

Feasibility study on cluster acknowledgement and certification

WP5	Cluster establishment and wide scale utilisation of the ICT system
Activity 5.3	Market positioning and long term strategies
D.5.3.3	Feasibility study on cluster acknowledgement and certification
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FEASIBILITY STUDY ON CLUSTER ACKNOWLEDGEMENT AND CERTIFICATION

Act. 5.3, D5.3.3

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1. INTRODUCTION

Being an integrative part of Blue Innovation SO 1.1., which is focusing the joint projects and actions aimed at creating platforms, networks and supporting the exchange of good practices in order to improve the transfer of knowledge and capitalize on the results achieved in the field of blue economy, ITACA deals with the competitiveness of the Adriatic small pelagic fisheries sector, encouraging the introduction of blue innovations and improving the sustainability of catch activities, and brings together all 7 regions participating the project.

ITACA focuses on SME pelagic fisheries and tangles two main species of ichthy: anchovies and sardines, which account for a significant share of revenue for the Adriatic sector (GSAs 17-18). The ITACA project actually contributes to the growth of the fisheries sector of the SP (WP3 - Tools for fisheries and mariculture management in the Adriatic Sea,), testing in 7 pilot regions (WP4 - Strengthening the Adriatic ecosystem and biodiversity) and encouraging large-scale implementation (WP5 - Models for sustainable fisheries management in the Adriatic) of the innovative tools aimed at small and medium-sized enterprises to increase the competitiveness of the small pelagic fisheries, including the management, organization and marketing throughout the establishment of a ITACA cluster

Witin the goal of the ITACA project - to establish and develop mechanisms that contribute to better exploitation of the blue economy in order to increase the efficiency of innovation activities in these sectors by strengthening knowledge transfer between companies, research and development centers, higher education and public sector cooperation – there comes this study as a practical and concise guideline into the subject of fisheries certification and more important, a manual for small pelagic fishermen keen to learn about advantages and benefits of cluster organization and small pelagic fish certification.

According to EU policies, more cost-effective commercialization of research results and wider access to knowledge is a must. The European Union, in a large number of its strategic documents (The concept of clusters and cluster policies and their role for competitiveness and innovation, 2008; Internet of Things Research Roadmap - Cluster, 2011; European Cluster Policy Group, 2009 and others) introduces various measures and policies to strengthen economic potential, encouraging the development of small and medium-sized enterprises through activities aimed at innovation, the establishment of small and medium-sized enterprises, networking and cluster development. Encouraging networking is important especially in the context of the fact that SMEs make up 99% of the total number of active businesses in the European Union. Yet in 2008, the European Commission adopted a document entitled "Powerful clusters: the main drivers of Europe's competitiveness", which states that clusters are "a powerful driver of economic development and a stimulus for the development of innovation in the European Union." The document states that "they create a fruitful business environment for companies, especially SMEs,

to collaborate with research institutes, suppliers, clients and competitors in the same geographical area.”

For this reasons , establishing a cluster of small pelagic fisheries – ITACA CLUSTER - is expected and desired, both as a tool for achieving the market / sales results and as a tool to work in a sustainable way.

Within the study opportunities for improvement and market positioning will be outlined, stemming from:

- a) the achievements associated with international certifications in fisheries
- b) the power of cluster cooperation

Furthermore, through the catalog of recognized and relevant certificates, a high level of benefits will be shown from the introduction of its own certification system in the area of small pelagic fish, especially sardines and anchovies.

Final chapters will practically present the model how ITACA cluster and a specific certification can help with reaching the following goals, specifically:

- Ensure sustainable growth through environmentally sustainable, resource efficient, innovative, competitive and knowledge-based aquaculture;
- Socially responsible encouragement of cross-border association and cooperation at the local and regional level
- Quality control and traceability
- Investing in innovation processes and education of fishermen

To resume, anchovies and sardines are an important fish resource both from an economic point of view (total catch value) and from a social point of view (number of entities involved) in the Adriatic, but fishermen operating in this sector face a number of problems limiting their competitiveness to increasingly globalized markets. Therefore, the methodological approach of ITACA is defined through an innovative cross-border model of analysis of the state of fish stocks in relation to the impact of fisheries on the environment, the fish stock and the demand for fish in the market, means optimizing the use of resources in relation to demand. In accordance with EU and national fisheries policies, which encourages operational guidelines for managing the use of sustainable capture systems of a defined set of target species, linking their ecological characteristics and spatial distribution throughout the year with

market demands, the pilot of ITACA project - ITACA webAPP would provide an insight into the state of small pelagic fish in the Adriatic Sea, with the aim of adopting sustainable fishing practices. The main features of WebAPP are the following:

- The economic module allows fishermen to monitor market data and perform predictive simulations of catches in the following month thanks to algorithms based on historical data, including the most probable selling price in the market is based on simulations made throughout two bio-econometric Models, one based on a daily basis and one based on a monthly basis;
- Statistics allow fishermen to see in graph form the catch trend relative to the average price for the last month or last six months.
- The bio-ecological module, on the other hand, allows the average size of fish caught to be plotted and compared with the average estimated in different fishing areas.

2. CATALOGUE OF FISHERIES CERTIFICATES

Certified products have a better chance of being marketed. There is a greater demand for them, and they achieve a better price. The key preconditions for gaining such position are the development of technical specifications and harmonization of all the actions related with the sector with the prescribed standards. This is followed by a certification and protection process.

It is important that operators and cluster are aware that introducing and adhering to standards is just the beginning. Control and constant quality control is another important step. This is followed by an extensive part of labeling, information, and promotion. It is true that customers are willing to pay more for a protected & certified product, but for a customer to pay for it, he must know about it and trust that brand.

Certification is therefore to be seen as an incentive tool which will improve the small pelagic fisheries management through the resulted benefits, generating economic, social, and environmental measurable positive impacts. Certification schemes are programmes that aim to increase customer awareness of the environmental impact and sustainability of their seafood purchasing choices. It is a means of communicating to customers that the product is sourced from well-managed capture fisheries or aquaculture production facilities that focus on issues related to the sustainable use of aquatic resources.

In this procedure a third party gives written or equivalent assurance that a product, process, or service conforms to specified requirements. Certification may be, as appropriate, based on a range of inspection activities which may include continuous inspection in the production chain (based on ISO Guide 2, 15.1.2 and Principles for Food Import and Export Certification and Inspection, CAC/GL 20). Certification is carried out by competent and recognized body. A certification body may oversee

certification activities carried out on its behalf by other bodies (based on ISO Guide 2, 15.2), and is accredited by the accreditation body to engage in certification. Certification body can be called upon an individual, organization or group of organizations that makes a formal application for a fishery to be assessed against the certain standard. The standard for certification includes requirements, criteria, and performance elements in a hierarchical arrangement. For each requirement, one or more substantive criteria are usually defined. For each criterion, one or more performance elements are usually provided for use in assessment.

The set of measures which are designed to guarantee that the product put on the market and bearing the ecolabel logo is really a product coming from the certified fishery concerned is called chain of custody (CoC). These measures should thus cover both the tracking/traceability of the product all along the processing, distribution, and marketing chain, as well as the proper tracking of the documentation (and control of the quantity concerned).

It is important to note that the monetary evaluation of economic, social and environmental benefits deriving from sustainability certification, brings enhanced access to markets, or the availability of premium prices for certified products, but the shift to sustainable production and trade requires a close collaboration between private and public actors. This is needed to bridge the gap between policy interventions and investment allocation, both aimed at creating more value for local producers (e.g. through the creation of new value chains).

Table of expected benefits of certification

Expected benefit / Stakeholder	Retailers/ food service sector	Consumers	Producers
Price increases	✓		✓
Improved client relationships	✓		✓
Improved management resulting in longer-term sustainability	✓	✓	✓
Better knowledge of provenance/ source	✓	✓	
Continued/improved access to markets			✓
Improved public image	✓		✓
Product differentiation and market segmentation	✓		✓

Global Sustainable Seafood Initiative - GSSI

Before giving an overview of the most significant fishery certificates, it is valuable to emphasize that GSSI (Global Sustainable Seafood Initiative) as a global platform with over 95 global partners (retailers, suppliers, NGOs, etc.) is a reliable resource of the fisheries certification programs that are successfully benchmarked as meeting responsible and sustainable sourcing.

GSSI is a public-private partnership working together on a common purpose: turn seafood into a driver for good to preserve oceans for future generations and drive forward more sustainable seafood for everyone. Its mission is to ensure confidence in the supply and promotion of certified seafood as well as promote improvement efforts in seafood sustainability globally. Through its strong relationship with the FAO, GSSI is uniquely positioned to support its Partners in accelerating the implementation of the UN Sustainable Development Goals. As one of the largest precompetitive collaborations in the world aligning businesses, NGOs, governments, and international organizations representing the full seafood value chain – the GSSI Global Partnership invites seafood sustainability leaders to join and become part of the solution.

Thus, process of small pelagic fisheries certification is to be within the framework of GSSI standards and certificates.

2.1. MSC – MARINE STEWARDSHIP COUNCIL

The MSC is an independent, global, non-profit organization whose role is to recognize well-managed fisheries and to harness consumer preference for seafood products bearing the MSC label of approval.

MSC standards are consistent with best practice codes and guidelines provided by the UN Food and Agriculture Organization (FAO), ISEAL and the Global Sustainable Seafood Initiative (GSSI). These reviews engage academics, fellow NGOs, governments, and industry.

Within MSC there are:

- a) MSC fishery standard – assessment if a fishery is well managed and sustainable, i.e. it turns around internationally accepted fisheries science and management.
- b) MSC chain of custody standard – ensures that products are traceable and separated from non-certified products. To use MSC blue logo, one must have the certification for chain of custody.

The blue MSC label is an eco-label existing because of the thread of overfishing, due to climate change or harmful fishing subsidies. It is only applied to wild fish or seafood from fisheries that have been certified to the MSC Fisheries Standard - a set of requirements for sustainable fishing. Fish and seafood

with the MSC blue label comes from a fishery that has been independently assessed on its impacts to wild fish populations and the ecosystems they're part of.

All along the supply chain, MSC certified products are separated from non-certified. The supply chain is traceable, i.e., it assures consumers that only seafood from an MSC certified fishery is sold with the blue MSC label and they preferentially purchase the seafood with the blue MSC label, which naturally leads to market demand for MSC certified seafood. This leads to an increased interest of the fisheries to join the MSC standard.

As a conclusion we may state that MSC works in a closed circle with fisheries, suppliers, and retailers to encourage sustainable seafood market. Within the research published in December 2021 proved the MSC Theory of Change, showing that market-based initiatives deliver social and economic benefits to seafood partners, providing also positive environmental outcomes. In practice Theory of Change proved that use of MSC label provides market-based advantages, such as price premiums. The research showed that fisheries are prone to MSC certification because it brings them new markets, preserves a market share, and directly brings impact on the image and reputation. To make this possible, fisheries are invited to coalesce (in clusters or similar) in associations which progressed toward MSC certification.

There are three main MSC fisheries standard requirements:

- fishing only healthy stocks
- good management so stocks can be fished for the long-term
- minimizing the impact of fishing on other species and the wider ecosystem.

Individual fishers or vessels cannot be MSC certified, only fishing operations.

An MSC certificate covers a vessel, fleet or individual operator using a certain gear type, fishing on a particular target stock. All these aspects are considered during a fishery assessment.

Vessels, fleets or individual operators fishing outside of the confines of their certification, would not be classed as MSC certified and therefore could not for example sell this catch into the [certified supply chain](#) or have these products carry an MSC ecolabel. This is to say that clustered fisheries are an ideal applicant. Vessels linked to fishing operations that are covered by an MSC certificate are publicly available through a vessel list document submitted on MSC website.

MSC certification process is independent, verifiable, and based on science. 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. 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.

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.

Last but not the least, 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.

2.2. FoS - FRIEND OF THE SEA

Friend of the Sea (FoS) was established in 2005 and reviews the sustainability of fisheries (and aqua culture) production based on published data. Its aim is to promote sustainable fisheries management through the certification of sustainable fisheries practices and sustainable fleet planning

Friend of the Sea is a project of the World Sustainability Organization, an international NGO whose mission is to promote environmental conservation.

The Friend of the Sea scheme works by approving fisheries/products if

- a) target stocks are not overexploited.
- b) fisheries use fishing methods which do not impact the seabed and
- c) they generate less than 8 percent discards (the global average estimated in FAO publications).

Fisheries are audited and certified against published information/data, following application by fisheries using a standard application form. Bureau Veritas or SGS checks chain of custody (traceability and documental evidence), actual fishing method and its compliance with legal standards.

There are around 60 capture fisheries products already approved under the FoS scheme. FoS-labelled products are now sold in Australia, Belgium, Czech Republic, France (including Martinique, Guadeloupe, Mayotte, Guyana and New Caledonia), Germany, Greece, Italy, Japan, Luxemburg, Mauritius, New Caledonia, Norway, Poland, Portugal, Reunion Islands, Romania, Spain, Switzerland, Turkey, UK, and the USA. The only fish from a developing country to have been certified, is a mixed fishery in Senegal.

Friend of the Sea certified products and services are subject to strict independent audits that verify both environmental and social standards. Procedure starts with the PIF (preliminary information form) which one fills online. After receiving the FoS contract with the offer from the Certification Body and after signing the contract, candidate agrees upon the audit date. The Certification Body carries out the audit and produces the certificate. Friend of the Sea inserts the name of the fishery and the audit report on its website. Friend of the Sea sends the logo and starts marketing, press and social activities.

Friend of the Sea criteria for sustainable fisheries require:

- non-overexploited target stock according to FAO, Regional Fishery Bodies and National Fisheries Authorities.
- no significant impact on the seabed.
- selective fishing gear (max 8 percent discard);
- no bycatch listed as 'vulnerable' or worse in the IUCN Redlist;
- compliance with legal requirements (including TACs, no IUU, mesh size, minimum size, etc.);
- waste and energy management.
- social accountability.

Additional criterion for the certification of tuna from sustainable fisheries: the use of non-entangling Fish Aggregation Devices (FADs)

Friend of the Sea has also created a set of marketing & communication tools: there are certification awards sustainable practices for Fisheries, Aquaculture, Fishmeal and Omega 3 Fish Oil. Friend of the Sea also promotes pilot projects related to restaurants, sustainable shipping, whale and dolphin-watching, aquaria, ornamental fish, UV creams and others.

2.3. RESPONSIBLE FISHERY MANAGEMENT (RFM)

Responsible Fisheries Management (RFM) is a third-party certification program for wild-capture fisheries, like the Marine Stewardship Council (MSC), Best Aquaculture Practices (BAP), and Aquaculture Stewardship Council (ASC) on the aquaculture side.

A non-profit foundation led by a diverse board of seafood and sustainability industry experts, became the owner of the Responsible Fisheries Management (RFM) Certification program. The Alaska Seafood Marketing Institute officially handed over the ownership after a six-month period of transition following over ten years of dedication to developing the robust and independent RFM certification for the industry.

RFM is directly based on criteria from the United Nations Food and Agriculture (FAO), which provides the world's most recognized fisheries management guidance. Developed with the participation of the world's leading fishery biologists, environmental organizations, and fishery managers from 70 countries, any change to FAO criteria and guidance documents occurs through a measured, deliberative process.

As a result of using FAO criteria, RFM is not beholden to special interests that results in frequent changing criteria for standards nor standards measurement. Other certification schemes can't offer this level of stability.

Like the other wild-capture seafood certification programs, RFM provides credible standards for sustainable or responsible fishing and supply chain traceability. It has two certification standards:

1. Fisheries Standard
2. Chain of Custody Standard (CoC)

Everyone involved with certification process is aware that cost control is a major issue for sourcing sustainable seafood. Logo fees add costs into the supply chain while funding some certification program's ability to exist. RFM lets the supply chain demonstrate proof of sustainable sourcing without having to pay any logo licensing fees for any use of the RFM logo. RFM does not generate any revenue on the marketing of its logo, nor does its success depend on any financial gain through logo licensing. The RFM logo is used purely as a way for those with RFM Chain of Custody to communicate, at no cost, the origin and that their seafood is certified sustainable. RFM's goal is to make certified sustainable and traceable seafood more accessible to all.

Key attributes of RFM Certification:

- Based on internationally recognized criteria from the United Nation's FAO
- Consumer-facing eco-label – RFM Certified logo has zero logo-licensing fees!
- RFM Certified logo allows companies to highlight certified sustainable seafood and preserve the Origin
- Third-party accredited program provides impartiality
- Sound governance structure
- Stakeholder engagement
- Chain of Custody certification provides traceability through the supply chain back to its origin
- Transparent and collaborative assessment process
- Recognized by credible organizations – 1st to be recognized by GSSI

2.4. NATURLAND WILD FISH

The focus of certification to the Naturland Sustainable Capture Fishery standards is on small-scale fisheries and in particular those which set an especially good example. Certification to the Naturland Wildfish standards makes it obligatory to adhere to social standards at every link along the value-added chain. Products displaying the Naturland Wildfish logo must have been processed according to the Naturland standards for organic products. Besides the general requirements for sustainable fishing,

individual management requirements specific to each project are applicable. These contain additional specifications addressing ecological, social, and economic aspects.

Naturland was founded in Graefelfing near Munich in 1982. The work of this organic association is governed by the Naturland e.V. statutes. Naturland is represented in each of the German federal states by both full-time and volunteer staff members. Outside of Germany, Naturland is represented by volunteers on every continent and by local full-time staff in some countries. In addition to the general regulations on sustainable fisheries, Naturland collaborates with independent experts to define specific additional farming requirements on an ecological, social, and economic level for each individual fishery. The supplementary requirements are highly customised to deal with the specific challenges faced by each fishery and updated every two years based on their latest circumstances. They are always set in consultation with external experts and the fishery itself. Once finalized, the farming requirements must be met in full. Furthermore, fisheries with a Naturland Wild Fish certification must adhere to the obligatory social standards at all stages of the value chain. Finally, Naturland Wild Fish products must be processed in accordance with the Naturland standards for organic products and thoroughly inspected.

The following conditions that fisheries must be complied with:

- a list of the contaminants and noxious substances (from both anthropogenic and natural sources) that are relevant to the region and the type of production
- the frequency of and processes used in the analysis of these pollutants (with reference to the water, sediment, feed, and products)
- alert values of max. 50% of the critical German legal level 2, at which Naturland must be notified
- threshold values leading to the exclusion of the product from marketing. (as a rule, the German legal critical values)

The Naturland certification committee confirms that the producer is adhering to the standards with the annual certification letter. If the producer violates current standards, the penalties listed in the catalogue of sanctions, which is part of the producer contract, can be imposed. To this end, the words “product of sustainable fishery” must appear on the label, on the list of ingredients or in the informative text (on the product itself and not just in the accompanying brochure) identifying the source as fishery (as distinct from organic aquaculture). In this case only the logo granted for use by Naturland Zeichen GmbH and authorized by Naturland, namely the “Wildfish” logo, may be used.

The key themes of the Naturland standards for sustainable fisheries are using fish stocks and the overall ecosystem sparingly, avoiding critical or environmentally damaging methods of capture, complying with

social standards for fishery and fish processing employees, using organic methods for finer processing and a well-publicized, transparent certification process for all stages of the value chain.

2.5. ORIGIN - BUREAU VERITAS FOOD TRACEABILITY SOLUTION

Bureau Veritas is a world leader in laboratory testing, inspection, and certification services. Created in 1828, the Group has approximately 70,000 employees and 1,400 offices and laboratories located all around the globe. Bureau Veritas helps its 400,000 clients improve their performance and reduce their risks through innovative solutions and business expertise. It ensures safety, transparency, and quality throughout the entire supply chain.

Origin is the first consumer facing traceability claim that provides consumers with proofs of quality products through scanning the QR code of the product. This way Origin gives access to the complete history of a product: where it comes from, how it was made and processed, and how its quality was preserved.

Standards of the Origin:

- Record the data in real time chronologically and publicly
- Control the value chain
- Reduce recall costs
- Give a definite proof of transparency and trust for each product
- Create an innovating and differentiating brand image
- Applies for all industries
- Facilitate quality, integrity controls and certifications along the supply chain

Next to the certificating programmes, there are the pre-assessment tools such as :

2.6. FIPs – FISHERY IMPROVEMENT PROJECTS

FISHERY IMPROVEMENT PROJECTS (FIPs) are multi-stakeholder initiatives that aim to help fisheries work toward sustainability. With an aim to help the fisheries to benchmark their progress against credible, established metrics, FIPs connect a fishery to a global network of accredited marine science and fishery management experts, tailored to match fisheries goals, optimize implementation, and communicate effectively to its customers.

There are 2 types of FIPs

- **MSC Benchmarked FIP** - An MSC-Benchmarked FIP is preparing a fishery for full MSC certification. Fisheries are evaluated against the internationally recognized Marine Stewardship Council (MSC) standards.
- **Flexible FIP** - Flexible FIPs are used to establish an incremental improvement plan for a fishery. Marine scientists help to develop strategies for adopting industry-recognized best practices, customized to a specific fishery's needs to deliver greater efficiency, sustainability and transparency. A Flexible FIP may also prepare a fishery for an MSC-Benchmarked FIP.

The steps in FIP's services:

- **Scope Project**

SCS (Scientific Certification System) team determine which FIP option would work best for a certain fishery. They customize the FIP scope to address the fishery's opportunities for improvement against fisheries objectives and market drivers.

- **Authorize a Work Order**

SCS (Scientific Certification System) prepares a written proposal with a timeline, budget and work order for fishery approval. When the proposal has been accepted, and the work order signed, a neutral third party initiates a conflict-of-interest provision between a fishery and SCS.

- **Document gathering**

A SCS (Scientific Certification System) technical coordinator helps the fishery to assemble preliminary documentation that will be submitted to SCS. SCS reviews documentation against objectives to determine focal areas and also to pinpoint any data gaps that must be addressed in order to fully understand fishery's impact.

- **On-site Audits**

A team of experts and auditors conducts on-site visits to further collect and evaluate data. The team interacts with fishery technical staff to gather, clarify, and obtain any additional information that might help identify improvement opportunities.

- **Goal Setting**

Based on findings from documentation and onsite visits, SCS (Scientific Certification System) helps develop strategic goals that will deliver cost-effective, measurable improvements. These goals could be comprehensive or could focus on just one technical area, depending on specific needs.

- **Work Plan and Tool Development**

The SCS (Scientific Certification System) team works with the fishery to develop work plans and tools to meet the FIP goals. These tools could include data collection and tracking

systems, metric development, governance and policy recommendations, communication strategies and more.

- **Stakeholder Review**

Fishery may opt to have SCS convene key stakeholders to provide feedback on FIP. Stakeholder review is valuable for creating strategic alliances and obtaining insight into how best to communicate the efforts.

- **FIP Reports**

Report findings, recommendations and preliminary results are communicated with the fishery, so it can revise the report and so that all parties have the same understanding of the improvements and the path forward. SCS can also advise on a communications plan to key stakeholders.

Once when in the process, FIP provides an ongoing evaluation (support) to help fisheries track progress, to provide further guidance, and to update scores against benchmarking tools.

3. ELEMENTS OF THE CERTIFICATION SCHEME FOR SMALL PELAGIC FISH

Despite the importance of small pelagic fisheries in quantitative terms, the Adriatic small pelagic fisheries SMEs suffers from structural threats that prevent their competitiveness, due to the incertitude in the resource's availability and in the market requests. Thus, small pelagic fishermen are trying to increase the level of catches, by increasing the fishing effort, generating, on one hand, possible surplus in small pelagic fish landings, subsequently causing a decrease of selling price and a decrease of SMEs income, and most importantly overexploitation of stocks. Therefore, there is a need to increase the business capacities of small pelagic fisheries SMEs, by providing the enterprises with tools and mechanisms allowing to match the fishing effort with market needs, ensuring maintenance of the proper producer price, and at the same time preserving the small pelagic stocks from overexploitation.

In 2019, the landings of sardine in the EU continued the downward trend started in 2017. Compared with 2018, they decreased 8% in volume to 166.689 tons, and 6% in value to EUR 156 million. The average price increased by 2%, from 0,93 EUR/kg to 0,95 EUR/kg. With landings totaling 45.186 tons with a value of EUR 20 million, Croatia covered 27% of total EU in volume and 13% in value. Compared with 2018, this represented a 3% reduction in volume and a 3% increase in value. As for Italy, its sardine landings totaled 24.067 tons in 2019, thus dropping 10% or 2.802 tons from the previous year. Due to a 32% price growth, from 0,69 EUR/kg to 1,27 EUR/kg, the value increased significantly to EUR 31 million, which was 19% or EUR 5 million higher than in 2018.

After reaching a 10-year peak reached in 2018, the 2019 landings of anchovy in the EU decreased by 15% and totaled 114.794 tons. In the same time, the average landing price increased by 16%, from 1,50 EUR/kg to 1,75 EUR/kg, thus causing total value to decrease by only 2%, to EUR 201 million.

With incertitude in the available resources and to protect the SMEs income, there is a necessity for the products and processes to be further recognized and accepted in the market, but also to protect the developed intellectual property. To achieve those goals, it is necessary to propose and implement the most favorable certification scheme, considering characteristics of the small pelagic fisheries SMEs within ITACA cluster.

Sustainable and traceable seafood standards



Figure 1. Sustainable and traceable seafood standards - traceability of certified seafood through the supply chain

3.1. Market research

According to EU Fish Market 2021 edition from 2019 to 2020, household expenditure on fishery and aquaculture products grew by 17%, which was much higher than the 2.1% inflation rate of prices for these products. The growth trend is confirmed by data on household consumption of fresh fish in the EU’s largest fish consuming countries, which showed an increase of 7% in value and 4% in volume. On opposite, almost all EU countries recorded a drop in out of home consumption of fishery and aquaculture products. This increase was most likely the result of closures in the hospitality sector and subsequently switch in demand due to the COVID-19 pandemic, and the consequent increase of “at-home” consumption-consumption through the foodservice has to a large extent been shifted to retail sales.

Eurobarometer survey carried out in 2021, showed that 79% (in period 2018-2021 increased from 77% to 79%) of respondents were buying fishery products in shops and supermarkets. Although the main factor in choosing and buying products is the appearance of the product (in period 2018-2021 decreased from 59% to 58%), respondents are clearly indicating growing awareness towards “origin of the product” and

“brand or quality labels”, especially for the unprocessed products originating from wild catches. In other words, to get more value for the same or even smaller amount of the fish itself.

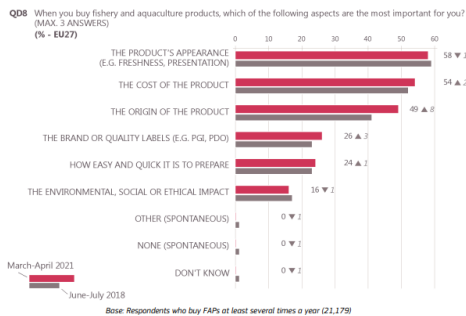


Figure 2. Respondents' answers to the question which is the most important aspect when buying fishery and aquaculture products (Source Eurobarometer 575 Report, 2021).

Geographical origin has been selected as the third most important factor when buying FAPs (Fishery and aquaculture products). The survey also shows that the origin of the product is becoming more and more important. This indicates the importance of geographical origin mark on the product package, as the reputation the product gains comes mainly due to its visibility in the market. There is need therefore for logos and other images representing the geographical indication on packaging.

In all EU countries, customers most often buy fish in the supermarkets, except for Greece, Malta, and Italy, where customers most often buy in the fish markets. Even in Croatia, fish is mostly bought in the supermarkets (69%). During 2020, due to the COVID-19 pandemic and lockdown measures implemented by national governments, the share of retail sales of unprocessed products increased significantly compared with 2019 at the expense of foodservice (UK increasing from a 69% retail share in 2019 to 82% in 2020; Spain retail sales share rising from 77% in 2019 to 85% in 2020; France increases from 72% to 82%; Italy from 80% to 87%).

Nowadays, almost all shopping is done in retail chains and supermarkets, which are fighting for the trust of customers. More than 60% of shoppers go out of their way to buy sustainable products — many customers only know or like a few sustainable brands and then default to big box retailers for other needs.

The development of conscious consumerism - ethical consumerism or green consumerism, signals a need for a strategic shift in how retailers approach their entire value chains. Brands with high responsibility performance don't just win consumers' confidence. Research shows they outperform their peers too— across operating margin, operating profit and total shareholder returns. Customer awareness is focused

on environmental protection, social responsibility and sustainability, yet sustainable products make up only about 15% of the market offer. This group of products has had the highest growth in the last five years or so, which represents the change in shopping culture led by the so-called Generation Z and Millennials. It is not easy for large companies to achieve such rapid turnaround, and the first step would be choosing the right benchmark for sustainability.

3.2. Regional product protection and promotion

In the case of the responsible and sustainable small pelagic fish in Adriatic, the protected geographical indications and designation of geographical origin with a trademark would be the first step for ITACA cluster and a realistic one. More precisely, ITACA cluster should work on finding its own certification system, following the guidelines and standards set by internationally acclaimed fisheries certificates.

Procedure for achieving the protected geographical indications and designation of geographical origin with a trademark is not too complicated + final consumer very well understands its benefits. EU quality policy aims to protect the names of specific products to promote their unique characteristics, linked to their geographical origin as well as traditional know-how. Product names can be granted a 'geographical indication' (GI) if they have a specific link to the place where they are made. The GI recognition enables consumers to trust and distinguish quality products while also helping producers to market their products better.

Products that are under consideration or have been granted GI recognition are listed in quality products registers. The registers also include information on the geographical and production specifications for each product. Geographical indications establish intellectual property rights for specific products, whose qualities are specifically linked to the area of production.

It allows for the registration of valuable product names produced according to a product specification in each geographical area by producers with recognized know-how. Geographical indications protect your products against misuse or imitation of the registered name and guarantee the true origin of the product to your customers. These rules ensure you and all producers in the given geographical area have collective rights over the product, if certain requirements are met.

A good example of such certification is certificate of the oyster from Mali Ston. Following this case of a good practice, ITACA cluster could certify Adriatic anchovy or Istrian anchovy.

Geographical indications for food items comprise:

PDO – protected designation of origin

Product names registered as PDO are those that have the strongest links to the place in which they are made.

PGI – protected geographical indication

PGI emphasizes the relationship between the specific geographic region and the name of the product, where a particular quality, reputation or other characteristic is essentially attributable to its geographical origin.

Non - geographical indications for food items comprise:

TSG - Traditional speciality guaranteed

TSG highlights the traditional aspects, such as the way the product is made or its composition, without being linked to a specific geographical area. The name of a product being registered as a TSG protects it against falsification and misuse.

Within Italy and Croatia there are seven GIs recognized under “Class 1.7. Fresh fish, molluscs, and crustaceans and products derived therefrom”, out of which 2 are referred to anchovy: “Colatura di alici di Cetara” and “Acciughe sotto sale del mar Ligure”.

3.3 Trademark protection

According to WTO trademark law, a trademark shall protect a sign which may be represented graphically and which is capable of distinguishing the goods or services of one undertaking from those of other undertakings. It is an exclusive right which is recognized for a mark used to distinguish the products and/or services of one (or more) persons from other persons in commercial transactions. Trademarks may protect signs, in particular: words, letters, numerals, abbreviations, graphical representations, combinations of colors and the tints thereof, three-dimensional forms, shapes of the goods or the packaging thereof, provided that they are distinctive, as well as the combinations of all the above indicated signs.

There are three kinds of trademarks that can be registered: individual marks, certification marks and collective marks.

Certification marks were introduced at EUIPO on 1 October 2017. They are a new type of trade mark at EU level, although they have already existed for many years in national systems. They are used to indicate that goods or services comply with the certification requirements of a certifying institution or organization; they are a sign of supervised quality. Any natural or legal person, including institutions, authorities and bodies governed by public law, may apply for EU certification marks provided that such person does not carry on a business involving the supply of goods or services of the kind certified.

A certification mark is any sign “capable of distinguishing goods or services which are certified by the proprietor of the mark in respect of material, mode of manufacture of goods or performance of services, quality, accuracy or other characteristics, with the exception of geographical origin, from goods and services which are not so certified “(Article 83 EUTMR). Therefore, the main objective of a certification mark is to distinguish the certified goods and services from those that are not so certified.

Certification marks are important for businesses that want to demonstrate the quality of their products. Trade associations and centralized commercial groups are the most common owners of these marks. To get the rights to use a given mark, the business's goods must reach a certain standard. By achieving this standard, companies can show that they use certain methods, workers, and materials to make a product.

An application for a European Union trade mark must contain a representation of the trade mark to be registered and a list of the goods and/or services to be covered by the mark. There are certain rules for how to present the list of goods and services:

- The goods and services should be specified as accurately and precisely as possible.
- They should be classified under one of the classes of the Nice Classification (divides the goods and services into categories or classes). The goods and services for which a trademark may be registered are classified in classes according to the Nice Classification, which contains 34 classes of goods and 11 classes of services.

Once filed at the European Union Intellectual Property Office (EUIPO), the trademark will be processed through following steps:

Examination period in which the goods and services seeking protection for, are reviewed to see if they have been correctly classified and their nature has been clearly indicated. To be eligible for registration, trademark must be distinctive and must not describe what is being sold.

Opposition period in which third parties who believe trademark should not be registered have three months to object, based on earlier rights (the third party has an earlier right (or more than one) and

believes that yours will, if registered, conflict with it) and absolute ground (the third party considers that your trademark should not have been accepted).

Registration has been done once the opposition period has passed. If nobody files an opposition or third-party observations, trademark is registered, and the registration is published. This is done so that other trademark owners and the public in general are aware that this trademark has been published.

Trademarks/brands are an efficient commercial communication tool to capture customer attention and make your business, products and services stand out. Customers viewing a trademark immediately know who they are dealing with, the reputation of your business and are less likely to look for alternatives.

3.4. Supply chain traceability

According to Regulation (EC) no. 178/2002 "traceability" is defined as the possibility of tracing food, feed, food-producing animals or substances intended for incorporation or expected to be incorporated into food or feed, through all stages of production, processing and distribution. This means that business entities must have ability to fully trace a product from the point of sale back to its point of origin.

The EU fisheries control regulation (EC) 1224/2009 requires the traceability and availability of production information on unprocessed fishery and aquaculture products throughout the supply chain. This has been amended to account for the additional catch information required. The control regulation only applies to fishery and aquaculture products from EU waters and landed into the EU. This establishes a control system to prevent, deter and eliminate illegal, unreported and unregulated (IUU) fishing, on fishery products entering the EU market. Fisheries control measures are necessary to combat fraud. The Commission also considers the provision of accurate and meaningful information about fishery products is necessary to maintain consumer confidence and enable informed choice. Therefore, it is essential that businesses at each stage of the supply chain from catching or harvesting to processing and retailing are clear about their responsibilities regarding fisheries and aquaculture traceability and consumer information. Product traceability is already a requirement under European Food Law which adopts the 'one up one down' approach for prescribed supplier and consumer information. Hence there is already traceability at all stages of production, processing, and distribution from catching or harvesting to retail. To help combat the landing of illegally caught fish from European waters, fisheries control measures in addition require prescribed information on fisheries and aquaculture products to be available throughout the supply chain.

All fisheries and aquaculture products must be put into 'lots' before first sale. Prescribed information should be provided at this point or at least before first sale. This information must then be 'available' at all stages of production from first sale through processing and distribution up to retail.

A 'lot' is defined as 'a quantity of fisheries and aquaculture products of a given species or the same presentation and coming from the same relevant geographical area and the same fishing vessel, or group of fishing vessels, or the same aquaculture production unit.' For each batch of fishery products, when unique identification or a LOT number is applied, it usually includes L marking and document type designations (LOG - electronic register of commercial fishing at sea, LB - register of commercial fishing at sea, CR - catch report). It is a numerical code consisting of: the last two digits of the year, the last five digits of the CFR number of the vessel; in the case of an electronic register - the last three digits of the serial number, or in the case of a paper register or report - the last four digits of the serial number of the register or report; FAO species codes. Information required for each lot of SP fish:

- Lot or batch number
- Supplier name and address
- Name and identification number of fishing vessel(s) or name of aquaculture unit
- Date of catch or harvest
- Quantity
- Predominant area where caught or farmed
- Category of fishing gear used
- Commercial designation and scientific name for species
- FAO alpha-3 code

When fish and shellfish are transported away from the port or place of landing this information should be available to hauliers. Inevitably lots of fish from different vessels or other sources of supply will be split and/or merged to meet with individual customer requirements. The fisheries control regulations allow for this provided a new identification number is given and it is still possible to trace back to catching or harvesting areas. The information can be provided by means of:

- Labelling or packaging
- Commercial documents accompanying the lot such as invoices or sales receipts. If so, there should be a means of identifying boxes or packages to which the documentation applies

- Electronic means such as bar coding or electronic chips

The benefits of traceability systems are often dependent on a specific company. A recent Comprehensive Reviews in Food Science and Food Safety article, *Assessing the Value and Role of Seafood Traceability from an Entire Value-Chain Perspective*, identified the following as the top seven benefits a business gains from traceability systems:

- Increase quality
- Improve product recalls
- Improve inventory tracking
- Improve food safety
- Improve customer service
- Respond to consumer demand
- Verify harvest date and location

3.5. Chain of Custody (CoC) Certification

Chain of Custody (CoC) Standard provides assurance that certified fish and seafood products are kept separate from non-certified products throughout the supply chain, and that procedures are in place so they can be traced back to certified sustainable fisheries. CoC verifies that certified material has been identified and separated from “ineligible and unacceptable” material as it makes its way along the supply chain to the market, in order to minimize the risk of public confusion between certified and non-certified fish products. To achieve this, a full product traceability system is required so products can be traced from their suppliers and tracked to their buyers, meaning all stakeholders in the fisheries value chain - from fisheries to retailers - that wish to use a certified claim on a product for marketing purposes need to be CoC certified. Chain of Custody aims to provide unbroken trail of accountability and improve transparency throughout the supply chain. The product is tracked to verify its quality and origin, but also to improve other factors that follow the production system such as human rights and environmental conditions. Thus, a set of measures and requirements for controlling the movement of raw materials and products is needed, at each stage of the supply chain.

3.6. Food safety

“Risk assessment” implies a scientifically based process, consisting of four steps: hazard identification, hazard characterization, exposure assessment and risk characterization. It is a systematic approach to the detection and control of food hazards and risks, to ensure that food reaches consumers without any contamination and to ensure food is safe for human consumption. The use of risk assessment has gained steadily in importance and recognition as the scientifically based approach for the development of food safety and quality standards. Note that all the certificates in the catalogue of fishery certificates do comply with food safety steps.

Like stated above risk assessment consist of four steps:

- Hazard identification - biological, chemical and physical agents capable of causing adverse health effects
- Hazard characterization - qualitative and/or quantitative evaluation of the nature of the adverse health effects
- Exposure assessment - qualitative and/or quantitative evaluation of the likely intake of biological, chemical, and physical agents via food
- Risk characterization - process of determining the qualitative and/or quantitative estimation, of the probability of occurrence and severity of known potential adverse health effects in each population, based on hazard identification, hazard characterization and exposure assessment (FAO, 2004).

Maintaining food security has become unconditional when it comes to food trade and customer demand. The food put on the market has to be of good quality and safe for consumption, as well as not be a source of disease and infection. For this reason, securing food safety and quality is a matter of international significance and a responsibility of food producers and governments. During the process of distribution food products go through all stages of supply chain, i. e. all processes which describe how food travels from a farm to the consumers tables.

Specific hygiene rules for the fishery products (Regulation (EC) No 852/2004):

Requirements for vessels:

- Vessels must be designed and constructed so as not to cause contamination of the products with bilge-water, sewage, smoke, fuel, oil, grease, or other objectionable substances.
- Surfaces with which fishery products come into contact must be of suitable corrosion-resistant material that is smooth and easy to clean. Surface coatings must be durable and non-toxic.
- Equipment and material used for working on fishery products must be made of corrosion-resistant material that is easy to clean and disinfect.
- When vessels have a water intake for water used with fishery products, it must be situated in a position that avoids contamination of the water supply.

Requirements for vessels designed and equipped to preserve fresh fishery products for more than twenty-four hours

- Vessels designed and equipped to preserve fishery products for more than twenty-four hours must be equipped with holds, tanks or containers for the storage of fishery products at the required temperatures
- Holds must be separated from the engine compartments and from the crew quarters by partitions which are sufficient to prevent any contamination of the stored fishery products. Holds and containers used for the storage of fishery products must ensure their preservation under satisfactory conditions of hygiene and, where necessary, ensure that melt water does not remain in contact with the products.
- In vessels equipped for chilling fishery products in cooled clean seawater, tanks must incorporate devices for achieving a uniform temperature throughout the tanks. Such devices must achieve a chilling rate that ensures that the mix of fish and clean seawater reaches not more than 3°C 6 hours after loading and not more than 0°C after 16 hours and allow the monitoring and, where necessary, recording of temperatures.

Hygiene requirements:

- When in use, the parts of vessels or containers set aside for the storage of fishery products must be kept clean and maintained in good repair and condition. They must not be contaminated by fuel or bilge water.
- As soon as possible after they are taken on board, fishery products must be protected from contamination and from the effects of the sun or any other source of heat. When they are washed, the water used must be either potable water or, where appropriate, clean water.
- Fishery products must be handled and stored so as to prevent bruising. Handlers may use spiked instruments to move large fish or fish which might injure them, provided that the flesh of the products suffers no damage.

- Fishery products other than those kept alive must undergo chilling as soon as possible after loading. However, when chilling is not possible, fishery products must be landed as soon as possible.
- Ice used to chill fishery products must be made from potable water or clean water.

Requirements during and after landing:

- Unloading and landing equipment that comes into contact with fishery products is constructed of material that is easy to clean and disinfect and maintained in a good state of repair and cleanliness.
- Avoid contamination of fishery products during unloading and landing, in particular by: (i) carrying out unloading and landing operations rapidly; (ii) placing fishery products without delay in a protected environment at the required temperature; and (iii) not using equipment and practices that cause unnecessary damage to the edible parts of the fishery products.
- When chilling was not possible on board the vessel, fresh fishery products, other than those kept alive, must undergo chilling as soon as possible after landing and be stored at a temperature approaching that of melting ice.

Requirements for establishments, including vessels, handling fishery products:

- Where chilled, unpackaged products are not distributed, dispatched, prepared or processed immediately after reaching an establishment on land, they must be stored under ice in appropriate facilities. Re-icing must be carried out as often as necessary. Packaged fresh fishery products must be chilled to a temperature approaching that of melting ice.
- Operations such as heading, and gutting must be carried out hygienically. Where gutting is possible from a technical and commercial viewpoint, it must be carried out as quickly as possible after the products have been caught or landed. The products must be washed thoroughly with potable water or, on board vessels, clean water immediately after these operations.
- Operations such as filleting and cutting must be carried out to avoid contamination or spoilage of fillets and slices. Fillets and slices must not remain on the worktables beyond the time necessary for their preparation. Fillets and slices must be wrapped and, where necessary, packaged and must be chilled as quickly as possible after their preparation.
- Containers used for the dispatch or storage of unpackaged prepared fresh fishery products stored under ice must ensure that melt water does not remain in contact with the products.
- Whole and gutted fresh fishery products may be transported and stored in cooled water on board vessels. They may also continue to be transported in cooled water after landing, and be

transported from aquaculture establishments, until they arrive at the first establishment on land carrying out any activity other than transport or sorting.

Health standards for fishery products:

- Organoleptic properties of fishery products
- Histamine
- Total volatile nitrogen
- Parasites
- Toxins harmful to human health

Storage of fishery products:

- Fresh fishery products, thawed unprocessed fishery products, and cooked and chilled products from crustaceans and mollusks, must be maintained at a temperature approaching that of melting ice.
- Frozen fishery products must be kept at a temperature of not more than -18°C in all parts of the product; however, whole frozen fish in brine intended for the manufacture of canned food may be kept at a temperature of not more than -9°C .
- Fishery products kept alive must be kept at a temperature and in a manner that does not adversely affect food safety or their viability

Transport of fishery products:

- During transport, fishery products must be maintained at the required temperature. In particular: fresh fishery products, thawed unprocessed fishery products, and cooked and chilled products from crustaceans and mollusks, must be maintained at a temperature approaching that of melting ice.
- If fishery products are kept under ice, melt water must not remain in contact with the products

3.7. Quality assurance

Quality assurance directives for the small pelagic fish will be developed in the ITACA project as recommendation for the cluster operators that wish to be certified.

Seafood quality requirements shall include, as appropriate, one or more of following division parameters:

a) Classification and categorization of the products

Small pelagic fish (SPF) play extremely important ecological roles in marine ecosystems, from some of the most economically valuable fishery's resources and play a vital role in global food security. Onwards to guidelines it is recommended to follow dynamics of SPF such as anchovies, sardines within the sub-order Clupeidae. From the prospective of commercial value, it is crucial in general Adriatic fisheries of the Republic of Croatia, small pelagic fish participate with an average of 70%, which indicates that they are extremely economically significant. Two main species that will be targeted are sardines and anchovies.

b) Treatment of the fish after the catch

Quality control of the fresh caught small pelagic fish is crucial to react promptly in terms of the chilling and reduction of the body temperature. Exposure of the fish to the high temperature can result in deterioration of the fish meat and what is most dangerous, development of the histamine in fish which can subsequently cause human toxication. Bacteria play a key role in the formation of histamine, so hygiene in the processes of handling, storage, and processing, along with temperature, is key to controlling this danger. Lowering the temperature is one of the measures to control the safety of the product, however, the nutritional quality of the fish and the freshness decline even at such low temperatures. At low temperatures, enzymes (responsible for the loss of freshness) and bacteria (responsible for spoilage) are also "shocked" and will need some time to resume their activity. During this period of their dormancy, the fish is of exceptional nutritional quality, we can say extra quality. This quality of fish is retained for up to 48 hours from the catch. If the fish is consumed or processed in that period, we can determine with certainty that it is a high-quality food. At moment of the catch, since the fish is cold water organism, body temperature will depend on the ambient temperature. So it is necessary to have quick chilling after bringing fish on board, chilling medium should have at least 0 – 3 ° C. To achieve this temperature fishing vessels, have to be equipped with ice machines on board along with additional chilled seawater (0 ° C). This equipment will guarantee maintenance of catch in the best condition. Another equipment (common in Scandinavian countries) is slurry ice machine. Slurry ice is a phase changing refrigerant made up of millions of ices "micro-crystals", commonly said ice slush. The small ice particle size results in greater heat transfer area than other types of ice for a given weight. It provides advantages as product is cooled faster – the smooth round shape of the small crystals ensures maximum surface area contact with the product and as a result, faster heat transfer, better product protection – the smooth, round crystals do not damage product, unlike other forms of sharp.

c) Organoleptic sensory, external influence, inspections

At supply stage chain management directly impacts product quality and the overall profitability of each company, the components in a product reflect the company putting them on the market, regardless of where they are sourced. For these reasons, quality control in the supply chain is critical for maintaining a competitive edge in the marketplace and reducing operating costs. Its importance will be monitored through:

- **Identifying defects and scrap** - If there are defects in the raw materials, quality issues are bound to arise in the finished products. It will make the entire production processes inefficient and thereby, increasing the defect rates. It will include physical, chemical, physio-chemical, and sensory properties and composition of food, type and physio-chemical and sensory properties. To prevent above, user must ensure the preservation of the cold chain and monitor the temperature during fish storage and add ice in timely manner if needed, take care of contamination control, preservation of the cold chain and catch quality at landing, use devices that record the temperature (loggers, sensors) in storage rooms, refrigerators and isolated containers.
- **External failures** - This is another benefit of quality control in supply chain management. A poor-quality supply chain will not offer the desired quality of products. In this case, the products are very likely to be damaged during shipping and transportation. If a customer is not satisfied with the quality of a product, he/she will lose respect for the brand. If a company implements quality control in its manufacturing operations, it can play a great hand in protecting its reputation. With the assistance of quality control subcontractors, organizations are developing positive relationships with their suppliers. This is catering to the long-term goals of marketers at large. Among other, transport must carry out properly. Fish have to be transported with isothermal boxes in ice water or even better in slurry ice to closest processing company where it will be sort it and store it box with layer of the ice. In processing facility manipulation chambers are chilled so it is better to sort and pack it there rather than on board of vessel. According to rule book and requested traceability products should be accompanied with the catch, loading and transport document. It should consist of date, fishing vessel name, quantity, temperature, transportation vehicle plates and on unloading point (processing facility) products will receive LOT number
- **Inspections** - Most companies indeed experience large quantities of defects or other forms of waste during its manufacturing operations. No doubt, inspection increases operating costs at large. Moreover, it is of no use if the quality control standards are not up to the mark. If quality control procedures and supplier relationship audits are conducted properly, organizations do not need to hire

someone for continual inspections on the manufacturing line. The quality control experts help organizations in assessing the fluctuating preferences of consumers.

c) Catch record, products weighing and labelling

All fish must be weighed using an approved and certified weighing system on board of fishing vessel before they are sold or transported for sale or storage through the electronic system of the Fishery directorate. It is possible to weigh a specified sample of the catch and estimate a ratio of each specie and estimate an amount. Additionally, fish could be weighed in processing company or approved object or transport the catch to a private buyer, merchant, or agent in the where the catch must be fully weighed on receipt at the premises in accordance with the Croatian fishery inspection control plan. Persons responsible for weighing shall submit the weighing records in electronic form within 24 hours, exceptionally for weighing in an approved facility within 48 hours from the end of weighing. Record weighing resulting from the weighing must be used for completing the landing declaration, transport document, sales note and take over declaration. A record sheet of the weighing operation must be marked: with the FAO alpha-3 code of the species weighed, result of weighing for each quantity of each species in kilograms product weight, the external identification number, and the name of the fishing vessel from which the weighed quantity originates, date of weighing.

Products must be labelled to ensure the traceability of catch from catching to the point of retail sale. The information on a label should be available for viewing at all points of production, processing, and distribution, so that relevant authorities always have access to it. As a fisher, buyer, seller, agent, transporter, or keeper of fisheries products you have the responsibility of ensuring fish is traceable from point of capture, through landing, up until the point of sale. Minimum labelling information must be present on or carried with all lots of fisheries products. Before first sale, fisheries products can be packed into a lot and labelled, or packed using a code, barcode, electronic chip or other suitable method. To ensure the traceability of catch from catching or harvesting, to the point of retail sale, minimum labelling information must be present on all lots of fisheries products after first sale.

3.8. Sustainability approach

Within the food sector, acting on the latest retail and consumer trends will be key to remaining competitive and relevant. One industry that is seeing a particularly rapid increase in demand due to changing consumer behavior with sustainability impact is seafood production. The Marine Stewardship Council (MSC) says 56% of seafood consumers globally are willing to pay more for

seafood from a certified sustainable fishery, and 65% believe that to protect the ocean, we must consume fish and shellfish only from sustainable sources.

Despite constant progress in understanding the complex processes involved in the variability of pelagic stock abundance, especially at short and medium time scales, our ability to predict abundance and catches is limited, which in turn limits our capacity to properly manage the fisheries and ensure sustainable exploitation. Therefore, it must be defined through:

1. The increased demand for sustainable products is the main incentive for the industry to implement fisheries improvements – market close up. In recent years, this market has become increasingly competitive, and the consumer has begun to demand responsible fishing based on the sustainable management of the resource throughout the production chain.
2. To compete in the contemporary fishing market, it is necessary to establish cooperation and coordination fora that promote the sustainability of the production chain. It was identified that participation in the current seafood market requires fora in which the various actors of the production chain can together cooperate and coordinate to promote sustainability and in a precompetitive basis. A clear example is where fishing organizations, private companies and public actors converged with the aim of achieving the certification, which will ultimately improve their position in the market. In addition to having a common objective, formal investment, information exchange and Public-Private partnerships were reached to achieve the objectives and above all to lay the foundations for a more sustainable production that proactively responds to the requirements of global demand.
3. Having a transparent and formal administration and coordination mechanism generates confidence to attract investment and strong commitment from industry and other private and public stakeholders. Generating a memorandum of understanding will establish the rules for investment, decision-making, resource management, targets and benefits of certification implementation.
4. A large-scale growth in sustainability operations in the fish processing industry should be followed by and accompanied with sustainable practices within the whole supply chain.

Packaging guidelines as a sustainable practice

The rapid development of plastic production the last couple of decades has led to extensive use of plastic products and waste problems with littering, waste management and exploitation of natural resources. Due to the cheap and easy production of plastics, the world's population has extended the limit of acceptable usage. The fish industry has historically been limited to a few packaging options

and expanded polystyrene (EPS) has been the least inferior one when packaging fresh fish for transportation and keeping the quality of the fish. It must be rigid to withstand chilling conditions and on the other side sustainable and recyclable. There are two solutions, develop recycling systems for EPS and fish boxes made from corrugated cardboard, that the fish industry should consider adopting. The two identified packaging solutions have different diffusion possibilities, where the corrugated foil cardboard fish box is considered as the most sustainable solution. On this way, companies can submit sustainability expression and in point it out following:

- Avoids Unnecessary Packaging
- Reduces Waste
- Easier Disposal
- More Versatile
- Responsibility

In addition to sustainable packaging huge role in sustainability has a labeling. According to a majority of respondents, labels play a key role in consumer perception about fish. The WWF has selected specific ecolabels for products that it considers unconditionally sustainable—regardless of the outcomes when applying its assessment methodology. These labels include MSC for fisheries and ASC and organic labels for farmed products. The share of labelled fish in overall sales according to one of the WWF’s recommended labels is a key performance criterion of the organization’s partners. As a result, the continuous increase of labelled fish as a percentage of fish sales is one of the main sustainability targets.

4. GUIDELINES FOR ITACA CLUSTER CERTIFICATION

ITACA certification standards should be composed upon FAO guidelines especially

- “Guidelines for the Ecolabelling of Fish and Fishery Products from Marine Capture Fisheries” (2009, 2011 – revision1)
- “Code of Conduct for the Responsible Fisheries” (1995).

Both are serving as an important reference point for national legislators and as an internationally agreed framework to direct global efforts to achieve the sustainable exploitation of aquatic resources, taking all relevant economic, social, nutritional, cultural, and environmental aspects into account.

As per FAO Guidelines ecolabelling schemes relate to fisheries management, and rights and duties of each country, meaning that the involvement of national states in ecolabelling schemes is desirable and should be encouraged. It is also recognized that countries, together with Regional Fisheries Management Organizations (RFMOs) may develop ecolabelling schemes in a manner consistent with these guidelines, meaning that in case of ITACA cluster certification, the international legal framework should be complemented by the EC Rules of the Common Fishery Policy and the Common Market Organization.

The CoC standards should be based on both global (MSC, FoS) and regional schemes (Iceland Responsible Fisheries and Alaska Responsible Fisheries Management Certification).

These guidelines address the three principal objectives that ecolabelling scheme should encompass:

- The setting of the certification standards (Certification standards are covering the objectives that are pursued by a certification scheme. It is specific criteria that a product and/or the production process and methods would have to meet to get certified).

- The accreditation of independent certifying bodies (Accreditation of a certification body seeks to verify that the body is appropriate and capable for the certifying tasks. It would have to ascertain that the certification body is neutral and independent and has the technical and financial capacity to perform a certification of the conformity of a fishery with the established standard).

- The certification that a fishery and the product chain of custody are in conformity with the required standard and procedures (Assess wild-capture fisheries of the ITACA cluster against developed Fisheries Standards, assess Chain of Custody (CoC) Standard, including Quality Assurance and Operational Efficiency criteria).

The above described three steps would normally have to occur sequentially in the same order whereby accreditation and certification would remain regular activities of the scheme once established

The certification scheme will assess wild-capture fisheries of the ITACA cluster against Fisheries Standards, Chain of Custody (CoC) Standard, including Quality Assurance and Operational Efficiency criteria. To ensure needed compliance with all requirements, certification should be granted by an independent body after a successful third-party audit.

4.1 ITACA cluster trademark and its usage

The use of a trademark owned by the others needs to be strictly regulated. If a third party, for example an independent processor, wants to sell seafood products with the ITACA cluster label on packaging, it needs to comply with the basic rules set out by the guidelines. As the label and associated claims would be a registered trademark, any kind of its usage will need to be approved, and the following guidelines should be used:

- The name of the ITACA Cluster certification, its logo and certified seal shall all be registered trademarks of the organization/institute/partnership that will set the standards.
- No company may claim that the product in question is certified without prior written approval of the certifying standard-setting organization.
- The records of such approvals shall be obtained and kept in possession of the company, as well as any other approvals for the use of the trademark on communication and marketing materials (on/off certified product).
- The companies may only use the trademark in accordance with the rules defined by the standard-setting organization, by providing applicable supporting documentation. This can be achieved through signing of a License Agreement prior to the trademark use.

4.2 ITACA CoC Standard

ITACA cluster CoC Standard should be developed to ensure the traceability certified products throughout the supply chain, support the responsible fisheries practices and maintain the credibility of the certification mark.

The CoC Standard contains of four principles:

1. Certified products are originating from certified suppliers

- The organization shall have a process in place to ensure that all certified products are purchased from certified suppliers, fisheries, or farms.
- Organizations handling physical products shall have a process in place to confirm the certified status of products upon receipt.
- Organizations with certified products in stock can demonstrate that these products were purchased from a certified supplier, fishery or farm.

2. Certified products are identifiable and segregated

- The organization shall operate a system that ensures packaging, labels, menus, and other materials identifying products as certified can only be used for certified products. Certified products shall not be mislabeled by species, catch area or origin.
- There shall be no substitution of certified products with non-certified products.

3. Certified products are traceable, and volumes are recorded

- The organization shall have a traceability system that allows:
 - a) Any product or batch sold as certified to be traced back from the sales invoice or point of serving to a certified supplier.
 - b) Any products identified as certified upon receipt to be traced forward from point of purchase to point of sale or serving.
- Traceability records shall be able to link certified product at every stage between purchase and sale, including receipt, processing, transport, packing, storage, dispatch and/or serving.
- Records of certified products shall be accurate, complete, and unaltered.
- Where records are changed, these changes shall be clearly documented including the date and name or initials of the person making the changes.
- The organization shall maintain records that allow volume calculation of certified product.
- If processing or repacking occurs, records shall allow conversion rates for certified outputs from certified inputs over any given batch or time period to be calculated. Conversion rates for processing of certified products shall be justifiable and accurate.
- The organization shall only sell as certified the products covered by its scope of certification.

4. CoC Management System

- The organization shall operate a management system that is effective in addressing all requirements in the Standard.
- The organization shall ensure that responsible personnel are trained and competent in order to ensure conformity with the Standard.
- The organization shall maintain the records demonstrating conformity.
- The organization shall be able to demonstrate that all subcontractors handling certified products comply with the relevant requirements of this Standard.

4.3 ITACA cluster on-board traceability guidelines

- Professional qualification (applicants are familiar with all relevant legal regulations; all technical measures and restrictions; technical characteristics and fishing gear; regulations on nature and environmental protection)
- Compliance of fishing gear with the prescribed condition (fishing gear fully complies with the legal framework and EU regulations)
- Ensured traceability system (on board system insuring traceability and LOT number identification)

4.4 ITACA procedures development for the quality assurance

- DOCUMENTATION SEQUENCE – responsibility of each chain link and required documentation must be listed from the moment of catch until final consumer.
Name of the organization ► Documentation requirement ► Issuing frame
- CATCH ON BOARD – prophylaxis as quality method procedure, clearly stated steps for fresh fish handling and chilling
- STORAGE – procedure will be carried out as more options for the applicable packaging
- TRANSPORTATION – transportation protocols will be developed in terms of traceability, datalogger monitoring temperatures and adequate loading and unloading processes
- MARKET PRESENTATION – since the products will be monitored from sea to the table, this is very important step to finalize product presentation. It includes sales and marketing activities with a „Backoffice“ preparation protocol

4.5 ITACA sustainability requirements

- TO PERFORM LAST UPDATES REGARDING SUSTAINABILITY OF THE FISHING VESSELS
NAVIGATION - proven sustainability measures will be provided in line with the last available trends
- TO USE PACKAGING APPROVED AS COMPLETE RECYCABILITY – catalogued sustainable packaging material will be presented to prove sustainability approach in cluster activities
- TO FOLLOW SUSTAINABLE TRANSPORTATION HABITS – these procedures will be shown as nowadays well-known energy savings, new equipment and technology solutions

- TO FOLLOW WASTE MANAGEMENT PROCEDURES – It will include waste management protocols on board of vessel, during transport and in the processing facility