
Fisheries: why technical measures matter



IN-DEPTH ANALYSIS

Author: Jean Weissenberger
Members' Research Service
European Parliamentary Research Service
02/06/2014
140807REV1

This paper gives an introduction to technical measures in relation to fishing practices and provides an overview of the current EU legislation and objectives on this subject. It also gives some illustration of what is under consideration in order both to align these rules with the aim of the newly reformed Common Fisheries Policy to end the discards of unwanted fish back at sea, and in relation to a possible future proposal for a broad review of the EU legislative framework on fisheries technical measures.

Disclaimer

This publication does not necessarily represent the views of the author or the European Parliament.

Reproduction and translation of this document for non-commercial purposes are authorised, provided the source is acknowledged and the publisher is given prior notice and sent a copy.

© European Union, 2014.

Photo credits: © ekix / Fotolia.

<http://www.eprs.ep.parl.union.eu>

<http://epthinktank.eu>

epers@ep.europa.eu

EXECUTIVE SUMMARY

Technical measures in fisheries can be roughly grouped into rules setting minimum legal sizes of fish, regulating the use of gear (including what can be caught with a gear) and their design (including mesh sizes), and restricting fishing in some areas or seasons. They basically aim at limiting the catch of unwanted fish (notably juvenile fish) and other aquatic species, as well as reducing the impact of fishing activities on vulnerable marine ecosystems.

The EU Common Fisheries Policy (CFP) has been subject to a comprehensive reform in 2013. This now has to be implemented and further complemented. Amongst its priorities, the reform aims at gradually eliminating discards of unwanted catches starting in January 2015. This requires the aligning of existing EU rules on technical aspects of fishing operations which are not compatible with this new objective. The European Commission is also preparing a general review of fisheries technical measures and has announced, for 2014, a proposal for a new framework regulation for the conservation of fishery resources through technical measures. Considering the wide range of marine environments and species concerned, combined with the diversity of fishing practices, technical rules for fishing can prove to be a rather complicated matter for non-specialists. EU regulations providing for technical rules in fisheries have also developed over time into a complex raft of measures. The European Parliament only became co-legislator on these matters with the Lisbon Treaty.

Some technical measures are currently associated with restrictions prohibiting the retention on board and landing of fish caught in contravention of these rules, leaving fishermen with no other option but to discard such fish at sea. The European Parliament and the Council are due to examine a Commission proposal reviewing such provisions in numerous regulations, making them compatible with the objective of ending fish discards and of having all catches landed. However, the time available for substantive debate on this proposal is short.

Though still under preparation, the proposal for a general review of technical measures in fisheries implies looking at a number of issues such as the value of technical measures as fisheries management tools and how best actually to reduce unwanted catches when fishing. The Commission's declared intentions for a framework regulation in the context of the reformed CFP, notably with regard to regionalisation and management by objective approach, also raise issues of a more institutional and political nature such as the level of involvement of the European Parliament under a new EU framework on technical measures (co-legislator vs. delegated powers). However, independently from this general revision of fisheries technical measures, the European Commission decided on 14 May 2014 to propose a complete ban of one specific fishing gear, namely driftnets, as of 1 January 2015.

Table of contents

1. Policy context	5
1.1 Fisheries policy and the EU.....	5
1.2 The reformed Common Fisheries Policy.....	5
1.3 Technical measures and the European Parliament.....	5
2. Main objectives of technical measures and some practical examples	6
2.1 Introduction.....	6
2.2 Limiting the catching of small (juvenile) fish	7
2.3 Limiting the catches of unwanted fish species.....	10
2.4 Limiting the capture of protected species.....	12
2.5 Measures aimed at protecting marine habitats.....	12
2.6 Other possible aims of technical measures.....	12
3. Some intrinsic complexities.....	13
3.1. Implementation, controllability and enforceability	13
3.2. Fishing techniques: an area of continuous change and adaptation	14
4. Technical measures today	15
4.1. Technical measures: a history of continuous development	15
4.2. A complex set of EU regulations.....	17
4.3. Limited EP involvement so far	18
4.4 Technical measures in the newly reformed 'CFP basic Regulation'	20
5. Technical measures: a source of mandatory discards	21
5.1. A reformed CFP which aims at ending discards	21
5.2. Aligning current rules for consistency with the aim to end discards.....	23
6. Towards a comprehensive review of technical measures in fisheries.....	24
6.1 European Commission preparing for a review.....	24
6.2 What are the problems and challenges?.....	25
6.3. Some issues at stake when assessing the past.....	26
6.4. Some issues at stake when considering the future.....	27
7. Outlook	34
Main references.....	35

1. Policy context

1.1 Fisheries policy and the EU

Fish do not recognise borders, so sustainable exploitation of the resources of the sea requires joint management. The EU is also a major market for fisheries and aquaculture products. The first Community rules on a common market organisation (CMO) in the fisheries sector as well as a structural policy for the fishing sector appeared in the 1970s. The first Council Regulation dealing in general with the conservation and management of fisheries resources was agreed in 1983¹.

The Treaties² provide the Union with exclusive competence concerning "*the conservation of marine biological resources under the Common Fisheries Policy (CFP)*". Other fisheries policy areas (e.g. market policy) fall under shared competence.

Since the Lisbon Treaty, the ordinary legislative procedure applies to almost all fisheries decisions³, making the European Parliament (EP) co-legislator on most CFP matters. Some competences however, notably "*for fixing and allocating fishing opportunities*" (e.g. total allowable catches - TACs - and quotas), remain only with the Council.

1.2 The reformed Common Fisheries Policy

The CFP not only covers fishing activities and conservation of stocks, but also aquaculture (the farming of fish, shellfish or algae) and the processing and marketing of fishery and aquaculture products.

At the end of 2013, the European Parliament and the Council agreed on a comprehensive CFP reform. It is now enshrined in a new legislative framework, the so-called 'new CFP basic regulation' (Regulation (EU) No 1380/2013)⁴. As far as the conservation of marine biological resources is concerned, it repeals and replaces the former 'basic fisheries management framework', laid down by the Council in 2002 (Regulation (EC) No 2371/2002).

This new 'CFP basic regulation' goes along with a new 'CFP market regulation'⁵, as well as a new financial instrument (the European Maritime and Fisheries Fund), formally adopted in May 2014⁶.

1.3 Technical measures and the European Parliament

Technical measures are rules addressing detailed elements of fishing practice, essentially with regard to the fishing device(s) – gear – which may be used, depending on what is (or what can be) fished for and in which sea areas (or in which time periods). Technical measures aim essentially at reducing the catch of juvenile fish or unwanted species, and limiting the impacts of fishing on some vulnerable marine habitats.

¹ Council [Regulation \(EEC\) No 170/83](#) establishing a Community system for the conservation and management of fishery resources.

² Cf. Articles 3 and 4 of the [Treaty on the functioning of the European Union](#) (TFEU).

³ Cf. Article 43 of the TFEU.

⁴ [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.

⁵ [Regulation \(EU\) No 1379/2013](#) of the European Parliament and of the Council of 11 December 2013 on the common organisation of the markets in fishery and aquaculture products.

⁶ Procedure file [2011/0380\(COD\)](#)

However, fishermen might catch unwanted fish which do not comply with technical rules, such as fish below minimum authorised sizes or fish caught in closed seasons or areas for the species concerned. Until now, fishermen were prohibited from keeping such "non-compliant" fish, and they had no option but to throw them back in the sea immediately after catching them, a practice known as "discards"⁷. Seen as leading to an unacceptable waste of resources, such discard-inducing policy has been completely reversed as part of the CFP reform. The mandatory discarding of fish must now be progressively replaced by a requirement to land all catches, starting for some fisheries from January 2015.

In December 2013 the Commission proposed amending a number of existing technical fisheries rules in order to make them compatible and aligned with the newly decided policy of progressively eliminating discards in fisheries.

The use of technical measures to contribute to the conservation of stocks and to the management of fishing activities is not a new feature under the CFP. The first Community Regulation on technical measures was adopted in 1980⁸, before even what is considered as the first 'CFP basic regulation'⁹ - Nonetheless, it is worth highlighting that most of the fisheries technical rules currently applicable were decided either by the Council or by the European Commission under the former 'comitology procedures'. With the exception of partial amendments to pieces of legislation or based on the need to prolong some temporary measures, the EP has only on a few occasions been in a position to exercise its co-legislator role on these issues, nor has it yet been party to a significant review of the majority of existing technical rules.

In the medium term, the EP is also likely to have to examine a proposal on a new regulatory framework for technical measures in the context of the reformed CFP, as announced by the Commission within its 2014 work programme and for which the Commission services launched a public consultation on 24 January 2014.

2. Main objectives of technical measures and some practical examples

2.1 Introduction

Addressing technical measures in fisheries entails the use of some specific terminology and concepts, notably about the marine organisms which are caught (e.g. benthic, demersal or pelagic species¹⁰), the type of fishing gear which are used (e.g. gillnets, entangling nets, trawls, seines or dredges¹¹) and some standardised coding systems for fishing areas¹².

Fishing has intrinsically a random dimension. Professional fishermen adapt their techniques and fishing strategies to maximise the catch of what they intend to capture,

⁷ See "Discarding fish under the Common Fisheries Policy - Towards an end to mandated waste", Library Briefing, European Parliament, May 2013 ([130436 Rev1](#)).

⁸ Council Regulation (EEC) No 2527/1980 laying down technical measures for the conservation of fishery resources.

⁹ Cf. foot-note 1.

¹⁰ Basic information on major EU fish species can be found on various marine institutes' webpages, such as [BIM](#), [IFREMER](#), [Thünen-Institut für Ostseefischerei](#). Multilingual information on fish species can also be found on the [FAO website](#) or in the extensive database [fishbase](#).

¹¹ A standardised coding of most types of fishing gear is established by Commission [Regulation \(EC\) No 26/2004](#) on the Community fishing fleet register (see Annex I), in combination with the static 'S' vs. towed gear 'T' criteria, and pelagic 'P' vs. demersal 'D' criteria.

¹² See for example the geographical areas established under the General Fisheries Commission for the Mediterranean ([GFCM](#)) or the International Council for the Exploration of the Sea ([ICES](#)).

but they do not only catch fish, shellfish, or crustaceans (from here on generally referred to simply as fish) of the desired species and sizes. Untargeted catches may include other fish, some possibly of commercial interest, or other forms of marine life such as starfish, jellyfish, protected birds or mammals. Bottom gear may also be of significant negative impact to vulnerable marine habitats, notably on coral reefs or sea-grass beds (e.g. *Posidonia*)¹³. The more a fishing method leads to catching only what is targeted (in terms of species and sizes) and avoiding unwanted catches, the more the fishing method is selective.

However, the selectivity process in a fishing operation is highly complex. Selectivity is of concern to any type of gear. It depends on numerous factors: some of a physical nature (notably those related to the net design and construction, in combination with the way the net is used), some related to the natural environment and to the biological characteristics of each marine species (size, shape, behaviour), not to omit the factors related to the fisherman's fishing strategy itself. Regulating fisheries to limit the catching of unwanted species or unwanted sizes of fish is a challenge for fisheries managers. The challenge is greatest in 'mixed fisheries', where many species and a large range of ages or sizes in specimens of the same species are present in the fished zone, and susceptible to being caught together by the gear.

Depending on their main objective, technical measures can largely be grouped into measures which aim at:

- limiting catches of small fish (intra-species selectivity),
- limiting catches of unwanted fish species (inter-species selectivity),
- limiting catches of protected species (inter-species selectivity),
- limiting or preventing (irreversible) damage to parts of the ecosystems, notably marine habitats.

Depending on what they require (or prohibit), technical measures can also be grouped into measures which consist of:

- regulating characteristics of what can be caught (i.e. kept and landed) by fishermen (e.g. fish above some minimum sizes, catch composition), considering the technicalities of the fishing operations concerned (gear, target species, area),
- regulating the design and other technical characteristics of the gear (e.g. mesh size, netting),
- regulating the use of gear during fishing operation (e.g. prohibited gear, length limitations),
- regulating access to fishing areas or periods (spatial or temporal fishing closures).

2.2 Limiting the catching of small (juvenile) fish

Fishing young fish prevents them from growing to a larger size and contributing to spawning and future generations. A variety of technical rules have been developed over time to protect juvenile fish.

Setting minimum sizes for commercial species

Regulating the minimum size of a fish that may be kept appears a simple measure to prevent, in the first instance, fishermen from being tempted or incentivised to catch undersized fish.

¹³ Further information on main fishing techniques, gear types and on technical measures can also be found in numerous webpages of private or public bodies specialised in fisheries matters, such as '[Seafish](#)', the '[Scottish government](#)', '[IFREMER](#)', '[Comité Régional des Pêches](#)' or '[Thünen-Institut für Ostseefischerei](#)'.

Setting minimum legal sizes also requires defining all the applicable restrictions. As fishing still has some random component, it is more appropriate (notably regarding enforcement) to prohibit the *keeping* of an undersized fish rather than the - possibly accidental - *catching* of it; a (much older) principle on which the CFP has been based for decades. In legal terms, this usually translates to a ban on keeping on board, transshipping, landing and marketing fish which do not comply with this commonly called **minimum landing size** (MLS). This leaves fishermen with no option but immediately to return (discard) such undersized fish back at sea.

In the North Sea for example, MLS are established for about 30 different commercial species or sometimes parts thereof (e.g. for Nephrops and Nephrops tails). The same species may also be subject to different MLS depending on the fishing areas¹⁴.

Regulating mesh size to allow smaller fish to escape

In a netting panel, a mesh corresponds to one of the spaces delimited by bounded twine: usually, a mesh is of diamond or square shape delimited by four threads of rope knotted at their ends. The mesh size represents the maximum possible opening (spacing) between two opposite knots when stretching the mesh at its maximum.

Regulating the minimum size of meshes in fishing nets appears at first glance a simple and easy measure to allow smaller fish not to be retained by the gear or to escape easily. Minimum mesh sizes were already used to regulate fishing activities several centuries ago. The question of appropriate mesh sizes however evolved with science and developments in technology¹⁵.

In most cases, a one-mesh size fits all approach would not suit the fisheries reality. Small mesh nets are needed to catch small species, and larger mesh nets may be needed for large fish species. As a consequence, there are only a limited number of general prohibitions of the smallest mesh sizes set independently of the target fish¹⁶.

Ideally, **mesh sizes** should correspond to the desired sizes of fish to be retained by the gear and mesh size limits should be defined for each target species on the basis of its biological features (e.g. fish shape, growth pattern and average age/size of sexual maturity). However, as no gear can be completely species-selective, mesh sizes have also to be considered with regard to the type of gear and the 'associated' species which may be caught simultaneously to the main target species in the fisheries concerned.

Mesh size rules are therefore often established not only with regard to the target species, but in combination with requirements for the target species to represent some minimum levels in the catch, while the proportion of associated species should remain below some maximum authorised levels.

The combinations of gear, minimum mesh sizes and given thresholds of target species and associated species in the catch are called "**catch composition rules**". Fish of associated species caught in excess of catch composition limits cannot be kept on board or landed and must be returned (discarded) back to sea. The setting of catch composition rules may lead to complex sets of requirements¹⁷.

¹⁴ See for example [Regulation No 850/98](#); Annex II (minimum sizes).

¹⁵ See '[Why increase mesh sizes](#)', A. C. Burd, MAFF, 1986.

¹⁶ See for example Regulation No 850/98; Article 4(2) (*provisions for towed gear*).

¹⁷ See for example [Regulation No 850/98](#); Annex I (*Towed gears: Regions 1 and 2, except Skagerrak and Kattegat - Mesh size ranges, target species, and required catch percentages applicable to the use of a single mesh size range*).

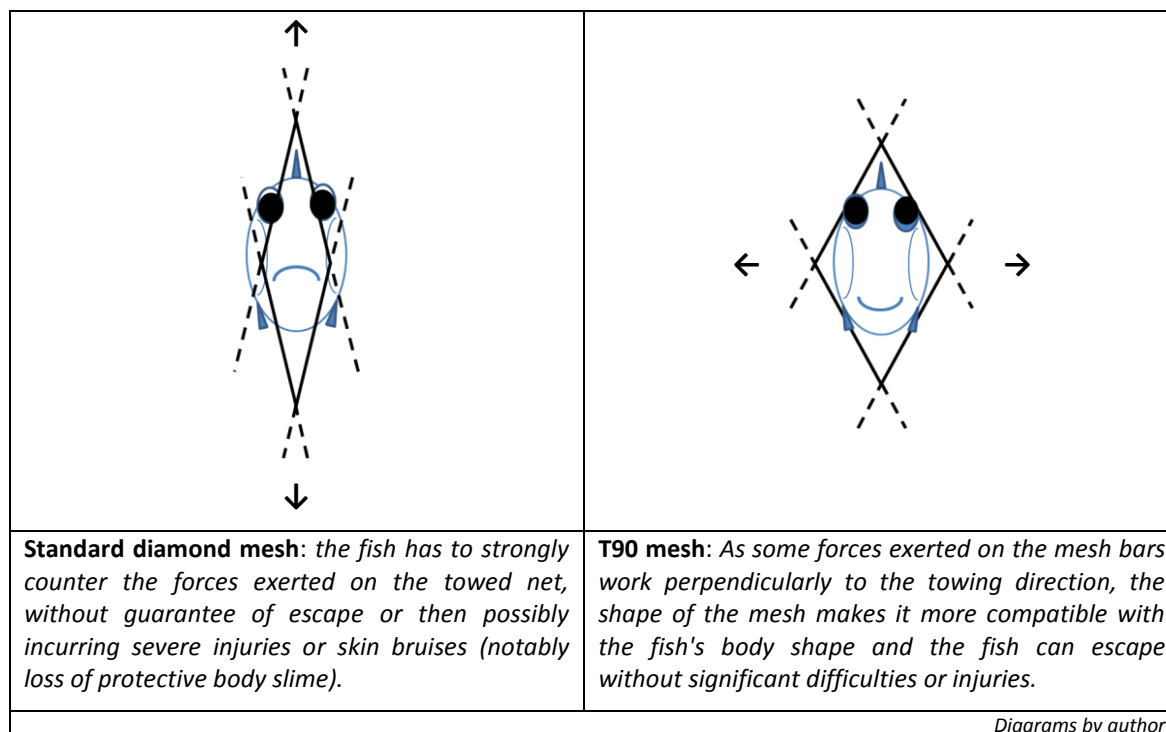
These technical rules are aimed at incentivising fishermen to orientate their fishing strategies towards more selective ones. They also aim at preventing possible malpractices which would consist of appearing to fish for a target species of small size - and therefore using small mesh nets - while actually targeting or hoping to catch a large proportion of small or medium sized specimens of fish of a larger target species (and for which larger mesh sizes should be used - see chapter below on the limiting of catches of unwanted species).

However, in itself the **mesh size** is not the only parameter which determines what is caught by the gear or what escapes. Indeed, the actual opening of the mesh during a fishing operation significantly varies, notably depending on the **tensions** exerted on the net (depending in particular on the amount of fish caught in it, the strength of currents or the speed of the vessel and the towing regularity) and on the **twine material**, both influencing the actual **shape of the mesh**.

As an example, the selectivity of a trawl mainly occurs in its codend (back part of the gear). However, the meshes in the codend do not necessarily remain at their optimal or maximal opening size and shape.

For a standard trawl - composed of classical "diamond meshes" - the codend meshes remain partially closed at the beginning of the fishing operation, because of the tension exerted on the netting of an empty trawl. Once a certain amount of fish is caught and packs in at the bottom of the codend, the tension on parts of the netting changes and the meshes in the area just in front of the catch open, allowing the smallest fish which then arrive in the codend to escape.

Figure 1: Illustration of the effect of the mesh shape on selectivity



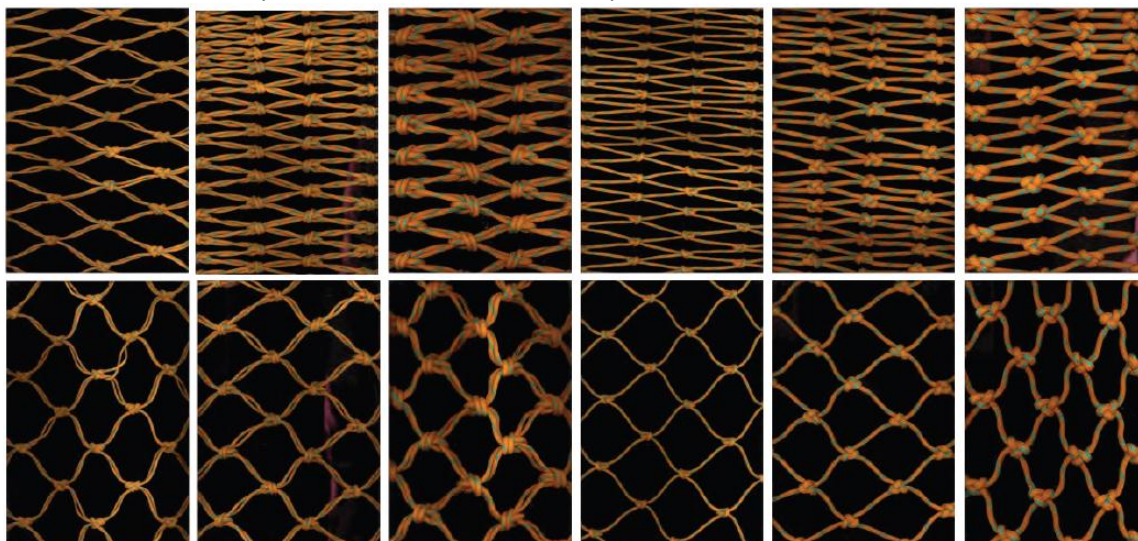
Diagrams by author

For the so-called 'T90 trawls', where the codend mesh panel is attached with a turn of 90° to the trawl orientation compared to a standard trawl, the resistance to the opening of meshes turns into a resistance to the closing of meshes. For the same mesh size, this allows small fish to escape more easily along the codend and significantly improves size selectivity (see figure 1). For the Baltic Sea for example, catch

composition rules¹⁸ provide that some towed gears are only authorised if equipped with a T90 codend or an escape window.

The twine material (diameter, single or double strand, knot) also adds to the actual selectivity of a trawl (see figure 2).

Figure 2: Actual opening of trawl mesh panel depending on mesh orientation and twine material (for a mesh size of 120 mm)¹⁹



Top: six different netting types stretched in the standard direction. Bottom; the same six different netting types stretched in the T90 direction.

From left to right: double twine 3 mm (D3), double twine 4 mm (D4), double twine 6 mm (D6), single twine 4 mm (S4), single twine 6 mm (S6), and single twine 8 mm (S8.)

Closed areas / seasons for some fishing

Areas known for their high concentration of juveniles (possibly in certain times of the year) may also be closed to fishing practices susceptible to catching too many of these small fish. The current technical measures regulations contain numerous geographical/seasonal restrictions to fishing for given species (so-called 'boxes'). Such restrictions may also be set for important spawning areas²⁰.

Areas with high concentrations of juvenile fish may however change over time, and when such areas are actually observed, their closure in real time could also be a way to limit catches of juvenile fish. Current rules do not foresee mechanisms for such real time closures. However, some provisions exist to require vessels to move on and change fishing zones if the proportion of undersized fish exceeds certain limits²¹.

2.3 Limiting the catches of unwanted fish species

As with the protection of juvenile fish, technical measures such as the prohibition of some gears in some areas²² or catch composition rules may contribute (directly or through indirect incentives) to more inter-species selective fishing.

¹⁸ Cf. [Regulation No 2187/2005](#): Annex II, end-note (2) of the catch composition table: towed gear with mesh sizes >105 mm is only authorised if equipped with T90 codend or with the Bacoma exit window.

¹⁹ Source: European Commission, study report: [Collaboration between the scientific community and the fishing sector to minimize discards in the Baltic cod fisheries](#), 2013.

²⁰ See for example [Regulation No 850/98](#); Article 28 and Article.

²¹ See for example Reg. No 850/98; Article 19b (*Moving-on provisions and prohibition on slipping*).

²² e.g. Reg. No 850/98; Article 34b (Use of gillnets in ICES divisions IIIa, IVa, Vb, VIa, VIb, VIIb, c, j, k and ICES sub-areas VIII, IX, X and XII east of 27° W) & Article 39 (prohibiting beam trawl in the Kattegat).

There have also been numerous technical adaptations to the gear, particularly towed ones in mixed fisheries, to allow more escapements of non-targeted species while not losing too much of the target one(s).

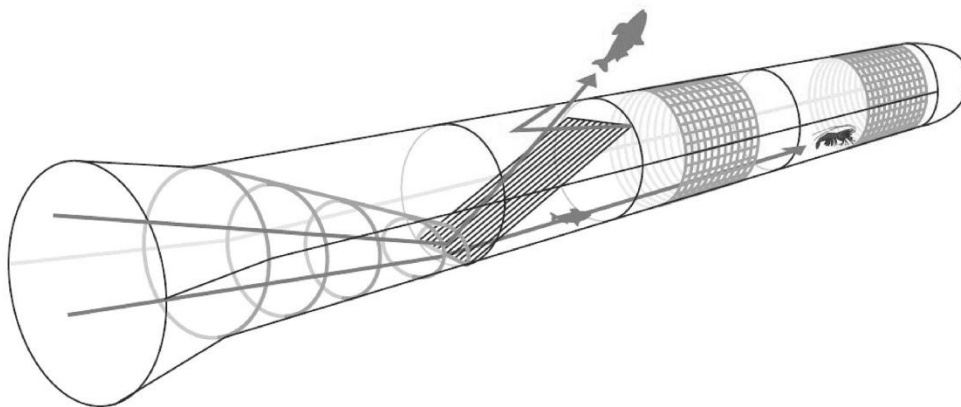
The mesh size being adapted to the target species, different types of separating devices have been developed in mixed fisheries to allow the escapement of associated unwanted species before they enter the trawl codend.

Such systems could consist for example of:

- **rigid or semi-rigid separation grids or panels**²³: usually set inclined in front of the codend, the separator panel or the grid bars allow the smallest animals to pass through, while larger ones cannot and get oriented along the grid. Depending on the grid orientation, one category will be retained by the trawl and the other will escape through a well-positioned opening at the grid end. This can be used for example for the trawling for shrimps or Norway lobster, while allowing fish like cod to escape.
- **Escape windows**: the principle is to offer some "escape windows" to the associated species, while the target species will mainly remain within the trawl because of its different behaviour.

A well-known system is the so-called **square mesh panel** consisting in a panel of large square mesh sizes. If of sufficient size and positioned at the right place in the gear, it allows for example the escapement of whiting, haddock or hake in Norway lobster trawl fisheries (cod usually escape less because this fish behaves differently). Another comparable well known system is the **Bacoma** escape window. EU technical rules have made such devices mandatory in some conditions²⁴.

Figure 3: schematic illustration of a size and species selective trawl²⁵



Fish entering are led towards the trawl floor and grid via a leading funnel. Larger fish are then led out of the trawl by the grid while smaller fish and Norway lobster pass through the grid and enter the codend. The full square mesh codend enhances escapement of small fish and undersized Norway lobster).

Another possibility may consist of setting large meshes in the front part of the trawl. But this is only efficient for small sized trawls when the fish, which is swimming at the trawl mouth, is close to the netting. Such a system does not work for large trawl, as the fish tends to move away from the sides of the trawls and remains in the central part of the gear opening.

²³ See for example "The specification and installation of the Swedish grid and the inclined separator panel", [published](#) by the Irish Sea Fisheries Boards (BIM) on its web page.

²⁴ See for example [Regulation No 850/98](#), Annex XIVb (square mesh panel).

²⁵ Source: Regulation No 850/98, Annex XIVa.

2.4 Limiting the capture of protected species

The types of technical rules designed to limit the catch of unwanted fish species may also be of use to limit the catches of unwanted species other than fish.

A wide range of technical measures have been trialled, and some made mandatory, with the aim of avoiding or limiting the accidental catches of protected sea mammals, birds and turtles. They may include:

- obligations concerning the use of gear (e.g. reducing the risk of catching sea birds on long lines through night shooting of lines, use of unfrozen baits and weighted lines),
- prohibitions of some gear (e.g. the ban on use of large driftnets),
- specifications concerning the construction of gear with separation grids or escape windows (e.g. turtle excluding devices in shrimp trawls) or concerning the sizes, shapes or even baiting of hooks (e.g. circle hooks to reduce catch of sea-turtles),
- use of some species specific scaring devices for example bird scaring devices when using long-lines²⁶ or acoustic deterrents (pingers) to prevent some dolphin species from coming close to and getting trapped into gillnets,
- area/season closures.

2.5 Measures aimed at protecting marine habitats

Some marine habitats (like corals) are particularly vulnerable to the destructive effects of some fishing practices (e.g. heavy bottom trawls).

Technical rules aimed at preventing such habitats being destroyed or significantly impacted usually translate in practical terms into the definition of "closed areas" where some fishing gear use is completely prohibited. These closures may result from the political commitment to integrate environmental protection into fisheries policy, or be subsequent to the implementation of EU environment legislation (e.g. the Natura 2000 network established under the EU 'Habitats Directive') or from international commitments to protect such vulnerable areas from destructive fishing practices²⁷.

2.6 Other possible aims of technical measures

Some technical rules may also be designed to contribute towards reducing "wasteful" mortality of fish. Such measures may consist for example in setting maximum durations for the immersion of set nets (to avoid some fish rotting in the nets), or in technical requirements to prevent ghost fishing (lost nets) or to reduce discards (like for example prohibition of 'high grading' or 'slipping' practices²⁸).

Technical measures may also include fisheries restrictions aimed at contributing indirectly to nature protection, like for example the 'sandeel box'²⁹. In this area, fishing for sandeels has been prohibited considering that they represent an important food source for some seabirds nesting in the area.

²⁶ See for example the EU Action plan to reduce incidental catches of birds in fisheries ([COM\(2012\)665](#)).

²⁷ See for example [closures of vulnerable marine ecosystems](#) under the North-East Atlantic Fisheries Commission.

²⁸ See for example [Regulation No 850/98](#); Articles 19(a) (*Prohibition of high-grading*) and 19(b) (*Moving-on provisions and prohibition on slipping*). 'High-grading' of fish consists of keeping only the most valuable fish sizes (or species) with the aim to maximise returns, because of e.g. low quota, storage limits on board or spoiling risks. 'Slipping' consist in returning the full catch at sea without even bringing the fish onto the deck of the vessel, a rather easy technique when using some gear like purse seines.

²⁹ Cf. Regulation No 850/98; Article 29a (*Closure of an area for sand eel fisheries in ICES sub-area IV*).

3. Some intrinsic complexities

The diversity in gear and fishing techniques and the wide range of possible objectives and types of technical measures, as developed in chapter 2, already give indications of the intrinsic complexity of setting rules on these matters. But translating technical elements into legal provisions poses further challenges.

3.1. Implementation, controllability and enforceability

Translating the principle of a given type of technical measure for a given purpose into regulatory specifications also necessitates considering implementation, enforceability and controllability issues, which may in turn require additional sets of detailed technicalities to be covered by the law.

For example, fish, shell fish and crustaceans have a large variation in anatomy, shapes and length-weight relationships. The setting of size limits therefore also implies standardising measurement procedures³⁰.

The mesh shape, the netting material and the design of the gear are among the numerous factors which interact with the actual selectivity of the **mesh size**. Hence, technical measures based on the setting of mesh size limits may have to include additional - possibly complicated - sets of associated details (e.g. on gear construction, twine thickness, joining rounds) to ensure that the use of such mesh sizes leads to the expected selectivity³¹.

When setting spatial/temporal restrictions, additional technical provisions may be needed in order to allow for simpler enforceability or controllability. For example, a ban on bottom gear in a given area may have to be complemented by provisions for vessels using surface gear in this area³² or for vessels equipped with bottom gear which simply navigate across the area³³.

Reducing incidental capture of cetaceans thanks to deterrent devices provides another example of complex technicalities. Cetacean species have different acoustic physiology and sensibility. Requiring the use of acoustic deterrents implies both that precise technical characteristics of the sound emitters (e.g. type of signal, frequency, pulse, noise levels) are set, and that the conditions for their use (e.g. position and spacing on the net) are defined in order to ensure the device's efficiency in reducing the incidental catch of the cetacean species concerned³⁴, while also taking into account possible negative effects of these sound emitters on other cetacean species with different hearing ranges.

³⁰ See for example [Regulation No 850/98](#); Annex X (*Measurement of the size of a marine organism*).

³¹ See for example [Regulation No 2187/2005](#); Appendix 1 (*Specifications of Bacoma codends*) and Appendix 2 (*Specifications of the T90 trawl*).

³² See for example [Regulation No 850/98](#); Art. 34(e) points 2-7 (provisions for pelagic fishing in areas with bottom gear prohibition).

³³ See for example Regulation No 850/98; Art. 28, point 2 or article 29, point 5 (bottom trawls carried on board must be lashed and stowed according to given prescriptions).

³⁴ Cf. Council [Regulation \(EC\) No 812/2004](#) laying down measures concerning incidental catches of cetaceans in fisheries, and notably its annex II which sets technical specifications for acoustic deterrents designed at reducing the capture of harbour porpoise in gillnets.

3.2. Fishing techniques: an area of continuous change and adaptation

3.2.1 Scientific and technological innovation

Significant progress has been made and continues to be made in fisheries. Technological innovations have significantly increased fishing efficiency (technological creep), improved the detection and chase of fish, and enabled fishing to take place in previously unexploited sea areas or depths (e.g. high performance sonar coupled with intelligent systems controlling in real time the trawl depths in order to follow precisely the bottom topography).

Over time, research has also provided better understanding and adaptation of the design and construction of fishing gear in order to optimise its selectivity pattern. This better understanding of the technical parameters of selectivity (net material, twine thickness, codend attachments...) has also, as a consequence, led to increasing complexity in corresponding selectivity rules.

In certain cases, the use of some technologies in fishing has already been outlawed, such as the ban on using aircraft or helicopters to search for bluefin tuna³⁵. If it were not for this, some would have probably considered aerial search for tuna with drones thanks to recent innovation and fast market developments in their non-military uses.

3.2.2 Rules-driven adaptations

Technical rules can be quite restrictive. They may require changes in fishing practices and can lead to additional costs for the operators concerned or to short term economic losses (e.g. by increasing escape of legally sized fish³⁶). These effects may be felt even more acutely when such additional technical measures are introduced to manage an already overexploited stock. As such stock is often characterised by a very low proportion of older fish classes, new rules to increase intra-species selectivity and to protect an increased part of the smallest fish may imply significant losses to the fisheries concerned as they already rely on catching mainly younger specimens.

Each new technical measure (especially when of limited acceptance by some operators) may lead to new developments and fishermen making technical changes in order to circumvent the rule, or at least limit its effect. In turn, fisheries managers may subsequently need to adapt the rules or complete them with new additional sets of, prescriptive or derogative, provisions.

This phenomenon is not new. The following example comes from a FAO technical paper³⁷ dating back several decades:

"....A further point about mesh size regulations concerns the ability of resourceful fishermen to get around them. Let us take a hypothetical case of a bottom trawler working for demersal fish in the North Sea. In his area the minimum mesh size is say 80 mm. This is fine for haddock and cod, but suppose the vessel encounters quantities of whiting, most of which can escape through an 80 mm mesh. What can the skipper do if he wants to get around the regulation? He could (a) change the codend temporarily; (b) add a blinder or second bag and codend over the first; (c) restrict the meshes in some other way so they do not open fully. Unless he was apprehended in the act of fishing with either modification, it would be extremely difficult after the event to prove any infringement of regulations. There are in fact ways

³⁵ Cf. [Regulation \(EC\) No 302/2009](#) concerning a multiannual recovery plan for bluefin tuna; Article 8.

³⁶ See for example: "[The Potential Short Term Economic Impacts of Square-Mesh Panels on the Shetland Inshore Fishing Fleet](#)", C. Laurenson and D. Beveridge, Sept. 1997.

³⁷ FAO Technical papers: "[Fishing gear and selectivity](#)", D.B. Thompson and M. Ben-Yami.

of accomplishing (c) which would probably not represent a breach of regulations at all, e.g. doubling the number of meshes in the cod-end circumference....

The example below gives another, this time very recent, illustration of trials³⁸ seeking alternatives, which were triggered by the introduction of new technical restrictions:

"In June 2012 a number of technical measures were introduced by the Commission in the Celtic Sea area through Regulation (EU) 737/2012 which came into force in August 2012. The main objectives for the introduction of these measures were to protect juvenile whiting and haddock stocks. Many of the Nephrops vessels voiced their concerns that these measures have increased the workload for their crew as they would normally work a different gear configuration in the Irish Sea. This resulted in having to take off the Swedish grid and replace it with the 110mm Square Mesh Panel (SMP) when moving from the Irish Sea and going to the Smalls and vice versa when returning to fish in the Irish Sea. It was suggested to fishermen that they could attach both the Swedish grid and the SMP aft of the Swedish grid and this would leave their vessels compliant with regulations in both the Irish and Celtic Seas. The majority of fishermen weren't interested in this as this would mean losing their by-catch of fish in the Celtic Sea which is an essential component of their earnings. The fishermen who were interested were concerned that the turbulence caused as a result of having the grid incorporated in the gear would blow the fish out through the SMP positioned aft of the Swedish grid. Alternatively positioning the SMP immediately aft of the grid may have the opposite effect of increasing the water-flow through the grid and could result in a better catch. It was agreed by the Industry Science Partnership Group that BIM would carry out a short catch comparison trial to assess the impacts of incorporating a SMP aft of the Swedish grid".

Technical measures may also lead to more substantial changes in overall fisheries patterns, which in turn, may deserve further management measures.

For example, area closures may simply lead to a displacement of fishing effort into other areas, the consequences of which may need new regulation. In a further example, the closure of a fishery or the ban on use of certain gear may lead fishermen to convert to other fisheries or change fishing methods, the effects of which may add to those of existing fishing practices or which may have new impacts on the marine environment. As an illustration, some tuna seining fisheries were criticised for their risks to dolphins and this led to changes in fishing practices towards the use of fish aggregating devices (FADs: floating objects which are known to attract and concentrate pelagic species). However, the now large scale use of FADs has also led to calls for better management of these fishing methods³⁹ in view of increasing concerns about others types of impacts (e.g. high by-catches of non-target pelagic sharks, manta rays or sea turtles, excessive catches of smaller fish and risks of ghost fishing).

4. Technical measures today

4.1. Technical measures: a history of continuous development

Technical measures (TM) in fisheries have a long history⁴⁰ and references to regulations on mesh sizes or minimum fish sizes can be dated back to several centuries ago.

³⁸ "[Summary of MFV Mater Dei Trials in the Irish Sea](#)", Irish Sea Fisheries Board (BIM), August 2013.

³⁹ See for example the meeting of the European Parliament Intergroup "Climate Change, Biodiversity and Sustainable Development" of January 2013: "[Fish aggregating devices \(FADS\): How to best manage them](#)".

⁴⁰ See for example: "[Why increase mesh sizes](#)", A. C. Burd, MAFF, 1986.

The modernisation of fishing, accompanied by huge technical innovation, starting at the end of the 19th century but increasing particularly from the 1950s, allowed for a tremendous increase in fishing capacity and efficiency. In the first part of the 20th century, concerns about over-exploitation of stocks and high levels of catch and discard of juvenile fish triggered international negotiations on the development of conventions in order to regulate fishing net meshes and set minimum fish sizes⁴¹.

Later, increased international cooperation in fisheries saw the establishment of several regional fisheries management organisations, notably the North East Atlantic Fisheries Commission NEAFC (1963), the International Baltic Sea Fisheries Commission IBSFC (1973)⁴² and the international Commission for the North West Atlantic (1950), replaced in 1979 by the Northwest Atlantic Fisheries organisation (NAFO). Over time, the number and complexity of technical measures adopted or promoted within these international arenas grew as the understanding of selectivity in fishing improved, within a background of continued over-exploitation of stocks and continued technological innovation.

Similar development on technical measures as fisheries management tools took place under the Common Fisheries Policy after its establishment at the start of the 1980s.

A good illustration of the historical development of some technical measures is given below (extract from a report from the Scientific, Technical and Economic Committee for Fisheries (STECF)⁴³:

"Technical conservation measures have a long history in the Baltic Sea. The work with trawl modifications to reduce catches of young fish in trawls started in the early 1900's ... Before most of the countries around the Baltic became EU members, the International Baltic Sea Fishery Commission (IBSFC) was responsible for fisheries management in the Baltic Sea. After its establishment in early 1970's, the IBSFC soon recognized that there was a need for investigating a mesh size increase, and many mesh size experiments were conducted ... The work was further intensified in the mid-1990s but this time the focus was changed from increasing mesh size to developing alternative devices to improve the size selectivity of the Baltic cod trawls.

Gear regulations for cod trawlers in the Baltic have changed many times during the last 20 years..., and are now mainly gathered in EC Council regulation 2187/2005. Before 1994 the minimum mesh size (MMS) was 105 mm, when the IBSFC decided to increase MMS to 120 mm and minimum landing size (MLS) from 33 to 35cm. At the same time, two other codend designs with side panels in a 105 mm codend (105 mm exit windows) were introduced as legal alternatives to the conventional diamond mesh codend. This was one of the first European Communities regulated regions where selective sorting devices were adopted into legislation...

With effect from 2002 and based on advice from the Bacoma project..., IBSFC exchanged both exit windows codends with a 120 mm BACOMA codend and at the same time increased mesh size in conventional diamond mesh codends to 130 mm. Use of the BACOMA-window codend was widespread in early 2002 but due to the markedly increased selectivity, initial catch losses for trawlers that used the BACOMA

⁴¹ E.g. draft Convention relating to the policing of fisheries and measures for the protection of immature fish (1943) or Convention for the regulation of meshes for fishing nets and the size limits of fish (1946).

⁴² The IBSFC ceased to exist as from 1st January 2007 (after all Baltic coastal states except Russia had become EU Member States).

⁴³ "Different principles for defining selectivity under the future TM regulation", STECF report ([STECF-12-20](#)), JRC, 2012.

codend were substantial ... Therefore, most trawlers rapidly switched to the alternative 130 mm diamond-mesh codend ... Furthermore, in January 2003, the MLS for cod was increased from 35 to 38cm and as a result of a major mismatch between selectivity in the trawls used and the increased MLS discards increased. This led to an emergency closure of cod fisheries in the Baltic EU waters in April 2003. When the fishery reopened in August 2003, conventional diamond mesh codends were prohibited and BACOMA panel mesh size was reduced to 110mm.

For some years, the BACOMA- cod end was the only legal gear. In 2006, the T90 codend was introduced as an alternative to BACOMA after an evaluation of existing data by ICES, which did not find any significant difference in selectivity between that of 110mm T90 codend and that of 110 mm BACOMA. The next major change occurred in 2010 when the mesh size of the T90 codend and the Bacoma window was increased from 110 mm to 120 mm mesh size to further decrease discard. At the same time, a high grading ban for all quota species was introduced while the minimum landing size was kept at 38 cm (Regulation (EC) No 1226/2009). Furthermore, with effect from January 2011 amendments to the technical specifications for BACOMA- and T90 codends in EC Council reg. 2187/2005 were introduced (EU No 686/2010)."

4.2. A complex set of EU regulations

Quite aside from the intrinsic technical complexity of fishing gear and techniques, the complex background to the preparation and adoption of technical measures has also contributed to a complex set of rules.

Fisheries technical rules can be found within numerous regulations (some specifically dedicated to technical measures, some not), which have been subject to numerous amendments over time, and are often complemented with additional sets of technical rules by the European Commission. Until a few years ago, technical measures were also included as - more or less - temporary provisions under the annual 'TAC and quotas' regulations⁴⁴ (see chapter 4.3).

One of the main sets of EU fisheries technical rules lies within Council Regulation (EC) No 850/1998 on technical measures for the protection of juveniles of marine organisms⁴⁵ (the so-called 'TM Regulation' or 'TM Regulation 850'). A distant successor of the very first technical measures regulation established at European level in 1980⁴⁶, this regulation is primarily of relevance to the Atlantic areas (including the North Sea). For the Baltic Sea, it has been deemed appropriate to address technical measures within a specific separate regulation, the current version thereof being Council Regulation (EC) No 2187/2005⁴⁷ (the 'Baltic TM regulation'). For the Mediterranean Sea, the first European technical rules were introduced in 1994. Today, technical measures applicable in the Mediterranean Sea represent a large part of Council Regulation (EC) No 1967/2006 (the 'Mediterranean regulation')⁴⁸.

⁴⁴ See for example DG MARE web page on [TACs and quotas](#).

⁴⁵ See the latest [consolidated version](#) of Council Regulation (EC) No 850/98 for the conservation of fishery resources through technical measures for the protection of juveniles of marine organisms.

⁴⁶ Regulation (EEC) No 2527/1980: this very first Community TM regulation was adopted even prior to the adoption of the first Regulation on a Common Fisheries policy in 1983.

⁴⁷ See the latest [consolidated version](#) of Council Regulation (EC) No 2187/2005 for the conservation of fishery resources through technical measures in the Baltic Sea, the Belts and the Sound.

⁴⁸ See the latest [consolidated version](#) of Council Regulation (EC) No 1967/2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea.

The above regulations have themselves been subject to numerous amendments (over 10 times for the 'TM Regulation 850'), and they have also been complemented by numerous European Commission technical regulations. Some of these technical rules also emanate from developments within regional fisheries management organisations (RFMOs⁴⁹) in which the EU participates (such as NEAFC or NAFO)⁵⁰.

Furthermore, the "geographical approach" in regulations concerning technical measures is not always applied with consistency. For example, some technical rules concerning the Black Sea were brought in through amendments to the 'Mediterranean Regulation'⁵¹, while others were set within amendments of the 'TM Regulation 850'⁵².

Besides the main "geographical" regulations, fisheries technical measures have also been incorporated as part of regulations establishing or amending stock-specific multiannual and recovery plans⁵³, as for example:

- the prohibition on the use of purse seine from 15 June to 15 May in the blue-fin tuna recovery plan⁵⁴, or
- spatial and seasonal gear prohibitions as part of the multiannual plan for cod stocks in the Baltic Sea⁵⁵.

In addition to "technical-measures-only" regulations, to "geographical" regulation or to "multiannual stock-specific" regulations, sets of technical rules can also be found within other regulations designed for a very particular aim. This is the case for example for:

- Regulation (EC) No 812/2004 aimed at reducing incidental catches of cetaceans in fisheries (the 'cetacean Regulation'⁵⁶), or
- Regulation (EC) No 1185/2003 on the removal of fins of sharks on board vessels (the 'shark-finning Regulation'⁵⁷).

4.3. Limited EP involvement so far

The vast majority of technical provisions in fisheries currently applicable were decided over time by the Council (and the Commission), before the entry into force of the Lisbon Treaty which made the EP co-legislator on most EU fisheries matters.

In addition, it is worth mentioning that as a result of political and practical opportunity, the Council (in agreement with the Commission) had frequently, notably during the 2000s, resorted to a practice of inserting some technical rules (including derogations

⁴⁹ See for example: http://ec.europa.eu/fisheries/cfp/international/rfmo/index_en.htm.

⁵⁰ Outside EU waters, some technical measures are also set for EU vessels engaged in fisheries in high seas not covered by an RFMO ([Council Regulation \(EC\) No 734/2008](#)) to protect vulnerable marine ecosystems (like reefs, seamounts, hydrothermal vents, cold water corals or cold water sponge beds).

⁵¹ Cf. [Regulation \(EU\) No 1343/2011](#) of the European Parliament and of the Council.

⁵² Cf. [Regulation \(EU\) No 227/2013](#) of the European Parliament and of the Council (which sets provisions on minimum mesh sizes for gillnets and a minimum landing size for turbot).

⁵³ See for example: http://ec.europa.eu/fisheries/cfp/fishing_rules/multi_annual_plans/index_en.htm.

⁵⁴ Cf. [Regulation \(EU\) No 500/2012](#) of the European Parliament and of the Council amending Council Regulation (EC) No 302/2009 concerning a multiannual recovery plan for bluefin tuna in the eastern Atlantic and Mediterranean.

⁵⁵ Cf. [Council Regulation \(EC\) No 1098/2007](#), notably Article 8 thereof.

⁵⁶ See [consolidated version](#) of Council Regulation (EC) No 812/2004 laying down measures concerning incidental catches of cetaceans in fisheries and amending Regulation (EC) No 88/98.

⁵⁷ See [consolidated version](#) of Council Regulation (EC) No 1185/2003 of 26 June 2003 on the removal of fins of sharks on board vessels.

thereto or technical measures for external waters decided in international fora) into the annual regulations destined to set fishing opportunities (TACs and quotas).

Already probably not fully in line with the then applicable treaties (as the EP was not even consulted), this way of law-making had to cease definitively with the entry into force of the Lisbon Treaty. As a result, in view of the risk of a legal vacuum and to make sure that those "still temporary" technical measures⁵⁸ would not end, the Council agreed a temporary prolongation in 2009⁵⁹. This temporary prolongation was further extended for 18 months by the EP and the Council in 2011⁶⁰, pending subsequent piecemeal amendments to the 'TM Regulation 850', which were agreed to avoid an interruption in the technical measures concerned⁶¹. These latter amendments are the only ones made in substance at this stage to the main 'TM Regulation 850' with full EP involvement⁶².

The EP has been co-legislator on amendments made in 2011 to the 'Mediterranean Regulation'⁶³ (parts of these were related to prior international developments in GFCM). It has also adopted various smaller sets of technical rules, as amendments of specific regulations, such as:

- the prohibition of use of purse seine for bluefin tuna fisheries from 15 June to 15 May⁶⁴,
- the obligation for fishing vessels to land the sharks with their fins attached to the body (as an amendment⁶⁵ to the 'shark finning Regulation' referred to above).

In April 2014, the EP gave its first reading position on a legislative proposal to amend the regulation on the multiannual plan for bluefin tuna. This draft regulation notably contains some new technical rules (notably fishing seasons), as a follow-up to international developments and recommendations adopted by the International Commission for the Conservation of Atlantic Tunas (ICCAT)⁶⁶.

⁵⁸ The technical measures which were laid down in the 2009 TAC and quotas regulations (annex III of Council Regulation No 43/2009) were a mixture of regionally specific measures and derogations from the 'TM regulation 850', covering the North Atlantic, the North Sea, Skagerrak and Kattegat as well as international NEAFC waters - measures aimed at stock conservation as well as environmental protection, notably vulnerable habitats.

⁵⁹ Council [Regulation \(EC\) No 1288/2009](#) establishing transitional technical measures from 1 January 2010 to 30 June 2011: in practice, this regulation was limited in scope and time, aimed only at the temporary prolongation of some technical measures, and was the end result of the Council's examination of and failure to agree on a much wider proposal for a complete revision and overhaul of the 'TM Regulation 850' presented by the Commission in 2008 ([COM\(2008\)324](#), file [2008/112/CNS](#)).

⁶⁰ [Regulation \(EU\) No 579/2011](#) of the European Parliament and of the Council.

⁶¹ [Regulation \(EU\) No 227/2013](#) of the European Parliament and of the Council amending Council Regulation (EC) No 850/98 (see also the [summary](#) of the final act).

⁶² File [2012/0158\(COD\)](#).

⁶³ [Regulation \(EU\) No 1343/2011](#) of the European Parliament and of the Council on certain provisions for fishing in the GFCM (General Fisheries Commission for the Mediterranean) Agreement area and amending Council Regulation (EC) No 1967/2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea.

⁶⁴ Cf. [Regulation \(EU\) No 500/2012](#) of the European Parliament and of the Council amending Council Regulation (EC) No 302/2009 concerning a multiannual recovery plan for bluefin tuna in the eastern Atlantic and Mediterranean.

⁶⁵ [Regulation No 605/2013](#) of the European Parliament and of the Council amending Council Regulation (EC) No 1185/2003 on the removal of fins of sharks on board vessels.

⁶⁶ File [2013/0133\(COD\)](#).

The EP has also given its first reading position on the alignments with the TFEU of the 'TM Regulation 850', the 'Baltic TM regulation' and the 'Mediterranean Regulation', with regard to delegated and implementing powers⁶⁷.

In broader policy terms, the EP decided with the Council on a comprehensive reform of the CFP. The 'new CFP basic regulation'⁶⁸ gives an altered dimension to technical measures, particularly with regard to limiting unwanted catches and reducing the discarding of part of the catch.

4.4 Technical measures in the newly reformed 'CFP basic Regulation'

4.4.1. Definitions

The new 'CFP basic Regulation' (EU) No 1380/2013 provides the following **definition** (Article 4):

***'Technical measures'** means a measure that regulates the composition of catches by species and size and the impacts on components of the ecosystems resulting from fishing activities by establishing conditions for the use and structure of fishing gear and restrictions on access to fishing areas.*

In its Article 7(1), the new 'CFP basic Regulation' identifies technical measures as one possible type of measure to be taken *for the conservation and sustainable exploitation of marine biological resources*. Article 7(2) further elaborates:

*2. Technical measures **may include**, inter alia, the following:*

(a) characteristics of fishing gears and rules concerning their use;

(b) specifications on the construction of fishing gear, including:

(i) modifications or additional devices to improve selectivity or to minimise the negative impact on the ecosystem;

(ii) modifications or additional devices to reduce the incidental capture of endangered, threatened and protected species, as well as to reduce other unwanted catches;

(c) limitations or prohibitions on the use of certain fishing gears, and on fishing activities, in certain areas or periods;

(d) requirements for fishing vessels to cease operating in a defined area for a defined minimum period in order to protect temporary aggregations of endangered species, spawning fish, fish below minimum conservation reference size, and other vulnerable marine resources;

(e) specific measures to minimise the negative impact of fishing activities on marine biodiversity and marine ecosystems, including measures to avoid and reduce, as far as possible, unwanted catches.

With regard to the above provisions, the following concepts are also given formal definitions in the new 'CFP basic regulation':

***'selective fishing'** means fishing with fishing methods or fishing gears that target and capture organisms by size or species during the fishing operation, allowing non-target specimens to be avoided or released unharmed;*

***'minimum conservation reference size'** means the size of a living marine aquatic species taking into account maturity, as established by Union law, below which*

⁶⁷ Respectively, files [2012/0208\(COD\)](#), [2012/0285\(COD\)](#) and [2011/0218\(COD\)](#).

⁶⁸ [Regulation \(EU\) No 1380/2013](#) of the European Parliament and of the Council on the Common Fisheries Policy.

restrictions or incentives apply that aim to avoid capture through fishing activity; such size replaces, where relevant, the minimum landing size.

This non-exhaustive list of what may be counted as technical measures under the new CFP largely covers all types of existing measures which were usually referred to as technical ones⁶⁹. The above definition of 'selectivity' refers to its usual meaning, namely in simple terms as catching only what is intended to be fished (and by contrast, avoiding unwanted catches). In terms of technical measures, the new CFP builds on the past, with one notable exception: the concept of fish below 'minimum conservation reference size' replaces the previous concept of fish below 'minimum landing size' (MLS), in line with a major policy U-turn decided under the reformed CFP to eliminate discards and move towards a progressive obligation to land all fish caught (including those under minimum sizes).

4.4.2 Future technical measures: in which context and decided by whom?

The 'new CFP basic Regulation' does not frame or limit the bringing in of technical measures within some given 'secondary' legislative instrument or within a defined specific set of further rules. It provides however that multiannual plans for the restoration and sustainable exploitation of fish stocks must include, among other things, the objectives of technical measures as well as measures designed to avoid or reduce unwanted catches (Art. 10); the adoption of such plans must be a priority in the CFP (Art. 9).

As a general basis, decisions on technical measures shall be subject to the ordinary legislative procedure. However, notwithstanding any yet hypothetical future delegation of powers, the reformed 'CFP basic regulation' foresees some possibilities for the European Commission to decide on conservation measures, including technical ones, when exercising delegated powers, in particular in the context of regional cooperation (specifically in respect of a Union conservation measure applying to a relevant geographical area - Art. 18).

The European Commission or a Member State may also take some (time-limited) measures, including possibly of a technical nature, on grounds of urgency in case of a serious threat to marine biological resources (Art. 12 and 13).

In the near future, a number of existing rules will have to be made compatible with the newly decided policy to progressively eliminate discards in EU fisheries. The Commission tabled a proposal to this end in January 2013⁷⁰. The Commission has also announced its intention to propose a substantial review of the technical measures regulatory framework in the medium term.

5. Technical measures: a source of mandatory discards

5.1. A reformed CFP which aims at ending discards

A major feature of the reformed CFP is to shift away from the former policy and still existing practices whereby significant amounts of fish caught by fishermen are returned (often dead) back at sea.

⁶⁹ The previous 'CFP basic Regulation' (EC) No 2371/2002 referred to technical measures with regard to limiting fishing mortality and the environmental impact of fishing activities, and gave indications on the type of measures they could include, but it did not provide for a formal definition thereof.

⁷⁰ File [2013/0436\(COD\)](#).

Discards at sea of fish of commercial stocks⁷¹ can be motivated by economic reasons (fish with no local market, or no trade circuit in the vessel's usual landing ports, damaged fish, or fish subject to other pre-market selection like high-grading⁷²). Discards can also be a direct consequence of regulations, particularly those rules which prohibit the keeping of those fish caught in the absence of fishing possibilities (e.g. no quota or quotas exhausted) or those fish not complying with some technical rules, particularly minimum sizes, catch composition rules, or fish caught in closed seasons or areas or using a type of gear not authorised for the species concerned.

The 'new CFP basic regulation' (EU) No 1380/2013 notably establishes, as one of its objectives (Art.2):

...5. The CFP shall, in particular:

(a) gradually eliminate discards, on a case-by-case basis, taking into account the best available scientific advice, by avoiding and reducing, as far as possible, unwanted catches, and by gradually ensuring that catches are landed;

(b) where necessary, make the best use of unwanted catches, without creating a market for such of those catches that are below the minimum conservation reference size;...

In operational terms, the 'new CFP basic regulation' sets a calendar for a progressive introduction of an obligation to land all fish caught, depending on the sea area and the fisheries concerned. This discard ban shall apply at first, from 1 January 2015, to pelagic fisheries, industrial fisheries (fish destined for transformation into fish meal and fish oil) and quota-species-defined fisheries in the Baltic Sea.

The discard ban calendar set in the new 'CFP basic regulation' is partially reproduced here:

Article 15

Landing obligation

1. All catches of species which are subject to catch limits and, in the Mediterranean, also catches of species which are subject to minimum sizes ... caught ... in the fisheries and geographical areas listed below shall be brought and retained on board the fishing vessels, recorded, landed and counted against the quotas where applicable,..., in accordance with the following time-frames:

*(a) From **1 January 2015** at the latest:*

- small pelagic fisheries (i.e. fisheries for mackerel, herring, horse mackerel, blue whiting, boarfish, anchovy, argentine, sardine, sprat);*
- large pelagic fisheries (i.e. fisheries for bluefin tuna, swordfish, albacore tuna, bigeye tuna, blue and white marlin);*
- fisheries for industrial purposes (inter alia, fisheries for capelin, sandeel and Norwegian pout);*
- fisheries for salmon in the Baltic Sea.*

*(b) From **1 January 2015** at the latest for species which define the fisheries ... in Union waters of the Baltic Sea for species subject to catch limits other than those covered by point (a).*

(c) ...

⁷¹ See for example 'Discarding fish under the Common Fisheries Policy - Towards an end to mandated waste', Library Briefing, European Parliament, May 2013 ([130436 Rev1](#)).

⁷² Cf. foot-note 28: high-grading practice consists of keeping only the most valuable fish sizes (or species) with the aim to maximise returns and discarding lower value but legally catchable fish.

*(d) From **1 January 2017** at the latest for species which define the fisheries ... and from **1 January 2019 at the latest** for all other species in fisheries ... in the Mediterranean, in the Black Sea and in all other Union waters and in non-Union waters not subject to third countries' sovereignty or jurisdiction....*

5.2. Aligning current rules for consistency with the aim to end discards

A number of existing EU provisions forbid fishermen from keeping on board and landing fish which have been caught in contravention with fisheries technical specifications. These provisions are no longer in line with the policy reform aimed at gradually eliminating regulatory-led discards.

To prevent legal inconsistencies once the landing obligation starts, the Commission tabled a proposal in December 2013⁷³ amending several fisheries regulations containing technical measures in order to make them compatible with the future landing obligations and some associated conditions (in particular that those fish below minimum sizes which must be landed cannot be used for direct human consumption).

This single legislative proposal covers changes within the three main geographical technical measures regulations (the 'TM regulation 850', the 'Baltic TM regulation', and the 'Mediterranean regulation') as well as within three regulations designed for the management of specific stock (multiannual plan for Baltic cod, recovery plan for Irish Sea cod, and conditions for deep sea stocks fishing⁷⁴). It also foresees repealing a regulation⁷⁵ specifying technical conditions (catch composition rules) under which catches of herring may be landed for industrial purposes other than direct human consumption as this would become irrelevant from 1 January 2015. Finally, in addition to reviewing those technical measures concerned, the Commission also includes in the same legislative proposal a number of possible changes to be made to the centrepiece regulation dealing with controls in fisheries⁷⁶.

Changes to these above-mentioned regulations are all to be decided by the EP and the Council. Additional adjustments would also be required to those Commission regulations which contain technical measures provisions no longer compatible with the new all-catch landing policy.

The inconsistencies between existing technical rules and the provisions of the reformed CFP policy should logically be corrected before 1 January 2015, when the first landing obligations are to start. This puts limits on the time available to the EP (and the Council) for proper examination and discussion of the Commission proposal on this item. It is clear that the institutional changes to take place in 2014 (notably the new EP legislature) will add significantly to the time constraints, a concern already expressed by some Members of the EP when the Commission presented its proposal in the Committee on Fisheries on 11 February 2014⁷⁷.

There may be different options to address legal inconsistencies, possibly with differing consequences. The above-mentioned time constraints raise the question of whether

⁷³ File [2013/0436\(COD\)](#) - Proposal for a Regulation of the European Parliament and the Council amending Council Regulations (EC) No 850/98, (EC) No 2187/2005, (EC) No 1967/2006, (EC) No 1098/2007, No 254/2002, (EC) No 2347/2002 and (EC) No 1224/2009 and repealing (EC) No 1434/98 as regards the landing obligation ([COM\(2013\)889](#)).

⁷⁴ Respectively [Regulation \(EC\) No 1098/2007](#), [Regulation \(EC\) No 254/2002](#) and [Regulation \(EC\) No 2347/2002](#)

⁷⁵ [Regulation \(EC\) No 1434/1998](#)

⁷⁶ [Regulation \(EC\) 1224/2009](#)

⁷⁷ The [broadcast](#) of the meeting is available in web streaming on the EP website (item starting at 15:09)

legislative alignments should be made "across the board" for all existing provisions within all concerned regulations before 2015 (irrespective of the fact that the discard ban is to be introduced progressively between 2015 and 2019), or whether priority should be given by the legislator to align technical provisions applicable to the fisheries first concerned in 2015, namely pelagic and industrial fisheries (usually with low levels of unwanted catches) and fisheries in the Baltic Sea.

These time constraints on the legislative process may also lead to the actual nature and real aim of the proposed amendments being scrutinised more closely and subject to additional controversy in this regard. Indeed, the Commission is also in the process of preparing a full review of the technical measures framework in the context of the reformed CFP. The present Commission proposal is hence presented only *"to remove any legal and practical impediments to implementation [of the progressive landing obligations] on a transitional basis while this new framework is being developed"*. This would mean for example replacing 'minimum sizes' for fish by 'minimum conservation reference sizes' (without any changes in substance on the different sizes themselves) or by inserting derogations to the minimum size and catch composition rules for those fish which are not to be discarded any more, and to require those amounts of fish being counted against quotas.

However, some proposed changes may not to be linked directly with, or immediately necessary for, the landing obligation decided as part of the CFP reform. For example, among the numerous sets of amendments, the Commission also proposes to review some provisions regarding an area closure to protect juvenile haddock. In the explanatory memorandum, the justification given for this is the possible misinterpretation of existing law which would create concerns for the conservation of haddock in this area⁷⁸. Similarly, some of the proposed amendments (in particular in association to practicalities of control) may not be seen as "simple" legal alignments. By creating new and additional requirements, these amendments may be considered to go beyond a straightforward change necessary at short notice for the purpose of legal consistency, a concern that may be exacerbated by the absence of any new Commission impact assessment accompanying this proposal.

6. Towards a comprehensive review of technical measures in fisheries

6.1 European Commission preparing for a review

A road map for an initiative on an in-depth review of the technical measures legislative framework was already prepared as early as 2011 by the Commission services⁷⁹. At the

⁷⁸ Cf. Article 1 of the [proposal](#) (on amendments to Regulation (EC) No 850/98), point (18) about the replacement of "Article 29c: Rockall haddock box in ICES sub-area VI". Some may question the Commission's justification ("risk to a stock because of possible misinterpretation") applied only to this small specific provision while the whole set of technical rules in itself is seen by the Commission as difficult to understand, control and enforce (see chapter 6.2), as well as the level of this risk compared to the urgency of such a change. Some may also see the motivations for the overall Commission proposal, by being not strictly limited to the alignment with landing obligations and by reviewing in parallel the Rockall haddock box rules, as a valid reason to extend the debate on this legislative proposal about other possible causes of concerns for stocks because of the current technical rules.

⁷⁹ [Road map](#) on a proposal for a Regulation of the European Parliament and of the Council for the conservation of fishery resources through technical measures for the protection of marine organism (DG MARE); Last modified in June 2011 and published as part of the 2012 road maps (see the detailed [work programme of the European Commission](#) - DG MARE for 2012), this road map - not yet update in May 2014 - foresees adoption of the proposal by the Commission in March 2013. The initiative has however been rescheduled as the DG [MARE management plan](#) 2013 included some preparatory evaluations due

beginning of 2014, the European Commission launched a **public consultation**⁸⁰ on the issue (the consultation started on 24 January 2014 and was due to last until 15 May 2014). The finalisation of the legislative proposal has been included as part of the Commission 2014 work programme⁸¹.

The Commission proposed on 14 May 2014 a complete ban of specific fishing gear, namely driftnets, as from 1 January 2015⁸². Although this initiative about some new technical rules may trigger a number of questions – not only when considering the proposed date of entry into force and the institutional calendar, as well as the timing of this specific proposal while a general review of fisheries technical measures is being prepared in parallel – it is not further considered in this paper.

6.2 What are the problems and challenges?

According to the preparatory documents from the European Commission services, the review of the technical measures legislative framework should allow a number of problems to be addressed, notably:

- the current complexity of technical measures: the vast number of provisions, possibly even contradictory, including multiple derogations and exceptions, disseminated in a range of different legal texts makes them difficult not only to understand, but also to control and enforce;
- limited effectiveness: although some technical measures introduced primarily to improve selectivity may have had positive effects (e.g. in Nephrops fisheries), many fisheries remain somewhat unselective, with possibly high levels of unwanted catches of commercial or non-commercial species and high discard rates. The setting of some technical measures may also have led to unanticipated negative effects.

Moreover, the review of the technical measures framework should be developed in the context of the reformed CFP.

It should thereby strive towards:

- a general improvement in the selectivity of fisheries, not only to ease the progressive elimination of discards, but to reduce and avoid unwanted catches at first hand;
- contributing to the CFP objective of restoring and maintaining populations of harvested species above levels which can produce Maximum Sustainable Yield (MSY⁸³), by 2015 where possible, and by 2020 at the latest for all stocks;
- minimising the negative impact of fishing gears on the ecosystem.

In terms of CFP governance, reviewing the technical measures framework should be particularly important in relation to regionalisation, and to the management by objective approach of the multiannual plans. It should allow for more stakeholder

to last until December 2013 (cf. references on page 67 for a retrospective evaluation of the existing technical measures regulations and a prospective study).

⁸⁰ This consultation is [available on the DG MARE website](#).

⁸¹ See annexes (page 15) to the European Commission work programme 2014 ([COM\(2013\)739](#)).

⁸² See proposal [COM\(2014\) 265 final](#), 2014/0138 (COD)

⁸³ In the new 'CFP basic regulation', **MSY** is defined 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*'. MSY grossly corresponds to the largest catch of a fish stock that can be taken over an indefinite period without harming it (with environmental conditions remaining constant). MSY is usually expressed in terms of amounts (weight) of fish which can be harvested.

involvement, lead to operators adhering to the principle of responsible fishing, and provide incentives for more selective fishing.

In its road map for a future technical measures proposal, the Commission notably states that *"the failure to reach political agreement [by Council] on a new technical measure regulation [notably on such a proposal submitted in 2008⁸⁴] highlights the need for a new approach... based on simplification, the decision making of the Lisbon Treaty, strengthening the long term approach..., regionalisation, further stakeholder involvement and more industry responsibility"*.

6.3. Some issues at stake when assessing the past.

6.3.1. Technical measures as part of other management measures

It is important to underline that technical measures are part of a wider set of management tools, available to, and used by fisheries managers to regulate fisheries.

Such other measures may aim at controlling fisheries outputs (e.g. what can be caught, notably through total allowable catches (TACs) and quotas) or limiting fisheries input (e.g. rules on fishing efforts, such as the power and tonnage of the fleet, or the number of days at sea to fish).

When managing fisheries and stocks, regulators usually focus on two aspects:

- limiting the **exploitation rate**, i.e. the overall proportion of fish which are removed from a given stock (e.g. catch allocation through quotas); and
- influencing the **exploitation pattern**, i.e. the proportion of fish which is removed from each age class (i.e. by categories of age and size) in a given population.

Control of the exploitation pattern can have a significant positive role in conservation, but the regulation of the exploitation rate, in comparison, can generally be more influential. Most often, fisheries are managed based on some trade-off between both the pattern and the exploitation rates.

Technical measures can significantly influence the exploitation pattern (notably size selective measures), but they can also play an important role in regulating the overall exploitation rate (e.g. intra-species selective measures, rules on size and maximum amount of gear used).

Both high exploitation rate and high exploitation pattern on younger age classes have, individually and in combination, a negative influence on the conservation status of a stock.

Scientists can model the influence of varying the exploitation rate and the exploitation pattern on a stock. Based on its analysis of practical cases, the Scientific, Technical and Economic Committee on fisheries (STECF) concludes⁸⁵ that selective fishing which retains fishing mainly above the maturity age combined with a moderate exploitation rate of the selected (higher) age classes "results in clear benefits in terms of yields and stock biomass". However, it also recognises that exploiting only some given age classes of a stock modifies its general demographic pattern and that selective mortality may

⁸⁴ Proposal for a Council Regulation concerning the conservation of fisheries resources through technical measures ([COM\(2008\)324](#)).

⁸⁵ Except when otherwise stated, references to STECF in this chapter are made with regard to two reports, both entitled "Different principles for defining selectivity under the future TM regulation", from 2012 ([STECF-12-20](#)) and from 2013 ([STECF-13-04](#)), published on the JRC website.

have broader implications over time on the stock and the ecosystems in general (e.g. genetic selection of smaller maturing fish).

Considering that technical measures are always part of a wider set of fisheries management measures acting in combination - and not necessarily effectively implemented - ex-post assessment of individual existing technical measures is potentially rather difficult, if not sometimes impossible (notably in quantitative terms with regard to its contribution to reducing mortality on fish stocks).

6.3.2. Gaps between technical trials, legal requirements and the reality of implementation

Numerous studies on innovation and improved selectivity in fishing have been, or continue to be, undertaken by national research laboratories (possibly with EU, national and private funding), often in partnership with some professional operators.

However, the actual technical conditions in which research trials prove positive in terms of selectivity may not necessarily result in appropriate corresponding legal provisions; and the setting by law of some new technical measures may also be accompanied by numerous derogations. The reasons for this may include an insufficient technical basis (e.g. lack of full understanding by scientists and fisheries managers, insufficient data or sharing of information by professionals), initial proposals of limited quality and final decisions resulting from compromise and legitimate political choice (e.g. balance between selectivity gains and economic losses or taking into account of competition between fisheries using different gear).

Subsequent to its adoption, each new technical rule has not necessarily been effective. Part of the complex set of technical measures has come about due to the "race" between fishermen and regulators, the former to innovate and modify their practices in order to limit economic losses from any new restrictive measure, the latter to adjust fisheries management to these innovations, especially in a context of overexploited stocks. Moreover, fisheries management rules are generally not referred to as a model of proper implementation, nor a benchmark of ideal enforcement by competent authorities, at all levels.

These above considerations need to be kept in mind when assessing the current sets of technical measures, but also when envisaging new technical measures for adoption. It is however important to note that the limits which hamper the overall effectiveness of fisheries technical measures (gaps between scientific optimisation and reality, implementation shortcomings, continued technical innovation but also changes in ecosystems) are equally applicable to the other types of tools used by fisheries managers (limitations of fishing opportunities, management of fishing effort, recovery plan, etc.).

6.4. Some issues at stake when considering the future.

The Commission consultation document launched in January 2014 raises a number of open questions to interested parties on the possible development of technical measures in the future. The sections below illustrate a few possible issues in this perspective, but not necessarily from the same angle or with the same details.

6.4.1. Technical measures as part of other management measures

Technical measures will continue to be part of a wider set of management tools. This implies that changes in technical measures will have to be envisaged and assessed in the context of all CFP objectives, and particularly the CFP objective of restoring and maintaining the populations of harvested species above levels which can produce

Maximum Sustainable Yield (MSY⁸⁶) by 2015 where possible, and by 2020 at the latest for all stocks.

As recalled by STECF, for any given stock, MSY is determined by the exploitation pattern and stock status in relation to MSY for a given EP is determined by the exploitation rate (assuming that biological characteristics, like growth or stock-recruitment, remain constant).

Even subtle changes in the exploitation pattern (selectivity) can produce important differences in MSY and in the fishing mortality level to result in MSY (Fmsy). If new technical measures lead to changes in the exploitation pattern of a particular stock, then MSY (Bmsy and Fmsy⁸⁷; namely the stock biomass and the fishing mortality resulting in MSY) for that stock will change and the assessed stock status may also change even if the overall exploitation rate remains constant.

It is therefore important for fisheries management to know about the actual exploitation pattern and that MSY reference points are reviewed periodically, *"particularly if there is evidence of improvements in selection pattern associated with changes in technical measures"*.

6.3.2. How best to reduce unwanted catches

- **Stopping discards of legally unwanted catches**

A central element of the CFP reform is the shift away from the present regulatory-led discarding practice translated into the requirement that all (commercial) fish caught, including unwanted catch, be landed.

In the context of fisheries management and policy, references to 'unwanted catches' should primarily be viewed as catches that fisheries managers do not want to take place, from a stock conservation perspective or from a broader ecosystem protection point of view. From the point of view of an individual economic operator, in the short term, small fish may not necessarily be unwanted if they can be of good economic value (small sized specimens of some species may fetch high prices in some markets), while well sized fish caught in a closed area or in the absence of quotas may not be unwanted either if they can (more or less easily) reach the market.

As illustrated in the previous chapter, eliminating regulatory-required discards implies the need to review accordingly the provisions which presently prohibit the landing of fish caught in contravention to technical rules. Undersized fish or fish in excess of catch composition limits which must be landed would be counted against the quotas. Fish below "minimum conservation reference size" will also be subject to market access limitations (i.e. not for direct human consumption, i.e. with lower economic return to fishermen).

However, even if all catches must be landed, part of them may remain "undesired" from a conservation perspective and other provisions have to be set in order to keep such catches limited.

- **...or reducing the scope of legally unwanted catches?**

⁸⁶ See also foot-note 83.

⁸⁷ F is the fishing mortality rate (the proportion of fish caught and removed by fishing). B is the biomass of a stock, i.e. the total weight of all fish of a given population (without any differentiation by age or gender classes). FMSY is the maximum rate of fishing mortality resulting, in the long run, in a population size of BMSY, biomass that enables a fish stock to deliver the maximum sustainable yield.

A reduction in unwanted catches could also be brought about by reducing the scope and the number of technical restrictions, without such simplification necessarily opposing the objective of restoring and maintaining stocks above MSY levels. It seems likely that a thorough assessment of the relevance of each current technical measure may allow for simplification, including for a reduction in the inventory of what managers have over time progressively defined as unwanted catches.

The complex sets of catch composition rules look good candidates for "simplification" in a future framework for technical measures. Not only do they contribute today for a significant part in the scope of legally-unwanted catches, but it would not make sense to leave them unchanged under a new policy requiring that all catches must be landed and counted against the quotas. Either they are associated to additional sets of (negative) incentives for fishermen to fish in ways that keep their catch of different species as closely as possible in proportion with the established catch compositions, or they are simply discontinued. This latter option seems more likely, though it may trigger additional issues to be addressed when managing actual catch quotas in the future (including the possible share between different fleets or vessels), as fishing behaviour and fishing patterns may also change as a consequence.

The current rules on minimum sizes for fish also raise a number of issues.

Technical rules with regard to minimum conservation reference sizes should logically be science-based (i.e. the protection of juvenile fish should notably be based upon growth rates and size/weight/age/sexual maturity relationships). Currently, numerous commercial species are subject to minimum size requirements, but for a given species, sizes may differ depending on the sea areas (including no size limit at all) without such differences necessarily being justified by scientific variations between seas or stocks. The need to simplify could be a valuable argument for harmonised rules, in particular where there is no conservation rationale to apply different sizes for the same species.

Another glaring problem lies within the inappropriate match between minimum mesh sizes (and the actual sizes of fish they allow catching) and minimum fish sizes. The rationale behind setting numerous minimum fish size limits in multi-species/multi-gear fisheries is questionable as one mesh size cannot fit such varied minimum fish sizes.

Similarly, the value of setting minimum sizes for several tenths of different species may be re-assessed as this can contribute to important levels of discards without necessarily influencing significantly on the conservation of some stocks. Even if it can be seen as incentivising selective fishing by virtuous fishermen fishing on wealthy stocks, it can also be seen as incentivising reduced selectivity aimed at avoiding losing fish greater than the minimum size, particularly in situations of stock overexploitation. Simplifying technical measures by reducing the number of species subject to legal minimum sizes would not necessarily imply less stock conservation, considering that other management measures would apply. If scientific data on size/age class of all catches continue to be needed, simplification of technical rules with legal minimum sizes set for only few major target species could be of interest to both operators and control authorities⁸⁸.

⁸⁸ In its previously attempted general revision of the 'TM Regulation 850', presented in 2008 ([COM\(2008\)324](#), file [2008/112/CNS](#) - see chapter 4.3 and foot-note 59), the European Commission already proposed, among other things, to reduce the number of species with minimum landing sizes (MLS) and to end possible differences in MLS depending on fishing areas. As illustrated for example in a publicly available [UK position](#) at that time, such proposals led to a number of questions and concerns from some Member States.

There are some 'historical' discrepancies between rules on minimum fish size established for fisheries conservation purposes, and parallel rules on minimum commercial sizes of fish established in the common market policy for fishery products⁸⁹. The review of technical measures would provide an opportunity to look at this discrepancy, and to review the need at all for a double system of minimum sizes for conservation purposes and for marketing rules.

- **Actually not catching unwanted fish in the first place**

As foreseen in the reformed CFP, technical measures should act as a central tool minimising unwanted catches and providing first and foremost for increased selectivity in fishing practices.

Notwithstanding the practicalities of its control and enforcement, the progressive discard ban also raises a number of implementation difficulties regarding stock conservation. As highlighted by the STECF in November 2013 in its report on landing obligation in EU fisheries⁹⁰, the landing of those fish which would have survived if discarded will increase actual fishing mortality. The potential impact of the all-catch landing policy will depend on numerous factors, such as the age structure of catches and the discard survival rates. Assuming no change in selectivity, the STECF simulations lead to a reduction in stock biomass over time⁹¹ or to the need to reduce fishing opportunities (such as TACS and quotas, hence the exploitation rate) if some predefined fishing mortality target (e.g. F_{MSY}) are to be met.

In this context, the actual reduction of unwanted catches, rather than simply requiring their landing, may become even more important. A recurrent idea in this context envisages going beyond technical specifications on mesh sizes or gear design by ways to improve "behavioural" avoidance of juvenile fish (e.g. with more involvement of operators, real-time closure or moving out provisions where fishing in given areas leads to excessive catch levels of small fish).

⁸⁹ Common marketing rules are essential for the good functioning of the internal market. Though marketing rules are not aimed at conservation of fish stocks, they should strive for consistency. Different minimum conservation sizes for the same species may lead to additional complexity (notably regarding traceability and control issues) once fish are landed and enter the market. Moreover, as already highlighted years ago by the Commission when reporting on the common market of fishery products (see [COM\(2006\)558](#)), the parallel systems of minimum marketing sizes and minimum sizes for stock conservation are suboptimal. This relates, among others things, to the fact that the vast majority of minimum conservation sizes are established in length, while minimum marketing sizes are defined in weight. However, the weight of fish of a certain length may vary significantly depending on individuals, seasons, etc.

The reformed CFP market policy ([Reg. \(EU\) No 1379/2013](#); see article 33(2) thereof) establishes the principle of correspondence, 'where relevant', between minimum marketing sizes and the minimum conservation reference sizes (MCRSs) newly defined in the reformed CFP 'basic Regulation' ([Reg. \(EU\) No 1380/2013](#), see in particular article 15(10)). For the further implementation of the new CFP principles, if MCRSs are to be reviewed as part of the general review of technical rules, the appropriateness of setting rules based on minimum fish sizes should be assessed jointly for both conservation and marketing objectives, balancing out notably questions of practical implementation.

⁹⁰ "Landing obligation in EU fisheries" ([STECF-13-23](#)); report reviewed by STECF plenary meeting on 4-8 November 2013 (published by the JRC).

⁹¹ See STECF-13-23: "the worked example show that where there is > 50% survivals across all age groups, then landings in fish would result in ~ 30 % reduction in stock biomass (after 20 years) assuming no change in selectivity. Where discard survival is lower with younger age group, the effect is far less pronounced (~ 6%)".

- **Deepening the ecosystem based approach... and going for a more 'balanced harvest'?**

In a number of policy documents - including in the most recent ones such as the Commission consultation document on the future technical measures framework - the ecosystem impacts of fisheries are primarily described, or referred to, as the effects of fishing on non-commercial and protected species such as sea mammals, sea birds or sea turtles, or on vulnerable marine habitats (e.g. those with fragile, very low growing corals).

It is likely that technical measures will continue to be one of the major tools for fishermen and managers to reduce or avoid incidental catches of non-commercial and protected species. Similarly, technical measures (closed areas) will remain an appropriate way to prevent irreversible impacts of some fishing practices on vulnerable marine habitats.

However, the impacts of fishing on the ecosystems are much wider than those on a limited number of selected species and habitats. Removing large amounts of some species (of market-interest) can significantly modify the food webs and the overall equilibrium and biodiversity of marine ecosystems including in terms of genetic changes in exploited fish populations. The question of selectivity, notably size selectivity, and the specific attention given to the protection of juveniles may be further considered in this regard.

It has been highlighted by the STECF that "*catching fish after they have spawned at least once; i.e. protecting immature fish is an old intuitive concept, predating fisheries science itself*"⁹². However, fisheries science has also endorsed this concept. Scientists have dedicated decades of research and work to supporting justifications for more selective fishing, particularly within the context of a single stock management approach and with the aim of maximising catch possibilities (MSY). Similarly, the concept of protecting juvenile fish has, since the earliest times, been a cornerstone of the policy pursued by fisheries managers.

There is however a growing body of literature which highlights that protecting juveniles and selective fishing on some specific age/size classes within a fish population can lead to evolutionary changes (e.g. rapid genetic shift towards smaller individuals and changes in age of maturation).

Some scientists suggest a need to change from the old paradigm of 'selective fishing' towards a more 'balanced harvest', more in line with an ecosystem-based approach to fisheries management: each age class of a population would be subject to fishing mortality levels which would allow the normal population demographic structure to be kept within its "normal variation range", while simply reducing its overall abundance⁹³. Mortality from fishing activities should also not lead to excessive disequilibrium in food webs or in interactions between species, in consideration of the ranges of variability and the capacities of resilience of the natural environment.

The new CFP confirms the principles of managing fisheries based on selective fishing and on minimum conservation reference sizes which take into account the maturity of fish. It remains unlikely therefore that the Commission's work to prepare for revised

⁹² [STECF-12-20](#) (see for example page 21).

⁹³ See for example the 2010 [IUCN workshop report](#) on "Selective fishing and balanced harvest in relation to fisheries and ecosystem sustainability" or the [EP workshop](#) on the issue in November 2012.

technical measures will include assessment of options for less selectivity to give more prominence to a comprehensive ecosystem based approach. It may nevertheless be valuable, when considering pros and cons to set rules for stock conservation purposes based on fish size, not to limit the reflection to 'minimum sizes', but also to envisage the possible value of 'maximum sizes'. Making unwanted the catch of larger specimens, (e.g. for long-lived and low reproducing species like some sharks or skates and rays), may be also a valid avenue to contribute to conservation. The protection of older and large mature fish ('BOFFs: big old fat fecund females') may also provide some mitigation against the genetic drifts induced by minimum-size selective fishing. Actually, the use of some gear like set gillnets with rather rigid netting panels or some hooks (depending on size, shape and bait) are already selective for a precise size-range and they not only avoid catches of smaller fish, but also reduce the probability of catching very large fish specimens (if they are still present in a species' population...).

6.3.3. How best to decide on new technical measures?

- **Simplification at EU level and enabling more regional approaches**

Though "*the conservation of marine biological resources under the Common Fisheries Policy*" is of exclusive Union competence, a move towards simplification and less involvement in details at EU level, besides more regionalisation appear to be among the guiding principles in the Commission's preparation of the future technical measures framework.

There are a number of reasons for increased cooperation in fisheries at the regional level, considering notably the differences in sea-basins ecosystems, the diversity in fisheries and some strong links between fisheries and local coastal communities. The Reformed CFP basic Regulation indeed allows for new forms of regionalised cooperation (Art. 18), but not as a general rule. Regional cooperation mechanisms or even some routes towards empowerment of Member States (MS) will be possible, but subject to prior defined empowerment by the EP and the Council, within a Union conservation measure applying to a relevant geographical area.

The Commission has announced that it is considering a possible framework regulation rather than an exhaustive detailed review of all existing technical measures provisions. According to the public consultation document⁹⁴ from the Commission services, "*the new CFP is based on the principle of management by result. The EU legislator fixes objectives, targets and standards, and Member States cooperate regionally with input from all stakeholders to design the best suited tools to achieve these objectives and targets. This requires rethinking the current set of technical measures in relation to the needs of regionalisation and stakeholder involvement*".

This could be interpreted by some as an orientation towards narrowing the scope of measures being adopted by the EP as co-legislator, and privileging options in which the bulk of fisheries technical measures might in future be decided by empowered bodies.

- **....or ensuring that the EP remains fully in a position to exert its co-legislator role in fisheries matters**

In this perspective, the possibilities for empowerments for fisheries technical rules (implementing or delegated acts, or even MS themselves in some regional cooperation) may become a policy debate.

⁹⁴ DG MARE [consultation document](#): "Development of a new framework for technical measures in the reformed CFP".

The intrinsic complexities and technicalities of fisheries technical measures, combined with the EP's limited experience so far as co-legislator on these matters added to a possible lack of 'internal' technical expertise (compared to the European Commission services or Member State administrations) may be considered by some to justify an EP involvement in technical measures which would remain centred only on the essentials. EP support for some improved regional cooperation in the CFP reform process may be used as an additional argument in this regard.

On the other hand, though having had only limited opportunities and fisheries technical rules to consider in substance and decide on since the entry into force of the Lisbon Treaty, the EP and its Committee on Fisheries have already shown their willingness and ability to address highly technical details on fisheries matters⁹⁵.

The EP already agreed also on some implementing powers on technical measures when adopting the Regulation⁹⁶ aimed at avoiding an interruption in some transitional technical measures. In this instance, in view of these particular circumstances, the EP declared⁹⁷ *"that the provisions of this Regulation regarding implementing acts were the result of a delicate compromise. In order to achieve a first reading agreement before the expiry of Regulation (EC) No 850/98 by the end of 2012, it [had] accepted the possibility of using implementing acts in certain specific cases in Regulation (EC) No 850/98. It stressed, however, that those provisions were not to be taken or used as a precedent in any regulation adopted in accordance with the ordinary legislative procedure, in particular the Commission proposal for a Regulation amending Council Regulation (EC) No 850/98"*.

In this latter regard, the EP adopted its first reading position⁹⁸ in September 2013 on a specific proposal to align the 'TM regulation 850' with the TFEU with regard to Commission delegated and implementing powers⁹⁹. The EP has also given its first reading position on the alignments with the TFEU of the 'Baltic technical measures regulation'¹⁰⁰ and of the 'Mediterranean Regulation'¹⁰¹. However, no progress has been made on these "Lisbonisation" files, as discussions at Council level were still "frozen" as of the beginning of May 2014.

In this context, the prospects for the transition between the present and the future may become even further complicated. Take for example a working scenario where a proposal for a new technical measures framework regulation foresees that some types

⁹⁵ As a very recent example, the EP requested to insert new and highly technical provisions concerning the use of stereoscopic cameras during caging operations, when examining the proposal for a Regulation amending the multiannual recovery plan of bluefin tuna ([2013/0133\(COD\)](#); see notably new Article 24a).

⁹⁶ [Regulation \(EU\) No 227/2013](#); See also chapter 4.3.

⁹⁷ See notably the [summary](#) of the EP first reading position and the [summary](#) of the final act of file 2012/0158(COD).

⁹⁸ Report [P7_TA\(2013\)0336](#), file [2012/0208\(COD\)](#).

⁹⁹ Delegated acts would for example concern rules on the division of regions into geographical areas, the use of mesh size combinations, on the respect of catch compositions, on technical descriptions and methods of use of authorised devices attached to the fishing net, or the measures to address unexpected large changes in recruitment of juveniles, changes in migration patterns or any other changes in the conservation status of fish stocks, with immediate effect. Implementing powers would be given to the Commission as regards for example rules on measurement of some technical requirements (mesh sizes, twine thickness, engine power, gear dimensions...) or rules related to the construction of netting materials.

¹⁰⁰ Report [P7_TA\(2013\)0343](#), file [2012/285\(COD\)](#).

¹⁰¹ Report [P7_TA\(2013\)0009](#), file [2011/0218\(COD\)](#).

of technical measures might be developed progressively under delegated powers and where this proposal does not in parallel include some form of overhaul of all existing measures (in order to allow time for new technical measures to be progressively developed, possibly to a greater extent within regional cooperation frameworks, while avoiding a situation of immediate legal vacuum). Such a situation would not allow for simplifying the currently complex sets of separate and disparate regulations which contain technical measures, possibly for many years to come. It may even risk adding complication to the EU legislative package when a new technical rule to be decided under empowerment notably for 'regional' application may aim at substituting for, or prove incompatible with, an existing EU provision: this new rule may only become reality if the EU legislators (European Parliament and Council) decide according to the ordinary institutional paths to amend the EU regulations concerned to this effect.

7. Outlook

Fisheries technical measures can play a significant role in what is actually caught, or not caught, by fishermen, thus directly influencing their impact on fish stocks and marine ecosystems, as well as their income from fishing activities. The issues concerned are likely to feature strongly in the work of the incoming Parliament on the Common Fisheries Policy for years to come. In particular, the EP will have to decide on the proposed alignment of the existing technical rules with the decision taken in the reform of the CFP to end discards (back into the sea) of fish caught by fishing activities, starting from 2015 for some fisheries.

The new legislature will also have to consider a proposal put forward by the European Commission, less than two weeks before the European elections, to fully ban one specific fishing gear, driftnets. Beyond this specific proposal, the Commission has also indicated its intention, in its 2014 work programme, to propose a comprehensive review of the EU legislative framework on fisheries technical measures this year.

These perspectives may trigger complex and intricate technical and political discussions on numerous issues, such as the conservation value of some technical measures or matters relating to governance (e.g. stakeholders' involvement, and ways of increasing industry or Member State responsibility).

Important debates may also develop on the difficulty of aiming at simplification and reducing involvement at EU level in subjects where details can matter. This is particularly so since fisheries is a policy of exclusive EU competence, with the European Parliament only becoming co-legislator on most fisheries matters a few years ago, with the Lisbon Treaty. In addition, debate is also likely on the need for fisheries managers at EU level to be fully in a position to ensure compliance and proper supervision, notably to respond fast enough if CFP objectives are not met.

Main references

[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.

Council Regulation ([consolidated version](#)) (EC) No 850/98 for the conservation of fishery resources through technical measures for the protection of juveniles of marine organisms.

Council Regulation ([consolidated version](#)) (EC) No 2187/2005 for the conservation of fishery resources through technical measures in the Baltic Sea, the Belts and the Sound, amending Regulation (EC) No 1434/98 and repealing Regulation (EC) No 88/98.

Council Regulation ([consolidated version](#)) (EC) No 1967/2006 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.

Proposal for a Regulation of the European Parliament and the Council amending Council Regulations (EC) No 850/98, (EC) No 2187/2005, (EC) No 1967/2006, (EC) No 1098/2007, No 254/2002, (EC) No 2347/2002 and (EC) No 1224/2009 and repealing (EC) No 1434/98 as regards the landing obligation ([COM\(2013\)889](#)).

Proposal for a Council regulation concerning the conservation of fisheries resources through technical measures ([COM\(2008\)324](#)).

European Commission, Directorate General for Maritime Affairs and Fisheries (DG MARE) website (http://ec.europa.eu/fisheries/index_en.htm), notably:

- [Technical measures](#) webpage
- [Road map](#) on a proposal for a Regulation of the European Parliament and of the Council for the conservation of fishery resources through technical measures for the protection of marine organisms, DG MARE, June 2011
- [Public consultation](#): new framework for technical measures in the reformed Common Fisheries Policy

Scientific, Technical and Economic Committee for fisheries reports (edited by the European Commission Joint Research Centre):

- Different principles for defining selectivity under the future TM regulation: [STECF-12-20](#) (5-9 November 2012)
- Different principles for defining selectivity under the future TM regulation: [STECF-13-04](#) (8-12 April 2013)
- Landing obligation in EU fisheries: [STECF-13-23](#) (4-8 November 2013)

FAO website (<http://www.fao.org/fishery/en>), notably:

- [Fisheries technology](#)
- [Fishing gear and methods](#)

SEAFISH website (<http://www.seafish.org>), notably:

- [Basic fishing methods](#)
- [Fishing gear](#)

IFREMER - le monde de la pêche; website: <http://wwwz.ifremer.fr/peche/Le-monde-de-la-peche>, notably:

- [Les engins de pêche](#)
- [La sélectivité](#)

Fisheries technical measures are rules aimed in essence at reducing the catch of juvenile fish or unwanted species, and limiting the impact of fishing activities on vulnerable marine ecosystems. Characterised by intrinsic technical complexities, technical rules in the EU Common Fisheries Policy (CFP) have led over time into complex sets of legislation.

Fish caught in contravention to technical rules cannot be kept and landed by fishermen. However, the European Parliament has now to align these technical rules with the policy shift, decided in the 2013 CFP reform, to end the discarding of such unwanted fish back at sea. The European Parliament may also receive, by the end of 2014, a Commission proposal for a large review of the regulatory framework on fisheries technical measures.
