

Adri.SmArtFish

WP3- Evaluation of the Small-Scale Fishery sector

D3.3.1. DOCUMENT ON SWOT ANALYSIS

WP3

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1. Introduction

This Report on SWOT analysis represents one of the deliverables of the Adri.SmArtFish project as part of the evaluation of the small-scale fisheries (SSF) sector (**ACTIVITY 1 DEFINING THE STATE-OF-THE-ART OF SSF**). The Activity is aimed at obtaining hands-on insight about problems, opportunities, strengths and weaknesses of SSF in the GSA 17, and conflicts with other activities. Main findings will be classified according to their investment orientation, e.g. product and service development; knowledge transfer; social and eco-innovation; public service applications; demand stimulation; networking; clusters and co-creation.

The Report includes the result of the SWOT analysis of the small-scale fisheries performed at the subregional, Adriatic level, including both Italy and Croatia.

The Report was put together based on the stakeholder consultation process that was conducted in both Italy and Croatia (at the level of country's regions, through the **Stakeholders Discussion Boards - SDB**) and at the joint subregional, Adriatic level (through the **Scientific Board - SB**). Regional Reports on SSF status (Italian and Croatian) were served as the basis of a comprehensive SWOT analysis of the SSF sector at the Basin scale. It is important to emphasise that the report analyses the small-scale fisheries at the transnational level, as part of the Adriatic-Ionian Macro region.

The results of this analysis will be used as input for the following Adri.SmArtFish project activities:

- **ACTIVITY 2 EVALUATION OF THE ECOLOGICAL SUSTAINABILITY OF SSF** - aiming at analysing the current sustainability of the SSF in GSA17, from an ecological perspective, carried out entirely by the research Partners PP1 and PP8 under the supervision of the SB. It will require the gathering of all available data on fish stock conditions, fishing effort, production, discard, gear employed, fishing strategies, seasonality and time trends, both at a local and at the basin scale. The data acquired will be analysed in order to underpin both the impact on the natural resources exploited by SSFs, and the potential of the sector for a sustainable management.

- **ACTIVITY 3 ASSESSMENT OF THE VULNERABILITY OF SSF TO CLIMATE CHANGE** - providing advice about the impacts that can be expected on Adriatic SSF due to Climate Changes (CC). Effects of CC on natural resources are already clearly visible (occurrence of new invasive species, alterations in the fish assemblage composition, community structure changes, and seasonal cycles), and it will surely pose a major challenge to the whole fishing sector in the near future. SSF is potentially very vulnerable to such modifications because, despite its intrinsic adaptability, its limited economic means, high fragmentation and lack of coordination will make it difficult to react effectively.

PP1 and PP8 will undertake an in-depth study of SSFs vulnerability to CC in GSA17 by gathering pertinent data about most likely scenarios, analysing available literature on the subject, and assess the impacts on the SSFs through mathematical modelling approaches. Observations from the

assessment will constitute a fundamental input for the resources management plan developed in WP5.

1.1 Regional Context

The following section draws from the project information that is available at the Institute of Oceanography and Fisheries webpage (Institute of Oceanography and Fisheries 2019).

Artisanal Small-scale fisheries (SSF) are designated by the EU as the segment of the fishing fleet comprising vessels smaller than 12 m LOA (length overall), which do not employ towed gear.

SSFs are of paramount importance for the economic development and the livelihood of populations in the whole Mediterranean. At a basin scale, they amount to more than 80% of the entire fishing fleet, totalling about 40.000 vessels. SSF are recognised to have the potential to contribute significantly to food security, economic growth and development and to provide valuable employment opportunities. Moreover, they are strongly anchored in local communities, reflecting often historic links with traditions, culture and values. They are a vibrant and multidimensional sector, where traditional local knowledge and cultural heritage coexist and are embedded in the surrounding environment. Finally, they are important vectors of local knowledge and good practices, and they have a relatively low environmental impact.

Despite their socio-economic importance, small-scale fisheries do not always receive the attention they deserve. SSF operators are often excluded from public policies and decision-making processes; they face socio-economic difficulties and strive to exploit resources that are depleting. The need to sustain the SSF sector, by engaging its representatives in the planning and decision making processes, by differentiating and expanding its market offer, and by raising awareness among customers has been acknowledged at many levels, due to its potential to positively affect employment, contribute to a more sustainable management of heavily exploited resources, and more generally to help reaching the objectives of blue growth.

At the European level, the Common Fisheries Policy (CFP) is EU's main instrument for managing European fishing fleets and for conserving fish stocks. It acknowledges that fish stocks in EU waters are generally overexploited, and calls for a management strategy able to ensure the economic viability of the fishing sector, while preserving the ability of marine resources to reproduce over time. The CFP acknowledges the special role of SSFs, by enabling member states to enforce restrictions in the 12-miles from the coastline fishing zone, reserving it to the activities of SSFs. Moreover, the European Maritime and Fisheries Fund (EMFF) aims specifically at empowering SSFs, as a means of creating jobs and supporting local communities while contributing to sustainability, via made on purpose, substantial aids, with a co-funding rate of 75%, as opposed to the 50% rate reserved for industrial fishing. These measures seek to initiate a renovation of the sector, by promoting diversification of the activities and opening new market opportunities.

Focusing on the Adriatic-Ionian basin scale, the EU Strategy for the Adriatic-Ionian Region (EUSAIR) points out that fisheries in the basin are predominantly small-scale, and that they face various challenges linked to global competitiveness and market forces, as well as to environmental objectives. To address these challenges, the strategy identifies as critical the sustainable use of resources and integrated control of fisheries and calls for better cooperation across the Adriatic-Ionian Sea basin as a means to trigger a virtuous process of increasing the competitiveness of the coastal communities depending on fisheries and of widening stakeholders' involvement.

1.2 Adri.SmArtFish project

According to the Project Application Form, the common challenge SSF faces, is a lack of competitiveness in comparison with other fleets (e.g trawling and/or dredges), difficult access to market, low prices, decreasing stocks and biodiversity in the catches, decreasing market values and increasing running costs. Due to the common characteristics of SSF throughout the Area, and to the fact that it exploits natural resources shared and freely moving between the waters of the two Countries, it is a challenge that calls for a cross-border cooperation approach.

The following section also draws from the project information that is available at the Institute of Oceanography and Fisheries webpage (Institute of Oceanography and Fisheries 2019).

The general objective of the AdriSmArtFish project is to strengthen the small-scale fisheries role in the GFCM's (General Fisheries Commission for the Mediterranean) GSA 17 (geographical subarea 17) in the near future by fostering their potential for innovation within the Blue Growth context. In a sector like the SSF, which has evolved over a very long time in strong connection with local tradition and peculiarities, and in substantial balance with the ecosystem it exploits, the elements of innovation most likely to bring the greatest benefits are not to be found in processes and technologies, but rather in the approach to regulation/management, and in the valorisation of the products, in an effort to boost resilience and sustainability. Taking advantage of the great adaptability and flexibility features of SSFs, the project promotes their assumption as a paradigm for the implementation of integrated management strategies of coastal areas, within the context of an ecosystem-based approach.

The project adopted a transboundary approach, involving all the different actors responsible for the management process of the coastal area, from the policy makers, to a scientific advisory board, to fishermen and other stakeholders (e.g. NGOs).

1.3 Small-scale fisheries in the Adriatic

The following section also draws from the draft Regional Reports on SSF Status in Italy and Croatia (D3.1.3. Regional Report on SSF Status in Italy 2019 and Regional Report on SSF Status in Croatia 2019).

Small-scale fisheries in the Adriatic is characterised by the numerous fleet using diverse fishing gears, multi species catches and a high number of landing sites. This means that the SSF is a multitarget and multigear activity. Even though the small-scale fisheries is considered important from the socio-economic point of view, there is very limited data available. Cultural and traditional identity of the region is linked to the small-scale fisheries. The catches of the SSF are probably underestimated, as illegal, unregulated and unreported (IUU) landings often occur in demersal and small-scale fisheries.

It is very hard to develop standardized data collection due to the above mentioned characteristics of the small-scale fisheries. Therefore, monitoring of small-scale fisheries landings is very difficult, as fishers sell a large portion of their catch outside the fish market. Hence, an on-board and on-quay data collection system has been designed, but certain proportion of the catches goes as unreported, ending up directly in restaurants or on the black market. This is due to the limited institutional capability to effectively conduct surveillance and monitoring of small-scale fisheries (large number of landing ports, inspections not frequent enough and fines not high enough to force compliance).

It is important to note that the average prices of SSF products, intended almost exclusively for fresh consumption, are five to ten times higher than those of species caught by industrial fisheries.

SSF in Italy account for at least 50% of total employment in the fisheries sector. In Italy, SSF covers 65 % of fishing boats in number and 65 % of the total days at sea. The small-scale fisheries segment accounts for about 18 % of the national catch and for 26 % of national value of landings. This difference depends on the species targeted by SSF, which are mostly of high value. In both Italy and Croatia, usually, just one or two fishers work on SSF vessels (mainly the owner and close family members).

In Croatia, SSF includes small boats which use traditional passive gears and small purse seine nets and shore seine nets. This fishery is mostly carried out within a distance of a few nautical miles from the mainland and island coasts, since the majority of fishers embark on one-day fishing trips, and at depths no greater than approximately 80 m. SSF vessels predominantly use different types of fixed nets (gillnets and trammel nets) and operate from the shore and in coastal waters, in limited areas and during limited periods.

If official data is consulted, SSF is not economically significant in Croatia. However, most landings are probably largely unreported and consequently their financial value too. This problem needs to be addressed by the policy makers.

1.4 Introduction into the SWOT analysis

SWOT analysis is one of the strategic planning techniques used to identify strengths (S), weaknesses (W), opportunities (O), and threats (T) of the internal and external environment related to the subject that is being analysed, in our case small-scale fisheries in the Adriatic Sea (more specifically, in Italy and Croatia). The idea behind it to match internal capacities and resources with its environment.

SWOT analysis is a snapshot of a particular moment in time and should be viewed as such, not as a claim that the state of the small-scale fisheries has always or will always be like that. Strengths are existing or internal positive characteristics, while weaknesses are existing or internal negative characteristics. Opportunities are future or external possibilities for improvement, while threats are future or external factors that can have negative impact.

Within the process of strategic planning, SWOT analysis is a first step which enables planners understand the internal and external environment and plan more realistically. Results of the SWOT analysis should be used for strategic decision making. While setting up objectives that are SMART (specific, measurable, achievable, realistic, and time bound) it is important to use strengths to capture opportunities, try to turn weaknesses into strengths, and look at the threats as opportunities. In other words, whether the strengths can open up some new possibilities and whether new possibilities be opened up if weaknesses are eliminated.

This approach was used within the Adri.SmArtFish project and the results are presented in the following section.

2. Small-scale fisheries SWOT analysis

SWOT analysis of the small scale fisheries looks at advantages and disadvantages of the small-scale fisheries as compared to other fishing sectors as well and the environmental conditions that are beneficial or detrimental for the small-scale fisheries.

Analysis includes both Italian and Croatian small-scale fisheries, as the approach used within this project is at the level of the Adriatic. Not all fish stocks targeted by small-scale fishers are shared between Italy and Croatia, but some are, in particular in the Northern Adriatic. In addition, although small pelagic species are not analysed as part of the Adri.SmArtFish project, these fish stocks are shared between the neighbouring countries and their management is determined by the Multiannual plan for small pelagic fish stocks in the Adriatic Sea (the first of its kind in the Mediterranean).

2.1 Stakeholder consultation process

The Adri.SmArtFish project used a participatory approach to design and implement the SWOT analysis of the small-scale fisheries.

On one hand project Scientific Board discussed the state of the play of the small-scale fisheries in the Adriatic on their joint online and in person meetings. Two SB meetings were held (April 2019 in Venice and October 2019 in Split). All meetings and consultations were used as opportunity to discuss in detail about issues needed to be consider in all documents that have been produced within WP3.

On the other hand Stakeholders Discussion Boards (several in each of the two countries, at the level of the country's regions) also had a number of meetings where the small-scale fisheries status was discussed. All issues raised by SSF were considered both in regional reports on SSF status as well in this Report.

In addition, questionnaires were distributed among small-scale fishers in order to obtain information on the current situation of the SSF in both Italy and Croatia.

Based on the all of the above, a SWOT analysis was conducted.

2.2 Results of the SWOT analysis

Results of the SWOT analysis are presented in a table and elaborated in more detail after the table, taking into account the points of view of different stakeholder groups – from policy makers, through SSF operators, to technical/scientific and environmental players.

STRENGTHS	WEAKNESSES
<p>CULTURAL HERITAGE</p> <ul style="list-style-type: none"> ⇒ Strong cultural tradition (long tradition and historical importance) ⇒ Diverse fishing gear, multispecies catches (less vulnerability) <p>SOCIO-ECONOMIC IMPORTANCE</p> <ul style="list-style-type: none"> ⇒ Social and economic importance for local population and communities ⇒ Continuous fish price rise of SSF target species ⇒ Contribution to diversification of fishery products ⇒ Added value of seafood products in case of sustainable fishing practices ⇒ Shorter supply/value chain (direct selling from the boat, local fish market) ⇒ Contribution to food supply on local market and for tourists (particularly during the season) <p>ORGANISATIONAL</p> <ul style="list-style-type: none"> ⇒ Organisation of fishers through the Crafts Chamber in Croatia ⇒ Aggregation in cooperatives and associations in Italy ⇒ SSF membership in Regional Councils (MEDAC) <p>POLICY AND FUNDING</p> <ul style="list-style-type: none"> ⇒ Less spatial and temporal restrictions in respect to active gears ⇒ Easy access to the information related to legislation and funding ⇒ Government support (through national funding) ⇒ EU support (through the European Maritime and Fisheries Fund (EMFF)) <p>SCIENCE</p> <ul style="list-style-type: none"> ⇒ Existing scientific monitoring in both countries ⇒ Joint projects with scientific institutions <p>ENVIRONMENT</p> <ul style="list-style-type: none"> ⇒ Most of the fishing areas are (still) unpolluted ⇒ Lower impact on resources and on the environment (as compared to industrial fisheries) 	<p>ORGANISATIONAL</p> <ul style="list-style-type: none"> ⇒ Lack of aggregation among operators ⇒ Heterogeneous among SSF actors ⇒ Slow progress of FLAG development (in Croatia) ⇒ Restraint towards co-management (lack of trust) ⇒ Dispersion of fishermen across the coast (and islands in Croatia) complicates cooperation and communication <p>GOVERNANCE AND POLICY</p> <ul style="list-style-type: none"> ⇒ Illegal, unregulated and unreported (IUU) landings often occur in SSF ⇒ Scarce control and surveillance (limited fisheries inspection capacities) ⇒ Difficulties in making unique rules due to the differences between SSF fishing areas ⇒ Complicated administration (if fisheries is a primary source of income) ⇒ Limited number of licences for SSF ⇒ Scarce communication with government ⇒ Lack of sectoral regulations ⇒ Lack of common governance and specific management plans <p>DATA COLLECTION FRAMEWORK</p> <ul style="list-style-type: none"> ⇒ Uncertainty of the real fishing effort ⇒ Official landing data not realistic (largely unreported) ⇒ Discrepancies between official data on vessels (number of active vessels) <p>SPATIAL ISSUES AND INFRASTRUCTURE</p> <ul style="list-style-type: none"> ⇒ Spatial conflicts with other activities in coastal zones (fisheries, marine traffic, infrastructure development, e.g. tourism) ⇒ Large number of landing ports in Croatia ⇒ Limited maritime infrastructure (mooring/docks and logistics) and access to landing ports ⇒ Old fleet (in Croatia) <p>MARKET VALUE</p>

	<ul style="list-style-type: none"> ⇒ Low market prices of SSF products in Italy and Croatia particularly during winter months ⇒ Difficulties to access at local fish market ⇒ High variability in profitability (seasonal variations) ⇒ Lack of promotional activities <p>FUNDING</p> <ul style="list-style-type: none"> ⇒ Scarce awareness of SSF operators on public funding opportunities <p>SCIENCE</p> <ul style="list-style-type: none"> ⇒ Scarce communication with scientific institutions <p>SSF CAPACITIES</p> <ul style="list-style-type: none"> ⇒ Insufficient knowledge and skills to use innovative technology
OPPORTUNITIES	THREATS
<p>CULTURAL HERITAGE</p> <ul style="list-style-type: none"> ⇒ Preservation of traditional and cultural heritage as added value in quality of life <p>ORGANISATIONAL</p> <ul style="list-style-type: none"> ⇒ Aggregation of SSF operators in cooperatives and associations (FLAGs...) ⇒ Aggregation of SSF operator on regional level, e.a. Northern Adriatic ⇒ Consultation and cooperation through advisory bodies, working groups for specific issues, etc. <p>DIVERSIFICATION OF INCOME</p> <ul style="list-style-type: none"> ⇒ Income integration and diversification (fishing tourism) ⇒ Development of marketing strategies <p>ADDED VALUE OF SEAFOOD PRODUCTS</p> <ul style="list-style-type: none"> ⇒ Development of seafood traceability, branding / certification of seafood products (sustainable fishing practices) and access to market ⇒ Consumers perception and preferences (raised awareness) ⇒ Investments in innovations for improvement of quality of products <p>SCIENCE</p> <ul style="list-style-type: none"> ⇒ Increased cooperation with scientific institutions (joint projects and monitoring schemes) ⇒ Assistance in the preparation of professional studies on specific issues <p>GOVERNMENT AND POLICY</p> <ul style="list-style-type: none"> ⇒ Improved legislative procedures (less frequent changes, transition periods for legislation changes) 	<p>POLICY AND GOVERNANCE</p> <ul style="list-style-type: none"> ⇒ Access to dedicated funding constrained by administrative burdens <p>ENVIRONMENTAL CONCERNS</p> <ul style="list-style-type: none"> ⇒ Spreading and invasion of alien species and/or meridionalisation of Mediterranean species ⇒ Decrease of the carrying capacity of the Adriatic ⇒ Increase of pesticides and microplastics ⇒ Growing number of top predators ⇒ Climate change ⇒ Marine traffic pollution <p>INFRASTRUCTURE DEVELOPMENT</p> <ul style="list-style-type: none"> ⇒ Excessive development of coastal industrial infrastructures

<ul style="list-style-type: none"> ⇒ Participatory approach to SSF management (stakeholder platforms, public consultations, etc.) ⇒ Simplification of administration (lessening of the administrative burden) ⇒ Increased cooperation with government (administration) ⇒ Better organization on national level through government and legislatures <p>DATA COLLECTION FRAMEWORK</p> <ul style="list-style-type: none"> ⇒ Applying new technologies to collect more data on fish stocks, to optimize resource efficiency, and reduce the ecological impact of the sector on the marine environment <p>FUNDING</p> <ul style="list-style-type: none"> ⇒ Preparation and implementation of projects funded through INTERREG, EMFF, national funding, etc. 	
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2.2.1. Point of view of technical/ scientific partners and policy makers

There are complex ecological, economic and social aspects of SSF, taking into account the context where SSF is taking place. The fisheries sector suffers from a multitude of problems: overfishing, fleet overcapacity, heavy subsidies, low economic resilience and decreases in the volume and size of fish caught (Regulation (EU) No 1380/2013).

General problem is IUU fishing within SSF. This should be tackled with more effective surveillance and monitoring. Scientists believe that besides all above listed economic variables, overfishing is a major cause of the decline in SSF in EU waters

Data collection, sampling and monitoring are limited due to insufficient number of experts. Thus, data collection of many coastal fisheries resources caught by SSF is still not sufficiently systematic and thus hinders the assessment and management of SSF, in spite of the enforcement of the EU Data Collection Regulation (DCR, Regulation (EU) No 1543/2000) in all EU Member States, as well as in Italy and Croatia. Data collection could be significantly improved by involving SSF operators in environmental monitoring. For this, better contact with SSF operators need to be established. Actively involving fishers not only brings otherwise unavailable traditional and local knowledge to the decision-making process, it also gives legitimacy to rules governing the fisheries in question and is more likely to result in management strategies that are respected and complied with willingly (Dimech et al. 2009).

Impediments for successful cooperation are incoherent fishermen interest groups. There is a heterogeneousness among SSF actors when it comes to tools they use, associations they belong to and general opinions about cooperation with NGO and administration. There is a need to promote work of SSF operators under co-operative umbrella, because it is a prerequisite for future development of co-management in SSF.

Needs in SSF are setting up of local and national SSF platforms, improving cross-sectoral cooperation as well as defining joined strategic objectives. Also, establishing long-term cooperation with

stakeholders at the regional and transnational level. Gaps in knowledge sharing can be addressed by creating multi stakeholder platforms, which share interest on same resource.

Cooperation among policy and research stakeholders could be improved through better communications, good governance and popularization of the science through more joint projects. Technological innovation in SSF should be developed through new species of fishery development, new fishing gears, and more selective and efficient fishing practices.

The opportunities of SSF are in promotion of technological and non-technological solutions and introduction of innovations. Joint development and implementation of projects are also seen as opportunities (where efforts should be made to achieve better status and innovation in this sector through associations and organizations).

Also, there should be certain changes in regulations related to SSF. As part of the new CFP, several obligations are defined for SSF. For example, a landing obligation was formally implemented in the European Union (EU) for the first time. It explicitly requires that all the species captured by SSF will be subject to catch limits (still not determined) or minimum sizes (in the case of the Mediterranean). SSF were included irrespective of the fact that the discard issue in the EU has historically been associated largely with mixed trawl fisheries. The effects of this measure in the long-term are unpredictable, but in the short to medium-term, Veiga et al. (2016) suggest that a landing obligation is likely to bring more negative social, economic and ecological impacts than benefits. Moreover, the EU has recognized that the main impacts associated with implementing a discard ban will be felt in the SSF sector in the Mediterranean (Villasante et al. 2015). A negative perception of this policy was found to significantly and adversely influence the behaviour and emotional response of fishers, which will, in turn, also influence their resilience. Generally, fishers feel estranged from decision-making processes and their confidence in the outcomes of policy-making is low.

One of the most serious examples of changes in regulations was for example related to non-commercial fisheries in Croatia being called “small-scale for personal needs” or subsistence fisheries that pursuant to the regulations in force needed to be registered in the commercial category. With this process, as of April 2015 around 7,500 fishers either joined the recreational category of fisheries or became inactive. The transition process was extended for almost two years and had very negative public perceptions in Croatia. This was mainly because fishers perceived that EU policy-makers did not recognize regional and local natural and geographical characteristics. Furthermore, they highlighted that social goals were almost completely neglected. Namely, resource and habitat protection policies (particularly those that are in competition with SSF like the establishment of new MPAs) are introduced without due consideration of socio-economic factors and, therefore, are ultimately ineffective in achieving resource protection. Marshall (2007) highlighted that these policies are typically associated with intense conflicts, low compliance, significant delays and overly complicated criteria.

Above all, equity has to be ensured, on national, regional and international levels. Perceptions of lack of fairness in the distribution of the costs and benefits of resource protection measures are known to be a major influence on how policies are perceived and interpreted, especially for SSF with non-

transferable skills (Cohrane 2000). Feelings of inequity can lead to hopelessness and anger and loss confidence in future work (Marshall 2007). Developing better national fisheries management strategies based on fishers' knowledge can provide invaluable practical information. Moreover, people will be less likely to automatically respond negatively to prospective changes and will be more willing to incorporate such changes into their lives.

The representatives of policy making institutions (e.a. Croatian Ministry of Agriculture) pointed out the need for ensuring sufficient availability of marine resources. To achieve the catch stability and sustainability, future focus should be on data collection improvement, relevant stock assessment for target species, better working conditions for fishers and more efficiency in operating.

The improvement in SSF should be directed to the efficiency in terms of vessel engines quality, and generally of vessels and their equipment. Solutions for sustainability in SSF should be sought in the catch with more selective fishing tools.

The future needs in SSF are education, sustainability approach and ecology based management. The cooperation with research/scientific institutions can be implemented through partnership in EU projects. Also, SSF operators could directly inform researchers and experts on relevant issues. In order to improve exchange of knowledge and networking, stakeholder platforms such as thematic working groups should be set up. SSF as a topic could be more present in the media.

2.2.2. Point of view of SSF operators

The sustainability of SSF has to be sought through its social, cultural, and ecological value.

One of the strengths of the SSF is cultural heritage and tradition that comes from the SSF, both on western and eastern Adriatic coast (and especially on the Croatian islands). Specifics of certain territory regarding tradition and experience in fishing should also be taken into an account.

One of the main problem affecting the small-scale fisheries is the lack of cooperation and aggregation with other fishermen and operators, due to the traditional mind set of fishermen. In Croatia, the possibility of cooperation and fast and direct communication is significantly impeded due to characteristics of the coastline and due to dissipation of SSF operators. In such conditions, so far, SSF traditionally gathers through regional and national Chamber of crafts. Lately, they are being offered a possibility to cooperate through FLAG-s and additionally through the cooperation of the FLAG-s themselves. Despite these obstacles, stakeholders had a uniformed opinion of the SSF in Croatia. The cooperation is perceived as a strength for achieving innovation and for seafood products marketing. Moreover, the aggregation into associations and cooperatives can help small-scale fishers to access funds and better understand the administrative operations (as one person can deal with administration).

In Italy, all SSF stakeholders already cooperate with public technical/scientific bodies (the regional research centres and universities), which is not so much the case in Croatia. However, SSF operators

do not use private knowledge providers due to the transaction costs. Furthermore, this cooperation is often limited to environmental monitoring and sampling at sea activities rather than the introduction of technological and organizational solutions.

Small-scale fishers expect more advice and information about implementation and opportunities of different programs and better communication with competent institutions. Administrative procedures are considered to be too complicated. Considering the fact it is usually fishers whose main activity is fishing, and therefore the administration is often overwhelming for them, a way to simplify the administrative work should be found. Also, fishers should be more involved in suggesting practical and useful policies and regulations through new co-management practices.

Weaknesses of the SSF include: old boats, bad fishing infrastructure, small profitability in fishing sector, small amount of licenses for SSF, sudden development of tourism, tourist activities and the occupation of the coast, poor infrastructure, marine pollution, and complex legislation.

Therefore, further investments in vessels equipment are needed. Also, there is a need for improvements in marketing and product differentiation of local fish products, profitability, creating and maintaining employment and improving working conditions, as well as promoting islands' fisheries heritage (in Croatia).

In Italy, the SSF stakeholders outlined as main problems in their day-to-day operation the access to local market, the low price of their product, the spatial conflicts with the other fishing activities, and the administrative complexity to access funding opportunities. Also, SSF stakeholders lack of knowledge and awareness about the funding opportunities, both public and private.

Despite the financial opportunities offered by the EMFF to support the sustainable and innovative development of small-scale fisheries sector, there is a lack of awareness and knowledge of SSF operators about the public financial opportunities, resulting in a scarce application to grants. This is both true in Italy and Croatia. Small-scale fisheries operators are often difficult to reach and the current discrepancies between official data (e.g. number of vessels) and active vessels negatively affects the institutional information flow. On the contrary, only a few number of operators recognizes the public funds as a concrete opportunity to seize due to the administrative burden and complexity underpinning the process for applying to subsidies. However, a better information from government and regional authorities about specific measures supporting the small-scale fisheries emerged as priority.

The SSF sector is also strongly affected by spatial conflicts. Small-scale fishers fish in the same areas as commercial and recreational fisheries, which makes them less effective. Small-scale fisheries activity is segregated inside the coastal strip because more offshore trawlers might destroy their set gears, moreover, in Italy, inside the coastal strip they spatially conflict with hydraulic dredges. In addition to this, in Italy small-scale fishermen complain about the scarce surveillance from the pertinent authorities as well as about the lack of a specific management plan to reduce the conflict with the other fishing activities. Access to the coast in the summer (during tourist season) is considerably limited, thus limiting their ability to use desirable market mechanisms.

The impact on resources and on the environment of the SSF is low since SSF uses passive gears which have higher selectivity if compared with active ones. There is less spatial and temporal restrictions for passive gear as compared with the active gears, which gives the SSF the advantage to carry out their activity in areas or periods which are closed for trawling. No limits exist for the SSF weekly fishing days. Also, SSF has the added value of seafood products due to sustainable fishing and the shorter supply/value chain. The quality of the product gives opportunity for better presentation of the product on market for the increasing of the income without the additional influence of biological resources.

On the other hand, the regional small-scale fisheries suffers from the decrease of seafood value due to concurrent exploitation of the same resources. In fact, when SSF exploit the same resources of trawling (e.g. common sole, cuttlefish, etc.), the higher catches of trawling generally decrease the value of SSF products. Further on, Lloret et al. (2018) highlighted the ecological and socio-economic changes that SSF are facing nowadays with a number of examples. They showed how SSF could threaten the sustainability of vulnerable coastal species and habitats by using fishing gears that actively select certain species, sizes and sexes and through the deployment of fishing gears on certain fragile habitats, as well as by ghost fishing gear, etc. Also, they underlined the importance of growing recreational fisheries in coastal waters and the disappearance of traditional low technology artisanal fisheries. All of which are leading to a loss of the traditional ecological knowledge held by small-scale fishers. In addition to this, as mentioned above, the SSF operators are poorly aggregated in cooperatives and associations, while fishers from other sectors (e.g. trawling) are highly aggregated.

From the economic point of view, despite the implicit added value of small-scale fisheries products given by the sustainability of this fishing activity, their market prices in Italy are often too low and fishers are often obliged to cheaply sell their product. Moreover, small-scale fishers in Italy report difficulties to access local fish market and high variability in profitability, while Croatian small-scale fishers sell their fish mostly on the local markets. The operators of the fishing district of Ancona strongly complain about the limited mooring/docks and logistic infrastructures dedicated to small-scale fisheries.

SSF stakeholders are interested in developing new organizational skills, enabling a better management of their business and a better access to market. Moreover, they are interested in scientific/technical knowledge sharing for better understanding of the biological cycle of the species targeted by their fishing activity.

Education topics for future should include basic business skills to be able to increase profit, sustainable approach to SSF, and ecology based management. SSF operators are not completely ready for adoption of innovations due to lack of education, insufficient knowledge and not enough willingness to accept innovations.

The challenges for future are less restrictions, better communication, and strengthening bottom-up approach in governance and management. There is also a need for improving and strengthening cooperation within SSF to allow for harmonization of diversity of each SSF domain and consequently harmonization of different interest of each group in SSF.

The opportunities for SSF are in introducing innovations (for example in blue energy), overcoming the conflicts between SSF and tourism development, reducing administration, and improving the quality of the services provided. Opportunities to improve SSF operators' business are fisheries related tourism activities, development of traceability and quality schemes to increase the product added value, development of joint marketing strategies to meet the consumers' preferences, empowerment with new organizational and operational skills. Furthermore, an increased cooperation with other operator as well with scientific and institutional actors can effectively help small-scale fisheries in addressing socio-economic and environmental challenges.

SSF operators see the uncertainty of the real fishing effort exerted by the fleet as one of the threats. Also, changing of the environmental conditions, such as climate change, altering the species composition and increase of alien species and/or meridionalisation of Mediterranean species. One of the concerns is a general decrease of the carrying capacity of the Adriatic, which would reduce the production of the basin. Then, an increased presence of pollutants, such as pesticides and microplastics that alter the deteriorate habitats. Finally, alteration of the trophic chain, due to the increased number of top predators (e.g. dolphins, bluefish).

3. Conclusions

Small-scale fisheries have a great potential to boost growth, employment and sustainable development of the Adriatic region. However this will only be the case if the small-scale fisheries will take into an account all the concerns expressed by different stakeholders. This includes dealing with the IUU, improved data collection, relevant stock assessments for target species, better working conditions for fishers and more efficiency in operating. Solutions for sustainability in SSF should be sought in the catch with more selective fishing tools.

The SWOT analysis of the small-scale fisheries showed that small-scale fishers look more at organizational solutions to make their activity more competitive while sustainable. The small-scale fisheries entrepreneurs mainly relate “innovation” to an improved and added value of their activity and product. The introduction of new technologies is not perceived as priority for their sector. However, SSF operators recognized the development of seafood traceability, branding / certification of seafood products (sustainable fishing practices) and access to market and important opportunities.

SSF operators recognize in theory the benefits deriving from their aggregation into sectoral cooperatives, associations, but most of them are still not aggregated. Cooperation and clustering/partnering within the SSF sector is a necessary prerequisite to ensure better future for small-scale fishers.

Spatial conflicts with other fisheries and sectors, such as marine traffic and tourism can be solved by improved sectoral planning, including spatial planning, which would involve a participatory approach and consultation of all stakeholders.

There are many funding opportunities at both national and EU level and small-scale fisheries should be able to better access this funding and use it effectively to improve the SSF, while at the same time ensuring marine resource sustainability.

Environmental concerns such as climate changes, spread and invasion of alien species, increase of pesticides and microplastics, and marine traffic pollution are perceived and serious future threats. Some of them already have existing solutions (such as pollution coming from pesticides and marine traffic), but these are not being adequately implemented. Others, such as microplastics, alien species and climate change need specific, complex and often expensive mitigation measures that are currently not in place.

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