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IMPACT ASSESSMENT

Accompanying the document

**PROPOSAL FOR A REGULATION OF THE EUROPEAN PARLIAMENT AND OF
THE COUNCIL**

**Establishing a multiannual plan for the fisheries exploiting demersal stocks in the
western Mediterranean Sea**

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GLOSSARY

Biomass	The sum of weights (total mass) of individuals in a stock or population.
B_{LIM}	A biological reference point. The stock size below which there is a risk of reduced reproduction leading to a reduction in recruitment; also a benchmark used to indicate when harvests should be constrained substantially so that the stock remains within safe biological limits.
Closure	Banning of fishing at times or seasons (temporal closures) or in particular areas (spatial closures), or a combination of both.
Co-management	Either informal or legal arrangements between government representatives, community groups and other user groups to take responsibility for and manage a fishery resource and its environment on a cooperative way.
Conservation reference point	Value of fish stock population parameters (such as biomass or fishing mortality rate) used in fisheries management, for example to indicate an acceptable level of biological risk or a desired level of yield.
Days at sea	Allowed maximum time for fishing trips allocated to vessels per year, depending on their type of fishing gear.
Demersal	Living in close relation with the sea bottom and depending on it. Species such as hake, red mullet, sole and lobsters are demersal resources.
Discard	Legal unwanted catches returned to the sea during fishing operations, either dead or alive.
Discard plan	A plan laying down specifications for implementing the landing obligation in a given geographical area and fisheries or for a given species. The proposal stems from the joint recommendation prepared by the Member States concerned and in line with the scientific advice. It is then adopted as a Commission delegated act.
Fishing activities	Searching for fish, shooting, setting, towing, hauling of fishing gear, taking catch on board, transshipping, retaining on board, processing on board, transferring, caging, fattening and landing of fish and fishery products.
Fishing capacity	A vessel's tonnage in GT (gross tonnage) and its power in kW (kilowatt) as defined in Articles 4 and 5 of Council Regulation (EEC) No 2930/86.
Fishing effort	The product of the capacity and the activity of a fishing vessel; for a group of fishing vessels, it is the sum of the fishing effort of all vessels in the group; also the amount of fishing gear of a specific type used on the fishing grounds over a given unit of time (e.g. hours trawled per day, number of hooks set per day, or number of hauls of a seine per day).
Fishing mortality (F)	An expression of the rate at which fish are removed from a stock by fishing (including fish discarded). It is approximately the stock annual removal expressed in percentage.

Fish stock	A marine biological resource that occurs in a given management area; also the living resources in the community or population from which catches are taken in a fishery. Use of the term fish stock usually implies that the particular population is more or less isolated from other stocks of the same species and hence self-sustaining.
F_{MSY}	The fishing mortality rate that, if applied constantly, would result in an average catch corresponding to the MSY and an average biomass corresponding to B _{MSY} .
Fishery restricted area	Or ‘fishing protected area’. A geographically defined sea area in which all or certain fishing activities are temporally or permanently banned or restricted to improve the exploitation and conservation of living aquatic resources or the protection of marine ecosystems. See also ‘closure’.
Gillnets	With this type of gear, fish are gilled, entangled or enmeshed in the netting. These nets can be either alone or, as is more usual, in large numbers placed in line.
Input controls	Limitations on the amount of fishing effort or restrictions on the number, type and size of fishing vessels or fishing gear in a fishery.
Juvenile	A young fish that has not reached sexual maturity.
Landing obligation	The obligation to land all catches in the respective fishery in accordance with Article 15 of Regulation (EU) 1380/2013 on the Common Fisheries Policy.
Longlines	Fishing method using a horizontal mainline to which weights and baited hooks are attached at regular intervals.
Maximum sustainable yield (MSY)	The highest theoretical equilibrium yield that can be continuously taken on average from a stock under existing average environmental conditions without significantly affecting the reproduction process.
Minimum conservation reference size (MCRS)	The size of a living marine aquatic species taking into account maturity, as established by EU law, below which restrictions or incentives apply that aim to avoid capture through fishing activity.
Multi-species fishery	Fishery in which more than one species is caught at the same time.
Output controls	Limitations on the weight of the catch (a quota), or the allowable size, sex or reproductive condition of individuals in the catch.
Overcapacity	A level of fishing pressure that threatens to reduce a stock below the abundance necessary to support the MSY and allow economically sustainable fishing industry.
Overfishing	A situation where a stock is subjected to a rate or level of fishing mortality that jeopardises the stock’s capacity to produce the MSY on a continuing basis.
PESCAMED	A high-level group consisting of fisheries directors from France, Italy and Spain and implementing the regionalisation approach in the western Mediterranean Sea basin.
Polyvalent vessel	A vessel carrying out multiple fisheries by using more than one fishing gear.

Pots	Trap designed to catch fish or crustaceans, in the form of cages or baskets made with various materials and with one or more openings or entrances.
Precautionary approach to fisheries management	An approach according to which the absence of adequate scientific information should not justify postponing or failing to take management measures to conserve target species, associated or dependent species and non-target species and their environment.
Recruitment	The amount of fish added to the exploitable stock each year due to growth and/or migration into the fishing area. For example, the number of fish that grow to become vulnerable to the fishing gear in one year would be the recruitment to the fishable population that year.
Reference point	The value of some indicator (say spawning stock size) which corresponds to a desirable position (a target reference point) or an undesirable position (limit reference point, B_{LIM} ; or threshold, B_{PA}) that requires urgent action.
Regionalisation	The process by which Member States with a direct management interest for fisheries in a given geographical region organise themselves with the aim of agreeing on common measures within EU waters (Article 18 of the CFP).
Safeguard measures	A precautionary measure designed to avoid something undesirable occurring.
Small-scale coastal fisheries	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.
Spawning stock biomass (SSB)	The total weight of all fish (both males and females) in the population that contribute to reproduction. Often defined as the biomass of all individuals beyond 'age/size at first maturity'.
Stock assessment	Quantitative study that leads to predictions of how stocks will respond under various management actions.
Target species	The resource species at which a fishing operation is directed.
Technical measures	Measure establishing conditions for the use and structure of fishing gear and restrictions on access to fishing areas.
Total allowable catch (TAC)	The maximum catch allowed from a fishery in accordance with a specified management plan.
Trammel nets	Bottom-set net made up of three walls of netting, the two outer walls being of a larger mesh size than the loosely hung inner netting panel. The fish get entangled in the inner small meshed wall after passing through the outer wall.
Trawl nets	Towed net consisting of a cone-shaped body closed by a bag or cod-end and extended at the opening by wings. It can be towed by one or two boats and, according to the type, used on the bottom (demersal) or in midwater (pelagic).

ACRONYMS

CFP	Common Fisheries Policy
EC	European Commission
EMFF	European Maritime and Fisheries Fund
EU	European Union
EUMOFA	European Market Observatory for Fisheries and Aquaculture
DCF	Data collection framework
FAO	Food and Agriculture Organization of the United Nations
FTE	Full-time equivalent
GFCM	General Fisheries Commission for the Mediterranean
GFCM-SAC	Scientific Advisory Committee of the GFCM
GSA	Geographical sub-area
JRC	Joint Research Centre
MCRS	Minimum Conservation Reference Size
MEDAC	Mediterranean Advisory Council
MEDREG	Mediterranean Regulation
MSFD	Marine Strategy Framework Directive
MSY	Maximum sustainable yield
NGO	Non-governmental organisation
RMFOs	Regional Management Fisheries Organisations
SME	Small and medium-sized enterprise
SSB	Spawning stock biomass
STECF	Scientific, Technical and Economic Committee for Fisheries
TAC	Total allowable catch
TFEU	Treaty on the Functioning of the European Union

1. INTRODUCTION

This impact assessment addresses the future framework to manage fisheries exploiting demersal stocks in the western Mediterranean Sea. It identifies the problems, including their drivers and consequences, and sets the objectives. It also outlines the main policy options and examines the potential impacts of these options from an environmental, social and economic viewpoint. The ultimate goal is to ensure that the policy decision is prepared in an open, transparent manner and with the best available knowledge. This impact assessment fulfils the requirements of the Better Regulation Guidelines¹.

1.1. Rationale and main elements of the Common Fisheries Policy

Given their migratory and transboundary nature, European fishery resources must be managed jointly among the European countries involved, hence the need for a Common Fisheries Policy². The most recent Common Fisheries Policy (CFP) entered into force on 1 January 2014³. Its main goal is to ensure that fishing activities are environmentally sustainable and managed in a way that is consistent with the objectives of achieving economic, social and employment benefits.

The CFP has in place three main tools for fisheries management:

- Fishing effort regime regulates access to fisheries resources through limitations on the number, type and size of fishing vessels or fishing gears and on the amount of time (i.e. these are ‘input controls’). This is the traditional way of managing fisheries in the Mediterranean Sea. Also in other EU waters, maximum allowable fishing efforts have been fixed as a complementary measure.
- Total allowable catch (TAC) regulates access to fisheries resources by setting of maximum allowable catches for an individual species or group of species (this system is known as ‘output controls’). TAC is the basis for allocating national fishing quotas among Member States. This management measure has not been implemented for Mediterranean fisheries, with the exception of Bluefin tuna and swordfish⁴.
- Technical measures set out the rules to protect fish stocks (often juveniles) and the ecosystems in which they live, and to minimise unwanted catches (e.g. the use and structure of fishing gears and restrictions on access to fishing areas).

The CFP introduces **multi-annual plans** as the dedicated framework for managing fish stocks in an integrated manner by fishery and sea basin. The rationale has been to provide greater transparency, predictability and stability of the management rules. Even though this instrument was introduced into the CFP of 2002, it has never been applied in the Mediterranean Sea at EU level. Nevertheless, with the current CFP, multi-annual plans have become a priority in all Union waters given their success in improving the status of stocks and the economic performance of the fishing sector. To date, one ‘new generation’ multi-annual plan has been adopted by the European Parliament and Council on the fisheries exploiting cod, herring and

¹ [SWD\(2017\)350](#). Commission staff working document: Better Regulation Guidelines. Brussels, 7.7.2017.

² Penas Lado (2016). The Common Fisheries Policy: The quest for sustainability. Wiley Blackwell, p. 375.

³ [Regulation \(EU\) No 1380/2013 of the European Parliament and of the Council](#) of 11 December 2013 on the Common Fisheries Policy, amending Council Regulations (EC) No 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC; OJ L 354, 28.12.2013, p. 22–61.

⁴ As highly migratory species, Bluefin tuna and swordfish are managed within the framework of the International Commission for the Conservation of Atlantic Tunas (ICCAT).

sprat in the Baltic Sea⁵. In addition, two Commission proposals establishing multi-annual plans in the North Sea⁶ and in the Adriatic Sea⁷ are under discussion and an additional proposal on the western waters of the Atlantic Sea will follow soon.

The CFP introduced for the first time the **obligation to land all catches** subject to catch limits and, in the Mediterranean Sea, subject to minimum conservation reference sizes (MCRSs). This is a measure designed to increase selectivity and gradually eliminate discards. On a temporary basis, the details on how the landing obligation is to be implemented are laid down in discard plans.

Another important element introduced by the current CFP is **regionalisation**. This was introduced to decentralise the policy to some extent, while enhancing stakeholders' involvement in the decision-making process through the use of advisory councils. It also allows for a degree of flexibility to incorporate the specific characteristics of each sub-region. Regionalisation can be applied in the context of multi-annual plans, discard plans, when establishing stock recovery areas, or in other conservation measures necessary to comply with the CFP obligations.

1.2. The CFP in the Mediterranean Sea: the 'Catania process'

Two aspects of the CFP reform marked a turning point in the Mediterranean Sea: the first was greater integration of the somewhat neglected Mediterranean fisheries into the policy; the second was the setting of concrete, quantifiable and time-based targets. These aspects made more evident the severe overfishing of the large majority of assessed stocks in the sea basin, the imbalanced economic performance for many fleet segments and the need to take action to comply with the goals set.

In this context, a high-level seminar on the status of fish stocks held in Catania in February 2016 was the starting point to develop a new strategy for the sustainable exploitation of Mediterranean fisheries. The seminar acknowledged: (i) the progress made on scientific advice; (ii) the adoption (to a lesser extent) of management measures for certain fish stocks; and (iii) the fruitful inter-governmental cooperation under the General Fisheries Commission for the Mediterranean (GFCM). On the other hand, the meeting also showed that these positive developments had not translated into an improvement in the status of the fish stocks. More than 90% of the evaluated commercial stocks are severely overexploited well beyond safe biological limits, while the state of many other stocks remains unknown⁸. To confront this situation, participants unanimously called for a renewed commitment to take concrete action to restore Mediterranean fisheries.

This positive political momentum (the various events are detailed in the stakeholder consultation in Annex 2) has given a clear sign of the EU's determination to reach the sustainability goals set in the CFP. This initiative is part of the action taken at EU level to restore fish stocks at sustainable levels in the western Mediterranean Sea.

⁵ [Regulation \(EU\) 2016/1139 of the European Parliament and of the Council](#) of 6 July 2016 establishing a multiannual plan for the stocks of cod, herring and sprat in the Baltic Sea and the fisheries exploiting those stocks, amending Council Regulation (EC) No 2187/2005 and repealing Council Regulation (EC) No 1098/2007; OJ L 191, 15.7.2016, p. 1–15.

⁶ [COM\(2016\)493](#). Proposal for a Regulation of the European Parliament and of the Council establishing a multi-annual plan for demersal stocks in the North Sea and the fisheries exploiting those stocks and repealing Council Regulation (EC) 676/2007 and Council Regulation (EC) 1342/2008. Brussels, 3.8.2016.

⁷ [COM\(2017\)097](#). Proposal for a Regulation of the European Parliament and of the Council establishing a multi-annual plan for small pelagic stocks in the Adriatic Sea and the fisheries exploiting those stocks. Brussels, 24.2.2017.

⁸ [STECF\(2016\)](#). EU Science and Fisheries: overview in the Mediterranean basin. February 2016, Catania.

The process culminated with the signature of the Ministerial Declaration on the sustainability of Mediterranean fisheries (March 2017)⁹. The declaration lays down a new strategic framework for fisheries governance in the region and an ambitious set of concrete actions with measurable deliverables for the next 10 years. The implementation of this new commitment is expected to reverse the decline of stocks and lead towards the sustainability of Mediterranean fisheries.

1.3. Other relevant pieces of legislation

The overarching objectives of the CFP are implemented through specific pieces of legislation. For the purpose of this impact assessment, the most relevant are the Mediterranean Regulation, the Technical Measures Regulation, the Control Regulation, the various environmental directives and the international decisions.

1.3.1. *The Mediterranean Regulation*

In 2006, the EU established for the first time a dedicated management framework for the sustainable exploitation of fisheries resources in the Mediterranean Sea, known as the ‘MEDREG’^{10,11}. The MEDREG applies to the conservation, management and exploitation of living aquatic resources. Its main elements are as follows:

- It prohibits fishing with certain nets above **protected habitats** such as seagrass beds (in particular, *Posidonia oceanica*), coralligenous habitats and maerl beds.
- It protects **coastal zones**, allowing towed and surrounding nets to operate only at a certain distance from the coast and/or at a minimum depth.
- It requires the designation of additional **fishing protected areas** in the territorial waters of the Member States.
- It sets the **technical characteristics for fishing gears**, such as minimum mesh sizes and minimum distances and depths for the use of fishing gears.
- It prohibits the catching, retention on board, transshipment, landing, storage or sale of marine organisms smaller than the **minimum sizes**.
- It prohibits the market and use of towed nets, surrounding nets, purse seines, dredges gillnets, trammel nets and combined bottom-set net for **recreational fisheries**.
- It requires Member States to adopt **national management plans** for fisheries conducted by trawl nets, boat seines, shore seines, surrounding nets and dredges within their territorial waters.

Under the MEDREG, national management plans are the key instrument regulating specific fisheries in territorial waters. This includes fishing by trawl nets, boat seines, shore seines, surrounding nets and dredges (static gears such as longlines, gillnets or trammel nets are not covered by the MEDREG). More specifically, demersal fisheries in the western Mediterranean Sea are covered by three Italian management plans for bottom trawlers (adopted in one single piece of legislation in 2011)¹², one French management plan for trawlers (adopted in 2013)¹³

⁹ [Ministerial Conference on the Sustainability of Mediterranean Fisheries](#); Malta MedFish4Ever Ministerial Declaration (Malta, 30 March 2017).

¹⁰ [Council Regulation \(EC\) No 1967/2006](#) of 21 December 2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea, amending Regulation (EEC) No 2847/93 and repealing Regulation (EC) No 1626/94; OJ L 36, 8.2.2007, p. 6–30.

¹¹ Before that date, only a set of technical measures were defined under [Council Regulation \(EC\) No 1626/94](#) of 27 June 1994 laying down certain technical measures for the conservation of fishery resources in the Mediterranean; OJ L 161, 6.7.1994, p. 1-6.

¹² [Decreto](#) 20 maggio 2011 relativo all'adozione Piani di gestione della flotta a strascico in sostituzione del decreto direttoriale n. 44 del 17 giugno 2010; GU Serie Generale n.154 del 5-7-2011; p. 2.

and one Spanish management plan for trawlers (entered into force in 2013)¹⁴. The plans are based on *input controls*, i.e. limiting the fishing effort. This management approach typically includes measures such as restrictions on the fishing gear, restrictions on the number of fishing authorisations and licences, the setting of a maximum number of fishing days, and permanent/temporary cessations (see Annex 6 for a more detailed description of the three national management plans, including their synergies and inconsistencies). As will be shown in Section 2, these measures are not restrictive enough to guide fisheries towards the conservation objectives set in the MEDREG and the CFP.

Retrospective evaluation of the MEDREG

A retrospective evaluation of the MEDREG was recently undertaken¹⁵, given that eight years had passed since its adoption. The objectives of the evaluation were to: (i) review Member States' implementation of the Regulation; (ii) analyse to what extent the objectives had been reached; and (iii) examine the extent to which the Regulation was fit to contribute to delivering the objectives of the CFP. For the purpose of this impact assessment report, we will present the main conclusions of one of the four case studies dedicated to the Gulf of Lions (i.e. the northern part of the western Mediterranean Sea).

Overall, the original objectives of the MEDREG remain highly relevant in the Gulf of Lions today as most stocks remain overfished and overfishing continues. Under the reformed CFP, this situation has not changed significantly. Even though the MEDREG may have contributed to some reduction in fishing effort, the evaluation shows that the effectiveness of the Regulation has been limited. Another relevant finding, which remains a major concern, was that the MEDREG has not had any significant impact on regulating recreational fisheries. According to the evaluation, some stakeholders consider that the MEDREG needs to be widened to include additional measures for small scale and recreational activities.

All in all, the effects of the MEDREG in the Gulf of Lions may be considered mixed. On one hand, it strengthened the legislative framework and monitoring of several fisheries and boosted cooperation between research institutes, managing authorities and industry. On the other hand, the MEDREG has not yet resulted in the sustainable exploitation of fisheries in the Mediterranean Sea and so its effectiveness and efficiency are considered to be low.

1.3.2. *Technical Measures Regulation*

'Technical measures' are the rules governing how and where fishermen may fish. They aim to control the catch that can be taken with a given amount of fishing effort and also to minimise the impacts of fishing on the ecosystem. Currently there are three specific technical measures regulations applying in European fisheries: one in the north-east Atlantic Ocean, another in the Baltic Sea and one in the Mediterranean (i.e. the MEDREG, as described in Section 1.3.1).

Due to the complexity and disjointed regulatory structure, in 2016 the Commission tabled a proposal for a single and integrated technical measures framework¹⁶. This proposal contains

¹³ [Arrêté](#) du 28 janvier 2013 portant création d'un régime d'effort de pêche pour la pêche professionnelle au chalut en mer Méditerranée par les navires battant pavillon français; NOR: TRAM1240482A, p. 3275-2378.

¹⁴ [Orden AAA/2808/2012](#), de 21 de diciembre, por la que se establece un Plan de Gestión Integral para la conservación de los recursos pesqueros en el Mediterráneo afectados por las pesquerías realizadas con redes de cerco, redes de arrastre y artes fijos y menores, para el período 2013-2017; No 313, p. 7.

¹⁵ MRAG(2016). Accompanying study: Retrospective evaluation study of the Mediterranean Sea Regulation. Final report, pp. 230. (*pending publication in the Publication Office of the European Union*).

¹⁶ [COM\(2016\)134](#). Proposal for a Regulation of the European parliament and of the Council on the conservation of fishery resources and the protection of marine ecosystems through technical measures. Brussels, 11.3.2016.

general provisions applicable to all EU fishing vessels and a set of annexes detailing the specific characteristics of each sub-region. In the case of the Mediterranean Sea, many technical measures introduced in the MEDREG (such as mesh sizes) will be integrated into this new framework. The adoption of the technical measures regulation is expected during 2018.

1.3.3. *Control Regulation*

The measures establishing a Union control system for ensuring compliance with rules of the CFP are provided for in the Council Regulation (EC) No 1224/2009¹⁷. This regime aims at ensuring that Member States comply with control obligations and operate an efficient control system, while ensuring rules are applied in the same harmonised way across the EU. It is also intended as a means to develop a culture of compliance with the CFP and ensure level playing field among operators, making more use of modern technologies and implementing a systematic crosschecking of data to improve its quality.

The first five years evaluation of the Control Regulation was concluded in 2017¹⁸. The European Commission recently launched the initiative for the revision of the Fishery Control System. The revision aims among others at bridging the gaps with the reformed CFP, improving availability, reliability and completeness of fisheries data and information and simplify the current legislative framework. Preparation and consultations on the revision of the Fishery Control System are taking place in parallel with this initiative.

1.3.4. *EU environmental legislation*

Under its Article 2(5), the CFP must be coherent with the Union's environmental legislation, in particular with the Marine Strategy Framework Directive (MSFD) which aims at achieving good environmental status of the EU's marine waters by 2020¹⁹. Other Union policies also need to be taken into account, specifically: Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds, including the action plan for reducing incidental catches of seabirds in fishing gears^{20,21}; and Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora²².

The full implementation of those Directives is to be achieved in close cooperation with the UN Convention on Biological Diversity and the Convention for the Protection of the Mediterranean Sea Against Pollution ('the Barcelona Convention').

¹⁷ [Council Regulation \(EC\) No 1224/2009](#) of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy, amending Regulations (EC) No 847/96, (EC) No 2371/2002, (EC) No 811/2004, (EC) No 768/2005, (EC) No 2115/2005, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007, (EC) No 676/2007, (EC) No 1098/2007, (EC) No 1300/2008, (EC) No 1342/2008 and repealing Regulations (EEC) No 2847/93, (EC) No 1627/94 and (EC) No 1966/2006.

¹⁸ [COM\(2017\)192](#). Report from the Commission to the European Parliament and the Council: Implementation and evaluation of Regulation (EC) 1224/2009 establishing a Union control system for ensuring compliance with the rules of the common fisheries policy as required under Article 118, REFIT Evaluation of the impact of the fisheries regulation {SWD(2017) 134 final}. Brussels, 24.4.2017.

¹⁹ [Directive 2008/56/EC of the European Parliament and of the Council](#) of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive); OJ L 164, 25.6.2008, p. 19–40.

²⁰ [Directive 2009/147/EC of the European Parliament and of the Council](#) of 30 November 2009 on the conservation of wild birds; OJ L 20, 26.1.2010, p. 7–25.

²¹ [COM\(2012\)665](#). Communication from the Commission to the European Parliament and the Council concerning an Action Plan for reducing incidental catches of seabirds in fishing gears. Brussels, 16.11.2012.

²² [Council Directive 92/43/EEC](#) of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora; OJ L 206, 22.7.1992, p. 7–50.

1.3.5. GFCM decisions

The General Fisheries Commission for the Mediterranean (GFCM) is a regional fisheries management organisation established under the Food and Agriculture Organization of the United Nations (FAO). Its main objective is to ensure the conservation and sustainable use, at the environmental, economic and social levels, of living marine resources in the Mediterranean and Black Seas. To reach this goal, every year the GFCM adopts binding decisions for fisheries conservation and management in its area of application in accordance with the Mid-term Strategy²³ and the scientific advice. For the western Mediterranean Sea, in 2009 the GFCM adopted a recommendation establishing a fisheries restricted area in the Gulf of Lions to protect spawning aggregations (particularly for hake) and deep sea sensitive habitats²⁴. The regional cooperation is part of the discussions at the GFCM, whereas at scientific level is ensured by the FAO sub-regional project COPEMED II²⁵.

1.4. Scope of the initiative

The European coastline of the western Mediterranean Sea extends along the Alboran Sea and the Tyrrhenian Sea, covering the Balearic archipelago and the islands of Corsica and Sardinia. This corresponds to the GFCM geographical sub-areas (GSAs) 1, 2, 5, 6, 7, 8, 9, 10, and 11 (see Figure 1.1). Its geomorphology is characterised by an irregular coastline and a narrow continental shelf that is almost non-existent in certain areas such as the coast of Andalusia, but very wide in the areas of Castellon-Valencia, the Gulf of Lions, and between Italy and northern Corsica. The areas of wide continental shelf are of great importance to fisheries, particularly to bottom trawlers.

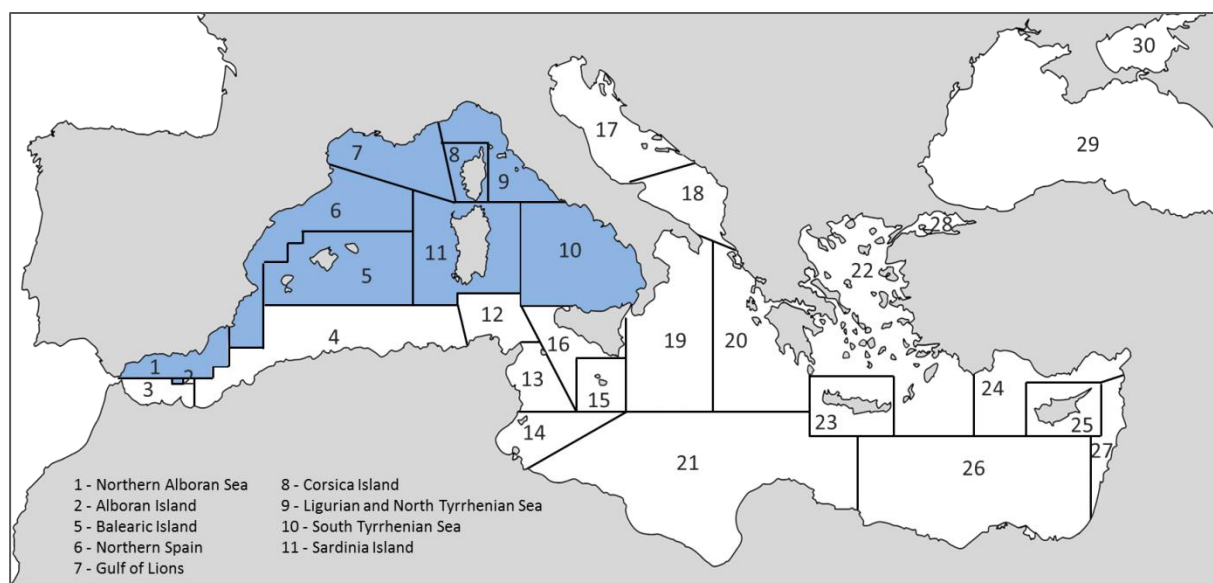


Figure 1.1 Geographical sub-areas (GSAs) in the GFCM area of application, as established in Resolution GFCM/33/2009/2²⁶. For the purpose of this initiative, the ‘western Mediterranean Sea’ covers GSAs 1, 2, 5, 6, 7, 8, 9, 10, and 11 (blue area).

²³ [Resolution GFCM/40/2016/2](#) for a mid-term strategy (2017–2020) towards the sustainability of Mediterranean and Black Sea fisheries.

²⁴ [Recommendation GFCM/33/2009/1](#) on the establishment of a Fisheries Restricted Area in the Gulf of Lions to protect spawning aggregations and deep sea sensitive habitats.

²⁵ [COPEMED II](#) aims at promoting scientific cooperation among the coastal nations in the western and central Mediterranean Sea, through coordinated scientific investigations and data-gathering.

²⁶ [Resolution GFCM/33/2009/2](#) on the establishment of Geographical Sub-Areas in the GFCM area amending the resolution GFCM/31/2007/2.

The western Mediterranean Sea is undoubtedly the most developed sub-region in terms of fisheries. Around 31 % of the Mediterranean Sea's total landing value comes from this sub-region (EUR 1.35 billion out of a total of EUR 4.76 billion). In addition, around 19 % of the officially reported Mediterranean fishing fleet operates in the western Mediterranean Sea²⁷.

Demersal species do not account for the largest share of the landings, but they are highly sought after by fishermen due to their high commercial value. The demersal fisheries in the Mediterranean Sea are highly complex, composed of a large number of species of fish and crustaceans. The main demersal species caught in the western Mediterranean Sea are hake (*Merluccius merluccius*), red mullet (*Mullus barbatus*), anglerfish (*Lophius spp.*), blue whiting (*Micromesistius poutassou*), giant red shrimp (*Aristaeomorpha foliacea*), deep-water rose shrimp (*Parapenaeus longirostris*), blue and red shrimp (*Aristeus antennatus*) and Norway lobster (*Nephrops norvegicus*) (see volume and value of landings in Table 1.1).

A number of the demersal species are coastal, e.g. grey mullet, seabream, seabass. The upper zones of the continental shelf are inhabited by red mullet, sole, poor cod, whiting, juvenile hake and octopus. On the slope there are many species of great economic interest. On the upper part of the slope (200-400 metres) we find adult hake, Norway lobster and various shrimps. In deeper waters (400 to 800 metres), the dominant species are the greater forkbeard, blue whiting and red shrimps. A schematic representation of the exploited fish stocks according to depth is provided in Figure 1.2.

Many fishing gears are used to exploit these species. Bottom trawl is the main gear and has the largest catch and fleet power. These are modern fleets operating mainly in the wider continental shelf and the slopes. Usually vessels leave the port in the morning and return during the afternoon. French bottom trawlers, for example, often cross the entire continental shelf of the Gulf of Lions to reach the highly productive submarine canyons. These canyons are commonly exploited together with Spanish vessels based in the northernmost ports of Catalonia (e.g. Roses).

Passive gears such as trammel nets, gillnets, traps and longlines are also important in the exploitation of demersal species. Most species distributed in the continental shelf, particularly those living close to the bottom, are targeted by trammel nets and gillnets. Longlines are used to catch mainly adult hake and other species located in deep waters (see Figure 1.2).

Table 1.1 Main demersal species exploited using bottom trawlers (i.e. bottom otter trawls, otter twin trawls, midwater otter trawls), passive gears (i.e. gillnets, trammel nets and traps) and longlines (set and drifting longlines) in the western Mediterranean Sea, expressed in volume (tonnes) and value (EUR) in 2014²⁸.

Species	Bottom trawl nets		Passive nets		Longlines	
	Volume	Value	Volume	Value	Volume	Value
European hake	2 909	17 448 739	1 098	10 782 371	286	2 153 627
Giant red shrimp	590	10 370 469	4.5	199 130	<i>n.a.</i>	<i>n.a.</i>
Red mullet	1 727	9 901 514	140	1 275 952	<i>n.a.</i>	<i>n.a.</i>
Deep-water rose shrimp	1 106	9 157 527	0.32	6 558	<i>n.a.</i>	<i>n.a.</i>
Monkfishes	812	4 962 507	67	454 485	0.2	756
Norway lobster	187	4 732 353	3.9	176 490	<i>n.a.</i>	<i>n.a.</i>
Blue and red shrimp	181	4 679 079	0.38	11 243	<i>n.a.</i>	<i>n.a.</i>
Blue whiting	180	592 091	9.5	45 640	2	2 960

²⁷ [FAO\(2016\)](#). The state of Mediterranean and Black Sea fisheries. General Fisheries Commission for the Mediterranean. Rome, Italy.

²⁸ [STECF\(2016\)](#). Multiannual plan for demersal fisheries in the western Mediterranean (STECF 16-21). Publications Office of the European Union, Luxembourg; EUR 27758 EN, 128 pp.

Demersal fisheries in the western Mediterranean Sea: illustration of a typical case of multi-species and multi-gears fisheries

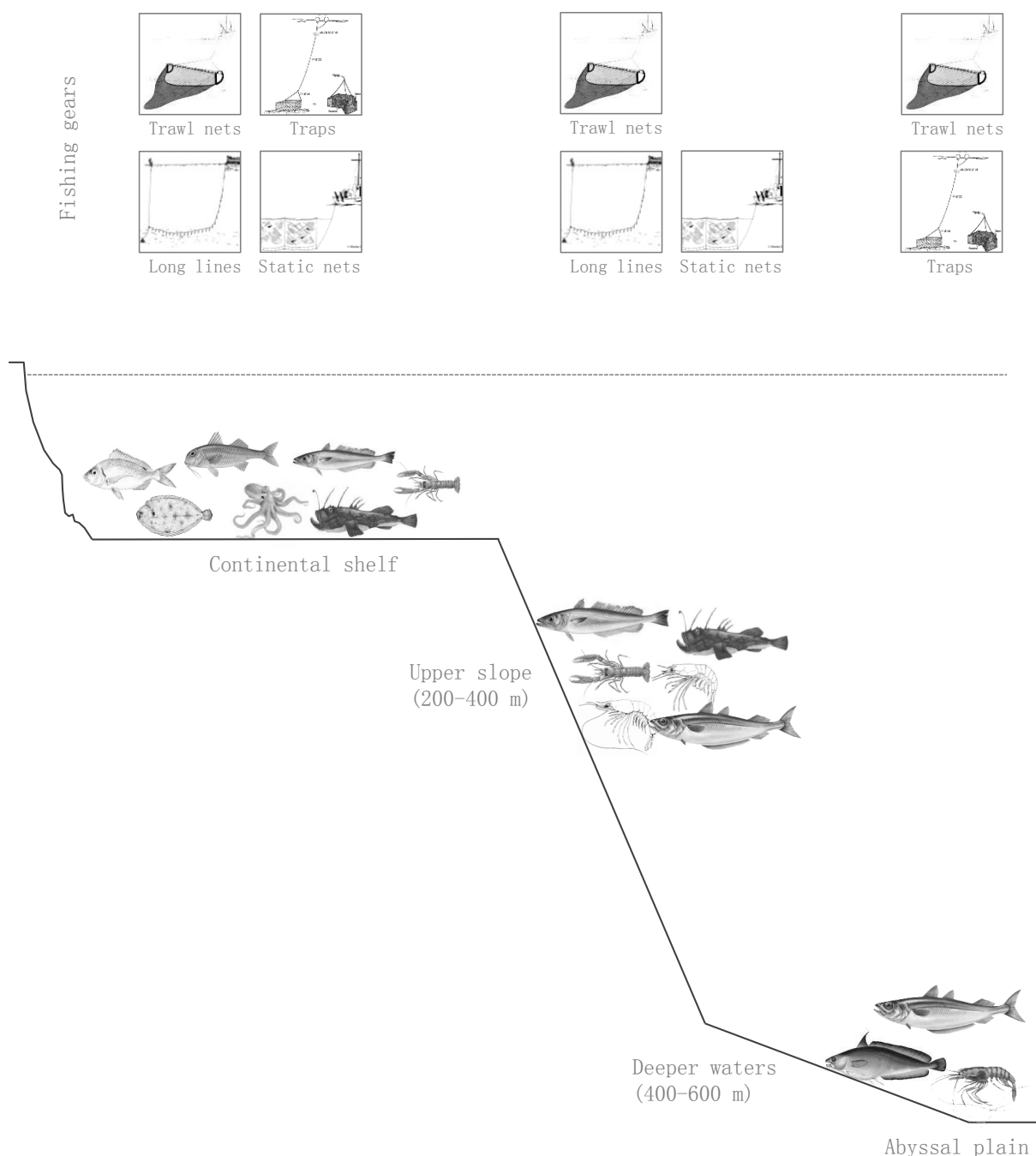


Figure 1.2 Diagram of exploited fish stocks and fishing gears used by depth: (i) the **continental shelf** is characterised by a wide number of species. From left to right, the common pandora (*Pagellus erythrinus*), red mullet (*Mullus barbatus*), juvenile hake (*Merluccius merluccius*), common sole (*Solea vulgaris*), common octopus (*Octopus vulgaris*), anglerfish (*Lophius piscatorius*) and Norway lobster (*Nephrops norvegicus*). These are mostly caught with bottom trawlers, static nets such as trammel nets or gillnets, longliners and traps; (ii) the **upper slope** (200-400 metres) is characterised by the presence of adult hake, anglerfish, Norway lobster, deep-water rose shrimp (*Parapenaeus longirostris*), giant red shrimp (*Aristaeomorpha foliacea*) and blue whiting (*Micromesistius poutassou*). These are mostly caught with bottom trawlers, static nets and longlines; (iii) the **deeper waters** (400-800 metres) are characterised by blue whiting, greater forkbeard (*Phycis blennoides*) and blue and red shrimp (*Aristeus antennatus*). These are mostly caught with bottom trawlers and traps.

2. WHAT IS THE PROBLEM AND WHY IS IT A PROBLEM?

This section identifies two major problems in the fisheries exploiting demersal stocks in the western Mediterranean Sea. These are the high levels of overfishing and the ineffective regulatory framework. The excessive use of fishing capacity (i.e. high amount of vessels and fishing effort) has been identified as the leading cause of overfishing, even though the changing environmental conditions may have an influence too. At the same time, the current regulatory framework is ineffective because of its limited scope of application, the slow and poor implementation and the lack of stakeholder ownership.

The high levels of overfishing and the ineffective regulatory framework have resulted, directly or indirectly, in the alarming state of demersal stocks in the western Mediterranean, socio-economic implications for the fishermen and the fishing sector, and impacts on the marine environment.

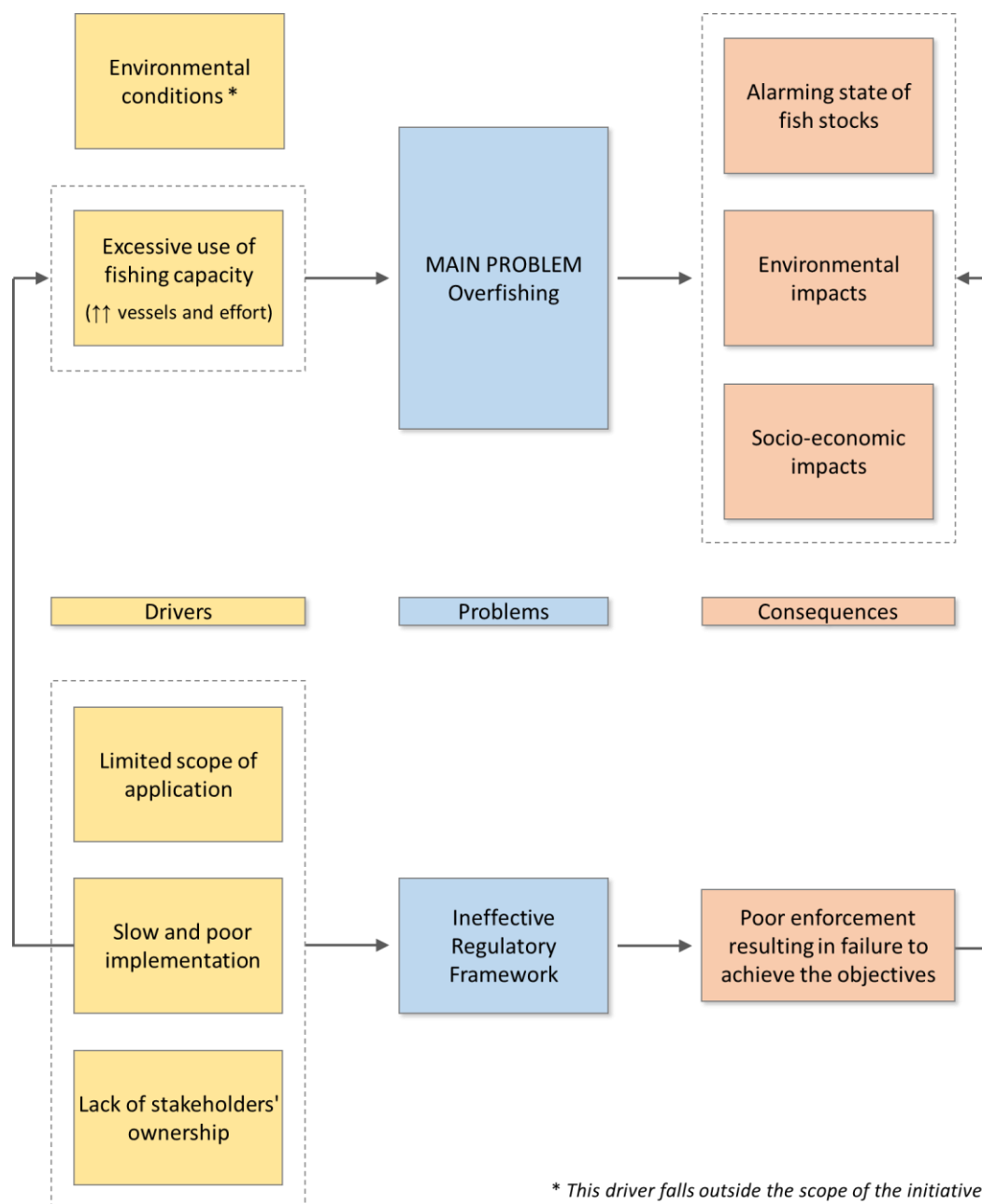


Figure 2.1 Schematic overview of the existing problems (blue boxes), their drivers (yellow boxes) and consequences (rose boxes) in fisheries exploiting demersal stocks in the western Mediterranean.

2.1. Nature and drivers of the problem

2.1.1. Overfishing

Overfishing is the situation where so many fish are removed from a stock that reproduction cannot replace the number lost. In the long term, excessive levels of fishing may lead to a poor condition of fish stocks, destabilise the food web and damage marine habitats.

In 2014, the CFP set a major objective to ensure that exploitation of living marine biological resources restores and maintains populations of harvested species above levels which can produce the **maximum sustainable yield (MSY)**²⁹. This legal obligation is, in fact, an instrument to adapt exploitation rates (or fishing mortality, F) to sustainable levels. In order to achieve these levels, stocks should be fished at F_{MSY} targets³⁰. Here we consider that any stock fished at levels above F_{MSY} is classified as overfished.

In the Mediterranean Sea, most commercial stocks are exploited at levels well beyond F_{MSY} targets: over 90 % of the assessed stocks are overfished³¹. Though the status of many other fish stocks still remains unknown, it is highly probable they are in a similar situation. In the various consultations carried out in 2015 and 2016, including as part of the ‘Catania process’, stakeholders overwhelmingly agreed that fish stocks in the Mediterranean Sea are severely overfished (see Annex 2). In addition, the scientific community at European and international level has repeatedly stressed the need to take urgent measures to reduce the high levels of overfishing throughout the entire Mediterranean Sea basin.

Demersal stocks in the western Mediterranean Sea are not an exception: most stocks assessed are highly overfished too. Furthermore, the biomass (B) of some of these stocks is close to the limit reference point (B_{LIM})^{32,33}, indicating that there is a high probability of collapse. Hake, red mullet and anglerfish are the most commonly overfished stocks, with current levels of exploitation reaching up to 10 times the estimated MSY targets. The most recent scientific advice for all the stocks assessed in the western Mediterranean is provided in Table 2.1 (as assessed by the scientific advisory body of the EU, the Scientific, Technical and Economic Committee for Fisheries (STECF)³⁴, and of the GFCM, the Scientific Advisory Committee (SAC)³⁵. The ratios between current fishing mortalities and fishing mortalities at MSY (F/F_{MSY}) should be seen as indicative of the magnitude of the problem (e.g. anglerfish in GSA 6 is fished at levels that are 6.5 times higher than its F_{MSY} target).

High levels of overfishing have been observed for nearly the past 15 years (i.e. since scientific advice started to be delivered on a regular basis). The change in the ratios F/F_{MSY} over time is provided for most demersal stocks in the western Mediterranean Sea in Annex 8 (see Figure A8.1). All in all, the large majority of stocks have been continuously exploited well beyond sustainable levels.

²⁹ 'MSY' means the highest theoretical equilibrium yield that can be continuously taken on average from a stock under existing average environmental conditions without significantly affecting the reproduction process.

³⁰ ' F_{MSY} ' means the fishing mortality rate that, if applied constantly, would result in an average catch corresponding to the MSY and an average biomass corresponding to B_{MSY} .

³¹ [STECF\(2017\)](#). Monitoring the performance of the Common Fisheries Policy (STECF-17-04). Publications Office of the European Union, Luxembourg; EUR 28359 EN, 91 pp.

³² ' B_{LIM} ' means a biological reference point. This is the stock size below which there is a risk of reduced reproduction leading to a reduction in recruitment; it is also a benchmark used to indicate when harvests should be constrained substantially so that the stock remains within safe biological limits.

³³ [STECF\(2015\)](#). Mediterranean assessments part 1 (STECF-15-18). Publications Office of the European Union, Luxembourg, JRC 98676, p. 410.

³⁴ [Gibin et al. \(2017\)](#). The STECF MED&BS Database Visualisation Dashboard. Scientific Information system and database, JRC104195.

³⁵ [GFCM-SAC](#). Validated stock assessment forms (SAFs).

Table 2.1 Overview of the western Mediterranean demersal stocks assessed. ‘Red’ means stocks assessed as overfished (i.e. current fishing mortality (F) is greater than F_{MSY} ; ‘light red’ means stocks close to the F_{MSY} and ‘bright red’ means stocks well over the F_{MSY}); ‘Green’ means stocks assessed as sustainable (i.e. current F is lower or equal to F_{MSY}). **Source:** STECF and GFCM-SAC^{30, 31}.

GSA	Common name	F _{curr}	F _{MSY}	F/F _{MSY}
1	Anglerfish	0.25	0.16	1.56
5	Anglerfish	0.84	0.08	10.50
6	Anglerfish	0.91	0.14	6.50
1	Blue and red shrimp	0.9	0.51	1.80
5	Blue and red shrimp	0.32	0.31	1.10
6	Blue and red shrimp	0.86	0.4	2.10
9	Blue and red shrimp	0.42	0.32	1.30
7	Common sole	0.63	0.085	7.41
1	Deep-water rose shrimp	0.78	0.87	0.90
6	Deep-water rose shrimp	1.40	0.50	2.80
9-10-11	Deep-water rose shrimp	0.87	0.91	0.96
7	European seabass	0.46	0.136	3.40
9	Giant red shrimp	0.24	0.59	0.40
10	Giant red shrimp	0.91	0.65	1.40
11	Giant red shrimp	0.50	0.31	1.61
7	Gilthead seabream	0.50	0.19	2.63
1-5-6-7	Hake	1.40	0.39	3.59
9-10-11	Hake	1.10	0.20	5.50
5	Norway lobster	0.29	0.17	1.71
6	Norway lobster	0.59	0.15	3.93
9	Norway lobster	0.34	0.19	1.75
11	Norway lobster	0.39	0.19	2.05
1	Red mullet	1.31	0.27	4.85
6	Red mullet	0.50	0.45	1.10
7	Red mullet	1.13	0.35	3.20
9	Red mullet	0.70	0.60	1.17
10	Red mullet	0.50	0.50	1.00
5	Striped red mullet	0.5	0.13	3.80
9	Striped red mullet	0.49	0.52	0.94

A screening of the different underlying factors has led to the identification of the **drivers for overfishing** in western Mediterranean demersal fisheries:

Excessive use of fishing capacity

The excessive use of fishing capacity (i.e. high amount of vessels and fishing effort) means that the fleets have the ability to fish more than the fishery resource can sustain or more than a desired reference point (e.g. the MSY). As shown in previous work³⁶, this is the leading driver for overfishing, particularly in the Mediterranean Sea.

Member States are required to assess and report on the balance between the fishing capacity of their fleets and the available biological resources (Article 22 of the CFP). These reports are prepared in accordance with common guidelines in which a set of biological, economic and social indicators are compared against standardised values³⁷. On the basis of the latest STECF assessment³⁸, the main results for the Mediterranean and Black Sea are as follows:

- The biological indicator ‘sustainable harvest indicator’ (SHI) suggests that 80 % of fleet segments for which an assessment was possible rely on overfished stocks³⁹.
- The economic indicator ‘ratio between current revenue and break-even revenue’ (CR/BER) suggests that 56 % of fleet segments are economically unsustainable in the short-term.
- The economic indicator ‘return on investment’ (ROI) suggests that 47 % of fleet segments are economically unsustainable in the long-term.
- The technical indicator ‘vessels utilisation ratio’ (VUR) suggests that, on average, 45 % of fleet segments did not reach the average activity levels⁴⁰.

To address imbalances, Member States have to prepare action plans to adjust the fishing capacity of their fleet segment to the fisheries resources available to them. These plans can include the use of permanent cessation under the European Maritime and Fisheries Fund (EMFF) up to 31.12.2017, whereas additional measures (e.g. temporary cessation) could go beyond this date. More specifically, France plans to carry out permanent cessations for at least three bottom trawlers between 18 and 40 metres in overall length. Italy plans to scrap, at national level, approx. 36 bottom trawlers between 12 and 40 metres in overall length, achieving an 8 % reduction in their capacity. In addition, Spain intends to apply a battery of

³⁶ [COM\(2011\)425](#). Impact assessment accompanying the document ‘Commission proposal for a Regulation of the European Parliament and of the Council on the Common Fisheries Policy [repealing Regulation (EC) No 2371/2002]’. Brussels, 13.7.2011.

³⁷ [COM\(2014\)545](#). Guidelines for the analysis of the balance between fishing capacity and fishing opportunities according to Art 22 of Regulation (EU) No 1380/2013 of the European Parliament and of the Council on the Common Fisheries Policy. Brussels, 2.9.2014.

³⁸ [STECF\(2016\)](#). Assessment of balance indicators for key fleet segments and review of national reports on Member States efforts to achieve balance between fleet capacity and fishing opportunities (STECF 16-18). Publications Office of the European Union, Luxembourg; EUR 27758 EN, 189 pp.

³⁹ The biological indicator ‘stock at risk’ (SAR) was not taken into account in this impact assessment report due to major problems over the calculation method. As suggested by the STECF 16-18, the SHI was considered a more reliable biological indicator for the Mediterranean and Black Sea.

⁴⁰ This indicator concerns the average activity levels of vessels that did fish at least once in the year, taking into account the seasonality of the fishery and other restrictions. Under normal conditions, it can be expected that 10 % or less of the vessels in a fleet segment should be inactive, which could be due to major repairs, refits, conversions or pending sales and transfers. If more than 20 % of the fleet segment is recurrently inactive or under-utilised, this could indicate technical inefficiency due to the existence of an imbalance such as an activity that is not economically viable.

measures (i.e. spatial/temporal closures, as well as permanent and temporary cessations) to bottom trawlers between 18 and 40 metres in overall length so as to achieve a 20 % reduction in their capacity. These measures are in line with the public consultation, where respondents were highly supportive of the introduction of measures to limit fishing capacity and/or fishing effort^{41,42}.

The modernisation of fleets and fishing techniques also plays a major role in the progressive increase of fishing capacity and the resulting pressure on the biological resources⁴³. Technological progress in Mediterranean fleets, such as the improvement of engine power and electronic equipment, has enabled fishing fleets to extend fishing grounds to new distant areas and to deeper waters. However, the use of technological advancements should not per se be regarded as adverse. The problem is rather the lack of effective measures to regulate fishing activities so that they are in line with the existing marine biological resources.

Given its strong link with overfishing, efforts to tackle the excessive amount of fishing effort are not only one of the main challenges in fisheries management, they also lie at the core of this initiative.

Environmental conditions

In recent decades, we have seen that environmental changes such as temperature or water currents can have an effect on the distribution and abundance of biological resources. For example, a link has been demonstrated between oceanographic processes and the strength of recruitment of hake and the blue and red shrimp in the Balearic Islands⁴⁴. Generally, colder winters tend to be more productive in the western Mediterranean Sea, partly because winter mixing of the water column may reach greater depths. This environmental condition is shown to be favourable for the recruitment and the abundance of hake and the blue and red shrimp. On the other hand, persistent warm winters caused by climate change could have the opposite effect on recruitment and abundance of the stocks, as a result of lower productivity.

While this driver falls outside the scope of the initiative, it is worth mentioning that environmental conditions (such as those studied in the Balearic Islands) may influence the state of fish stocks and can further contribute to the undesired situation of overfishing. In contrast, it seems reasonable to consider that healthier fish stocks might be more resilient to environmental fluctuations.

⁴¹ The public consultation found that 88% of the respondents considered it ‘important’ or ‘very important’ to introduce measures relating to fishing capacity and/or fishing effort (from a Likert-type scale of five levels).

⁴² [COM\(2016\)](#). Summary Report of the Public Consultation concerning on a multiannual plan for the fisheries exploiting demersal stocks in the western Mediterranean sea. Brussels, November 2016.

⁴³ [Farrugio et al \(1993\)](#). An overview of the history, knowledge, recent and future research trends in Mediterranean fisheries. *Scientia Marina* 57: 105-119.

⁴⁴ [Massuti et al \(2008\)](#). The influence of oceanographic scenarios on the population dynamics of demersal resources in the western Mediterranean: hypothesis for hake and the blue and red shrimp off Balearic Islands. *Journal of Marine Systems* 71: 421-438.

2.1.2. *Ineffective regulatory framework*

This section describes how the current regulatory framework has not been effective in achieving key objectives of the CFP and the MEDREG, particularly:

- **MSY is far from being achieved:** The current management framework (i.e. national management plans under the MEDREG) does not seem to be guiding fishing activity towards the target F_{MSY} levels⁴⁵. Indeed, nearly all commercial stocks assessed in the western Mediterranean have been under continuous and severe overfishing (see Table 2.1 and Figure A8.1).
- **Fishing effort is not restrictive enough:** The national management plans have not been sufficient to adjust the fishing effort of western Mediterranean demersal fleets to the available fishing opportunities. Member States have adopted measures such as: (i) temporary cessations; (ii) limiting the number of fishing licences and authorisations; (iii) fixing a maximum number of fishing days per year or week; and (iv) limiting the number and size of the fishing gear. However, the continuing overfishing and worrying state of the stocks suggest that those measures are not restrictive enough to be effective.
- **Economic sustainability is at risk:** As long as the bad environmental situation continues, it is expected that the CFP's goal of ensuring conditions for an economically viable and competitive fishing industry will not fully succeed. In the Mediterranean Sea, the fishing sector, which is represented by the Mediterranean Advisory Council (MEDAC), has repeatedly expressed concerns about the decreasing trend in the number of active vessels, employment and total income from landings over recent years^{46,47}. Small-scale fisheries are particularly suffering because of this. If the deterioration in the status of many fish stocks continues, the performance of the fishing fleets may soon be seriously affected.
- **Catches of undersized fish are large:** There are large amount of catches of undersized fish, indicating that the MCRSs set in the MEDREG have not been effectively implemented and that there is a poor selectivity pattern. This suggests that the technical measures in place (e.g. minimum mesh sizes) have not delivered any improvements in selectivity, in particular for bottom trawlers. The limited enforcement and control, and the scarcity of additional measures such as spatial/temporal closures in nursery areas have also hampered fulfilment of this objective.
- **Protection of nurseries and spawning areas is still scarce:** In the Mediterranean Sea, the coverage of marine protected areas (which includes fishing protected areas) is still considered low, estimated at around 3.25 % of the total sea basin (or 6.41 % if the Pelagos sanctuary is included)⁴⁸. Moreover, the objectives and measures in place for the protected areas are not always designed to specifically protect/restore fish stocks, as such areas have been designated under various legal regimes such as national provisions, EU legislation (the CFP, the MEDREG, the MSFD, the Birds and Habitats Directives), and the Barcelona Convention.

⁴⁵ [STECF\(2015\)](#). 50th Plenary Meeting Report (PLEN-15-03). Publications Office of the European Union, Luxembourg; EUR 27602 EN, 90 pp.

⁴⁶ [MEDAC\(2017\)](#). Opinion on the socioeconomic situation of the fisheries sector in the Mediterranean Sea. Rome, June 2017.

⁴⁷ [D'Alessio M \(2017\)](#). Socio-economic situation in Mediterranean fisheries sector. MEDAC Working Group on socio-economic impact. Rome, June 2017.

⁴⁸ [EEA\(2015\)](#). Marine protected areas in Europe's seas: an overview and perspectives for the future. European Environment Agency, Copenhagen, Denmark.

This analysis is consistent with the results of the public consultation, which found that 75 % of respondents disagree or strongly disagree that the current management framework is sufficient to meet the objectives of the CFP. The main reasons expressed were the difficulties to: (i) address the objectives and timeframes of the CFP, in particular to achieve MSY by 2020, implement the precautionary and ecosystem-based approaches and gradually eliminate discards; (ii) develop a single regulatory framework for fisheries, integrating the interactions between different gears and Member States, as well as the trans-boundary nature of certain fish stocks; (iii) incorporate recreational fisheries into national management plans; and (iv) ensure full implementation of the plans.

A screening of the different underlying factors has led to the identification of the **drivers for the ineffective regulatory framework**:

Limited scope of application

The scope of the current management framework (i.e. national management plans under the MEDREG) is considered to be limited, as it partially covers fishing gears exploiting demersal stocks, the multi-species dimension of the fisheries and does not encompass the distribution of the stocks.

The existing national management plans, as their name indicates, refer to areas which are under the competence of one single Member State. They manage the fisheries unilaterally ‘by fishing gear’, not ‘by species’ or ‘by group of species’. Some fishing gears used in the western Mediterranean Sea and targeting demersal species are not covered by national management plans (e.g. for longliners and static nets such as trammel nets and gillnets). The reason for this gap is the obligation in the MEDREG to have national management plans for a limited list of fishing gears (for details see Section 1.3).

Mediterranean demersal fisheries are highly multi-species and some of the fish stocks move across the territorial waters of more than one Member State. Not all of the most important species are covered by the existing national management plans. Figure 2.3 compares the current fishing activities of bottom trawlers (the main fishing gear) against: (i) the most scientifically sound stock boundaries for hake (see stock boundaries for additional species in Annex 7); and (ii) the actual network of national management plans. The national management plans cover most areas where their fishing activities take place. However, the stocks of hake, red mullet, Norway lobster and blue and red shrimp are distributed well beyond the area covered by each individual national management plan. This indicates that the objectives and measures established unilaterally by each Member State may not cover the fishing activity in neighbouring areas. Annex 6 provides a detailed description of the three national management plans, including their synergies and inconsistencies.

The fourth map below indicates the geographical coverage of a possible EU multi-annual plan in the western Mediterranean Sea. In this case, most of the exploited stocks appear to be distributed inside this management framework.

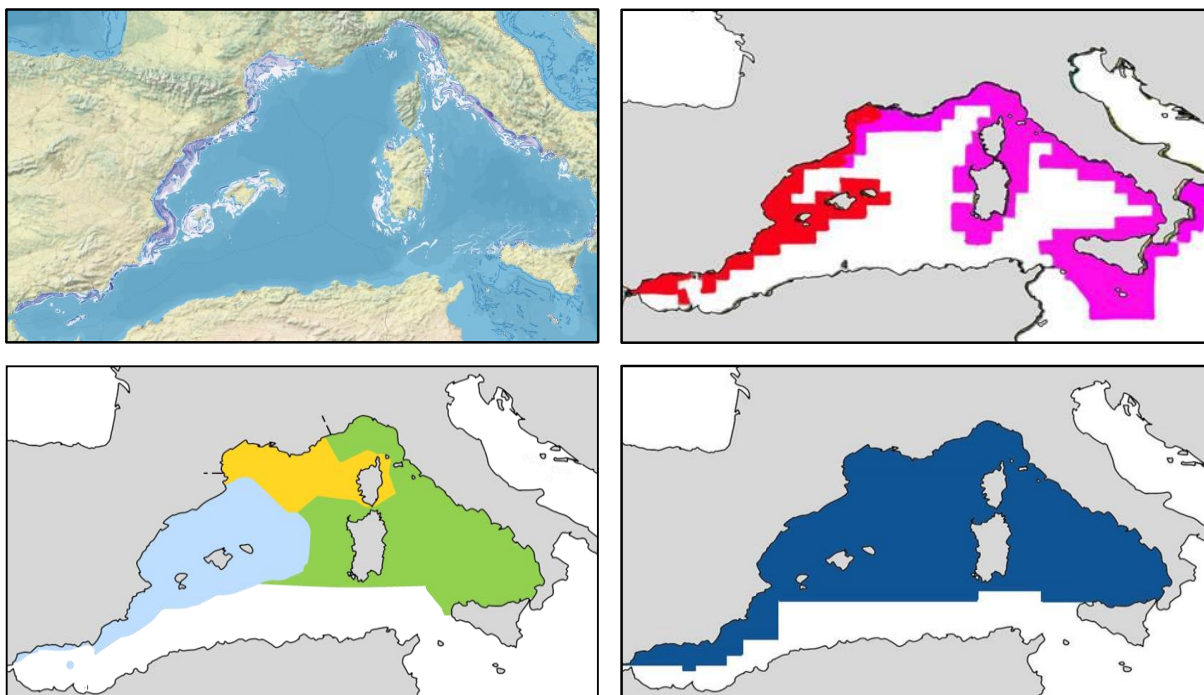


Figure 2.3 Spatial comparison of the current fishing activities of bottom trawlers (upper-left graph), the distribution of the two hake stocks (upper-right graph), the current network of national management plans (bottom-left graph) and the possible EU multi-annual plan (bottom-right graph). *The maps are not precise.*

Slow and poor implementation

Although the MEDREG was adopted in 2006, the first national management plans only came into force in 2011. These were a series of Italian management plans, including for bottom trawlers in Italy's western Mediterranean territorial waters (i.e. GSAs 9, 10, 11). The French and Spanish management plans for bottom trawlers followed in 2013. These plans have been applied over 6 years in the case of Italy, and 4 years in the case of France and Spain. There has been relatively little progress in implementing the provisions contained in those plans. Specific issues include fishing effort restrictions, which have not been adjusted in a manner compatible with MSY targets (for further details, see current situation in Table 2.1).

A recent report by the European Court of Auditors highlights that fishermen have difficulties in implementing the existing technical measures as so many rules are applicable in the Mediterranean Sea⁴⁹. For example, MCRSs are far from being well implemented, as can be seen from the large amount of undersized fish. Similarly, the evaluation of the MEDREG indicates that technical measures on mesh sizes have been unevenly enforced through the entire sea basin. The poor implementation of the CFP and the MEDREG is also due to the lack of control tools for small-scale fisheries.

The Commission is reflecting to address these problems in the context of the revision of the Control Regulation. In addition, the Commission has adopted action plans to improve the implementation of the CFP in the Mediterranean Sea.

Lack of stakeholder ownership

Fisheries are the classic example of the tragedy of the commons, where natural renewable resources could be depleted because of negative externalities (such as insufficient management and the lack of acceptability by fishermen) inherent to the common-pool goods.

⁴⁹ [European Court of Auditors \(2017\)](#). EU fisheries controls: more efforts needed. Special Report No 08/2017.

Since its conception, the MEDREG was negatively received by stakeholders, mainly due to limited dialogue at earlier stages. The Regulation is still perceived as a top-down approach where the specific characteristics of each sub-region are not sufficiently taken into account. The public consultation stressed notably that stakeholders did not have an active role in drafting the MEDREG. As a result, the Regulation may be seen as having been ‘imposed’ by the EU, causing fishermen to be less likely to comply with restrictions they did not support in the first place. Ultimately, fishermen feel no ownership of the EU Regulation and its provisions.

Rebuilding stakeholder confidence and trust should be a priority in Mediterranean fisheries. In this respect, the CFP and its new regionalisation approach would enable greater integration of, and cooperation with, all stakeholders from the very beginning of the process. Good evidence of this can already be found in the wide participation received in the overall stakeholder consultation, including the internet-based public consultation.

2.2. Consequences of the identified problems

2.2.1. Alarming state of demersal stocks

The alarming state of demersal stocks in the western Mediterranean Sea is shown by three quantitative indicators: total landings, biomass index and length of the individuals caught. For simplicity, we present below the iconic species of Mediterranean demersal fisheries, hake.

The total landings of hake in northern Spain (Mediterranean basin) fell by around 42% from 2003 to 2014 (Figure 2.4, upper graph)⁵⁰. In addition, based on data from research campaigns, the biomass index (equivalent to the size of the stock) suggests a similar downward trend since 2003 (Figure 2.4, middle graph). The length distribution of the total catch of hake is also shown in the bottom graph. Catches of larger individuals (or adults) are practically non-existent and the bulk of exploitation is concentrated in juveniles (lengths around 15 cm). This length is well below the MCRS of 20 cm set in the MEDREG and the estimated length at first maturity (i.e. 28 and 38 cm for males and females respectively⁵¹). This notorious downward trend for total landings and biomass index, plus the high exploitation of juveniles, add up to a high risk of stock collapse. As demonstrated for other species and areas, this can lead to severe effects on the whole ecosystem (e.g. changes in the food web structure) and on the fishing sector (e.g. socio-economic instability).

Similar patterns to those experienced with hake in northern Spain can also be observed in other areas of the western Mediterranean Sea (see Annex 8). The many other finfish stocks caught together with hake are considered highly overfished too, although in certain cases the trends are less obvious. In general, crustacean species are closer to sustainable exploitation levels with better indicators.

Stakeholders, which include the fishing sector, Member State public administrations and European and international scientific bodies, overwhelmingly agreed on the poor state of demersal stocks in the Mediterranean Sea.

⁵⁰ [STECF\(2015\)](#). Mediterranean assessments, part 1 (PLEN-15-18). Publications Office of the European Union, Luxembourg; EUR 27638 EN, 410 pp.

⁵¹ [Mellon-Duval et al \(2009\)](#). Growth of European hake (*Merluccius merluccius*) in the Gulf of Lions based on conventional tagging. ICES Journal of Marine Science, 67: 62–70.

**Alarming state of demersal stocks:
the case of hake in northern Spain (GSA 6)**

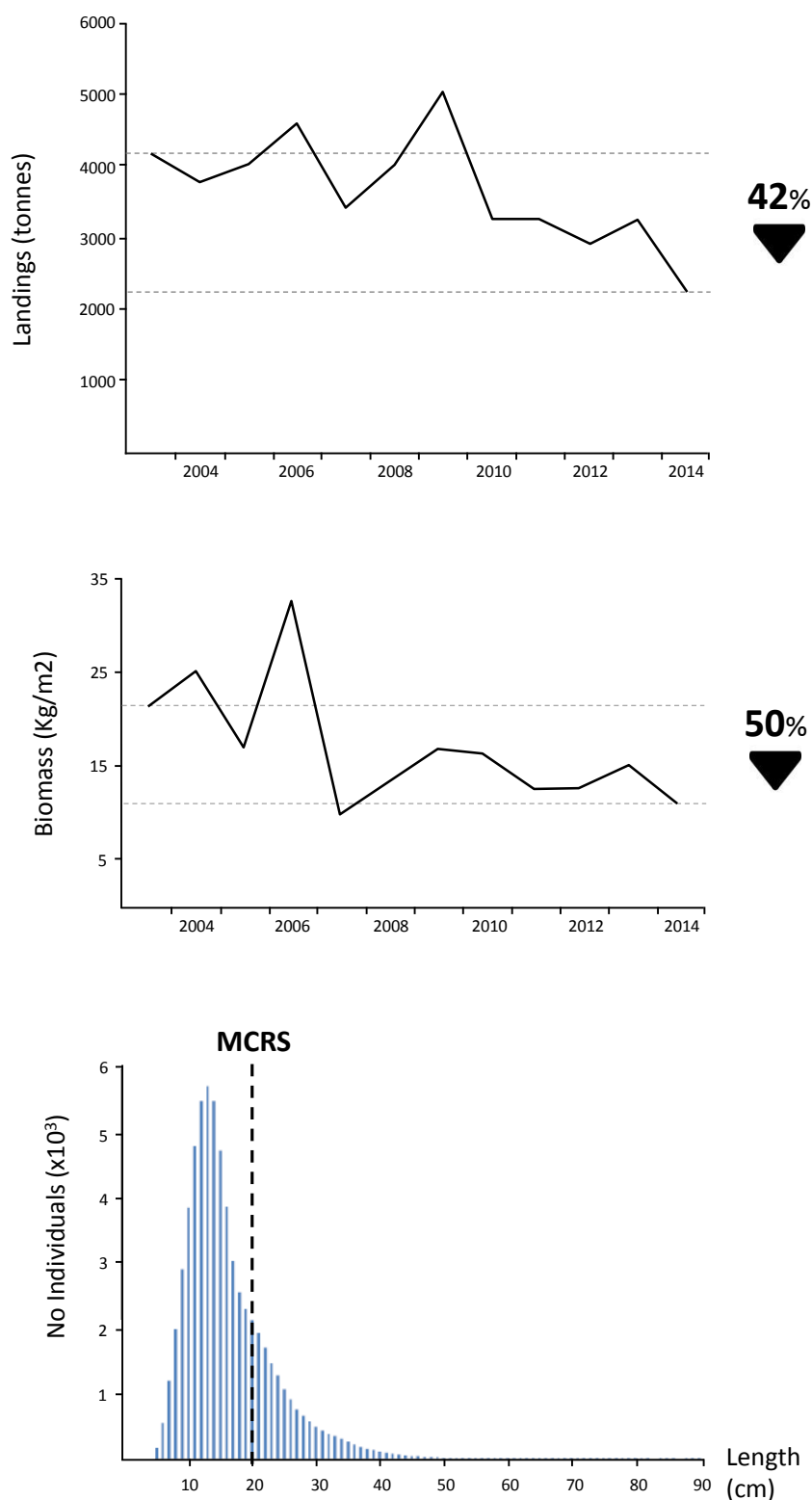


Figure 2.4 Trend in total landings (upper graph), biomass index (equivalent to stock size; middle graph) and number of individual of hake caught by length (bottom graph) in northern Spain (GSA 6). The MCRS is also shown.

2.2.2. *Environmental impacts: trophic interactions & non-target species*

Overall, excessive levels of fishing and damage to fish habitats have caused major losses of biodiversity, changes in the structure of fish populations (e.g. fewer large individuals) and changes in the trophic web⁵². For instance, as top predators such as adult hake and anglerfish play an important role in the food web, their decreasing biomass is likely to cause an increase in the biomass of other organisms such as shrimps and benthic invertebrates⁵³. This is consistent with the status of many crustacean stocks like deep-water rose shrimp, where current levels of biomass are considered to be high or intermediate with their exploitation only slightly greater than the desired MSY targets. This increase could also have an effect on other species, creating a real trophic cascade.

Another environmental consequence of the fishing activities is the capture of non-target species. This covers: (i) the ‘unwanted’ part of the catch during fishing operations, i.e. non-commercial species, commercial species not sought (e.g. undersized, damaged individuals); and (ii) incidental catches of vulnerable and protected species (e.g. sea turtles, sharks, marine mammals). Bottom trawlers, the main fishing gear covered by this initiative, are responsible for the bulk of discards in the western Mediterranean Sea (representing from 14 % to 60 % of the total catches)⁵⁴.

2.2.1. *Socio-economic impacts*

High levels of overfishing over recent decades have pushed most demersal stocks in the western Mediterranean Sea into decline. As shown in other sea basins, the associated decrease in the productivity of the stocks can affect the amount and the quality of landings and, therefore, the income of fishermen.

The economic and social importance of demersal fisheries in the western Mediterranean Sea is high. Taken together, the French, Italian and Spanish fleets represent around 13 000 vessels and near 24 000 jobs. The MEDAC has repeatedly expressed concerns about the decreasing trend in terms of number of active vessels, employment and total income from landings over recent years. At present, the economic impact on the western Mediterranean fishing sector is visible for the largest bottom trawl fleets in France and Italy, where net profits are negative (see affected stakeholders in Section 2.3). Furthermore, since many fleet segments are highly dependent on demersal species, they could face a greater economic impact if overfishing continues.

Hence, ensuring that fish stocks remain within safe biological limits is crucial not only for the ecological balance of the ecosystems, but also for the social and economic well-being of those who depend on them.

⁵² [Pauly et al \(1998\)](#). Fishing down marine food webs. *Science* 279: 860-863.

⁵³ [Coll et al \(2008\)](#). Food-web dynamics in the South Catalan Sea ecosystem (NW Mediterranean) for 1978 – 2003. *Ecological modelling* 217: 95-116.

⁵⁴ [FAO\(2016\)](#). The state of Mediterranean and Black Sea fisheries. General Fisheries Commission for the Mediterranean. Rome, Italy.

2.3. Affected stakeholders

2.3.1. Fishing sector

The problems described above primarily affect fishermen fishing for demersal stocks in the western Mediterranean Sea, meaning EU fleets from Italy, France and Spain. According to the data reported under the EU fisheries data collection framework (DCF), around 13 000 vessels would be potentially affected by this initiative^{55,56}.

Table 2.2 provides a detailed overview of the **affected fishing sector**. It illustrates the number of vessels, employment rates, the volume and value of landings, and the level of dependency on the eight most relevant demersal species (i.e. hake, red mullet, anglerfish, blue whiting, giant red shrimp, deep-water rose shrimp, Norway lobster and blue and red shrimp). All in all, bottom trawlers account for 21 % of the total fleet operating in the area, with passive gears at 66 %, longliners at 2 %, and another 10 % taken up by polyvalent vessels. About 76 % of the vessels are Italian, 15 % are Spanish and 9 % are French. Almost all bottom trawlers (around 2 804 in total) are Italian and Spanish. Passive gears are most common in the French and Italian fleets (for around 846 and 7 821 vessels respectively). As for longliners (260 vessels in total), almost half are Spanish (46 %), followed by French and Italian in more or less equal numbers (29 % and 25 % respectively).

As regards fleet segmentation, two main conclusions can be drawn from Table 2.2:

- the smallest fleet segments (0-18 m) are largely passive gears and longliners, equivalent to small-scale coastal fleets (i.e. nearly 10 400 vessels catching approx. 1 500 tonnes).
- the largest fleet segments (18-40 m) are mostly bottom trawlers, equivalent to large-scale fleets (i.e. nearly 2 800 vessels catching approx. 13 500 tonnes).

An analysis of the **economic dependency** on the eight most relevant demersal species in the western Mediterranean Sea⁵⁷ suggests high dependency among a relatively low number of fleet segments and vessels. Indeed, the four fleet segments with the highest dependency make up only 5 % of the vessels and yet account for 62 % of the total value of the landings assessed. These fleet segments are French and Spanish bottom trawlers between 12 and 40 metres in length – see the dark blue cells in Table 2.2. They have a significant socio-economic importance, providing around 2 900 on-board jobs, 1 500 jobs in ancillary activities in coastal communities and EUR 104 million in income directly generated from the eight demersal species selected. Moderate dependency is observed in eight fleet segments (mostly additional bottom trawlers and some longliners – see the mid-blue cells in Table 2.2.). Low dependency covers around two thirds of the fleet segments (equal to 80 % of the vessels and 11 % of the value of landings). The predominance of fleet segments with low and moderate dependency highlights the great diversity of species caught in these fisheries.

⁵⁵ These values are expected to be lower as Italian official data include the total number of vessels operating in the Mediterranean Sea (i.e. also includes fleets from the Adriatic Sea, the Strait of Sicily and the Ionian Sea). According to the STECF 16-11, around 9 000 vessels operate exclusively in the western Mediterranean. However, in this impact assessment report, we used the official data reported by the Member States under the data collection framework.

⁵⁶ [STECF\(2016\)](#). The 2016 Annual Economic Report on the EU Fishing Fleet (STECF 16-11). Publications Office of the European Union, Luxembourg; ISBN 978-92-79-64633-1, 472 pp.

⁵⁷ Analysis carried out by the Commission services, May 2017.

As far as **employment** is concerned, the estimated number of jobs generated by demersal fisheries is near 24 000 full-time equivalent (FTE) jobs, generating about 12 500 ancillary jobs⁵⁸ in coastal communities.

The vast majority of enterprises in the fishing sector targeting demersal species in the western Mediterranean Sea are considered micro-enterprises, as most of them have only one vessel with less than 10 workers on board and a turnover lower than EUR 2 million. This highlights the **importance small and medium-sized enterprises (SMEs)** for this sector:

- In France, 88 % of enterprises have only 1 vessel and 99 % have fewer than 5 vessels;
- In Italy, 86 % of enterprises have only 1 vessel and 97 % have fewer than 5 vessels;
- In Spain, 93 % of enterprises have only 1 vessel and 99 % have fewer than 5 vessels⁵⁹.

2.3.2. *Processing sector*

According to the European Market Observatory for Fisheries and Aquaculture (EUMOFA), the most relevant demersal species are high-value species sold mainly fresh and with a limited processing phase⁶⁰. Therefore, the dependency of the processing sector on demersal species from the western Mediterranean Sea is considered negligible.

2.3.3. *Public administrations*

The European institutions and public administrations in France, Italy and Spain will be involved at one stage or another in the design, implementation and monitoring of the future regulatory framework. Some autonomous regions, such as Sardinia, Catalonia and Andalusia, will be also involved as they share the fisheries remit with their national governments.

2.3.4. *Others representing society at large*

Other groups affected by this initiative may include non-governmental organisations such as BirdLife, Ecologistas en Accion, Medreact, Oceana and the WWF (they already contributed to the public consultation). The initiative may also affect the general public (chiefly consumers and the media), the scientific community, particularly universities and research institutions, and also consultants and fisheries experts. Furthermore, non-EU actors could be indirectly affected as fish consumption in the western Mediterranean is, as in the entire EU, dependent on imports.

Further details, including how stakeholders would be affected, are provided in Annex 3.

⁵⁸ In this impact assessment report, all activities up-to the first point of sale that are directly linked to the primary sector are considered ancillary activities. For example, activities related to the servicing of equipment and/or vessels, activities related to the sale of fish, supplies for operations and R+D+I services (processing industry is not included as it was considered negligible). Therefore, ‘ancillary jobs’ is the employment generated by the ancillary activities.

⁵⁹ [STECF\(2016\)](#). The 2016 Annual Economic Report on the EU Fishing Fleet (STECF 16-11). Publications Office of the European Union, Luxembourg; ISBN 978-92-79-64633-1, 472 pp.

⁶⁰ Except when prepared as fillets or as cooked products like shrimps.

Table 2.2: Number of vessels, employment (as full-time equivalent, or FTE), fishing days, volume and value of landings (in kg and EUR respectively) of the most relevant species (i.e. hake, red mullet, anglerfish, blue whiting, giant red shrimp, deep-water rose shrimp, Norway lobster and blue and red shrimp) and the economic dependency (%) in the EU fleet targeting demersal stocks in the western Mediterranean Sea, by fishing gear (i.e. bottom trawlers, passive gears such as gillnets, trammel nets and traps, longlines and polyvalent vessels), by fleet segment (i.e. 0-6 m, 6-12 m, 12-24 m and 24-40 m in length overall) and by Member State (i.e. France, Italy, Spain). Figures marked ‘*’ denote negative net profit and ‘---’ entries mean that no vessel has been reported under that particular fleet segment. High dependency (> 25 %) is coloured in dark blue; moderate dependency (10-25 %) in mid-blue; and low dependency (< 10 %) in light blue. Reference year: 2015.

		FRANCE						ITALY (!)						SPAIN					
		Vessels	FTE	Fishing days	Volume	Value	Dep'cy	Vessels	FTE	Fishing days	Volume	Value	Dep'cy	Vessels	FTE	Fishing days	Volume	Value	Dep'cy
Bottom trawlers	0-6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	6-12	---	---	---	---	---	---	202	187	12 788	39 108	204 322	2.5%	21	67	3 600	31 512	233 939	23.1%
	12-18	---	---	---	---	---	---	1 159	3 246	172 230	2 165 139	18 539 114	10.5%	152	463	28 308	592 299	5 990 987	30.7%
	18-24	31	68	4 950	432 649	2 948 644	28.9% *	610	2 410	97 048	2 649 436	22 716 700	14.0%	307	1486	63 124	4 000 567	61 778 727	62.4%
	24-40	32	110	6 120	931 444	5 660 513	34.5% *	218	1 083	30 224	419 485	5 048 604	5.4% *	135	835	28 303	2 249 007	31 199 478	68.8%
Passive gears	0-6	180	43	7 605	336	2 629	0.1%	2 213	2 167	282 826	102 173	977 197	2.2%	---	---	---	---	---	---
	6-12	645	217	27 629	46 222	283 759	2.4%	5 205	7 649	748 088	816 468	8 716 249	5.2%	45	118	6 646	11 417	84 138	4.6%
	12-18	21	9	663	6 497	39 707	1.1%	403	1 045	59 254	242 538	2 113 363	5.9%	105	356	15 137	18 200	129 202	1.0% *
	18-24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	24-40	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Long lines	0-6	19	3	477	6	72	0.0%	---	---	---	---	---	---	---	---	---	---	---	---
	6-12	56	13	1 610	4 737	34 190	2.9%	---	---	---	---	---	---	42	87	5 168	21 046	162 495	9.9%
	12-18	---	---	---	---	---	---	120	465	16 271	20 373	160 884	1.0%	23	41	2 583	24 378	194 043	14.5%
	18-24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	24-40	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Polyvalent vessels	0-6	56	20	3 322	178	1 491	0.1%	---	---	---	---	---	---	111	77	7 716	1 627	9 896	0.6%
	6-12	110	63	7 494	7 595	45 711	0.9%	---	---	---	---	---	---	1 032	1235	112 568	100 570	658 519	2.2%
	12-18	---	---	---	---	---	---	30	87	4 227	50 338	350 655	9.8%	52	156	7 670	24 143	180 971	7.6%
	18-24	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	24-40	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

(!) These values are expected to be lower as Italian official data includes the total number of vessels operating in the entire Mediterranean. According to the STECF 16-11⁵⁵, around 9 000 vessels will operate exclusively in the western Mediterranean. However, in this impact assessment report, we used the official data reported by the Member States under the DCF.

2.4. The evolution of the problem (baseline)

This part of the impact assessment report describes how the problems addressed in Section 2.1 are likely to evolve with no new action. In other words, it shows that the need for a policy change will persist in the future, as the identified problems are likely to remain.

2.4.1. Overfishing

As described earlier, the large majority of demersal stocks in the western Mediterranean Sea are severely overfished. Hake, red mullet and anglerfish are the most commonly overfished stocks, where current levels of exploitation can reach up to 10 times the estimated MSY targets. The excessive use of fishing capacity (i.e. high amount of vessels and fishing effort) is seen as the leading driver for overfishing.

In view of that, substantial reductions in fishing mortality would be needed to meet the MSY targets in the western Mediterranean Sea. However, the measures in the national management plans are not sufficient to cope with the magnitude of the problem. The measures included are restrictions on the number of fishing authorisations and licences, the setting of a maximum number of fishing days per year, permanent/temporary cessations and closure areas (see a more detailed description of the three national management plans in Annex 6).

From an environmental viewpoint, the modelling of the evolution of this problem⁶¹ suggests that the percentage of fish stocks recovered to spawning stock biomass (SSB)⁶² levels above the precautionary reference point (B_{PA}) would only be around 12 % by 2020 and 7 % by 2025. In addition, the probability of reaching fishing mortality targets at MSY would be 0 % in both years. Indeed, the simulations show that the *status quo* neither improves the number of stocks recovered nor the probabilities of achieving fishing mortality targets. Therefore, without additional measures there is a high risk of stock collapse in the near future.

From a socio-economic viewpoint, nine fleet segments would be at financial risk by 2025, as they highly depend on overfished stocks. These are the French, Italian and Spanish bottom trawlers between 18 and 40 metres length overall and some Spanish longliners. This nine fleet segments consist of 1 438 vessels and 6 234 FTE fishermen. The remaining fleets, including small-scale fisheries, would also see a deterioration of their economic performance, without any prospect of improvement.

2.4.2. Ineffective regulatory framework

Our experience shows that the implementation of the existing policy (i.e. mainly the national management plans) has not been effective in achieving the objectives introduced in the CFP and the MEDREG. As already shown, essential goals such as environmental and socio-economic sustainability in western Mediterranean demersal fisheries are far from being attained.

As their name indicates, the existing national management plans cover areas which are under the jurisdiction of a single Member State. They manage the fisheries by 'fishing gear' and not by 'fisheries'. In addition, not all the relevant species are covered by the existing national

⁶¹ [STECF\(2016\)](#). Multiannual plan for demersal fisheries in the western Mediterranean (STECF 16-21). Publications Office of the European Union, Luxembourg; EUR 27758 EN, 128 pp.

⁶² 'SSB' means the total weight of all fish (both males and females) in the population that contribute to reproduction; also the biomass of all individuals beyond "age/size at first maturity". It is an indicator of the size of the stock.

management plans and most of them do not include measures aiming to achieve MSY. With no new action, unilateral measures by each Member State would continue in an un-harmonised and un-coordinated manner. Regionalisation and consultations within the Mediterranean Advisory Council (MEDAC) could contribute to identifying common conservation measures. However, a long negotiation process among Member States and fishing sectors would risk delaying the adoption of such measures and even the setting of common goals and targets.

Indeed, the current regulatory framework will likely continue being ineffective, as it does not integrate all the fisheries and the trans-boundary nature of the fish stocks. Besides, its limited scope of application would persist because it is intrinsic to the current regulatory framework itself. Given that the general dissatisfaction with the national management plans would hardly change, the poor implementation and the lack of ownership would likely remain in future too.

3. WHY SHOULD THE EU ACT?

The proportionality principle requires that the involvement of the institutions must be limited to what is necessary to achieve the objectives of the Treaties.

Under Article 3(1)(d) of the Treaty on the Functioning of the European Union (TFEU)⁶³, the EU has exclusive competence for the conservation of the marine biological resources under the CFP, managed directly through EU regulations. Furthermore, certain fish stocks and fishing vessels are trans-boundary, so action at Member State level alone is unlikely to be effective in achieving the objectives. To be effective, measures should be coordinated and apply to the whole area of distribution of the stock and to all fleets concerned (see Figure 2.3). 71% of the respondents to the public consultation agreed or strongly agreed that EU intervention is necessary, in the form of an EU multi-annual plan⁶⁴.

This initiative upholds the subsidiarity principle and fulfils its requirements.

However, one of the objectives of this proposal is to strengthen regional governance mechanisms, as provided for under Article 18 of the CFP. Regionalisation is intended to increase the involvement of Member States affected by the initiative and thus their ownership of the measures. The Commission's role is to ensure that the adopted measures fulfil the objectives of the CFP. Regionalisation constitutes an important shift from instrument-based to results-based management.

⁶³ [Consolidated version of the Treaty on the Functioning of the European Union](#) of 26 October 2012; OJ C 326, 26.10.2012, p. 47-390.

⁶⁴ [COM\(2016\)](#). Summary Report of the public consultation on a multiannual plan for the fisheries exploiting demersal stocks in the western Mediterranean Sea. Brussels, November 2016.

4. WHAT SHOULD BE ACHIEVED?

The general and specific objectives and their relation with the identified problems are presented in Figure 4.1 and detailed below.

4.1. General objectives

The general objectives are as follows:

- To achieve the objectives of the CFP (Article 2 of Regulation (EU) No 1380/2013) in the western Mediterranean demersal fisheries, namely with regards to ensuring that fishing activities are environmentally sustainable in the long-term and are managed in a way that allow economic, social and employment benefits;
- To improve the regulatory framework of the fisheries exploiting demersal stocks in the western Mediterranean Sea.

4.2. Specific objectives

The specific objectives are as follows:

- To achieve and maintain fishing mortality at the maximum sustainable yield (F_{MSY}) for all demersal stocks listed in Table 2.1 by 2020;
- To increase the selectivity of bottom trawls, particularly to exclude juvenile individuals;
- To ensure a sustainable fishing sector for the exploitation of demersal stocks in the western Mediterranean Sea;
- To provide an effective management framework, which is simpler, more stable and provides stakeholders with greater ownership.

This initiative will be consistent with the EU environmental legislation and in particular with the objective of achieving good environmental status by 2020, as set out in Article 1(1) of the MSFD. It will also contribute to ensuring that the conditions described in Descriptor 3 on healthy populations of commercial fish species are met.

Measures under this initiative would be taken in accordance with the best available scientific advice.

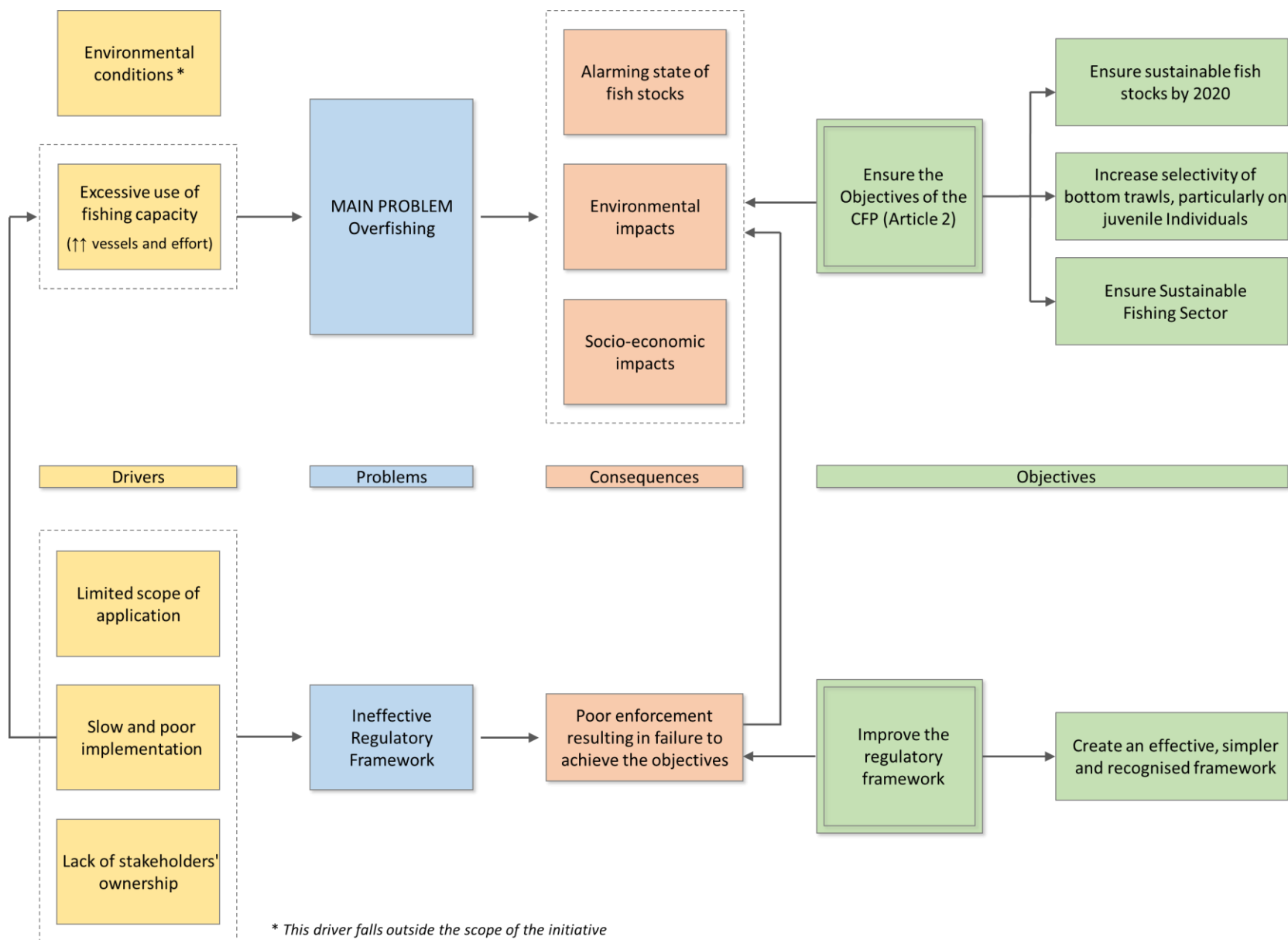


Figure 4.1 Schematic overview of the general objectives (green boxes, double line) and specific objectives (green boxes, single line) and their relationship with the existing problems (blue boxes), their drivers (yellow boxes) and consequences (rose boxes) in fisheries exploiting demersal fish stocks in the western Mediterranean Sea.

5. WHAT ARE THE VARIOUS OPTIONS TO ACHIEVE THE OBJECTIVES?

An assessment of a range of alternatives has revealed the policy options that are most relevant in achieving the objectives described in Section 4. Overall, four policy options were seriously considered: (i) no policy change or baseline; (ii) amending the current management framework; (iii) adopting a multi-annual plan at EU level; and (iv) establishing a multi-annual plan at international level.

Under the third option (multi-annual plan at EU level), thought has been given as to whether a management regime based on total allowable catches (TACs) would best achieve the policy objectives. This sub-option and the fourth option were discarded at an early stage. The reasons for this are provided below. The two most relevant policy options, together with the baseline, have been retained for further analysis and comparison.

5.1. Discarded policy options

A potential option that was discarded early on was that of ***adopting a multi-annual plan at EU level based on TACs***. This regime is meant to impose ceilings on the amount of fish caught in a certain time period (e.g. a year or a fishing season). It is also the measure most directly related to fishing mortality, which helps in providing scientific advice. On the other hand, various aspects of the Mediterranean demersal fisheries are likely to hamper the implementation of a TAC-based system.

Firstly, how should a TAC for different combinations of target stocks caught with different gears be set to guarantee the sustainability of all stocks and the profitability of the sector? It is recognised that using single-species TACs in highly multi-species, multi-gear fisheries is extremely complex. This is because the different quotas set for the various stocks can be exhausted at different rates. When this happens, fishermen may stop fishing and underuse the quota for other stocks, or continue fishing and discard or illegally land the surplus. This is especially likely to happen in the Mediterranean demersal fisheries, as the catch composition of a typical fishing day contains a wide number of species (often more than 10) and can change between and within fishing gears. For example, a bottom trawler could leave port in the early morning and make various fishing operations on the continental shelf before reaching its desired fishing ground located on the middle slope. The vessel could spend the day fishing on the slope and, when returning to port, it could still carry out a last operation on the continental shelf. On arrival in port, the landings would be the total catches caught in the various fishing operations in the different fishing grounds (each with different fish assemblages – see Figure 1.2). Besides, the large number of fishing vessels and landing places common to demersal fisheries in the western Mediterranean Sea makes for a very large number of ‘landing events’. When taking into account the various aspects of these fisheries (i.e. the number of fishing vessels, fishing gears, landing places and events, as well as the spatial and temporal variability of the catch composition and market fluctuations), it is evident that the equation becomes extremely complex.

The second reason derives from the substantial unreported catches observed in the Mediterranean Sea. Since most fisheries are small-scale vessels returning to port every day, the amount of landings per species is very low compared to other EU fisheries and often below the 50 kg threshold set in the Control Regulation (i.e. they are not declared catches, as many fishing vessels are exempt from the completion and submission of the fishing logbook, Article 14 of the Regulation). The black market is also considered one of the most important sources of unreported catches. In 2014, a European Parliament study highlighted that unreported catches in the Mediterranean demersal fisheries were estimated at around 30 to

35 % of total landings⁶⁵. The limited nature of the official fisheries data therefore seems inadequate as a basis for either setting or enforcing TAC and quotas, at least for the time being.

The respondents to the public consultation showed a preference for managing these fisheries through spatial/temporal closures, selectivity improvements and fishing capacity/effort ceilings over the setting of TACs. In their view the multi-species nature of demersal fisheries would be very difficult to address in a TAC-based system. Doing so might even complicate and delay management, as new problems such as choke species⁶⁶, higher discards or identifying a fair TAC/quota allocation would appear.

Another policy option initially considered was that of ***establishing a multi-annual plan at international level***. The relevance of this policy option is similar to the setting of a multi-annual plan at EU level, since the main elements of the plan could be defined in the same way (scope in terms of fish stocks, fisheries and area, targets and timeframes, safeguard measures). However, the multi-annual plan would differ in one respect: it would be almost exclusively located in the jurisdictional waters of the European Union. This is because the three Member States concerned have declared contiguous protection zones, either as economic exclusive zones or ecological protection zones (see bottom-left graph in Figure 2.3)^{67,68,69}. In addition, there are no international conservation obligations that extend beyond existing CFP and MEDREG rules. Therefore, there is no apparent added value in regulating these fisheries outside an EU framework.

At some point during the impact assessment process, two additional alternatives were very briefly mentioned. One reflected the fact that three respondents to the public consultation proposed another approach in which more local management plans would be implemented. This option was not considered for four reasons: (i) the broader distribution and transboundary nature of the fish stocks and certain fishing vessels; (ii) the incompatibility with the scientific advice – provided by GSA or group of GSAs; (iii) the difficulties to set in a coordinated and timely manner common conservation targets and measures in a coordinated and timely manner; and (iv) the existence of regionalisation tools incorporating the specificities of each sub-region.

In addition, and due to the alarming state of most demersal stocks in the western Mediterranean Sea, a more ambitious option such as the closure of the fisheries for a period of time (e.g. one year) was also considered. From an environmental viewpoint, this would be somehow beneficial both for marine biological resources and habitats. However, the associated socio-economic costs of this option would be enormous and would not find a long-term solution (such as creating an effective regulatory framework). Besides, this option would clearly fail to win the necessary political support.

⁶⁵ [European Parliament](#) (2014). The obligation to land all catches – Consequences for the Mediterranean. In depth analysis. Brussels, March 2014. ISBN: 978-92-823-5604-3. DOI: 10.2861/59268; 46 pp.

⁶⁶ A choke-species situation occurs when the available quota for a species is exhausted (long) before the quotas of the other species that are caught together in a fishery.

⁶⁷ [Décret n° 2012-1148](#) du 12 octobre 2012 portant création d'une zone économique exclusive au large des côtes du territoire de la République en Méditerranée; MAEJ1109102D, p.3.

⁶⁸ [Decreto No 209 del Presidente della Repubblica](#), 27 ottobre 2011, relativo all'istituzione di Zone di protezione ecologica del Mediterraneo nord-occidentale, del Mar Ligure e del Mar Tirreno; GU n. 293, 17.12.2011, p. 6.

⁶⁹ [Real Decreto 236/2013](#), de 5 de abril, por el que se establece la Zona Económica Exclusiva de España en el Mediterráneo noroccidental; BOE No 92, p. 3.

5.2. Retained policy options

5.2.1. Option 1: No policy change (baseline)

The first option is the status quo, or no policy change (i.e. the existing regulatory framework would continue to apply). It is used as a benchmark against which the alternative options will be compared.

The fisheries exploiting demersal stocks in the western Mediterranean Sea would continue to be managed through the national management plans adopted by France, Italy and Spain under the MEDREG (see Section 1.3.1 and Annex 6 for a detailed description). The geographical scope of the plans, confined to the territorial waters of the Member States, and the partial coverage of the fishing gears would remain unchanged.

Under this scenario, the CFP objectives (e.g. MSY) would also apply as they entered into force since 2014. The actions already planned by the Member States through the EMFF to strike a sustainable balance between fishing capacity and available fishing opportunities would feature as well.

The landing obligation for the demersal species defining the fisheries and subject to MCRSs has been in force since 1 January 2017. Under this option, the recent discard plan would remain in place for three years. After that, the landing obligation would apply to the whole fishery, with no exemptions (i.e. high survival rates)^{70,71}.

The Commission would continue to monitor the implementation of the national management plans, including their contribution to the CFP objectives. In the event of non-compliance with the existing management framework it would take the necessary steps, such as opening infringement proceedings.

5.2.2. Option 2: Amending the existing management framework

Under this option the current management tools, namely the national management plans, would be reviewed to include the CFP objectives.

The main aspects to be considered in the review would be: amendments to the current scope (in terms of fish stocks, fisheries and area covered); new conservation objectives such as MSY; quantifiable targets and timeframes; and new safeguards.

Member States would be in charge of reviewing existing national management plans since, in line with Article 19 of the MEDREG, they have been approved under their national legislation. As the plans entered into force at different times, Member States would have to agree on a mechanism to simultaneously review and adopt them. On the other hand, this option would not allow for new national management plans for several fishing gears relevant to these fisheries (e.g. longlines and static nets such as trammel nets and gillnets) because they are not included in Article 19 of the MEDREG, unless it is on a voluntary basis. Each Member State would also have to ensure adequate scientific monitoring of the national management plans.

Under Option 2, the Commission would act as a facilitator, steering the process and ensuring regional coherence in the measures contained in the national management plans. The

⁷⁰ In August 2017, the EC proposed to amend Article 15(6) of the CFP concerning the duration of discard plans. The amendment consist of the adoption of discard plans for a further total period of up to three years to facilitate the implementation of the landing obligation and until multi-annual plans are in place. For the purpose of this impact assessment report, the policy options have been described according to the current CFP, since at this stage it is not possible to anticipate the outcomes of the proposed amendment.

⁷¹ [COM\(2017\)424](#). Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) No 1380/2013 on the Common Fisheries Policy. Brussels, 11.08.2017.

Commission would also consult its scientific advisory body, the STECF, to assess the scientific basis for the plans.

Under this option it would be difficult to estimate and allocate the contribution of each fishing gear-based plan to the target F_{MSY} in a mixed fisheries context. In addition, keeping and amending the existing plans would make it difficult to achieve the objectives of bringing the landing obligation into effect. Implementation of the landing obligation (by fishery) in the current management framework (by fishing gears) would be difficult to achieve as it would be unclear and, in practice, nearly impossible to have different stocks subject to the landing obligation for each fishing gear-based plan. Furthermore, the recent discard plan would not be renewed after it expires (on 31 December 2019). The landing obligation would be thus applicable to the whole fishery, with no exemptions (i.e. high survival rates).

As with the baseline scenario, the Commission would continue to monitor implementation of the national management plans and, in the event of non-compliance, it would take the necessary steps, such as opening infringement proceedings.

5.2.3. Option 3: Adopting an EU multi-annual plan

This option would aim at ensuring that EU fishing fleets targeting demersal stocks in the western Mediterranean are regulated by a single and integrated regulatory framework at the EU level. Under this option, the national management plans would no longer be needed, as the multi-annual plan (together with the Fishing Opportunities Regulation) would cover the main conservation aspects of the fisheries concerned.

According to the CFP, multi-annual plans should be adopted as a priority and establish a common framework for the sustainable exploitation of the jointly exploited fish stocks. They should also contain conservation objectives such as MSY, together with quantifiable targets, timeframes, safeguard mechanisms, and provisions to implement regionalisation and the landing obligation. This means that each multi-annual plan should contain the same core elements, but should be tailored to reflect the specificities of a given fishery and sub-region.

Five main elements⁷² to be considered under this multi-annual plan are outlined below:

(i) The scope of the multi-annual plan in terms of fish stocks, fishery and area

Demersal fisheries in the western Mediterranean Sea are known for being highly multi-species and multi-gear (see Section 1.4). Under this option, a wide range of stocks and fishing gears would be included to fully cover the main aspects of the fishery.

Two groups of stocks have been identified on the basis of data availability (i.e. data-rich and data-poor stocks). Group 1 contains those stocks for which there are enough data to provide scientific advice (including the estimation of F_{MSY} and biological reference points such as B_{LIM} and B_{PA}). These are the main species driving demersal fisheries in the western Mediterranean. Depending on the GSA, they are hake (*Merluccius merluccius*), red mullet (*Mullus barbatus*), striped red mullet (*Mullus surmuletus*), giant red shrimp (*Aristaeomorpha foliacea*), deep-water rose shrimp (*Parapenaeus longirostris*), blue and red shrimp (*Aristeus antennatus*), Norway lobster (*Nephrops norvegicus*), anglerfish (*Lophius spp.*), common sole (*Solea vulgaris*), gilt-head seabream (*Sparus aurata*) and the European seabass (*Dicentrarchus labrax*). The STECF⁷³ and the respondents to the public consultation (see Annex 2) broadly supported including these stocks in a multi-annual plan.

⁷² These elements were also agreed in an [inter-institutional taskforce agreement \(April 2014\)](#).

⁷³ [STECF\(2016\)](#). Multiannual plan for demersal fisheries in the Western Mediterranean (STECF 16-21). Publications Office of the European Union, Luxembourg; EUR 27758 EN, 130 pp.

The EU multi-annual plan would also include a Group 2 consisting of demersal stocks that are commercially important and/or subject to the landing obligation, but for which data limitations have prevented the provision of scientific advice. Species such as wreckfish (*Polyprion americanus*), lobster (*Homarus gammarus*), crawfish (*Palinuridae*), together with seabreams (*Diplodus* spp.), pandoras (*Pagellus* spp.) and groupers (*Epinephelus* spp.), would fall into this category. For this group of species, the multi-annual plan would not fix concrete targets, but it would allow for the adoption of complementary measures such as technical measures.

The fishing gears included under this option would be bottom trawlers and, unlike for Option 2, passive gears such as trammel nets, gillnets, longlines and traps. The stakeholder consultation revealed broad support for including recreational fisheries, as total catches are considered significant. The multi-annual plan could contain provisions regulating recreational fisheries beyond those in the MEDREG (see Section 1.3.1). However, cross-cutting legislative tools providing for a common approach in all EU waters are thought to be more effective in addressing this issue. For instance, there are ongoing discussions about including some provisions on recreational fisheries in the future Technical Measures Regulation and, probably at a later stage, in the revised Control Regulation. Pending adoption of these regulations, the multi-annual plan would propose applying the regionalisation approach and introducing concrete measures for those recreational fisheries where the advice from appropriate scientific bodies indicates that there is a significant amount of catches of a particular stock.

Due to the trans-boundary nature of certain fish stocks (see stocks' boundaries in Annex 7), the geographical scope would be the wide area of the EU western Mediterranean Sea (i.e. GFCM GSAs 1, 2, 5, 6, 7, 8, 9, 10 and 11; see Figure 1.1). This area has similar environmental features and would cover the distribution of all EU vessels fishing in the western Mediterranean Sea. Moreover, this is the area covered by the PESCAMED high-level group, which implements regionalisation in the western Mediterranean basin.

(ii) Quantifiable targets and related timeframes

Quantifiable goals or targets would be used to turn the broad objectives of the multi-annual plan into practical results. Under the CFP, those targets would be set as the highest theoretical equilibrium yield that can be continuously taken on average from a stock under existing average environmental conditions without significantly affecting the reproduction process. This target is commonly called fishing mortality at MSY levels, or F_{MSY} . Under this option, some flexibility would be used to reflect the multi-species nature of the fisheries, through the use of F_{MSY} ranges (i.e. lower and upper values). These ranges would make for greater consistency in setting the management measures for the different stocks, as the lower and upper values would provide some room for manoeuvre.

Article 2(2) of the CFP sets the timeframe for achieving the objectives by 2015 where possible and, on a progressive, incremental basis, by 2020 at the latest for all stocks. In this case, the multi-annual plan would aim at achieving the goals by 2020⁷⁴.

(iii) Conservation reference points and safeguard measures

Besides the targets (i.e. F_{MSY} ranges), the multi-annual plan would also contain conservation reference points in terms of stock size. These points are, in fact, thresholds or limit values that indicate whether the fishery is in an undesirable situation (e.g. with a dangerously low spawning biomass). The plan would set for each stock a limit reference point (or biomass limit, B_{LIM}) indicating that the stock is in serious danger of collapse. To avoid getting too close to B_{LIM} , the plan would also contain a safety margin by incorporating a precautionary

⁷⁴ There is a high risk of not achieving the goals of the multi-annual plan in the proposed deadline. However, the initial goal of the initiative would be the one set by the CFP, so that is by 2020 at the latest.

reference point (or biomass precautionary, B_{PA}). This is set at a value that keeps the risk of falling below B_{LIM} and that takes into account uncertainties about the dynamics of that stock.

When either the precautionary or limit reference points are surpassed, immediate management action is needed. In this event, the multi-annual plan would contain safeguard measures to allow the stock to recover. Safeguard measures would be pre-planned and could cover a variety of steps, such as bringing fishing mortality below the lower value of the F_{MSY} range, altering the technical characteristics of the fishing gears, setting additional spatial/temporal closures, or even suspending the fishery for a certain period of time.

(iv) Management instrument to achieve the objectives

Until now, the management regime in the Mediterranean Sea has focused on limiting the number, type and size of fishing vessels or fishing gears (i.e. input controls) to regulate access to fisheries resources. The only regulatory tool for this has been the national management plans adopted under the MEDREG. As described above, this has proven ineffective in meeting the objectives set in the MEDREG and, subsequently, in the CFP. However, the main issue for fisheries management in the western Mediterranean Sea is not the effort management regime per se, but rather the lack of timely and coordinated actions commensurate to deal with the scale of the problem and follow the scientific recommendations.

As the broad stakeholder consultation suggests and given the difficulties to introduce TAC at this stage (see explanation in Section 5.1), the multi-annual plan would back a **new effort management regime** for demersal fisheries in the western Mediterranean Sea. This regime would attempt to tackle the challenges of the multi-species nature of the fisheries through a combination of total allowable effort implemented through days at sea and technical measures. Unlike the present situation, the Council would set a maximum total effort annually for each pre-defined effort group (e.g. bottom trawlers above 18 metres in overall length), possibly capped with weekly or monthly catch limits for the larger fishing vessels and in accordance with the scientific advice. This mechanism would periodically assess current levels of fishing mortality and progressively adjust to the point where assessments show that the stocks are being fished at the F_{MSY} . The benefits of this reformed effort regime compared to the current national management plans adopted under the MEDREG (also based on effort limitations) would be the setting of common goals and measures to be jointly implemented by the Member States concerned; greater transparency among Member States and the Commission; and closer monitoring of fishing activity, as effort would be regularly adjusted by the Council. Should the evaluation show that the new fishing effort regime fails, the multi-annual plan would foresee a possible replacement by output controls such as TAC.

Another important aspect would be a greater use of closures for certain periods of the year, areas and types of fishing gear, in particular bottom trawlers. These closures would primarily aim at protecting spawning and nursery grounds within the geographical scope of the plan. They might take the form of fish stock recovery areas (Article 8 of the CFP), with fishing activities restricted or prohibited in order to help conserve living aquatic resources and marine ecosystems, including biologically sensitive areas. Additional technical measures such as using sorting grids or setting new MCRSs for target and by-catch species would be strongly encouraged.

(v) Measures to implement the landing obligation

In the Mediterranean Sea the landing obligation for demersal species entered into force in January 2017 with the adoption of a three-year discard plan. The main elements set out in the discard plan are a list of vessels, *de minimis* exemptions and survivability exemptions⁷⁵.

⁷⁵ [Commission Delegated Regulation \(EU\) 2017/86](#) of 20 October 2016 establishing a discard plan for certain demersal fisheries in the Mediterranean Sea; OJ L 14, 18.1.2017, p. 4–8.

Under Article 18 of the CFP, after the discard plans have expired, details on implementing the landing obligation should be adopted as part of a multi-annual plan and, where relevant, further specified in accordance with the regionalisation approach. This means that the multi-annual plan may include an empowerment to adopt delegated acts to enforce the landing obligation, including for existing and future exemptions.

The option of including exemptions in the plan itself has been discarded for several reasons. Firstly, the discard plans are constantly evolving. PESCAMED has brought forward two joint recommendations for demersal fisheries in the western Mediterranean Sea, which cover the initial stages of the landing obligation only (i.e. 2016/2017). Further joint recommendations for the subsequent step will follow. In addition, some exemptions might still change because, following the STECF evaluation, they have been granted on condition that Member States conduct further scientific studies that justify the exemptions. The adaptive, flexible approach of regionalisation is therefore clearly the preferred option for this element of the plan.

Lastly, a schematic view of how the multi-annual plan would be implemented, by whom and over what time line, is provided in Figure 5.1.

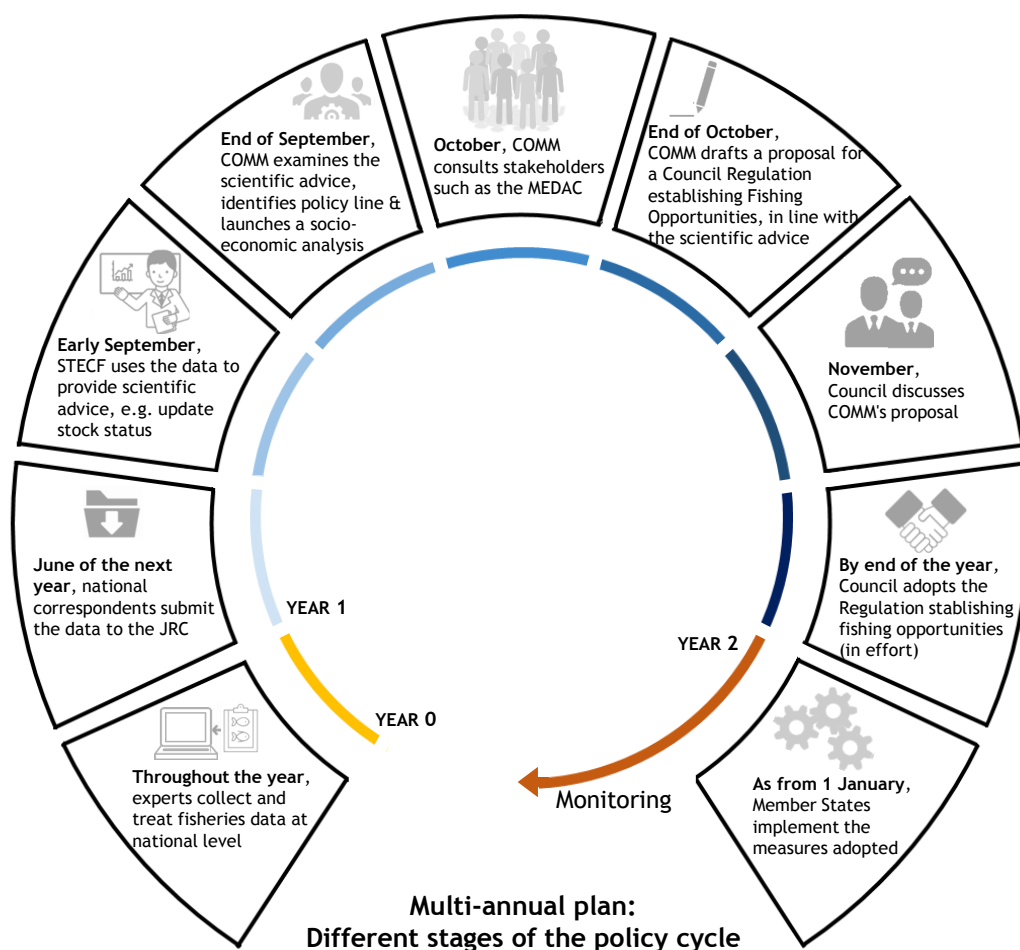


Figure 5.1 Diagram of the different stages of the policy cycle. The multi-annual plan, as the main regulatory framework, would define among others the management objectives, the new effort regime and the safeguard mechanisms. On an annual basis, the Council Regulation establishing fishing opportunities would set out the rules for the exploitation of demersal stocks in the western Mediterranean Sea, in line with the policy cycle. ‘Year 0’ corresponds to the year before the adoption of the multi-annual plan; ‘Year 1’ corresponds to the year the multi-annual plan enters into force and when the Regulation establishing fishing opportunities adjusts fishing effort levels; and ‘Year 2’ corresponds to year of the implementation of the measures adopted at Member States’ level. During Year 2 a monitoring of the measures will be carried out through the data collection, thereby re-launching the policy cycle. ‘JRC’ means Joint Research Centre; ‘STECF’ means Scientific, Technical and Economic Committee for Fisheries; and ‘COMM’ means European Commission.

6. WHAT ARE THE IMPACTS OF THE DIFFERENT POLICY OPTIONS AND WHO WILL BE AFFECTED?

This section assesses, for the main target stocks^{76,77}, the likely environmental, social and economic impacts of the retained policy options against the baseline. This work was carried out by the STECF and Commission services^{78,79,80}.

The following indicators have been identified:

- **Environmental:** (i) the stock size or SSB; (ii) the percentage of stocks that has recovered (where recovery means the moment at which a stock shows a less than 5 % probability of its SSB being below B_{PA}); (iii) the probability of reaching the fishing mortality targets for all the stocks.
- **Economic:** the number of fleet segments at financial risk; the number of vessels affected.
- **Social:** the effect on jobs (as FTEs).

All of the impacts described below are expected to be especially relevant to SMEs, as the large majority of fishing firms involved in exploiting demersal stocks in the western Mediterranean Sea are micro-enterprises (see Section 2.3 on the affected stakeholders).

6.1. Option 1: No policy change at EU level (baseline scenario)

The environmental and socio-economic impacts of the baseline scenario are presented in Section 2.4 (evolution of the problem) and summarised in Table 6.1.

⁷⁶ For the purpose of assessing environmental impacts, target stocks means: the two stocks of hake (*Merluccius merluccius*) in GSAs 1-5-6-7 and GSAs 9-10-11; the five stocks of red mullet (*Mullus barbatus*) in GSAs 1, 5, 6, 7, 9, 10; one stock of striped red mullet (*Mullus surmuletus*) in GSA 5; the two stocks of anglerfish (*Lophius budegassa*) in GSAs 5 and 6; the two stocks of blue and red shrimp (*Aristeus antennatus*) in GSA 5 and 6; the three stocks of giant red shrimp (*Aristeomorpha foliacea*) in GSAs 9, 10, 11; and the three stocks of deep-water rose shrimp (*Parapenaeus longirostris*) in GSAs 1, 5, 6, 9. All in all, environmental impacts have been assessed for 18 of 29 assessed stocks. The 11 additional stocks listed in Table 2.1 were not assessed for two main reasons: they are new assessments carried out after the STECF meeting (e.g. sole and European seabass in GSA 7); and there were constraints on timing and data access.

⁷⁷ For the purpose of assessing socio-economic impacts, target stocks means: all catches of the eight most commercially important species in the western Mediterranean Sea, FAO area 37.1.1 (i.e. hake, red mullet, anglerfish, blue whiting, giant red shrimp, deep-water rose shrimp, Norway lobster and blue and red shrimp).

⁷⁸ [STECF\(2016\)](#). Multiannual plan for demersal fisheries in the Western Mediterranean (STECF 16-21). Publications Office of the European Union, Luxembourg; EUR 27758 EN, 130 pp.

⁷⁹ [JRC\(2017\)](#). Analysis of success of achieving fishing levels for the western Mediterranean Multi-annual plan. Publications Office of the European Union, Luxembourg; EUR 28706 EN; 19 pp.

⁸⁰ The socio-economic analysis was carried out by the Commission services, May 2017.

Table 6.1 Results of the analysis of the options, in terms of socio-economic indicators (i.e. number of fleets at financial risk, and number of vessels and jobs affected) and environmental indicators (i.e. catch and SSB for hake in GSAs 1-5-6-7 and red mullet in GSA 11, in tonnes; percentage of stocks recovered and probability that all stocks will reach FMSY). Table A provides the short-term results (i.e. by 2020 for the environmental indicators and by 2022 for the socio-economic indicators); Table B provides the medium-term results (i.e. by 2025 for both the socio-economic and environmental indicators). **Source:** STECF and Commission services^{66, 67, 68}.

(A) Impacts in the short-term (i.e. to 2020/22)

	No of fleets at financial risk	No of vessels affected	Jobs affected (FTEs)	Catch Hake GSA 1-5-6-7 (tonnes)	Catch Red mullet GSA 11 (tonnes)	SSB Hake GSA 1-5-6-7 (tonnes)	SSB Red mullet GSA 11 (tonnes)	Percentage of stocks recovered	Probability of all stocks reaching FMSY
Current situation (2015)	4	386	1 617	3 834	262	6 739	133	11 %	0 %
Option 1: Baseline	5	628	2 861	4 897	286	6 662	161	16 %	0 %
Option 2: Amend current framework	6	538	1 880	3 615	156	10 999	527	33 %	22 %
Option 3: Adopt an EU multi-annual plan	8	1 415	6 193	3 537	157	11 725	579	36 %	32 %

(B) Impacts in the medium-term (i.e. to 2025)

	No of fleets at financial risk	No of vessels affected	Jobs affected (FTEs)	Catch Hake GSA 1-5-6-7 (tonnes)	Catch Red mullet GSA 11 (tonnes)	SSB Hake GSA 1-5-6-7 (tonnes)	SSB Red mullet GSA 11 (tonnes)	Percentage of stocks recovered	Probability of all stocks reaching FMSY
Current situation (2015)	4	386	1 617	3 834	262	6 739	133	11 %	0 %
Option 1: Baseline	9	1 438	6 234	4 784	315	6 585	172	5 %	0 %
Option 2: Amend current framework	4	763	3 696	4 600	305	21 048	1 393	72 %	28 %
Option 3: Adopt an EU multi-annual plan	1	52	156	4 395	312	22 597	1 474	70 %	36 %

6.2. Option 2: Amending the current management framework

Under this option, the current management tools, namely the national management plans, would be reviewed to take on the objectives of the CFP (e.g. MSY).

Management measures would apply exclusively to bottom trawlers (i.e. fishing gear subject to national management plans) to attain F_{MSY} levels for the assessed stocks. This option includes the actions already planned in the French, Italian and Spanish EMFF operational programmes. In addition, it has been assumed that the Member States would adopt additional conservation measures at national level in response to the commitments undertaken in the ‘Catania process’. All these actions were translated as a reduction of 20% of the existing fishing effort compared to the baseline.

For simplification, the following sub-sections will describe the results of the simulations for hake in the GSAs 1-5-6-7 and red mullet in GSA 11. More detailed information on all assessed stocks is available in Annex 9.

6.2.1. Environmental impacts

The STECF analysis suggests that the **SSBs** of the assessed stocks are expected to recover as a result of fishing effort reductions:

- Under Option 2, by 2020 the SSB of hake in GSAs 1-5-6-7 would be 10 999 tonnes, 40 % higher than the baseline. A similar pattern was observed for red mullet in GSA 11, for which the SSB would be 527 tonnes, 70 % higher than the baseline.
- Under Option 2, by 2025 the SSB of hake in GSAs 1-5-6-7 would be 21 048 tonnes, 68 % higher than the baseline. The SSB of red mullet in GSA 11 would be 1 393 tonnes, 87 % higher than the baseline.

Two additional indicators were tested to give an overview of the trends in all assessed stocks. Under Option 2, **approximately 72 % of the assessed stocks would recover to SSB levels above the B_{PA} precautionary reference point by 2025. However, the probability of achieving fishing mortality targets for all stocks would be only around 28 %**. The simulations suggest that, under Option 2, neither indicator would be fully met. Nevertheless, this scenario produces more positive results than the baseline (where a mere 5 % of demersal stocks would recover above B_{PA} levels and 0 % would be exploited at F_{MSY} by 2025).

6.2.2. Socio-economic impacts

As a consequence of the substantial reductions to meet F_{MSY} targets, this option would put **6 fleet segments at financial risk by 2022** (one fleet segment more than the baseline). They are the French and Spanish bottom trawlers between 18 and 40 metres in overall length and the large Italian bottom trawlers of 24 to 40 metres in overall length. **The 6 fleet segments have 538 vessels, 1 880 FTE fishermen and 940 jobs in ancillary activities at risk.**

The effort reductions are expected to slightly increase the productivity of the stocks and, consequently, total catches would also increase. Under Option 2, **only 4 fleet segments would be at financial risk by 2025** (five fleet segments fewer than the baseline). **The affected fleet segments have 763 vessels, 3 696 FTE fishermen and 1848 jobs in ancillary activities at risk.**

6.3. Option 3: Adopting an EU multi-annual plan

This option aims at ensuring that EU fishing fleets targeting demersal stocks in the western Mediterranean Sea are regulated by a single, integrated regulatory framework at EU level.

Under this option, management measures would apply to all fishing gears involved in attaining F_{MSY} levels for the target stocks. As with Option 2, this option includes the measures already planned in the French, Italian and Spanish EMFF operational programmes and any possible additional conservation measures adopted at national level in response to the commitments undertaken in the ‘Catania process’ (i.e. a 20 % reduction in the existing fishing effort). Besides, under Option 3, additional reductions would be carried out to reach the F_{MSY} targets set for all stocks.

6.3.1. Environmental impacts

As with the previous option, the **SSBs** of the assessed stocks are expected to recover as a result of the fishing effort reductions:

- Under Option 3, by 2020 the SSB of hake in GSAs 1-5-6-7 would be 11 725 tonnes, 44 % higher than the baseline. The SSB of red mullet in GSA 11 would be 579 tonnes, 72 % higher than the baseline.
- Under Option 3, by 2025 the SSB of hake in GSAs 1-5-6-7 would be 22 597 tonnes, 71 % higher than the baseline. The SSB of red mullet in GSA 11 would be 1 474 tonnes, 88 % higher than the baseline.

In addition, under Option 3, **approximately 70 % of the assessed stocks would recover to SSB levels above the B_{PA} precautionary reference point by 2025**. However, the **probability of achieving fishing mortality targets for all stocks would remain low, at around 36 %**. The simulations suggest that, under Option 3, neither indicator would be fully met. Nevertheless, this scenario produces substantially better results than the baseline and also than Option 2 in relation to change F_{MSY} .

6.3.2. Socio-economic impacts

As a consequence of the substantial reductions needed to attain fishing mortality targets, this option would put **8 fleet segments at financial risk by 2022** (three fleet segments more than the baseline). They are the French, Spanish and Italian bottom trawlers between 18 and 40 metres in overall length and some Spanish passive gears (e.g. longliners between 6 and 12 metres). **The 8 fleet segments have 1 415 vessels, 6 193 FTE fishermen and 3 100 jobs in ancillary activities at risk.**

After the reductions a recovery in the stocks is expected, leading to an increase in catches. **By 2025 there would be an improvement in economic performance across all fleets, with only 1 fleet segment unprofitable** (under the baseline scenario nine fleet segments would be at financial risk). **The affected fleet segment (i.e. Spanish netters between 12 and 18 metres in overall length) has 52 vessels, 156 FTE fishermen and 78 jobs in ancillary activities at risk.**

7. HOW DO THE DIFFERENT OPTIONS COMPARE?

This section compares the different policy options with regard to their effectiveness, efficiency, coherence and acceptability. The results are presented in summary tables with a comparison of the relative positive, negative or neutral impacts, compared to the baseline. The preferred option and the reasons for choosing it are given at the end of this section.

7.1. Effectiveness

This sub-section looks at effectiveness, or how successful the different policy options would be in achieving the specific objectives set out in Section 4.2 (i.e. MSY by 2020, a sustainable fishing sector, improved selectivity particularly on juvenile individuals, and an effective management framework).

(i) To achieve and maintain fishing mortality at the maximum sustainable yield (F_{MSY}) for all demersal stocks by 2020

Under the baseline (Option 1), this objective will not be achieved at all, as the vast majority of stocks would fall far short of F_{MSY} by 2020 and even beyond.

Options 2 and 3 would have positive environmental impacts compared with the baseline. In particular, the ‘Percentage of stocks recovered’ indicator yielded a very positive impact: given that the baseline would result in a mere 5 % recovery, whereas Options 2 and 3 would result in 70-72 % by 2025⁸¹. The analysis of the ‘Probability of all stocks reaching F_{MSY} ’ indicator gave a positive impact, as options 2 and 3 performed better than the baseline, but it is still not ideal (28 % - 36 %). Bearing in mind the current bad state of most stocks and the complexity of the fishery⁸², these results allow to strike a satisfactory and realistic balance between the environmental and socio-economic objectives of the CFP.

The multi-annual plan (Option 3) would also introduce biomass safeguards that would require action to recover stocks that fall outside safe biological limits and a novel mechanism in which the Council would adopt for the first time fishing opportunities (in terms of effort) on annual basis to carry out a real reduction of the fishing mortality in accordance with the scientific advice. In addition, achieving the F_{MSY} objective under Option 2 is inherently riskier than under Option 3, for two basic reasons: (i) far more conditions need to be met to deliver an effective management framework (e.g. greater cooperation, harmonisation, coordination among Member States); and (ii) even if the current framework is amended, there is no guarantee that the poor implementation observed until now will end. Hence, assumed mortality reduction of 20 % may not materialise. Therefore, the likelihood of attaining sustainable fish stocks is greater for Option 3 (++) than Option 2 (+).

(ii) To increase the selectivity of bottom trawls, particularly on juveniles individuals

Under options 2 (amended framework) and 3 (multi-annual plan), additional technical measures such as spatio/temporal closures for nursery areas would be adopted in order to improve the

⁸¹ The comparison of the impacts was made in the medium-term (i.e. to 2025), as it is too early to see any likely benefit from the different options by 2020. Therefore, the initial goal set in the CFP of reaching F_{MSY} by 2020 will most likely not be attained because the policy options would only be implemented for few years.

⁸² There are two key aspects to consider; (i) the vast majority of the stocks are overexploited and many of them at alarming levels; and (ii) the time-frame to reach sustainability (either 2020 or 2025) is too short to observe a full achievement of F_{MSY} targets. In addition, the multispecies nature of the fisheries (Figure 1.2) increases the difficulty to set commensurate fishing levels for all of the stocks at once. The inter-species interactions also play an important role, as the recovery of one species can affect negatively the status of another species (e.g. predator-prey relationship).

fishing pattern and so increase the selectivity of bottom trawls. Therefore, both options would perform better than Option 1 (baseline). However, under Option 3, technical measures would play an essential role complementing the new effort management regime. They might take the form of fish stock recovery areas (Article 8 of the CFP), with fishing activities restricted or prohibited in order to help conserve living aquatic resources and marine ecosystems, including biologically sensitive areas. In particular, spatio-temporal closures would also reserve the coastal zone for more selective gears in order to protect nursery areas and safeguard small-scale fisheries. Additional technical measures such as using sorting grids or setting new MCRs for target and by-catch species would be strongly encouraged.

(iii) To ensure a sustainable fishing sector

A sustainable fishing sector is directly related to, and depends on meeting the objective of exploiting fish stocks sustainably. To have a sustainable fisheries sector, the resource needs to be exploited sustainably.

Therefore, in terms of achieving this objective, Option 2 (amended framework) and Option 3 (multi-annual plan) are far more effective than Option 1 (baseline) in the medium term (i.e. by 2025). Moreover, Option 3 would deliver a better socio-economic performance than Option 2, as the number of fleets at financial risk and the number of vessels and jobs affected would be minimal. The affected fleet segment (i.e. Spanish netters between 12 and 18 metres in overall length) has 52 vessels, 156 FTE fishermen and 78 jobs in ancillary activities at risk.

As shown in other sea basins, multi-annual plans have proven effective in increasing the number of stocks fished at sustainable levels and the economic performance of many fleets in the long-term, especially for small-scale fisheries⁸³.

(iv) To provide an effective management framework which is simpler, more stable and provides stakeholders with greater ownership

Simplification

As described in the problem definition, the current management framework is complex. A simpler, more stable and more transparent framework would markedly improve the situation. By definition, options 1 and 2 do not provide any simplification, as they would not alter the existing regulatory framework.

In the short term Option 3 would not lead to simplification compared to the baseline, as Member States and the fishing sector would need to adapt to a new management instrument in the form of a multi-annual plan. However, simplification could be expected after this transitional period, because the multi-annual plan would replace provisions currently spread across national management plans and would make the various management tools used for this fishery coherent.

Option 3 would also provide for a simpler and more transparent system than the baseline for translating scientific advice into management measures. Scientists would provide their scientific advice on a yearly basis, including effort limits to ensure sustainable fishing levels, and this would then be translated into a yearly Commission proposal in the fishing opportunities regulation.

Option 2 does not provide any simplification, but instead offers further complications in the short term, as the national management measures would need to be changed. Revising the

⁸³ [COM\(2017\)368](#). Communication from the Commission on the State of Play of the Common Fisheries Policy and Consultation on the Fishing Opportunities for 2018. Brussels, 5.07.2017.

current management framework is a complex process and could add complexity and administrative burden for the Commission and national administrations alike. Even if the current framework is improved, under Option 2 the number of management instruments (three national management plans) would still remain as high as under the baseline.

Greater stability

As described in the problem definition, with options 1 and 2 there is a distinct lack of stability and predictability with the management measures in place, which is a problem for the fishing sector. Option 3 would provide more stability and predictability to Member States and the industry compared to Option 1. With a multi-annual plan, the process would be clearer and predictable, thanks to the yearly setting of fishing opportunities (in terms of fishing effort). Option 3 would also provide more transparency regarding the respective share of effort that each Member State can allocate in a given year.

Under Option 2, the national management plans, even if improved, would still be open to modifications and thus there would be no more stability compared to the baseline.

Better ownership

One of the cornerstones of the new CFP is the regionalisation process, as a means of increasing ownership of management measures by operator and Member States. Under the baseline, and even if amended (Option 2), regionalisation could not be achieved. At best, the existing management plans adopted under the MEDREG could be updated after regional consultations and agreement, provided that Member States were willing to take part in such a voluntary exercise or regional consultation and to update their national management plans in line with regionally agreed measures.

However, the multi-annual plan (Option 3) would provide the legal basis for regionalisation, as intended in the CFP, on the basis of joint recommendations. Under Option 3, Member States could agree on aspects such as conservation measures for fish stocks, including where to establish fish stock recovery areas (protected areas), or measures to gradually eliminate discards. In turn, this is likely to result in greater ownership of the adopted management measures, which would have been developed with consideration for the regional specificities of the western Mediterranean Sea.

Table 7.1 Comparison of options for their effectiveness by 2025.

Options	<i>Option 1 – Baseline</i>	<i>Option 2 – Amended framework</i>	<i>Option 3 – EU multi-annual plan</i>
To achieve and maintain fishing mortality at maximum sustainable yield (F_{MSY}) for all demersal stocks	0	+	++
To increase selectivity of bottom trawls, particularly on juveniles individuals	0	+	++
To ensure a sustainable fishing sector	0	+	++
To provide an effective management framework which is:			
– simpler	0	-	+/-
– more stable	0	0	+
– provides greater ownership	0	0	+

Key: 0 = neutral impact, + = positive impact, ++ = very positive impact, - = negative impact, -- = very negative impact, +/- = both positive and negative impacts.

7.2. Efficiency

Efficiency evaluates the cost-effectiveness of the different options in delivering the objectives. The costs are considered as regards socio-economic impacts (e.g. to what extent employment would be affected) and administrative burden; the benefits are considered as regards environmental impacts (e.g. percentage of stocks recovered). The results of the comparison are summarised in Table 7.2.

According to Section 7.1, Option 3 (multi-annual plan) would be more effective than Option 1 (baseline) and Option 2 (amended framework) with respect to meeting the **environmental objectives** of this initiative.

As regards the **socio-economic costs**, options 2 and 3 appear to result in greater costs overall in the short term than Option 1, in particular in terms of overall numbers of vessels and jobs affected. However, in the medium term (i.e. 2025), the socio-economic costs are expected to decrease as stock status improves. Under Option 3, the socio-economic performance (i.e. fleet at financial risk, number of vessels and jobs affected) is expected to improve across all fleets by 2025, with only one fleet segment at financial risk. Therefore, Option 3 delivered a very positive impact (++) and Option 2 a positive impact (+).

As regards **administrative burden**, under Option 3 the setting of fishing effort levels would be part of the annual proposal for fishing opportunities and thus would not cause any major additional burden. As for the Member States, putting in place the new effort management system may lead to some additional administrative costs, but this could be catered for through EMFF support (Article 36 of the EMFF). After a transitional period, it is expected that the administrative costs (equivalent to maintaining the established regulatory framework) would fall and be more in line with the benefits of achieving the goals set.

Overall, **Options 3** deliver more positive environmental and socio-economic impacts than the baseline and Option 2 by 2025.

Table 7.2 Comparison of options for their environmental and socio-economic costs and administrative burden by 2025.

Options	Option 1 – Baseline	Option 2 – Amended framework	Option 3 – EU multi-annual plan
Environmental impacts:			
– Percentage of stocks recovered	0	++	++
– Probability all stocks reach F_{MSY}	0	+	++
Socio-economic impacts:			
– Fleets at financial risk	0	+	++
– No of vessels affected	0	+	++
– Jobs affected	0	+	++
Administrative burden	0	0	+/-

Key: 0 = neutral impact, + = positive impact, ++ = very positive impact, - = negative impact, -- = very negative impact, +/- = both positive and negative impacts.

7.3. Coherence

The **Common Fisheries Policy** is the main policy with which the initiative should be coherent, as it is the overarching policy for managing fisheries in the EU. Option 1 (baseline) is not coherent with the CFP's overall objectives, as it does not provide long-term sustainability for the western Mediterranean demersal stocks or an appropriate legal framework for regionalised decision-making. Option 2 (amended framework) is coherent with some CFP objectives (e.g. sustainability), but not all (e.g. regionalisation). Option 3 (multi-annual plan) is fully coherent with the CFP, as it is by far the preferred tool for managing the sustainable exploitation of fish stocks. Besides, the content of the multi-annual plans has already been agreed and pre-defined in the CFP (Article 10).

Outside fisheries, a closely-related EU policy, the **Marine Strategy Framework Directive (MSFD)**, seeks to achieve 'good environmental status' for EU marine waters by 2020. In particular, the MSFD aims to ensure that the population of commercial fish species is healthy (Descriptor 3) and that elements of food webs ensure long-term abundance and reproduction (Descriptor 4). Option 1 would not be coherent with these policy objectives, because it would not enable fish stocks to recover to a healthy state and to be fished at sustainable levels. Options 2 (amended framework) and 3 (multi-annual plan) would be fully coherent with the MSFD objectives, as both options integrate the objective of sustainable fisheries.

A key overarching document of relevance to initiatives in all policy areas, is the **EU Charter of Fundamental Rights**⁸⁴, and in particular Article 37, according to which environmental protection and a better quality of the environment must feature highly in EU policies and be in line with the sustainable development principle. As for previous policies, Option 1 would not be coherent with this policy objective, while options 2 and 3 would be fully coherent with it.

7.4. Acceptability

Most stakeholders, including the three Member States concerned, MEDAC and the fishing sector, agree that a multi-annual plan (Option 3) is preferable to option 2 (amended framework). More precisely, nearly three quarters of respondents to the **public consultation** agreed or strongly agreed that a multi-annual plan would be the best option to manage demersal fisheries in the western Mediterranean Sea.

Technical measures (e.g. spatial/temporal closures) combined with fishing effort limitations, such as limitations on the number of fishing days, enjoyed the broadest support. The option expressed by the respondents is in line with the management measures proposed in the multi-annual plan (Option 3), which will certainly be widely accepted – more so than if the plan had proposed TACs. On the other hand, stakeholders might be dissatisfied with the fact that there are no additional provisions on control. However, given the likely upcoming revision of the Control Regulation, it would have been counterproductive to anticipate new control measures.

The EU has provided, and continues to provide **financial assistance** to Member States, to the fishing industry and to coastal communities to help them adapt to changing conditions in the sector and become economically resilient and ecologically sustainable. The EMFF specifically provides funding tools to help fishermen to transit to sustainable fishing. It contains provisions for offering support to fishermen to stop fishing temporarily or permanently, to retrain for a different career, to diversify their sources of income (away from fishing) and to replace gears to be more selective. Some of these measures are conditional on the fishery being covered by an EU multi-annual plan.

⁸⁴ [Charter of Fundamental Rights of the European Union \(2012/C 326/02\)](#); OJ C 326, 26.10.2012, p. 391–407.

All in all, the multi-annual plan is seen as an opportunity to improve the current ineffective regulatory framework for the fisheries exploiting demersal stocks in the western Mediterranean Sea. The broad consultations and public campaigns (see MEDFISH4EVER declaration) carried out so far as part of the ‘Catania process’ have created a very positive momentum in which stakeholders are ready to take action, mainly in the form of multi-annual plans.

7.5. The preferred option

Taking into account all the evidences collected and analysed through the Impact Assessment process, the preferred option is **Option 3: a multi-annual plan at EU level**. The reasons for this are listed below:

- As shown in Section 2, the vast majority of demersal stocks in the western Mediterranean Sea are in an alarming state. Besides, the current regulatory framework (i.e. national management plans) is ineffective due to its limited scope (e.g. some fishing gears are not covered), poor implementation (e.g. fishing effort has not been adapted to sustainable levels) and widespread low uptake from stakeholders.
- Given the trans-boundary nature of certain fish stocks and fleets, European fisheries must be managed jointly among the Member States involved; hence the need for a multi-annual plan at EU level (Section 3).
- The broad consultation indicates that most stakeholders (public administrations, fishing sector, NGOs and general public) consider an EU multi-annual plan as the best option to manage demersal fisheries in the western Mediterranean Sea.
- The multi-annual plan is more coherent with the reformed CFP, particularly with the objectives defined in Section 4, as it is by far the preferred tool for managing the sustainable exploitation of fish stocks.
- As indicates sections 6 and 7, the likelihood of attaining sustainable fish stocks is greater for the multi-annual plan (Option 3) than the amended framework (Option 2). In addition, achieving the F_{MSY} objective under Option 2 is inherently much riskier than under Option 3, as: (i) far more conditions need to be met to deliver an effective management framework; and (ii) even if the current framework is amended, there is no guarantee that the poor implementation observed until now will end.
- Section 7 also shows that the multi-annual plan is streamlined (one main regulatory framework), more stable (it considers the long-term perspective) and more transparent (as the three Member States concerned would jointly adapt current fishing mortalities to sustainable levels through a Council Regulation) than the amended framework.
- Multi-annual plans have proven effective in boosting the number of stocks fished at sustainable levels and the economic profitability of the fishing sector in other sea basins.
- As will be shown in Section 8, the multi-annual and annual adjustment of fishing effort to the target MSY will allow for closer monitoring by the Commission, while ensuring better enforcement of the measures adopted.

8. HOW WOULD ACTUAL IMPACTS BE MONITORED AND EVALUATED?

This section identifies the monitoring and evaluation arrangements needed to track the intended results of this initiative. In addition, a set of core indicators has been defined for the preferred option, the multi-annual plan.

8.1. Monitoring

Under Article 10(2) of the CFP, quantifiable indicators can be used for the periodic monitoring and assessment of progress in achieving the targets of the multi-annual plans. The operational objectives and the monitoring indicators would be the following:

Operational objectives	Monitoring indicators (and frequency)
1. Ensuring that the Spawning Stock Biomass (SSB) of the demersal stocks is above the precautionary levels (B_{PA}) specified in the plan	SSB (tonnes) Annually
2. Ensuring that the level of fishing mortality is in line with the F_{MSY} targets defined in the plan	Total catch (tonnes) Annually
3. Ensuring that Member States effort levels remain within the effort levels, as set out in a Council decision	Fishing days Quarterly

Monitoring of some of the **effects of management measures** is part of the routine work associated with the implementation of the CFP. The data required to monitor the three operational indicators are already collected by Member States under the DCF.

The Commission's fisheries advisory body, the STECF, already provides regular scientific advice on all the demersal stocks concerned (i.e. hake, red mullet, striped red mullet, monkfish, sole, European seabass, gilthead seabream, blue and red shrimp, deep-water rose shrimp, giant red shrimp and Norway lobster), including estimating their stock size (operational objective 1). The Commission would ensure that the STECF work programme continues to include providing scientific advice for these stocks every year.

Member States are required to submit to the Commission quarterly catch and effort data for species managed under effort regimes. This would allow for the monitoring of operational objectives 2 and 3 above.

In addition, the **socio-economic impacts** of the plan should be monitored. Every year since 2010 the STECF has assessed the EU fleet's economic performance on the basis of Member States' data collection under the DCF (including an assessment of employment, profit and salary levels). The Commission would ensure that this annual assessment continues so that the socio-economic impacts of the multi-annual plan can be monitored.

In short, the reference data are available and a process is in place to monitor the three operational objectives above, along with the socio-economic impacts of the multi-annual plan.

There are, however, some aspects, such as **administrative burden**, whose monitoring is not performed routinely and which may need an ad hoc system. Monitoring the **satisfaction of the fishing industry** could also be carried out – for example through regular participation at the focus groups of the Mediterranean Advisory Council.

8.2. Evaluation

As far as evaluation is concerned, Article 10(3) of the CFP stipulates that multi-annual plans must provide for their revision after an initial ex-post evaluation, in particular to take account of changes in scientific advice.

The plan, and its impacts, should be assessed by the STECF five years after its entry into force. The Commission would then report to the European Parliament and Council on the results. An earlier evaluation is not workable, due to fact that there is a significant time lapse between implementation of the multi-annual plan and when the data required for evaluation would be available.

Indicators to be used for the assessment do not need to be specified in the legal acts setting the multi-annual plans; instead, they can be developed subsequently in consultation with the relevant stakeholders and scientific bodies. They should be environmental (such as fishing mortality and stock size for all relevant stocks), economic (such as net profits, return on investment, gross value added), social (total jobs in FTE terms, average wage) and cost efficiency-related (administrative burden). Disaggregated analysis should be preferred in order to find out whether there are fleet segments or fish stocks for which specific action would be required.
