RECOMMENDATION PAPER

on the applicability of a management model based on Transferable Fishing Concessions in the Mediterranean sea

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This Recommendation Paper is based on the results of the MAREMED Pilot Action "Transferable Fishing Concessions (TFC): transferability, modes of applicability and management model analysis for the Mediterranean area" carried out, in synergy with other project partners, by Marche Region (U. Meconi, L. Gagliardini Anibaldi, S. Palladino) and the Regional Development Agency SVIM (M. Marchesan, C. Frittelloni, L. Catalani), in collaboration with

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Abbreviations and acronyms

CFP	Common Fisheries Policy
CTQ	Community Transferable Quota
EC	European Commission
EMFF	European Maritime and Fisheries Fund
EU	European Union
FAO-GFCM	Food and Agriculture Organization of the United Nations - General Fisheries Commission for the Mediterranean
GFCM	General Fisheries Commission for the Mediterranean
GT	Gross Tonnage
ICCAT	International Commission for the Conservation of Atlantic Tunas
ITQ	Individual Transferable Quota
GSA	Geographical Sub Area
MS	Member State
MSY	Maximum Sustainable Yield
PO	Producers' Organization
RBM	Rights-Based Management
TAC	Total Allowable Catches
TFC	Transferable Fishing Concession
TURF	Territorial Use Rights in Fisheries

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INTRODUCTION

In 2009 [1] the European Commission identified in fleet overcapacity and inefficiency, associated to a general overfishing of stocks, two of the main issues threatening the EU fisheries sector. Advocating for an ambitious reform of the Common Fisheries Policy (CFP), the Green Paper "Reform of the Common Fisheries Policy" underlined an high criticism *vis-à-vis* of the last 10 years of implementation of the CFP. In such a context, among new measures scheduled by the legislative packet pubblished in 2011 [2], the European Commission included the mandatory introduction of a system of Transferable Fishing Concessions (TFC) specifically aimed at reducing fleet overcapacity and increasing economic viability of the fisheries sector. **Transferable Fishing Concessions (TFC)** can be defined as a form of rights-based fisheries management that entitle the holder to a specific proportion of its Member State's annual fishing quota or allowable fishing effort. The mandatory introduction of a TFC system has however been widely opposed by Member States and it has been finally rejected by the European Parliament and Council. The reformed CFP will therefore include the possibility to **adopt a TFC system for fisheries management on a facultative basis** at each Member State's discretion. Indeed, given the diversity of fisheries in Europe, Member States should be allowed to choose the management system which is most appropriate for the specific **characteristics and requirements of the regional fisheries**, based on a set of transparent **criteria for economically viable, and environmentally and socially sustainable practices**.

Stemming from these premises and in the framework of the **EU Project MAREMED**, Marche Region (Italy) as the coordinator of the fisheries theme has developed a pilot action on the applicability of Transferable Fishing Concessions (TFC) in the Mediterranean. The pilot action was carried out in collaboration with other project partners (France: Conference of Peripheral Maritime Regions and Mediterranean Intercommission CRPM-CIM, PACA Region, Corsica Region; Spain: Valencia Region; Italy: Liguria Region, Toscana Region) and fisheries experts from the academic sector (Italy: Fano Marine Biology Laboratory of the University of Bologna, CNR-ISMAR of Ancona) and the private sector (Corsica: STARESO-Station de Recherches Sous-marines et Oceanographiques). The study included an introductory analysis of the legal framework, background information and state of the art at the European level, and an evaluation of the appropriateness, transferability and modes of applicability of a fisheries management model based on a TFC system in the Mediterranean area, which is characterised by multispecific, multigear and small-scale fisheries. This Recommendation Paper provides an overview of the results and conclusions of the pilot action; the complete outcomes of the study including the questionnaires filled in by each project partner are presented in the Final Report, which is available on demand.

[1] EU COM (2009) 163 final. Green Paper "Reform of the Common Fisheries Policy".

[2] EU COM (2011a) 417 final. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions "Reform of the Common Fisheries Policy".
EU COM (2011b) 425 final. Proposal for a Regulation of the European Parliament and of the Council on the Common Fisheries Policy.

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GENERAL RECOMMENDATIONS

Fisheries management systems based on transferable concessions/quotas and similar rights-based systems have been developed during the last decades in a number of European countries (especially in Northern Europe). However, at present there is not a clear view on the effects caused by the application of this management systems both in the short and in the long term, and controversial results have been achieved in many cases. According to the results of this pilot action, **the Transferable Fishing Concession (TFC) concept may fit well with fisheries regimes characterised by industrial, monospecific and single-gear fishing. However, the transferability potential of a TFC-based system to the Mediterranean context appears to be extremely low, especially in the demersal and in the small-scale fisheries, due to the characteristics of the Mediterranean fisheries**. Indeed, the Mediterranean context is mainly characterised by artisanal small-scale fishing vessels, where each vessel usually catches a wide variety of species using several different fishing gears and systems, with high spatial and seasonal variability. Therefore, the results of this pilot action have shown that **a fisheries management model based on a TFC system is in general not appropriate and recommended for the Mediterranean context**.

With regard to the analysis of biological, ecological and environmental issues related to the applicability potential of a TFC system in the Mediterranean, MAREMED project partners highlighted that their Regional fleets are mainly artisanal, with small-scale fishing vessels commonly catching a wide variety of species with different fishing gears. None of the partners think that a quota allocation system based on **catch histories** would be appropriate and feasible for the Mediterranean. The main reason is a general lack of sound individual historical data, since none of the Regions have a specific archive or database managed by the Regional administration to keep track of catch data per fishing vessel, and catches declared by fishermen are not always accurate and reliable. In fact, only national statistics are available, where catches are subdivided by Region, species and fishing gear, but these statistics are based on a restricted sample of fishing vessels and cannot be referred to individual catches.

A concept strictly related to catch quotas as a portion of Total Allowable Catches is that of **Maximum Sustainable Yield (MSY)**, which does however not seem exhaustive in its current shape for the development of a sustainable fisheries management model in the Mediterranean. The current MSY concept seems not applicable to resources which are highly interrelated and variable over time. In the Mediterranean, the MSY should be determined for groups of species (mixed-species MSY) according to fishing systems, seasons and areas, also considering that MSY for mixed species should have a margin of flexibility. Moreover, there are not enough biological and life history data to determine the MSY for most Mediterranean species. Direct resource assessment methods, such as echo-surveys with standardised equipment kept onboard fishing vessels, could be a feasible alternative to MSY in order to determine catch quotas, provided that local data are integrated over space and time to obtain a reliable picture of stock status and trends.

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At the moment and according to the project partners' responses, **discard** seems not to be a common practice in Mediterranean Regions, except for bottom trawling, and to a certain extent for pelagic trawling. **But project partners think that a TFC system could increase the practice of discards**. A possible solution would be to carry out stricter control and surveillance activities on board fishing vessels, and this would also allow to collect more reliable total catch data, but this is in general not feasible in the Mediterranean yet.

In general terms, none of the project partners would apply a TFC system to the Regional fisheries sector. If a TFC system were to be developed in the Mediterranean, this should be limited only to certain types of fisheries resources, to some fishing areas and to specific fleet segments and fisheries gears and systems. For instance, Marche Region would only consider it for specific single-species and single-gear fisheries such as clam fisheries, with direct management by Fishermen Consortia or Producers' Organizations, which have the responsibility to determine quotas within the overall limits defined by Member States. Clam fisheries carried out with hydraulic dredges is based on the exploitation of sedentary resources (clam, mutable nassa, and other shellfish) and it is regulated by TURF management. A TFC system based on catch or time restrictions may be feasible also for small pelagic fisheries, such as anchovy and sardine fishing targeted by purse seining and pair trawling. For these fisheries, a management system based on Individual Catch Quotas, which could be integrated into a TFC concept, is already applied on the basis of legal requirements (national or EU regulations) or, in some Regions, of a self-regulated management. However, in the latter case the quotas fixed on a voluntary base are mostly market-driven, and biological considerations play only a secondary role. In addition, such a system could only be applied after having assessed the status of small-scale pelagic fish stocks for the entire Adriatic sea, and this would imply **a thorough data collection from all countries which share this basin**. Moreover, **the potential negative effects of this system on discard levels should also be taken into account**. The application of this system would require stricter surveillance and control activities by fishermen associations and control bodies, but this is not always feasible.

Another critical issue is that **the Mediterranean sea is characterised by the presence of several geographic areas where stocks are shared among different countries**, such as the Adriatic Sea (probably the largest and best-defined area of shared stocks in the Mediterranean). This aspect further complicates the feasibility of applying quotas on certain resources (pelagic and demersal), which are targeted by Italian, Croatian and Slovenian fisheries. In fact, several demersal species (hake, Norway lobster, sole, etc) are caught by all these countries, and a few species (red mullet, pandora, sole, common cuttlefish, tub gurnard, etc) complete their lifecycle by moving from the East coast to the West; thus, quotas should be applied taking into account all these aspects.

With regard to the analysis of social, economic and regulatory issues related to the applicability potential of a TFC system in the Mediterranean, Italian, French and Spanish partners have pointed out that in their Regions fisheries rights are currently regulated through a **system of licences** released by the State according to specific regulatory frameworks. Fisheries rights are in general not assigned according to territorial, biological or economic criteria, although there are exceptions in the case of species under special management regimes. The TFC concept could be compared to the licence system,

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although licences do not "penalize" fishermen activities by setting restrictions on catch quota or fishing time. Theoretically, the market value of a TFC is proportional to the potential profits that it will allow to obtain. At the moment the fisheries sector is in strong crisis, and project partners argue that if quantities of fish that can be caught or fishing days were limited by assigning TFCs and thus setting quotas, the economic situation would become even more critical. Concessions would also lose their transferability power, since there would be no significant potential gains in acquiring a TFC.

Just as seen for the biological and ecological aspects, also when it comes to socio-economic issues none of the partners think that a TFC system would be appropriate for the Mediterranean: this would introduce **stricter limits in terms of catch quotas and fishing time**, it would cause the **disappearance of a number of fishermen from the sector without real benefits in terms of fish stocks or production** (their concessions would be simply acquired by bigger enterprises), and it would **increase job barriers** for new generations.

Overall, **TFCs are not seen as an appropriate tool to increase competitiveness** in the fisheries sector. TFCs bring restrictions that are often set without a thorough knowledge of the local requirements, with a tendency to standardize too much and oversimplify a highly complex issue. A TFC system is strongly based on market and economic considerations. In some EU countries, this has helped to rationalize the fleet. But these types of economic speculation would be detrimental for the Mediterranean Regions, which are characterised by artisanal small-scale fisheries. Indeed, the implementation of a TFC system is likely to lead many small enterprises to cease their activities by selling their TFCs to bigger enterprises. Although from an economic model point of view this might lead to a higher level of competitiveness in the Mediterranean fisheries market, on the other hand, concentrating TFC in the hands of a few fishing vessel owners might threaten all efforts made by Regional and local governments to ensure a coastal development aiming to support territorial, economic and social cohesion. **The best way to avoid excessive concentration would be to exclude small-scale fisheries, as well as species which do not have a quota (only bluefin tuna has a quota in the Mediterranean). But this means once again that TFCs are not appropriate for the Mediterranean peculiarities and specificities**.

More in general, all project partners agree in making **TFC systems facultative and discretionary for Member States**. There might be specific ecological or social contexts where TFCs can provide some benefits, but the choice to adopt a TFC system should be made on the basis of clear and sound decisions shared by all actors and stakeholders involved, and not on the basis of mere economic and market pressures. With regard to setting specific **restrictions to TFC transferability**, none of the partners would set territorial restrictions. Considering fishing vessel characteristics and fishing gears and systems, all partners think that TFCs should not be transferred from fixed (gillnetting) to trawling gears. Similarly, all partners believe that some restrictions in transferability should be set on fish categories, in order to avoid transferring fishing pressure from one resource to another. Transferability should be regulated by the releasing authority, so that catches can be orientated on the resources that are environmentally and economically more sustainable.

TFC systems can be based on **quotas managed and transferred on a strictly individual basis (ITQ model), or on wider quotas co-managed at the community level (CTQ model).** Some of the project partners think that an ITQ model might be more appropriate and reliable, since a CTQ model might

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bring into the equation aspects that are too theoretical and unpredictable. Also, the co-management of resources at the community level is often not positively seen by Regional fisheries communities themselves, as reported by Italian and French partners. Nevertheless, some project partners believe that a common management of TFCs at the Producers' Organization level could help to better plan production and to exchange quotas in real time.

According to MAREMED project partners, throughout the Mediterranean **fishermen and category associations are mainly worried about the potential introduction of a TFC system**. Overall, actors and stakeholders in the fisheries sector have not a clear vision of how a TFC system could actually work, since this issue is managed with a top-down approach, including the setting of quotas and fishing times. There are however specific cases where fishermen show a direct interest in developing management schemes based on quotas, such as for anchovy fishing in Marche and Liguria Regions.

With regard to the options for Quota determination and related allocation criteria for the Mediterranean, MAREMED project partners identified the following main options, also providing an exhaustive list of advantages and disadvantages associated to each one of them:

- **Option 1**: Quota in terms of resource quantity that can be caught by a fishing vessel
  (quota is calculated as a portion of the total allowed catches)
- **Option 2**: Quota as a portion of the total fishing time independent of the species
  (only the total time for which a vessel is allowed to fish is considered, with no restrictions on chosen areas or caught species)
- **Option 3**: Quota as a portion of the total fishing capacity, considering the overall fishing time and the overall horsepower/size of fishing vessels
  (the quota is assigned to each vessel as a function of its horsepower/size and the maximum fishing time, and therefore it will vary according to a fishing vessel's characteristics)

These can be regarded as "pure options", but several other options could be considered by combining a number of different factors. In all cases and whatever the option chosen, control and surveillance activities will have to be stricter, both on landings and out at sea, with higher costs and obligations. It must also be considered that for most Mediterreanean species and fishing areas there are no exhaustive data on the overall state of exploitation of resources, and quotas could only be assigned adopting a precautionary approach. Finally, if small scale fishing is kept out of the TFC system, a thorough control on the overall catches cannot be carried out. In fact, in the Mediterranean context small-scale fisheries have a very significant incidence on the overall catches.

In the Mediterranean, a TFC system based on quotas of caught fish, with all the limitations discussed above, could be appropriate only if applied to single-species fisheries, such as clam or anchovy fishing, even if in general terms the disadvantages seem always to be higher than the advantages.

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CHALLENGES AND OPPORTUNITIES FOR A FISHERIES MANAGEMENT MODEL BASED ON A TFC SYSTEM IN THE MEDITERRANEAN SEA

The Mediterranean Sea is a semi-enclosed basin with a surface area of about 3 million km^2 (Black Sea incuded), which is about 0.8% of the world's total sea surface. The two fundamental features of Mediterranean fisheries are **the large variety of caught species and the absence of large single-species stocks** (with some exceptions, such as the bluefin tuna).

Fishing activities in the Mediterranean employ several hundreds of thousand of people and have artisanal fisheries characteristics. Mediterranean fleets are mainly composed of a large number of small (80% are <12 m) and relatively old fishing vessels, characterised by a high degree of polyvalent techniques and a high diversity of fishing gears. Fleets have a capillary distribution along the whole coastline, with fragmented landing sites and markets. Three fleet types can be recognized: artisanal, semi-industrial and industrial fleets. The artisanal fleet is composed of small, relatively cheap and often rather old fishing vessels, mostly owned by fishermen themselves. Small-scale vessels usually operate at close distance from the shore, and use a broad diversity of fishing gears targeting several different species. The semi-industrial fleet is composed of vessels with intermediate characteristics between the other two types, but closer to the artisanal fleet. It consists mainly of trawlers, purse-seiners and some longliners. Catches are usually landed daily or every two days, and therefore vessels usually operate close to the coast, on the continental shelf or upper slope. The industrial fleet is composed of fishing vessels of bigger size and engine power, mainly trawlers or large vessels targeting big pelagic fish. Industrial fishing vessels can spend several days out at sea, and they have refrigerating systems onboard for long-term product conservation (especially for shrimp fishing). They can move among fishing areas covering considerable distances out at sea.

The Mediterranean is regarded as one of the most important marine regions in the world for its peculiarities and biodiversity levels. Demersal trawling in the Mediterranean is multispecific and it targets a high number of species of commercial interest. Demersal fish (also called groundfish) stocks have traditionally provided the most significant catches in economic terms, and several species have a very high commercial importance at the local level. Within this fisheries segment, monospecific fisheries is very rare and mainly limited to shrimp fisheries on lower slope muddy bottoms.

The Mediterranean Region is characterised by a very high level of anthropogenic pressure: indeed, fishing vessels from more than 20 countries share the same pool of fisheries resources. Therefore managing Mediterranean fisheries is a complex process, with the presence of a large number of different fishing fleets in the same (shared) areas using a wide diversity of fishing gears. **Mediterranean fisheries are highly diverse and show strong geographical variations, not only because of the existence of different marine environments, but also because of different socio-economic situations.**

Two international organizations are in charge of assessing the status of resources and providing advice for Mediterranean fisheries management: the General Fisheries Commission for the Mediterranean (**GFCM**) and the International Commission for the Conservation of Atlantic Tunas (**ICCAT**). Fishing has

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been carried out in the Mediterranean for thousands of years, so the current patterns are the result of a long history, and not simply the outcome of a specific and relatively recent management policy. Mediterranean fisheries management is mainly based on **fishing effort control**. Neither TACs (except for bluefin tuna) nor other types of adaptive management are applied. In the Mediterranean, the presence of multispecific stocks and the wide variety of fishing systems and gears used for catching single species have favoured the adoption of management systems mainly based on the regulation of fishing effort and on the definition of minimum catchable sizes for the relevant commercial species. A management system based on catch quotas is applied to some specific fishery segments, such as clam fisheries. Other technical measures, such as **minimum landing size and minimum mesh size**, are also implemented but not always strictly enforced. Most of the rules concerning demersal fisheries management have been developed for trawling, not only because it is the fishing gear which gives the highest contribution to demersal catches, but also because it has lower selectivity than the most important artisanal gears (net and lines). **Fisheries management is usually carried out at the national level through technical and economic measures**, such as limiting vessels' engine power and tonnage, limiting the number of boats or licences, limiting the daily time at sea, establishing fishing restricted areas and, occasionally, implementing closed seasons and temporary protection periods. Governments are also supporting the fisheries sector through subsidies for modernization of vessels, infrastructure and fishing equipment (often using EU funds). In general, economic measures are more effective than technical ones in managing Mediterranean fisheries. The complexity of the fisheries sector is also related to the fishermen's ability to swiftly adapt to favourable or unfavourable changes in relevant factors (biomass fluctuation, energy costs, market schemes, innovation, legal measures, etc).

Some fishermen organizations contribute to local fisheries regulation through gentlemen's agreements. In some cases and for limited periods, the associations have been able to implement a "self-regulation" system based on specific rules that were followed by the whole fishing community, a behaviour that has even been studied by social scientists. However, even in such cases government directives have higher priority on their own rules. An interesting case study is that of **clam fishery** in the Adriatic Sea, for which formal consortia have been created (in agreement with the producers) in order to regulate and manage resource exploitation and to carry out seeding experiments. Quotas have been fixed on the basis of dredge surveys, and research inputs form the basis of management decisions by the consortia. Community-based management is another interesting approach to Mediterranean fisheries management. It involves giving some authority to fishermen in developing a regulatory framework and in protecting both resources and local fishing activities.

Whatever the complexity of a system, fisheries management always aims at achieving a balance between fish stock status and catch levels, in order to ensure a long-term sustainability of fisheries. This means that economic gains must be obtained without compromising the state of resources for future exploitation.

Within a Mediterranean context, the management of fisheries and marine resources is a particularly complex task. Each country is characterised by strong environmental, socio-cultural and economic specificities, whereas at the European level there is a tendency to set standard rules for the

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implementation of common policies. These specificities have started to be recognised at the European level with the implementation of **European regulations focused on Mediterranean fisheries**.
In addition, managing fisheries resources in the Mediterranean means acting on two fronts: within the EU and in the context of biological resource sharing with the non-EU Balkan countries eastwards and with Northern Africa southwards. Developing and implementing fisheries management policies based on innovative models, such as those based on a strong scientific support, is therefore particularly difficult in the Mediterranean, not only because of the characteristics of fish stocks (*e.g.* **multispecific stocks**) and catch types (*e.g.* **a high variety of fishing gears**), but also because of the **geographical and sociopolitical complexity of the Mediterranean area.**
The Mediterranean situation is therefore very different from that of Northern European areas, where TFC systems may find a satisfactory application. Indeed, fisheries areas can be described as intertwined systems between one or more fish stocks and the group of fishermen exploiting them. The system's complexity depends on stock complexity, fleet size, technologies, etc. **The Mediterranean system is intrinsically complex, since this area is characterised by fleets of diverse origin, which use highly differentiated and mutually competitive fisheries systems, and which exploit fish communities characterised by the coexistence of a high number of interdependent populations of commercial interest.**
Within the non-Mediterranean EU context, which is the reference area for European Community Regulations, the technical measures adopted for fisheries management have been associated to the introduction of Total Allowed Catches (TAC), based on biomass assessment for specific stocks. But the Mediterranean sea is very different from the Northern European seas.

All this considered, it is difficult to develop and apply a TFC system in the Mediterranean context, where management systems based on TACs and quotas are not common, since the TAC concept is only appropriate for single-species fisheries. In addition, long-time data series for the fisheries sector (landings, real engine horsepower, etc) are not exhaustive for the Mediterranean area.
The introduction of catch and effort quotas, as proposed by the European Commission, may enhance the efficiency of management authorities only within **specific management plans**. More specifically, effort quotas could be assigned to multispecific stock fisheries, whereas for monospecific stocks – like shrimp fisheries in the Sicilian Channel, or small pelagic fisheries in the Adriatic – catch quotas may be more suitable, possibly in association with effort quotas.
Member States may be the main referent authorities for management plans when resources are not shared with other countries, the European Community when resources are shared by several Community fleets. With Croatia joining the EU, this could be the case in Northern and Central Adriatic sea, where Italian, Croatian and Slovenian fleets compete for the same resources. In the Sicilian Channel, where fleets from Community and non-Community countries target the same stocks, the General Fishery Commission for the Mediterranean holds the responsibility to draft management schemes on an appropriate scale and over selected stocks.

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ANNEX I – OVERVIEW OF THE GENERAL ANALYSIS: OPTIONS FOR QUOTA DETERMINATION AND ALLOCATION CRITERIA

This Annex presents the overall analysis of the 1st Thematic Section of the Questionnaire "Options for Quota determination and allocation criteria", and it is based on opinions, data and information that were provided by project partners and related fisheries experts by filling in the questionnaire.

In order to evaluate the transferability and modes of applicability of a TFC management model in the Mediterranean area, it is vital to outline the most suitable options for Quota determination and criteria for TFC allocation. As a basis for the development of an appropriate set of rules, a coherent **system for Quota determination** (based for example on parameters such as species quantity, fleet/vessel characteristics, length of fishing period) and related **allocation criteria** shall thus be developed, making sure that the advantages and disadvantages associated to each option are clearly defined.

There are various possible options for Quota determination, and different options may also be combined in order to make them more effective. When choosing among available options, it is important to identify the option that better allows to stay **within the biological catch limits** of the target species, keeping in mind that such limits are different among species.

Some examples of possible options for Quota determination in the TFC framework are:

TFC – Quota as a quantity that can be caught by a fishing vessel identified as a portion of the national catch Quota for a TAC species, for example tons of mullets.

TFC – Quota as a portion of the total fishing time allocated to the catch of one or more species, for example fishing days for mullets or fishing days for all species caught together.

TFC – Quota as a portion of the total fishing capacity of the whole fleet calculated as fishing power by fishing time, for example fishing days by vessel horsepower in kW.

TFC – Quota as a portion of the national catch Quota for each fishing system and fishing area, both for single species and for groups of species, for example tons of mullets caught by towed gear in FAO-GFCM GSA 17.

The following table presents the various **options for Quota determination and related allocation criteria for the Mediterranean** that were identified by MAREMED project partners according to their Regional situation, together with a list of advantages and disadvantages related to each option.

OPTION 1: <u>Quota in terms of resource quantity</u> that can be caught by a fishing vessel *(quota is calculated as a portion of the total allowed catches)*	
ADVANTAGES	***DISADVANTAGES***
Biological, Ecological, Environmental aspects	
1. More control on the resource to be	1. Necessity of very accurate studies on the

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monitored /protected. 2. It could keep catches within safe biological limits. 3. It can be applied to single species fisheries and it has given good results with sedentary species. The maximum daily allowable catch per vessel has already been put in place for clams. 4. Quotas would make more sense if they are applied to catches rather than to landings, in order to avoid an increase in discards which is very difficult to control. 5. Smaller vessels could sell their quotas to bigger ones and cease their activity. This could decrease fishing pressure on resources. 6. For strictly single-species fisheries (*e.g.* «rossetto», cuttlefish and octopus caught with traps, swordfish, bluefin tuna) it may be appropriate to set Quotas.	resource quantity and status: introduction of a degree of uncertainty. 2. For most species, especially demersal ones, there are no exhaustive resource assessments for quota determination, together with an overall lack of biological and ecological data (e.g. with regard to Corsica, the red spiny lobster *Palinurus elephas* is a very important species but understanding stock-recruitment relationship is still very difficult). 3. There are no exhaustive data which allow to assign quotas to the different GSA areas for each species. 4. Quotas assigned to each species could differ among areas, even if vessel characteristics are the same, due to differences in the ecological features of each area and in the species biology (e.g. distribution throughout the life cycle). 5. Several species of commercial interest are part of multispecific communities, and it is not possible to catch them as single species. 6. Discards tend to increase without biological benefits. 7. Due to the short life cycle of many Mediterranean species, quotas can include adults as well as juveniles according to the chosen fishing period. 8. Small fishing vessels may sell their TFCs to bigger vessels which concentrate their catches in restricted areas. This would determine an increase of the fishing effort in specific areas.
Economic aspects	
1. Quotas put a limit on quantities that can be sold, and in certain periods quotas can cause an increase in market prices (if the same product is not brought to the market from	1. Quotas are usually reached in a short time, and this could cause long inactivity periods or the use of quotas allocated to other species, with a high probability of catching also

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other fishing areas, its economic value increases). 2. For some fishing systems, such as anchovy caught by light fishing and purse seine, fixing quotas could give a higher value to catches and more stable prices throughout the year. 3. Smaller vessels could decide to sell part of their quotas to bigger vessels, thus obtaining an economic gain. 4. Quotas may give a higher value to licences and thus to fishing vessels. This may be relevant if the new EMFF does not provide financial support for vessel scrapping and/or sets limits to supports for renewal. Quotas could therefore be an advantage for fishermen, in that they give an added value to their vessels and could allow to gain higher monetary reward to fishermen who cease their activity. 5. A TFC system based on catch quotas could give economic benefits if it is related to product quality policies aimed at increasing the price of fisheries products.	species for which the quota has already been reached (in this case it is most likely that species for which the quota has been reached are discarded). 2. The quota will be reached trying to catch fish of the size/age class at higher market value. This means younger individuals for many Mediterranean commercial species (octopus, cuttlefish, squid, mullets, etc). In other cases, such as anchovy, bigger size fish have a higher commercial value. In these cases the risk is that fishermen selectively keep on board bigger-size individuals and discard the residual catches (this is both an economic and a biological consideration). 3. The controls carried out to verify catch quantities on fishing vessels have high costs and are often not effective, as demonstrated in Northern Europe. These costs would have to be beard by fishermen. 4. In the case of transnational resources, quotas should be shared between neighbouring countries and respected also in neighbouring areas, but this is difficult to apply and control. 5. There is the risk to concentrate quotas in a few hands, if small size vessels sell their quotas to big vessels that can more easily bear with market fluctuations. 6. Quotas for different species could be traded between vessels, for instance one could exchange a few "higher value" Norwegian prawn quotas and get a lot of mullet or anchovy quotas. 7. The distribution of national quotas among fishermen could lead to anomalies related to the different distribution of fish resources in the different areas. This could lead to the uneven distribution of quotas among fishing vessels with similar characteristics but

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	operating in areas with different resource availability. 8. Fishermen that do not obtain quotas or have lower quota values are penalized from the economic point of view. 9. The operational and maintenance costs of fishing vessels are high. Allocating TFCs on the basis of catch quotas may lead to a further decrease in the profitability of fisheries, especially if quotas are assigned to species with low market value. 10. If the quota system caused a decrease of the total amount of fish that is caught, this could determine an increase in the price of fish, which might remain unsold. This would further decrease the fishermen's gains, which are already low.
Social aspects	
1. Fixing quotas could favour the aggregation of fishermen in consortia or producers' associations in order to improve market relationships. 2. Fixing quotas could develop better collaboration between fishermen and could improve the position of Regional institutions (e.g. prud'homies in Corsica) – especially considering that at present, professional fishermen tend to be increasingly individualistic. 3. Fixing quotas could decrease the total amount of time spent out at sea, thus improving the quality of life and enhancing the possibility to develop secondary activities.	1. Each fishing area hosts populations characterised by specific territorial and seasonal features. Quotas can modify fishing areas according to the distribution and movements of species for which a quota has been assigned, thus modifying the typical fishing areas of the different fisheries segments. 2. As soon as a quota is reached, fishing must be suspended, and this means longer periods of inactivity and no direct incomes for fishermen. 3. Fixing quotas could reduce the time spent out at sea, and this could lead fishing vessel's owners to cut the number of crew members. 4. Smaller vessels could sell their quotas to bigger ones and cease their activity. This would cause a loss of working places.
ALLOCATION CRITERIA	
A quota is determined for each GSA and for each species, adopting a precautionary approach. The	

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quota fixed for each species is subdivided among authorized fishing systems, and then it is allocated to the fishing vessels which are registered in each category. Specific allocation criteria can vary. Same quotas for all fishing vessels in a category and in a GSA, or quotas proportional to horsepower/size/tonnage of vessel, or quotas proportional to a fishing vessel's catches based on landings in the last few years. In addition, some fishing such as sole or cuttlefish fishing, is carried out in coastal areas, whereas other, such as Norway prawn or hake fishing is carried out in open sea (areas more difficult and more expensive to reach), and this must also be taken into account when allocating quotas.

OPTION 2: Quota as a portion of the total fishing time independent of the species

(only the total time for which a vessel is allowed to fish is considered, with no restrictions on chosen areas or caught species)

ADVANTAGES	***DISADVANTAGES***
Biological, Ecological, Environmental aspects	
1. Environmental pressure will not increase since the overall time spent fishing will be kept constant or will decrease as a consequence of quota setting. 2. If the fixed quota is lower than the current total fishing time, the fishing effort would decrease with positive impacts on the status of stocks. 3. It reduces discards and accessory catches. 4. If fishing times could be related to the life cycles of the species of main interest, this would allow to better safeguard those species.	1. Fishing time cannot be calibrated on each and every species' dynamics, and even associating it to the species of main interest may be very difficult. 2. The MSY goal for each species will not be reached, since fishermen will use their fishing time to catch whatever species, taking into account only the economic gain. 3. Fishing time cannot be associated to a biological community because fishermen will catch species wherever it is more profitable. 4. Fishing effort would be concentrated in periods which are more economically convenient or environmentally favourable, with the risk of stock overexploitation during such periods.
Economic aspects	
1. Since the total fishing time is limited, the best meteorological conditions can be chosen throughout the year. 2. Smaller vessels could decide to sell their time-quotas to bigger vessels.	1. Fishing time is lower, and thus catches and economic revenues will probably be lower too. 2. The total fishing time cannot be flexibly varied according to market requirements.

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3. A decrease in costs due for instance to lower fuel consumption, since fishing trips can be better planned and optimized. 4. Quotas may give a higher value to licences and thus to fishing vessels. This may be relevant if the new EMFF does not provide financial support for vessel scrapping and/or sets limits to supports for renewal. Quotas could therefore be an advantage for fishermen, in that they give an added value to their vessels and could allow to gain higher monetary reward to fishermen who cease their activity. 5. A TFC system based on time quotas could give economic benefits if it is related to product quality policies aimed at increasing the price of fisheries products.	3. In the last portion of the year, many vessels will have already finished their fishing time. 4. If fishing effort is concentrated in certain periods, this may cause the landing of high fish quantities all in the same period, thus causing a decrease in prices. 5. Fishermen would have lower market power.
Social aspects	
1. The time to be spent out at sea can be better planned throughout the year, and this will improve the quality of life. 2. Traditional fishing habits, expertise and cultural heritage can be maintained.	1. Difficulties in calibrating fishing time allocation for vessels of different size and using different fishing systems. 2. Daily fishing times can be very different, ranging from 10 to 24 hours, fixing a maximum number of fishing days can make "working days" longer in terms of hours spent out at sea. 3. Controls must be very intense in order to avoid infringements. This could be particularly difficult in some Regions, such as Corsica, where there is a high number of small and independent ports (direct selling, no general common fish markets) spread along a 1000-km coastline.
ALLOCATION CRITERIA	
Based on the existing fleet and on number of fishing vessels in each category, a total number of fishing days is assigned for each fishing system. This total number of fishing days is allocated among vessels in that category, so that a specific number of fishing days will be assigned to each vessel. The number of fishing days will tend to decrease throughout the years, causing an income reduction and an	

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abandonment of the profession by several fishermen.	
OPTION 3: <u>Quota as a portion of the total fishing capacity</u>, considering the overall fishing time and the overall horsepower/size of fishing vessels ***(the quota is assigned to each vessel as a function of its horsepower/size and the maximum fishing time, and therefore it will vary according to a fishing vessel's characteristics)***	
ADVANTAGES	***DISADVANTAGES***
Biological, Ecological, Environmental aspects	
1. Each fishing vessel operates with quota restrictions which are mainly related to its horsepower/size, and it can catch a certain amount of fish (of whatever species) during a specific fishing time. 2. Small vessels could sell their quotas and the fleet could be restructured, causing a reduction in fishing effort and a lower pressure on fish stocks.	1. Catches are usually composed by a mixture of higher and lower value species; with a fixed quota, lower-value catches are discarded and the pressure on higher-value ones will increase. 2. There is no connection between quotas of allowed catches and levels of resource exploitation for each species, and thus the benefits on the status of specific stocks cannot be evaluated. 3. With two limits, total catches allowed and fishing time, it is not possible to calibrate quotas on the available resources (fluctuations in abundance). 4. The decrease in fishing effort is not targeted on specific species, and thus it is not possible to control pressure levels on specific species (especially those that should be more safeguarded). 5. If a specific reduction in fishing time or allowed catches is not put in place, there will be no benefits in terms of levels of resource exploitation, and thus in expected future catches (this has also socio-economic implications).
Economic aspects	
1. Bigger vessels will get more quotas. 2. Smaller vessels could sell their quotas to	1. Only the declared (registered) horsepower can be considered for quota allocation, but

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bigger ones thus obtaining a direct monetary reward.	the real horsepower of fishing vessels is often higher than the registered one. 2. The controls should be doubled, on quantities of catches and on fishing times. 3. The quota allocated to same-horsepower fishing vessels will not have the same value for each one of them, since the real value depends on the species composition of catches, which varies according to fishing areas (for instance it is different in coastal and deep sea areas). 4. In some cases, for instance in Corsica, quantity and economic value of catches are not necessarily proportional to fishing vessel size.
Social aspects	
1. Fishing habits will not vary much, apart from a stricter control on catch quantities and fishing times. 2. If the days to go fishing can be freely chosen by fishermen throughout the year, only respecting the maximum fishing time allowed, some restrictions are avoided (Saturdays and Sundays can become fishing days, etc). 3. Job contracts can be fairer because the maximum fishing time is clearly stated.	1. Risk to increase fishing capacity in order to obtain more quotas. 2. When the quota limit is reached, fishermen will have no direct incomes. 3. An income reduction can be expected for both vessel owners and crew. 4. Smaller vessels (lower horsepower) would get very small quotas and thus would not obtain sufficient economic gains from their fishing activity anymore.
ALLOCATION CRITERIA	
The total fishing capacity for each GSA is determined and then subdivided among fishing systems. Within each fishing system, the parameter on which to calculate the fishing capacity is determined (length, horsepower, tonnage, etc) and the quota for each fishing vessel is allocated in a proportional way (tons of catches allowed according to a vessel's characteristics). Such a quota will indicate the maximum quantity of fish that can be caught in a maximum number of days (freely chosen by fishermen throughout the year). This quota would assign a specific "value" to each fishing vessel. For instance, bigger vessels that can operate even with very bad weather conditions could get a higher time-quota. In the long run smaller vessels could be "forced" to sell their quotas since economic gains are too low, thus reducing fleet consistency.	

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The options highlighted above can be considered as "pure options", but **several other options could be considered by combining a number of different factors, for instance setting a catch quota for a group of species rather than a single species, and taking into account combinations of catch quotas and other parameters such as fishing areas, fishing systems, fishing times**.

A good example is the **combination of a catch quota** (*e.g.* tons of red mullets) **caught by a specific fishing system** (bottom trawling) **in a specific fishing area** (GSA 17). Such a «mixed-criteria» option would have all the advantages of the «pure option» n.1 (catch quota), and in general it would allow to better manage a specific fisheries segment from both the resource and the socio-economic point of view. In addition, **linking catch quotas to specific fishing areas and systems would allow to better implement the interventions included in local management plans**. The adoption of measures developed at the local scale would allow to finely-tune the socio-economic interventions aimed at compensating income losses due to fishing effort restrictions. One of the main disadvantages of this mixed criteria is the risk to freeze the system. Fishing vessels would be forced to operate only in specific areas (*e.g.* only in GSA 17), and this may lead to a loss of income and to the impossibility to catch some important species (*e.g.* swordfish).

In the case of **catch quotas set for groups of species**, if we want a direct connection with a species' level of exploitation (fishing pressure on each species), we will have to determine the combined quota as the weighted sum of quantities that can be caught for each species, but this could be very difficult to determine. If an overall catch quota is set with no limits assigned to each single species, the risk is to have a more intense fishing pressure on higher-value species, so that these will tend to be overexploited, and the lower-value species will tend to be discarded.

In all cases and whatever the option chosen, control and surveillance activities will have to be stricter, both on landings and out at sea, with higher costs and obligations. Ideally, a TFC system based on quantities would be more meaningful if applied to catches rather than to landings, but this would imply the implementation of complex control systems on board fishing vessels.

It must also be considered that for most Mediterreanean species and areas (GSA) there are no exhaustive data on the overall state of exploitation of resources and on the status of stocks, and quotas could only be assigned adopting a precautionary approach (which is very restrictive).

Finally, if small-scale fishing is kept out of the TFC system, a thorough control on the overall catches cannot be carried out, especially in a context such as the Mediterranean one, where small-scale fisheries has a very significant incidence on the overall catches.

In the Mediterranean, a TFC system based on quotas of caught fish, with all the limitations discussed above, could be appropriate only if applied to single-species fisheries, such as clam or anchovy fishing. In general terms and despite the fact that disadvantages seem always to be higher than advantages as discussed above, **the most appropriate TFC system for the Mediterranean may be the one based on a portion of the total fishing capacity, and thus on the allocation of a time-quota calculated according to a fishing vessel's characteristics (*e.g.* length, horsepower, tonnage).** However the results of this choice would be highly unpredictable, since specific tests and experiments have not been carried out yet.

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ANNEX II – OVERVIEW OF THE GENERAL ANALYSIS: BIOLOGICAL, ECOLOGICAL AND ENVIRONMENTAL ISSUES RELATED TO FISHERIES MANAGEMENT BASED ON A TFC SYSTEM

This Annex presents the overall analysis of the 2nd Thematic Section "Fisheries management model based on a TFC system: Biological, Ecological and Environmental issues", and it is based on opinions, data and information that were provided by project partners and related fisheries experts by filling in the questionnaire.

Overall, the questionnaire analysis highlights that throughout the Mediterranean (MAREMED project partner Regions that filled out the questionnaire are located in France, Italy and Spain) fisheries is multispecific, and **a wide variety of species of commercial interest are commonly caught**. Although annual catches per species are usually summarized at the national and Regional level by statistics and charts, often in collaboration with research institutes in charge of data collection, **Regions do not have a specific archive or database managed by the Regional administration to keep track of catch data in full detail**, including for instance catches of each and every species per fishing district and per fishing vessel. The only exceptions are, to a certain extent, Toscana and Corsica Regions. In Toscana Region, the Regional Environmental Protection Agency has kept a daily record of "rossetto" catches for many years, and all landings of the Viareggio marinery have also been recorded each month for the last 20 years, but it is not clear if such data are also subdivided by fishing vessel, which would be important in order to determine catch histories and thus quotas to be allocated. In Corsica Region a specific database has been created only for spiny lobster catches since 2004.

Even if in certain European areas (*e.g.* Scotland, Iceland) Individual Transferable Quotas are mainly assigned on the basis of fishing vessels' catch histories (species and quantities caught in recent years by each vessel), **none of the partners think that a system based on catch histories would be appropriate and feasible for the Mediterranean**. The main reason is a general lack of sound individual historical data, as seen above, together with the fact that catches declared by fishermen are not always accurate and reliable. When it comes to **new entries**, quotas should be assigned taking into account the amounts that are allocated to vessels with similar characteristics.

The **Maximum Sustainable Yield (MSY) concept does not seem appropriate and exhaustive** for the development of a sustainable fisheries management model in the Mediterranean. All partners see the MSY concept as too theoretical, and not applicable to resources which are highly interrelated and variable over time. The current determination of stock status is based on scientific assessments which **do not take into account all factors that have an influence on resource fluctuations** (climate change impacts, maritime pollution, natural predation, recruitment variation, etc). The MSY definition is relatively easier for single stocks as it is the case for Northern Sea fisheries, but it is very difficult in case of mixed species catches, as it is the case for Mediterranean fisheries. Indeed, **in the Mediterranean the MSY should be determined for groups of species (mixed-species MSY) according to fishing systems, seasons and areas**, also considering that MSY for mixed species should have a margin of flexibility.

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Moreover, there are **not enough biological and life history data** to determine the MSY for most Mediterranean species. PACA and Corsica Regions highlight that it is difficult to develop a method to calculate the MSY for multispecies fisheries. There have been many objections to the EC proposal of calibrating multispecies MSY on the most threatened species, since this would cause an unnecessary ban on species with stocks in good status. Calculations could be based on the mortality rate for each target species, but this type of data may not be available. Also, Marche Region points out that in the Adriatic sea the state of populations is determined by recruitment rather than by fishing mortality, since most species have a short life cycle. In Corsica, it seems that the state of spiny lobster population does also fluctuate according to recruitment, a complex process governed by a 5-month pelagic larval phase. More in general, it would be good to develop specific management tools at the Regional level, and to enhance a dialogue with non-European countries in order to set specific MSY goals within multiannual management plans calibrated on each target species and for each Region in the framework of more general MSY guidelines. This is difficult to achieve however, due to the lack of sufficient scientific data and to the difficult dialogue with non-EU third countries. Valencia Region adds that the MSY concept is very restrictive and it does only take into account environmental aspects, whereas social and economic issues should also be added to the equation.

Project partners identify **direct resource assessment methods** as the most suitable alternative to MSY. Liguria Region stresses the importance to constantly monitor the state of resources at the local level, identifying specific indicators that can be used to assess resource state and trends and thus modulate fishing effort. Marche Region suggests the adoption of direct methods such as **echo-surveys with standardised equipment kept onboard**. Abundance or density indexes and trends could then be determined, and consequently mortality rates could be calculated. If the resource showed a decrease, the quota would be proportionally decreased, if the resource showed a recovery trend, the quota could be raised again. PACA Region points out that echo-surveys are however not suitable for their Regional fleet, which is characterised by small vessels (< 12 m) with limited financial resources. The acquisition of sonars to carry out echo-surveys is not cofinanced by the EU anymore, since this was seen as a measure to potentially increase the fishing fleet, although it is in fact a way to reduce the fishing effort through the constant monitoring of stock status. However, stock abundance assessment through echo-survey monitoring campaigns is currently carried out by scientific institutes in the framework of EU projects on "Data Collection" (*e.g.* MEDIAS project).

Overall, **discard seems not to be a common practice in Mediterranean Regions** which participated in the project, with the exception of Toscana and Valencia Regions. In Valencia, the "Fishery Towns Association (AECIPE)" has started a project on discard in July 2012; the project was especially needed because of the high amounts of dead fish that reached the beaches, with an impact on tourism and bathing water quality. In the other Regions, **discard is commonly associated only to bottom trawling**, where non-commercial species or species below legal size are typically thrown back in the sea. **Pelagic trawling may also favour discard as a consequence of multispecific catches associated to economic considerations**: for instance, sardines are sometimes discarded due to their low commercial value. In general, project partners think that **a TFC system could increase the practice of discards**. If a non-sellable species is caught with the target species, the "best" choice for a fisherman will be to discard it,

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unless forced by law to land it. The only effective solution would be to apply TFC to catches rather than to landings, but this would imply much stricter control and surveillance activities on board fishing vessels, something which is in general not feasible at the moment in the Mediterranean. PACA Region adds that the proposal of setting up a supply chain to transform discards into fish flour is not approved by Regional fishermen (additional costs, difficulty of access for small-scale fishermen, economic interests by big enterprises, etc). This supply chain approach would not be feasible in Corsica either, due to the large fleet dispersion along a 1000 km coastline. Moreover, the use of marine species for the production of fish flour could strongly encourage fishermen to catch as much fish as possible.

In general terms, none of the partners would apply a TFC system to the Regional fisheries sector. Marche Region points out that **a quota system is in general not suitable for the management of Mediterranean resources, especially considering fishery characteristics (multispecific, multigear, small-scale) and the high seasonal and spatial variability**. Having said this however, a management model similar to a quota-based TFC system is applied with good results to clams and in some cases to anchovy fishing in Marche Region. PACA and Corsica Regions highlight that it would be anomalous to develop a TFC system in the Mediterranean, where there are no quotas except for bluefin tuna (for swordfish the possibility is under study). Small-scale fishermen are already facing difficulties in the access to these quotas: in France, 90% of bluefin tuna national quota is hold by just a few big vessels, and the small-scale fisheries segment has access to just 10% of the authorised catches. Corsica Region adds out that no fishing vessels in their fleet would be eligible for a TFC system.

According to MAREMED project partners, if a TFC system were to be developed in the Mediterranean, this should be **limited only to certain types of fisheries resources, to some fishing areas and to specific fleet segments and fisheries gears and systems**. For instance, Marche Region would only apply it to single-species fisheries such as clam fisheries, with direct management of TFCs by Fishermen Consortia or Producers' Organizations, which have the responsibility to determine quotas within the overall limits (TAC and contingencies) defined by Member States. On the top of that, it would adopt a TFC system only in coastal areas for specific species (*e.g.* within one mile from the shoreline for clams) and for specific gears, such as hydraulic dredges with self-management, which are indeed used for clam fishing. **TFC could be tested also for anchovy (pelagic trawling or purse seining), provided that the test will be carried out on all Adriatic fleets, in order to assess if this approach could really improve the overall fisheries sector and state of resources.** At the moment, the main problem for anchovy fishing is not the state of resources but the market value of fish; in many cases the high quantities of anchovies that reach the market cause a strong decrease in prices. Toscana Region would also apply TFCs only to specific fishing areas and fishing systems, but it would not set restrictions on fisheries resources. With regard to fleet segments and in particular to small-scale fisheries (exempted from TFC), Valencia Region highlights that for Spanish fishermen it is quite difficult to accept that a 12.5-m-long boat is classified as "industrial", whereas a 11.5-m-long boat is classified as "artisanal/small-scale", even if they have the same number of crew members, they use the same fishing gears and systems, they fish in the same areas and sell their catches in the same ports. Corsica Region would only apply it to overexploited species caught by pelagic long lines, which is the only fishing system currently interested by quotas.

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Finally, project partners have different opinions with regard to **whether or not TFCs should be finely tuned on Regional market trends, thus possibly modifying the value attributed to fishing rights**. PACA and Corsica Regions argue that a fisheries management system should not be based on market fluctuations, also considering that the most common way of selling fish is by direct selling at the docks and not in fish markets. Valencia and Toscana Regions may be in favour of this Regional approach, although the problem of modulating the value of fishing rights according to local market fluctuations is very complex and it would require exhaustive and detailed socio-economic analyses at both the Regional and the national scale. Marche Region points out that the market is ample and fishermen can access different market segments simultaneously, making this type of modulation even more complex.

ANNEX III – OVERVIEW OF THE GENERAL ANALYSIS: SOCIAL, ECONOMIC AND REGULATORY ISSUES RELATED TO FISHERIES MANAGEMENT BASED ON A TFC SYSTEM

This Annex presents the overall analysis of the 3rd Thematic Section "Fisheries management model based on a TFC system: Social, Economic and Regulatory issues", and it is based on opinions, data and information that were provided by project partners and related fisheries experts by filling in the questionnaire.

MAREMED project partners were asked whether they have already developed a Rights Based Management (RBM) system for fisheries that can be compared to a concession system. In all Italian Regions partner of the project (Marche, Liguria, Toscana, Lazio, Emilia-Romagna), **fisheries rights are regulated through a system of licences** released by the State. A licence authorizes a fishing vessel to catch fish with a specific fishing gear and system. Licences usually last 8 years and can be renewed. They can be related to the concept of "concession", but they are not transferable (licences can only be sold with a fishing vessel or a portion of it) and they are not associated to a quota. Similarly, in PACA and Corsica Regions fishing rights are regulated through licences, which are associated to a specific fishing vessel and gear, and "transferable" only when the fishing vessel is sold, and through **special fishing permits** (Permis de Pêche Spéciaux-PPS), which are allocated on an annual basis and associated to specific species. For example, bluefin tuna, eels, clams can only be caught after having acquired a PPS.

At the moment, **fisheries rights are in general not assigned according to territorial, biological or economic criteria, although there are exceptions in the case of species under special management regimes**. In Marche Region, licences were assigned to the existing vessels on a specific date, which was agreed upon by the authority in charge. In order to subsequently enter the fleet, a licence should be purchased. Licences cannot be "created" and they are assigned on the basis of a fishing vessel's size/horsepower. Hence, in order to operate with a big (or high horsepower) fishing vessel, several small vessels must be dismantled.

In Liguria Region, a specificity is related to "rossetto" fishing. Catches for this species are regulated through a Management Plan, and fisheries rights are assigned on the basis of territorial, biological and socio-economic criteria; the number of fishing vessels which are allowed to operate, the maximum

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quota that can be caught and the total fishing days are all strictly defined. PACA and Corsica Regions show similarities with the Italian system: licences are only assigned and regulated according to the overall available kW (horsepower): for each fishing vessel which is dismissed, a corresponding amount of kW is made available for new entries.

While in PACA and Corsica Regions a licence can only be transferred when a fishing vessel is sold, in Marche Region **the "transferability" of licences is done with a sell/purchase process on either the whole fishing vessel or on portions of it (carats)**. The owner society could trade some of its "quotas" (vessel carats), thus keeping its name on the licence but sharing property on one or more vessels. Similarly, a legal entity may own carats of one or more vessels without having its name on the licence. Liguria Region argues that if fishing concessions were associated to specific marine areas, transferability would allow to increase or reduce the "sea portion" where a fisherman exerts exclusive rights.

Both Marche and PACA Regions stress that **fishing concessions are very similar to licences**. But the latter **do not penalize fishermen by setting restrictions on catch quotas or on fishing days. Bringing such factors into the equation would decrease the licence value**. The overall fishing effort is regulated by reducing the number of licences through vessel scrapping without allowing new entries. Liguria Region points out that according to the Regional context, **a genuine "fishing concession" could only make sense if related to a spatial concept**, that is to the exclusive rights to catch resources located in a specific maritime area.

None of the partners think that a TFC system would be appropriate for their Regional context and, more in general, for the Mediterranean. PACA Region enumerates once more some of the reasons why: it would introduce stricter limits in terms of catches (through quotas) and in terms of fishing time, it would make it more difficult for new entries to enter the fisheries sector, it would cause the disappearance of a number of fishermen from the sector without real benefits in terms of production (their concessions would simply be acquired by bigger enterprises). Corsica Region states that TFCs would be misunderstood and not well accepted by fishermen, and it points out that, to be effective, this management policy would require monitoring and control operations that at present are impossible to be implemented in Corsica. In addition, Corsican fleet is mainly composed of little vessels that are economically and socially vulnerable (95% of the fleet is composed of small-scale artisanal vessels), one of the risks of TFCs would be that small-scale fisheries should disappear in favor of larger, economically stronger companies. Marche and Liguria Regions argue that fishermen should instead be **directly involved in fisheries management at the local level**, and made more responsible through the participation in the development and implementation of management plans. In Marche Region, management plans always set the rule that fishermen receive **specific fishing permits (to be added to the licence) only if they agree upon respecting the management measures included in the plan**.

All project partners agree in making **TFC systems facultative and discretionary for Member States**. Marche and Liguria Regions recognize that there might be specific ecological or social contexts where TFCs can provide some benefits, even if current experiences show that concessions are a way to expel significant percentages of fishermen from the market with no benefits for the production, which is constantly decreasing. PACA Region highlights that it is important that this choice is made on the basis of clear and sound decisions shared by all actors and stakeholders involved, and not on the basis of

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mere market pressures. Also, the process of selling and acquiring TFCs should not be merely regulated by the operators' individual interests, especially considering the weaker position of small and medium enterprises, the pressures that could be made on the fisheries market, and the difficulties created by the general economic crisis. The problems related to speculations, to the excessive concentration of TFCs in a few hands (stronger economic groups/bigger enterprises), to the safeguard of small-scale coastal fisheries have not been exhaustively tackled and solved yet.

The initial CFP reform proposal indicated that TFCs should be allocated for a period of 15 years. However, all partners agree that **there is not an optimal duration for TFCs**. If the limits in duration and validity are associated to **mortage duration for new vessels, the maximum duration will be 15 years. But this is not long enough for making long term investments in a fishing activity**. If a fisherman invests his capital in a fishing vessel, he does not think that he will lose it after 15 years. Indeed, the average age of the Mediterranean fleet is much higher. It is likely that after 15 years a TFC will have to be renewed, and this means that there will be no room for new entries, unless some fishermen leave the sector and sell their TFCs.

Theoretically, **the market value of a TFC is proportional to the potential profits that it will allow to obtain**. At the moment the fisheries sector is in strong crisis and there are no buyers, and only vessel scrapping allows to exit the sector without losing too much. **If quantities of fish that can be caught and fishing times were limited by assigning TFCs and thus setting quotas, the economic situation would become even more critical**. Concessions would also lose their transferability power, since there would be no significant potential gains in acquiring a TFC.

With regard to setting specific restrictions to TFC transferability, almost none of the partners would set territorial restrictions, since this would further decrease the possibility to develop the fisheries activity, further decreasing also the TFC value. The only exception is Corsica Region, which would limit the transferability at the Regional level, in order to avoid the risk that big industrial vessels which are not part of the Corsican fleet acquire concessions to exploit the Corsican sea, thus put at risk the local small-scale artisanal fishery sector. Considering fishing vessel characteristics and fishing gears and systems, all partners think that **TFC should not be transferred from fixed (gillnetting) to trawling gears**. This measure would protect in particular artisanal small-scale coastal fisheries. Similarly, all partners believe that some **restrictions in transferability should be set on fish categories**. For example, TFCs for demersal fish should not be transferred to pelagic fishing, and TFCs for small-size pelagic should not be transferred to big pelagic fishing. This is important in order to **avoid transferring fishing pressure from one resource to another**, and thus maintain a good control on the status of each stock and a good balance between the different fish resources. More in general, transferability should be regulated by the **releasing authority, so that catches can be orientated on the resources that are environmentally and economically more sustainable**.

Overall, **TFCs are not seen as an appropriate tool to increase competitiveness in the fisheries sector**. Marche Region comments that TFCs neither improve the socio-economic situation of the fisheries sector nor increase production. On the contrary, TFCs bring restrictions that are often set without a thorough knowledge of the local requirements, with a tendency to standardize too much and oversimplify a highly complex issue. In terms of competition, the only likely effect is that many small

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enterprises cease the activity by selling their TFC to bigger and more competitive enterprises. Within an Adriatic context, a TFC system could bring benefits only to anchovy fishing, if the same approach is applied to the whole GSA 17. But this should be verified with pilot tests in the field as a first step. PACA and Corsica Regions add that a TFC system is based too strongly on market and economic considerations and does not take into account social factors. In several EU countries, this has helped to rationalize the fleet. But this type of economic speculations would be detrimental for the Mediterranean Regions, which are characterised by artisanal small-scale fisheries.

TFCs would also **increase job entry barriers for new generations**. In order to enter the profession, TFCs or licences must be purchased, and this has a cost which is proportional to the potential incomes. Building or buying a fishing vessel in order to get a TFC is very expensive, usually too expensive compared to potential incomes, considering the current crisis of the sector. In addition a concentration of TFCs could cause an exit of small fishing vessels, thus making new entries to the profession even more difficult.

It is often argued that one of the criticalities of TFCs is the **risk of concentration in the hands of a few vessel owners**. Overall, partners agree with this position, and both PACA and Corsica Regions underline that the risk for bigger fishing enterprises to absorbe smaller ones is high, and the subsequent TFC concentration in just a few hands would also further prevent new entries to access the profession. Marche Region argues however that it is difficult to foresee TFC markets and prices. In certain cases the monopoly can be obtained through a concentration of licences rather than the organisation of fishermen in Consortia or Producers' Organisations. The best way to **avoid excessive concentration would be to exclude small-scale fisheries, as well as species which do not have a quota** (only bluefin tuna has a quota in the Mediterranean). PACA Region adds that an overall **stronger financial support to new entries** would be more useful than reserving a proportion of TFCs to new entries.

Project partners do not agree when asked if they prefer a system based on quotas managed and transferred on a strictly individual basis (ITQ model), or a system based on wider quotas co-managed at the community level (CTQ model). Marche Region suggests that **an ITQ model might be more appropriate and reliable**, since a CTQ model might bring into the equation aspects that are too theoretical and unpredictable. Liguria Region supports this position, adding that a **co-management of resources at the community level is not positively seen by the Regional fisheries community itself**, perhaps due to the intrinsic behavioural traits of fishermen. On the other hand, PACA and Corsica Regions would be more in favour of a quota co-management at the community level. They recognize however that small-scale fishermen do not favour a global co-management system. They are more interested in the development of an ITQ system. But **a common management of TFCs at the Producers' Organization (PO) level could help to better plan production and to exchange quotas in real time**. A CTQ management by PO or "prud'homie" could be interesting both for fleet and resource management. In Mediterranean France, "prud'homies de pêche" have already legislative power, although they are not independent jurisdictional bodies according to article 234 of the Treaty on the Functioning of the European Union.

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All partners believe that **the adoption of a TFC system would lead to a fleet reduction**. Introducing new **restrictions (quota and/or fishing days), the potential income for each enterprise is reduced**. Some of the fishermen will therefore have to exit the sector because staying in is not remunerative anymore.

According to the MAREMED partners, **throughout the Mediterranean fishermen and category associations are mainly worried about a potential TFC introduction**. One of the reasons is related to what has happened with the introduction of quotas for tuna: this type of fisheries has almost disappeared as a consequence. In Marche and Liguria Regions however, fishermen that catch small-size pelagic fish may support the introduction of quotas for anchovies. Fishermen and Producers Organizations, CNPMEM, CRPMEM PACA, CCR Méditerranée and the Regional Council are all against the application of a TFC system in Region PACA, since TFCs are not appropriate for fisheries systems which are not based on quotas. Moreover, if TFCs were put in place at the French national level, only about ten fishing vessels (> 12 m) would be involved in Region PACA. Overall, **actors and stakeholders in the fisheries sector have however not a clear vision of how a TFC system could actually work**, since this issue is managed with a top-down approach, including the setting of quotas and fishing times. Marche and Liguria Regions point out that the only exception is perhaps the anchovy fisheries sector, where fishermen show a direct interest in developing management schemes based on quotas.

In Italy, **a legal framework** that can be somehow related to the concept of transferable concessions **has been developed at the national level for fishing licences**, with Law n. 41/82 and subsequent regulations. Similarly, in France there is a national legal framework for licences and special fishing permits (Permis de Pêche Spéciaux-PPS). Spain has also developed a legal framework for fishing licences.

Considering more in general EU fisheries regulations, Valencia and Marche Regions have not **claimed for derogations from the fishing restrictions set by EU rules**, even if they set stringent restrictions (*e.g.* minimum size for clams, anchovies, sardines, hakes, etc). In Liguria Region the only derogations have been claimed for the traditional "rossetto" fishing (minimum net size, distance from the coast). In France, EU fishery regulations are usually translated into national rules without derogations. Where these are made, they are related to stricter regulations (*e.g.* trawling distance from the coast is set to 1500 m by EU regulations, but it is set at 3000 m by the French rules; in Corsica, the opening of the spiny lobster fishing season is restricted to 7 months – March to September, whereas there is no closed season in the rest of France).

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