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“Fisheries in the Adriatic Region - a Shared Ecosystem Approach”

D 3.1.2 – Context analysis on socioeconomic aspects resulting from fishermen and fishing enterprises meetings

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FAIRSEA – Fisheries in the Adriatic Region – a shared Ecosystem Approach

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Acronyms used

CFP	Common Fisheries Policy
EAF	Ecosystem Approach to Fisheries
EAFM	Ecosystem Approach to Fisheries Management
FAIRSEA	Fisheries in the Adrlatic Region – a Shared Ecosystem Approach
FLAG	Fisheries Local Action Group
LP	Lead Partner
OGS	Istituto Nazionale di Oceanografia e di Geofisica Sperimentale - OGS
PO	Producers Organization
GT	Gross Ton
PS	Purse Seiners
PTM	Midwater Pair Trawls
OTB	Bottom Trawl
EMFF	European Maritime and Fisheries Fund

INTRODUCTION

The FAIRSEA project (Fisheries in the Adriatic Region – a Shared Ecosystem Approach) aims at enhancing transnational capacity and cooperation in the field of an ecosystem approach to fisheries (EAF) in the Adriatic region by exchanging knowledge and sharing good practices among partners. The complementary expertise of the partners is shared, interlinked and integrated, considering also challenges and opportunities identified by stakeholders.

This WP includes a series of activities for increasing partnership and for spreading concepts for the EAF in the Adriatic Sea thus broadening the access to EAF knowledge.

In order to increase practical understanding and implications of integrated approaches, in the capacity building activities, the tools and results developed during WP4 will be used for presenting a possible EAF decision support tool in the region.

This WP aims at mapping the current situation, defining a roadmap for application of EAF, increasing capacity on EAF for scientific, technical and policy experts, and networking to disseminate project results to expert commissions with a broad scope.

About FAIRSEA Project

The FAIRSEA project aims at enhancing transnational capacity and cooperation in the field of an ecosystem approach to fisheries in the Adriatic region by exchanging knowledge and sharing good practices among partners. The complementary expertise of the partners is shared, interlinked and integrated, considering also challenges and opportunities identified by stakeholders. The best way to reach sustainability, in fact, is to ensure stakeholders' participation in the process that requires time, trust, transparency and efficient steering. The efforts are embedded in a spatially explicit management platform that will allow to share expertise, create a common pool of knowledge, boost the operational application of the ecosystem approach to fisheries, enhance the competence in complex system dynamics, and foster a consensus on the state of the environment and fisheries in the region. The collective development of the integrated platform will enhance partners' expertise on an approach seldom carried out in the Mediterranean Sea. The platform will result in a spatially explicit dynamic tool integrating cornerstone elements for an ecosystem approach to fisheries that are: water masses circulation and connectivity (module HYDRO), biogeochemical planktonic processes (BGC), distribution of resources (BSTAT), catch and fleet statistics (FSTAT), effort distribution (EFFORT), bioeconomic responses (BIOECO) and food web dynamics (FWM). The attention to the spatial components in the distribution of the resources, the variability of the oceanographic condition, the management policies and the socio-economic impact is a particularly innovative and extremely valuable aspect. The shared integrated platform will be used as a planning tool to implement demonstrative testing of applicable fisheries policies both at local (subareas) and whole Adriatic scales. Especially, it will provide a scientific basis to formulate and evaluate shared management advice in the local and international participatory processes, answering to the need of reference points knowledge for the optimisation between ecological and socio-economical sustainability. The process developed in FAIRSEA will provide an opportunity to describe best practices and define guidelines for a

sustainable fishery management. The integrated platform will result in a product that constitutes the basis for a science-based decision support tool and a preliminary step toward the future development of multiannual fishery management plans.

The main overall objective of FAIRSEA is to enhance the conditions for implementing innovative approaches in the sector of sustainable fisheries management in the Adriatic Sea. This is done through the development of a shared conceptual and operational framework for an EAF. It will be achieved through the implementation of a spatially explicit and territorially integrated tool that considers water mass circulation, physical-chemical properties, plankton productivity, dynamics of resources including their interactions, fisheries displacement and bio-economic drivers. The technical integration is adapted to address stakeholders' and policy makers' issues and is used for increasing awareness, for understanding EAF, for increasing technical skills and capacities in the region also through demonstrative applications. The platform result in a high technological and innovative tool for EAF to be useful for policy makers, institutions and organizations and might require patent.

Overall objective will be achieved through three specific objectives as in the following.

Project specific objectives

Project specific objectives

- Enhance trans boundary integrated competence in the field of ecosystem approach to fisheries
- Implement a shared “state of the art” integrated platform for the region
- Share benefits and challenges of ecosystem approach to facilitate the achievement of CFP objectives.

Work package 3 - Mapping, benchmarking, sharing and enhancing EAF capabilities

A shared ecosystem approach to fisheries (EAF) needs full involvement of the institutions responsible for the management of fisheries, technical and scientific bodies that prepare the quantitative basis and recommendations for management, and the fishermen to which this management applies. This WP includes a series of activities for contextualising and developing a shared operative conceptualization of the EAF, for increasing partnership and exchanges on integrated approaches, and for spreading concepts for the EAF in the Adriatic Sea thus broadening the access to EAF knowledge. The approach is conceived in a transboundary networking and capacity building activity, embedding institutional, technical, scientific, stakeholder, advisor and policy maker components from the region. In order to increase practical understanding and implications of integrated approaches, in the capacity building activities, the tools and results developed during WP4 will be used for presenting a possible EAF decision support tool in the region. This WP aims at mapping the current situation, defining a roadmap for application of EAF, increasing capacity on EAF for scientific, technical and policy experts, and networking to disseminate project results to expert commissions with a broad scope. Capacity building is carried out through advanced schools set on the yearly basis for spreading concepts and methods of EAF. These schools will represent the beginning of a series continuing after the project.

Two distinct context analyses will establish preliminary relations within institutional-technical and socioeconomic participants for setting the conditions for cooperation arising and for successful participation in a shared EAF. Institutional context analysis will be defined on the basis of two technical meetings (one in each country). Socioeconomic context analysis will result from workshops with fishermen/fishing enterprises and local action groups (PO, FLAG). Context analyses will identify issues and challenges for application of an EAF from the institutional, technical and socioeconomic point of view for individual fisheries in the region. Particular attention will be given to cross-border cooperation and on understanding their possible impact on the establishment of the EAF. The results of these activities will be useful to better shape the integrated decision support tool to be developed in WP4 and the scenarios in WP5.

Expected outputs

- to enhance transboundary-integrated competence in the field of EAF in the region for scientific, technical and institutional experts by crossing and sharing their complementary expertise.
- at least 10 institutions (local agencies, ministries and policy institutions) to become aware of innovative integrated methods useful for planning and for supporting decision makers – through the meetings with policy makers in different regions and counties of the programme area.

SOCIOECONOMIC FRAMEWORK

Fisheries in the Mediterranean can be divided in commercial and non-commercial. Catches of marine organisms resulting from leisure fisheries should not be marketed, therefore recreational or leisure fisheries is non-commercial while catches from professional or commercial fisheries are sold and supply the market.

Recreational fisheries can have a significant impact on fish resources and Member States should, therefore, ensure that they are conducted in a manner that is compatible with the objectives of the Common fisheries policy (CFP). Since leisure fisheries are very important in the Mediterranean, it is necessary to ensure that they are carried out in a manner that does not significantly interfere with commercial fishing, is compatible with sustainable exploitation of living aquatic resources and complies with Community obligations in respect of Regional Fishery Organisations.

Council Regulation (EC) No 1967/2006 in the Article 17 considering leisure fisheries states that the use of towed nets, surrounding nets, purse seines, boat dredges, mechanised dredges, gillnets, trammel nets and combined bottom-set nets shall be prohibited for leisure fisheries. The use of longlines for highly migratory species shall also be prohibited for leisure fisheries. All these gears are highly effective and using them cannot be considered leisure activity.

The commercial fleet is further divided in large-scale and small-scale fisheries.

According to Article 3 of the Regulation (EU) No 508/2014 on the European Maritime and Fisheries Fund, “small-scale coastal fishing” means fishing carried out by fishing vessels of an overall length of less than 12 metres and not using towed fishing gear as listed in Table 3 of Annex I to Commission Regulation (EC) No 26/2004.

A key element of the Commission proposal for the post 2020 EMFF is a preferential treatment granted to small-scale coastal fishing. Council Regulation (EC) No 1967/2006 also states that a part of the coastal zone should be reserved for selective fishing gears used by small-scale fishermen, in order to protect nursery areas and sensitive habitats and enhance the social sustainability of Mediterranean fisheries. Common fisheries policy also promotes coastal fishing activities, taking into account socio-economic aspects. EU small-scale coastal fleet represents 82% of the EU active vessels.

The large-scale fleet contributes 81% to landings in weight and 72% to landings in value in the EU. The distant water fleet produced almost 14% of the landed weight and 15.4% of the landed value. The SSF

landed the remaining 5% in weight and 12.5% in value, indicating that when compared to its larger counterparts, the SSCF on average obtains higher first sale prices.

In the Mediterranean, fishers are for mostly (96%) men. The age, education and nationality distributions look quite similar between EU and Mediterranean, however some marginal differences can be highlighted. On average, employees in the area are slightly older and with a slightly lower education level, compared to the EU average. **Finally, it is important to emphasize that in contrast to the EU average, in the Mediterranean the majority of fishers are owners.** The high importance of the SSCF sector seems to be the driver for the abovementioned differences.

According to GFCM (FAO 2018. a and b) only 38% of the stocks in the Mediterranean are at biologically sustainable levels even if there are examples of fisheries where stocks are being exploited at rates consistent with achieving MSY (STECF, 2019) and fleets are showing positive trends, particularly in landings. The overall level of overfishing, however, remains generally too high. Indeed, the marine resources and ecosystems of this region have come under increasing pressure in recent years, driven by diversification and intensification of marine and maritime activities. While the fishing capacity has been frozen or reduced in EU countries since the mid '90s, the trend in non-EU Mediterranean countries is probably following a different pattern, and an increase in effort and capacity is likely to still occur in some areas.

Regulation and fisheries management in the region

The Mediterranean fishery management is based on a number of management tools. First of all, it includes a number of important technical measures, which were introduced by Regulation (EU) No 1967/2006 (Mediterranean Regulation), entered into force in 2010.

Over the last years the EU has accelerated the development and introduction of multiannual plans under the CFP, essential management tools in the context of shared stock. Considering the importance and the poor state of shared stocks as small-pelagics in the Adriatic, GSA 17 and 18, the current regulations implement GFCM (General Fisheries Commission for the Mediterranean, RFMO for the Med) recommendation GFCM 37/2013/1 regarding a multi-annual management plan for the exploitation of small pelagic stocks in GSA 17 (Northern Adriatic) and transitional conservation measures for the exploitation of small pelagics in GSA 18 (Southern Adriatic) and the subsequent ones establishing further precautionary and emergency measures for small pelagics in GSA 17 and 18, namely GFCM/38/2014/1, GFCM/39/2015/1, GFCM 40/2016/3 and GFCM/42/2018/8.

In this context a multi-annual plan for the management of small pelagic stocks (anchovy, sardine, mackerel, and horse mackerel) in the Adriatic, was proposed by the EC in 2016 and adopted on 24 February 2017 by the European Commission with the proposal (COM (2017) 97). With the new plan for Adriatic small pelagic stocks, the Commission proposed to introduce a major shift in fisheries management in this area, currently based on fishing effort, by framing a system of setting total allowable catches (TACs). The plan has substantially been modified in its objectives by the European Parliament by a vote taken in 2018 (European Parliament, 2018). The PECH report, indeed, supports maintaining the current fishing effort regime and opposes the introduction of TACs or a regulation establishing a multiannual plan for small pelagic stocks (sardine and anchovy) in the Adriatic Sea and the fisheries exploiting those stocks.

As far as the Adriatic part of the Mediterranean basin, in 2015 Italy and Croatia adopted joint management measures at the national level establishing no-take zone for bottom trawls in the area of Jabuka/Pomo pit. This regime was introduced from July 2015 to October 2016 after which it was modified with a more stringent regime established for the next three-year period. In addition, the new regime was transposed into GFCM Recommendation 41/2017/3, on the establishment of a restricted fisheries area in the Jabuka/Pomo Pit in the Adriatic Sea. The new regime includes three control zones: a middle zone where all demersal (trawls and longlines) and sport fishing is prohibited, and two side zones where only a limited number of authorized vessels may operate for up to two days per week. This is the first fishery restricted area (FRA) in the Adriatic and an important measure for demersal fisheries. The Jabuka/Pomo pit area had been an important fishing ground for both fleets and, short-term losses aside, it is expected that the positive effects of FRA will influence it and the surrounding area bringing longer term benefits to the fleets operating there.

Status of important stocks

The Mediterranean is facing significant challenges in terms of resources' sustainability.

The total landings in the Mediterranean and Black Sea reached a maximum of about 2 million tonnes in the mid-1980s, then declined to a low of 1.1 million tonnes in 2014 and showed a slight recovery to 1.3 million tonnes in 2015. In 2015, the area had 38 percent of the assessed stocks at biologically sustainable levels, the lowest among all sea basins all over the world (FAO, 2018.a). Nevertheless, the recent trend is a decreasing one, especially since 2014 when the percentage of overexploited stocks decreased from 88 percent to 78 percent in 2016 (FAO, 2018.b). Demersal resources such as hake (*Merluccius merluccius*), red mullets (*Mullus* spp.), turbot (*Psetta maxima*), common sole (*Solea vulgaris*), sea breams (*Pagellus* spp.) and small pelagic resources such as anchovy (*Engraulis encrasicolus*) and sardine are overfished. Most stocks of sardinellas (*Sardinella* spp.), deep-water shrimps (*Parapenaeus longirostris*, *Aristeus*

antennatus and *Aristaeomorpha foliacea*) and cephalopods are probably maximally sustainably fished to overfished.

In December 2016, for the first time, the EU Council agreed on setting a catch limit for the EU concerning small pelagic species in the Adriatic Sea for 2017 (set at 2014 level, namely 112 700 tonnes of anchovy plus sardine - Annex IL of Regulation 2017/0127). The same catch limit was agreed for the 2018 fishing opportunities). Except the indication that the catch for Slovenia should not exceed 300 tonnes, the Council did not however define the share (quotas) of the total fishing opportunities between Croatia and Italy. This catch limits were set, for 2019 (Regulation 2019/124, Annex IL of Regulation 2018/120) at 107 065. The latest also recalls previous effort limitations, such as a maximum number of days-at-sea per year (180) and a fixed number of days for fishing anchovies or sardines (no more than 144 per year, for each species).

Socioeconomic framework - Croatia

According to the latest STCF report (**2019 Annual Economic Report on the EU Fishing Fleet**), Croatian national fleet, which operates solely in the Adriatic Sea, in 2018 consisted of 7 731 vessels with a combined gross tonnage (GT) of 46 thousand tonnes, a total power of 360.88 thousand kilowatts (kW) and an average age of 37.7 years. The average length of the fishing vessels was 6.89 metres in the same year. Compared to its highest values in 2015 capacity of the fleet decreased between 2015 and 2018; the number of vessels by 2% and GT and kW by 14% and 16%, respectively. The major factors causing the fleet to decrease is the scrapping of PS, DTS and DRB vessels.

The Croatian fleet is divided to the main commercial fleet and a category of small-scale artisanal coastal fisheries for personal needs consisting of some 3 500 vessels, and defined by national legislation. Pursuant to the accession negotiations, 3 500 small-scale vessels were transferred into the commercial SSCF in 2015. Although in the commercial fleet, the vessels are mostly operating for personal needs and are kept as a separate category, with specific requirements and constrains. Out of 6 052 active vessels in 2017, 5 085 vessels are small-scale and 967 large-scale vessels. While the active small-scale vessels constitute 84% of the active fleet, their contribution in gross tonnage is less than 25% and in engine power 46%.

Specificities in fleet composition and fleet activity
https://ec.europa.eu/fisheries/cfp/mediterranean/specificities_en

a) Daily activity of boats: the vast majority of Mediterranean fishing vessels come back to port every day, generally with catches mixing several species. As each species is usually below the 50 kg threshold set by the Control Regulation, the catches are not declared.

b) Fleet composition: most of the vessels composing the Mediterranean fleet are less than 10 m long and therefore not covered by the rules on registering catches. As a result, many catches are unrecorded. Small-scale operations involving small vessels with low daily catches represent 80 % of the Mediterranean fishing fleet, 60 % of jobs and 23 % of landings.

c) Economic performance: the 2015 Annual Economic Report noted a progressive deterioration in the economic performance of the small-scale coastal fleet. In sharp contrast to many EU fleets of other regions, which showed steady improvement, EU fleets in the Mediterranean region did not improve their economic performance significantly over the 2008-2013 period.

Non-commercial fisheries

In Croatia there are between 70.000 and 80.000 sports and recreational licences sold in a period of one year. Around 35.000 to 45.000 are annual permits, and the rest are weekly or daily permits.

Sports fishermen are joined in Croatian Sport Fishing Association, however recreational fishers can come from other EU countries as well and are difficult to reach.

Performance results of selected fleet segments

In 2017, the most important fleet segment in terms of landing percentage was purse seiners (PS, over 91% of total landings), whereas the largest number of vessels were active in fixed nets segment (DFN, in Croatia fixed nets – gill nets and trammel nets, 998 active vessels).

Purse seine 24-40m

73 active vessels targeting sardine and anchovy and operating predominantly in GSA 17. This segment is employing 31% of total FTE, and it has value of landing amounted to EUR 17.5 million, 23% of total national revenue. It reported a gross profit of EUR 2.4 million and a net loss of EUR 1.8 million in 2017. Its GVA is EUR 10.8 million, and it has average wage per FTE of EUR 16.4 thousand.

Purse seine 18-24m

49 active vessels operating predominantly in GSA 17, and targeting mostly sardine and anchovy. This segment is employing 17% of total FTE, and its landings amounts to EUR 9.5 million, representing 12% of total revenue. Positive gross profit of EUR 2.7 million is reported with net profit of EUR 1.2 million in 2017. Average crew wage per FTE was EUR 13.4 thousand.

Demersal trawl 12-18m

169 active vessels, operating in GSA 17 and targeting different demersal species, mostly European hake, Norway lobster, Red mullet and Deep-water rose shrimp. This segment is employing 9% of total FTE, and

it has EUR 5.6 million value of landing, representing 11% of total of total revenue. It reported a positive gross profit of EUR 2.9 million, and a net profit of EUR 1.7 million in 2017. Average crew wage per FTE was EUR 11 thousand.

Drift and fixed nets 6-12m

667 active vessels, operating predominantly in coastal areas, targeting different species and using fixed nets and longlines. This segment is employing 6% of total FTE, and in 2017 it had value of landing of EUR 3.6 million, representing 10% of total revenue. It reported a positive gross profit of EUR 3.4 million and a net profit of EUR 2.4 million in 2017. Average crew wage per FTE was EUR 14.3 thousand.

Organization of fishermen in Croatia

Fishermen are organized through the Croatian Chamber of Trades & Crafts and Chamber of Commerce. The Chamber of Trades & Crafts comprises the largest part of the SSF sector. Membership in the Crafts Chamber is compulsory for all tradesmen/artisan fishermen. The Croatian Chamber of Trades and Crafts operates nationally, regionally and at the city level. Within the Crafts Chamber the fishermen are organized in the Fishermen Guild and also based on the fishing gear, additionally was established: "The coordination of fishermen using small fishing gear" (small tools meaning gill and trammel nets, traps, hooks, harpoons).

The fishermen choose among themselves the representatives for the Chamber, their work is based on volunteering. Chamber of Trades & Crafts provides logistical and legal assistance and advocates the interests of fishermen in state administration bodies and other organizations, gives opinions and suggestions to state bodies in adopting regulations of interest to fishermen.

The Fishermen Guild meets several times a year at the city, county and state levels, discussing current topics.

Fisherman guild/coordination representative reports issues raised at the meetings to the chambers' Legal Service. The issues and questions are then addressed to the Department of Fisheries. There is good communication between Croatian Chamber of Trades and Crafts and the Department of Fisheries, so joint meetings, workshops and lectures are organized.

Once a year, Chamber of Trades and Crafts organizes fishermen's meetings where representatives of authorities and ministries participate with fishermen and discuss about current fisheries topics.

All information coming from the authorities is sent to fishermen from the Chamber by mail, SMS, and is also available on the Chamber's and the Department of Fisheries' websites.

Total number of different fishermen organizations in Croatia:

Fishermen cooperatives (23)

Producers organizations (2)

Chamber of Trades & Crafts (HOK) - Fishermen guild

Chamber of commerce (HGK)

FLAGs (14)

Local NGOs ()

List of FLAGs:

	County	FLAG name	Address
1	Istria county	LOKALNA AKCIJSKA GRUPA U RIBARSTVU "ISTARSKI ŠVOJ"	154. brigade Hrvatske vojske 5, Pazin
2	Istria county	LOKALNA AKCIJSKA GRUPA U RIBARSTVU "ALBA"	Rudarska 1, Labin
3	Istria county	LOKALNA AKCIJSKA GRUPA U RIBARSTVU "ISTARSKA BATANA"	Centar 214, Medulin
4	Istria county	LOKALNA AKCIJSKA GRUPA U RIBARSTVU "PINNA NOBILIS"	Ulica rijeke Boljunčice 3, Novigrad
5	Primorje-Gorski kotar county	LOKALNA AKCIJSKA GRUPA U RIBARSTVU "VELA VRATA"	Pod urom 6, Cres
6	Primorje-Gorski kotar county	LOKALNA AKCIJSKA GRUPA U RIBARSTVU TUNERA	Kralja Tomislava 85a, Crikvenica
7	Lika-Senj county and Primorje-Gorski kotar county	LOKALNA AKCIJSKA GRUPA U RIBARSTVU TRAMUNTANA	Trg dr. Franje Tuđmana 2, Karlobag
8	Zadar county	LOKALNA AKCIJSKA GRUPA U RIBARSTVU "LOSTURA"	Šetalište kneza Branimira 32, Biograd Na Moru
9	Zadar county	LOKALNA AKCIJSKA GRUPA U RIBARSTVU "PLODOVI MORA"	TRG MARNJIVE 23, Kali
10	Zadar county	LOKALNA AKCIJSKA GRUPA U RIBARSTVU "TRI MORA"	NIKOLE TAVELIĆA 11, Posedarje
11	Šibenik-Knin county	LOKALNA AKCIJSKA GRUPA U RIBARSTVU "GALEB"	Badnje 1, Tribunj
12	Split-Dalmatia county	LOKALNA AKCIJSKA GRUPA U RIBARSTVU "BRAČ"	Žedno Drage 37, Supetar
13	Split-Dalmatia county	LOKALNA AKCIJSKA GRUPA U RIBARSTVU ŠKOJI	Vicka Butorovića 4, Hvar
14	Dubrovnik-Neretva county	LOKALNA AKCIJSKA GRUPA U RIBARSTVU JUŽNI JADRAN	Trg Kralja Tomislava 1, Ston

Management instruments

Croatian fleet is managed through the capacity and effort limitations, as well as through time and spatial restrictions. Effort regulations are related to restrictions on issuing fishing licences and transfer of fishing rights from one license to other in terms of permitted fishing gears or fishing zones as well as through issuing additional authorisations for fisheries under management plans. This system is preventing increase of fishing effort related to fishing gear or fishing zone, or even subzone. Capacity limitation is related to increase of vessel power and length in terms of total national fleet capacity and total capacity for specific fisheries. Besides that, by the national regulations there are restrictions related to transfer of effort between fishing zones of inner and outer fishing sea preventing increase of effort in the most vulnerable areas of inner sea. Spatial and temporal closures have been used in the past years for management of purse seine and trawling fishery. In the recent period this has become effective measure in preventing catch of smaller categories of small pelagic as well as in protection of areas important for recruitment of target species.

In addition to the aforementioned, from 2014 GFCM management plan for small pelagic fish in GSA 17 has been in force. By the provisions of this plan maximum number of fishing days for targeting sardine and anchovy has been set, as well as temporal closure period. Given the full implementation of these measures and additional national restrictions implemented for protection of small pelagic, the total number of days-at-sea will probably decrease further in the future.

In 2015, Italy and Croatia adopted joint management measures at the national level establishing no-take zone for bottom trawls in the area of Jabuka/Pomo pit. This regime was introduced from July 2015 to October 2016 after which regime was modified and more stringent regime has been established for the three-year period. On the top of national legislations this new regime was also transposed into GFCM Recommendation 41/2017/3 on the establishment of a fisheries restricted area in the Jabuka/Pomo Pit in the Adriatic Sea.

Improvements and Development

After Croatian accession to the EU in 2013, and changes that followed due to a full implementation of Mediterranean regulation, number for 2017 still cannot be considered as stable. In first order this is because of the process of permanent cessation which is ongoing by the end of 2017 and which will affect large scale fleet of purse seines and bottom trawlers, but also due to a process of inclusion of large number of vessels in the small-scale PGP segment. It should be noted that economic and fishing activity data analysis for the PGP segment should be taken with caution, as the fleet was mostly inactive in 2015 and with limited activity in 2016 and 2017. It is expected that in 2017, after all remaining licences have been issued, and entire fleet segment shows its activity potential, the real potential of the segment shall be

known. It is expected that economic and fishing activity data analysis of the segment shall be improved in the following years. In connection to the progressive, but still limited, increase of the fishing activities, an overall increasing trend is expected in the values of fishing activity and economic data. Nevertheless, these vessels due to a large number have visible impact on the performance of the all fleet.

Investments over the segments are based on the gear or engine reparation, as well as on improving terms of fish preservation or processing aiming at increasing product quality and value. This trend can be expected in the future as well in line with EMFF and Operational program. In 2016 GFCM adopted Recommendation GFCM/40/2016/3 with additional restricting measures for 2017 and 2018 for small pelagic fisheries in Adriatic. It should also be mentioned that in 2017 EC presented a proposal for Multiannual plan for small pelagic stocks in the Adriatic Sea and the fisheries exploiting those stocks. This plan is still in the pipeline but it can be expected that it will have significant impact on Croatian national fleet and fisheries. As for the demersal fleet, it can be expected that adoption of FRA in the Jabuka/Pomo pit will have limited impact on the large scale DTS fleet.

Socio-economic impact

Overexploitation and management measures implemented as a result of the stocks status remains to have a significant influence on the economic performance of the sector. This is truth primarily for small pelagic fleets which have been under strong restrictions from 2015. These were also followed with appropriate measures from the EMFF which compensate their effect to certain level. As the sector is heavily dependent on small-pelagic fish the effects of management measures, mainly temporary and permanent cessation of fishing activities, is expected to have a positive impact as Croatia intends to continue with the measures provided within the framework of the EMFF. In addition, Croatia intends to reduce fishing effort through diversification of activities. Same measures have been implemented in the demersal fishery. Assuming that fuel prices remain fairly constant and fish prices continue to increase, the effects of conservation measures are expected to have a positive long-term impact on the general recovery of the sector.

The higher value achieved by the SSCF (compared to the LSF) appears to reflect higher prices linked to differences in quality, freshness, product size and the use of different marketing channels. The SSCF generally operates through very short supply-chains.

problems that negatively still affect the economic performance of small-scale fishers there are:

- Competition with an increasing number of recreational fishers, who usually fish in coastal areas and sometimes illegally sell their catch at low prices.
- Conflict between the small-scale and large-scale fleets.
- Older age profile, if compared with LSC employment: there, is, indeed, a low generational change because small-scale fisheries, being less rewarding than large-scale ones, are less attractive.

In 2017, large-scale vessels generated, by far, the highest landed weight (89% of the total) and 78% of the landed value. The total weight landed by the LSF (excluding Greece) was 323 804 tonnes, confirming the positive trend of the previous years. With an estimated value of EUR 1.13 billion these fleets recorded almost EUR 680 million in GVA and a gross profit of EUR 323.5 million.

Small pelagics accounted for 57% of total landings weight of the area and for 23% of landings value in 2017. In particular, small pelagics are the main fisheries resources of the Adriatic Sea, accounting for bulk of the total catch. In the eastern part, Croatian vessels mainly target sardines, while anchovies are mainly landed by the Italian pelagic fleet.

The Mediterranean LSF is also heavily dependent on some demersal species as European hake, deep-water rose shrimp, Atlantic bluefin tuna, giant red shrimp, combined accounted for 23% of total landings value in 2017.

Socioeconomic framework – Italy

Fisheries and aquaculture are two key sectors for the Italian socio-economic growth. Italy's coastline spans 9136 km, making up 8.75% of the total EU coastline. The surface of the coastal regions, in line with the Eurostat definition, is 181 289 km², approximately 10% of the EU total and 60% of the national territory. Although the fishery sector's contribution to the national GDP remains limited, a little over 0.5% of Italy's GDP, it is more significant in certain regions, particularly the south.

Fishing in Italy takes place along the entire coastline. In 2017, national catches accounted for 192 202 tonnes. The size of the Italian fleet has been steadily decreasing over the decade, however, numbers have been levelling out recently. In 2017, 12250 vessels were registered. The decrease in fishing vessels may correlate with declining catches. The fleet is highly diversified with a broad range of vessel types targeting different species, predominantly in the Mediterranean Sea. Seventy percent of the fleet is made up off small-scale fisheries' vessels, less than 12 meters in length. The small-scale fisheries use passive gears and involve day trips made by a small crew of one or two fishers. The gear most commonly used are: surrounding nets, bottom trawl nets of different dimensions, midwater trawlers (volanti), dredges (turboffiante), and trammel nets. Traps and longlines are used by the small-scale fisheries fleet, including drifting longlines which are widely used today to catch large-pelagic fish.

Fleet structure

According to the latest STECF report (**2019 Annual Economic Report on the EU Fishing Fleet**), in 2017, Italian fishing fleet consisted of 12 270 registered vessels, with a combined gross tonnage of 157 thousand tonnes and engine power of 983 thousand kilowatts (kW). The size of the fleet decreased slightly compared to previous years. The proportion of inactive vessels remained stable with percentage below 9% of the vessels; inactive vessels mainly include small-scale vessels.

The Italian fishing fleet is nationally divided into:

- the small-scale coastal fleet – SSCF (7 346 active vessels) with a large variety of passive gears (fixes nets, pots traps and longlines) and targeting many different species.
- the large-scale fleet - LSF (3 901 active vessels). They represent the major part of the fleet in terms of gross tonnage (82% of the total at national level); this group of vessels is mainly made up of vessels using active gears, especially demersal trawlers, purse seiners and dredgers. About 500 vessels use passive gears to catch mainly large pelagic species (i.e. tuna and swordfish). Among these, the hook vessels recorded improvements in all economic indicators over the last three years. The large-scale fleet is widespread along all the Italian coast, but the major proportion of these vessels is based in the Strait of Sicily and in Northern and Central Adriatic Sea.
- the distant water fleet - DWF - composed of 8 active vessels: 7 trawlers operating in in the Eastern Central Atlantic and a vessel operating as a purse seiner in Indian Ocean).

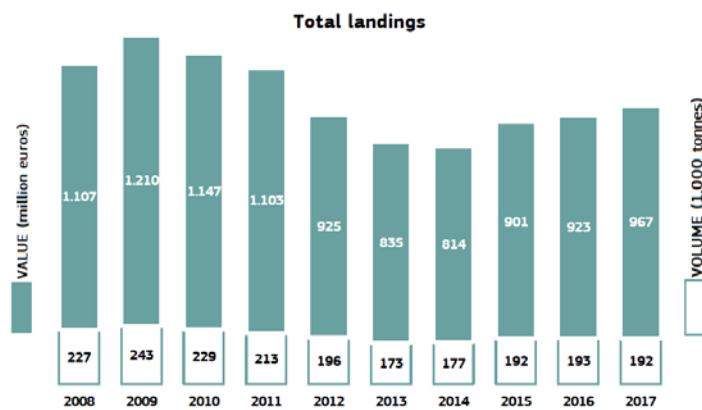
In 2018, the number of fishing enterprises amounted to 7 945, with the vast majority (87%) owning a single vessel. In the small-scale fisheries, the majority of the vessels are members of fishing cooperatives.

Performance of selected fleet segments

The value of the landings in 2017 was €0.97 billion. Crustaceans are the largest contributor with 28% of the total value. Other valuable species groups are cephalopods (15%), anchovy (8%), whitefish (7%), and flatfish (3%).

A third of the landings volume in 2017 consisted of small pelagics, predominantly anchovies and sardines. Other important commercial landings included crustaceans, such as deep-water rose shrimp (*Parapenaeus longirostris*) and squillids (*Squilla mantis*) as well as cephalopods mainly cuttlefish, squid and octopus. Tuna plays also an important role in catches. The landing composition of marine fisheries is very heterogeneous, reflecting both the different gears in use, various fishing grounds, and the high biodiversity of aquatic resources.

In 2017, 95% of landings in Italy included fresh products and 5% included frozen products. All were destined for human consumption. As for destination use, 97% of landings were for human consumption and 3% for industrial uses. There are 282 fishing ports registered in Italy (source: EU Master Data Register).



Main commercial species landed and % of total
(2017, million euros and 1,000 tonnes)

Figure 1. Total Italian Landings (Source: EUFOMA, 2020)

In 2017 the Italian fleet consisted of 23 fleet segments. Most of them showed an improved economic performance compared with the previous year. Based on the net profit margin, seven fleet segments showed high profitability, six a reasonable profitability and only 4 a weak profitability. Net losses are registered with the only exception of the TBB VL1824.

Both in terms of number of vessels and production value, the fleet is dominated by polyvalent passive segments, large demersal trawlers and dredgers. The performance of the polyvalent passive vessels is described in the section on the small-scale coastal fleet, which includes the fleet segments PGP VL0006 and PGP VL0612.

Demersal trawl / seine 12-18m

This fleet segment accounts for 11% of the national fleet and is spread along the Italian GSAs (Geographical Sub-Areas) and predominantly in Apulia and Sicily regions. The fleet mainly targets demersal species, such as European hake, giant red shrimp, deep-water rose shrimp, red mullet, spottail mantis shrimp, common cuttlefish and Norway lobster. In 2017, the total value of landings was EUR 189 million, contributing to 20% of total revenue of the Italian fleet. The profitability of these vessels was high and slightly increasing from 2016. The main reason for the positive economic performance of this fleet segment is the increase in productivity, which determined an increase by around 10% in total revenues. The same percentage increase was registered in terms of GVA, gross and net profits.

Demersal trawl / seine 18-24m

A 6% of the Italian vessels belongs to this fleet segment, which is active in all the Italian GSAs and mainly in Sicily, Apulia, Marche and Lazio. In 2017, this fleet contributed to the national landings in weight and value by 13% and 19% respectively. Compared to 2016, the value of landings increased by 3%, mainly because of an increase in the prices of some species. However, the parallel increase in the operating costs, also due to an increase by 8% in the days-at-sea, did not allow the fleet segment to improve its weak profitability. In 2017, the fleet segment registered a gross profit of EUR 49 million and a net profit of EUR 15 million.

Demersal trawl / seine 24-40m

This fleet segment is concentrated in the GSA 16 (Strait of Sicily) and mainly in the port of Mazara del Vallo. Giant red shrimp, blue and red shrimp and deep-water rose shrimp are the main target species representing 65% of the landings in value and around a half of the landings in weight. In the last years, the activity of the fleet is more and more concentrated in fishing areas distant from the coast (like the eastern Mediterranean). This has changed the composition of the landings with an increasing quota of giant red shrimp and blue and red shrimp in place of the deep-water rose shrimp. The longer time needed to achieve fishing zones far from the coast determined also an increase in the days-at-sea and fuel cost. However, in 2017 the increase in fuel cost was compensated by reductions in other costs, except for labour costs that increased. From 2016 to 2017, the landings in weight and value increased by 16% and 19% respectively. This produced an improvement in all the economic performance indicators changing

the profitability level from weak to reasonable and the net profits from EUR -1.8 million to EUR 13.4 million.

Dredges 12-18m

This fleet segment consisted of 704 vessels operating mainly in GSA 17 and predominantly in the Adriatic administrative Regions of Marche, Veneto and Abruzzo. Striped Venus (*Chamelea gallina*) is the main target species, representing 83% of the landing value and 91% of the landing weight. This fishing activity is traditionally managed by local Consortia, which can enforce limitations to the fishing days and the maximum quantities of daily catch. In 2017, the Discard Plan for mollusc bivalve Venus species entered into force specifying minimum conservation reference size and the list of the vessels authorised to fish Venus spp. using hydraulic dredges in the Italian territorial waters for the period 2017-2019.

In 2017 profitability was estimated at a weak level with a net profit margin close to zero. The strong reduction in net profits, from EUR 5.55 million to EUR 0.69 million, was due to a decrease by 27% in the volume of landings. This reduction, which was not counterbalanced by an increase in the average price of striped Venus, determined a decrease in revenues by more than 30%.

Organization of fishermen in Italy

Producers' organization and sales

In Italy, 38 producer organisations (POs) and 2 associations of POs are formally recognized. Their role is to contribute to the achievement of the objectives of the Common Fisheries Policy (CFP) and of the Common organisation of the markets (CMO) through the collective management of their members' activities. Of the 38 POs, 31 operate in the fishery sector, 6 in aquaculture and 1 is involved in both sectors. The two associations of POs operate in the fishery sector.

First sales concern the fish that is sold or registered at an auction center or to registered buyers or to producer organizations (PO). First sales may differ from landings since the former do not cover fish that is landed by vessels owned by processing companies or direct sales to processors.

In 2019, total first sales in Italian places of sale amounted to 86.933 tonnes and 347 million euros.

The top-3 places of sale covered 20% and 25% of total first sales, respectively in volume and value terms

Wholesale

Wholesale is an intermediary stage in the distribution channel that buys in bulk and sells to resellers (e.g. retailers) rather than to consumers. In Italy, there are two main wholesale market places involved in sales of fishery and aquaculture products, namely Rome and Milan .

Employment

It is estimated that around 47.000 jobs are linked to the fisheries and aquaculture sectors: 69% in

fishing, 12% in aquaculture, 14% in the processing industry and 5% in related activities. As a result, the regional distribution of jobs is similar to that of catches. Thus most jobs are to be found in Sicily (22%) and

Puglia (14%). Other regions such as Veneto, Sardinia, Emilia-Romagna, Campania or Marche account for around 6% to 8% each. The remaining regions contribute less than 3%, with the exception of Abruzzo (4%)

The aquaculture sector is dominated by small enterprises with less than five employees. According to Eurostat-SBS, 5.536 persons were employed in the Italian fish processing industry in 2017. The sector recorded a value added of 381 million euros, covering 2% of the value added of total manufacture of food products. In 2018, the main products sold were “Prepared or preserved tuna, skipjack and Atlantic bonito, whole or in pieces (excl. minced products and prepared meals and dishes)” (source: Eurostat-PRODCOM). The number of aquaculture companies is 413.

Management instruments and regulation

The Italian fisheries management system is largely based on fishing effort control through input measures. The fishing effort is managed through fishing licenses (fish resources can be exploited only by subjects holding a regular license) and control of fishing capacity. The permanent decommissioning of vessels with public aid has been set out in the Action Plan enclosed in the annual Report describing the effort made by Italy in 2016 to find a sustainable balance between fishing capacity and resources, as envisaged by Regulation (EU) No 1380/2013 (art. 22). In 2018, about 200 vessels were scrapped with public aid.

The National Management Plans (NMPs) for demersal species updated by Italian authority in 2018 (Ministerial decree No 26510) provide for a reduction in fishing days for fishing segments targeting some selected demersal stock; the reduction is of 10% in 2019 and 7% in 2020 compared to the average fishing days in the period 2015-2017. The effort reduction in terms of capacity (permanent cessation of fishing activities) and activities (NMPs) should lead to a reduction in landings and, consequently, in revenues in the short period.

The implementation of the landing obligation in Italy has been hampered by a number of problems. In particular, the discard plan for small pelagics entails real-time monitoring of the de minimis exemption, and the discard plan regarding demersal species is based on a list of the vessels that are subject to the landing obligation for each individual fishing activity. All the vessels whose hake, mullet, common sole, and deep-water rose shrimp catch in 2014 and 2015 accounted for 25% of captures are to be included in such list (Sabatella et al., 2018). In 2018, the Commission Delegated Regulation (EU) No 2018/2036 (amending Delegated Regulation (EU) 2017/86 establishing a discard plan for certain demersal fisheries in the Mediterranean Sea) extended current survivability and de minimis exemptions for various single species or introduced new de minimis exemptions for some groups of species until 31 December 2021.

TACs and quotas

Three fisheries are managed through TACs and quotas in Italy.

- bluefin tuna: quota is allocated among purse seines (74.1% of the whole quota), longlines (13.5%), tuna purse seines (8.4%), a quota set aside for compensations (slightly less than 3.5%), and recreational fishing (0.5%). In 2017, Italian bluefin tuna quota increased by 20%, reaching 3 304.5

tonnes; regulation (EU) No 120/2018 has set for Italy a TAC of 3 894 tons for 2018 and of 4 308 for 2019;

- swordfish: in line with the ICCAT recommendations, the Italian Administration established the national list of vessels authorised to fish for swordfish and regulated the use of fishing gears (about 850 vessels); a TAC of 4.3 thousand tonnes has been set for 2017; regulation (EU) No 120/2018 has granted Italy a total quota of 3 624 tons for 2018 and 3512 for 2019;
- small pelagic species in Adriatic Sea: in December 2016, for the first time, the Council agreed on setting a catch limit for the EU concerning small pelagic species in the Adriatic Sea for 2017 (namely 112 700 tonnes of anchovy plus sardine - Annex IL of Regulation 2017/0127). The same catch limit was agreed for the 2018 fishing opportunities (Annex IL of Regulation 2018/120). Except the indication that the catch for Slovenia should not exceed 300 tonnes, the Council did not however define the share (quotas) of the total fishing opportunities between Croatia and Italy.

Innovation and Development

EMFF funds foresee measures for investments to the fishing fleet to improve selectivity of the gears or for technical adjustments. In 2018, the first projects under EMFF have been funded by national and regional authorities; they concerned projects improving hygiene, health, safety and working conditions for fishers, limitation of the impact of fishing on the marine environment, replacement or modernisation of engines.

As a result of the implementation of the landing obligation, national projects have been financed in order to find solutions through the adoption of technologies and practices reducing bycatch and increase the selectivity; one of these projects tested modified bottom trawl nets by using sorting grid separators and separator panels in crustacean fisheries.

Investments that add value to fishery products, i.e. allowing fishers to carry out the processing, marketing and direct sale of their own catches, have met great interest on the part of the fishers. In some local harbours, new marketing approaches have been experimented: fish basket schemes or digital tools are providing opportunities for fishers to inform directly their customers and to promote and sell their products.

In the last years, various commercial strategies have been implemented, aiming to improve traceability and quality of local seafood. “Venetian Wild Harvested Striped Clam fishery” has become the first Italian and Mediterranean fishery to achieve an MSC certification in 2018.

Socioeconomic Impact

The overall economic situation of Italian fishing sector has improved. Energy consumption, after several years, have been decreased leading to proportionally lower energy costs per landed ton. Total income raised thanks to the positive trend in fish prices for some key species. The fleet appears to be returning to levels of profitability not achieved for many years.

Despite this positive national trend, economic performance differs significantly between fleet segments and fishing areas. In general, SSCF did not reach the same level of profitability and the income per vessel and the wage per fisherman remained at a very low level compared with other economic sectors. LSF showed a better situation with some exceptions (in particular, the hydraulic dredges and the beam trawlers).

The decline in the number of fishers has been particularly evident for the small-scale coastal fishing segment; many fishing enterprises closed because owner's sons are not interested to continue the fishing activity and it is difficult to sell the small-scale vessels to other fishers.

In the LSF, the employment is a problem, too; it is still difficult for many companies to recruit fishers and in some ports, the use of foreign labour (for example, African fishers) is the only way to reach the required number of workers on board.

In addition, new management measures (such as effort limitations, spatial closures, fishing permits) and law requirements (electronic logbook, landing obligation) had socioeconomic impact on fishers in so far as they need technical and behaviour adaptations.

Consumption

In 2017, apparent consumption was estimated at 30,9 kg per capita, a slight decrease compared with 2016 (-0,6%). The most consumed species were yellowfin tuna, squid, salmon, mussel, skipjack tuna and cod (source: EUMOFA).

Regular consumers, namely those who eat fishery and aquaculture products at least once a month, mainly belong to age groups 25-39 and 40-54. Young people (15-24) are less inclined to eat fish frequently in Italy, as well as at EU level. In this category, regular consumers cover 66% of the total, which is slightly lower than at EU level (67%). Italians mainly consume fresh fish; loose fish is much more frequently consumed (84%) than at EU level (68%) .

Main challenges of Italian fisheries

- Improving modelling for Ecosystem Based Approach to Fisheries
- Reducing discards and improving small scale fisheries
- Developing participatory co- management mechanisms
- Improving communication/cooperation among local stakeholders
- Reducing spatial conflicts
- Advancing in data collection frameworks
- Assessing impact of global change on fishery resources and ecosystems
- Reducing administrative burden
- Scouting and simplifying the access financial tools for new investments

STRUCTURE OF TECHNICAL MEETINGS

Context analysis on socioeconomic aspects resulting from fishermen and fishing enterprises meetings is planned as a report resulting from national meetings and focus groups with fishermen/fishing enterprises and local action groups (PO, FLAG) that are organised in each country to discuss project's outputs, set priorities, enhance uptake of project's results including final users' needs and requests. Short education precedes the workshops and is implemented with the aim of introducing the sector and FLAGs with the EAF concept.

The meetings consist of two distinct parts. The first is dedicated to educating the stakeholders and the second is about receiving feedback from them.

1. Introduction to the FairSea project and partners
 1. Introduction to the EAF approach to fisheries
 2. Main goals of the project
 3. What is the Integrated Decision Support Tool
 4. What is participatory approach
 5. What is planned for WP3
 6. What are goals of this meeting
2. Discussion – round table

In the discussion section stakeholders are asked to fill and answer some specific questions.

- What are the benefits of applying an ecosystem approach to fisheries management?
- What are the disadvantages of applying an ecosystem approach to fisheries management?
- What are some good opportunities for this approach?
- What are the dangers that may arise from its application?
- What problems or issues that you have could, in your opinion, be solved by a model like this?
What is your current or future management issue that you think would benefit from this approach?

- Identify major challenges and opportunities for fisheries management and decision-making that are in the making or are being planned.
- Discuss whether this tool/model (that this project plans to deliver) covers the desires and needs of you as an end user and whether you find it useful.

RESULTS

Meeting 1 – Poreč

List of socio-economic stakeholders invited to the first technical meeting in Poreč:

1. Kristijan Zović
2. Ranko Bonaca
3. Davor Rašin
4. Gianni Spitz
5. Robert Momić
6. Diego Makovac
7. Franka Makovac
8. Dragan Vasić
9. Michael Tasić – Fishermen cooperative Istra and Producers Organization
10. Neven Iveša
11. Daniele Turcovich
12. Zadruga Ostriga
13. Marinko Mekelenić
14. Roberto Paris
15. Ante Juran
16. Antal Kovacs
17. Fishermen cooperative Ostriga
18. FLAG Alba
19. FLAG Istarska batana
20. FLAG Istarski švoj
21. FLAG Pinna Nobilis

List of stakeholders that attended the meeting

Stakeholder Type	Name	Representative
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Fisherman	Bonaca, obrt, vl. Danijel Rojnić	Danijel Rojnić
	Bonaca, obrt, vl. Ranko Bonaca	Ranko Bonaca
	Baltazar, obrt, vl. Kristijan Zović	Kristijan Zović
	Ribarski obrt Marinko Mekelenić	Marinko Mekelenić
	Zajednički obrt za morski ribolov	Daniele Turcovich
	Big Blue, obrt, vl. Neven Iveša	Neven Iveša
Fishermen association	Ribarska zadruga Istra	Sandi Fonović, Michael Tasić (manager)
Producers organization	Organizacija proizvođača Istra	Sandi Fonović, Michael Tasić (manager)
Chamber of commerce/Fishermen guild	Ceh ribara	Robert Momić (president)
FLAG	FLAG Istarski švoj	Iva Jekić, Marina Gudić
other	-	-

The SWOT table aims to summarize the main strengths, weaknesses, opportunities and threats related to the application of the ecosystem approach to the fisheries governance, tackling in a comprehensive frame technical and institutional implications.

The SWOT constitutes the outcome of the technical meeting for socioeconomic stakeholders held on 24th of July in Poreč, arranged by MofA.

STRENGTHS	WEAKNESSES
Fishermen can have a tool that will help them predict their catch and/or make decisions on fishing grounds and using different fishing gear. EAF model can be used to calculate a cost/benefit ratio for no take zones and explain	It is difficult to incorporate the traditional and economic factors in the model, since in Croatia we have a situation that for a significant number of fishermen fishing is a secondary employment/source of income.

<p>to fishermen how their profits will be impacted. Model can be used to calculate damage from marine mammals and predict their population growth.</p>	<p>The general state of the economy in the country can increase or decrease fishing effort. The data on the market is not detailed enough to provide all the information needed to predict the sales. For instance, the Italian market demands smaller sized red mullet, while in Croatia restaurants and fish markets have very low sales of this species in general. Statistics on the consumption of fish per capita is biased due to the fact that the catch from recreational fishing is not included. There is not enough data on the predators (like dolphins, sharks, tuna, dolphin fish, bluefish etc.). The data on fisheries and catch doesn't include the size of the fish. We only get the total weight. For some more expensive fishery products (like lobster), the catch data is biased due to illegal selling.</p>
<p>OPPORTUNITIES</p>	<p>THREATS</p>
<p>EAF models can predict future events and reduce the time needed for making decisions.</p>	<p>The market is unpredictable and can act illogically. Economic issues on the market can influence the price of fish in a way that we didn't expect. Demographic changes (immigration) can change the consumption of fish. Young people have different habits and cooking preferences that are difficult to predict. Illegal fishing influences the stock and the price on the market, yet we have no data about it.</p>

Management issues pointed out by stakeholders

During the technical meeting in Poreč, there was a round table in which the fishermen were asked to discuss which management issues they find relevant and in need of resolution.

The topics that were pointed out are:

1. The fishermen noticed that the stock of European lobster (*Homarus gammarus*) has improved and that they catch it in the northern Adriatic during the whole year. Currently the season for catching this species is closed from 1st of September till 15th of May. During closed season there is a lot of unreported and illegal fishing of this high valued species due to the fact that accidental catches are not returned to the sea, and are sold to the black market. If there was no closed season, the fishermen would have a chance to report the catch and sell this species legally and this would improve the management. However, the negative effect could be that some fishermen that were returning the lobsters in the sea and didn't engage in illegal fishing, would now add to fishing effort and fishing mortality for this species. This positive and negative effects could be accounted for in the modelling simulation.
2. For the last couple of years fishermen noticed that the size and the prices of sole (*Solea* sp.) decreased, since the prices depend on the size category. The fishermen think that increasing mesh size on trammel nets would at the beginning reduce the total amount of catch and decrease the profit, but in the long-term, the stock would have a chance to recover and the profitability would increase. They are wondering if this management decision would in fact benefit them, or not.
3. The population of dolphins is increasing in recent years as a result of protection measures for marine mammals. As a result, fishermen are suffering from damage on nets and losing catch due to predatory behaviour of dolphins. Since it is not possible to manage dolphin populations, the Ministry of agriculture is partially compensating financial losses to fishermen. The issue is how are fish stocks affected by recovering marine mammal populations and what is the effect on the ecosystem.

The management problems include socio-economic effects that are difficult to predict. In Croatia fishing is a secondary employment/source of income for a significant number of fishermen, so the general economic situation in the country can increase or decrease fishing effort. Also, the data about marketing fishery products is not detailed enough to provide all the information needed to predict the sales.

Statistics on the consumption of fish per capita is biased due to the fact that the catch from recreational fishing is not included in the analysis.

The market is unpredictable and can act illogically. Economic issues on the market can influence the price of fish in a way that can't be predicted. Demographic changes (immigration) can change the consumption of fish. Young people have different habits and cooking preferences that can be difficult to predict.

CONCLUSIONS AND RECCOMENDATIONS

Socioeconomic stakeholders can best be reached through organizations and associations like the Chamber of commerce or Croatian Chamber of Trades & Crafts. Some of the fishermen cooperatives also gather a significant number of fishermen.

Fishermen have their representatives in the Fishermen guild and depending on gear they have working bodies called coordination that discuss problems that are specific to a fleet segment.

It has to be taken into account that, the 2018 and beyond economic performance will be likely influenced by EMFF funds planned for the period 2014-2020. In particular, EMFF funds foresee measures, among others, for investments to improve selectivity of the gears or for technical adjustments as well as investments that add value to fishery products, i.e. allowing fishers to carry out the processing, marketing.