities sold. • Quality control initiatives also effectively undertaken by wholesale operators in the sector. 	WEAKNESSES <ul style="list-style-type: none"> • Low level of economic resources for the most part of enterprises. • Limited research and monitoring capacity and insufficient knowledge on stocks for management plans. • Fragmentation of supply due to the increasing difficulty shown by the major associations to represent the needs of their member producers. • Poor foreign market penetration capacity (e.g. Spain, size and post-catch quality of anchovies). • Lack of clear commercial strategies in production. Strong price competition for processed products from Morocco, Albania and Tunisia. • Strong concentration of purchases among a few traders. Product not recognisable as origin. Lack of attention to post-capture processing and treatment.
EXTERNAL FACTORS	OPPORTUNITIES <ul style="list-style-type: none"> • Awareness of creating forms of concentration to enable scale economies in investments, infrastructure, support services. • Growing push by producers towards dynamisation of local fish markets to cope with new pressures from buyers • Steady growth in demand for fresh • Increasing demand for processed product • Growing demand for greater 'traceability' of fish product, from producers, processors and distributors and from consumers. • Good opportunities for diversification towards fishing-tourism, ichthyic-tourism, fishing 	THREATS <ul style="list-style-type: none"> • Financial resources (European, national and local) for investments in the sector are insufficient to act decisively. • Inefficiency of producer organisations on administrative and non-commercial activities, thus exercising a scarcely active role. • Foreign product more competitive due to better organisation of transport - logistics. • The large-scale retail trade favours price over product quality. • The profitability of fishing activity seems to be declining. Technological innovation concentrates on production equipment, which, however, has the effect of producing increased pressure on resources. • Verticalisation of distribution on wholesale traders (threat of market conditioning in the concentration of

	<p>environmental excursions. The seafood product is increasingly becoming a value-added product that incorporates a growing component of services (processing, transport, logistics, packaging, trade promotion, consumer education and information campaigns).</p>	<p>services).</p>
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9.3 Phase SWOT 3 preliminary expected impact

The following matrix shows the contribution that the SWOT analysis can give to prepare a sector strategy to achieve good impacts on the sector to:

- take advantage of opportunities to avoid weakness;
- use strengths to make use of opportunities;
- minimise the weakness to avoid threats;
- use strengths to avoid threats.

STRATEGY AND IMPACT INTERNAL STRENGTHS AND WEAKNESSES		
INTERNAL ENVIRONMENT	Strategy action	Impact
Finance	EU Fishery fund.	Sector faces constrain related to the low level of economic resources for the most part of sector enterprises and public sector.
Management	Training for institutional staff on technical, legal, environment, food safety.	Fishery administration increases the staff competence giving attention to the Blue economy guidelines and opportunity and to legal, environment, food safety issues.
Training	Implementation of training for fishery enterprises on technical, legal, environment, food safety.	Fishermen improve their knowledge on technical, legal and environmental issues.
Port infrastructure	Development strategy for improving landing and facilities, according to the fishery sector stakeholders demand	Improvement of sector performacne.
Fleet	Eu Fishery fund	Improvement of efficiency and revenues.
Market and distribution	Plan to develop dedicated market and improvement of value chain/marketing	Improvement of consumption and products quality according to HACCP and EU standard regulation
Brand and labelling	Action of increasing income	EU markets.. ..
Innovation	Scientific research in cooperation with international Institute	Improvement of monitoring capacity on stocks for implementation of management plans

**STRATEGY AND IMPACT
EXTERNAL OPPORTUNITIES AND TREATHS**

EXTERNAL ENVIRONMENT	Strategy action	Impact
Competitor environment		
Finance	International credit loan with low interest rate.	Access to credit by fishery enterprises
Managerial	Coordination and planning between the several involved Institutions	Improvement of capacity for sector policy analysis to assist decision-making regarding management of resources.
Port Infrastructures	General plan for ports improving for trade and tourism	Conflict mitigation and integration with other marine sector and activity in the port area.
Fleet	Blue economy development according to the EU high level of interest	Improvement of knowledge on EU financial instruments and utilisation.
Market and distribution	Demand for fishery products	Improvement knowledge on product benefit (people, women children
Brand	Consumer demand for certified products. Training action on international labels	Improvement of local consumer demand for local certified products
Innovation	Institutional Co management of natural resources	Development Plan
Industry environment		
Intensity of competition	Participation to the global market with international standard	New opportunity for export according to the high demand in Mediterranean EU countries.
New entrants	Increasing the aquaculture product consumption	Education on nutrition for increasing the consumption at local level
General environment		
Political	Increasing Institutions attention to the sector.	Improvement of coordination between Involved Institutions
Economic	Improvement of product quality in coastal area,	Increasing of profit and consumption
Socio cultural	Media action for sector support and consumption increasing	Improvement of environmental awareness on the negative impact of illegal fishing practices.,
Environmental	Dissemination on importance of marine national resources and environment protection.	Improvement of policy for comanagement development
Ethical	Sustainability development linked to economic advantage and Ethic code for fishery enterprises	Marketing advantages of sustainability and development of ethic code for fishery enterprises

10. STRATEGIES

The European and Mediterranean fisheries sector is facing a difficult period linked to several causes:

- the state of resources, although showing signs of slight recovery, is still far from the sustainability targets set by the Common Fisheries Policy (CFP);
- the consequent reduction in fishing opportunities made necessary by the achievement of the CFP objectives;
- the increase in operating costs, particularly fuel prices;
- the impact that the new measures required by the ecological transition will certainly have on the cost of inputs aimed at promoting the use of clean technologies.

All these challenges call for a reflection on the management and governance tools that the bodies in charge can adopt and on the operational innovations that operators in the sector are called upon to address.

In this context, the maintenance of adequate income levels for crews and the achievement of company profits require action to be taken mainly on two fronts:

- a) Reduction of marginal production costs through measures to increase efficiency in the use of production factors;
- b) Strategies to reposition supply at the initial marketing and product valorisation stage by acting on the elements along the value chain that contribute to the formation of the final consumer price.

Increasing competitiveness in an increasingly global market, the segmentation of consumption, the demand for more information on product composition and origin, the modest structural size of the fleet which makes it difficult to build up capital for technological and commercial innovation induce the supply side to change organisational and production forms and to explore new development strategies to meet market needs.

Development models and strategies at the company level can be oriented towards interventions to revitalise and expand the sector, which can be outlined in five actions:

ACTION	PRODUCTION AND MARKETING APPROACHES
1	Development of product innovations, introducing differentiated products in the original market to meet the emergence of new needs or current needs with different organisational and technological forms
2	Conquering new markets, which requires substantial volume availability and heavy investments for market entry
3	Focus on the expansion of activities with new products and new markets, requiring a strong effort to reconvert and restructure the sector to allow the exploitation of economies of scale and range
4	Consolidate the market position with forms of generic product promotion in order to penetrate the market more.
5	Encourage the aggregation of supply, with particular reference to the upstream part of the chain, through the development of forms of horizontal integration to enable fishermen to acquire greater contractual and market power.

Among the development strategies that can be used in the fisheries sector, those that assume greater consistency and concreteness are product differentiation and valorisation, as well as the development of forms of integration such as Producer Organisations (POs).

This assumption derives from the fact that an increasingly globalised market, in which barriers are weakening due to widespread and necessary liberalisation policies, determines an increasing competition among enterprises, especially for those products that are poorly differentiated and scarcely characterised by specific attributes, as fresh seafood could be.

In the competitive scenario of the agri-food sector, of particular importance is the growing competition based on product differentiation and on the quality and food safety attributes put in place both by the public authorities (mainly related to the hygienic and economic protection of consumers) and by private players (as a strategic choice) over the last few years.

By way of example, mention may be made both of the strategies adopted by large-scale distribution and oriented towards signalling quality to the consumer through a supply chain brand, and those coordinated by several distributors and aimed at minimising the market risk associated with health crises.

Italy and Croatia, considering the costs of labour and raw materials, the logistic difficulties and the size of the enterprises, cannot compete on the international market by adopting price strategies (which do not have wide margins of competitiveness) and with mass and undifferentiated products whose production costs are always and in any case higher than any product coming from Tunisia, Albania, Morocco or Spain.

Particular leverage must be made on forms of productive, qualitative, territorial and organisational specificity through which to bring out those distinctive elements capable of increasing the unit value of their production, maintaining a competitive position in existing markets and/or opening up to new markets.

Finally, analyses of the structure of consumption show the trend towards a growing fragmentation of demand into increasingly delimited and specific segments; alongside segments characterised by adherence to internationally or globally standardised consumption models, there is a growing demand for quality and differentiated goods.

Producers should be able to supply large quantities of production, with high quality standards, and given the high fragmentation of the sector, strategies of both horizontal integration (between producers) and vertical coordination (along the supply chain) are necessary. In addition, an effective use of marketing actions becomes necessary in order to facilitate market access and to further develop product communication and valorisation in foreign countries.

10.1 Integration and coordination

The dynamics of the marketing and distribution of food products, and of fish products in particular, have undergone a radical transformation in recent years. On the one hand, the growth of modern distribution, which has currently reached a share of around 50% of the fresh seafood product marketed; on the other hand, the increasing presence of imported products with a strong characteristic of standardisation and homologation.

In this context, there is increasing evidence of forms of concentration in the organisation of commercial channels through the formation of purchasing centres or large commercial groups in which the volume of product and standardisation of quality play a major role.

One of the viable strategies is to increase bargaining power through an aggregation of supply, which is often placed on the first-sale market without a real marketing strategy and in a fragmented manner. As also reported in (Success, 2018), pelagic species, compared to demersal and inshore fisheries, being a single target species and seasonal fishery can better adapt to this new context in which retail has a dominant position.

The recourse to forms of aggregation such as Producers' Organisations (POs) (still, unfortunately, not widely diffused in the Italian fishing context) is increasingly demonstrating enormous potentialities in terms of fish valorisation, which can also take place through the conferral, through processing, of added value to a raw material that would otherwise be poorly appreciated from a commercial point of view.

In this sense, the European Commission encourages and promotes forms of aggregation of producers made up of fishermen who freely associate in order to adopt measures to guarantee the best marketing conditions for their products. POs are a fundamental element in the organisation of the seafood market because it is through POs that the industry seeks to organise and stabilise the market.

There are several examples of the valorisation of fish at the local level that require, however, investments in technology and specialised labour. In these cases, the aggregation of supply can create economies of scale without which, production costs (especially labour) would make the investment unprofitable.

The main advantage of these organisations is that they allow the producers themselves to adapt production to market demand. The Community has encouraged their creation since the inception of the Common Fisheries Policy in 1970.

POs must fulfil a number of requirements to be recognised by their respective Member States, namely:

- they must represent a minimum proportion of the economic activity in the area they intend to cover;
- they must not discriminate on the basis of the nationality or geographical location of potential members;
- they must fulfil the legal conditions required by the Member State concerned.

To be representative, the organisation must count among its members a minimum percentage of the vessels operating in the area or ensure that a minimum quantity of its members' production is sold in the same area.

Since POs are in a strategic position between production and the market, according to the Fisheries CMO they can implement measures for the rational management of resources, add value to fish products and contribute to market stability. Giving more responsibility to POs for self-regulation in the management of available resources helps to ensure better compliance with market requirements and less pressure on stocks.

The objective is to avoid catching fish for which there is little or no demand by encouraging the planning of fishing activities. In order to conserve fish stocks and remain competitive, producers

must anticipate market requirements in terms not only of quantity but also of regularity of supply. According to the new regulation, POs must draw up and implement annual operational programmes indicating measures to adjust catches to market needs.

This market approach is clearly simpler for aquaculture products, both intensive and extensive) whereas for fisheries products, dedicated governance policies for co-management of resources are needed.

In agreement with their members, POs can also distribute the fishing activities of their vessels over time. This avoids a race for quotas and allows producers to spread their landings over the year, avoiding drastic price reductions and ensuring a more stable supply to the market. More regular quality landings will benefit producers in terms of price, traders in terms of supply and consumers in terms of monetary value.

Increased membership of fishermen in producer organisations, and closer cooperation between these and other market players, would make market management of fisheries products more effective for the benefit of all concerned.

10.2 Quality

Differentiation makes it possible to satisfy certain customer needs in an unequalled manner. These needs can be satisfied through the product itself or through services provided by the company. The concept of differentiation is closely linked to the notion of quality, understood both as an objective aspect, i.e. defined by attributes or physical properties of products, and as a subjective aspect, which takes the form of judgements that reveal the superiority and excellence of products (Pilati, 2004).

Hence, the quality of a good can be defined by a series of nutritional, hygienic, organoleptic, usage and psycho-social attributes such as to establish the degree of substitutability or independence between products based on the presence or absence of a given characteristic. In the same context, from a subjective point of view, the consumer interprets attributes by making a judgement on the basis of preferences towards goods.

But the definition of quality is not always uniform among the operators at different levels along the chain, as it is subject to change when it is the consumer or the producer who enunciates it.

For the producer, quality is based on the intrinsic characteristics of the product, whether organoleptic, nutritional or hygienic-sanitary, linked to the environment, the variety, the intensity of the use of labour, without giving importance to the intangible quality inherent in the image, the security of supply, the brand

For industry, product quality is determined by the correspondence of attributes to the specific needs of the manufacturing process and the type of service incorporated in the product, just as for organised distribution, quality is based on the guarantee of uniform standards, the services incorporated and the distinctiveness demanded by the consumer.

At this stage, product quality is understood as a means of differentiation and segmentation to meet consumer needs. For the latter, quality is identified with the judgement expressed towards the set of attributes that characterise the product, whether they are material such as nutritional, organoleptic, hygienic and sanitary characteristics, or immaterial such as ease of use, the label, the packaging, the method of consumption.

Therefore, quality is an important factor in product differentiation and in increasing the variety of supply, which in turn contributes to increasing the ability to better respond to market needs and to better match consumer preferences (De Stefano, 2000).

In addition, it constitutes a fundamental marketing tool to attribute specificity and reputation to a product vis-à-vis the consumer and to enable it to be more highly valued in the markets. Therefore, differentiation, purposely created by the strategic action of public or private bodies, acting through the support of targeted marketing policies, reduces the substitutability of demand with respect to competing products and increases their unit value.

The concept of quality in fish products is very complex, both because it involves a series of factors relating to the intrinsic characteristics of the product (organoleptic, nutritional and morphometric aspects) and because it is intertwined with issues such as food safety and hygiene control systems.

The qualitative characteristic par excellence in fresh fish products remains freshness, the maintenance of which requires knowledge of the phases that characterise the supply chain, such as the type of feeding and habits of the animal if it is farmed fish, or the method of capture and control of the cold chain, for the maintenance of the nutritional and organoleptic characteristics of the product, knowledge of the area of capture and the packaging and processing processes if it is caught.

Recognition of the quality of fish products can follow different paths, such as visual and tactile ones such as verifying freshness by analysing the gill colour, the lustre of the livery, the protruding eye, or by verifying muscle turgidity; or cognitive ones by verifying the origin and traceability of the production, processing and packaging process.

There is no doubt that the pursuit of a high standard of quality requires the involvement of operators at all levels of the chain so as to make all the production links responsible and adequately motivate them in order to guarantee both the consumer and the producer through the enhancement of the product.

It should be emphasised that the quality attributes offered, if they are decisive for the purposes of differentiation, must be made known to the buyer. It is often the case that there is no uniform distribution of information among the agents on the market; therefore, the price that is determined loses its balancing function due to the different concept of quality to which consumers and producers refer.

The consumer bases his choices on the expectations of consumption of a given good expressed in terms of average expected quality, so higher prices are attributable to better products based on the buyer's perception and expectations of that product.

Conversely, the producer offers the good based on the actual quality of the product and its cost. If there is no correspondence between the degree of quality expected by the consumer and that reported by the producer, the exchange is reduced and prices are lowered, resulting in additional costs for the consumer and producer and consequences for food safety (Akerlof, 1970).

In the case of information asymmetry, the actions that the company can try to carry out to differentiate its product and to obtain recognition of higher quality levels from the market can be associated with public intervention; in this case, the objective is to protect the consumer by increasing market transparency through the regulation of the flow of information from producer to

consumer through the definition of quality standards, certifications, controls, definition of collective brands, labelling rules (De Stefano, 2000).

In this context, among the possible viable strategies for the differentiation and enhancement of regional fish production we can indicate the implementation of brand policies.

10.3 Branding

The development of brand policies is a commercial tool for product qualification and differentiation, as well as for communication and information between companies and consumers.

The objective is to expand the market for products and increase their price, as well as reduce the elasticity of substitution of demand with respect to competing products. This requires a strong commitment to identifying and safeguarding the specificities and related attributes of a product or group of products in order to ensure a competitive advantage in the markets and to increase the added value achievable by producers. This instrument accentuates the process of differentiation and distinctiveness, while at the same time increasing transparency and information on the market and cohesion between partners.

The quality mark, which, in its various forms and purposes, defines and illustrates the characteristics of a product in such a way that they are recognised and appreciated by the consumer, mainly performs two functions: 1) it links a product to a specific territory or to specific qualitative characteristics, such as to determine the distinctiveness and uniqueness of a product; 2) it facilitates the transfer of information to the market such as to facilitate the recognition of the level of the product's qualitative attributes by the consumer and thus the degree of appreciation of the same.

The brand constitutes the monopolistic factor of product differentiation that makes manifest the overcoming of the condition of product homogeneity in order to achieve market segmentation by initiating a hierarchisation of supply, such as to maintain a satisfactory price level.

Differentiated products, characterised by specific quality attributes determine competitive advantages, stemming from the recognition of the superior quality level that induces a price differential. In fact, consumers recognise the existence of territorial product differentiation factors, associating product quality with the specific climatic, environmental and production conditions of a given area. In other words, branded products escape the logic of a competitive market where the competitive factor is price.

Furthermore, a viable solution for producers to implement a differentiation strategy and increase the profitability of the sector is the valorisation of the product through sustainability certification.

The adoption of sustainability and/or origin labels can, in fact, support operators in outlining the traceability of the local catch (Zander et al., 2021) and can act as leverage for a greater and better placement of the product both on the Ho.Re.Ca. channel (which now increasingly appreciates the certified sustainability of seafood products) and on export markets, especially on those markets where sensitivity to sustainability certification is more pronounced.

Entering new markets (particularly foreign ones) is, however, linked to production volumes and the size of the catch.

It should be pointed out that adherence to the standard by operators is the result of a balance between benefits and expected commitments. It is therefore a matter of assessing how adherence to this form of coordination between operators for the implementation of the collective private standard will develop. The assessment of the strategic interest of the operators in adhering to the label therefore requires an analysis of the expected benefits and commitments associated with its implementation.

11. CONCLUSIONS

The difficulties that the fisheries sector is now facing are related on the one hand to the reduction in fishing opportunities, made necessary by the achievement of the CFP objectives, and on the other hand to the increase in operating costs, in particular fuel prices. Moreover, the new measures required by the ecological transition, which aims to promote the use of clean technologies, will certainly affect the cost of inputs.

The maintenance of adequate income levels for crews and the achievement of company profits undoubtedly require action to reduce marginal costs with measures to increase the efficiency of factor utilisation.

Above all, however, also in relation to the analysis carried out as part of the ITACA Project, new strategies are needed to reposition supply in the initial marketing and product valorisation phase by acting on the elements that, along the entire value chain, contribute to the formation of the final price to the consumer.

The direct acquisition of the quantity and composition of the landed fish disaggregated at a monthly or daily level makes it possible to identify the dynamics of the flow of product in the different periods of the year, providing a starting point for further in-depth analysis.

This makes it possible to identify the existence of a relationship between the product landed and the suitability for consumption of certain species throughout the year. Specifically, it highlights the existence, or otherwise, of a significant correlation between the availability of product at certain times of the year and consumer demand based on their knowledge of seasonality and eating habits.

11.1. Narrative

i) CONCENTRATION OF SUPPLY

One of the viable strategies for fishing enterprises is that of supply concentration aimed at increasing bargaining power through the concentration of supply.

Associations and aggregations such as Producers' Organisations (POs) are increasingly demonstrating enormous potential in terms of enhancing the value of the catch, which can also be achieved by conferring, through processing, added value to a raw material that would otherwise be poorly appreciated from a commercial point of view. (horizontal co-ordination with reunification within a single decision-making unit of 'equal' phases of production processes previously carried out by autonomous enterprises. POs can be a key element in the organisation of the seafood market because it is through POs that the industry seeks to organise and stabilise the market. The main advantage of these organisations is that they allow the producers themselves to adapt production to market demand. However, investments in technology and skilled labour are often required and in these cases, the aggregation of supply can create economies of scale in the absence of which, production costs (labour) costs would make the investment unprofitable.

ii) MARKET COORDINATION

Vertical coordination allows alignment of distinct and contiguous phases of the production process through more or less close agreements between autonomous decision-making units. Through vertical co-ordination POs could perform one or more 'new' functions 'upstream' (e.g. co-management of resources, negotiating tables, sources of financing; promotional campaigns; equipment and maintenance) and 'downstream' (e.g. processing), so as to improve the co-ordination of the different phases of a given production-industrial process.

Horizontal and vertical co-ordination can be merged in circular co-ordination, whereby the same phases are brought into alignment with the previous and/or next phase. An example of vertical integration is given by a group of fishing enterprises that unitedly realise and manage a processing plant, where before this realisation the individual enterprises individually sold the fishery products to other processors. POs are in a strategic position between production and the market and can implement measures for rational resource management, add value to fish products and contribute to market stability. Giving POs more responsibility for self-regulation in the management of available resources helps to ensure better compliance with market requirements and less pressure on stocks. In order to conserve fish stocks and remain competitive, producers must anticipate market requirements in terms not only of quantity but also of regularity of supply. The POs on the other hand must be ready to face the challenges of quality, which is an important factor in product differentiation and increasing the variety of supply, which in turn contributes to increasing the ability to better meet market requirements and better match consumer preferences .

iii) QUALITY

Quality is thus determined by the correspondence of attributes to the specific needs of the process and the type of service incorporated in the product, just as for organised distribution, quality is based on the guarantee of uniform standards, the services incorporated and the distinctiveness demanded by the consumer. At this stage, product quality is understood as a means of differentiation and segmentation to meet consumer needs. For the latter, quality is identified with the judgement expressed towards the set of attributes that characterise the product, whether they are material such as nutritional, organoleptic, hygienic and sanitary characteristics, or immaterial such as ease of use, the label, the packaging, the mode of consumption. As a marketing tool, it attributes specificity and reputation vis-à-vis the consumer and reduces substitutability with competing products and increases their unit value.

iv) TRACEABILITY AND TRANSPARENCY

On the other hand, the mismatch between the degree of quality expected by the consumer and that reported by the producer reduces the exchange and leads to additional costs for the consumer and producer and consequences for food safety. Crucially, the aim is to protect the consumer by increasing market transparency by regulating the flow of information from producer to consumer through the definition of quality standards, certifications, controls, definition of collective brands, labelling standards

v) BRAND POLICIES

Brand policies qualify and differentiate products, and are based on communication and information between companies and consumers. On the demand side, it is crucial to increase the transparency and quality of communication with consumers. The objective is to expand the market and increase its price, as well as to reduce the elasticity of substitution of demand with respect to competing products. This requires a strong commitment to identifying and safeguarding the specificities of products, in order to ensure a competitive advantage in the markets and to increase the added value achievable by producers. This instrument accentuates the process of differentiation and increases transparency and information on the market and cohesion between partners. The functions of a quality mark that defines and illustrates the characteristics of a product in such a way that they are recognised and appreciated by the consumer are i) product and territory or specific quality characteristics,

such as to determine the distinctiveness and uniqueness of a product; ii) transfer of information to the market that facilitates the recognition of the level of the product's quality attributes by the consumer and thus the degree to which the product is appreciated.

A valid solution for producers to implement a differentiation strategy and increase the profitability of the sector is the valorisation of the product through sustainability certification. The adoption of sustainability and/or origin labels can, in fact, support operators in outlining the traceability of the catch and act as leverage for a greater and better placement of the product both on the Ho.Re.Ca. ⁽²⁷⁾, which now increasingly appreciates the certified sustainability of seafood products, and on export markets, especially on those markets where sensitivity to sustainability certification is more pronounced. Entering new markets, particularly foreign ones, is however linked to production volumes and the size of the catch.

It should be pointed out that adherence to the standard by operators is the result of a balance between benefits and expected commitments. It is therefore a question of assessing how adherence to this form of coordination between operators for the implementation of the collective private standard will develop. The assessment of the strategic interest of operators in adhering to the label therefore requires an analysis of the expected benefits and commitments associated with its implementation.

11.2 Proposed Goals

The analysis leads to the identification of five key goals that are set out below and are linked to develop marketing strategies, aimed to identifying the business' unique value in relation to competitors.

As already remarked, market positioning strategy requires focus and a commitment to a specific niche, idea, or target audience for creating a positive image of products and service in the customers' minds, claiming the position in the competitive market landscape.

Goal 1:	Marketing management improvement
Objective:	CONCENTRATION OF SUPPLY AND ORGANISATIN OF SEA FOOD MARKET
Recommendation:	Associations and aggregations such as Producers' Organisations (POs) are demonstrating enormous potential in terms of enhancing the value of the catch, which can be achieved by conferring added value to a raw material that would otherwise be poorly appreciated from a commercial point of view (horizontal co-ordination with reunification within a single decision-making unit of 'equal' phases of production processes previously carried out by autonomous enterprises. POs can be a key element in the organisation of the seafood market because it is through POs that the industry seeks to organise and stabilise the market. The main advantage of these organisations is that they allow the producers themselves to adapt production to market demand. However, investments in technology

²⁷ Horeca is a trade term referring to the hotel industry. It stands for hotellerie-restaurant-café (hotel, restaurant, bar), but the third word is sometimes identified with catering. The term Horeca is used to refer to the distribution of a product at hotels, restaurants, trattorias, pizzerias, bars and the like, catering. In practice, the Horeca channel is represented by those who, by profession, administer food and beverages, while the large-scale retail trade (GDO) or shops are those who trade in food and beverages.

and skilled labour are often required and in these cases, the aggregation of supply can create economies of scale in the absence of which, production costs (labour) costs would make the investment unprofitable.

This recommendation is coherent with the Agenda 2030 for sustainable development (General Assembly resolution of 25 September 2015):

- Goal 1. End poverty in all its forms everywhere;
- Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- Goal 5. Achieve gender equality and empower all women and girls;
- Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all;
- Goal 12. Ensure sustainable consumption and production patterns;
- Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

This recommendation is also coherent with the GFCM 2030 Strategy:

- Thriving communities and better livelihoods right along the value chain, through new ways for improving revenues, increasing the value of catches and diversifying activities for making fisheries sustainable in the long term,. On shore, greater involvement in local management decisions and stronger social protection structures will both contribute to making fisher livelihoods more secure.

Goal 2: Optimum utilisation and equitable distribution

Objective:

MARKET COORDINATION

Recommendation

Vertical coordination allows alignment of distinct and contiguous phases of the production process through more or less close agreements between autonomous decision-making units. Through vertical co-ordination POs could perform one or more 'new' functions 'upstream' (e.g. co-management of resources, negotiating tables, sources of financing; promotional campaigns; equipment and maintenance) and 'downstream' (e.g. processing), so as to improve the co-ordination of the different phases of a given production-industrial process. Horizontal and vertical co-ordination can be merged in circular co-ordination, whereby the same phases are brought into alignment with the previous and/or next phase. An example of vertical integration is given by a group of fishing enterprises that unitedly realise and manage a processing plant, where before this realisation the individual enterprises individually sold the fishery products to other processors. POs are in a strategic position between production and the market and can implement measures for rational resource management, add value to fish products and contribute to market stability. Giving POs more responsibility for self-regulation in the management of available resources helps to ensure better compliance with market requirements and less pressure on stocks. In order to conserve fish stocks and remain competitive, producers must anticipate market requirements in terms not only of quantity but also of regularity of supply. The POs on the other hand must be ready to face the challenges of quality, which is an important factor in product differentiation and increasing the variety of supply, which in turn contributes to increasing the ability to better meet market requirements and better match consumer preferences .

This is also in line and coherent with the SDG's, as follows:

- Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all;

- Goal 12. Ensure sustainable consumption and production patterns;
- Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

This recommendation is also coherent with the GFCM 2030 Strategy:

- The 2030 Strategy takes an integrated approach towards the many threats to the marine environment, working to conserve biodiversity and provide maximum sustainably yields, on the basis of enhanced oriented research and data collection in support of science-based fisheries management plans.
- Bringing together a hugely diverse range of actors, from governments and fishers to academia and NGOs, all of whom have important contributions to make to shared objectives..

Goal 3: Marine fleet management

Objective:

QUALITY IMPROVEMENT

Recommendation

Quality is thus determined by the correspondence of attributes to the specific needs of the process and the type of service incorporated in the product, just as for organised distribution, quality is based on the guarantee of uniform standards, the services incorporated and the distinctiveness demanded by the consumer. At this stage, product quality is understood as a means of differentiation and segmentation to meet consumer needs. For the latter, quality is identified with the judgement expressed towards the set of attributes that characterise the product, whether they are material such as nutritional, organoleptic, hygienic and sanitary characteristics, or immaterial such as ease of use, the label, the packaging, the mode of consumption. As a marketing tool, it attributes specificity and reputation vis-à-vis the consumer and reduces substitutability with competing products and increases their unit value.

This approach is coherent with the SDG's, as follows:

- Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all;
- Goal 12. Ensure sustainable consumption and production patterns;
- Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

This recommendation is also coherent with the GFCM 2030 Strategy:

- Thriving communities and better livelihoods right along the value chain. The GFCM is supporting new ways to help fishers improve their revenues, for increasing the value of their catches, diversifying their activities and for making fisheries sustainable in the long term.

Goal 4: Value chain improvement
Objective: TRACEABILITY AND TRASPARENCY
<p>Recommendation:</p> <p>The mismatch between the degree of quality expected by the consumer and that reported by the producer reduces the exchange and leads to additional costs for the consumer and producer and consequences for food safety. Crucially, the aim is to protect the consumer by increasing market transparency by regulating the flow of information from producer to consumer through the definition of quality standards, certifications, controls, definition of collective brands, labelling standards</p> <p>This approach is coherent with the SDG's, as follows:</p> <ul style="list-style-type: none"> • Goal 12. Ensure sustainable consumption and production patterns; • Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development <p>This recommendation is also coherent with the GFCM 2030 Strategy:</p> <ul style="list-style-type: none"> ➤ Thriving communities and better livelihoods right along the value chain. The GFCM is finding new ways to help fishers improve their revenues, from increasing the value of their catches to diversifying their activities and by making fisheries sustainable in the long term, the revenues will be sustainable too. On shore, greater involvement in local management decisions and stronger social protection structures will both contribute to making fisher livelihoods more secure.

Goal 5: Value added and market management
Objective: BRAND POLICIES
<p>Recommendation:</p> <p>Brand policies qualify and differentiate products, and are based on communication and information between companies and consumers. It is crucial to increase the transparency and quality of communication with consumers. The objective is to expand the market and increase its price, as well as to reduce the elasticity of substitution of demand with respect to competing products, safeguarding the specificities of products to ensure a competitive advantage in the markets and to increase the added value achievable by producers. This instrument accentuates the process of differentiation and increases transparency and information on the market and cohesion between partners. A valid solution for producers to implement a differentiation strategy and increase the profitability of the sector is the valorisation of the product through sustainability certification. It should be pointed out that adherence to the standard by operators is the result of a balance between benefits and expected commitments. It is therefore a question of assessing how adherence to this form of coordination between operators for the implementation of the collective private standard will develop. The assessment of the strategic interest of operators in adhering to the label therefore requires an analysis of the expected benefits and commitments associated with its implementation.</p> <p>This approach is coherent with the SDG's, as follows:</p> <ul style="list-style-type: none"> • Goal 12. Ensure sustainable consumption and production patterns; • Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development <p>This recommendation is also coherent with the GFCM 2030 Strategy:</p> <ul style="list-style-type: none"> ➤ Thriving communities and better livelihoods right along the value chain. The GFCM is finding new ways to help fishers improve their revenues, from increasing the value of

their catches to diversifying their activities and by making fisheries sustainable in the long term, the revenues will be sustainable too. On shore, greater involvement in local management decisions and stronger social protection structures will both contribute to making fisher livelihoods more secure.



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ANNEX OVERVIEW ON FISHERY CERTIFICATION AND STANDARD

Fish certification standards are applicable to various types of fisheries organisations; the best known are Friend of The Sea and MSC Marine Stewardship Council. These standards include in their requirements aspects of food safety, environmental sustainability, animal welfare, decent work, and chain of custody. The standards are private in nature.

The MSC Fisheries Standard



The Marine Stewardship Council Certification is an independent, globally operating organisation founded in 1997 by Unilever and WWF for the responsible management of fish stocks.

Fields of application of MSC Certification:

MSC Fishery - Applicable to saltwater and freshwater fisheries;

MSC Chain of Custody - Applicable to the supply chain of products originating from sustainable fisheries or farming facilities. Can also be applied to related services (CoC).

The MSC Fisheries Standard is used to assess if a fishery is well-managed and sustainable. The Standard reflects the most up-to-date understanding of internationally accepted fisheries science and management. We review and develop the MSC Fisheries Standard in consultation with scientists, the fishing industry and conservation groups.

When a fishery is successfully certified to the Fisheries Standard, its certified catch can be sold with the blue MSC label. Certification to the MSC Fisheries Standard is voluntary. It's open to all fisheries who catch marine or freshwater organisms in the wild. This includes most types of fish and shellfish. Fisheries are assessed by accredited independent certifiers (called Conformity Assessment Bodies (CABs) – also called certification bodies), not the MSC.

The MSC Fisheries Standard has three core principles that every fishery must meet.

- i) Sustainable fish stocks: fishing must be at a level that ensures it can continue indefinitely and the fish population can remain productive and healthy.
- ii) Minimising environmental impact: fishing must be managed carefully so that other species and habitats within the ecosystem remain healthy.
- iii) Effective fisheries management: fisheries must comply with relevant laws and be able to adapt to changing environmental circumstances.

The Fisheries Certification Process (FCP) is the instruction manual for Conformity Assessment Bodies (CABs) and defines the processes they must follow when assessing a fishery against the Fisheries Standard. The FCP also defines the criteria which determine whether a fishery is eligible for certification, known as the scope requirements.

The FCP ensures that the assessment process is robust, transparent and credible, and that the Standard is applied equally to all fisheries, regardless of species, fishing method, environment or size.

The MSC certification requirements for both fisheries and chain of custody are defined in a series of documents that outline specific requirements, guidelines and methods to enable consistency and compliance in assessments.

The Fisheries Certification Process is regularly reviewed- An updated version of the Fisheries Certification Process was published in March 2020 and came into effect in September 2020. (<https://www.msc.org/standards-and-certification/fisheries-standard>)

An MSC certificate covers a vessel, fleet or individual operator with dedicated gears on a particular target stock. All these aspects are taken into account during a fishery assessment to the MSC and is referred to as the Unit of Certification or UoC.

Vessels, fleets or individual operators fishing outside of the confines of their certification, would not be classed as MSC certified and therefore could not sell this catch under the MSC ecolabel. Vessels linked to fishing operations that are covered by an MSC certificate are publicly available through a vessel list document submitted in the MSC website

Marine Stewardship Council does not the certification directly; but it work from an independent assessor. It can sometimes take years of hard work to improve before a fishery can become MSC certified. Even when a fishery gains certification, this is only the start of the journey. Every year, assessors carry out surveillance reports to check on progress and re-assess fisheries every five years.

Under our Standard requirements, fisheries must improve continuously until they reach what we consider to be the best practice in sustainability. If fisheries do not make the required improvements within a specified time, they can have their certificates suspended until they reach the level of performance required by the MSC Standard.

The MSC blue fish label is only applied to wild fish or seafood products from fisheries that have been certified to the MSC Standard. Chain of Custody Standard for supply chain businesses ensures MSC certified fish and seafood is separated from that which is non-certified and is clearly labelled.

More than 7,000 businesses worldwide are MSC Chain of Custody certified, including over 48,000 sites from supermarkets and restaurants to processors, distributors and warehouses. These businesses are audited on an annual basis and subject to unannounced audits, to ensure they are conforming to requirements on traceability, labelling and separation.

The MSC also sometimes commissions independent DNA tests on MSC labelled products to guard against fish fraud, ensuring MSC certified seafood has not been substituted for a different – possibly endangered – species.

CANTABRIAN SEA PURSE SEINE ANCHOVY FISHERY

Certifier : Bureau Veritas Certification
Certified status : Certified
Certified since : 24 Mar 2015
Certificate expires : 19 Oct 2025
Conformity Assessment Body (CAB) Bureau Veritas Certification Holding SAS

The historical evolution of anchovy catches in ICES Subarea 8 by country shows that this stock has been targeted by the Spanish and French fleets since the 40s. However, the Spanish purse-seine fleet is the main fleet targeting anchovy in the Bay of Biscay. The Spanish fishery developed in the 1950s and declined from the early 1970s until the mid-1980s, when a French fishery developed (Villamor et al., 2008). Landings have varied greatly over the time series, likely the result of stock abundance variability. The fishery was closed on the 1st July 2005 and re-opened in June 2010 due to very low stock abundance. Since the reopening of the fishery catches have been increasing following the different ICES advices. The Spanish purse-seiner fleet is a multispecies fleet that traditionally distributes its activity across three seasons: the mackerel season (from approximately February to May), the anchovy season (from around April to June) and the tuna season (from approximately June to November). Nevertheless, some fisheries overlap for certain periods of the year. The fleet also targets coastal species such as sardine, horse mackerel and chub mackerel, among others, during the tuna season. In the second semester the majority of the vessels change fishing gear from purse seine to bait boat, and to a lesser extent to trolling gear, to catch albacore and bluefin tuna (Andrés & Prellezo, 2012). The French fleet operating in the anchovy fishery belong to two main segments pelagic trawlers (12-18 m and 18-24 m, mainly during the second half of the year) and purse seiners (12-18 m, operating in autumn) (12-18 m; STECF, 2014). The client group includes all the vessels integrated in the Basque producer's organizations (OPEGUI and OPESCAYA) which are at the same time members of the Basque Federations "Federación de Cofradías de Guipuzcoa & Federación de Cofradías de Vizcaya" and in the following producer's organizations: OPACAN, Sociedad Cooperativa Gallega del Mar Santa Eugenia and CERCOASTUR aggrupation. An up to date vessel list can be found on the MSC website, or by contacting Bureau Veritas. This Public Certification Report (PCR) provides details to the client, peer reviewers, stakeholders and to the general public on the outcome of the assessment of the Cantabrian Sea Purse Seine Anchovy Fishery against the MSC Fisheries Certification Process Version 2.1. The assessment team has addressed the follow-up comments from Peer Reviewers and the MSC Technical Oversight received during the public comment period that followed the publication of the PCDR in order to elaborate the FDR. The current PCR is published after the 15 UK working days objection period. No objections were received. This report was prepared by Bureau Veritas Iberia. The assessment team for this fishery since the site visit was comprised by Luis Ambrosio (covering Principle 3), Lisa Borges (covering Principle 1) and Gemma QuílezBadia (who acted as team leader and expert covering Principle 2). A short BIO of each of them is published in the Announcement of the fishery.

The following guilds ("cofradías") are included in the certificate of the fishery as part of the client group: • Cofradía de Bermeo • Cofradía de Lekeitio • Cofradía de Ondarroa • Cofradía de Getaria • Cofradía de Pasaia • Cofradía de Hondarribia • Cofradía de Laredo • Cofradía de Colindres • Cofradía Castro Urdiales • Cofradía Santoña • Cofradía de San Vicente de la Barquera The MSC fishery certification scope includes the first sale done at the auction points ("lonjas"), i.e., as the abovementioned guilds are included in the client group, it includes the change of ownership when one of these guilds buys the fish from a boat. However, once a Cofradía issues the sales note before the next user, i.e. the company that purchases the fish, they will be required to have a valid chain of custody certificate whenever they want to market the product bought with an MSC certification. Moreover, the following warehouses for storage (freezer) and distribution activities are included in the certificate of the fishery as part of the client group: • Cofradía de Bermeo, Muelle Bidea, 9, 48370 Bermeo, Vizcaya. • Frigoríficos de Bermeo. Polígono Lamiaran Aramburu, 48360. Mundaka, Vizcaya. In order to guarantee the origin of the fish and the certificate status, both the fish auction points and vessels joining the certificate will need to comply with the following points: • The purchases of the certified anchovy at the Guipuzcoa auction points will need to have attached a specific certificate issued by OPEGUI, whereas the purchases of the certified anchovy from the actions points of Vizcaya, Cantabria, and Asturias will need to have attached a specific certificate issued by the auction points included in the certificate. • All the fish auction points that issue the

certificates referred to will need to inform the certificate holders about the quantity of certified anchovy (Kg) and the average price per buyer. • Those auction points not included in the certificate of the fishery, will need to be certified against the MSC Chain of Custody Standard. To sum up, the first sale, i.e. when the fish auction sells to authorised buyer, is covered by the fishery certificate being the trading and storage activity the activities covered by the scope. The change of ownership, and therefore the point where Chain of Custody (CoC) commences, will require chain of custody certification.

FRIEND OF THE SEA



Friend of the Sea is a non-governmental organisation, which was established in 2008. Its aim is to safeguard the marine environment and its resources by incentivising a sustainable market and implementing specific conservation projects. Friend of the Sea certification program allows assessment of fisheries products according to sustainability criteria and requirements.

E' uno dei principali sistemi internazionali per la certificazione di prodotti ittici. Alla base della certificazione vi è la Politica Comune della Pesca dell'Unione Europea.

La certificazione si fonda sui principi del rispetto ambientale, conservazione e sfruttamento sostenibile delle risorse marine, metodi di pesca selettivi e risparmio energetico.

Tra i criteri dello standard di certificazione Friend Of The Sea

Protezione di stock sovra sfruttati o inseriti nella Lista Rossa IUCN delle specie minacciate, in conformità alle linee guida della FAO, enti regionali per la pesca e autorità nazionali marine;

Nessun impatto su habitat critici (mangrovie, zone umide e altri);

Rispetto dei parametri ambientali delle acque reflue;

Riduzione delle catture accessorie e delle fughe;

Nessun utilizzo di agenti anti-vegetativi e ormoni della crescita;

Capacità di raccogliere tutte le informazioni inerenti la fase di pesca e/o di allevamento;

Sistema di tracciabilità strutturato per garantire il mantenimento della catena di custodia;

Metodi di pesca selettiva (max 8% di scarti);

Rispetto delle norme (TAC, no INN, nessun FOC, dimensioni delle maglie, dimensioni minime, MPA e altre);

Efficientismo energetico e della gestione dei rifiuti;

Responsabilità sociale.

The certification, granted following an audit by independent certification bodies, ensures that a product complies with the sustainability requirements.

Andrexport SARL

Species: *Engraulis encrasicolus*

Gear type: Purse seine

Fishing Area: FAO Area 34.1. Atlantic Eastern Central

Fishery management: The Institut National de Recherche Halieutique (INRH) is the scientific institute in charge of assessing the stocks of small pelagics in Morocco (<http://www.inrh.ma/petits-pelagiques>).

The Fishery Committee for the Eastern Central Atlantic (CECAF) keeps under review the state of the fishery resources within its area of competence and establishes the scientific basis for regulatory measures leading to the conservation and management of marine fishery resources.

The strategic plan developed by Morocco for small pelagic stocks guarantees sustainable exploitation of this resource. Launched in February 2010, the plan has introduced management measures to manage permitted fishing areas, species and gears, operating procedures for the different fleets and measures to monitor catches.

Stock Status: According to the INRH (2012), the European anchovy stock in FAO area 34.1 is estimated to be fully exploited (<http://www.inrh.ma/fr/petits-pelagiques/diagnostic-de-letat-dexploitation-des-stocks>).

According to the latest CECAF report of the Scientific Sub-Committee (2015), the *E. encrasicolus* stock in the North Fishery is overexploited and the biomass level is unknown.

Habitat impact: This fishery uses purse seines, which do not interact with the seabed and hence have no negative impact.

Discards: The local law sets the discard limit to 2%. Moroccan authorities control and weight each landing.

Dalyan Su Unleri ve Gıda San Nak

Species: *Engraulis encrasicolus*

Gear type: Purse seine

Fishing Area: FAO 37, Subarea 4.2 Black Sea (GSA 29)

Fishery management: The General Fisheries Commission for the Mediterranean (GFCM) is the regional fishery management organisation in charge of the assessment of the size and state of European anchovy stocks in the Mediterranean Sea and the Black Sea (FAO 37). The fisheries operations in Turkey are regulated by the Turkish Ministry of Food, Agriculture and Livestock.

Stock Status: There are uncertainties about the stock status of *Engraulis encrasicolus* in the Black Sea due to high seasonal variation and the short lifespan of the species. Despite the assessment uncertainties, a noticeable increase in the recruitment is evident in the last years (2012-2013).

Moreover, the general trend in the last ten years indicates a slight decrease in the fishing mortality. This is the consequence of the effort regulation measures recently enforced by Turkey, namely restriction the anchovy fishery to night hours only (16:00 to 08:00) since 2007, setting a depth limit (0-24m) for purse seining, and by the buyback program launched in 2012.

Discard and bycatch: The use of purse seine ensures low levels of discard and bycatch. Mesh and net size are regulated by the local institution and they play an important role in the discard management.

References:

Turkish Ministry of Food, Agriculture and Livestock <http://www.tarim.gov.tr/>

GFCM <http://www.fao.org/gfcm/activities/fisheries/stock-assessment/en/>

DELIMAR S.A.

Fishing area: FAO 34.1.1

Fishing vessels: The Company has a fleet of 27 vessels.

Vessels audited on site as fleet samples: 11-221; 10-112; 6/1 234; 7/1 165; 6/1 124; 8-977.

Fishing method: Purse seine.

Certified species: Scientific name: *Engraulis encrasicolus*;

Common name: Anchovy.

Management summary

The National Office of Fisheries (ONP) is a Moroccan public institution that, under the auspices of the Ministry of Agriculture, Rural Development and Maritime Fisheries (MADRPM), is assigned with task to undertake strategies for the fisheries sector development. The Department of Marine Fisheries (DPM) controls the vessels in relation at security, people on board, gears and license, while ONP controls unloading, sizes and quantities. The National Institute of fisheries research (Institut National de Recherche Halieutique: INRH) monitors the resources of small pelagics. Since 2015, there is a management plan for small pelagics. The project is planned to last until 2020. The Moroccan fisheries management plan is reviewed annually in agreement with the board of the Fishery Committee for the Eastern Central Atlantic (CECAF).

Stock status summary. According to INRH, in the Central Atlantic, the biomass of 2016 is below the average of the last 5 years (0.073 thousand tonnes) and the stock is considered fully exploited, with fishing mortality close to the maximum sustainable yield (MSY). In South Atlantic, the estimated biomass is currently 15% higher than in 2015 and the stock is considered fully exploited. The minimum legal size of anchovy is 60–63 mm.

Bycatch / discards: The fishing method used allows accidental catches to remain alive. A sonar system is in place to locate the schools and avoid non-target species. All vessels are obliged to declare all the catch (quantities and species), under the supervision of the agents of the ONP. The reported accidental catch species are not included in the IUCN Red List. The Moroccan authority allows an amount of 3% of bycatch, except for Boops boops that has an allowed rate set at 10%.

Habitat Impact: All vessels are monitored in real time by the competent authority through the vessel monitoring system (VMS). Fisheries occur outside of Marine Protected Areas, respecting the authorized distance from the shore (3 miles). Purse seine fishing has no impact on the seabed.

Social Accountability performance: The fleet complies with the human rights and labour regulations of Morocco. Conclusion with reasons for approval

The fleet complies with Friend of the Sea requirements, without any non-conformities.

Pesce Azzurro Cefalù

Species: *Engraulis encrasicolus*

Gear type: Purse seine

Fishing Area: FAO 37, Subarea 2.1 Adriatic Sea (GSA 17,18)

Fishery management: The General Fisheries Commission for the Mediterranean (GFCM) is the regional fishery management organisation in charge of the assessment of the size and state of European anchovy stocks in the Mediterranean Sea and the Black Sea (FAO 37). GFCM is in charge also of ensuring the sustainability of fisheries activities through the adoption of adequate management measures. The Italian authority responsible for the supervision and management of fisheries is the General Fisheries directorate-general of the Ministry of Agriculture.

Stock Status: The most recent stock assessment results were published in 2016, and refer to data collected in 2015. The average fishing mortality increased constantly up to 2011, when reached the maximum value of 1.006. It started to decrease afterwards to 2013 (0.91) and then it increased again reaching the value of 0.99 in 2015, indicating that the resource is currently subjected to overexploitation. The spawning stock biomass (SBB) was estimated at 86 595 t in 2015. As the target reference point is set at 45 936 t, the stock is overexploited.

Discard and bycatch: The use of purse seine ensures low levels of discard and bycatch. Discards level below 1% are reported by the GFCM assessment in 2015. There are no records of protected species affected by this fishery.

References:

San Benedetto del Tronto

Italy – Purse seine – *Sardina pilchardus* – FAO 37 (Mediterranean and Black sea)

Species scientific name: *Sardina pilchardus*

FAO area: 37.2.1

Fishing method: Purse seine

San Benedetto del Tronto

Fishing area: FAO 37, Adriatic (Division 37.2.1).

Fishing vessels: The Company has one artisanal vessel.

Vessels audited on site as fleet samples: 7AN816.

Fishing method: Purse seine.

Certified species: Scientific name: *Sardina pilchardus*;

Common name: Sarda.

Management summary: In Italy, the fishery policy is implemented through the Directorate General for Fisheries and Aquaculture of the Italian Ministry of Agriculture, Food and Forestry Policies (MIPAAF) and by the Directorate for Fisheries of the regional administrations, with the support of services provided by decentralized offices (Marine Coastal Guard). Small-scale or artisanal fishing refers to fishing boats with less than 12 meter in length, using passive gears, involving day trips with a minimal crew (one or two fishermen). The audited company has this format; it is in accordance with the current legislation operating with a single boat, with fishing capacity of 10/12 tons, in which the owner is part of the crew.

Stock status summary: Several reports present information on the stock of the species. However, as the audited company corresponds to artisanal fishing, with a fishing capacity of 10/12 tonnes and without a refrigeration system. Thus, it does not pose risks to the fish stock.

Bycatch / discards: The fishery has a procedure for recording discards, complying with a request from the port landing authority. In the last year, there was no record of discards.

Habitat Impact: The owner of the vessel has operated for about 50 years in the fishing zone. The fishery occurs 3 miles from shore up to a maximum of 40 miles, outside of Marine Protected Areas. Purse seine fishing almost never touch the bottom of the ocean causing a negligible impact. The purse seine used in the fishery has 19 mm mesh (14 is the minimum by law), 120 m of height and 400 m of length.

Social Accountability performance: The fleet complies with the human rights and Italian labour regulations.

Conclusion with reasons for approval: The fishery complies with Friend of the Sea requirements, without any non-conformity

Fishery client: Union des Pecheries Africaines.

Morocco – Purse seine, Pelagic Trawl – *Sardina pilchardus* – FAO 34 (Atlantic, Eastern Central)

Fishing area: FAO 34, Eastern Central Atlantic Waters; Zones A, B and C.

Fishing vessels: The Company has a fleet of 17 vessels.

Vessels audited on site as fleet samples: 7-787; 6/2-172; 8-738; 8-1044; 10-66.

Fishing method: Purse Seine, Pelagic Trawl.

Certified species: Scientific name: *Sardina pilchardus*;

Common name: Sardine.

Management summary

The National Office of Fisheries (ONP) is a Moroccan public institution that, under the auspices of the Ministry of Agriculture, Rural Development and Marine Fisheries (MADRPM), is assigned

with task to undertake the governmental strategy for the development and the promotion of the competitiveness of the Moroccan fisheries sector. The Department of Maritime Fisheries (DPM) controls the vessels in relation at security, people on board, gears and license, while ONP controls unloading, sizes and quantities. The royal navy patrols the national waters to avoid illegal fishing.

Stock status summary

The stock assessment is performed by the National Research Institute for Fisheries (INRH) and by the Fishery Committee for the Eastern Central Atlantic (CECAF). In zones A and B, the stock is improving as compared the 2013 assessment and the stock is considered non-fully exploited. Still, CECAF 2015 Committee recommends the adoption of a precautionary approach setting a catch limit of around 550,000 tonnes. In zone C, the stock is not fully exploited and it is not overfished.

Bycatch / discards

The ONP officer records all the discards. No accidental catches are included in the IUCN Red list. The gears are very selective and the level of discard allowed is less than 3%. If a large predator is arriving in the net, the seine is not closed and the animal is released alive to the sea.

Habitat Impact

There is no fishing in Marine Protected Areas, as reported on the Vessel Monitoring System (VMS) of all vessels. All the vessels are monitored by the central control of Rabat. The fishery occurs from 3 to 6 miles from the shore with selective gears (mesh size 30 mm, 140 m of height, and 1000 m of length). In zones A and B, there is a minimum catch size of 45 pieces per kg. In zone C, it is 40 pieces per kg. All the vessels are fishing with purse seine and pelagic trawler. The two gears have no effect on the seabed.

Social Accountability performance

The fleet complies with the human rights and Moroccan labour regulations.

Conclusion with reasons for approval

The fishery complies with Friend of the Sea requirements, without any non-conformity.

Fishery client: C.I.B.E.L. S.A.

Fishing area: FAO 34, ZONE A, B and C.

Fishing vessels: The Company has a fleet of 26 vessels.

Vessels audited on site as fleet samples: 11-201, 7/1-109, 12-84, 3/3-180, 8-01010, 7-667, 7-744, 11-257.

Fishing method: Purse seine, Pelagic Trawl.

Certified species: Scientific name: *Sardina pilchardus*;

Common name: Sardine.

Management summary

The National Office of Fisheries (ONP) is a Moroccan public institution that, under the auspices of the Ministry of Agriculture, Rural Development and Maritime Fisheries (MADRPM), is assigned with task to undertake strategies for the fisheries sector development. The Department of Marine Fisheries (DPM) controls the vessels in relation at security, people on board, gears and license, while ONP controls unloading, sizes and quantities. The National Institute of fisheries research (Institut National de Recherche Halieutique: INRH) monitors the resources of small pelagics. The Moroccan fisheries management plan is reviewed annually in agreement with the board of the Fishery Committee for the Eastern Central Atlantic (CECAF), with the comprehensive coastal zone strategies that are shared in zone A B and C and with its different management plans.

Stock status summary

According to INRH and CECAF, in the zones A and B, there was an increase in the stock biomass from 2014-2015 to 2016 and the stock is not overfished. Even so, the instability of the resource led

to the adoption of a precautionary approach by limiting the catch. In the zone C, there is a low level of fishing mortality, indicating that the stock is not fully exploited. The minimum size established for capture is 35 pieces per kg.

Bycatch / discards

Fishermen are obliged to land all the catch; the ONP registers the landings. The audited fleet uses a sonar system to locate schools. Accidental catches species are other pelagic species not included in the IUCN Red List. Refrigerated Sea Water (RSW) fishing vessels are obliged to fill out the logbook with all catches and forward the catch declared as rejected to fishmeal production.

Habitat Impact

Fishing is done with purse seiners and pelagic trawlers. Both methods have no impact on the seabed. Fisheries occur 8 to 10 miles from the shore, outside of Marine Protected Areas.

Social Accountability performance

The fleet complies with the human rights and labour regulations of Morocco.

The fleet complies with Friend of the Sea requirements, without any non-conformities.

ANNEX ITALY CASE STUDY

The system of enterprises operating in the fishery sector in the Adriatic Sea represents an important reality in the economic and social context, both in Italy and in Croatia, where it constitutes one of the prevailing employment activities for the population in coastal areas.

In spite of their consistency and rootedness in the socio-economic fabric, the enterprises of the fishery sector constitute a heterogeneous and complex aggregate that is not easy to frame and assess through the information obtainable from conventional statistical sources, precisely because of the pulverisation of the operators and the high level of detail required to grasp their characteristics and trends.

Generally speaking, companies operating in the fisheries sector, like all those in the agri-food system, are faced with increasingly close and multiform competition, determined by other operators present in the same market phase at a local level, by actors along the supply chain and by competition from countries often possessing more favourable cost and organisational conditions.

Anchovies and sardines are traditional products in the national food system, especially in the Adriatic regions but also in Liguria, Lazio, Campania and Sicily

Sardines market

International trade in sardine products shows an overall foreign dependence of the Italian system, with a negative trade balance in 2021 of EUR 1.7 billion.

However, compared to 2010, an improvement is evident with a reduction in the trade deficit, largely due to a reduction in imports of processed products.

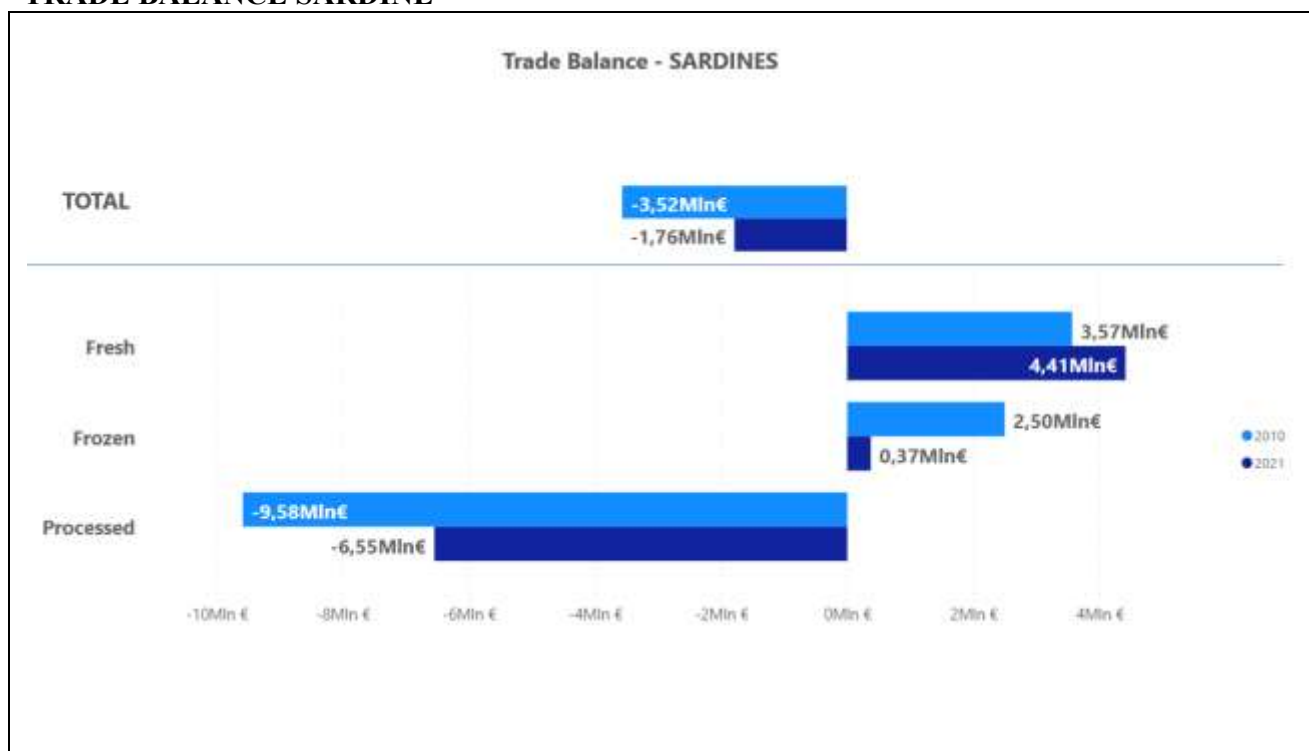
The latter accounts for about 63% of sardine product imports, while processed product have decreased by about 13% of total exports.

The situation for fresh products is positive, with an improvement in the trade balance, already positive in 2010, due to a 10% increase in exports between 2010 and 2021 and a 4% reduction in imports. However, trade in fresh products in 2021 accounts for about 69% of sardine product exports and 24% of imports.

Negative, on the other hand, was the situation of trade in frozen sardines, which although maintaining a positive trade balance in 2021 saw exports decrease compared to 2021 and imports increase significantly.

All in all, the analysis of trade in sardine products shows Italy's dependence on processed and frozen products, products that incorporate services and give the possibility to create more added values for businesses than the fresh product for which Italy has shown a higher performance.

TRADE BALANCE SARDINE



ITALIAN EXPORT/IMPORT MARKET SARDINE PRODUCTS

CATEGORY	SARDINE					
	EXPORT			IMPORT		
	2010	2021	Var.%	2010	2021	Var.%
Processed	2.515.327 €	1.439.609 €	-42,77%	12.096.694 €	7.984.627 €	-33,99%
Fresh	6.759.227 €	7.475.646 €	10,60%	3.193.975 €	3.064.641 €	-4,05%
Frozen	2.953.199 €	1.854.397 €	-37,21%	457.631 €	1.481.384 €	223,71%
TOTAL	12.227.753 €	10.769.652 €	-11,92%	15.748.300 €	12.530.652 €	-20,43%

Source: ISTAT, COEWEB

Concerning the geographical flows of the origin and destination of sardine products, we can detect a relative concentration.

In fact, for imports of processed product in practice Morocco holds the prevailing role both in 2010 and in 2021 followed by Spain. While, for exports of processed product, the main markets in 2021 are Germany, Belgium and Greece.

The main suppliers of fresh product are Croatia, Spain and France. The latter practically also constitute the main destination markets, thus showing intra-industry trade to compensate for the availability and seasonality of the product.

SARDINES INTERNATIONAL MARKETS BY PRODUCTS BY COUNTRY

SARDINE							
Export				Import			
2010		2021		2010		2021	
Processed	20,6%	Processed	13,4%	Processed	78,61%	Processed	63,72%
<i>Austria</i>	<i>43,4%</i>	<i>Germany</i>	<i>28,0%</i>	<i>Morocco</i>	<i>43,2%</i>	<i>Morocco</i>	<i>59,8%</i>
<i>Germany</i>	<i>16,8%</i>	<i>Belgium</i>	<i>9,4%</i>	<i>Germany</i>	<i>14,2%</i>	<i>Spain</i>	<i>17,3%</i>
<i>Australia</i>	<i>14,1%</i>	<i>Greece</i>	<i>8,2%</i>	<i>Spain</i>	<i>13,3%</i>	<i>Portugal</i>	<i>10,8%</i>
<i>Other</i>	<i>25,8%</i>	<i>Other</i>	<i>54,4%</i>	<i>Other</i>	<i>29,3%</i>	<i>Other</i>	<i>12,1%</i>
Fresh	55,3%	Fresh	69,4%	Fresh	20,28%	Fresh	24,46%
<i>Spain</i>	<i>58,3%</i>	<i>France</i>	<i>46,9%</i>	<i>Croatia</i>	<i>75,2%</i>	<i>Croatia</i>	<i>75,5%</i>
<i>France</i>	<i>33,7%</i>	<i>Spain</i>	<i>38,2%</i>	<i>France</i>	<i>8,7%</i>	<i>Spain</i>	<i>19,2%</i>
<i>Germany</i>	<i>1,7%</i>	<i>Germany</i>	<i>5,2%</i>	<i>Spain</i>	<i>8,6%</i>	<i>France</i>	<i>4,8%</i>
<i>Other</i>	<i>6,3%</i>	<i>Other</i>	<i>9,8%</i>	<i>Other</i>	<i>7,5%</i>	<i>Other</i>	<i>0,5%</i>
Frozen	24,2%	Frozen	17,2%	Frozen	2,91%	Frozen	11,82%
<i>Spain</i>	<i>68,5%</i>	<i>Spain</i>	<i>69,4%</i>	<i>Croatia</i>	<i>63,7%</i>	<i>Croatia</i>	<i>59,8%</i>
<i>France</i>	<i>23,6%</i>	<i>Malta</i>	<i>10,5%</i>	<i>Spain</i>	<i>22,6%</i>	<i>Spain</i>	<i>29,2%</i>
<i>Germany</i>	<i>3,8%</i>	<i>Greece</i>	<i>7,0%</i>	<i>Belgium</i>	<i>5,8%</i>	<i>France</i>	<i>3,4%</i>
<i>Other</i>	<i>4,1%</i>	<i>Other</i>	<i>13,2%</i>	<i>Other</i>	<i>8,0%</i>	<i>Other</i>	<i>7,7%</i>
TOTAL	100,0%	TOTAL	100,0%	TOTAL	101,8%	TOTAL	100,0%

Source: ISTAT,

Anchovies market

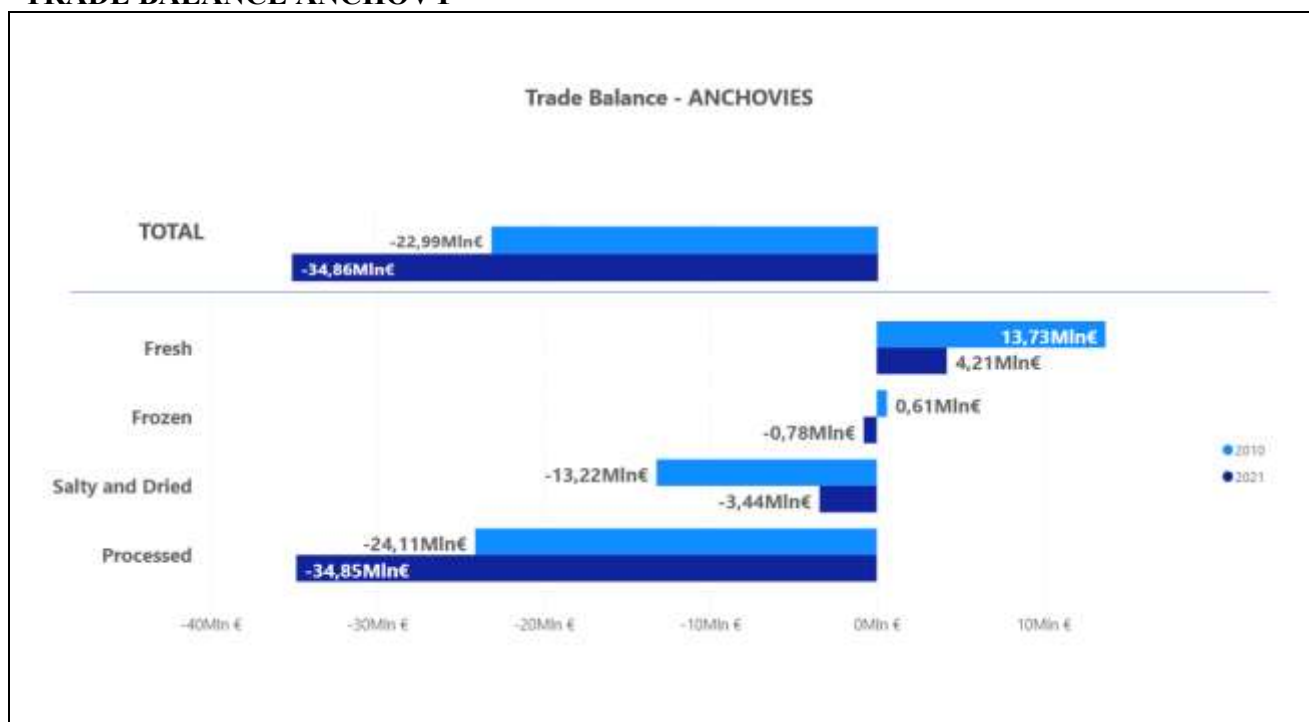
Opposite is the anchovies market, which shows a worsening structural deficit in foreign trade, rising from EUR -22 billion in 2010 to EUR -34 billion in 2021.

Above all, the negative balance of processed products, which account for the largest share of anchovy imports with 72% of total anchovy imports in 2021, increases to EUR 34 billion. At the same time, however, there is an increase in exports of processed products, thus increasing their weight within exports between 2010 and 2021.

In addition, exports of fresh and frozen products decrease, while at the same time imports of the same product categories increase, accounting for 9% and 1% respectively of anchovy imports in 2021.

The only positive development concerns salted and dried anchovies, which account for about 17% of the anchovy trade, and which between 2010 and 2021 see imports decrease and exports increase at the same time.

TRADE BALANCE ANCHOVY



ITALIAN ANCHOVY INTERNATIONAL MARKET BY CATEGORY

CATEGORR	ANCHOVY					
	EXPORT			IMPORT		
	2010	2021	Var.%	2010	2021	Var.%
Processed	18.767.614 €	33.740.569 €	79,78%	42.881.295 €	68.589.792 €	59,95%
Salt and dry	8.128.267 €	12.578.962 €	54,76%	21.351.396 €	16.014.743 €	-24,99%
Fresh	19.471.184 €	13.485.035 €	-30,74%	5.737.600 €	9.274.933 €	61,65%
Frozen	801.763 €	278.506 €	-65,26%	188.717 €	1.061.632 €	462,55%
TOTAL	47.168.828 €	60.083.072 €	27,38%	70.159.008 €	94.941.100 €	35,32%

Source : ISTAT, COEWEB

With regard to the geographical flows of origin and destination, a relative concentration can also be observed for anchovy products.

In fact, for imports of processed products, Morocco holds the prevailing role both in 2010 and in 2021, followed by Albania and Tunisia. For processed product exports the destination markets are diversified; mainly in 2021 Albania, USA and Australia.

The main suppliers of fresh product are Croatia, Spain, Portugal and France. Germany, France and Spain are the main destination markets, thus showing, for the latter two countries, intra-industry trade to compensate for the availability and seasonality of the product.

For salted and dried products, Spain, Morocco and Croatia hold the main import shares, while for exports the destination markets are Albania, Tunisia and the USA.

ANCHOVIES INTERNATIONAL MARKETS BY PRODUCTS BY COUNTRY

ANCHOVIES					
Export			Import		
2010		2021	2010		2021
Processed	39,8 %	Processed	56,2 %	Processed	61,12 %
<i>Albania</i>	15,4%	<i>Albania</i>	12,7%	<i>Morocco</i>	39,3%
<i>Japan</i>	13,1%	<i>USA</i>	10,8%	<i>Albania</i>	29,0%
<i>USA</i>	12,3%	<i>Australia</i>	10,5%	<i>Tunisia</i>	17,3%
<i>Other</i>	59,3%	<i>Other</i>	66,0%	<i>Other</i>	14,5%
Salt and dry	17,2 %	Salt and dry	20,9 %	Salt and dry	30,43 %
<i>Tunisia</i>	51,4%	<i>Albania</i>	67,0%	<i>Croatia</i>	63,9%
<i>Spain</i>	23,0%	<i>Tunisia</i>	19,6%	<i>Spain</i>	22,4%
<i>Albania</i>	10,4%	<i>USA</i>	3,8%	<i>Argentina</i>	5,3%
<i>Other</i>	15,2%	<i>Other</i>	9,7%	<i>Other</i>	8,4%
Fresh	41,3 %	Fresh	22,4 %	Fresh	8,18 %
<i>Spain</i>	83,3%	<i>Germany</i>	32,3%	<i>Croatia</i>	62,5%
<i>Greece</i>	4,5%	<i>Spain</i>	20,9%	<i>Spain</i>	17,9%
<i>Germany</i>	4,0%	<i>France</i>	10,2%	<i>France</i>	13,9%
<i>Other</i>	8,2%	<i>Other</i>	36,7%	<i>Other</i>	5,7%
Frozen	1,7%	Frozen	0,5%	Frozen	0,27 %
<i>Morocco</i>	35,0%	<i>Croatia</i>	72,7%	<i>Croatia</i>	32,6%
<i>Germany</i>	21,6%	<i>Albania</i>	15,1%	<i>Argentina</i>	22,4%
<i>Spain</i>	9,2%	<i>Malta</i>	5,3%	<i>Spain</i>	20,1%
<i>Other</i>	34,2%	<i>Other</i>	7,0%	<i>Other</i>	25,0%
TOTAL	100,0 %	TOTAL	100,0 %	TOTAL	100,0 %
TOTAL	100,0 %	TOTAL	100,0 %	TOTAL	100,0 %

Source: ISTAT, COEWEB

Seasonally production and prices variability

The Italian fishery in the Adriatic does not seem able to adequately exploit all the opportunities, mainly related to the abundant quantity of anchovies and sardines landed and the rather high number of processing companies.

The main problems are the lack of commercial strategies, the insufficient ability and capacity to concentrate supply, and the lack of coordination between the different stages of the chain.

At the same time, structural problems linked to high labour costs and the complexity of introducing specific technological innovations, due to the intrinsic characteristics of the product in question, should be recalled.

Prices

A comparison of import and export prices is telling. In fact, it can be observed that the ratio of import and export prices of processed anchovies in both 2010 and 2012 is in favour of imports with values between 20% and 40% lower.

For fresh, on the other hand, import prices compared to export prices were higher in 2010 while the ratio reverses in 2021. On the contrary for frozen products, import prices were higher than export prices in 2021 and on the contrary in 2010. This shows a price competitiveness of exporting countries against the domestic product.

ANCHOVY PRICES IMPORTED PRODUCTS

CATEGORY	EXPORT		IMPORT	
	2010	2021	2010	2021
Processed	6,16 €	12,87 €	5,39 €	7,77 €
Salt and dry	2,91 €	3,47 €	2,73 €	3,35 €
Fresh	1,39 €	2,91 €	1,59 €	2,76 €
Frozen	1,38 €	1,12 €	1,26 €	1,81 €

The situation is similar for sardines, where import prices are much lower than export prices for both fresh and processed products in 2010 and 2021. The opposite is true for the frozen product.

SARDINE PRICES IMPORTED PRODUCTS

CATEGORY	EXPORT		IMPORT	
	2010	2021	2010	2021
Processed	6,79 €	8,79 €	3,17 €	4,12 €
Fresh	1,12 €	1,16 €	0,83 €	1,11 €
Frozen	0,77 €	0,82 €	0,90 €	1,25 €

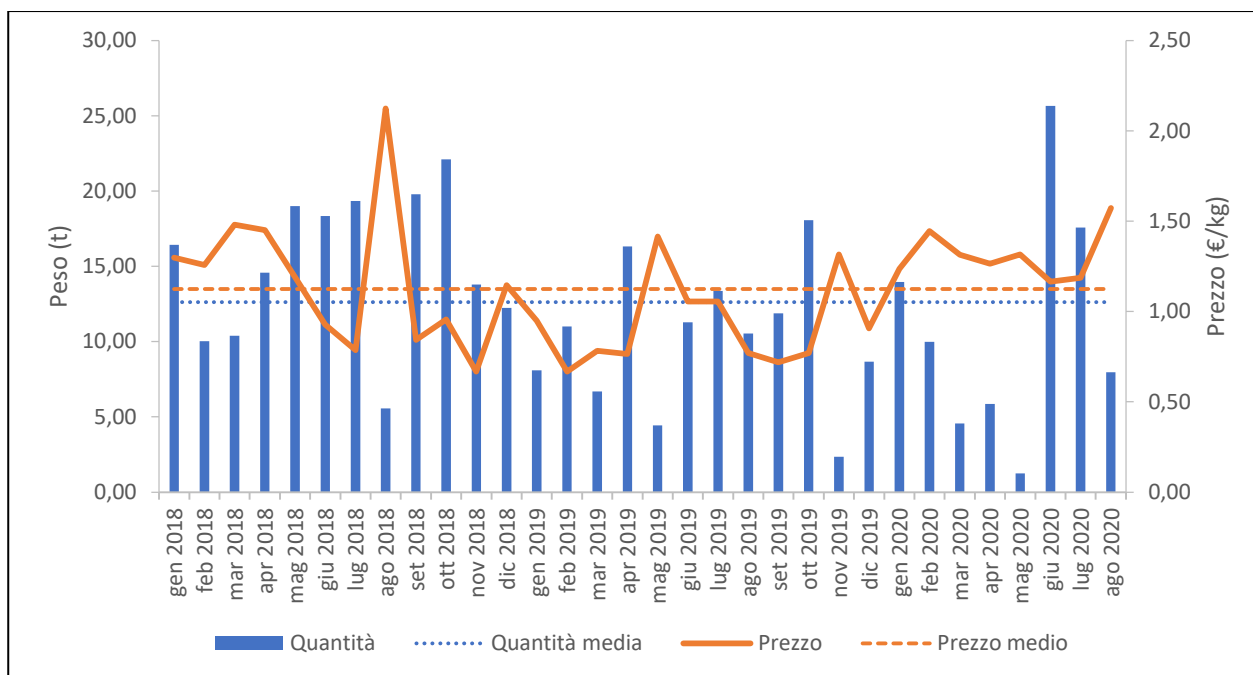
Seasonally fishery in low Adriatic

The monthly trend in catches shows a consistent seasonality that is affected both by the technical break (which, as far as the lower Adriatic is concerned, falls around August for anchovies and October for sardines), but above all by the level of biomass present and the type of fishing practised.

Seasonality is undoubtedly an unavoidable condition of this activity as each season is typical for certain types of production and the prices of these species undergo strong fluctuations.

The composition of the production mix is very articulated given the wide variety of resources fished. In any case,. The most frequently fished species are anchovies (over 32% of the total catch) and sardines

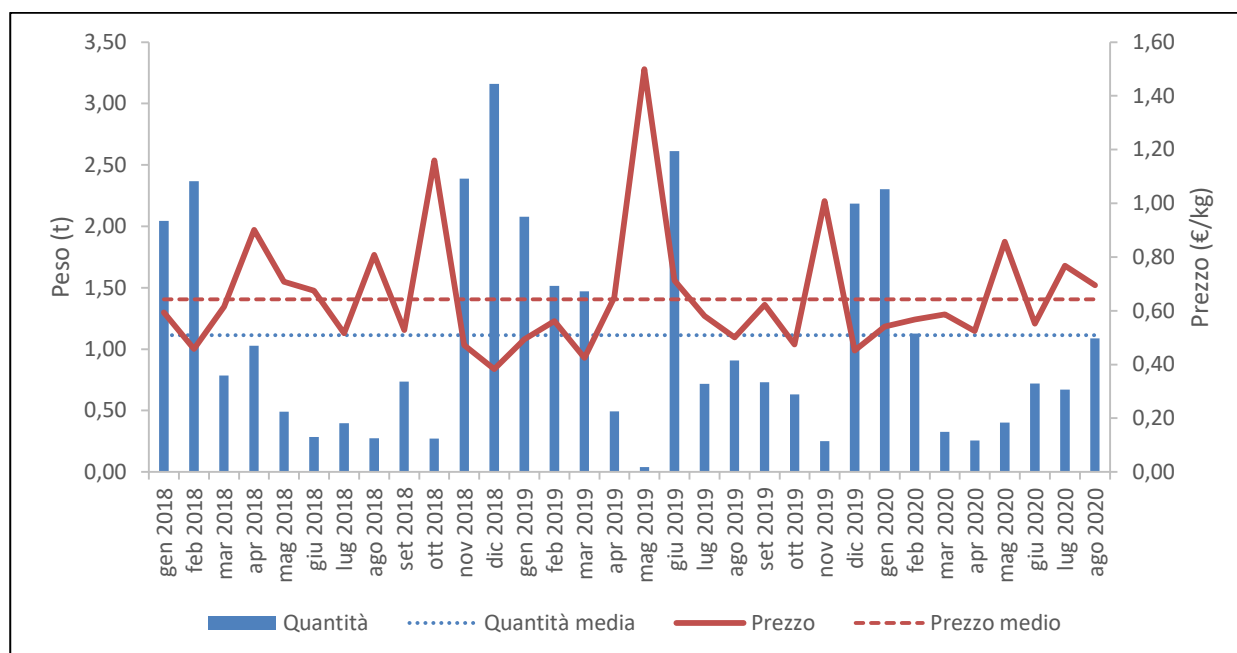
ANCHOVIES MONTHLY PRICES AND FISHERY IN PUGLIA (MIPAAF)



In the months between 2018 and 2020, anchovy catches were particularly high in June-July and September-October when they peaked at around 25 tonnes. (Figure 3). We see that average monthly prices for these products usually remain within a fairly narrow range, between €0.60 - €2.15 per kg.

Prices show an inverse dynamic to the quantity trend. In fact, the correlation index is not only modest, but also -0.13; this means that the price trend shows a relationship with the flow of the quantities landed, but also depends on other factors probably linked to the downstream market

SARDINES MONTHLY PRICES AND FISHERY IN PUGLIA (MIPAAF)



The situation recorded for sardine shows two periods of highest catch in spring and autumn with a peak reached in December 2018 around 3.2 tonnes, corresponding to a minimum price of 0.30. On the contrary, May 2019 shows a low point in the monthly overhang with a monthly average price peak of around 1.50 €/Kg.

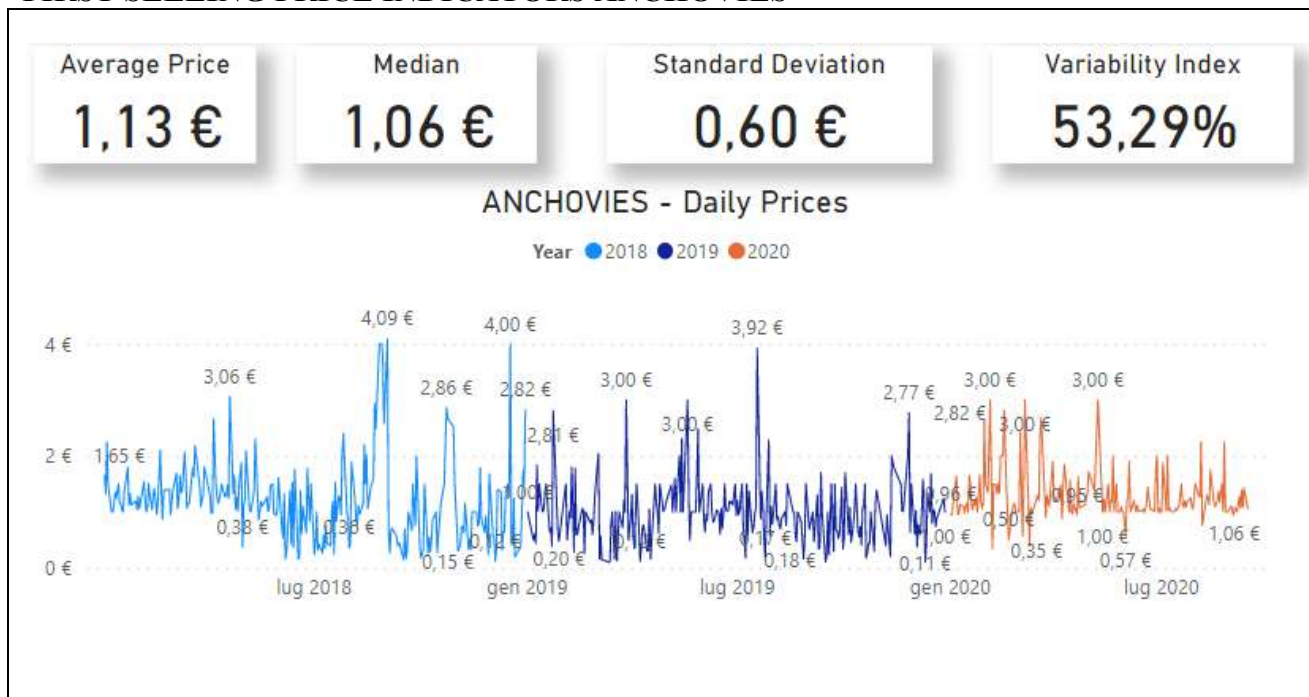
The price/quantity correlation coefficient is inverses, albeit modest (-0.20). This means that there is little correlation in the trend of the two variables due not only to local production landed in neighbouring areas, but also to the seasonality of consumption and the effects of the amount of total supply available on the market at a given time of year.

The variability of daily anchovy prices recorded from 2018 to October 2020 from a Mipaaf source shows that for anchovies the average price over the period is 1.13 €/Kg with a median of 1.06 €/kg and a variability index around 54%.

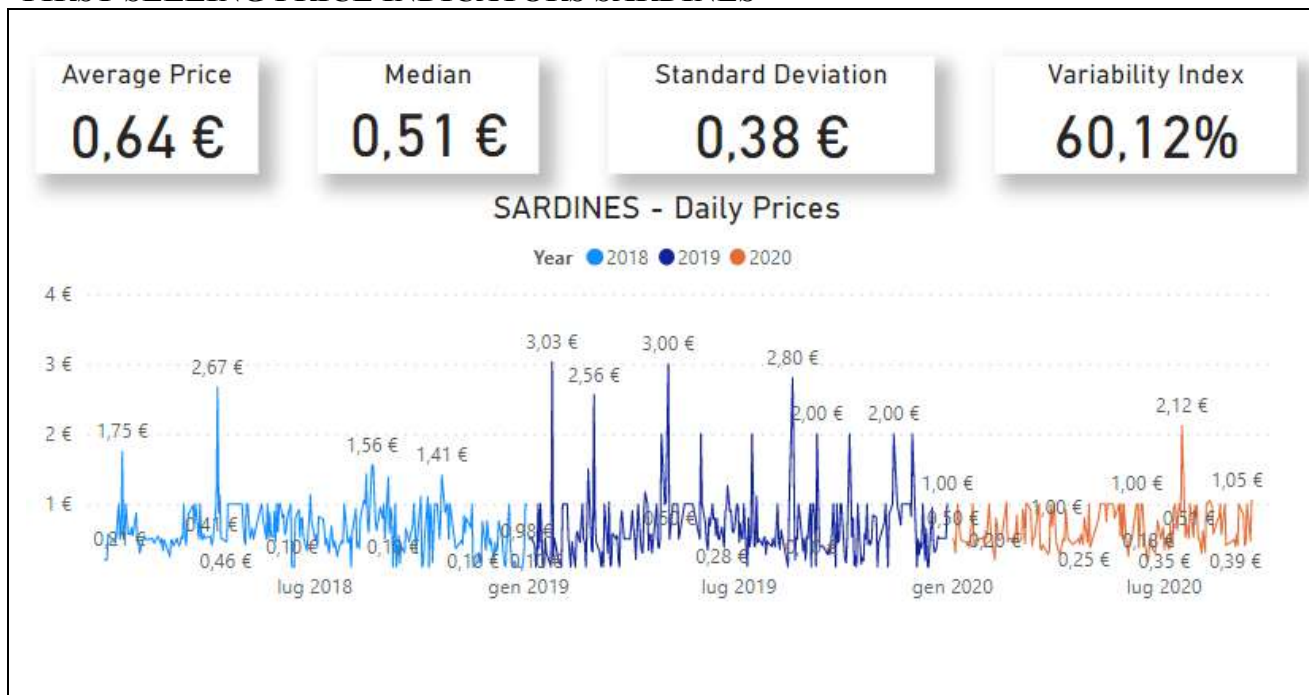
The same trend for sardines, which show an average price over the same period of €0.64/kg, a median of €0.51/kg and a variability coefficient of 60%

Therefore, the anchovy and sardine market shows certain instability in prices with high daily fluctuations and consequently fishermen experience a certain uncertainty in planning and managing production as well as a weakness vis-à-vis traders who determine the price according to their needs and convenience.

FIRST SELLING PRICE INDICATORS ANCHOVIES



FIRST SELLING PRICE INDICATORS SARDINES



ANNEX VENEZIA FINAL CONFERENCE

The ITACA Project organised a final conference to present the results on 22 June in Venice. During this event, CIHEAM Bari presented the results of the study on the CLUSTER market position, the contents of which are reported.

In particular, the presentation highlighted aspects related to:

- The low level of influence of fishery enterprise on price dynamism.
- The natural resources exploitation (sardines and anchovies) linked to environment and ecological issue in the GSA17 and GSA18.
- The value chain organisation that currently does not ensure enough income for fishermen.
- The importance of horizontal integration between producers organisation.
- The importance of vertical integration for processing.
- The Institutions involvement not only for regulation but also for market management.
- Needs to develop a custody chain with labelling and code of conducts.



The banner features the logos of Interreg Italy - Croatia ITACA and the European Union. It includes the CIHEAM Bari logo and the text 'Centre International de Hautes Études Agronomiques Méditerranéennes'. A central image shows a grid of blue flags. Below the grid, the text reads 'ITACA FINAL CONFERENCE VENEZIA 22 June 2022' and 'ACTIVITY 5.3 D5.3.2 STUDY ON MARKET POSITION'. A small inset image on the left shows fishermen on a boat.

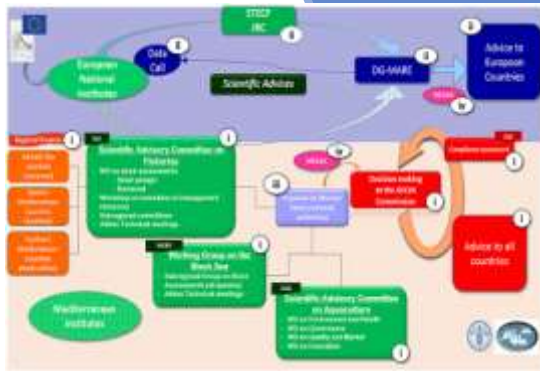


The banner features the logos of Interreg Italy - Croatia ITACA and the European Union. It includes the text 'ACTIVITY 5.3 D5.3.2 STUDY ON MARKET POSITION'. A central blue box contains the following text:

CONCLUSIVE NOTES

1. THE FISHERY ENTERPRISES HAVE LOW LEVEL OF INFLUENCE ON PRICE DYNAMISM
2. RESOURCES EXPLOITATION LINKED TO ENVIRONMENT AND ECOLOGICAL ISSUES (GSA 17 AND GSA18)
3. VALUE CHAIN DOES NOT INSURE ENOUGH INCOME FOR ENTERPRISES
4. HORIZONTAL INTEGRATION BETWEEN PRODUCERS ORGANISATION AND FISHING BOATS i.e. CLUSTER DEVELOPMENT)
5. VERTICAL INTEGRATION FOR PROCESSING THROUGH SEVERAL INITIATIVES
6. INSTITUTIONS INVOLVEMENT NON ONLY FOR REGULATIONS
7. NEEDS TO DEVELOP A CUSTODY CHAIN i.e. LABELLING AND CODE OF CONDUCTS

ACTIVITY 5.3 D5.3.2 STUDY ON MARKET POSITION



PLAYERS



FROM VALUE CHAIN TO CUSTODY CHAIN



VIDEO 1



interreg PRODUCTION





PRODUCTION AND LANDINGS VALUE

Species/volume	CROATIA KG	ITALY KG	Year
Anchovy	7.994.602,47	31.067.661,79	2019
Sardine	45.134.107,90	23.317.184,76	2019

Species/Value	CROATIA EURO	ITALY EURO	Year
Anchovy	7.261.219,83	71.165.197,19	2019
Sardine	20.048.428,62	30.259.349,20	2019



FISHERY SECTOR WEAK POINTS

1. STATE OF RESOURCES: SLIGHT RECOVERY, BUT FAR FROM THE SUSTAINABILITY TARGET SET BY THE CFP
2. CONSEQUENT REDUCTION IN FISHING EFFORT MADE NECESSARY BY THE ACHIEVEMENTS OF CFP
3. INCREASING IN OPERATIVE COSTS, PARTICULARLY FUEL PRICES
4. IMPACT OF NEW MEASURES/ECOLOGICAL TRANSITION ON COST OF INPUTS AIMED AT PROMOTING THE USE OF CLEAN TECHNOLOGIES



FISHERY SECTOR MARKETS

1. COMPETITIVENES IN GLOBAL MARKETS,
2. COMSUMERS DEMAND ON PRODUCTS QUALITY AND ORIGIN
3. LOW LEVEL OF FINANCIAL STRATEGY IN THE FISHERY SECTOR FOR TECHNICAL AND COMMERCIAL INNOVATIONS



FISHERY MARKETS AND STRATEGIES

NEW ACTIONS TO CHANGE ORGANISATIONAL AND PRODUCTION FORMS TO EXPLORE NEW DEVELOPMENT STRATEGIES TO MEET MARKETS NEEDS AND DEMAND

ACTIONS

TO DEFEND ADEQUATE INCOME LEVELS FOR CREWS AND FOR THE ACHIEVEMENTS OF COMPANY PROFITS ACTION CAN BE TAKEN MAINLY ON TWO FRONTS

1. REDUCTION OF MARGINAL PRODUCTION COSTS THROUGH MEASURES TO INCREASE EFFICIENCY IN THE USE OF PRODUCTION FACTORS;
2. STRATEGIES FOR SUPPLY CHAIN AND PRODUCTS VALORISATION BY ACTING ON THE ELEMENTS ALONG THE CHAIN THAT CONTRIBUTE TO THE PRICES AT CONSUMERS (for instance information; fishermen works; nutritional issues, labelling and packaging)

PRODUCTS RANGE OPPORTUNITIES AND THREAT

- I RANGE Fresh products, for processing.
- II RANGE Preserved products, ready to be processed in the kitchen.
- III RANGE Frozen products, ready to be cooked.
- IV RANGE Fresh products cleaned and cut, raw or cooked, ready to be served directly.
- V RANGE semi processed/thermal cooking treatment/packaged under vacuum/modified atmosphere

II RANGE

V RANGE (COMPETITORS???)



STRATEGY ELEMENTS –

- CONCENTRATION OF SUPPLY
- MARKET COORDINATION
- QUALITY
- TRACEABILITY AND TRANSPARENCY/BRAND POLICIES

AIMED TO CUSTODY CHAIN



STRATEGY ELEMENTS - CONCENTRATION OF SUPPLY

Associations and aggregations such as Producers' Organisations (POs) are increasingly demonstrating enormous potential in terms of enhancing the value of the catch,.

(horizontal co-ordination with reunification within a single decision-making unit of 'equal' phases of production processes previously carried out by autonomous enterprises;

POs can be a key element in the organisation of the seafood market to organise and stabilise the market.

The main advantage of these organisations is that they allow the producers themselves to adapt production to market demand.

However, investments in technology and skilled labour are often required and in these cases, the aggregation of supply can create economies of scale in the absence of which, production costs (labour) would make the investment unprofitable.

STRATEGY ELEMENTS - MARKET COORDINATION

Horizontal and vertical co-ordination CLUSTER DEVELOPMENT

Horizontal integration group of fishing enterprise manage the same production phase can be merged in circular co-ordination, whereby the same phases are brought into alignment with the previous and/or next phase.

An example of vertical integration is given by a group of fishing enterprises that united realize and manage a processing plant, where before this realization the individual enterprises individually sold the fishery products to other processors.

CLUSTER AND PO'S STRATEGIC POSITION

Strategic position between production and the market, implementing measures for rational resource management, add value to fish products and contribute to market stability, to conserve fish stocks, anticipating market requirements in terms not only of quantity but also of regularity of supply.

STRATEGY ELEMENTS- QUALITY

Attributes to the specific needs of the process and type of service incorporated in the product.

Product quality as a means of differentiation and segmentation to meet consumer needs.

Attributes that characterise the product, whether they are material such as nutritional, organoleptic, hygienic and sanitary characteristics, or immaterial such as ease of use, the label, the packaging, the mode of consumption.

As a marketing tool, it attributes specificity and reputation vis-à-vis the consumer and reduces substitutability with competing products and increases their unit value.

STRATEGY ELEMENTS – TRACEABILITY, TRANSPARENCY BRAND POLICIES

The aim is to protect the consumer by increasing market transparency by regulating the flow of information from producer to consumer through the definition of quality standards, certifications, controls, definition of collective brands, labelling standards .

TARGET
INSTITUTION INVOLVEMENT



CONCLUSION THE WAY FORWARD

1. CLUSTER DEVELOPMENT
2. RESEARCH MORE ORIENTED TO SUPPORT POLICY MAKERS
3. CLUSTER CUSTODY CHAIN
4. CLUSTER LABELLING AND CODE OF CONDUCTS
5. ORIZONTAL INTEGRATION PRODUCERS ORGANISATION AND FISHING BOATS i.e. CLUSTER DEVELOPMENT)
6. VERTICAL INTEGRATION FOR PROCESSING THROUGH SEVERAL INITIATIVE S
7. INSTITUTIONS INVOLVEMENT

TO INCREASE THE LEVEL OF INFLUENCE OF FISHERY SECTOR

ITACA project

Activity 5.3 - Market positioning and long-term strategies

D 5.3.1 – B2B meeting

Questionnaire for survey in the Apulia Region

Background

The ITACA project promotes cooperation between Italian and Croatian fishing enterprises towards sustainable fishing of small pelagic, mainly anchovies and sardines, with the dual objective of preserving the common resources in the North Adriatic area and improving its profitability for fishermen. To this aim, it has been developed a scientifically based economic forecasting model that can analyse in real time, based on the specific market, the economic and fishing data.

This model has proven to be able to indicate thanks to an online support to fishermen, the exact amount of small pelagic that each individual market is able to absorb in the different periods of the year. In other words, an essentially on-demand management of quantities is envisaged for Adriatic fishing enterprises, respectful first of the natural populations of bluefish since they are no longer overexploited, therefore sustainable, and an optimization and stabilization of the relationship between costs and economic returns from fishing.

Besides improving the economic condition of fishermen, ITACA promotes the creation of a cross-border network (cluster) among bluefish enterprises operating in the Adriatic, to generally improve the level of competitiveness of the Adriatic product in international markets as well.

The role of the cluster is consolidated through B2B actions with the different types of buyers in the small pelagic fishing supply chain (wholesalers, large retailers, etc.) to present the role of the cluster and promote possible agreements along the supply chain, in which the cluster acts as a single entity representing the producers, while strengthening their commercial power.

In this context, this questionnaire aims to gather information and suggestions from operators to lead the cluster's strategic choices relatively to market positioning and facilitating the adoption of trade agreement.

To which category does your activity belong? (You may choose only one answer)

- Seafood wholesale *(Please complete section 1 of the questionnaire)*
 - Seafood Processing *(Please complete section 2 of the questionnaire)*
 - Large-scale retail trade *(Please complete section 3 of the questionnaire)*
-

Section 1 - Seafood wholesale

1. In what territorial area do you routinely conduct your business relations with suppliers and buyers in the seafood sector? (You may choose multiple options for this response)

- at a local level
- at a regional level
- at a national level
- at an international level (indicate which countries prevail)

2. What are the productive references of your main business interest? (You may choose multiple options for this response)

- fresh or very fresh fish
- fresh gutted fish
- fillets and steaks of fish
- ready to cook
- smoked fish
- ready to eat
- sushi
- frozen fish
- monoportions of fish
- canned fish
- high value-added seafood prepared with local recipes
- other (please specify) _____

3. What are your main trading channels of supply? (You may choose multiple options for this response)

- fishermen or fishermen's cooperatives
- fish markets
- on line platform
- other wholesalers
- self-supply since I am also a shipowner
- seafood processing companies
- other (please specify) _____

4. What are your main sales trading channels (your customers)? (You may choose multiple options for this response)

- other wholesalers
- fish shops
- street fishmongers
- on line platforms
- large-scale retail trade
- direct sell in my fish store
- HO.RE.CA segment
- other (please specify) _____

5. Does your company/organization have already had opportunities to be actively involved in fish supply chain projects with specific regard to small pelagic (anchovies and sardines) by signing any trade agreements? (You may choose only one option)

- My company is not member of a network, and it is not interested in any future partnerships
- My company is not member of a network, but it is interested in any future partnership
- My company is already member of a network, and it is not interested in future partnership
- My company is already member of a network, but it is interested in future partnership

6. What would motivate you to engage in relationships with a business grouping - Adriatic Small Pelagics cluster? (You may choose multiple answer options)

- Dealing with a reliable, well-organized and efficient partner
- Availability of informative documents regarding the cluster, its product, and its concept that are clear, concise, and comprehensive (newsletter, report, etc)
- discovering a good quality product at a competitive price, in a context of competitors with the same characteristics
- Information on the catch method, the catching gear, the fishing area
- Opportunity to make online trading (e-commerce)
- Providing products from local fish landings
- Adoption by the cluster of certified ethical and responsible practices
- Certifiable traceability
- Emphasis by the cluster on the issue of environmental sustainability of fisheries
- Other (*please specify*) _____

7. What do you think might be the disadvantages (criticisms) of participating in any form of aggregation (cluster, network, etc.)? (You may choose multiple options)

- Hard management
- Fear of increased competition among participants
- Lack of trust among partners
- Other (*please specify*) _____

Section 2: Seafood Processors

1. **In what territorial area do you routinely conduct your business relations with suppliers in the seafood sector? (You may choose multiple options for response)**
 - at a local level
 - at a regional level
 - at a national level
 - at an international level (indicate which countries prevail)

2. **Has your company/organization already had opportunities to be actively involved in fish supply chain projects with specific regard to small pelagic (anchovies and sardines) by signing any trade agreements? (you may choose only one option)**
 - My company is not member of a network and it is not interested in any future partnerships
 - My company is not member of a network, but it is interested in any future partnership
 - My company is already member of a network and it is not interested in any future partnership
 - My company is already member of a network, but it is interested in future partnership

3. **What would motivate you to engage in relationships with a business grouping - Adriatic Small Pelagic cluster? (You may choose multiple options)**
 - Dealing with a reliable, well-organized and efficient partner
 - Availability of informative documents regarding the cluster, its product, and its concept that are clear, concise, and comprehensive (such as, for example, detailed "product fiches", newsletter, report, etc)
 - discovering a good quality product at a competitive price, in a context of competitors with the same characteristics
 - Opportunity to make online trading (e-commerce)
 - Opportunity to evaluate and view the cluster's offerings on an online marketplace with an online showcase, trading platform and booking platform
 - Punctual delivery of supplies
 - Information on the catch method, the catching gear, the fishing area
 - Added value of the Adriatic catch compared to the oceanic catch
 - Adoption by the cluster of certified ethical and responsible practices
 - certifiable traceability
 - Emphasis by the cluster on the issue of environmental sustainability of fisheries
 - stimulating the design and the creation of new products (fresh gutted, fillets, slices, ready to cook, smoked, ready to eat, sushi, frozen, single portions, canned fish, high value-added seafood with local recipes, etc.)
 - motivation to design and adopt sustainable and original packaging
 - an ideal showcase for advertising to a qualified target audience of buyers offering flexible marketing solutions
 - Other (*please specify*) _____

4. What do you think might be the disadvantages (criticisms) of participating in any form of aggregation (cluster, network, etc.)? (You may choose multiple options)

- Hard management
- Fear of increased competition among participants
- Lack of trust among partners
- Other (*please specify*) _____

5. What do you suggest it could be the strategic directions necessary to improve the attractiveness of processed products to large-scale retailers? (you may choose multiple options)

- focusing on gutted/filleted/sliced fresh fish, ready-to-cook, smoked, ready-to-eat and sushi references
- focusing on canned fish
- greater focus on take-away through the introduction of products with sustainable packaging, longer shelf life and single-portion format.
- Strengthen the offering of ready-to-eat seafood dishes.
- To develop offering ranges at Distributor Brand.
- modify the layout of the fishmonger's shop to improve the visibility of higher margin references
- communicate fishing methods that respect animal welfare principles,
- enhance the professional and interpersonal skills of processors through the implementation of dedicated training programs
- other (specify) _____

Section 3 - Large-scale retail trade

1. **In what territorial area do you routinely conduct your business relations with suppliers in the seafood sector? (You may choose multiple options for response)**
 - at a local level
 - at a regional level
 - at a national level
 - at an international level (indicate which countries prevail)

2. **What are the productive references of your main business interest? (You may choose multiple options)**
 - fresh and very fresh fish
 - fresh gutted fish
 - defrosted fish
 - frozen and quick-frozen fish
 - fillets and steaks of fish
 - ready to cook
 - smoked fish
 - ready to eat
 - sushi
 - monoportions of fish
 - canned fish
 - high value-added seafood prepared with local recipes
 - ready-to-eat fish dishes by fixed weight
 - seafood ready to eat for the deli area
 - high value-added seafood with minimally processed products
 - processed fish products with high health value (enriched with spices and other super-food ingredients considered nutraceuticals)
 - other (please specify) _____

3. **What space is dedicated to seafood in your commercial areas (retail outlets)? (You may choose multiple options)**
 - Served fish stand (with attendants)
 - Refrigerated islands with free serving products
 - Delivery area
 - Take-away area
 - other (specify) _____

4. **What are your preferred suppliers? (You may choose multiple options)**
 - fishermen and fishermen's cooperatives
 - fish markets
 - on line platforms
 - wholesalers
 - fish processing companies

other (please specify) _____

5. **Does your company/organization have already had opportunities to be actively involved in fish supply chain projects with specific regard to small pelagic (anchovies and sardines) by signing trade agreements? (You may choose only one answer option)**

- My company is not member of a network, and it is not interested in any future partnerships
- My company is not member of a network, but it is interested in any future partnership
- My company is already member of a network, and it is not interested in any future partnership
- My company is already member of a network, but it is interested in future partnership

6. **What would motivate you to engage in relationships with a business grouping - Adriatic Small Pelagic cluster? (You may choose multiple options)**

- Dealing with a reliable, well-organized, and efficient partner
- Availability of informative documents regarding the cluster, its product, and its concept that are clear, concise, and comprehensive (such as, for example, detailed "product fiches", newsletter, report, etc)
- Have the availability of a "Vendor Analysis," i.e., a report outlining the Cluster's sales outlook, supply capacity, logistics organization, storage, quality monitoring method.
- discovering a good quality product at a competitive price, in a context of competitors with the same characteristics
- Having certainty to avoid the occurrence of a sudden "out of stock"
- Opportunity to evaluate and view the cluster's offerings on an online marketplace with an online showcase, trading platform and booking platform
- Offering integrated logistics products and services in favour of large-scale retail trade
- Punctual delivery of supplies
- Organization of the platforms
- Availability of autonomous transportation companies
- Information on the catch method, the catching gear, the fishing area
- Have offering ranges at Distributor Brand (private labelling)
- Possibility of single-source procurement of both commodities (bluefish) and specialties such as, for example, marinated anchovies
- Providing products from local fish landings
- certifiable traceability
- Adoption by the cluster of certified ethical and responsible practices
- Emphasis by the cluster on the issue of environmental sustainability of fisheries
- Portfolio of products characterized by a longer shelf life, thanks to innovative packaging technologies in total absence of preservatives
- Innovative products with sustainable and original packaging
- Supplying several references from a unique supplier (fresh fish, fresh gutted, fillets, slices, ready to cook - ready to cook, smoked, ready to eat - ready to eat, sushi, frozen, canned fish etc.)
- cooperation to implement own-brand products and to study new references
- other (please specify) _____

7. What do you think might be the disadvantages (criticisms) of participating in any form of aggregation (cluster, network, etc.)? (You may choose multiple answer options)

- Hard in management
- Fear of increased competition among participants
- Lack of trust among partners
- Other (*please specify*) _____

8. In your opinion what could it be the strategic guidelines to improve the commercial performance of seafood products at the large-scale retail trade? (You may choose multiple options)

- Focusing on fresh seafood
- Focusing on gutted/filleted/sliced fresh fish, ready-to-cook, smoked, ready-to-eat and sushi references
- Focusing on canned fish
- focus primarily on fresh and ultra-fresh seafood references with relevant level content that can "make life easier" for consumers
- Managing the offering from a category management perspective, reorganizing the selling area and product communication
- Properly rationalize the available references
- Improving the visibility of higher profile products
- Greater focus on the take-away area through the implementation of products with sustainable packaging, longer shelf life and single-portion size.
- Enhancing the offer of seafood-based ready to eat meals in the delivery area
- Improving the visibility of higher margin references by revising the layout of the fish market area
- Communicating fishing methods that respect animal welfare principles
- Improving the professional and relational skills of desk workers through the implementation of dedicated training programs
- Producing cookbooks and offering them to clients
- Other (*please specify*) _____

ANNEX THE APULIAN CASE STUDY

ANNEX to the Cluster Market Positioning Study

B2B dynamics of the fisheries sector

The case study of the Apulia Region

Introduction

In the framework of Activities 5.3 of the ITACA project, CIHEAM Bari has conducted a specific study on the commercial dynamics of the regional fisheries sector, with specific reference to small pelagic, through the creation of three synergic and complementary activities, namely:

Activity 1: Organization of 3 meetings ITACA - B2B on the regional territory of Apulia involving the operators of the supply chain (wholesalers, processors and GDO operators). Two of these meetings were organized in form of special B2B sessions conducted with the help of an expert facilitator within the operators awareness events scheduled in April 2022 (on Saturday, April 9th at Bisceglie and on Saturday, April 23th at Castro). A third B2B meeting was organized in Tricase Porto. The objectives of the meetings were to:

- introduce the commercial world to the experience and opportunities of the Adriatic cluster of small pelagic fishing.
- stimulating mutual interest between producers and traders.
- stimulating trade agreements.

Activity 2: Cognitive survey through a semi-structured questionnaire (Annex no. xxx), formulated in such a way as to leave a certain freedom to the interviewed's answers, albeit within pre-structured grids. The questionnaire was set up in different sections according to the target audience (wholesale traders, fish processing operators, GDO operators)

The objectives of the survey were:

- to detect the positions of the stakeholders regarding the opportunity to undertake structured commercial relations with the Adriatic cluster of ITACA;
- probing attitudes to market positioning strategies;
- detect input and suggestions.

Activity 3: Preparation of a report on the B2B guidelines of the pilot area Apulia.

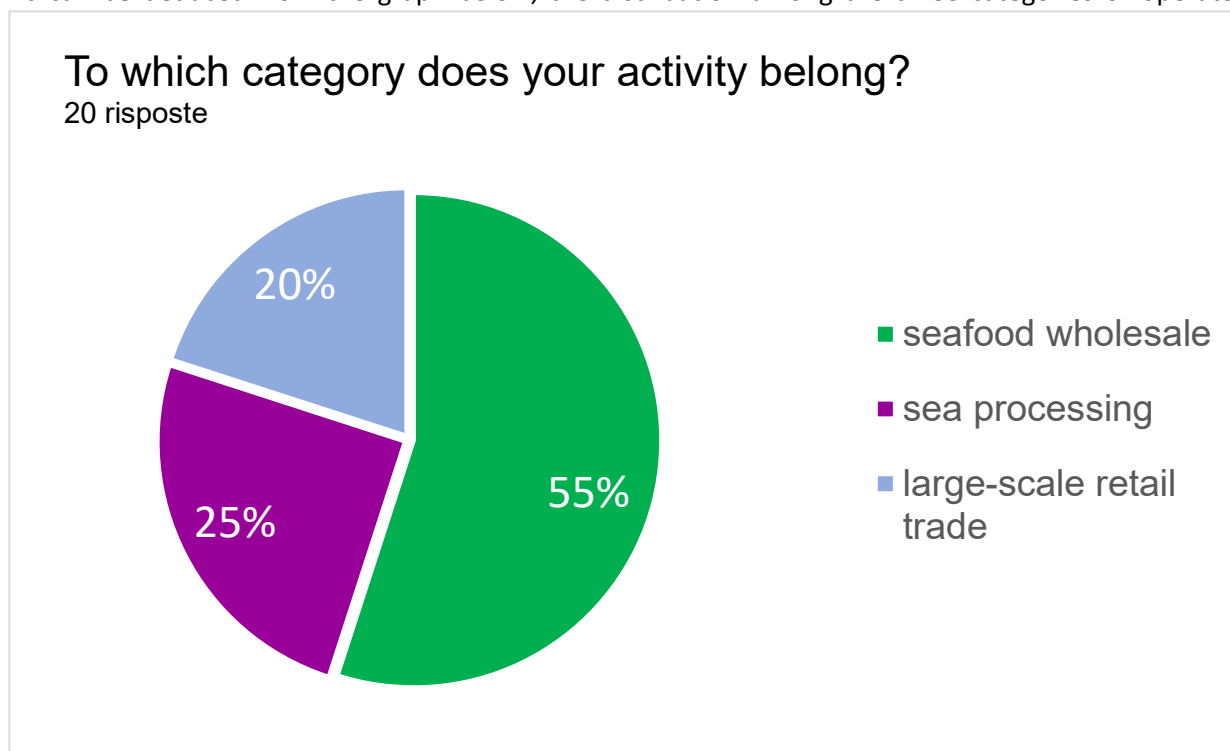
Results

The questionnaire was submitted to operators either through face-to-face interviews during B2B meetings, meetings at companies' operating headquarters or through phone interviews.

In total, it was possible to collect feedback from 20 operators in the regional fish trade sector. The following table summarizes the identifying data of the sample.

N.	Company	Activities in the supply chain	Name	Task in the company	Company headquarters	Province
1	SEA & FISH società acquicola e di trasformazione	Seafood processing	Ciro Nenna	CEO	Manfredonia	Foggia
2	MINAVA FARM Scarl Società Acquicola e di Trasformazione	Seafood processing	Rino Tampone	CEO	Manfredonia	Foggia
3	MARICOLTURA SAN VITO Scarl Società Acquicola e di Trasformazione	Seafood processing	Agostino Totagiancaspro	CEO	Taranto	Taranto
4	INMARE COOP. Società Acquicola e di Trasformazione	Seafood processing	Aldo Maria Reho	CEO	Racale	Lecce
5	MAREVIVO SRL	Wholesale	Orazio Albano	Resp. R&S	Castro	Lecce
6	PORTA D'ORIENTE Srl	Wholesale	Antonella De Pascalis	CEO	Carpignano Salentino	Lecce
7	TERRA D'OTRANTO Srl	Wholesale	Antonella De Pascalis	CEO	Carpignano Salentino	Lecce
8	TOP FISH di Gramazio Clementina	Wholesale	Clementina Gramazio	CEO	Manfredonia	Foggia
9	SEA & FISH Società Acquicola e di Trasformazione	Wholesale	Ciro Nenna	CEO	Manfredonia	Foggia
10	ITTICA DI BARI Snc	Wholesale	Stefano Palmieri	Member	Bari	Bari
11	MINAVA FARM Scarl Società Acquicola e di Trasformazione	Wholesale	Rino Tampone	CEO	Manfredonia	Foggia
12	MARICOLTURA SAN VITO Scarl Società Acquicola e di Trasformazione	Wholesale	Agostino Totagiancaspro	CEO	Taranto	Taranto
13	ITTICA VENTURA Srl	Wholesale	Michelina Ventura	Director	Bisceglie	BAT
14	REHOMARE SRL	Wholesale	Aldo Maria Reho	Director	Racale	Lecce
15	INMARE COOP. Società Acquicola e di Trasformazione	Wholesale	Aldo Maria Reho	CEO	Racale	Lecce
16	MAREVIVO SRL	Wholesale	Orazio Albano	Resp. R&S	Castro	Lecce
17	TODIS	Large-scale retail trade	Giuseppe Cavallo	Sales manager	Rutigliano	Bari
18	GLN GAETANI Group	Large-scale retail trade	Gianluca Gaetani	Sales manager	Matino	Lecce
19	ALDA Group	Large-scale retail trade	Giovanni Orsini	Sales manager	Aradeo	Lecce
20	GRUPPO MEGAMARK	Large-scale retail trade	Carmelo Orlandino	Category manager	Trani	BAT

As can be deduced from the graph below, the distribution among the three categories of operators is:

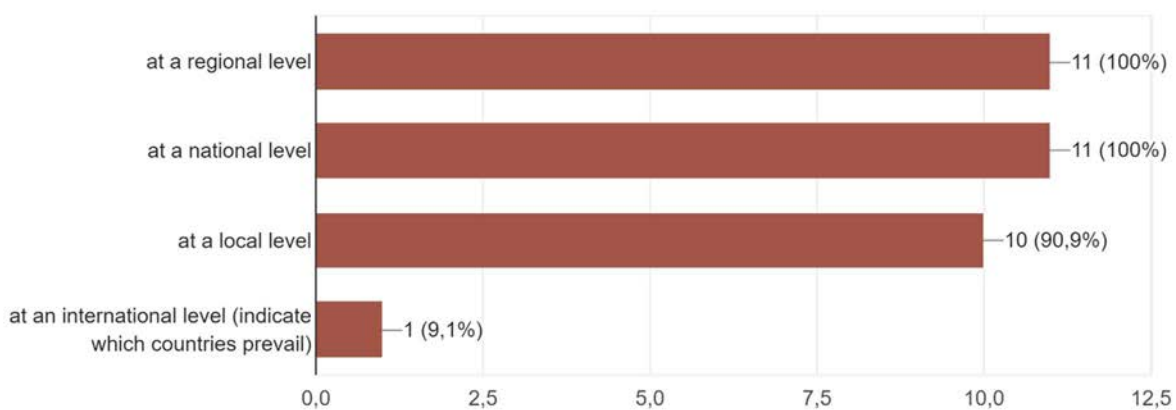


Section 1. Fish wholesalers

About the category of wholesalers, the total of the operators interviewed reports that their territorial scope of reference is local, regional and national. Amongst them, only one operator reports to have also an international reference market (namely in Greece, Spain, Argentina and Vietnam).

1. In what territorial area do you routinely conduct your business relations with suppliers and buyers in the seafood sector?

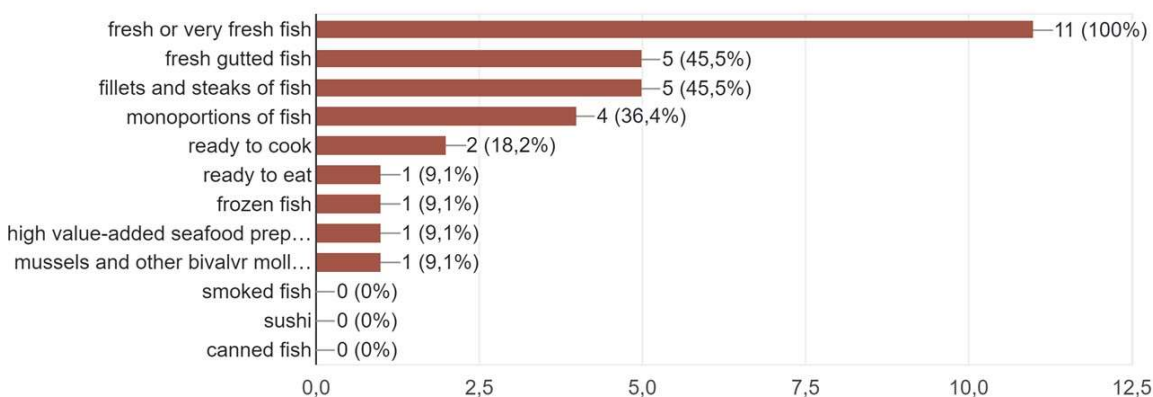
11 risposte



Regarding the productive references of greatest interest to wholesalers, respondents affirm that they are primarily interested in fresh or very fresh fish, after in fresh gutted fish and fillets and steaks of fish. Lastly, ready to cook and ready to eat, frozen fish, high value-added seafood prepared with local recipes, mussels and other bivalve mollusc.

2. What are the productive references of your main business interest?

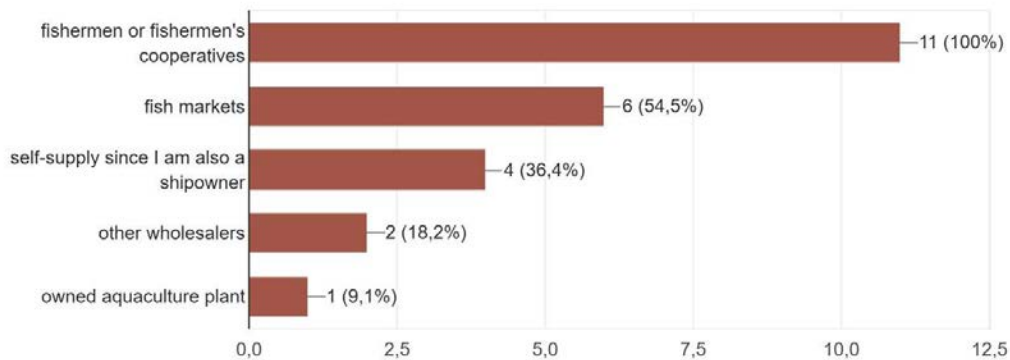
11 risposte



Regarding commercial fish supply channels, 100 % of the sample of wholesaler's buys mainly from fishermen and fishermen's cooperatives, followed by fish markets. Some other procure fish from their own fishing fleet because they are also vessel owners.

3. What are your main trading channels of supply?

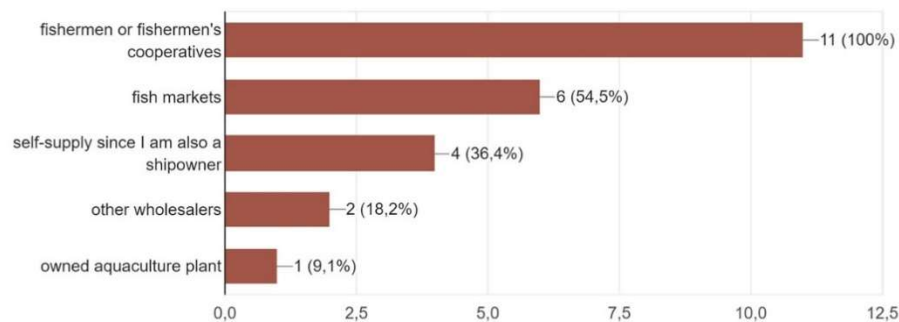
11 risposte



The next table shows the main trade channels that Apulian fish wholesalers use to sell their product. It is evident that other wholesalers and traditional retail stores (fishmongers) predominate. Still little exploited is the channel of online platforms.

3. What are your main trading channels of supply?

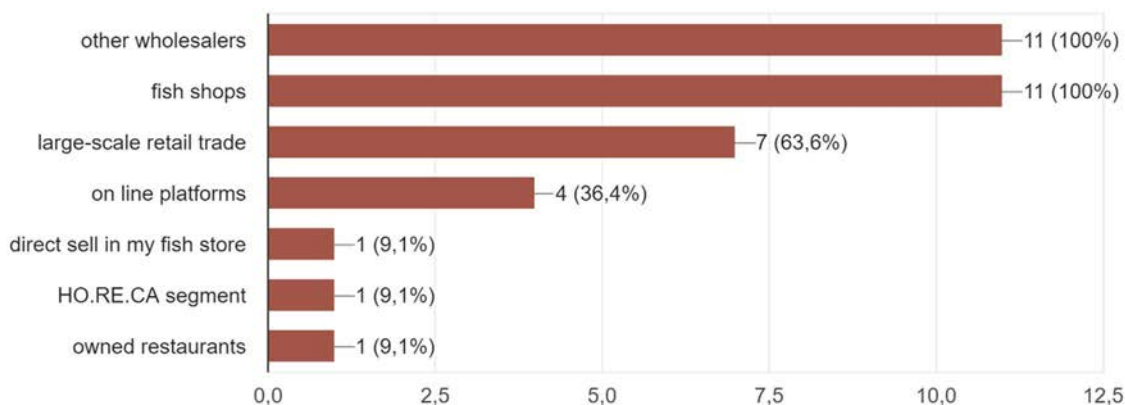
11 risposte



Having considered the following table, it can be easily noticed that the main trading channels for seafood wholesalers remain both fish shops and other kind of fish distributors with a very high percentage (around 100%) of trading, in comparison with a quite low percentage (less than 10%) made out of owned restaurants and HO.RE.CA segment.

4. What are your main sales trading channels (your customers)?

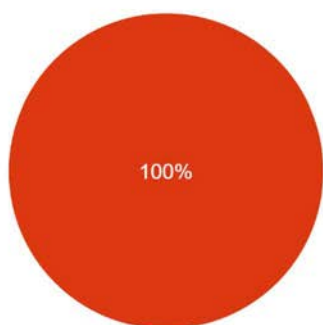
11 risposte



The following graphic shows that, despite the fact that all the companies (100%) surveyed are not member of any trade agreement involving fish supply chain projects yet, all of them would be interested in signing future partnerships with other companies or organizations involved with specific regard to small pelagic, such as anchovies and sardines.

5. Does your company/organization have already had opportunities to be actively involved in fish supply chain projects with specific regard to small pelagics and sardines) by signing any trade agreements?

11 risposte

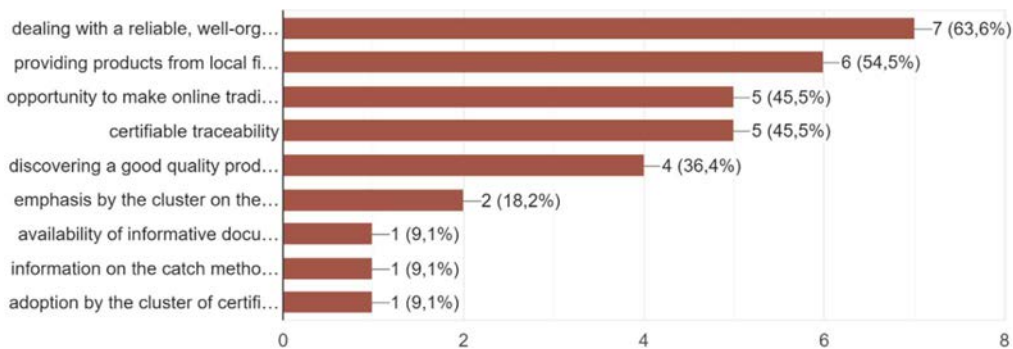


- my company is not member of a network, and it is not interested in any future partnerships
- my company is not member of a network, but it is interested in any future partnership
- my company is already member of a network, and it is not interested in future...
- my company is already member of a network, but it is interested in future p...

Since all of the fish wholesalers surveyed declared to be not engaged to any trade agreement with other companies of the relating market, the next section has been dedicated to the understanding of what would motivate them the most in order to engage with business groupings with specific regard to Adriatic pelagic clusters. To this extent, more then the half of the surveyed wholesalers affirmed that what makes them feel motivated is the awareness to deal with a reliable, well-organized and efficient partner. Together with that, providing products from local fish landings plays a big role as well. From the data analysed, it emerges that the good quality at a competitive price in a context of competitors with the same characteristics and the traceability criteria are also key element. On the other hand, the graphic below shows that criteria such as the adoption by the cluster of certified ethical and responsible practices or the availability of concise informative documents regarding the cluster and its product are not crucial for fish wholesalers to engage in economic agreements.

6. What would motivate you to engage in relationships with a business grouping - Adriatic Small Pelagics cluster?

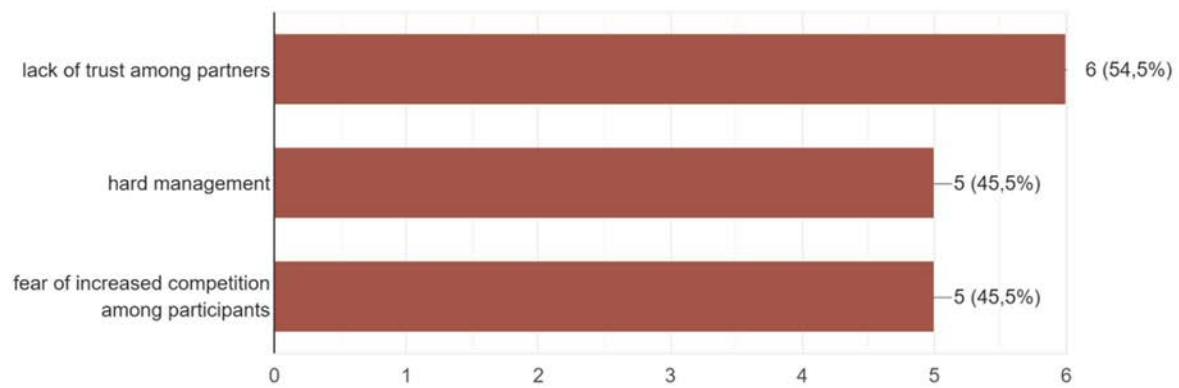
11 risposte



With regard to fish wholesalers' opinion on what they think it might be the disadvantages of participating in any form of aggregation such as clusters or networks, the gap between the three possible options is slight. As a matter of fact, if the lack of trust among partners seems to be the main reason that leads most of the interviewed to do not engage in any form of aggregation as mentioned above, to the same extent both the hard management and the fear of increasing competition among the participants themselves, it shows to be main reason to affect the willingness of fish stockists to take part in trade agreements.

7. What do you think might be the disadvantages (criticisms) of participating in any form of aggregation (cluster, network, etc.)?

11 risposte

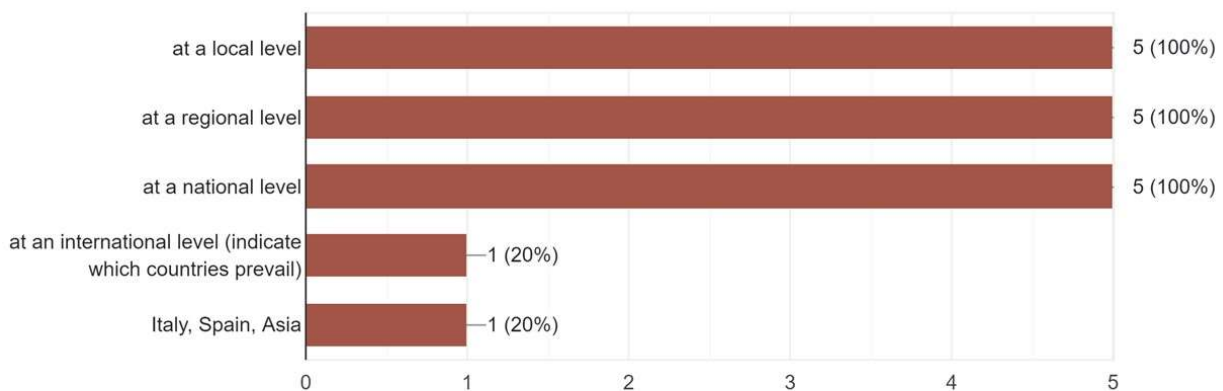


Section 2. Seafood processors

The sample of Apulian fish processors who participated in the survey mainly operates at local, regional and national level. Only one operator declares to have commercial relations abroad (namely in Italy, Spain and Asia).

1. In what territorial area do you routinely conduct your business relations with suppliers in the seafood sector?

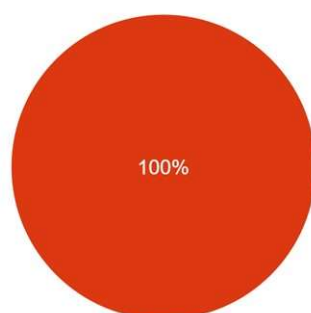
5 risposte



All of the processors interviewed declare that they are not part of any network, but they would be interested in joining any partnerships.

2. Has your company/organization already had opportunities to be actively involved in fish supply chain projects with specific regard to small pelag...ies and sardines) by signing any trade agreements?

5 risposte

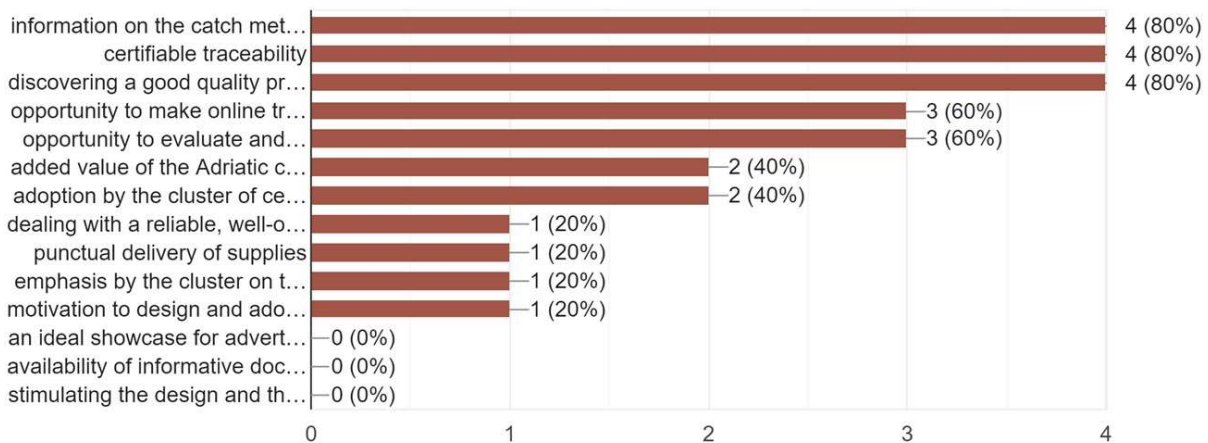


- my company is not member of a network and it is not interested in any future partnerships
- my company is not member of a network, but it is interested in any future partnership
- my company is already member of a network and it is not interested in any...
- my company is already member of a network, but it is interested in future p...

Concerning the reasons that could lead to trade relations with a group of companies, processors give priority to the availability of information on the catch method, the catching gear, the fishing area, certifiable traceability and the discovery of a good quality product at a competitive price in a context of competitors with the same characteristics. Subsequently, the graphic below shows that they would rather catch the opportunity to trade online (e-commerce) and to evaluate and display the offers of the cluster on an online marketplace, such as online showcases, trading platform and booking platform. Another main reason that would motivate them to engage in relationship with business grouping is related to the added value of Adriatic fish compared to ocean fish and the adoption by the cluster of certified ethical and responsible practices. Despite to what expressed from the operators of the GDO, the motivations linked to the punctual delivery of supplies appears less stringent.

3. What would motivate you to engage in relationships with a business grouping - Adriatic Small Pelagic cluster?

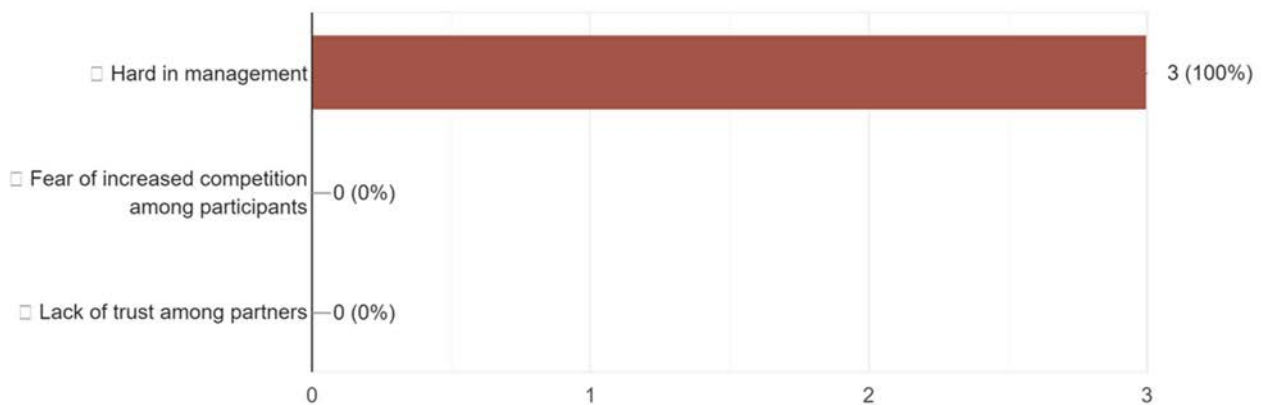
5 risposte



Like seafood processors, also for converters the main criticism related to participation in aggregate forms of business may lie in the possibility of increasing management difficulties.

7. What do you think might be the disadvantages (criticisms) of participating in any form of aggregation (cluster, network, etc.)?

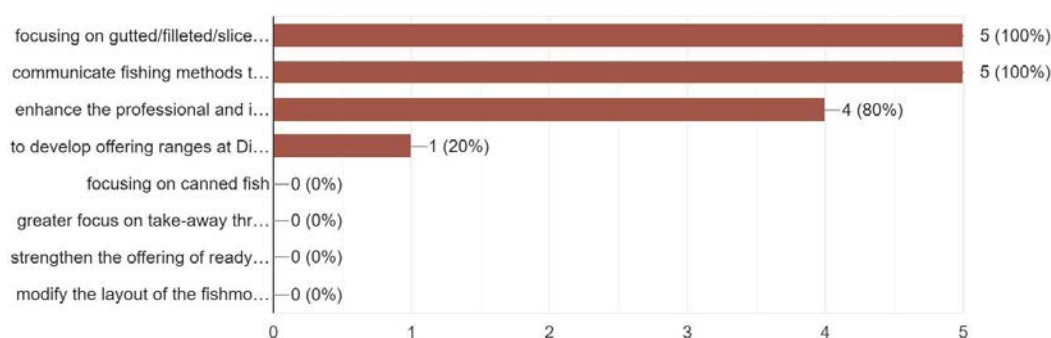
3 risposte



Finally, in relation to the strategic guidelines that could improve the positioning of fish processing products within large-scale retailers, transformers indicate that focusing on gutted/filleted/sliced fresh fish, ready-to-cook, smoked, ready-to-eat and sushi references, is a high priority. Other priorities identified by processors are both fishing methods complying with animal welfare principles and strategic actions to enhance the professional and interpersonal skills of processors through the implementation of dedicated training programs.

5. What do you suggest it could be the strategic directions necessary to improve the attractiveness of processed products to large-scale retailers?

5 risposte

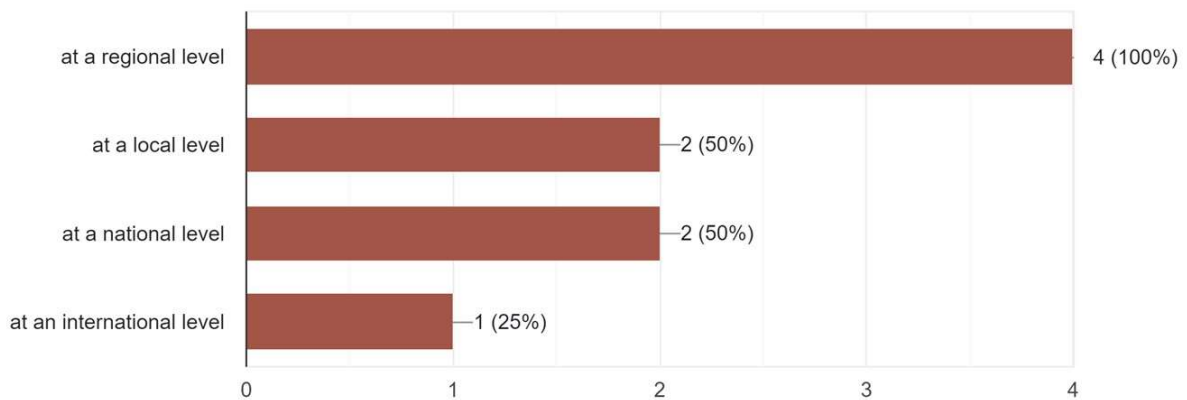


Section 3. Large scale retail-trade

As regards to the large-scale retail-trade segment, the trend of Apulian companies to operate mainly on a regional, local, and national scale is confirmed. Only a larger group states that it also operates internationally (mainly in Croatia and Greece).

1. In what territorial area do you routinely conduct your business relations with suppliers in the seafood sector?

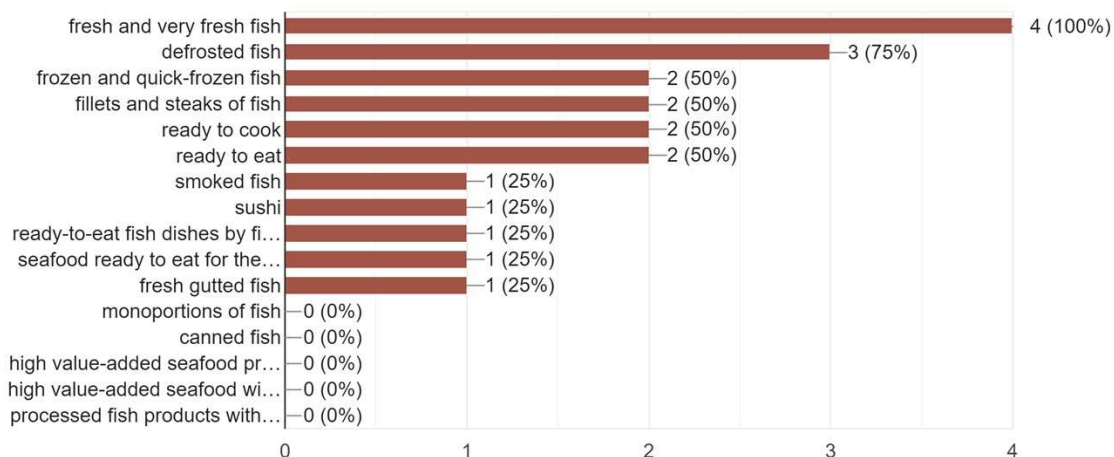
4 risposte



In this sector, the field of commercial production references for fish has been extended because of the direct relationship with the final consumer who takes more diversified choices. It dominates the fresh and very fresh fish, followed by the thawed fish. The frozen and quickly frozen fish, ready to cook and ready to eat are equally interesting. Some respondents also mentioned smoked fish, sushi, ready-made fish dishes at fixed weight and seafood ready to eat for the gastronomy area.

2. What are the productive references of your main business interest?

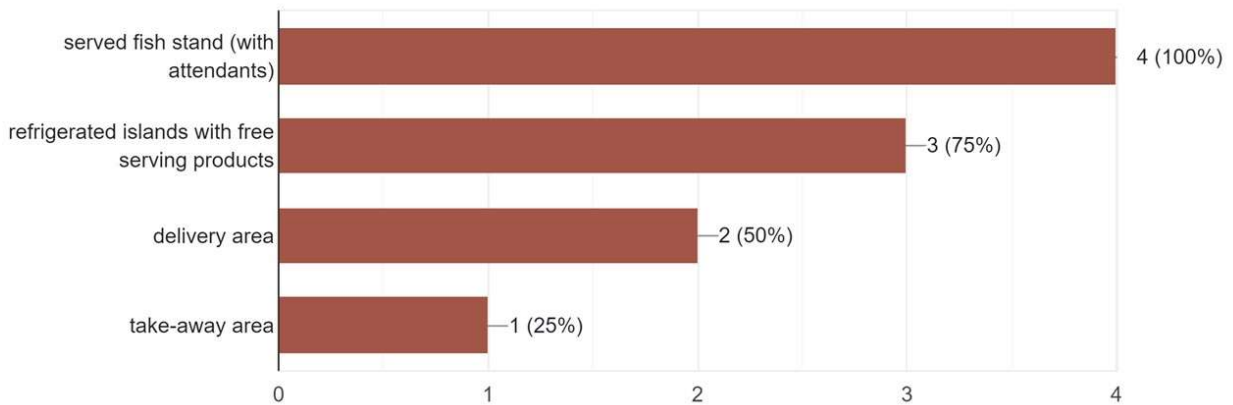
4 risposte



In comparison with the commercial spaces dedicated by the large regional distribution to fish products, the type of sales area preferred is served fish stand (with attendants) followed by refrigerated islands with free serving products, delivery area, take-away area in descending order. The answers clearly indicate that the Apulian consumers are basically keen on the more traditional commercial exercise of buying fish, that is namely the fishmonger's products, even when the purchase is carried out in a large-scale commercial distribution centre.

3. What space is dedicated to seafood in your commercial areas (retail outlets)?

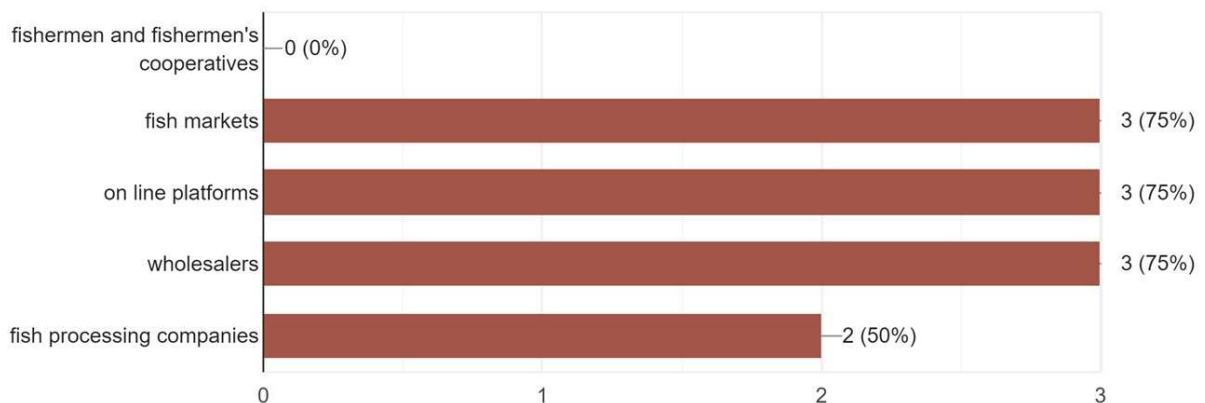
4 risposte



Regarding the source of supply of fish, the Apulian operators of the GDO signal to operate mainly purchases from fish markets, online platforms and wholesalers. The graphic shows that it is also important for them the direct channel with transformers for the supply of processed products to be displayed on the shelves of commercial surfaces.

4. What are your preferred suppliers?

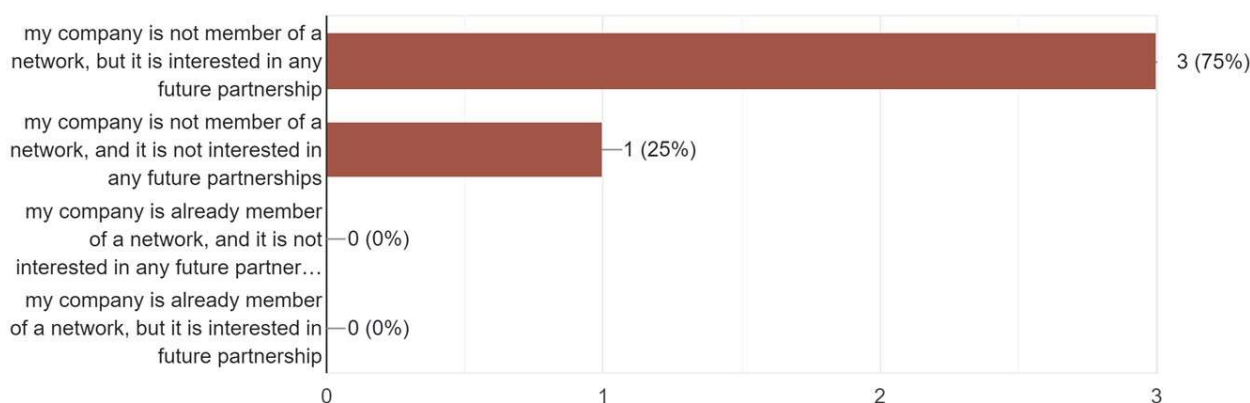
4 risposte



On the aptitude to be involved in supply chain projects, clusters and/or other forms of business aggregation, the answers confirms the current condition for most of them to operate in single form, although almost all of them declare to be interested in future partnerships. Only one operator out of four claims to be not interested.

5. Does your company/organization have already had opportunities to be actively involved in fish supply chain projects with specific regard to small...hovies and sardines) by signing trade agreements?

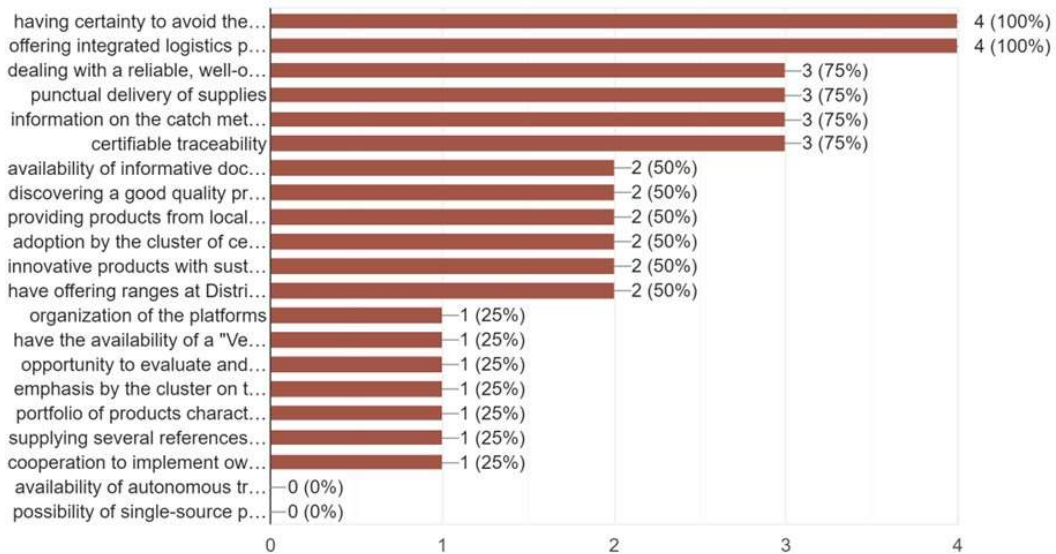
4 risposte



Regarding the motivations that could encourage the regional operators of the GDO towards the establishment of commercial relationships with enterprises groupings (for instance Adriatic Small Pelagic Cluster), the most frequent responses indicate that both having the certainty to avoid the occurrence of a sudden "out of stock" and offering integrated logistics products and services in favour of large-scale retail trade are the main reasons for engagement. Such indication underlines from a typical and fearing eventuality on large scale retailers' behalf to remain without suppliers on the on hand, on the other hand the necessity to manage the logistic distribution in evolved form. There are also other interesting reasons for the strategic development of the cluster or the aspects related to trust, organizational efficiency and fairness of business relations. On the same level are set reasons related to the quality/price *ratio*, the opportunity to acquire products from local fish landings, the certification of ethical and responsible fishing practices, the availability of innovative products with sustainable and original packaging, etc.

6. What would motivate you to engage in relationships with a business grouping - Adriatic Small Pelagic cluster?

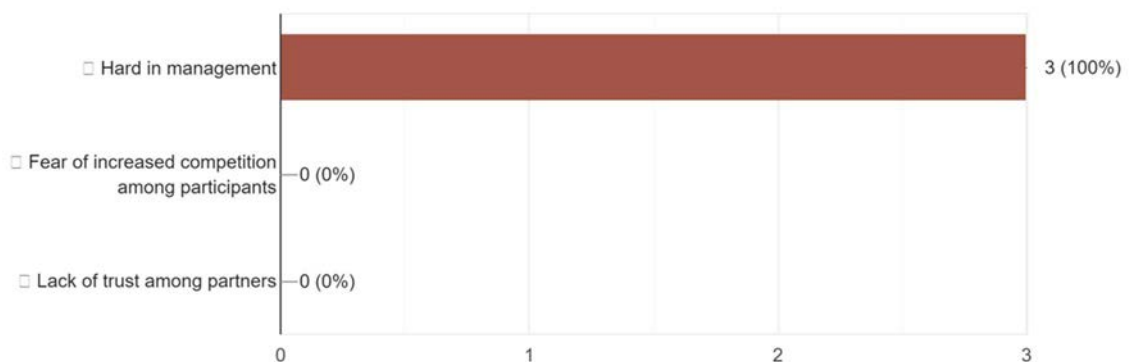
4 risposte



For what concerns the main worries on large-scale retailers to establish relations with a cluster, all the Apulian operators of the GDO affirm that the main difficulty it will relate the management aspect.

7. What do you think might be the disadvantages (criticisms) of participating in any form of aggregation (cluster, network, etc.)?

3 risposte



The operators interviewed identify the necessity to head on the fresh fish and the very fresh one. Also reported are actions to strengthen the visibility of products of greater commercial profile and the improvement of the professional and relational skills of desk workers. This can be achieved through the implementation of dedicated training programs. In conclusion, very high strategic value is attributed to the commercial push towards gutted/filleted/sliced fresh fish, ready-to-cook, smoked, ready-to-eat and sushi references considered more strategic than canned fish.

8. In your opinion what could it be the strategic guidelines to improve the commercial performance of seafood products at the large-scale retail trade?

4 risposte

