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IMPACT ASSESSMENT

Accompanying the document

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

establishing a mixed fishery multi-annual plan for demersal stocks and their fisheries in the North Sea

{COM(2016) 493 final}
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This report commits only the Commission's services involved in its preparation and does not prejudge the final form of any decision to be taken by the Commission

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Glossary

Biomass	Biomass refers to the size of the stock in units of weight. Often, biomass refers to only one part of the stock (e.g. spawning biomass, recruited biomass or vulnerable biomass, the latter two of which are essentially equivalent).
B_{lim}	A biological reference point. The stock size below which there is a risk of reduced reproduction leading to a reduction in recruitment.
B_{MSY}	A biological reference point. B_{MSY} is the average biomass expected if the stock is exploited at F_{MSY}. It is a notional value around which stock size fluctuates when $F= F_{MSY}$. It strongly depends on the interactions between the fish stock and the environment it lives in, including biological interactions between different species.
Days at sea	Allowed maximum time for fishing trips allocated to vessels per year, depending on their type of fishing gear. For the purpose of this impact assessment it means the same as 'fishing effort' which is the product of the capacity and the activity of a fishing vessel.
Demersal	Descriptive of a fish which lives at or near the bottom of the water column, e.g. cod or haddock.
Discard plan	A plan laying down specifications for implementation of the landing obligation in a given geographical area for given fisheries or species. The proposal for the plan is prepared by the Member States concerned and after scientific assessment adopted as Commission delegated act. Discard plans can only contain elements listed in Article 15(5) of Regulation (EU) 1380/2013 (the "Basic Regulation").
Discards	Unwanted catches returned to the sea during fishing operations.
Fishing mortality (F)	The rate at which fish are removed from the stock due to fishing operations.
F_{MSY}	A biological reference point. It is the fishing mortality rate that, if applied constantly, would result in an average catch corresponding to the Maximum Sustainable Yield (MSY) and an average biomass corresponding to B_{MSY}.
Harvest control rule	A set of rules which specify what the TAC for a given stock should be in a given year based on information about the state of that stock and its fisheries.
Landing obligation	Discarding is the practice of returning unwanted catches to the sea, either dead or alive,
Maximum Sustainable Yield (MSY)	In population ecology and economics, MSY is the largest average yield (catch) that can theoretically be taken from a species' stock over an indefinite period under constant environmental conditions.

Mixed fisheries	Fisheries in which several species are likely to be caught in the same fishing operation.
Overexploitation	A situation where catches of fish observed fishing mortality (or exploitation) rates exceed targets.
Pelagic	In relation to fish, the term 'pelagic' refers to fish which live in the upper layers of the water column, e.g. herring, sprat and mackerel.
Precautionary approach to fisheries management	An approach to managing fisheries to ensure a high probability of avoiding undesirable outcomes. Typically this involves specifying a limit value of spawning stock biomass, then managing fisheries to make sure the stock stays above this level. A limit reference point may also be specified for fishing mortality, in which case management will aim to keep fishing mortality below this level.
Recruitment	The number of new fish added to the exploitable portion of the stock resulting from growth of juvenile fish into adults, or migration of smaller fish.
Regionalisation	The process by which the Member States with direct interest for fisheries of a given geographical region organize themselves with the aim to agree on common management measures. The agreed measures as joined recommendation are submitted to the Commission and after scientific assessment adopted as Commission delegated acts.
Spawning Stock Biomass	The weight (usually in tonnes) of the total number of individual fish that is old enough to reproduce. This generally corresponds to the minimum landing size and so defines the 'fishable' population.
Stock	The population of a given species that forms a reproductive unit and spawns little if at all with other units. The “total stock” refers to both juveniles and adults while “spawning stock” refers to the adult population (see above).
TAC	Total allowable catch; the maximum biomass of fish that can be caught from a given stock in a given year.
Technical measures	Measure establishing conditions for the use and structure of fishing gear and restrictions on access to fishing areas.

List of acronyms

AC	Advisory Council
CFP	Common Fisheries Policy
EWG	Expert Working Group
FTE	Full-Time Equivalent
GVA	Gross Value Added
IA	Impact Assessment
ICES	International Council for the Exploration of the Sea
MAP	Multi-annual Plan
MRAG	Marine Resources Assessment Group
MSFD	Marine Strategy Framework Directive
MSY	Maximum Sustainable Yield
NGO	Nongovernmental Organization
NSAC	North Sea Advisory Council
SME	Small and Medium-Sized Enterprise
STECF	Scientific, Technical and Economic Committee for Fisheries
TFEU	Treaty on the Functioning of the European Union

Lead DG: DG MARE

Other departments involved: *DG ENV, DG GROW, Legal Services and the Secretariat-General*

Agenda planning/WP reference: 2011/MARE/063

1. INTRODUCTION

This impact assessment (IA) concerns the future framework for managing the demersal stocks and their fisheries in the North Sea in the context of the Common Fisheries Policy (CFP) – the "Basic Regulation" - that entered into force in 2014. The new CFP introduced an obligation to manage fisheries sustainably based on the principle of maximum sustainable yield (MSY). At the same time it introduced an obligation to land all catches that, for the North Sea, will have to be implemented incrementally between 2016 and 2019. The new CFP gives particular emphasis to multi-annual plans as one of the main conservation measure for fish stocks.

The current rules governing the demersal fisheries in the North Sea have been heavily criticised as overly prescriptive, ineffective and inapplicable. Additionally, they are not being applied coherently by the Council and the EU Member States. In particular, this is the case for the scheme that currently limits the number of days fishermen can spend at sea. It has created significant administrative burden and caused problems for the catching sector of the North Sea fishing industry by forcing them to apply unsustainable practices like discarding fish for which they do not have quota.

The IA presents the problems and challenges produced by the different generations of policy in detail. It defines the objectives with regard to the Basic Regulation, outlines the main policy alternatives and examines the options available to introduce the improvements required for an effective and smooth implementation of the new CFP. The consultation with stakeholders demonstrated almost unanimous preference for a new, flexible multi-annual management plan that would apply to fish stocks fished in mixed demersal fisheries in the North Sea.

This plan should be adaptive to the changing realities and conservation needs by facilitating the development of regionalised measures that are consistent with the objectives contained in EU law. Finally, it will provide an opportunity to simplify the current rules that have become overly complex and difficult to enforce. Simplification will contribute to reductions in administrative burden in terms of lessening the number of regulations fishermen will have to comply with and Member States will have to enforce. This stems from the commitments detailed in the Commission's Regulatory Fitness and Performance Program (REFIT)[1] for "Better Regulation". It also addresses the simplification needs outlined in an earlier Commission Communication on the implementation of the CFP[2].

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[1] COM(2013) 685 final Communication from the Commission to the European Parliament, the Council, the European Social and Economic Committee and the Committee of the Regions. Regulatory Fitness and Performance (REFIT): Results and Next Steps.

[2] COM(2009) 261 final Communication from the Commission to the Council and the European Parliament on the implementation of the Action Plan for simplifying and improving the Common Fisheries Policy.

2. PROCEDURAL ISSUES AND CONSULTATION OF INTERESTED PARTIES

2.1. Organisation and timing

New conservation measures need to be considered for the demersal fisheries in the North Sea that would implement the new CFP and replace the existing management plans for cod[3] and for plaice and sole[4]. The two existing plans have been evaluated by technical experts between 2011 and 2014, with the main conclusions that both plans need substantial revision. Consultation on a new approach to fisheries management in the North Sea has been ongoing since then.

This impact assessment concerns the management framework for the demersal stocks and their fisheries in the North Sea. The initiative was planned in 2011 (Agenda Planning **2011/MARE/063**) and enshrined in the 2013 Annual Management Plan of the Directorate-General for Maritime Affairs and Fisheries. The long delay in implementing the initiative is due to the negotiations on the reform of the Common Fisheries Policy (CFP) that lasted from 2011 until the end of 2013. The regulation defining the new CFP entered into force on January 1, 2014[5]. Additionally, within that time frame, there were inter-institutional discussions on the respective competences of the Council and the Parliament; their agreement was published in January 2014[6].

The impact assessment report (IAR) was submitted to the Regulatory Scrutiny Board (RSB) on June 8, 2015. The RSB met to consider the IAR on July 1, 2015. The RSB produced a set of comments[7] prior to the meeting, on June 26, 2015, and their opinion[8] was published on July 6, 2015.

2.2. Consultation of the Regulatory Scrutiny Board

The impact assessment report (IAR) was revised considerably following the extensive comments received from the RSB. A broad description of the changes, requested in the opinion from the RSB (Ares(2015)2821066 - 06/07/2015) is given below; the detailed changes required in both the opinion and in the impact assessment quality checklist were provided to the RSB separately.

The opinion listed four main recommendations for improvement in the following areas: the policy context; the provisions of the multi-annual plan; the analysis of impacts; compliance and monitoring.

The policy context: the revised report merged the previous sections entitled "Policy Context" and "Problem Definition" into a new section entitled "Problem Definition". This section now

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3 Council Regulation (EC) 1342/2008 of 18 December 2008 establishing a long-term plan for cod stocks and the fisheries exploiting those stocks and repealing Regulation (EC) No 423/2004. *(OJ L 348, 24.12.2008).*

4 Council Regulation (EC) No 676/2007 of 11 June 2007 establishing a multi-annual plan for fisheries exploiting stocks of plaice and sole in the North Sea (*OJ L 157, 19.6.2007*).

5 Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy. (*OJ L 354, 28.12.2013*).

6 http://www.europarl.europa.eu/meetdocs/2009_2014/documents/pech/dv/taskfor/taskforce.pdf

7 Impact Assessment Quality Checklist for Regulatory Scrutiny Board Opinion.

8 RSB opinion – Ref.Ares(2015)2821066 - 06/07/2015.

explains in much clearer terms the evolution of fisheries management policy over the last 15 years including the introduction of the existing management plans, the rationale of the new Basic Regulation and the challenges that the various regulations have raised. It explains what instruments the Basic Regulation offers to solve the problems identified. It also explains how the results of an Inter-Institutional Task-Force that resolved inter-institutional stalemate on the new generation of management plans can be used to address the identified problems.

Additionally, the objectives section has been redrafted. All objectives are now clearly linked to problems identified in the "Problem Definition" section, to the CFP Basic Regulation or to the multi-annual plan.

Provisions of the multi-annual plan: the policy options section has been redrafted. Options that were discarded early in the process are presented separately. This section also explains why the status quo option has been discarded.

Among the retained options, the option of a single mixed-fisheries multi-annual plan is presented in more detail, describing in more clarity the relationship with other regional management plans and how the instrument of Regionalisation will be used within the plan. More sub-options are discussed. The report identifies one group of sub-options for which the best option has to be chosen based on qualitative arguments. These qualitative arguments are discussed in detail. A second group of sub-options is identified for which the choice of the best option has to be based on a quantitative analysis.

Analysis of impacts: the report presents the analysis of the quantitative sub-options of the multi-annual plan in a more evidence-based format, as requested in the opinion. The results are presented based on the robust, though limited, quantitative support analysis carried out by STECF[9].

Compliance and monitoring: the monitoring and evaluation section now describes potential compliance issues, how the CFP Control Regulation monitors compliance in general and how the Data Collection Framework and ICES advice based on these data provide the tools for constant monitoring. It explains how the new mixed-fisheries plan incentivises compliance. It also depicts how the different components of the initiative will be monitored and evaluated.

Further clarification was requested by the board (Ares(2015)4245599 – 12/10/2015) following its scrutiny of the revised IAR. The revised opinion listed four main recommendations for clarification in the following areas: coherence with other initiatives; assessment of impacts; comparison of options; compliance issues.

In this third version of the IAR a broad description of the changes is given below:

Coherence with other initiatives: an explanatory footnote has been added in Section 5.2.2 to explain the coherence between the new regional multi-annual plans and the new technical measures framework; a paragraph has been added in Section 5.2.2.1 to further explain the coherence between the new regional multi-annual plans themselves.

Assessment of impacts: a more quantitative and detailed breakdown of possible impacts from an economic and social perspective has been given in Section 6.2 for the sub-options of

[9] Report on Evaluation of management plans: Evaluation of the multi-annual plan for the North Sea demersal stocks (STECF-15-04).

Option 2 – a potential single mixed-fisheries plan for North Sea demersal fisheries using one economic indicator (profitability) and one social indicator (number of vessels) and comparing the outcomes to the baseline option (use solely the Basic Regulation (including the landing obligation)). The data have been taken from the robust, though limited, quantitative support analysis carried out by STECF[9].

Comparison of options: an extra paragraph has been inserted into Section 7.1 on the assessment against the environmental, economic and social impacts. This better explains how the sub-options of Option 2 compare in terms of effectiveness, efficiency and coherence. Extra text has been inserted into Section 7.3 on "Effectiveness, Efficiency, Coherence and Acceptability" where the impacts of the sub-options of Option 2 can be distinguished.

Compliance issues: the text in Section 8.2 has been revised to better explain how compliance will be ensured and why the risk to uneven implementation is believed to be.

Additionally, there was a request to more clearly define technical terms. Some of the definitions in the glossary have been revised. A figure has been added in Section 3.1 to explain better the MSY concept and in Section 5.2.2 to explain better the precautionary reference points B_{lim} and B_{pa}.

2.3. Consultation and expertise

In preparing this Impact Assessment, consultation has taken place at different levels, including stakeholders, scientists, public (including public administrations) and Commission services. It has followed a full evaluation process, set-up so that the initial tasks and questions to be addressed have been specified by DG MARE but the key inputs at all steps have come from scientists and other experts, and from stakeholders who have been fully involved throughout the process.

2.3.1. Consultation with Stakeholders

Stakeholders have been consulted in a targeted manner during the scoping exercise and through consultation with the North Sea Advisory Council[10] (one of several stakeholder-led organisations established in order to encourage participation by the fisheries sector in the formulation and management of the CFP – see Section 3.1.3). Two scoping workshops have been held.

The first workshop was held in Brussels on 27 February 2014[11]. Participants included invited scientific experts and representatives of North Sea Member States and the North Sea and pelagic ACs. This workshop enabled discussion to be initiated on the development and implementation of a mixed-fisheries multi-annual plan for the North Sea. Mixed fisheries are fisheries in which several species are likely to be caught in the same fishing operation (i.e., using the same vessel and gear).

[10] http://www.nsrac.org

[11] Scoping workshop on mixed fisheries management for the North Sea, Brussels, 27.02.2014. Overview. Ref.Ares (2015) 2301118-02/06/2015.

A second scoping workshop subsequently took place in Brussels from 29 to 30 September 2014[12]. Participants included invited scientific experts, representatives of North Sea Member States and the North Sea AC (NSAC). Its main objectives were to reach a shared understanding of the new legal and political framework for multi-annual plans, to discuss a draft outline of how the future MAP for the North Sea could look and, through break-out groups, to take forward collective thinking on the possible "building blocks" of the future plan.

Additionally there were discussions with the NSAC, through its Mixed Fisheries Focus Group, at meetings in October 2015 in Amsterdam and in March 2015 in Copenhagen[10].

A wide ranging, internet-based, public consultation was carried out from 9 February to 4 May 2015[13]. A total of 25 detailed contributions were received from Member States, the Advisory Councils (ACs), industry representative organisations, NGOs, and the general public[13]. Annex I contains a summary of the findings from the public consultation. The main conclusions, which will also be reflected in the relevant parts of the report, were as follows:

- current management plans are too prescriptive and too complex. They need to be replaced with legislation that is based on strategic objectives and general principles
- any new management plans should take into account mixed-fisheries interactions
- the landing obligation presents a major challenge, not only to the fishing industry but also the Member States in the allocation of quotas to the fleets
- detailed rules should be managed at a regional level, but there has to be coherence with management plans for neighbouring areas
- many contributors agree on cod, haddock, saithe, whiting, sole, plaice and *Nephrops* as the main target species. There are varying points of view on the inclusion of additional target species and on the level of protection of other species. In general, the Member States and the fishing industry favour a focus on the main target species, whereas the NGOs want specific objectives for each of the harvested species in the North Sea
- Technical Measures introduced on the basis of the management plan should be agreed on at a regional level

2.3.2. Expert advice

Most of the work and consultation necessary to cover all of these aspects of the work has been carried out by scientists working through the auspices of the Scientific, Technical and Economic Committee on Fisheries (STECF)[14] and The International Council for the Exploration of the Sea (ICES)[15] as well as by the Marine Resources Assessment Group (MRAG) under a framework contract with the Commission.

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[12] 2nd Scoping workshop: mixed fisheries management for North Sea demersal stocks. Overview of the discussions. Ref.Ares (2015) 2300556-02/06/2015.

[13] http://ec.europa.eu/dgs/maritimeaffairs_fisheries/consultations/north-sea-multiannual/index_en.htm

[14] Commission Decision of 26 August 2005 establishing a Scientific, Technical and Economic Committee for Fisheries (2005/629/EC).

[15] http://www.ices.dk/explore-us/what-we-do/Pages/default.aspx

These bodies had conducted a number of evaluations of the current management plan for cod stocks[3] (hereafter referred to as "the cod plan") and the management plan for North Sea sole and plaice[4] (hereafter called "the flatfish plan") prior to the reform of the CFP. In the case of the flatfish plan, an impact assessment of options from the first "recovery stage" to the second "management stage" of the plan was carried out by the MRAG[16] in 2009, as such a revision is foreseen in the plan itself once both stocks are observed to be within safe biological limits for two consecutive years. An STECF expert group that met in Vigo in October 2010[17] also evaluated the flatfish plan.

Two meetings took place in 2011 to perform a retrospective review of a number of management plans, including the cod plan[3]: these were a combined STECF/ICES expert group in Copenhagen in February/March 2011[18] and a follow-up meeting in Hamburg in June 2011[19]. Both meetings were open to participants from NSAC and Member State administrations. Among the conclusions of these analyses were that the cod plan[3] would benefit from linking to plans for *Nephrops* and haddock, whiting, saithe, sole and plaice in the North Sea and that the plan had not controlled fishing mortality as had been envisaged.

The Commission Services took no action to revise either plan at that time due to an inter-institutional dispute over management competencies. Once an Inter-Institutional Task Force to resolve the dispute had presented its conclusions[6], and following the adoption of the new CFP, work on the evaluations could take into account the new political context (see Sections 3.1.3 and 3.1.4).

In 2014, an STECF expert group met in Varese, Italy, from 10 to 14 March, to prepare a retrospective evaluation of the flatfish plan[4]. The evaluation was reviewed by STECF at their plenary meeting in Brussels later in March 2014[20]. The first scoping meeting to discuss and hone the STECF EWG evaluation of the North Sea multi-annual plan options took place from 6 to 8 December 2014 in Varese, Italy. The work planned by that group was subsequently carried out by a full panel of experts in the STECF EWG 15-02 in Varese, Italy from 16 to 20 March 2015. The report[9] was reviewed and presented to STECF at their plenary meeting from 13-17 April 2015[21].

2.3.3. Other relevant studies

This impact assessment for a North Sea multi-annual plan is taking place in the context of the new CFP and the redrafting of the technical measures regulations (see Section 3.1). The new CFP includes, inter alia, a new landing obligation, a timeline to reach maximum sustainable

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16 Economic and social impacts of multi-annual management plans for North Sea plaice and sole, Final Report Fish/2006/09.

17 Report of the Sub Group on Management Objectives and Strategies (SGMOS 10-06). Part b) Impact assessment of North Sea plaice and sole multi-annual plan.

18 Report on Scoping for Impact Assessments for Baltic cod and Evaluation of Cod in Kattegat, North Sea, West of Scotland and Irish Sea (STECF-11-02).

19 Evaluation of multi-annual plans for cod in Irish Sea, Kattegat, North Sea, and West of Scotland (STECF-11-07).

20 Report on Evaluation/scoping of management plans: Evaluation of the multi-annual management plan for the North Sea stocks of plaice and sole (STECF-14-03).

21 Scientific, Technical And Economic Committee For Fisheries – 48th Plenary Meeting Report (PLEN-15-01).

yield (MSY) and Regionalisation. Against this background, a number of reports, studies and contracts have provided background on these issues. These include:

- the reform of the CFP[22]
- impacts of the introduction of the landing obligation[23] [24]
- socio-economic dimensions of the CFP[25] [26]
- the development of a new technical measures regulation[27]
- mixed-fisheries issues in the EU[28], including dealing with choke effects[29]
- considerations on management areas for the new multi-annual plans[30]
- considerations of managing using MSY[31]

2.3.4. Internal consultation

An Impact Assessment Steering Group (IASG) was established in November 2014, which, in addition to DG MARE, comprised representatives from four other Directorates-Generals (DG) and services – Secretariat General (SG); Legal Services (SJ), DG Environment (DG ENV) and DG Internal Market, Industry, Entrepreneurship and SMEs (DG GROW). The IASG met on 3 occasions in 2015 – 23 January, 15 April, 8 May – and worked to finalise a draft of the IA by written consultation following its last meeting.

3. PROBLEM DEFINITION

The main objectives of the EU's Common Fisheries Policy are the sustainable management of fisheries resources by maintaining healthy fish stocks and providing the conditions for an economically viable and competitive fishing industry. Demersal fisheries in the North Sea have been governed by common rules since the 1970s because the coastal Member States

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22 http://ec.europa.eu/fisheries/reform/impact_assessments_en.htm

23 45th Plenary Meeting Report of the Scientific, Technical and Economic Committee for Fisheries (PLEN-14-01).

24 http://www.europarl.europa.eu/RegData/etudes/STUD/2015/540360/IPOL_STU(2015)540360_EN.pdf

25 http://ec.europa.eu/fisheries/documentation/studies/socio_economic_dimension/index_en.htm

26 http://www.socioec.eu/images/SOCIOEC/Media_Centre/Deliverables/SOCIOEC%20Deliverable%206%208%20Management%20Measures%20North%20Sea%2026%2003%202012.pdf

27 MRAG et al. (2014). A study in support of the development of a new Technical conservation measures framework within a reformed CFP. Lot 2: retrospective and prospective evaluation on the Common fisheries policy, excluding its international Dimension. Brussels. 265pp.

28 http://www.europarl.europa.eu/RegData/etudes/etudes/join/2014/529053/IPOL-PECH_ET(2014)529053_EN.pdf

29 http://stecf.jrc.ec.europa.eu/documents/43805/830996/2014-11_STECF+14-19+-+Landing+Obligations+-+part+4_JRC93045.pdf

30 http://stecf.jrc.ec.europa.eu/documents/43805/364146/2012-07_STECF+12-14+-+Management+plans+II+-+area+definitions_JRC73150.pdf

31 http://www.myfishproject.eu/project-myfish/deliverables

understood the need for a common regulatory framework. Prior to the introduction of a common policy[32], several demersal stocks were overfished[33].

Overfishing occurs in an unmanaged fishery as every fisherman tries to maximise his catch without paying attention to the long-term consequences for the state of fish stocks. An individual fisherman simply does not have an incentive to catch less than he can. In the end, when stocks decline, the outcome is unsatisfactory for all fishermen. This situation is often referred to as "the tragedy of the commons". Additionally, without regulation, there is no incentive for fishermen to avoid the young fish which have not yet had the chance to reproduce; this further deteriorates the state of the fish stock in question[34].

This section will show that, while regulation is needed to prevent overfishing and discarding, the current rules are outdated and too complex and, therefore, need to be updated.

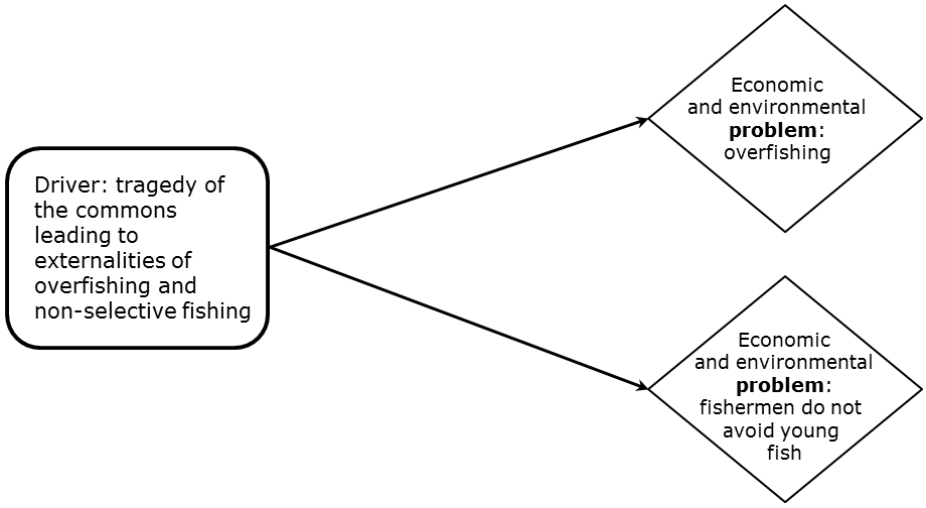

Figure 3.1.1. Driver and problems in an unregulated fishery.

Section 3.1 briefly describes existing relevant legislation and the political context. Section 3.2 describes how traditional fisheries management in the North Sea tried to reduce overfishing and how this approach caused new problems by increasing discarding. Sections 3.3 to 3.6 describe how additional past (management plans) and recent (CFP reform) regulation has more or less successfully addressed problems identified in the preceding sections while at the same time creating new challenges. Section 3.7 describes who is affected by this initiative. Section 3.8 summarises why this initiative is needed while Section 3.9 discusses the legal basis for EU action.

3.1. Existing legislation and political context

The following section describes the most important EU legal frameworks regulating demersal fisheries of the North Sea in order to show the context for this initiative.

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[32] Regulation (EEC) No 2141/70 of the Council of 20 October 1970 laying down a common structural policy for the fishing industry (*OJ L 236, 27.10.1970*).

[33] See, for example, Thurstan, R.H., Brockington, S. & C.M. Roberts. 2010. The effects of 118 years of industrial fishing on UK bottom trawl fisheries. Nature Communication, 1, no. 15. doi:10.1038/ncomms1013

[34] See, for example, Grafton, R.Q., Kirkley, J., Kompass, T. & D. Squires. 2006. Economics for Fisheries Management. Ashgate Studies in Environmental and Natural Resource Economics, 176 pp.

3.1.1. Annual fishing opportunities regulation

Every year, in its annual fishing opportunities regulation, the EU establishes the amount of fish that European fishermen are allowed to exploit from each fish stock. This amount is referred to as the total allowable catch (TAC). This regulation is not adopted under the ordinary legislative framework but solely by Council, upon proposal by the Commission. This deviation from the ordinary procedure is fixed in Article 43(3) of the Treaty on the functioning of the European Union (TFEU)[35]. The Commission bases its proposals for the annual fishing opportunity regulations on annual scientific advice provided by ICES[15].

3.1.2. The "old" CFP Regulation (EC)2371/2002 and management plans derived from it

Council Regulation (EC) 2371/2002[36], the pre-reform Basic Regulation, constituted a horizontal regulation containing the most important rules on fisheries management in the EU.

The Regulation foresaw the use of management plans of which the basic description of role and content could be found in its Articles 5 and 6. The ethos of these plans was to address the problem that, prior to 2002, there were no constraints to Council's decision to setting TACs. Hence, TACs were often set at too high levels and the size of many fish stocks subsequently declined. These plans limited the freedom of Council when deciding on annual fishing opportunities; they gave binding guidance when translating scientific advice into tangible annual TACs[37].

In the North Sea there are currently two management plans, introduced in 2007 and 2008 respectively: the flatfish plan[4], for plaice and sole, and the cod plan[3] were both adopted in the form of Council Regulations (Council Regulation (EC) No 676/2007 and Council Regulation (EC) 1342/2008 respectively). It is important to note that although Regulation (EC) 2371/2002[36] is no longer in force, the management plans derived from it still are.

3.1.3. The new Basic Regulation

In 2013 a new Basic Regulation of the Common Fisheries Policy[5] was adopted as the cornerstone of a broad reform of the policy, replacing Regulation (EC) 2371/2002[36]. Its main elements are listed in Annex II. The new Basic Regulation obliges the EU to manage its fisheries sustainably, based on the principle of Maximum Sustainable Yield (MSY). The MSY is the catch of a fish stock that optimises the yield from that stock in the long term.

As another important measure, the Basic Regulation bans the discarding of fish (see Section 3.4.1). The Basic Regulation also foresees the use of management plans, now called multi-annual plans. These multi-annual plans are supposed to implement the Basic Regulation and to enable its objectives, especially with regards to sustainable MSY-based fisheries management. In some narrowly defined cases, multi-annual plans are allowed to deviate from the provisions of the Basic Regulation (see Section 3.6). The current management plans like the cod[3] and the flatfish[4] plans do not fit into this structure as they were adopted prior to the

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[35] Consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union.

[36] Council Regulation (EC) No 2371/2002 of 20 December 2002 on the conservation and sustainable exploitation of fisheries resources under the Common Fisheries Policy (*OJ L 358 , 31.12.2002*).

[37] Green Paper on the future of the common fisheries policy (COM/2001/0135 final).

latest CFP reform. In many aspects they are contradictory to the new Basic Regulation (see Section 3.5).

Another important innovation introduced by the new Basic Regulation is the so-called "Regionalisation". Regionalisation is the reform's reply to the common and long-lasting accusation of micro-management i.e. that in the CFP too many detailed decisions are taken in "Brussels", far away from the stakeholders concerned.

The Basic Regulation lays down the concept of Regionalisation in Article 18 as a blueprint to be used in future CFP legislation. The concept is supposed to be used for detailed, rather technical, provisions to achieve the objectives of a regulation. It foresees that fisheries regulations, where appropriate, include an empowerment to the Commission to adopt these rather technical provisions in a Delegated Act. The difference to the ordinary case of Delegated Acts is that the Commission invites the Member States that are affected by these provisions to collaborate to formulate Joint Recommendations on the measures to take. There is a strong political commitment from the Commission to include measures into these Delegated Acts that are only agreed unanimously by the concerned Member States[38].

The aim of Regionalisation is to increase the involvement of the Member States affected by regulation and thus to increase their identification with the measures. The Commission's role is to ensure that the adopted measures are suitable to fulfil the objectives of the basic act. Regionalisation thus constitutes an important shift from instrument-based to results-based management. Regionalisation also gives a stronger voice to Advisory Councils (ACs) which have to be consulted when formulating Joint Recommendations (Art. 18(2) of the Basic Regulation). ACs are stakeholder organisations[39], established by the previous CFP reform in 2002, that bring together the industry (fishing, processing and marketing sectors) and other interest groups, such as environmental and consumers' organisations. ACs are separated by Sea Basins. Annex III of the Basic Regulation foresees an AC for the North Sea area – the North Sea Advisory Council (NSAC) - and delineates its exact area coverage to ICES Subarea IV and Division IIIa[40].

In practice, Regionalisation in the North Sea area will be delivered by the Scheveningen group which is a group of Member States cooperating on fisheries policy, established in 2013. Members are Denmark, Sweden, Germany, Belgium, the Netherlands, the UK and France. So far, the Commission has received two Joint Recommendations from the group: one in 2014

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[38] If Member States are not able to agree on measures but the Commission deems certain measures as necessary, the Commission can obviously still propose regulation through the ordinary legislative procedure. Legally speaking, the empowerment to adopt Delegated Acts also applies when there is no regulation. However, there is strong political commitment from the Commission not to adopt a Delegated Act in such a situation, unless the basic act foresees otherwise. This is the case for the Basic Regulation (which not only describes regionalisation as a blueprint for future fisheries legislation but also applies it for the first time) with regards to exemptions from the landing obligation (see Section 3.6). Article 15(6) contains an empowerment to the Commission to adopt a Delegated Act based on a Joint Recommendation from Member States concerned while as a sort of fall back option, Article 15(7) contains a more limited empowerment to adopt a Delegated Act in the absence of a Joint Recommendation.

[39] http://ec.europa.eu/fisheries/documentation/publications/cfp_factsheets/racs_en.pdf

[40] The NE Atlantic (amongst other sea areas) is divided into statistical rectangles. Various combinations of these rectangles are combined by ICES to give different areas, sub-areas, divisions and sub-divisions. Various combinations of these ICES "zones" are used to define fish stocks in the ICES area.

for the pelagic discard plan and recently another one for the demersal discard plan. The Commission has submitted the recommendations to STECF in order to assess their compatibility with the CFP. After a positive assessment is received, Commission proceeds to adoption of a delegated act that contains the elements proposed by the Joint Recommendation.

The regionalisation procedure in the North Sea and the cooperation between members of the Scheveningen group and the Commission has already proven effective when adopting the discard plan for small pelagic and industrial fisheries in the North Sea in 2014.

3.1.4. Lisbon Treaty, inter-institutional conflict and its resolution

Prior to the changes introduced by the Treaty of Lisbon (the Treaty on the Functioning of the European Union or TFEU[35]), fisheries legislation was adopted by the Council based on Commission proposals. Since the Lisbon Treaty, fisheries legislation is now subject to the ordinary legislative procedure with the derogation with regards to "measures on […] the allocation of fishing opportunities" (Article 43(3) of the TFEU[35]), i.e. the setting of annual TACs, remaining under control of the Council (see Section 3.1.1). The entry into force of the Lisbon Treaty led to a dispute between the European Parliament and the Council on the subject of multi-annual plans, as on the one hand they affect the setting of annual TACs, a Council competence, and on the other hand they go beyond the annual TAC setting exercise by taking a multi-annual policy perspective, suggesting that the Parliament should play a role.

An Inter-institutional Task Force comprising the three main EU Institutions (Commission, Council and Parliament) was therefore convened, in September 2013, to solve the delicate inter-institutional controversy that emerged on the sharing of competences. In its final report, issued in April 2014[6], the Task Force suggested, as a solution to the stalemate, a framework where multi-annual plans would be adopted under the ordinary legislative procedure while a certain margin for discretion would be kept for Council's annual TAC decisions. The solution would be to use ranges, rather than point values, of F_{MSY} when defining the amount of fish that is allowed to be caught through fishing every year in a multi-annual plan. Council would then, for the species covered by a plan, have to fix TACs within the ranges provided for in the plan. ICES provided ranges that give a long-term yield from the stock that is at least 95 percent of the yield if the F_{MSY} point-value was being used (see [41] and Figure 3.1).

Beyond the resolution of the inter-institutional conflict, the Task-Force also agreed to include biomass safeguards into the plans. These biomass safeguards are thresholds that trigger remedial action if the biomass of a stock falls below a certain limit. The rationale for this is that exploiting a stock based on F_{MSY} is the sustainable choice in most cases but it can put a stock at risk if the stock's biomass is very low. In such a situation it is advisable to adopt a TAC based on a lower exploitation rate or to take other measures that reduce the fishing mortality for this stock. Article 2(2) of the Basic Regulation requires fishing at F_{MSY} or below and adherence to the precautionary principle. Biomass safeguards can be regarded as a concrete manifestation of the precautionary approach to fisheries.

[41] In fisheries science, the rate at which fish are removed from a stock due to fishing operations (including fish subsequently discarded) is denoted F. It is approximately the stock annual removal expressed as a proportion of the total stock. F_{MSY} is the fishing mortality rate that, if applied constantly, would result in an average catch corresponding to the Maximum Sustainable Yield (MSY). Upon Commission's request, ICES has calculated ranges for important North Sea stocks that maximise long-term average yield and thus comply with the CFP objectives (Version 4 of Report 6.2.3.1 EU request to ICES to provide F_{MSY} ranges for selected North Sea and Baltic Sea stocks).

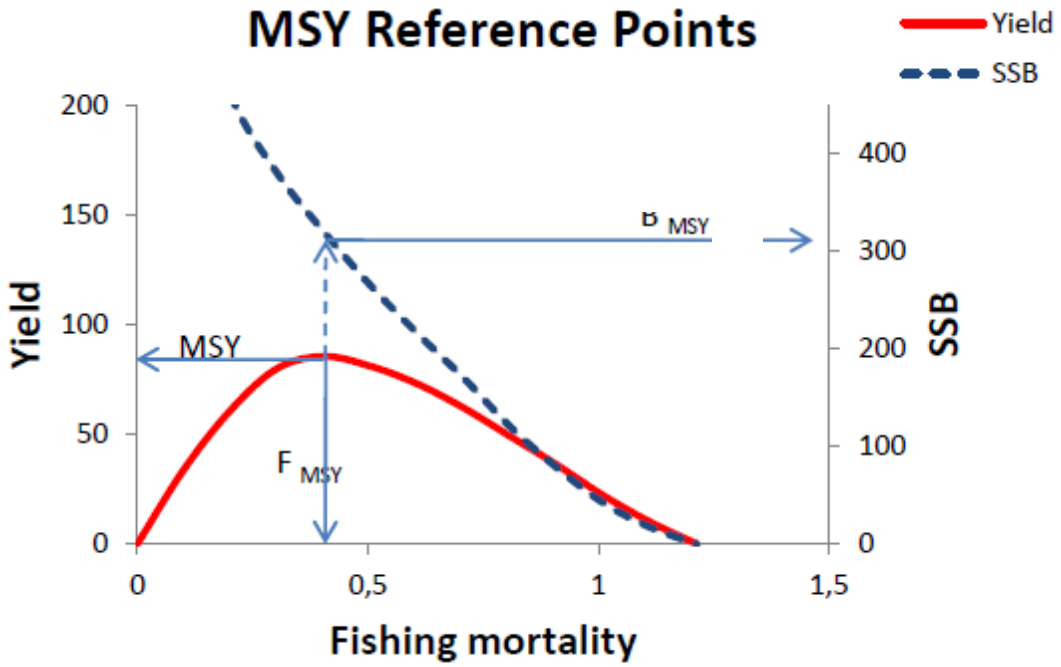

Figure 3.1. Example of yield (production) versus fishing mortality (F) for a hypothetical fishery. SSB: spawning stock biomass. The peak of the production function is MSY and the fishing mortality generating this peak is F_{MSY}.

The Task-Force results have already been followed in adopting a Commission proposal for a multi-annual plan for the stocks of cod, herring and sprat in the Baltic Sea[42]. Both co-legislators have received the proposal positively, adopted their respective positions and have been negotiating on the final text in trilogues since June 2015.

3.1.5. Technical measures regulations

Another important tool to manage fisheries in the EU has been to prescribe technical measures, i.e. measures establishing conditions for the use and structure of fishing gear and restrictions on access to fishing areas. There are a large number of technical measures in place for fisheries exploiting stocks in the North Sea. At present, these are mainly contained in the main technical measures regulation (Council Regulation (EC) No. 850/1998)[43]. The measures include gear specifications, minimum percentages of target species and by-catch limitations by mesh size and area as well as a variety of closed areas and seasons. The reasons for the technical measures vary but very often they are in place to increase avoidance of unwanted catches and thus reduce discards.

The Commission is working towards a new framework for technical measures to adapt it to the logic of the reformed CFP where discard avoidance is already strongly incentivised by the Basic Regulation (see Section 3.4.1). Preparation and consultations on this issue are taking place in parallel with the North Sea multi-annual plan.

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[42] Proposal for a Regulation of the European Parliament and of the Council establishing a multiannual plan for the stocks of cod, herring and sprat in the Baltic Sea and the fisheries exploiting those stocks, amending Council Regulation (EC) No 2187/2005 and repealing Council Regulation (EC) No 1098/2007.

[43] Council Regulation (EC) No 850/1998 of 30 March 1998 for the conservation of fishery resources through technical measures for the protection of juveniles of marine organisms. (*OJ L 125, 27.4.1998*).

3.2. "Traditional" management of North Sea demersal fisheries: The problem of discarding

In the North Sea and adjacent areas a wide range of different fish and shellfish species are exploited, among them many demersal species. Demersal fish are fish that live at or near the bottom of the water column, e.g. cod and haddock. The North Sea demersal fishery is a mixed fishery: fishermen unavoidably catch a mixture of demersal species at the same time. They cannot control (or only to a limited extent) the composition of their catches[44].

Fisheries in the EU are traditionally managed by defining and prescribing annually the amount of fish that can be fished in the coming year for each stock. This amount is divided among Member States following a fixed allocation key and then, in most of the cases, it is shared out to fishing enterprises at the Member State level. If fishermen run out of quota for a particular stock ("stock A") and they still have quota available for another in the same mixed fishery ("stock B") they are allowed to keep on fishing. Fishermen simply throw catches of stock A back into the sea. They also discard catches of young fish because EU legislation[45] stipulates that they are not allowed to land catches below a certain size in order to avoid the emergence of a market for such young fish and thus further incentives for fishermen to catch young fish. Discarded fish does not survive in most cases[29]. The discarded part of the stocks is thus wasted; the stocks are effectively economically underutilised. While TACs reduce overfishing, they create new externalities by the fact that over-quota catches are being discarded and hence wasted.

Another problem stems from the fact that the true amount of discarding is unknown and is therefore only partially taken into account when setting the annual TAC. The TAC does then not fully reflect the amount of fish that is really killed due to fishing. This is one among several reasons why TACs are often set too high and the stocks are overfished[46].

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[44] Depending on the specific circumstances, catch composition can sometimes be controlled by employing fishing gear that allows undesired species to escape ("selective" gear) or by avoiding areas with an abundance of an unwanted species.

[45] Article 9 Council Regulation (EC) No. 850/1998, see footnote 43.

[46] Commission Staff Working Paper, Impact Assessment, accompanying the document Commission proposal for a Regulation of the European Parliament and of the Council on the Common Fisheries Policy (SEC(2001)891).

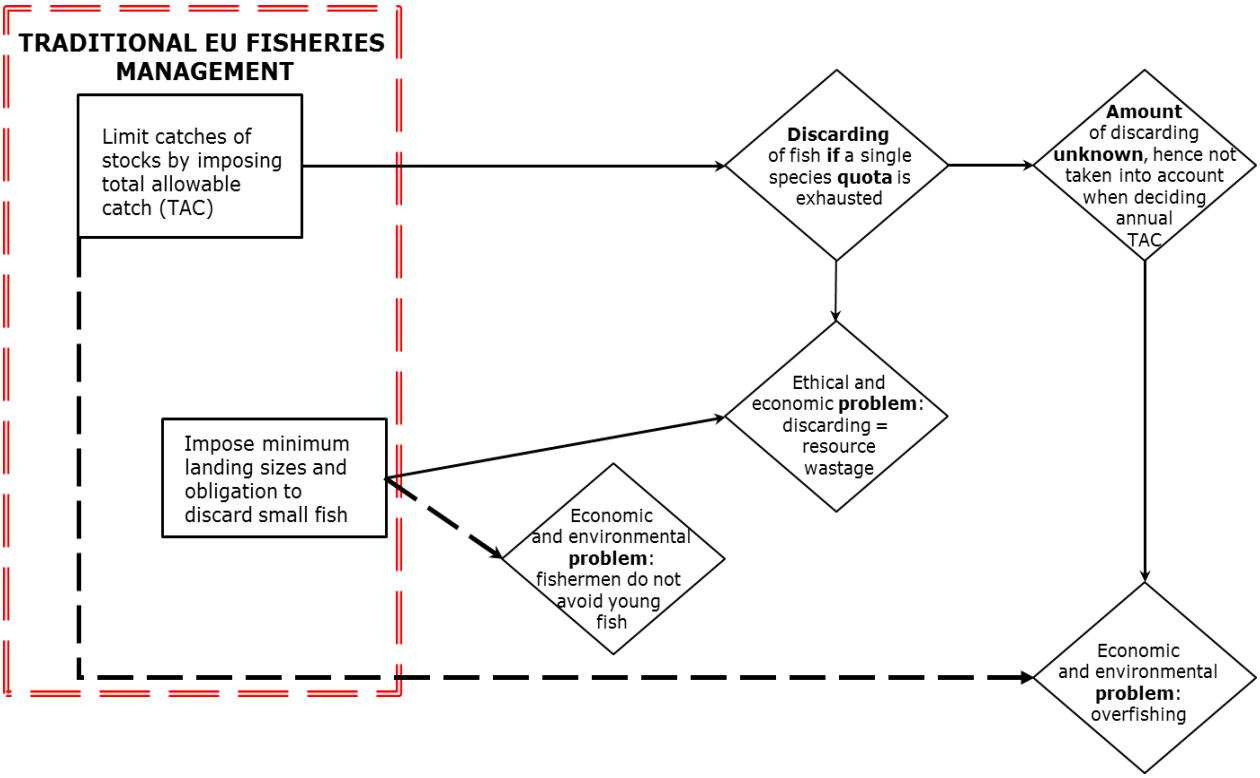

Figure 3.2.1. Traditional management and the new problems it creates. Rectangle: policy measure; diamond: problem; solid line: leads to unwanted result; dashed line: reduces / removes problem.

3.3. Solutions and problems stemming from current North Sea Management Plans

In the North Sea, the system described in the previous section has led to significant discarding and could not prevent overfishing[37]. The stock that has been most negatively affected by the right to discard over-quota fish is the cod stock. Therefore, when introducing the cod management plan[3] (see Section 3.1.2), the EU decided to protect the cod stock by introducing another regulatory system in addition to the TAC system. The cod plan[3] introduced limitations of "days at sea", i.e. to the time that fishermen are allowed to spend at sea. The system tried to protect the cod stock by generally limiting demersal fishing in the North Sea, including fishing for other stocks where cod is caught as an unwanted by-catch. The plan incentivised fishing methods that avoid involuntary catches of cod by allowing Member States to increase the days at sea of their fishermen if they could prove that the cod by-catch of these fishermen is very low. A comparable system of days at sea has also been applied in the flatfish plan[4].

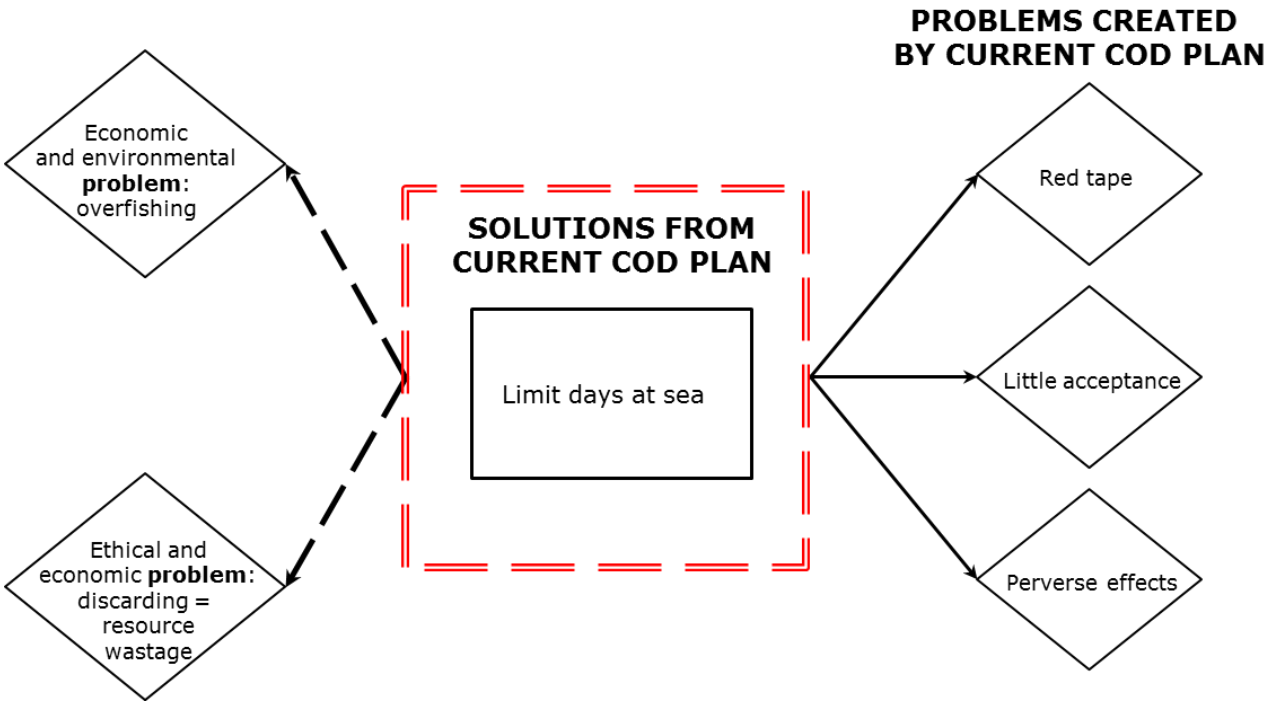

Figure 3.3.1. The North Sea management plans – partial solutions and new problems. Rectangle: policy measure; diamond: problem; solid line: leads to unwanted result; dashed line: reduces / removes problem.

These current management regimes are considered by Member States, the fishing industry, scientists[22-31, 47] and environmental organisations as ineffective, overly prescriptive, unnecessarily burdensome and economically damaging for the EU fishing industry. In particular, the "days at sea" regime has been at the centre of criticism. In its evaluation of the cod plan[19], STECF concluded that the plan had not controlled fishing mortality as envisaged and that the short-term economic impacts of the management plan were not clear. With regards to the flatfish plan, STECF concluded that the observed recovery of sole and plaice was unlikely to stem from limitations on days at sea[20]. The ability of the days at sea regime to address the problem of discarding has therefore been rather mediocre.

The cod plan[3] has also been heavily criticised for envisaging further restrictions even when the cod stock in the North Sea started to recover in recent years. Its effect has been not only to limit fishing for cod in the North Sea, which accounts for approximately 5% of the fish landed, but also to prevent fishing vessels from leaving port even when they own legitimate fishing quota for the 95% of other fish. That consequence has been criticised as grossly unfair and disproportionate throughout the fishing sector.

The days at sea regime has also been criticised for having perverse effects that damage the environment rather than preserving fish stocks, for instance because vessels with a limited budget of fishing days have to fish close to shore where juvenile fish concentrates. Similarly, the North Sea fishing industry has argued in the Public Consultation to this initiative (see Annex I) that severe restrictions on the time they can spend at sea makes it more difficult for them to seek fishing areas with lower cod abundance, so the restrictions exacerbate the problem of unwanted cod catches in the mixed fisheries. Moreover, the days at sea

[47] Poseidon Aquatic Resource Management Lot 2 Study. Administrative experience with effort management concerning the NE Atlantic (December 2010).

management scheme has created significant administrative burden for the Commission and Member State administrations.

Since 2011, the Council has been calling on the Commission to submit a proposal to replace the cod plan, which it considers ineffective and discredited.

In 2012, the Commission adopted two proposals[48], [49] for amendments of the cod plan[3]. The first was to align it to the Lisbon Treaty; the second to amend it to provide interim solutions to its most pressing problems, pending the development and implementation of a mixed-fisheries plan for North Sea fisheries.

In December 2012, Council decided to split the COM proposal COM (2012)0498[49] and unilaterally adopted a Council Regulation (EU) amending the cod plan[50]. That amendment removed some of the most burdensome rigidities of the cod plan but without putting in place a scheme that would allow management of the cod stock effectively as part of a mixed fishery.

The European Parliament and the Commission have each brought an action against the Council to the European Court of Justice (ECJ) for the annulment of that regulation[51]. It is likely that the judgement of the ECJ will lead to its repeal[51]. This would re-establish the previous version of the cod plan which is considered as unworkable and inapplicable.

To sum up, the system of days at sea restrictions is ineffective, very bureaucratic and has not gained acceptance among fishermen. In the Public Consultation (Annex I) the fishing industry gave a clear message that the restrictions on days at sea in the two existing plans are very unpopular as they are unworkable, not sufficiently adaptive, and/or counterproductive. Additionally, the current plans have been criticised for not being flexible enough to address the issues that have evolved during their implementation. For these reasons, the plans can be regarded as regulatory failure which should be addressed by this initiative. More importantly, the plans can be regarded as pieces of outdated regulation because the problem of discarding in mixed fisheries is being addressed in a more thorough way by the new Basic Regulation of the CFP which will be described in the next section.

3.4. CFP-reform: solving problems, creating new challenges

3.4.1. Ending discarding and overfishing

The new Basic Regulation adopted in 2013 includes a new approach to solve the problems of overfishing and discarding. The new Basic Regulation bans discarding by introducing an

[48] Proposal for a Regulation of the European Parliament and of the Council amending Council Regulation (EC) No 1342/2008 of 18 December 2008 establishing a long-term plan for cod stocks and the fisheries exploiting those stocks (COM(2012)0021).

[49] Proposal for a Regulation of the European Parliament and of the Council amending Council Regulation (EC) No 1342/2008 of 18 December 2008 establishing a long-term plan for cod stocks and the fisheries exploiting those stocks (COM(2012)0498 final).

[50] Council Regulation (EU) No 1243/2012 amending Regulation (EC) No 1342/2008 establishing a long-term plan for cod stocks and the fisheries exploiting those stocks. (*OJ L 352, 21.12.2012*).

[51] Joined Cases C‑124/13 and C‑125/13. (Common fisheries policy — Action for annulment — Council Regulation (EU) No 1243/2012 establishing a long-term plan for cod stocks and the fisheries exploiting those stocks — Legal basis — Scope of Article 43(2) and Article 43(3) TFEU — Technical implementing measures).

obligation to land all catches; this obligation is being introduced stepwise between 2015 and 2019. The landing obligation implies that fishermen have to stop fishing when they run out of quota for one of the stocks that they catch – discarding will simply no longer be allowed. This provision is supposed to trigger behavioural change on many levels. The Commission expects Member States to attribute fishing rights to their fishermen in a way that reflects, as far as possible, the expected mixture of species caught. Fishermen are expected to change behaviour because they now have a much bigger incentive to avoid stocks that they do not want to catch because they would have to "pay" with valuable quota for these catches. Under the old management, the discarded catch was not counted against the quota for that species. Under the landing obligation, however, not only do all fish caught have to be landed but all fish caught will now be counted against the quota for that stock. The landing obligation should therefore trigger innovation in fishing gears, techniques and strategies.

At the same time Article 2(2) of the new Basic Regulation makes the concept of Maximum Sustainable Yield (MSY) legally binding. Where possible by 2015, and at the latest by 2020, the EU cannot set total allowable catches above levels that comply with the MSY concept. Therefore, once F_{MSY} has been reached for any particular stock, the annual fishing opportunities need to be set at the level necessary to ensure that exploitation does not exceed F_{MSY} for that stock.

These two central measures of the CFP are expected to solve the problem of overfishing and resource wastage caused by discarding.

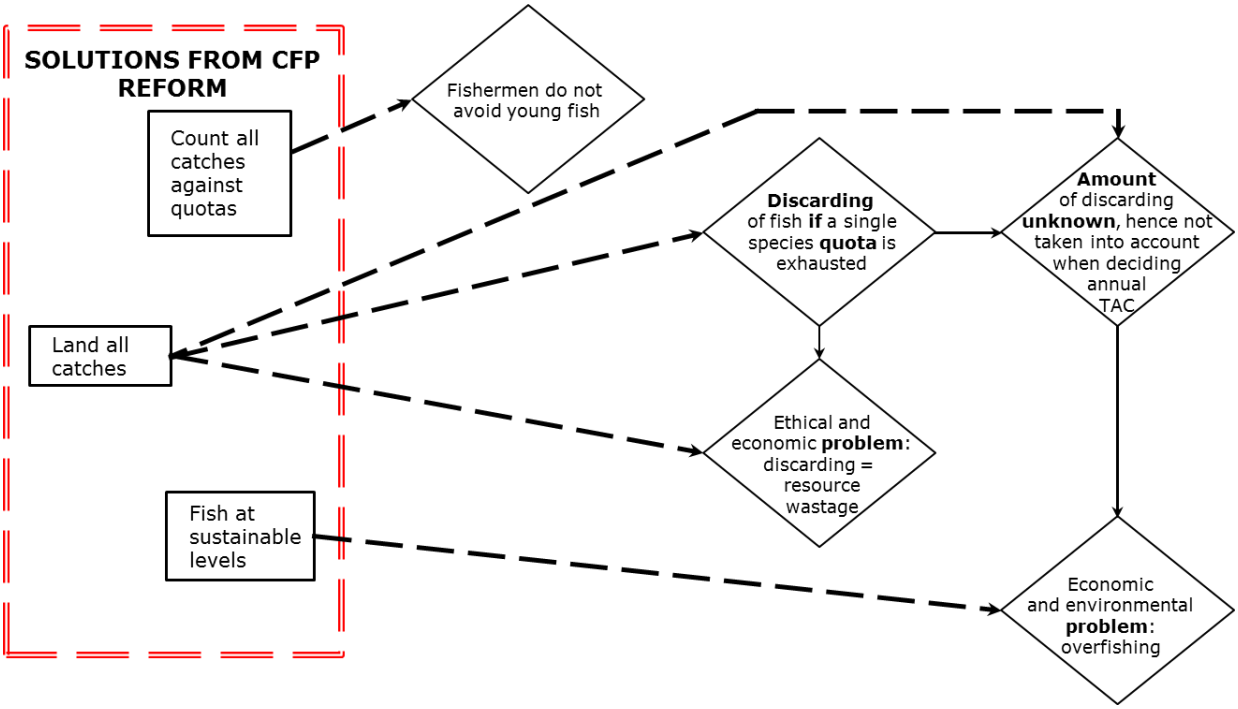

Figure 3.4.1. The CFP reform – a comprehensive solution. Rectangle: policy measure; diamond: problem; solid line: leads to unwanted result; dashed line: reduces / removes problem.

3.4.2. New challenge: "Choke" species and underfishing

However, the rule that states that fishermen have to stop fishing when they run out of quota for just one of the stocks caught in the mixed fishery will create new problems. Some stocks will probably be underfished in the future, because the entire fishery will have to be closed

when another stock's quota has been used up. Such a stock which restricts fishing in a mixed fishery is often referred to as a "choke species". The problem will be aggravated by the obligation to apply the MSY concept to all stocks simultaneously because it will not be possible to allow (temporary) overfishing of a stock that "chokes" the fishery. Due to the fluctuations in the abundance of the different fish stocks, different species might become choke species in different years. The resulting underfishing could threaten the economic viability of the fishing industry.

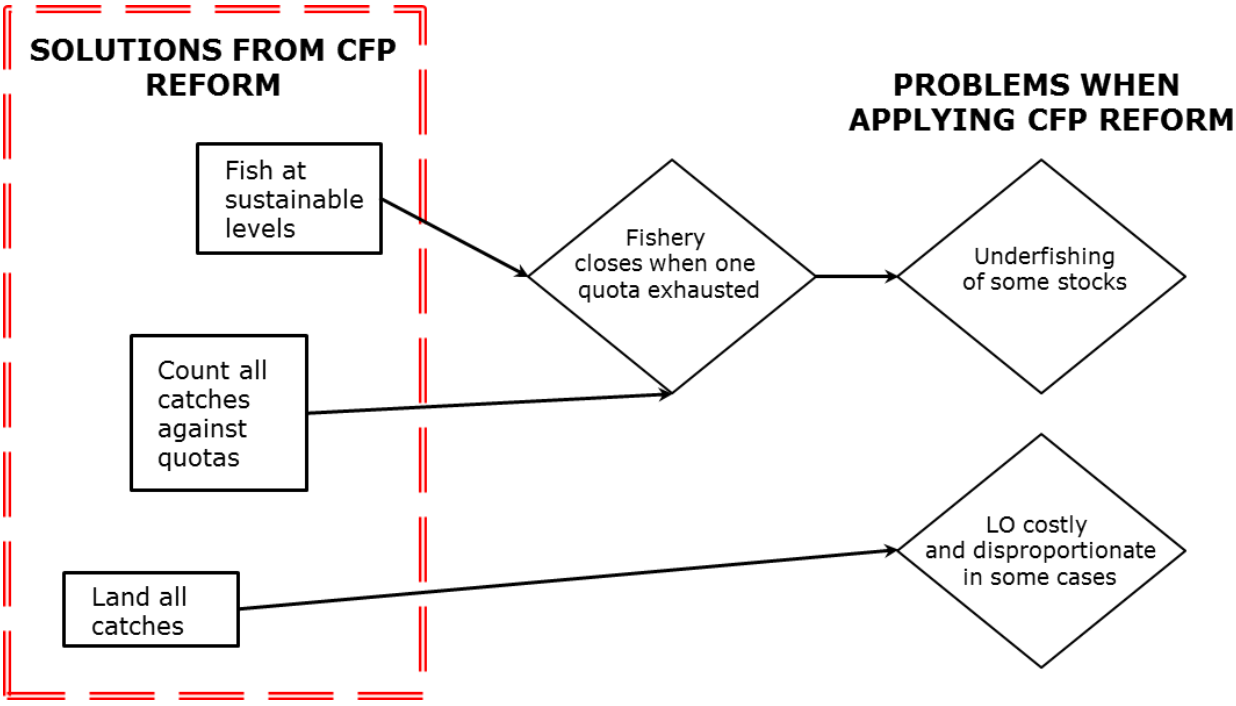

Figure 3.4.2. The CFP reform – creating new challenges. Rectangle: policy measure; diamond: problem; solid line: leads to unwanted result.

Under the impact of the landing obligation, where no discarding is allowed, cod has the potential to be a choke species, given the significant degree of historical over-quota catches (currently discarded) of cod. These over-quota catches appear to be increasing in recent years, as shown in Table 3.4.2.1 giving the proportions of over-quota catches where 1.0 expresses an exact match of catches and TAC and >1.0 expresses catch figures that are higher than the TAC).

Table 3.4.2.1. Over quota catches of cod in the North Sea

Year	2010	2011	2012	2013	2014
Cod	1.2	1.4	1.4	1.4	1.6

Table 3.4.2.2 illustrates the hypothetical effects on the landed value for seven demersal species caught together in the North Sea if the landing obligation were already fully applied to cod in 2015. There are clearly significant reductions in the quantities of other demersal species that could be landed, with highly significant impacts on the reduction in value.

Table 3.4.2.2. The hypothetical effects on landings, in tonnes, and value, in euros, for seven North Sea demersal fish species based on the cod scenario in the mixed-fisheries advice for 2015[52] where, once the North Sea cod quota is caught other fisheries catching cod would have to cease.

Species	Single species landing advice 2015 (t)	Landings (t) if landing obligation fully applied	2012 value per ton (€)	% change in landed value compared to single species advice
Cod	26713	26713	2.72	0
Haddock	48176	16592	1.28	-66
Plaice	128376	60175	1.41	-53
Saithe	72854	45797	1.30	-37
Sole	10973	6469	9.36	-41
Turbot	2406	1972	8.22	-18
Whiting	17190	9654	1.27	-44

The problem is not limited to the cod stock. An analysis of these issues for the North Sea fisheries was undertaken by the STECF[29], which showed that for all Member States and for a number of stocks, catches were well in excess of the available quota which indicates that these stocks would become choke species under a landing obligation. The most important findings of this STECF report are provided in Annex III.

The landing obligation will be introduced in the North Sea demersal fishery stepwise for catches from different species between 2016 and 2019[53]. Therefore, the problem of underfishing is not imminent yet but will evolve from the legislation that is already in place.

3.4.3. New challenge: the costs of landing all catches

Another problem created by the Basic Regulation is the costs of the landing obligation that fishermen have to bear. These costs notably stem from having to sort and record additional catches, and store them on board until landed, while not being allowed to market them for human consumption[54]. In some cases, especially when the stock which is being discarded is in a good state, has low economic value or discarded amounts are relatively small, the obligation to land all catches might be a disproportionate measure. To sum up, the CFP reform solves the problem of overfishing and discarding but, when applied strictly, may lead to the problems of disproportionate costs and underfishing.

3.5. Mismatch between the current management plans and the Basic Regulation

Some provisions of the cod plan[3] do not match with the new Basic Regulation. Most importantly, the current plans include rules on how to define the annual fishing opportunities that are not in line with the principle of MSY foreseen by the Basic Regulation.

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[52] http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/mix-nsea.pdf

[53] Details will be included in a Delegated Act, adopted on the basis of Article 15(5)(a) of the Basic Regulation and developed according to the Regionalisation method.

[54] Article 15(11) of the new Basic Regulation bans the marketing of undersized fish for direct human consumption in order not to incentivise fishing activities that target young fish.

3.6. Solutions foreseen in the CFP Basic Regulation

The Basic Regulation introduces a binding timetable for implementing the landing obligation, but it also foresees ways to address the challenges described above. Before the entry into force of the landing obligation in a specific fishery, Article 15(5) of this regulation allows for the adoption of exemptions from the landing obligation for species that have a high chance of survival when thrown back into the sea. Exemptions can also be granted "where scientific evidence indicates that increases in selectivity are very difficult to achieve" (Article 15(5)(c)(i)) or to avoid "disproportionate costs of handling unwanted catches" (Article 15(5)(c)(ii)). The Basic Regulation contains the right for the Commission to adopt these exemptions in a Delegated Act for a transitional period of no more than three years. The Basic Regulation stipulates that these Delegated Acts, commonly referred to as "discard plans", are developed following the Regionalisation method described in Section 3.1.3. According to Article 15(5) of the Basic Regulation, any exemptions that are supposed to be valid for a period longer than three years can only be adopted as part of a multi-annual plan.

Another way towards a solution can be found in the Inter-Institutional Task Force's proposal to use fishing mortality ranges instead of the point estimate of F_{MSY} (see Section 3.1.4). This would enable management of the mixed fishery by allowing some more room for manoeuvre to set TACs in a way that avoids underfishing and thus reduces economic and social losses caused by the "choke species" problem.

An additional solution, not explicitly foreseen in the Basic Regulation but developed by the Inter-institutional Task-Force (see Section 3.1.4) is the "decoupling" of mixed fisheries by prescribing specific technical measures that increase selectivity. The Task-Force final report[6] foresees room for such measures especially for by-catch stocks in a mixed fishery and foresees the use of the regionalisation procedure (see Section 3.1.3) to develop such measures.

3.7. Who is affected?

The fisheries of the North Sea and adjacent areas involve vessels from Belgium, Denmark, Germany, France, the Netherlands, Sweden and the United Kingdom, as well as Norway, using a wide variety of different fishing gears to target a wide range of different fish and shellfish species. According to the 2014 STECF Annual Economic Report[55], in 2012, the North Sea fleet comprised some 5800 vessels, varying in size from 6 m to greater than 40 m in length. Employment within the North Sea fleet (in terms of full time equivalents) was around 9300 people. The weight and value of landings generated by the EU North Sea fleet in 2012 amounted to approximately 1.1 million tonnes and almost €1.5 billion respectively. The UK, French and Danish North Sea fleets together accounted for around 73% of the total days at sea in the region (See Annex IV for more detail on the North Sea demersal fisheries and stocks).

In the North Sea, demersal trawls and seines and beam trawls were the two most important gears with respect to both the total weight of species landed (64%) and the total value of species landed (68%) by the EU North Sea fleet in 2012. The majority of demersal fish landed are caught in these gears. The numbers of vessels and employment for vessels using these gear categories (relative to all other gear types), for each Member State, for the top 35 fleet

[55] The 2014 Annual Economic Report on the EU Fishing fleet. STECF 14-16.

segments[56], are given in Table 3.7.1. Overall, these data show that, in 2012, these two demersal gear categories accounted for 20% of the vessels and more than 55% of the employment of the entire North Sea fleet.

Table 3.7.1. Numbers of vessels and employment in the EU North Sea fleet in 2012 by gear type and by Member State for the top 35 Member State fleet segments[56] in terms of landed value. Employment is given as Full Time Equivalents (FTEs).

EU Member State	Demersal trawls / seines		Beam trawlers		Other gears	
	Fleet size	FTEs	Fleet size	FTEs	Fleet size	FTEs
Belgium	0	0	58	157	0	0
Denmark	218	665	0	0	62	234
France	57	297	0	0	186	505
Germany	15	128	181	286	0	0
Netherlands	21	84	255	906	13	75
Sweden	66	232	0	0	0	0
UK	268	2100	20	118	1026	940
Totals	645	3506	514	1467	1287	1754
% of total NS fleet	11	38	9	16	22	19

However, for individual Member States, the dependence on the demersal fleets can be much higher than the overall figures. For example, the demersal sector of the Belgian and German fleets comprises over 75% of their North Sea fleet in each country (Table 3.7.1), with the Dutch fleet having around 50% of its vessels in the demersal sector. In terms of employment, only France has significantly less than 50% of the North Sea fleets' employment in the demersal catching sector.

The catching sector for North Sea demersal fish is, demonstrably, very important to the Member States surrounding the North Sea. It comprises a high proportion of the fleet size, employment, landed value, landed weight, fishing time (days at sea) and GVA for the majority of those Member States (Table 3.7.2). Clearly, any negative impacts on the demersal catching sector have the potential to impact those Member States.

Within the top 35 North Sea fleet segments[56], the demersal catching sectors in Belgium, Germany and the Netherlands represent over 80% of the landed value of North Sea landings. Sweden's demersal sector provides over 93% of its landed weight; the figure is greater than 80% for Belgium and Germany. In terms of gross value added (GVA), GVA from the demersal catching sectors in Belgium, Germany, the Netherlands and Sweden is in excess of 70% for each of their North Sea fleets; it is around 50% for the UK.

[56] The STECF AER (see footnote 55) only provides detailed data for the 35 fleet segments with the highest value of landings. A fleet segment is a group of vessels from the same Member State using the same gear type. Although not exhaustive, the data available are still relevant, as in 2012 the top 35 Member State fleet segments in the catching sector represented 60% of the fishing effort, 84% of the landed weight and 83% of the landed value generated by the regional fleet. These top 35 fleet segments represented 42% of the fleet in terms of number of vessels and 72% of the employment. Note that these figures include landings generated from a variety of gear categories, not only demersal gears. All figures in this section refer to the top 35 fleet segments, not to the entire fishing fleet.

Table 3.7.2. Percentages of various categories, by Member State, represented by the demersal sector in 2012 for the top 35 Member State fleet segments[56] in terms of landed value. Employment is given as Full Time Equivalents (FTEs)

EU Member State	Fleet size (%)	FTEs (%)	Landed value (%)	Landed weight (t) (%)	Days at sea (%)	GVA (%)
Belgium	77	73	81	81	74	84
Denmark	21	56	45	40	43	38
France	10	23	36	39	14	21
Germany	79	77	84	86	82	85
Netherlands	49	78	84	53	87	84
Sweden	13	46	70	93	22	70
UK	10	52	50	37	22	48

Additionally, there is a shore-based processing sector that deals with the North Sea fish catch. Figures for the numbers of enterprises and employment within the sector in each of the North Sea Member States are given in Table 3.7.3. Note that in most cases the enterprises will be processing catches from other areas as well as the North Sea. In terms of employment, 61% of these enterprises are micro-businesses and 37% are SMEs[57].

Table 3.7.3. Numbers of enterprises and employment in the processing sector of North Sea EU Member States in 2012.

	Number of enterprises by size (No. of employees)					Employment (FTEs)
No. of employees:	**≤ 10**	**11-49**	**50-249**	**≥250**	**Total**	
Belgium	206	28	5	1	240	2492
Denmark	57	30	19	0	106	3409
France	133	108	39	15	295	16184
Germany	171	56	15	8	250	7010
Netherlands	35	33	16	0	84	3567
Sweden	190	25	8	0	223	2135
UK	166	133	64	12	375	19070
Total	958	413	166	36	1573	53867

The other stakeholders most affected by this proposal would be the sector regulators in the Member States. Any changes to the regulatory structure will require a re-adjustment of the management regime. Sectors' research agencies will also be affected as changes in management measures will require experimentation and evaluation of these new measures.

[57] Report of the STECF Expert Group on: Economic Performance of the EU Fish Processing Industry (STECF-14-21).

3.8. Summary

The EU has tried, for decades, to solve the main problems in the North Sea demersal fisheries: overfishing and discarding. Currently, old instruments (the current management plans and their days at sea schemes) and a new instrument (the new Basic Regulation) are in force at the same time, all aiming to solve these problems. The current management plans have failed to solve these problems satisfactorily while creating new problems. They can therefore be regarded as regulatory failure. At the same time they are outdated because the Basic Regulation addresses the same problems in a different way.

The Basic Regulation promises to solve the problems of overfishing and discarding more effectively. However, this regulation is too strict as it leads to underfishing and imposes a landing obligation even in situations where such an obligation is disproportionate. Hence, if no alleviating measures (exemptions from the landing obligation beyond the 3 years discard plans, flexibility with regards to MSY in a mixed fishery, technical measures to "decouple fisheries") are taken, the Basic Regulation will most likely have negative economic and social consequences for the fishing industry in the coming years.

3.9. Legal basis for the EU to act

According to Article 3(1)(d) of the TFEU[35], the Union shall have exclusive competence in the conservation of marine biological resources under the CFP. Article 43(2) of the TFEU[35] establishes the Union's power to adopt the provisions necessary for the pursuit of the objectives of the CFP. The problems identified in this section clearly relate to the conservation of marine biological resources; they therefore have to be resolved by the EU. Hence, there is no need to justify measures with regards to the principle of subsidiarity. Nevertheless, the reformed CFP gives the EU the possibility to move decision making closer to the affected stakeholder by making use of Regionalisation (see Section 3.1.3) thus living up to the spirit of subsidiarity.

4. OBJECTIVES

4.1. General objectives

The current initiative complements the CFP reform and helps to implement it for the North Sea demersal fisheries. It therefore has to be in line with objectives of the CFP Basic Regulation which are stated in its Article 2. Of particular importance for this initiative are the following objectives:

- to provide a transparent framework to achieve the maximum sustainable yield exploitation rate (F_{MSY}) by 2015, where possible, and by 2020 at the latest
- to apply the precautionary approach
- the simplification of EU legislation and of the management of European fisheries[58]

[58] The objective of simplification is not stated explicitly in the Basic Regulation but it can be found in Commission Communications COM(2011)417 (Communication From The Commission To The Council And The European Parliament on the Reform of the Common Fisheries Policy) and COM(2009)261 (Communication From The Commission To The Council And The European Parliament on the implementation of the Action Plan for simplifying and improving the Common Fisheries Policy).

4.2. Specific objectives

Having identified the main problems that occur in the North Sea demersal fisheries, or that will occur once the landing obligation is introduced, the following objectives for this initiative can be derived:

- to reduce the extent of underfishing in a mixed fishery under a landing obligation (see Sections 3.4.2) by introducing F_{MSY} ranges (see Sections 3.1.4 and 3.6),
- to establish biomass safeguards in order to enable the precautionary approach established in Article 2(2) of the Basic Regulation (see Section 3.1.4)
- to facilitate the application of the landing obligation introduced in the reformed CFP[59] (see Sections 3.4.2 and 3.4.3 and 3.6)
- to establish the framework necessary for the implementation of Regionalisation within the North Sea area (see Sections 3.1.3 and 3.6)
- to remove the days at sea regime which has proven to be ineffective and which is no longer necessary given that the new Basic Regulation addresses the same underlying problems with different means

It should be noted that the specific objectives are partly linked to each other. Facilitating the application of the landing obligation by granting exemptions from this obligation could help to reduce the risk of underfishing in a mixed fishery. Establishing a framework for the implementation of Regionalisation within the North Sea area makes it significantly easier to adopt technical measures that decouple mixed fisheries. Hence, Regionalisation equally has a potential to contribute to reducing the risk of underfishing (see Section 3.6).

Another important objective of the CFP is to minimise negative impacts of fishing activities on the marine ecosystem (Basic Regulation, Article 2(3) and to be coherent with the EU environmental legislation (Basic Regulation, Article 2(5)(j)). Any initiative taken within the Common Fisheries Policy shall therefore avoid being detrimental to these objectives and where possible should help to achieve them.

An additional important objective of the CFP is to achieve "economic, social and employment benefits" (Article 2(1)) and to "provide conditions for economically viable and competitive fishing capture and processing industry" (Article 2(5)(c)). This initiative will contribute to achieving this objective by preventing underfishing and by simplifying legislation.

[59] The issue of Regionalisation is closely linked to the new technical measures framework which is currently under development (see Section 3.1.5). The new technical measures framework might enable Regionalisation for all EU waters. However, as a new technical measures framework would constitute a major reform of the way the EU manages its fisheries, substantial delays in the adoption of that initiative cannot be excluded. For the reasons described in Section 3.6, after the introduction of the landing obligation regionalised technical measures will become essential in the North Sea to "decouple" mixed fisheries and thus increase the yield from the fishery. Therefore, one cannot rely on the technical measures framework to bring about the possibility of regionalised technical measures but the initiative developed in this impact assessment also has to enable Regionalisation. The Commission will have to ensure coherence between the different instruments.

5. POLICY OPTIONS

A screening of different policy options has led to the identification of those policy options that are most likely to meet the objectives and address the problems identified in Section 3. The four options considered are the existing management approach, amending the existing plans, managing solely according to the new CFP (the Basic Regulation), and establishing a single mixed-fisheries multi-annual plan. The first two options (existing management approach, amending the existing plans) have been discarded early on. The reasons for this will be explained in the following sub-sections. Subsequently, the remaining two options will be discussed in more detail, including sub-options for a potential mixed-fisheries multi-annual plan.

5.1. Discarded options

5.1.1. No policy change at EU level

The first option is the *status quo* option or no policy change at EU level, i.e. to continue to apply the existing management (i.e. cod[3] and flatfish[4]) plans, in combination with all other existing rules of the new CFP.

Under this option none of the objectives of this initiative would be reached. It would not provide a transparent framework on how and when to achieve the maximum sustainable yield exploitation rate (F_{MSY}). Instead it would provide for contradictory management objectives, i.e. the fishing mortality rates stated in the existing plans and the MSY objective stated in the Basic Regulation[60]. The unilateral amendment by Council to the cod plan (Council Regulation 1243/2012) see Section 3.3), deemed illegal by Commission and Parliament, does not change the fishing mortality rate stated in the plan and therefore does not solve the problem. This option would also not introduce ranges for F_{MSY}.

The current plans only include biomass safeguards for the cod stocks, therefore, the objectives of applying the precautionary approach and establishing biomass safeguards cannot be reached for all other stocks in the North Sea.

Under this option, it would not be possible to replace the discard plans after they have lapsed. The landing obligation would thus also be applied in cases where this is disproportionate (see Section 3.4.3). Moreover, this option does not enable Regionalisation in the North Sea and would not do away with days at sea management[61], a policy that has been strongly criticised at many levels (see Section 3.3).

Due to the contradictory provisions that would be in force, this option clearly does not reach the objective to simplify legislation.

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[60] The target fishing mortality provided for in the cod plan is no longer appropriate because it is much higher than F_{MSY} for the North Sea stock. The same applies for both the sole and plaice stocks, for which the plan has achieved the first-stage objectives and has not been amended to introduce new objectives. It is therefore outdated vis-à-vis the new CFP.

[61] The unilateral amendment Council made to the cod plan (see Section 3.3) does not abolish the days at sea scheme, it merely eases its application by limiting the automatic days at sea reductions foreseen in the plan (Council Regulation 1243/2012, Article 1(2)).

Additionally, stakeholders clearly reject this option[13]. In the public consultations for both the North Sea multi-annual plan and for the new framework for technical measures the catching sector gave a clear message that the restrictions on days at sea in the two existing plans are very unpopular as they are unworkable, not sufficiently adaptive, and/or counterproductive. Both the catching sector and the Member States consider that these restrictions would be unnecessary or even counterproductive when the landing obligation enters into force and the administrative burden of implementing them would therefore no longer be justified. Additionally, the current plans have been criticised for not being flexible enough to address the issues that have evolved during their implementation. The Member States directly concerned have requested to replace these plans as soon as possible. There are high expectations by all stakeholders that these plans will be replaced. In addition, there are expectations, e.g. from the European Parliament, to bring more fisheries under multi-annual plans in the future. In 2012 the European Parliament adopted a resolution which "calls on the Commission to provide for the establishment of long-term management plans for all EU fisheries"[62].

This "no-change"-option has been discarded very early in the process, not only because none of the problems identified above would be resolved but also because under this option contradictory, competing legislation would be in force; it would, therefore, be unclear which of the legislations would be enforced. The "no-change"-option is therefore not an appropriate baseline against which the other options can be assessed[63].

5.1.2. Amendment of the existing management plans

This option would enable an update and review of the existing management plans, and subsequently consider the introduction of a series of new single-species plans. Existing (cod and flatfish) plans would be updated to meet the challenges of the new CFP reform, and in light of their evaluations – adjusting to F_{MSY}, reviewing elements such as days at sea restrictions, etc. Over time new, additional, plans could be introduced for stocks not currently under a management plan. This would entail the development of between 7 and 9 plans for the demersal fish stocks for which ICES currently provides scientific advice on maximum sustainable yield[41], and potentially a further 23 plans for other commercially important stocks.

Some of the objectives of this initiative can be achieved by this option in exactly the same way as under a single mixed-fisheries multi-annual plan: a transparent framework for F_{MSY} as well as F_{MSY} ranges and biomass safeguards could be established; days at sea management could be abolished. These elements will be discussed in more depth in the section dealing with the option of a single mixed-fisheries multi-annual plan (see Section 5.2.2).

However, keeping and amending the existing plans would make it difficult to achieve the objectives of implementing regionalisation and facilitating the introduction of the landing obligation. This is because integrated approaches to the implementation of the landing obligation (introduced per fishery) or of technical measures to be introduced at a regional level would be virtually impossible because the same technical measures applying to fishing

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[62] European Parliament resolution of 12 September 2012 on the reform of the Common Fisheries Policy – Overarching Communication (2011/2290(INI)).

[63] We recognise that it is unorthodox to discard the "no-change" option. However, we have demonstrated that the current management plans constitute regulatory failure. To discard this option is, therefore, the pragmatic and honest approach.

different stocks would have to be introduced in separate delegated acts based on different (multiple) single-stock plans – and would therefore create a proliferation of delegated acts. This would also be the case for the implementing rules governing the landing obligation and possible exemptions from this obligation (see Section 3.6). In a mixed fishery it would be unclear which of the species/stock-based plans would have to include details on the fisheries-based phasing in of the landing obligation. Additionally, future exemptions from the landing obligation for the North Sea would need to be distributed over many different plans instead of being contained within one document as is the case for the current discard plans.

The foreseen outcome would create a very complex legal framework, with complicated management challenges and most likely increased administrative burden in developing each plan and implementing and updating them to ensure coherence between them. The risk of unforeseen loopholes would also need to be considered. The objective of simplifying legislation would clearly not be met.

The Public Consultation showed that, among stakeholders, there has been strong criticism of the complexity of the existing legislation, so any further complications arising from a multiplicity of plans are unlikely to be welcomed. Additionally, Member States consider that no time should be spent on amendment of the plans in force and focus instead should be on development of a new multi-annual plan for the North Sea mixed fisheries. There is general support by stakeholders that the existing plans should be replaced by a new holistic plan (see Annex I).

This option would address some of the objectives in the same way that a mixed-fisheries plan can (i.e. provision of a transparent framework; introduction of F_{MSY} ranges; application of the precautionary approach; removal of the days at sea regime). However, there are difficulties to solve the remaining problems that a single-species plan can address more easily (i.e. facilitation of the landing obligation; Regionalisation; simplification; see Section 5.2.2); therefore this option has also been discarded.

5.2. Potential policy options

5.2.1. Use solely the Basic Regulation (including the landing obligation)

This option would aim at repealing the two existing multi-annual plans (the cod plan[3] and the flatfish plan[4]) and apply only the Basic Regulation, including the landing obligation. This option would mean that for every (of the around 40 – see Annex IV) stock in the North Sea the management obligation is to achieve MSY by 2020 at the latest. This means that the TACs that are set annually for all stocks must respect MSY objectives, using the point estimate value of F_{MSY} as a target. TACs are set on a single-stock basis, where there may be no consideration of mixed-fisheries interactions. This has proven in the past to lead to mismatches in the quota basket for fishermen and Member States, normally having discarding as a potential consequence. With the landing obligation, a large number of stocks would turn into choke species under this option (see Section 3.4.2). As a consequence, either the fishery would need to be stopped completely before the end of the season – to ensure that the conservation objectives are met and the TAC is respected – or, alternatively, fishermen would continue to fish for species for which they still have quota, in combination with illegal discarding. The latter, though hard to estimate quantitatively, would lead to a deterioration of catch data, distortion of stock assessments and the risk of structural (not identified) overfishing of the choke-species' stock.

A quick remedy would need to be found whereby cod could be isolated (decoupled) from the other demersal species, in particular from haddock, by means of technical measures (see Section 3.6). Such short-term remedies are not foreseeable under the Basic Regulation, especially in the absence of adaptable technical measures or alternative conservation measures – which would have to be adopted through co-decision: the inflexible governance structure (no regionalisation) would hinder stock conservation. This option would operate within the existing framework of technical measures under co-decision, implying very limited adaptability of the technical rules to new situations or requirements.

In addition, the lack of flexibility and adaptability in, notably, the technical measures legislation, rules out the possibility to introduce more selective and avoidance fishing strategies and techniques to a significant degree. Individual fishermen will see no driver to change the behaviour when others don't participate – which is typically the argument for the tragedy of the commons. In the absence of these adaptations of fishing gears and of fishing strategies, the choke species phenomenon will continue to hamper the fishing industries.

This option would also imply that the implementation of the landing obligation in North Sea demersal fisheries would have to proceed without any facilitating practical measures after 2018. Once the discard plan expires, the landing obligation would have to be applied without any exemptions which could have severe negative economic effects in some fisheries (see Table 3.4.2).

Additionally, under this option, when stocks fall below a stock size consistent with full reproductive capacity, there would be no immediate safeguards written into the regulation. In the absence of such semi-automatic initiatives to recover the stocks to safe biological levels, stock recovery is normally slow as decision makers avoid drastic measures that lead to large reductions in fishing mortality.

5.2.2. A single mixed-fisheries plan for North Sea demersal fisheries

This option would provide one plan, containing one single management framework for the management of stocks caught together in demersal fisheries in the North Sea. It would aim to account for mixed-fisheries interactions through the introduction of F_{MSY} ranges, allowing more flexibility in the setting of fishing opportunities. This would enable more coherence in the definition of fishing opportunities for the different stocks it would cover because different stock's TACs would be able to be based on values of fishing mortality within their F_{MSY} ranges, rather than the point estimate value of F_{MSY} (see Section 3.4.2). A mixed-fisheries plan, using ranges of fishing mortality, instead of point estimates, as MSY targets would maximise the contribution that a mixed-fisheries approach to setting TACs could make to reducing the choke species problem.

Figure 5.2.2.1 illustrates for five of the six main North Sea demersal stocks how F_{MSY} ranges help to resolve the choke species problem described in Section 3.4.2. Each of the symbols in the figure shows where the fishing mortality in 2013 is, in relation to F_{MSY}. If the value is less than 1, then the fishing mortality in 2013 (F_{2013}) is higher than the F_{MSY} values. If the value is greater than 1 then the F_{2013} is lower than the F_{MSY} values. The three different symbols represent F_{2013} relative to: the point estimate of F_{MSY} (blue diamonds); the upper bound of the F_{MSY} range (red triangles); the lower bound of the F_{MSY} range (green squares). It can be seen that saithe, plaice and sole, for example, have F_{2013} values that are around F_{MSY} (they all have values of around 1) and similar relative ranges of F_{MSY} for the three species. Conversely, cod and haddock are very different to the other three species. Cod in 2013 is well above its F_{MSY} values, whereas haddock is well below its F_{MSY} values. It would, therefore, be easy to set

coherent TACs for saithe, plaice and sole to ensure exploitation consistent with F_{MSY}. However, because the relative F_{MSY} ranges for cod and haddock have minimal overlap with each other and with the ranges for the other species it would be difficult to set TACs that would exploit all five species at levels consistent with $F_{MSY.}$ This is where regionally defined technical measures that would be possible under the framework of a multi-annual plan could be useful to complement the F_{MSY} range approach, for example, by reducing the F for cod through technical measures and thereby minimising choke effects, rather than setting incompatible TACs.

An added important dimension, agreed by the Inter-Institutional Task Force[6], would be the identification of the species that determine the fishery as opposed to the by-catch species, with distinct management targets for the two categories of stocks – all befitting the MSY objective. For the target species (driving the fishery) the plan would introduce ranges of fishing mortality, while for by-catch species in the fishery it would include specific or alternative conservation measures to ensure that the conservation objectives are respected.

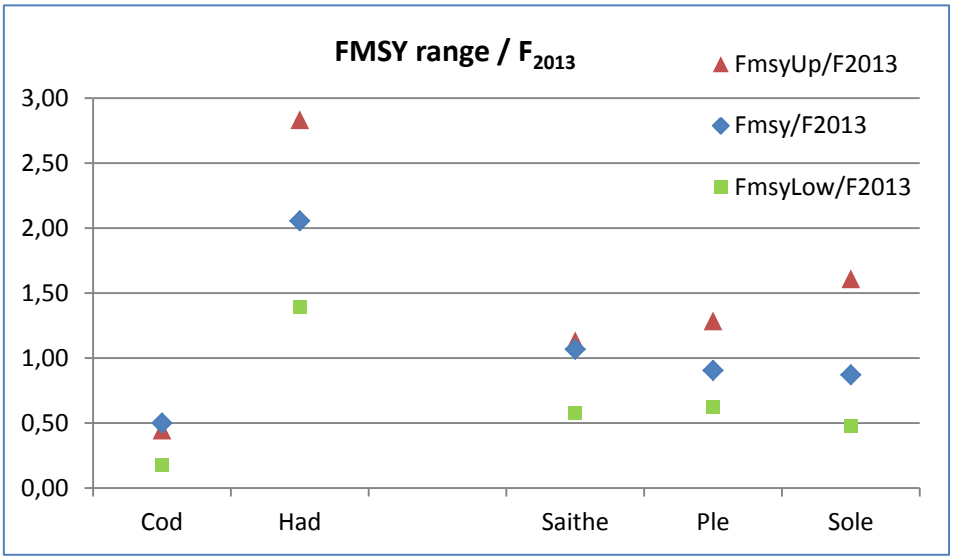

Figure 5.2.2.1. F_{MSY} ranges in 2013 relative to the fishing mortality in 2013 (F_{2013}), for five of the six main North Sea stocks. "FmsyUp" and "FmsyLow" are the upper and lower bounds of the F_{MSY} ranges respectively for each species that were provided to STECF by ICES in March 2015 (N.B. Some of these values have since been updated).

The regionalised governance possibilities under the new CFP (see Section 3.1.3) mean that the plan would not only allow for adaptation mechanisms in specified technical measures to allow for the introduction of measures to decouple fisheries (see above) but also to use such measures to minimise impacts of fishing on the wider marine environment, e.g. on marine mammals, sea birds and the sea bed. Specific technical measures to protect the marine environment might be needed for one fleet, but not necessarily for another. Under this option, it will be possible to adopt such measures rapidly, without having to make use of the lengthy Ordinary Legislative Procedure[64].

[64] The new technical measures framework which is currently under development will also enable the adoption of regionalised technical measures. The exact legal setup for the interplay between the new technical measures regulation and the multi-annual plans is still under development.

By the same token, the plan would allow for the introduction of implementation elements for the landing obligation in light of the limited lifespan of discard plans.

Creating a single management framework, with in-built options for Regionalisation and adaptation would allow the plan to be responsive to changes in the fisheries, in the management advice and in the status of the stocks while keeping consistency between all of the elements relevant for the management, and making it easier to ensure coherence across the stocks caught together in the mixed fisheries.

Within this option there are a number of choices to be made:

- the delineation of areas and the consequent fisheries and stocks to be covered
- the choice of how to introduce measures that facilitate the introduction of the landing obligation
- the choice of the ranges for F_{MSY}
- the choice of species for which precise MSY-related target ranges would be set. The Task Force agreement foresees focus on the species that drive the fishery – the main target species – and by managing those sustainably, the plan is expected to deliver on the conservation objectives for the by-catch species as well
- the latest dates for achieving F_{MSY} (between now and 2020 at the latest)
- the time period for rebuilding stocks to precautionary levels (whenever they are below such levels)

The first four choices can be taken based on a qualitative analysis conducted in the following sub-section. The last two sub-options will be analysed quantitatively.

5.2.2.1. Sub-options for qualitative analysis

Delineation of areas

When deciding on the area scope of the plan, several criteria have to be taken into account:

- different multi-annual plans have to be coherent, situations where areas remain uncovered by a plan in the long term should be avoided
- the area coverage should be as coherent as possible with the areas covered by established Member States' regional cooperation fora (here: the Scheveningen group, see Section 3.1.3) and Advisory Council areas (here : the NSAC, see Section 3.1.3). In case of a mismatch between the area covered by the plan and these bodies, Member States would have to cooperate outside the established regional fora when drafting Joint Recommendations and two or more Advisory Councils would have to be consulted on these measures.
- fish stocks do not respect the borders drawn by humans; additionally the borders between fish stocks are different. However, as much as coherence as possible in biological and fisheries terms should be achieved.

It is obvious that ICES Subarea IV, which is the main part of the North Sea, should be covered by the plan. The question is whether adjacent waters like Skagerrak and Kattegat (Division IIIa) and the Eastern Channel (Division VIId) should be covered by the plan as well.

Skagerrak and Kattegat have to be covered by the plan as they are not covered by the Baltic Sea plan which has been proposed by the Commission[42]. Not including this area into the

North Sea plan would lead to a situation where this area would likely remain uncovered in the long-run as it is too small to justify a plan on its own.

STECF[30] was requested to comment on the areas to include in the new generation of regional management plans. STECF recommended inclusion of the Eastern Channel within a North Sea plan, as the fish in the Eastern Channel (VIId) appear to have greater affinity with the North Sea than areas to the west. At the same time, however, this area is not covered by the Scheveningen group and the NSAC but by the regional management body called the North-Western High-Level Group and by the North-Western Waters AC (NWWAC). Therefore, it has to be decided whether to follow the criteria of coherence with the area coverage of established management bodies and Advisory Councils or the criteria of biological coherence. It seems appropriate to opt for coherence with the management areas. The reason is that it is not so important where to establish management objectives for fish stocks, e.g. F_{MSY} ranges. What is important is that there are no contradictory objectives for the same stock in different plans. Management objectives should be included in the plan which covers the area of main abundance of a stock. In order to ensure coherence between different plans, all plans would have to ensure that management objectives established in other plans remain valid when a stock straddles the areas of those plans. The Commission can ensure this when establishing and amending plans. Hence, a lack of biological coherence can be remedied.

Deviating from the area covered by the Scheveningen group and the NSAC would be more problematic, notably when adopting measures under Regionalisation. As explained, additional Member States and the NWWAC would have to be consulted when formulating Joint Recommendations. This would be detrimental to a smooth implementation of Regionalisation which actually builds on improving cooperation among Member States as well as among stakeholders, so changing the current configuration should be avoided. The sub-option of including the Eastern Channel into the plan is therefore discarded. This area will have to be covered by the North-Western Waters plan which is being developed in parallel.

To ensure coherence with the other plans, the Commission has to ensure that if a range of F_{MSY} is to be set for any straddling stock then this range is included in the plan that covers the area of main abundance of the stock in question; all other plans containing that straddling stock will contain a provision that makes the application of the F_{MSY} range also binding in the areas that they cover.

In the Public Consultation (Annex I), some stakeholders supported the inclusion of the Eastern Channel into the plan, while some contributions from the fishing industry objected to the inclusion of Skagerrak and Kattegat and the Eastern Channel if this leads to the inclusion of additional stocks other than straddling stocks that are also present in the main basin of the North Sea (Subarea IV). The NSAC in its contribution only highlighted the need of consistency with adjacent areas.

Choice of method for facilitating the introduction of the landing obligation

As described in Section 3.6, the Basic Regulation allows the adoption of so-called "discard plans" through Regionalisation to adopt exemptions from the landing obligation for not more than three years. After the expiry of these discard plans, exemptions will still be needed, in order to allow for the discarding of species that survive discarding and to allow for exemptions in situations where the landing obligation is a disproportionate measure. The Basic Regulation itself foresees in Article 15(5) that such exemptions should be adopted as parts of a multi-annual plan and "where relevant, further specified in accordance with Article

18", i.e. through Regionalisation. The latter would mean that the multi-annual plan includes an empowerment to adopt delegated acts for this purpose.

When drafting a multi-annual plan, the Commission will have to decide which elements of the future exemptions from the Basic Regulation will be included in the multi-annual plan itself and which elements will be adopted as a part of a delegated act / Joint Recommendation.

However, the option of including exemptions in the plan itself can be discarded, for several reasons. Firstly, the discard plans that are adopted on the Basic Regulation are constantly evolving. The Scheveningen group has brought forward a first Joint Recommendation concerning demersal North Sea fisheries that only covers the first stage of the landing obligation, i.e. exemptions from the landing obligation for the stocks for which this obligation applies already in 2016. Further Joint Recommendations will follow for the following steps. The multi-annual plan will be adopted before the landing obligation will be fully implemented in the North Sea, thus an empowerment for delegated acts to adopt exemptions for the later steps of the phasing-in of the landing obligation would be needed in order to avoid a situation where the plan has to be amended several times through the Ordinary Legislative Procedure. One could imagine consolidation of all the exemptions already adopted in the plan itself; however, some these exemptions might still evolve as some of them, following STECF evaluation[65], will probably only be granted under the condition that the Member States conduct further scientific studies that justify these exemptions. The adaptive, flexible approach of Regionalisation is therefore clearly the preferred option for this element of the plan.

Choice of the F_{MSY} ranges

In terms of the ranges of F_{MSY} to be used in the plan, in September 2014 Commission Services requested ICES to provide plausible values around F_{MSY} (ranges for F_{MSY}) for various stocks of fish and shellfish in the North Sea[41], to be based on the stock biology, fishery characteristics and environmental conditions (see also Section 3.1.4). ICES provided F_{MSY} ranges[41] (F_{lower}, F_{upper}) that are derived to deliver no more than a 5% difference in long-term yield compared with F_{MSY}. Additionally, in order to be consistent with the ICES precautionary approach, the value for F_{upper} is capped, so that the probability of the spawning stock biomass (SSB) being below the limit biomass reference point (B_{lim}) is no more than 5% ([66] and Figure 5.2.2.2 below).

Theoretically, wider (or narrower) ranges could be envisaged. However, for consistency and coherence with the Baltic plan, which has used the ICES definitions for the F_{MSY} ranges, the North Sea plan will also use ICES' definitions.

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65 STECF report -Landing Obligation - Part 5 (demersal species for NWW, SWW and North Sea).

66 SSB is the spawning stock biomass – the size of the adult part of a stock (in tonnes) that is able to contribute to reproduction in any given year; B_{lim} and B_{pa} are conservation (or precautionary) reference points for any stock. The smaller the stock size, the greater the likelihood that reproduction will be impaired and the stock will fall below safe biological limits. If the stock size is below B_{lim} there is a risk that the stock will suffer from severely reduced productivity. B_{pa} is the biomass reference point designed to have a low probability of being below B_{lim}. When the spawning stock size is estimated to be above B_{pa}, the probability of impaired recruitment is expected to be low.

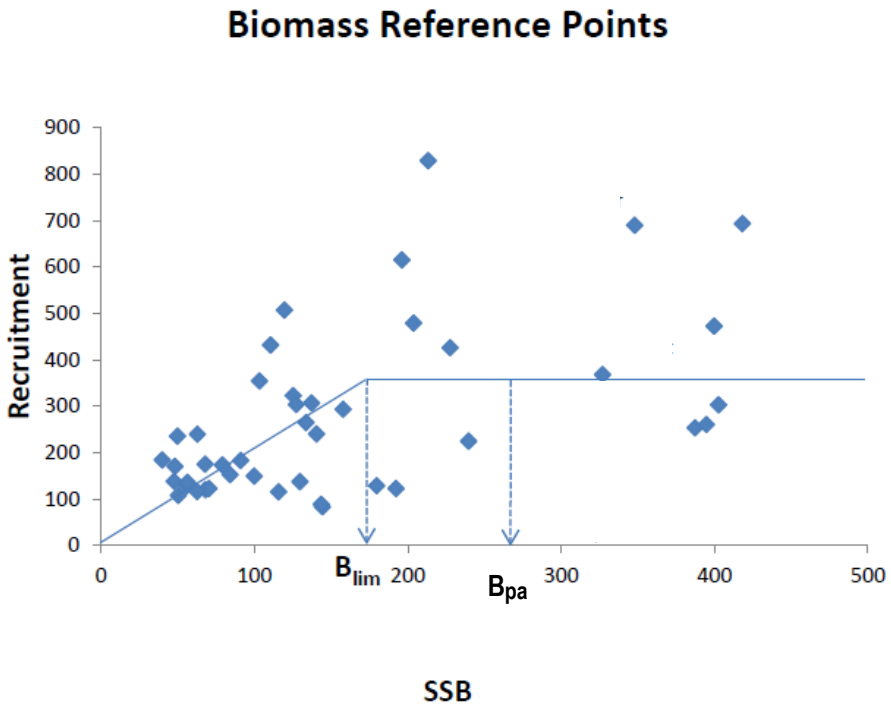


Figure 5.2.2.2. Illustration of biomass-based reference points. B_{lim} and B_{pa} are precautionary reference points related to the risk of impaired reproductive capacity. Diamonds show the variable recruitment for different spawning stock sizes (SSB) that has been observed over the years. Recruitment can be seen to be generally lower when the SSB is below B_{lim}.

In the Public Consultation (Annex I), the NGOs replied that they would like to set the upper bound of the range at the point estimate of F_{MSY}. However, this would effectively set F_{MSY} as a limit not as a target. The current practice is to consider F_{MSY} as a target, which means that the actual fishing mortality would fluctuate around F_{MSY}, sometimes above, sometimes below. Setting F_{MSY} as a limit would mean that we should never fish above that level. The target fishing mortality would, therefore, need to be substantially lower than F_{MSY}. This would lead to underfishing of virtually all stocks in the mixed fishery.

Choice of species

All harvested species in the North Sea are covered by the obligations and objectives of the Basic Regulation and these same harvested species will be covered by this plan. Where F_{MSY} ranges are available then those species will be listed accordingly. Currently these are the main target species. However, the plan is expected to deliver on the conservation objectives for the by-catch species as well and to evaluate the question of whether management of the species that drive the fisheries adequately allows for the management of the by-catch species, STECF[29] carried out an analysis of correlations between the catches of driver species identified in the plan and a variety of by-catch species. The analysis overall suggested limited correlation meaning that, at the gross level, management of the species that drive the fisheries would not be adequate for the management of the by-catch species. However, when the analysis was performed at the fleet segment level, there were some obvious strong correlations between some driver and by-catch species in specific segments but not in others. This suggests the scope to use fleet segment-related management measures for the driver species as a way of managing some of the by-catch species through, for example, technical measures. Under the framework of the multi-annual plan, the regionalised governance will

enable these kinds of measures to be introduced at the appropriate regional level to enable the appropriate management of the by-catch species.

5.2.2.2. Sub-options for quantitative analysis

Achievement of F_{MSY}

Article 2(2) of the Basic Regulation provides for a binding obligation to reach F_{MSY} (see Section 3.4.1) but leaves some flexibility regarding the timeframe for reaching this target (by 2015 where possible and […] at the latest by 2020). In order to achieve the objective of providing a transparent framework regarding F_{MSY}, the plan should specify this timetable for the North Sea demersal stocks. The environmental, economic and social impacts of different timeframes should therefore be assessed.

The time period for rebuilding stocks to precautionary levels

Annex 2 of the UN Fish Stocks Agreement[67] contains guidelines for applying a precautionary approach within an MSY framework. In accordance with a precautionary approach, populations need to be maintained within safe biological limits to make MSY possible. However, within safe biological limits, an MSY approach is necessary to achieve MSY. A precautionary approach is a necessary, but not a sufficient condition for MSY.

When a stock's biomass falls below safe biological limits then it needs to be rebuilt because when the spawning stock size is estimated to be below safe biological limits, the probability of impaired recruitment is expected to be high[66]. The time taken to rebuild any stock is associated with the level of risk that managers are prepared to take in attempting to achieve management objectives. It is anticipated that catch opportunities would be set at a fishing mortality rate that is lower than the lower bound of the F_{MSY} range; this is coherent with the Baltic plan proposal.

A biomass objective in a plan should be linked to a binding timetable; otherwise rebuilding the stock can be delayed and will not have any binding effect. Theoretically, many different timeframes can be imagined. However, it seems reasonable not to go beyond a recovery time of 10 years, firstly because longer timelines would make the objective irrelevant for the current generation of fishermen and would thus put at risk the support for this policy objective. Secondly, if a stock is below a biomass safeguard threshold, there is a constant risk that the stock might collapse and the stock size shrink to even lower levels. Therefore, the time at which the stock is left in such a risky state has to be limited.

Recovery within 5 years seems to be a reasonable choice as an alternative sub-option. As the most important stock that is below B_{pa} at the moment is cod and as the TAC for this stock has a limiting effect on fishing for other stocks, a faster recovery time would imply a stronger reduction of the TAC and thus have more negative economic and social consequences.

6. ANALYSIS OF IMPACTS

The main areas of uncertainty in the short-term are around the introduction of both the landing obligation and Regionalisation, introducing the new concept of results-based management, as

[67] UN. 1995. United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks.

noted in Sections 3.1.3 and 3.4.2. This uncertainty has a knock-on effect for the evaluation of the impacts of the candidate options, as by nature these impacts will be very difficult to quantify. It is impossible at this stage to know what Joint Recommendations the Member States may put forward for technical and other conservation measures etc. and their subsequent impacts, and the landing obligation will be introduce on a stepwise basis, introducing more stringent, but currently unknown, exemptions each year.

As a result, the approach used here has been to give the best evaluation of the possible impacts of each option, taking into account the introduction of the landing obligation in the new CFP.

The impacts are considered in the light of various indicators which are:

ENVIRONMENT: abundance of the main stocks (SSB; risk to B_{lim}; risk to B_{pa}[66])

ECONOMIC: landed value; profitability and revenue

SOCIAL: employment; number of vessels.

6.1. Option 1- Use the Basic Regulation (including the landing obligation)

This option can be considered as a realistic baseline scenario in the sense that existing plans have lost most of their value in light of the MSY objective under the new CFP (see Section 5.1.1).

Description of the option and stakeholder support

Under this option the current management plans are repealed and the new Basic Regulation (including the landing obligation) is applied (see Sections 3.4 and 5.2.1). This option is the baseline against which any added value of the mixed-fisheries multi-annual plan can be ascertained.

The large majority of stakeholders call for repealing the current cod plan, which is seen as rigid and overly restrictive. Generally, however, stakeholders are expecting a strategic multi-annual framework that is provided by a new generation of plans, containing ranges of F_{MSY}, rather than a reversion to the unpopular situation (before the plans) whereby TACs are set purely on an annual basis, without guidance and only steering on MSY. The high expectations from EU Institutions, Member States' authorities and stakeholders for a multi-annual plan imply that this option would only be acceptable when a multi-annual plan would have no clear, demonstrable added value. Additionally, repealing a plan without replacing it is considered not to be in line with the objectives of the CFP (i.e. to bring more stocks under multi-annual management plans). Additionally, this approach would mean that the European Parliament would not be involved in the decision making.

The majority of the important fish species in the North Sea demersal fishery have already achieved, or are close to achieving F_{MSY}. Cod, however, is still being exploited above F_{MSY}. The information available at the time of the consultation and scientific analysis[68] was that cod was fished in 2014 at a fishing mortality of F=0.4. The impact of achieving F_{MSY} will,

[68] ICES Advice 2014. Cod in Subarea IV (North Sea) and Divisions VIId (Eastern Channel) and IIIa West (Skagerrak).

therefore, mostly be driven by the rate at which the fishing mortality for cod is reduced from 0.4 to F_{MSY}.

The following impacts will be described with the assumption that fishing mortality on cod is reduced from F=0.4 in 2014 to the point estimate of F_{MSY} for cod, where F=0.22, at the start of 2016.

Table 3.4.2 in Section 3.4.2 above, describing the evolution of the problem with full implementation of the landing obligation, illustrates the effects that cod can have on the under exploitation of other species in the North Sea demersal fisheries. The single species scientific advice for cod in 2015 given in Table 3.4.2, and also in Table 6.1 below, shows the landings that would be obtained if the North Sea cod stock was fished at F_{MSY} in 2015. Table 3.4.2 illustrates the impact of the choke effect that cod would exert on the landings of other stocks in the North Sea mixed-fisheries assemblage; it also shows the subsequent impact on the value of those landings. Table 6.1 illustrates the impact of the reduction in catch on the size of the stock (SSB) the following year. The tables are highly illustrative of the scale of the impact of an immediate change to F_{MSY} for cod.

Table 6.1. The effects on landings and SSB, in tonnes, for six North Sea demersal fish species based on the mixed-fisheries advice for 2015[53] where, once the North Sea cod quota is caught, other fisheries catching cod would have to cease fishing.

Species	Single species landings advice 2015 (t)	Landings (t) if landing obligation fully applied	SSB (t) 2016 following single species advice	SSB (t) 2016 following full LO on cod	% difference in SSB
Cod	26713	26713	109100	104855	-4
Haddock	48176	16592	117426	146776	25
Plaice	128376	60175	735259	803339	9
Saithe	72854	45797	178867	210160	17
Sole	10973	6469	53783	58524	9
Whiting	17190	9654	266012	270986	2

6.1.1. Environmental effects

The landings of cod would be significantly reduced if F_{MSY} is achieved at the start of 2016, from around 40 000 t to 26 713 t. The choke effect that this would exert on the other stocks in the North Sea mixed-fisheries assemblage would result in significantly reduced catches of the other fish species. The knock-on effect of this would be positive for the stock size of all of the species because less fish would be removed in the fisheries, leaving larger stocks in the sea. However, the short term impact on SSB is small compared to larger long-term effects where leaving higher biomasses reduces the risks to any of the stocks falling below B_{pa} and B_{lim}. The MSY approach is intended to make the best use of the ecosystem productivity in the long term. Therefore, in the long term, once MSY is achieved, the SSB for each stock would be expected to fluctuate around its maximum. All of the stocks have some way to go to achieve their maxima.

6.1.2. Economic effects

The converse effect is true for the economic effects on the North Sea industry. Table 3.4.2 shows that the large reduction in catch opportunities resulting from an immediate move to

F_{MSY} would have catastrophic effects on the industry. In 2016 alone, the value (based on 2012 values) of the haddock landings could be reduced by more than 60%; plaice by 53%, saithe, sole and whiting by about 40%; turbot by around 20%. This equates to a loss of landed value (based on 2012 values) of around €200 million in one single year, a loss of 55% overall.

Section 3.7 shows that the catching sector for North Sea demersal fish is very important to the Member States surrounding the North Sea. It comprises a high proportion of the fleet size, employment, landed value, landed weight, fishing time (days at sea) and GVA for the majority of those Member States. Fleets carrying both major gear types (demersal trawls and seines and beam trawls) would be negatively impacted significantly as all of the species above are caught in those gears. These gear types catch around 90% by value (see Annex IV) of the top ten demersal species (which include all of those listed above).

Cod is among the most valuable and the most vulnerable stocks in the mixture of demersal species in the North Sea. Without the mixed-fisheries considerations and the flexibility to match TACs between stocks within the boundaries of the CFP (as indicated above), the introduction of the landing obligation will have additional negative economic and social impacts, until a solution can be found and applied that isolates (decouples) cod from the other demersal species. Additionally, the economic impact of the effect of other choke species would also be negative for many of the North Sea fleets, with significant under-quota catches being landed with the corresponding negative economic effects (Table 3.4.2).

While the discard plan to implement the landing obligation in the North Sea may give some temporary relief to these problems, in the longer term, the discard plan would be phased out (after 3 years) – leaving the industry with a stringent set of rules, with no room for flexibility or exemptions. This will aggravate the phenomenon of choke species into almost every fishery and even for virtually every fisherman individually; fisheries will have to be stopped before the whole quota basket is used up, with the corresponding economic losses for fishermen and the industry as a whole. In addition, handling costs may increase.

6.1.3. Social effects

Fishermen normally work under the concept of share fishermen[69], therefore negative economic impacts (in terms of returns and revenues of vessels) are directly translated into either reduced income for the crew members, or, where possible in reduction of crew and job losses.

The social effects of an immediate move to F_{MSY} would therefore also have catastrophic effects. A 55% reduction in landings of the named species would be a highly significant reduction for the processing sector to absorb in a single year.

Given the large number of SMEs and micro-businesses in the North Sea catching and processing sectors, significant direct negative impacts on both sectors would occur. In the demersal catching sector, the top 35 fleet segments with the highest landed value (see Section 3.7), some 1100 vessels, consist exclusively of vessels with an average of 10 (FTE) employees or less, averaging 4 (FTE) employees (Table 3.7.1). The processing sector has 958 companies with 10 employees or less, 61% of the processing enterprises. 98% of these enterprises employ less than 250 people (Table 3.7.3).

[69] A 'share fisherman' is someone who works in the fishing industry that is paid a share of the earnings or profit of the boat and is not employed under a contract.

6.1.4. Administrative costs

There is no doubt that the repeal of the existing management plans would reduce administrative costs, particularly because the management of days at sea would no longer be required. However under this option, TACs would be set annually for each stock on the basis of single species MSY advice, with no account taken of mixed-fisheries interactions (Section 5.2.1). Moreover, there would be no facility to rapidly adjust technical measures at regional level to reduce the impact of mixed fisheries. There are likely to be indirect administrative costs arising from this. One example is that choke effects caused by the lack of coherence between TACs would create an incentive for illegal discarding, which would need to be controlled through enhanced enforcement.

6.2. Option 2- A single mixed-fisheries plan for North Sea demersal fisheries

Description of the option, stakeholder support and consideration of the sub-options

Under Option 2, there would be one plan, containing one single management framework for management of stocks caught together in demersal fisheries in the North Sea. It would aim to account for mixed-fisheries interactions (links between stocks and species) and enable coherence in the definition of fishing opportunities for the stocks it would cover. It would include any specific or alternative conservation measures for by-catch species caught in the fisheries for which TACs are established. This corresponds to what the European Parliament and Member States expect and is the same approach as taken for the Baltic plan.

The large majority of stakeholders agree that multi-annual plans are preferable to setting TACs purely on an annual basis, and that it would make sense to develop a single mixed-fisheries plan covering the main demersal species in the North Sea. Additionally, the new multi-annual plan will provide the framework for more a flexible regional, results-based management approach that has strong stakeholder support.

The sub-options relating to the latest date for achievement of F_{MSY} in European fisheries (sub-options 2.1. and 2.2) and stock rebuilding timetables, to be implemented when the spawning stock biomass is outside safe biological limits, (sub-options 2.3 and 2.4) were assessed by the STECF[9]. They examined the impacts of achieving F_{MSY} both immediately and by 2020 and the impacts of achieving rebuilding within 5 or 10 years. These are compared to Option 1 – the Basic Regulation under the new CFP. The STECF analyis was performed using a variety of models to give the best results possible, whilst recognising that the scope of the analysis was somewhat limited due to the lack of a holistic model that could adequately capture all of the dynamics. In the Public Consultation, several stakeholders seemed to prefer an incremental reduction to F_{MSY} by 2020.

Under each sub-option it is possible to set fishing opportunities using a range of fishing mortalities, between a lower and an upper bound of F_{MSY} as defined by ICES[41] for each stock. STECF[9] used this approach - an envelope, or bracketing, approach - where the scenarios tested considered the likely consequences of moving to the target (i.e. the lower or upper bound of F_{MSY}) in the first or last year of the intended timescale (2016 or 2020) and keeping fishing mortality constant during the rest of the period. The levels of fishing mortality were set at both extremes of the F_{MSY} range, to give a "best / worst case" scenario evaluation. This approach informs on the range of potential outcomes of alternative tactical management decisions and is the most pragmatic approach given that Council decisions on the annual fishing opportunites cannot be anticipated. Additionally, the variables of F and time to reach

F_{MSY}, and of SSB and time to rebuild, give myriad possible sub-options that are not realistic to model (Figure 6.2.1). Ultimately, the impacts of any of the sub-options are highly dependent on the choices of fishing mortality that would be made each year by the Council under a single mixed-fisheries plan for North Sea demersal fisheries.

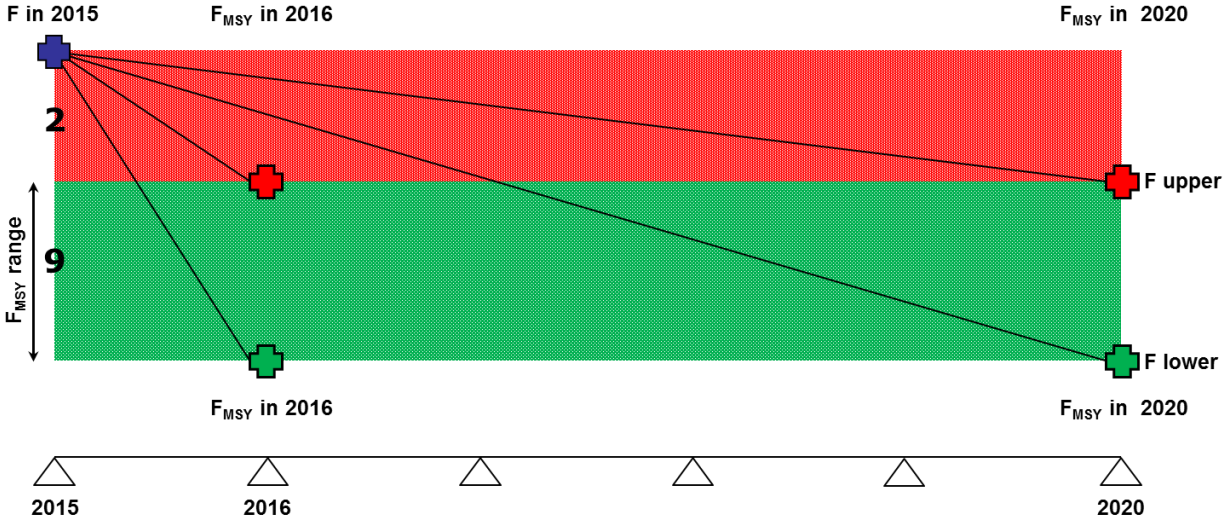


Figure 6.2.1. Illustration to show, simplistically, how fishing could be reduced from the situation in 2015 to immediate achievement of the F_{MSY} ranges in 2016 or a more prolonged achievement by 2020. Note that the trajectory could be smooth, as is illustrated, or stepwise and that there are, therefore, many ways to achieve the same result which are too numerous to model.

6.2.1. Sub-option 2.1 - F_{MSY} is achieved by the start of 2016

6.2.1.1. Environmental effects

The STECF analysis[9] shows that where F_{MSY} is achieved by the start of 2016, in the short term, fishing at the upper bound of the F_{MSY} range will generate larger catches for all stocks with the trade-offs of higher inter-annual variability and larger fishing mortalities - which can be 50% above those in Option 1. The consequence of this is lower biomasses than under Option 1. This results in increased risks to the SSB falling below B_{lim} for cod and below B_{pa} for haddock and sole.

In contrast, however, where fishing is at the lower bound of the F_{MSY} range, compared to Option 1, the catches are lower and show lower inter-annual variability. The consequence of this is higher biomasses with subsequent reduction to the risks of SSB falling below both B_{pa} and B_{lim}.

The largest trade-off to fishing at the upper bound of the F_{MSY} is keeping biomasses at lower levels.

In the long term, fishing at the upper bound of the F_{MSY} range generates larger catches than Option 1, while fishing at the lower bound produces smaller catches. The trade-offs are between biomass levels and the fishing mortality required to get those catches, which can be seen as a proxy for variable costs. Fishing at the upper bound of the F_{MSY} range generates more catches but keeps biomass at lower levels, which implies an increase in biological risk and an increase in effort.

Additionally, STECF[9] concluded that to maximise the likelihood of achieving the objectives of the CFP, setting fishing opportunities at the upper bound of the F_{MSY} range should be

applied only in exceptional circumstances, such as in the case of cod where, in the short term, fishing opportunities need to be reconciled with the other species in the mixed fishery. Under the multi-annual plan this flexibility is inherent and gives considerable added value over and above Option 1.

6.2.1.2. Economic effects

Two models were available to predict socio-economic effects. The first, SIMFISH, is limited to 2 flatfish and 1 shrimp species, predominantly in the southern North Sea, and to 6 beam trawl fleet segments. The second, FISHRENT, contains 4 demersal fish species and 10 demersal trawl fleet segments. Neither model deals with mixed-fisheries considerations. The results are, therefore, limited.

The economic effects vary depending on the level of F.

If F is set at the upper bound of the F_{MSY} range more fishing effort is required to catch the higher short-term catches; the large increase required in fishing mortality, when compared to Option 1, may not be balanced out by the effort required to catch the higher quantities of fish, leading to a less profitable fishery.

However, setting F at the lower bound of the F_{MSY} range results in reduced costs across most of the fleet segments with other indicators showing a variable result but generally better than under Option 1.

For the mixed fishery as a whole, therefore, utilising the upper bound of the F_{MSY} range for a substantial proportion of the stocks may impair the economic performance of the fleet in the long term whereas fishing at the lower bound of the F_{MSY} range will give improved economic performance.

Profitability is one of the economic indicators that can be predicted in both economic models. In SIMFISH, where F_{MSY} is achieved by the start of 2016, only 2 of the 6 fleet segments show any likely impact on profitability compared to Option 1. The extent of the impact will very much depend on choices of fishing mortality that would be made each year by the Council. The 2 fleet segments are Dutch beam trawlers between 24 and 40 m vessel length and, secondly, those with a vessel length greater than 40 m. In FISHRENT, the profitability for all bar 3 of the the 10 fleet segments is likely to be affected, to a greater or lesser extent, by the attainment of F_{MSY} by the start of 2016. Four fleet segments are most likely to be impacted. These are German demersal trawlers between 24 and 40 m vessel length; German and French demersal trawlers with vessel lengths greater than 40 m and UK demersal trawlers with vessel lengths between 12 and 18 m.

6.2.1.3. Social effects

Two models were available to predict socio-economic effects. The first, SIMFISH, is limited to 2 flatfish and 1 shrimp species, predominantly in the southern North Sea, and to 6 beam trawl fleet segments. The second, FISHRENT, contains 4 demersal fish species and 10 demersal trawl fleet segments. Neither model deals with mixed-fisheries considerations. The results are, therefore, limited.

The number of vessels is one of the social indicators can be modelled in both SIMFISH and FISHRENT. In SIMFISH, where F_{MSY} is achieved by the start of 2016, only 2 of the 6 fleet segments show any likely impact on the number of vessels compared to Option 1, and to a more limited extent than the possible change in profitability. Again, the extent of the impact will very much depend on choices of fishing mortality that would be made each year by the

Council. The 2 fleet segments are the same as those mentioned above for the economic indicator of profitability. In FISHRENT, the pattern is similar to that for profitability. All bar 2 of the the 10 fleet segments are likely to be affected, to a greater or lesser extent, by the attainment of F_{MSY} by the start of 2016, compared to Option 1. The vessel numbers of 2 other fleet segments are considerably more likely to be impacted than the others. These are German demersal trawlers between 24 and 40 m vessel length and UK demersal trawlers with vessel lengths between 12 and 18 m.

Given the large number of SMEs and micro-businesses in the North Sea catching and processing sectors, direct negative impacts on both sectors are possible with fishing at the upper bound of the F_{MSY} range. Conversely, fishing at the lower bound of the F_{MSY} range gives an improved outcome in comparison to Option 1.

The socio-economic effects mentioned above will mostly affect SMEs and micro-businesses. Although the fleet segments themselves may each employ a large number of people, each individual enterprise (in many cases these are skipper owned enterprises) itself will have only a small crew. For example, in the demersal catching sector, the top 35 fleet segments with the highest landed value (see Section 3.7), some 1100 vessels, consist exclusively of vessels with an average of 10 (FTE) employees or less, averaging 4 (FTE) employees (Table 3.7.1). The processing sector has 958 companies with 10 employees or less, 61% of the processing enterprises. 98% of these enterprises employ less than 250 people (Table 3.7.3).

6.2.1.4. Administrative costs

One plan, containing one single management framework for the management of stocks caught together in demersal fisheries in the North Sea will represent considerable simplification in comparison to Option 1. Creating a single management framework, with in-built options for Regionalisation and adaptation will allow the plan to be responsive to changes in the fisheries, in the management advice and in the status of the stocks while keeping consistency between all of the elements relevant for the management, and making it easier to ensure coherence across the stocks caught together in the mixed fisheries. The administrative burden under this option will be considerably lower than under Option 1.

6.2.2. Sub-option 2.2 - F_{MSY} is achieved by 2020 at the latest

6.2.2.1. Environmental effects

The STECF analysis shows that if the achievement of F_{MSY} is delayed to 2020, catches are lower than, but not very different from, the average catches under sub-option 2.1. SSB is, on average, generally higher than the average SSB under sub-option 2.1. Overall this represents an improvement on Option 1, which is reflected in lower risks to B_{pa} and B_{lim}, with the exception of cod and sole's risk to B_{lim}.

When fishing at the upper bound of the F_{MSY} range, the stocks of cod and sole show an increased risk to B_{lim} and a significantly increased risk to B_{pa} for cod in 2020 when compared with sub-option 2.1, which is, in turn, an increased risk on Option 1. Overall, in the longer term, fishing at the upper bound of the F_{MSY} range generates higher catches but keeps biomasses lower and increases risks to the stocks of falling below both B_{lim} and B_{pa}.

Similarly to sub-option 2.1, if exploitation is at the lower bound of the F_{MSY} range, compared to Option 1 the catches are lower and show lower inter-annual variability, leaving higher biomasses and reducing the risks to B_{lim} and B_{pa}. Moreover, biomasses are even higher and risks to B_{lim} and B_{pa} are further reduced compared to sub-option 2.1.

Again, for the mixed fishery as a whole, the best approach to maximise long-term yield would be to attempt to reconcile F on mixed fisheries using Fs between the lower bound of the F_{MSY} range and F_{MSY}. This will lead to larger and healthier stocks.

6.2.2.2. Economic effects

Under this sub-option, where achievement of F_{MSY} is delayed to 2020, compared to Option 1, there are larger landings for the fleets but these may be associated with higher costs due to higher effort needed to make these catches. Overall, fishing at the upper bound of the F_{MSY} range leads to a negative impact on profitability and net profit because effort has to be sustained at a higher level.

As with sub-option 2.1, fishing at the lower bound of the F_{MSY} range, in contrast, leads to higher profitability across many of the fleet segments because less effort is required to catch the fish, and will, therefore, give improved economic performance compared with Option 1.

For the mixed fishery as a whole, therefore, utilising the upper bound of the F_{MSY} range for a substantial proportion of the stocks may impair the economic performance of the fleet in the long term.

Profitability can be predicted in both economic models. In SIMFISH, where F_{MSY} is achieved by 2020, the effects on the fleet segments are more limited than with immediate attainment of F_{MSY} and with less variable effects. Again, only 2 of the 6 fleet segments show any likely impact on profitability compared to Option 1. The extent of the impact will very much depend on choices of fishing mortality that would be made each year by the Council. The 2 fleet segments are different to those under immediate attainment of F_{MSY}; they are German beam trawlers between 18 and 24 m vessel length and Dutch beam trawlers with vessel lengths between 12 and 24 m. In FISHRENT, the same fleet segments are affected as for the attainment of F_{MSY} by the start of 2016 but the potential effects on profitability could be larger, depending on the choice of fishing mortality, for the most affected segments.

6.2.2.3. Social effects

The number of vessels can be modelled in both SIMFISH and FISHRENT. In SIMFISH, where F_{MSY} is achieved by 2020, the same 2 of the 6 fleet segments show any likely impact on the number of vessels compared to Option 1, but to a greater extent than those seen with immediate attainment of F_{MSY}. Again, the extent of the impact will very much depend on choices of fishing mortality that would be made each year by the Council. In FISHRENT, the pattern is similar to that for the immediate attainment of F_{MSY}. All bar 2 of the the 10 fleet segments are likely to be affected, to a greater or lesser extent, by the attainment of F_{MSY} by the start of 2016. The vessel numbers of 3 other fleet segments are considerably more likely to be impacted than the others. Two are the same as for the results where F_{MSY} is achieved by 2016: German demersal trawlers between 24 and 40 m vessel length and UK demersal trawlers with vessel lengths between 12 and 18 m; the third fleet segment affected is the German demersal trawlers with a vessel length greater than 40 m.

6.2.2.4. Administrative costs

The administrative costs, effects on simplification and the reduction of administrative burden under this sub-option are the same as those related to sub-option 2.1.

Stock rebuilding timetables

The multi-annual plan introduces biomass safeguards that are not contained in the Basic Regulation. These will enable stocks to be rebuilt above precautionary levels (above which there is a low probability that the recruitment will be impaired) whenever the SSB falls below the levels stipulated. It is anticipated that catch opportunities would be set at a fishing mortality rate that is lower than the lower bound of the F_{MSY} range. The time period for recovery could be long or short. It will be discussed below in the short and medium term (5 versus 10 years) – see Section 5.2.2.

Currently, the majority of the important fish species in the North Sea demersal fishery are already within safe biological limits. The impact on most stocks of a short term (5 year) or medium term (10 year) recovery period when a stock falls below its precautionary biomass is not very pronounced except for cod where the risks to SSB, to B_{lim} and to B_{pa} are very much higher if recovery is protracted. This is because cod is still below safe biological limits although its biomass has been showing a steady recovery in recent years. Nevertheless, because it is still below the biomass safeguard and fishing mortality is still above F_{MSY}, the management of this stock will continue to drive the impacts on the mixed fisheries.

The significant added value of this multi-annual plan, over and above Option 1, is the inclusion of conservation measures that can be adopted to enable the rebuilding of stocks that fall below precautionary levels.

6.2.3. Sub-option 2.3 - short (5 year) recovery period

6.2.3.1. Environmental effects

A short recovery time will mean that F has to be reduced considerably to enable the stock to rebuild quickly. The knock-on effect of this would be positive for the stock size of all of the species because less fish would be removed in the fisheries, leaving larger stocks in the sea. The STECF analysis shows that the risk for cod of being below B_{pa} by 2020 is reduced significantly in comparison to the Basic Regulation and is lower than in the slow recovery scheme.

From a stock perspective, fast recovery for cod seems preferable because it bears a smaller risk with lower uncertainty for future biomass levels, not least for cod, and it confers improved environmental sustainability.

6.2.3.2. Economic effects

Similarly to sub-option 2.2, a short recovery time and fishing below the lower bound of the F_{MSY} range leads to higher profitability across many of the fleet segments because less effort is required to catch the fish, and will, therefore, give improved economic performance compared with Option 1.

6.2.3.3. Social effects

Fishing below the lower bound of the F_{MSY} range gives an improved outcome in comparison to Option 1. It is, therefore, likely that the impacts on factors like job losses, reduction in crew numbers etc., would be lower than under Option 1. This would be more beneficial for the large number of SMEs and micro-businesses in the North Sea catching and processing sectors.

6.2.3.4. Administrative costs

The administrative costs, effects on simplification and the reduction of administrative burden under this sub-option are the same as those related to the other sub-options.

6.2.4. Sub-option 2.4 - long (10 year) recovery period

6.2.4.1. Environmental effects

Compared to sub-option 2.3, the risk to B_{pa} for cod is higher if recovery is protracted, but still significantly lower than the risk under Option 1.

6.2.4.2. Economic effects

The economic effects on the fleet are improved with a slower recovery time compared to Option 1 but more negative than with a fast recovery time.

6.2.4.3. Social effects

Any negative economic effects will mostly affect SMEs and micro-businesses. In the demersal catching sector, the top 35 fleet segments with the highest landed value (see Section 3.7), some 1100 vessels, consist exclusively of vessels with an average of 10 (FTE) employees or less, averaging 4 (FTE) employees (Table 3.7.1). The processing sector has 958 companies with 10 employees or less, 61% of the processing enterprises. 98% of these enterprises employ less than 250 people (Table 3.7.3).

6.2.4.4. Administrative costs

The administrative costs, effects on simplification and the reduction of administrative burden under this sub-option are the same as those related to the other sub-options.

Overall, STECF considered that a fast recovery scenario (5 years) is better than a slow recovery, because it bears a smaller risk and smaller uncertainty to the future biomass levels, not least for cod, without making much difference to the fleets in the short term.

6.3. Summary

The following text table summarises the results of the analysis comparing the two feasible options and sub-options.

	Option 1-Use the CFP Basic Regulation (including the landing obligation)	*Option 2- A single mixed-fisheries plan for North Sea demersal fisheries*					
		Sub-option 2.1. F_{MSY} achieved by the start of 2016		*Sub-option 2.2. F_{MSY} achieved by 2020 at the latest*		*Sub-option 2.3. 5 year rebuilding period*	*Sub-option 2.4. 10 year rebuilding period*
		Lower bound of F_{MSY}	*Upper bound of F_{MSY}*	*Lower bound of F_{MSY}*	*Upper bound of F_{MSY}*		
Acceptability	**Low**. The majority of stakeholders want the current plans to be repealed.	**High**. There is high expectation from stakeholders for a strategic multi-annual framework enabling a flexible, regional results-based management. It will aim to account for mixed-fisheries interactions and enable coherence in the definition of fishing opportunities and include any specific or alternative conservation measures for by-catch species caught in the fisheries for which TACs are established					
Environmental effects	Single species TACs with no consideration of the mixed-fisheries interactions leading to discarding and /or choke effects. No biomass safeguards to recover stocks	Higher biomasses c.f. Option 1. Reduced risk of falling below safe biological limits (B_{pa} and B_{lim})	Lower biomasses c.f. Option 1. Increased risk of falling below B_{pa} and B_{lim}	Higher biomasses and reduced risk of falling below B_{pa} and B_{lim} c.f. sub-option 2.1	Increased risk c.f. sub-option 2.1. Significantly increased risk for cod and sole falling below B_{lim} and for cod below B_{pa}	Low risk of cod being below B_{pa} and B_{lim} by 2020. Higher biomass for all stocks	Low risk of cod being below B_{pa} and B_{lim} by 2025 but higher than in sub-option 2.3
Economic effects	Severe negative economic effects with choke effects driving down profits. Short term negative effects with a 55% loss of landed value of major fish species in North Sea mixed fisheries	Lower effort and reduced costs. Outcome better than Option 1	Higher effort required for short term increase in catch gives less profitable fishery than Option 1	Higher profitability across many fleet segments to give improved economic performance c.f. Option 1	Higher landings but higher costs leading to negative impact on profitability and net profit c.f. sub-Option 1	Higher profitability across many fleet segments to give improved economic performance c.f. Option 1	Improved c.f. Option 1 but lower than sub-option 2.3
Social effects	Reduced income for crew members. Likely reduction of crew numbers and job losses – mostly affecting SMEs.	Improved outcome for SMEs and micro-businesses in comparison to Option 1	Direct negative effects on SMEs and microbusinesses likely worse than Option 1	Improved outcome in comparison with Option 1	More negative effects for SMEs and micro-businesses than in Option 1	Improved outcome in comparison with Option 1	Improved c.f. Option 1 but lower than sub-option 2.3
Administrative burden	Mixed. Some reduction and some increase.	One plan, containing one single management framework for the management of stocks caught together in demersal fisheries in the North Sea will represent considerable simplification. The administrative burden under Option 2 will be considerably lower than under Option 1					

For the management plan sub-options it is very important to remember that, in reality, Council will set fishing opportunities between the lower and upper bounds of F_{MSY} as defined by ICES[41]; this means that the outcome within each sub-option will be different than fishing at either the higher or lower bound of the range. However, the outcome would not be that different when compared for the same rate of F for the different sub-options.

Additionally, it should be noted that fishing at F_{MSY} does not guarantee that a stock will remain above its safeguard biomass. In the case of cod, the current fishing mortality is above F_{MSY}, and the biomass is below the safeguard biomass. Although these are two different issues to be addressed they both require the same solution, which is a reduction in fishing mortality. The impacts of a rapid reduction in fishing mortality to F_{MSY} and of a rapid recovery of the biomass levels are therefore essentially the same.

Compared to the Basic Regulation, a single management framework for the management of stocks caught together in demersal fisheries in the North Sea will confer a number of advantages:

- simplification: the single management framework, with in-built options for Regionalisation and adaptation will allow the plan to be flexible to deal with conservation measures and issues such as using fleet-related management measures for the driver species as a way of managing some of the by-catch species
- the F_{MSY} range approach appears to confer flexibility that could help reconcile difficulties arising in the mixed-fisheries context
- the use of F_{MSY} ranges gives scope to reconcile TACs for different species so that they become closer to being consistent with F_{MSY}
- however, the use of the F_{MSY} range approach should only be employed when informed by objective mixed-fisheries advice
- the biomass safeguards provide an important level of protection against over-fishing

The Basic Regulation stipulates that "the maximum yield sustainable exploitation rate shall be achieved by 2015 where possible and on a progressive incremental basis at the latest by 2020 for all stocks." The sub-options 2.1 and 2.2 are illustrative of the effects of earlier versus later attainment of F_{MSY}.

Whether fishing mortalities are chosen at the lower or upper bounds of the F_{MSY} ranges does make a difference, with negative effects on risk and profitability at the upper bounds. Fishing at the upper bounds of the ranges will maintain smaller stock biomasses, require greater fishing effort (and therefore have negative consequences in terms of carbon dioxide emissions and profitability) and, as a consequence of higher fishing mortalities, tend to reduce the average ages in the populations which is not indicative of a healthy stock[70]. Additionally, the impact of the F_{MSY} range approach is highly dependent on the choices of fishing mortality that would be made each year by the Council under a single mixed-fisheries plan for North Sea demersal fisheries. ICES has specified the ranges of F_{MSY} that should be followed[41] for a number of North Sea demersal stocks. For precautionary management, and to provide maximum long term benefits for the stocks, it has stipulated that the F targets set should be

[70] Descriptor 3 of Directive 2008/56/EC Of The European Parliament And Of The Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive).

between the lower bound of F_{MSY} and the point estimate of F_{MSY}. STECF similarly demonstrated[9] that there is an increased risk of over-exploitation if fishing opportunities are set in line with the upper bounds of the F_{MSY} ranges, particularly if several stocks in a mixed fishery are involved. Similarly there are increased economic and social risks to fishing at the upper bounds of the F_{MSY} ranges. However, setting fishing opportunities at the level of the upper bound of the F_{MSY} range could be applied but only in exceptional circumstances and only in the short term, such as in the case of cod where fishing opportunities need to be reconciled with the other species in the mixed fishery. These findings are in accordance with Recital 7 of the Basic Regulation that states "The exploitation rates should be achieved by 2015. Achieving those exploitation rates by a later date should be allowed only if achieving them by 2015 would seriously jeopardise the social and economic sustainability of the fishing fleets involved. After 2015, those rates should be achieved as soon as possible and in any event no later than 2020".

7. COMPARING THE OPTIONS

The new CFP introduces a number of changes to the way fisheries are managed in the European Union. The most important of these are the landing obligation and Regionalisation. These represent a fundamental shift in fisheries management and will change the behaviour of the fleets in ways that are difficult to predict. This means that any proposals for new management measures must be evaluated against a baseline that will in any case change.

Any new management measures must be coherent with the requirements of the new CFP. This means that they must facilitate the landing obligation, establish the framework necessary for the implementation of Regionalisation and take into account mixed-fisheries interactions.

7.1. Assessment against the environmental, economic and social impacts

Table 7.1 provides a comparison of the options and sub-options in terms of the environmental, economic and social impacts of a new mixed-fisheries multi-annual plan compared to managing according to the Basic Regulation.

Table 7.1 shows that management under sub option 2.2, where F_{MSY} is achieved by 2020 at the latest, is more advantageous than under either sub-option 2.1 (where F_{MSY} is achieved by the start of 2016*)* or Option 1 – use the CFP Basic Regulation. The suite of measures under sub-option 2.2 has the most advantageous outcome when analysing the trade-offs between environmental, economic and social impacts, especially when fishing between the lower bound of F_{MSY} and the point estimate of F_{MSY}; this ensures precautionary management and provides the maximum long term benefits for the stocks' status, economic returns and environmental impact.

Table 7.1. Comparison of options and sub-options in terms of achieving the objectives of revising the management of demersal fisheries in the North Sea.

	Option 1- Use the CFP Basic Regulation (including the landing obligation)	*Option 2- A single mixed-fisheries plan for North Sea demersal fisheries*			
		Sub-option 2.1. F_{MSY} achieved by the start of 2016	*Sub-option 2.2. F_{MSY} achieved by 2020 at the latest*	*Sub-option 2.3. 5 year rebuilding period*	*Sub-option 2.4. 10 year rebuilding period*
Environmental effects	0	+	++	++	+
Economic effects	0	++/-*	++/-*	+	+
Social effects	0	++/-*	++/-*	+	+

Key: 0 = neutral impact, + = positive impact, ++ = very positive impact (relative to other options), - = negative impact, +/- = both positive and negative impacts

*** N.B. Fishing between F_{MSY} and F_{lower} gives much more positive results than the Basic Regulation. However, fishing above F_{MSY} for more than very short time periods gives more negative results than the Basic Regulation.**

7.2. Qualitative assessment against the general and specific objectives

A comparison of the Basic Regulation and a new mixed-fisheries multi-annual plan relative to the objectives of revising the management of demersal fisheries in the North Sea is provided in Table 7.2.

Table 7.2 shows Option 2 as the plan in its entirety, rather than divided into the sub-options that have been analysed for their respective impacts. Each sub-option scores the same against each objective. It is only when they are compared against the environmental, economic and social indicators (Table 7.1 above), that the true differences between the sub-options are apparent. The two tables together enhance the ability to choose the preferred option (taking into account the sub-options within Option 2).

Table 7.2. Comparison of options in terms of achieving the objectives of revising the management of demersal fisheries in the North Sea.

	Options	Option 1 – Basic Regulation	Option 2 – mixed-fisheries multi-annual plan
General Objectives	Provide a transparent framework to achieve Maximum Sustainable Yield (MSY) by 2020 at the latest	0	++
	Apply the precautionary approach	0	++
	Simplification of EU legislation and of the management of European fisheries	0	++
Specific Objectives	Reduce the extent of underfishing in a mixed fishery under a landing obligation by introducing F_{MSY} ranges	0	++
	Establish biomass safeguards in order to enable the precautionary approach established in Article 2(2) of the Basic Regulation	0	++
	Facilitate the application of the landing obligation introduced in the reformed CFP	0	++
	Establish the framework necessary for the implementation of regionalisation within the North Sea area	0	++
	Remove the days at sea regime which proved ineffective and which is no longer necessary given that the new Basic Regulation addresses the same underlying problems with different means	0	++

Key: 0 = neutral impact, + = positive impact, ++ = very positive impact (relative to other options), - = negative impact, +/- = both positive and negative impacts

7.3. Effectiveness, Efficiency, Coherence and Acceptability

Effectiveness

Table 7.2 shows that Option 2 is considerably more effective than Option 1 with respect to meeting the objectives. The plan would ensure that the main stocks covered by the plan achieve their MSY targets by specified deadlines whilst minimising any conflicts between the management requirements for each of the stocks. The plan also introduces biomass safeguards that require action to recover stocks that fall outside safe biological limits. It is apparent from Table 7.1 that a faster recovery period (sub-option 2.3) is preferable to a slower one (sub-option 2.4) because it confers greater environmental benefits to the fish stocks than slower recovery with minimal differences in the economic and social impacts. The plan would allow for adaptation mechanisms in specified technical measures to take measures aiming at decoupling fisheries and helping to achieve the conservation objectives of the plan, as well as to minimise impacts of fishing on the marine environment. This would be done through the regionalised governance possibilities under the new CFP. At the same time, the plan would

allow to introduce implementation elements for the landing obligation in light of the limited lifespan of discard plans. One plan, containing one single management framework for the management of stocks caught together in demersal fisheries in the North Sea will represent considerable simplification compared to Option 1.

These actions represent additional added value of Option 2 over and above Option 1.

The stocks of plaice, saithe and sole are already fished within their MSY ranges, so it will be relatively simple for the Council to fix TACs for these species that minimise any choke effects in the mixed fisheries. More problematic are cod and haddock. It can be seen from Figure 5.1.4.1 that it is impossible to find levels of fishing mortality on these stocks that would be coherent with one another, or indeed with the fishing mortalities of plaice, saithe and sole. This does not mean that the TACs are necessarily incompatible; that would depend on the degree of interaction in the mixed fisheries. It is probable that, for example, the TAC for sole could be fixed independently to that of haddock with few, if any, problems. The same is not true for cod and haddock, which are highly associated in the mixed fisheries. The degree to which the TACs on these species could be made compatible would depend not only on the relative sizes of the TAC, but also on the degree to which the fisheries on cod and the fisheries on haddock could be decoupled, perhaps through technical measures or through changes in the spatial or seasonal behaviour of the fleets. This illustrates further the effectiveness and added value of Option 2, where both TAC levels and appropriate regional technical measures can be considered together in the same legal framework.

Efficiency

Option 2 creates more efficient management than Option 1 because it provides a framework within which flexibility and rapid decision making, tailored to the characteristics of the specific sea basin, will be possible through a regional decision making process. This is the case regardless of the sub-options chosen within Option 2. The administrative burden under Option 2 would be expected to be considerably lower than under Option 1. Under Option 2, more coherent TACs and regional technical measures will reduce unwanted catches and hence reduce the burden on control and enforcement. Overall, the single mixed-fisheries multi-annual plan represents consolidation of the management of the North Sea demersal fish stocks.

Coherence

Option 1 is coherent with the overarching objectives of the CFP but it is not fully coherent with regionalised decision-making as envisaged in the CFP. Nor is it coherent with the objectives of the CFP to take into account mixed-fisheries interactions. This option provides only limited scope for simplification.

Option 2 is coherent with the objectives of the CFP and provides a governance structure that is fully in line with Regionalisation.

Acceptability

The majority of stakeholders agree that multi-annual plans are preferable to setting TACs purely on an annual basis, and that it would make sense to develop a single mixed-fisheries plan covering the main demersal species in the North Sea[13]. This shows that Option 2 is preferable to Option 1. The majority of contributors think that the current North Sea management plans need to be replaced and that a mixed-fisheries multi-annual approach is the

right way forward. Contributors from Member States' administrations and the fishing industry would like to see simple, non-prescriptive regulation –an EU framework including strategic objectives and general principles with detailed rules drawn up through the regionalised model. A new mixed-fisheries multi-annual plan is seen as an opportunity to improve the management of North Sea fisheries.

Table 7.3. Comparison of the options in terms of effectiveness, efficiency, coherence and acceptability in achieving the objectives.

	Effectiveness	**Efficiency**	**Coherence**	**Acceptability**
Option 1	0	0	0	0
Option 2	++	++	++	++

Key: 0 = neutral impact, + = positive impact, ++ = very positive impact (relative to other options), - = negative impact, +/- = both positive and negative impacts

7.4. The preferred option

The preferred option is a mixed-fisheries multi-annual plan with the sub-options of the achievement of F_{MSY} by 2020 at the latest, in line with the objectives of the Basic Regulation, with faster recovery of a stock when it falls below safe biological limits. Once F_{MSY} has been reached for any particular stock, exploitation should not exceed F_{MSY} for that stock.

This suite of measures has the most advantageous outcome when analysing the trade-offs between environmental, economic and social impacts (Table 7.1), especially when fishing between the lower bound of F_{MSY} and the point estimate of F_{MSY}; this ensures precautionary management and provides the maximum long term benefits for the stocks' status, economic returns and environmental impact. Additionally, ICES[41] and STECF[9] have both stipulated, through considerable analysis, that there is an increased risk of over-exploitation if fishing opportunities are set in line with the upper bounds of the F_{MSY} ranges, particularly where several stocks in a mixed fishery are involved.

The operational objectives that would enable this suite of measures are:

- keep fishing mortality within the target fishing mortality ranges defined by ICES for the main target species
- maintain spawning stock biomass above the biomass safeguards (MSY $B_{trigger}$ and the limit biomass B_{lim}) defined by ICES for the main target species
- ensure that fishing practices are adopted, through Regionalisation, to take into account the specific characteristics of the fisheries in the North Sea

8. MONITORING AND EVALUATION

Any multi-annual plan must have the means to ensure its correct implementation and application. As the preferred option is a regulation that is directly applicable, there are no problems with implementation. Correct application, however, has to be monitored and evaluated.

8.1. Monitoring

The Commission has to monitor whether the MSY related fishing mortality targets prescribed by the plan are being met. This is relatively easy as these targets have to be translated into total allowable catches (TACs) to be adopted by Council in its annual fishing opportunies regulation. Adopting TACs that do not correspond to the provisions of the plan would simply be illegal.

The same goes for the achievement of the precautionary approach. The Commission proposal for the annual fishing opportunities regulation is based on annual ICES advice which again is based on catch data and scientific sampling data provided by Member States fulfilling the obligations they have under the EU data collection regulation[71]. If a stock is below the precautionary targets established by the plan, ICES would advise what fishing mortality has to be adopted to move biomass above the theshold and within the timeframe provided for in the plan. Council would be legally bound to adopt TACs based on these fishing mortality rates.

It also has to be ensured that the TACs adopted by Council are being respected. The EU fisheries control regulation (Council Regulation (EC) No 1224/2009)[72] contains provisions that oblige Member States to control whether fishermen respect the CFP rules. Among other rules, Member States are obliged to carry out landing inspections and cross check whether fishermen correctly record their catches to make sure that fishermen do not land more catches than their quota allows and to ensure that no fish caught illegally enters markets. The Control Regulation also contains provisions on the deduction of quota applied to Member States in the form of reduced fishing opportunities if a quota from the previous year had been overfished.

The application of the ranges for F_{MSY} and their effects will have to be monitored throughout the application of the plan. It has to be ensured that Council does not set TACs that are based in the upper part of the F ranges without having a justification stemming from mixed-fisheries / choke species problems. DG MARE deals annually with the preparation of Council decisions and with ICES stock advice, so no special monitoring arrangements have to be taken. If TACs are set too often in the upper part of the range, the Commission can react by proposing an amendment to the plan.

Additionally, to ensure that Regionalisation works effectively, the Commission will ensure that the Joint Recommendations submitted by Member States are scientifically sound and will meet their objectives. This will be ensured through the evaluation of each Joint Recommendation by the STECF.

8.2. Ex-ante evaluation of delegated acts (regionalised measures)

All Joint Recommendations proposed by Member States will have to be evaluated by STECF before being adopted as a Delegated Act. A similar evaluation has been made for the discard plans that are being adopted based on the delegation in the Basic Regulation. Commission has

[71] Council Regulation (EC) No 199/2008 of 25 February 2008 concerning the establishment of a Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy. (*OJ L 060, 5.3.2008*).

[72] Council Regulation (EC) No 1224/2009 of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy, amending Regulations (EC) No 847/96, (EC) No 2371/2002, (EC) No 811/2004, (EC) No 768/2005, (EC) No 2115/2005, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007, (EC) No 676/2007, (EC) No 1098/2007, (EC) No 1300/2008, (EC) No 1342/2008 and repealing Regulations (EEC) No 2847/93, (EC) No 1627/94 and (EC) No 1966/2006. *(OJ L 343, 22.12.2009).*

already successfully asked Member States to modify their Joint Recommendations in cases where STECF concluded that provisions foreseen in a Joint Recommendations were not based on correct scientific advice.

When it comes to technical measures that serve to decouple the mixed fishery in order to increase its economic profitability, there is a strong incentive for Member States to propose Joint Recommendations that include effective measures. If Member States do not suggest such technical measures, one potential instrument to solve the choke species problem remains unused, thus the productivity of the fishery decreases.

There is a similar incentive for Member States to suggest effective technical measures aiming at achieving the conservation targets of the plan. If Member States do not suggest appropriate technical measures, the TAC of the species concerned will have to be reduced to be in compliance with the plan. That again constitutes a strong incentive for Member States to suggest appropriate technical measures.

Member States will also have a strong incentive to control compliance with these measures, as these measures only successfully decouple the mixed fisheries or achieve conservation targets if they are really enforced. In addition, it can be expected that the Regionalisation procedure increases Member States' support for the agreed measures as Member States will play a much more active role in developing these measures. This should also increase compliance by Member States.

The Control Regulation also obliges Member States to verify within their Exclusive Economic Zones whether CFP provisions are complied with. Previous EU-level technical measures contain provisions to make control easier (e.g. provisions to have only one gear type on board at a time, so that fisheries inspectors easily determine which gear has been used during the fishing trip). Joint Recommendations could include similar provisions, if deemed sensible by Member States.

Measures adopted through Regionalisation are Union Measures, even though they are developed by regional groups of Member States. The Control Regulation then obliges Member States to control the application of these rules. The Commission will be obliged to monitor the correct implementation of the rules (and of the control systems) by Member States. In suspected cases of non-compliance by Member States the Commission will follow the standard procedures, i.e. EU pilots and infringement procedures.

8.3. Ex-post evaluation of the plan

The plan, and its environmental, economic and social effects, should be evaluated by STECF 5 years after its entry into force. An earlier evaluation is not sensible, due to fact that there is an important time gap between implementation of the plan and when the data required for evaluation are available. STECF notes that a period of 48 months after implementation would be required in order to have 3 years of biological data at its disposal and 60 months for 3 years of economic data to be available[73]. It also has to be noted that the regulatory environment in the North Sea demersal fisheries will be under constant change due to the stepwise introduction of the landing obligation between 2016 and 2019. The use of the F_{MSY} ranges will likely change over time because with every additional stock which comes under the

[73] Report of the STECF Study Group on the Evaluation of Fishery Multi-Annual Plans (SGMOS 09-02).

landing obligation other choke species challenges might arise. This is another reason to evaluate the plan only after the landing obligation has been fully in force for some years.

Indicators to be used for the evaluation should be environmental (fishing mortality and SSB for all relevant stocks), economic (net profit margin, return on fixed capital assets (ROFTA) and gross value added by full-time equivalent (GVA/FTE) as well as social (total employed, total FTE, average wage). It would be advisable to analyse economic and social indicators both on an aggregated as well as on a fleet-segment level, to see whether the management options taken had specific effects in specific segments.

ANNEX I

SUMMARY OF PUBLIC CONSULTATION

Introduction

Council Regulation (EU) No 1380/2013 on the new Common Fisheries Policy (CFP), establishes new objectives and means for sustainable fisheries, including the objective of maintaining populations of harvested species above levels that can produce the maximum sustainable yield and achieving an exploitation rate consistent with this objective as soon as possible and at the latest by 2020 for all stocks.

The new CFP also introduces a landing obligation, which means that unwanted catches of species that are subject to quotas can no longer be discarded, and objectives that contribute to achieving "good environmental status" (GES) as required by Directive 2008/56/EC (the Marine Strategy Framework Directive, or MSFD).

The introduction of the landing obligation represents a fundamental shift in the way in which fisheries are managed. In the North Sea demersal fisheries, several species are usually caught together in the same net. The management plans currently in place were conceived when there was no landing obligation. This limits their effectiveness, because under the previous CFP, fishing could continue in these mixed fisheries even if the quota for one or more of the species concerned was exhausted. The unwanted catches would simply be discarded. Indeed, there was a legal obligation to discard catches in excess of quota, and also to discard any fish that were below the minimum landing size. This will no longer be the case. Under the landing obligation, the fishery should be stopped whenever the quota for any one of the species in the mixture is exhausted. Moreover, all under-sized fish must be landed and counted against the quota.

In line with the principles and objectives set out in Articles 9 and 10 of the Basic Regulation (Council Regulation (EU) No 1380/2013), and to the extent possible, multi-annual plans should become the main repository for all of the elements and instruments necessary for the management of the fisheries and stocks that a plan encompasses. This ambition would need to take into account the developments regarding the landing obligation and technical conservation measures which are underway in a parallel process to development of this proposal. It could be envisaged that recommended measures or approaches resulting from those developments be incorporated into any multi-annual plan, through regionalisation.

A new multi-annual plan for the North Sea would aim to fulfil the objectives of the new CFP i.e. to achieve an exploitation rate consistent with maximum sustainable yield (MSY), to ensure high and stable yields for the industry, while taking into account mixed-fisheries interactions. It would respond to the challenges under the landing obligation, and would seek a results-based approach by enabling tailor made management measures to be produced in close consultation with fishers and Member States. It would also contribute to the objectives of the Marine Strategy Framework Directive, achieving high long-term yields while maintaining productive and healthy fish stocks within functioning marine ecosystems.

The views of stakeholders and the public in general were sought through a public consultation on the best way forward to modernise and rationalise multi-annual plans in the context of the new CFP. This document reports on the outcome of this consultation.

The overview of the contributions presented is based on the written contributions received. It is neither intended to draw conclusions regarding the options proposed nor does it represent the position of the Commission. It will support the preparation of the Impact Assessment report, which in turn will be the basis for developing the Commission's proposal for a new multi-annual plan for North Sea fisheries.

Contributions received

The public consultation took place between 9 February and 4 May 2015, with a total of 25 written contributions received. Individual contributions are available on the dedicated website to this consultation[74].

Table AI.1 provides a summary of the submissions by stakeholder grouping.

Table AI.1. Breakdown of contributions to the Public Consultation on North Sea multi-annual plans

Stakeholder Group	Number of contributions	Examples
Advisory Councils	1 (4%)	MED AC, SWW AC, NS AC, NWW AC, BS AC
Member States administrations	4 (16%)	Ministries, Local government
Civil society organisations	9 (36%)	Environmental NGOs
Industry/interest groups stakeholder organisations	9 (36%)	Fishermen's representative organisations, , consumer groups, European transport workers federation, anglers organisations, fisheries consultants
General Public	2 (8%)	Citizens with differing backgrounds (e.g. retired fisherman, anglers, member of NGO)

General comments

The majority of contributors think that the current North Sea long term management plans need to be replaced as they have become outdated due to the introduction of the landing obligation. Member States' and industry's contributions strongly criticise the current effort-based regime that does not incentivise fishermen to fish more selectively. The majority of stakeholders state that a mixed-fisheries multi-annual approach is the right way forward. Contributors from Member States' administrations and the fishing industry would like to see simple, non-prescriptive regulation –an EU framework including strategic objectives and general principles with detailed rules drawn up through the regionalised model. A new mixed-fisheries multi-annual plan is seen as an opportunity to improve the management of North Sea fisheries.

Almost all NGO contributors highlight that the precautionary approach and the ecosystem-based approach should be respected in all new MAPs. With respect to the way that TACs will be set in the future, almost all NGOs state that F_{MSY} must be an upper limit and not a target value. NGOs strongly argue against F_{MSY} ranges where the upper bound of the range is above F_{MSY}. NGOs also want biomass reference points which trigger previously agreed reductions in F to be included into the plan.

[74] http://ec.europa.eu/dgs/maritimeaffairs_fisheries/consultations/north-sea-multiannual/index_en.htm

Implementation of the landing obligation

There is general agreement from all contributors that the implementation of the landing obligation will present a major challenge for the fishing industry. Some industry contributors challenge the usefulness of the landing obligation. While sharing the point of view that the landing obligation will present an important challenge for fishermen, NGO contributors also emphasise the environmental and economic opportunities that a successful implementation of the landing obligation might present. One NGO points out that the implementation of the landing obligation not only poses a challenge to the fishing industry but also to MS as a new approach to quota allocation within MS is needed.

Area coverage

There is general agreement that the plan must make suitable provision for consistency with other area plans to ensure consistency of objectives. There are divergent views whether stocks that are not predominantly fished in the North Sea should be covered by the proposed North Sea plan or not. All Member States that participated in the consultation recommend that the plan covers ICES areas IIIa, IV and VIId. However, some contributions from the fishing industry object to the inclusion of IIIa and VIId if this leads to the inclusion of additional stocks other than straddling stocks that are also present in the main basin of the North Sea (area IV).

Major stocks to be included in the plan

The most frequently mentioned additional major stock to be included in the plan was monkfish. Clarity over approaches for co-management with Norway was also mentioned (by NSAC and Member States). Many industry contributors agree with the list of stocks presented in the consultation document. In addition to monkfish, a stock that is mentioned in several industry contributions is megrim. A couple of other fishing industry contributors individually suggest adding other stocks, e.g. sea bass or brown shrimp. NGO contributors emphasise that the MSY objective should be applied to all harvested species. One NGO contribution mentions lemon sole, brill and turbot as drivers of fishermen's behaviour which therefore might be considered as major stocks.

By-catch species to be covered by the plan

With respect to by-catch species, where by-catches are significant or where interactions are important, technical measures through regionalisation are considered appropriate by the majority of industry contributors, the NSAC and Member States, using an adaptive and incremental approach and monitoring the situation to determine the most at-risk species. Many NGOs again emphasise that the CFP's MSY objectives should apply to all species. Some NGOs give special mention to the protected zero-TAC species porbeagle and spurdog, which need special protection as they still can be discarded in the future.

Ecosystem considerations

For ecosystem considerations**,** many industry and Member State contributors feel that existing legislation already takes the ecosystem into account. There was recognition that some stocks may need to be exploited more lightly than F_{MSY} to achieve MSFD Descriptor 3.

However, NGO contributors agree on the need to include ecosystem considerations when drafting the multi-annual plan. They see a need in respecting the MFSD objectives when

adopting fisheries legislation and also refer to article 2(3) of the Basic Regulation of the CFP which foresees an ecosystem-based approach. Some NGOs want very concrete objectives to be achieved like the improvement of the state of specific Natura 2000 sites.

One Member State and one NGO state that the multi-annual plan should be developed incrementally and that ecosystem considerations might be added after evaluation of the new plan or when scientific advice evolves.

Regionalised technical measures

For technical measures, Member States and fishing industry ask the Commission to coordinate the elaboration of the multi-annual plan and future framework for technical measures to avoid duplication. One Member State highlighted that they should be broadly formulated to avoid excluding possible instruments for future management. All technical measures should be dealt with through regionalisation alone.

The AC, Member States and industry highlighted a wide range of technical measures including selectivity improvements, spatial / temporal closures, limitations or prohibitions on the use of certain fishing gears and activities, MCRS and combinations of measures where necessary.

One industry interest group suggested new technologies like sorting fish in the water prior to bringing them on board and leaving behind the unwanted catch.

Additionally, many NGOs underline the need for broad consultation and effective regionalisation when developing new technical measures. Several NGOs propose temporal, real-time and permanent closures in order to protect juveniles and/or vulnerable species. Some NGOs refer to the possibility of creating fish stock recovery areas as defined in Article 8 of the Basic Regulation. Many NGOs suggest introducing measures for higher selectivity of fishing gear. Some NGOs want best practices on handling unwanted catches (e.g. of vulnerable species like sharks and rays) to be promoted, in order to achieve higher survival rates.

Two NGOs suggest other concrete measures like obligatory by-catch reduction devices, move-on rules, obligatory CCTV in cod ends, improved monitoring and reporting requirements and the limitation of fishing licences to certain areas.

Citizen's contributions

Two responses were received from members of the general public. One respondent is a retired fisheries scientist. His contribution emphasizes the need to set F below F_{MSY} and suggests working on defining a general rule for defining such an F value like 75 or 80 percent of F_{MSY} instead of setting F arbitrarily below F_{MSY}. He also points out the need to reduce fishing below the F value foreseen in the plan if scientific data indicate that the size of the spawning stock has fallen below some threshold value.

The other respondent is the Chief Executive of a regional processors' association who contributed on his own behalf. He strongly criticises the landing obligation and emphasises the need to leave more decisions to the individual fishermen. He also asks to add crab, squid and lobster to the list of main target and bycatch species.

A word cloud indicating the 100 most frequently used words and phrases in the combined responses to the public consultation from all contributors is illustrated in Figure AI.1.

Figure AI.1. Word cloud to show the 100 most frequently used words and phrases in the combined responses to the public consultation from all contributors

ANNEX II

MAIN ELEMENTS OF THE COMMON FISHERIES POLICY

The new CFP, Regulation (EU) 138/2013 entered into force on 1 January 2014. The main elements of the new CFP are:

(1) **Maximum Sustainable Yield** is the best possible objective for renewable and profitable fisheries, harvesting the maximum amount of fish on a long term basis. The objective of the CFP is to ensure that MSY is achieved by 2015 where possible, and by 2020 at the latest. Not all stocks in the north-east Atlantic are MSY-assessed yet. Of the assessed stocks 60% of them are fished at MSY (up from 6 % only in 2005). In the Mediterranean only around 11% of assessed stocks are within MSY and there is little sign of improvement. For many stocks, particularly in the Mediterranean, we have no assessment of MSY.

(2) **Annual legislation on fixing fishing opportunities** (TACs and quotas, some are set on a two-yearly basis): to fix, based on scientific advice that is consistent with MSY and in accordance with multi-annual plans (where they exist), the amount of fishing for the stocks concerned, and to allocate quotas to the Member States following the so-called relative stability key. In turn, Member States deal with how to distribute their national quotas to their fishermen. Annually fishing opportunities are set for the Baltic, North Sea, Atlantic and deep-sea stock, by Council only, to determine the level of catches (before the landing obligation: landings), for each stock. The COM outlines its approach for the TAC each spring in a Policy Statement.

The COM proposals are based on existing multi-annual plans (with certain provisions on TAC setting), or on annual biological advice. TACs are shared out to Member States following fixed allocation keys (so-called relative stability, which differs among stocks). TACs (in tonnes) are a translation of fishing mortality (F, mortality caused by fishing as a ratio of the stock). In the context of multi-annual plans the COM will be seeking advice on MSY expressed in ranges of fishing mortality that correspond to sustainable fishing and MSY, for the target species.

Under certain multi-annual plans TACs are accompanied by effort reduction schemes for certain fleets. These effort regimes are currently considered ineffective, causing red tape, and sometimes creating conflicts with the TACs. They are likely to disappear from future multi-annual plans, but are currently still part of the TAC proposals.

(3) The landing obligation: The new CFP includes a landing obligation for all catches of species subject to catch limits (TACs) and, in the Mediterranean, also catches of species which are subject to minimum sizes (only blue-fin tuna is under TAC in this sea basin).

It applies to all Union vessels fishing in Union and non-Union waters. The landing obligation is applied in a gradual way and is fishery based. On 1 January 2015

pelagic fisheries and industrial fisheries everywhere in Union waters will be under the landing obligation, as will be all other fisheries (salmon and cod) in the Baltic.

The landing obligation comes with a set of potential measures and flexibility instruments to make the transition and timely implementation possible. These include quota flexibilities, exemptions for species that have a high survival rate and a *de minimis* exemption to cater for unwanted catches that are unavoidable. The plans may also fix conservation reference sizes for fish. These measures should be developed through multi-annual plans, but in the absence of such plans, *discard plans* can be adopted.

The new CFP encourages regionalisation, which basically allows Member States, in consultation with the relevant stakeholder Advisory Councils, to come forward with a proposal for a discard plan (joint recommendation) that the COM, after review, turns into Union legislation (through a Commission Regulation).

(4) **EU multi-annual plans**; national plans in the Mediterranean: they contain the framework for management of a stock or a combination of stocks (by fishery). Multi-annual plans are designed to ensure effective management of the fisheries and to bring conservation and management provisions for groups of stocks under plans. Plans contribute to stability and a long-term security for the industry. The main elements of plans are:

- MSY-related targets (per target stock), deadlines for achieving MSY, and fishing mortality/exploitation ranges that are consistent with MSY (F_{MSY} as a range of values)
- safeguard provisions if science indicates that stocks are in trouble; specific conservation measures for non-target species, so as to keep them within sustainable boundaries
- mechanisms to allow for regionalisation of implementing measures under the plan

(5) **Fleet capacity rules**: these are provisions to support that the fleet capacity of a Member State matches with the fishing opportunities that are allocated to it; fleet overcapacity potentially leads to overfishing. Member States cannot increase the engine power or storage capacity of their fleets. Each Member State is subject to a maximum capacity threshold (in engine power (kW) and in vessel volume (gt)). Nominally, all Member States fleets are under these ceilings; however, in many Member States the effective engine capacity may well outscore the numbers in the CFP. Despite intensified enforcement, this is a persistent and hard-to-tackle issue.

Annually Member States must report on the balance between capacity and fishing opportunities. Historically this has not been linked to targeted actions. For the first time, under the new CFP Member States have to give follow-up to the identification of overcapacity with an action plan to eliminate it, in order to have access to funding for decommissioning of excess vessels. The assessment exercise by Member States on the balance between capacity and fishing opportunities is facilitated by common guidelines developed by the Commission. It includes technical and economic parameters. Member States will have to include in their

reports an action plan for the fleet segments with identified imbalance. In the action plan, Member States have to set out the adjustment targets and tools to achieve the balance. The plan has to include a clear time frame for the implementation of the action plan as well.

(6) **The External Dimension**: The CFP reform enshrines for the first time the external dimension of the CFP (Part VI of the Basic Regulation: Articles 28-31). It calls for strong external action that follows externally the same principles and standards as internally while promoting a level-playing field for EU operators. Under the CFP new international agreements should

- contribute to long term sustainability worldwide via stronger bilateral relations and tackling global issues such as IUU fishing and fishing overcapacity
- uphold and strengthen the global architecture for fisheries governance (UN, FAO, OECD, etc.)
- contribute towards a more effective functioning of RFMOs, more sustainable Fisheries Agreements and better coherence with other EU policies

(7) **Data Collection Framework**: a set of requirements on collection by fishermen and Member States and management of biological and other data as input for biological, economic and other knowledge and advice in support of the policy. To align to the new CFP a Commission proposal for a revised Data Collection Framework Regulation is under preparation. It will introduce simplifications and more flexibility and adaptability, based on an evaluation of the previous framework.

(8) **Advisory Councils**: The Advisory Councils (ACs) were established since 2004 to advise the Commission on matters related to fisheries management in their respective areas of competence. Seven ACs were established for the Mediterranean Sea, the South Western Waters, the North Western Waters, the North Sea, the Baltic Sea, small pelagic species, and the Long Distance Fleet.

ACs are stakeholders' organisations that bring together the industry (fishing, processing and marketing sectors) and other interest groups, such as environmental and consumers' organisations. They receive an annual grant of up to 250.000 euros from the Commission to cover part of their operational costs. The new CFP foresees the creation of four new ACs for Aquaculture, Markets, the Black Sea and Outermost Regions.

ACs are expected to expand their play in the regionalised CFP and are to be consulted by Member States when preparing joint recommendations on conservation measures.

ANNEX III

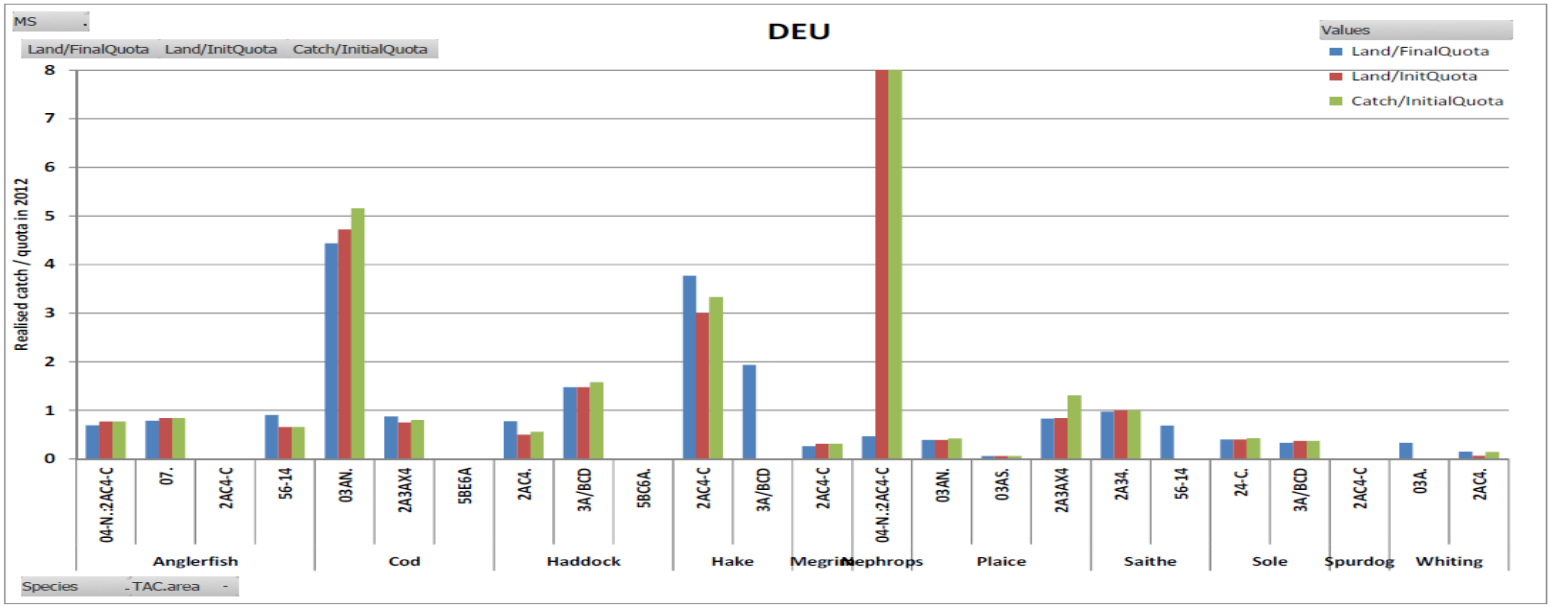
ANALYSIS ON CHOKE SPECIES EXTRACTED FROM STECF 14-19

The findings of the STECF for selected Member States are summarised in the figures below[75]. Given the uncertainties on how the landing obligation will be implemented, the information presented can only be used to flag potential choke species issues. All information is presented in relative terms (ratio of realized catches to quota), regardless of the actual size of the quota and/or of the value of the fishery.

- The blue bars - indicate the ratio of actual landings to actual quota (final quota in 2012 after swaps). Where this is close to 1, it indicates a high uptake of the quota and a good balance between landings and final fishing opportunities at the country level.
- The red bars - show the same thing for the initial quotas (before swaps). A comparison between the red and the blue bars therefore indicates the extent to which the Member State is dependent on receiving quota from other Member States to cover its landings.
- The green bars - illustrate the mismatch between catches (landings + estimated discards) and the initial quota allocation in 2012. Any green bar above 1 indicates that the 2012 initial quota would not have been sufficient to account for the realised catches if they had been subject to the landing obligation, and is therefore the primary indicator for potential choke effects.

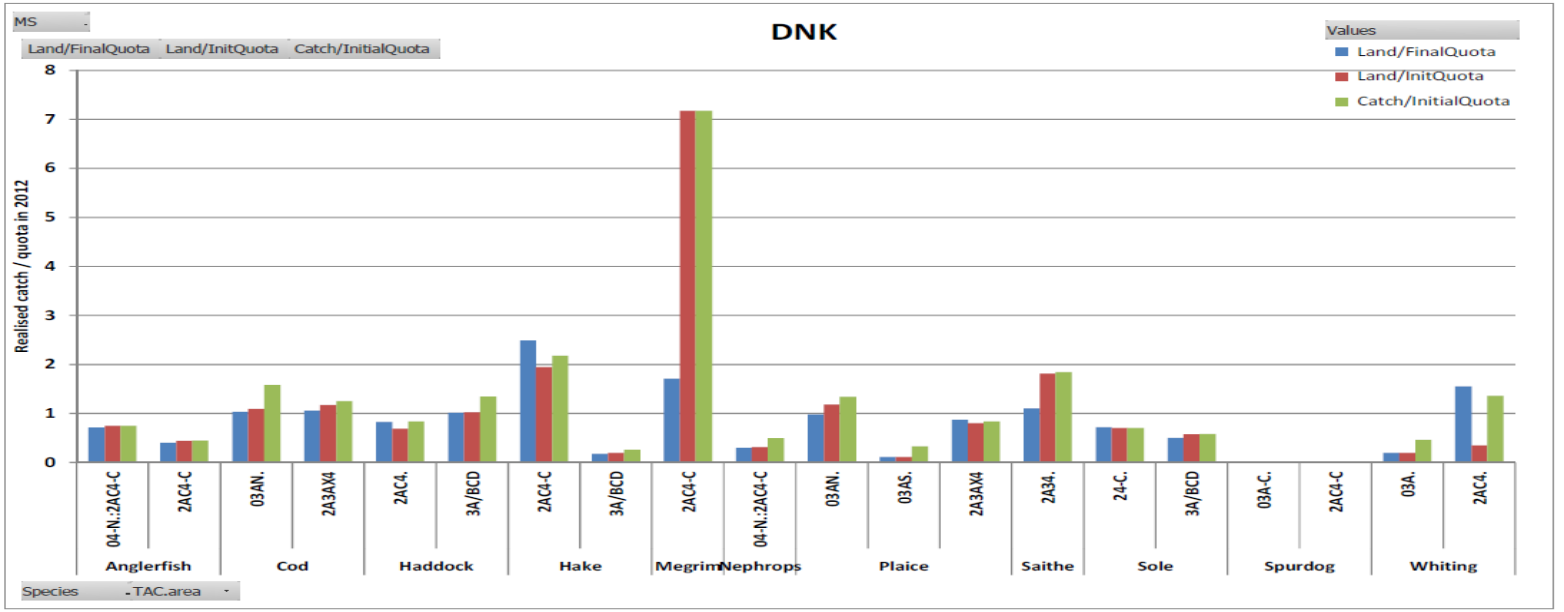
The main conclusions concerning North Sea stocks are summarised after the figures for each of the Member States.

[75] Report on Landing Obligations in EU Fisheries -part 4(STECF-14-19).



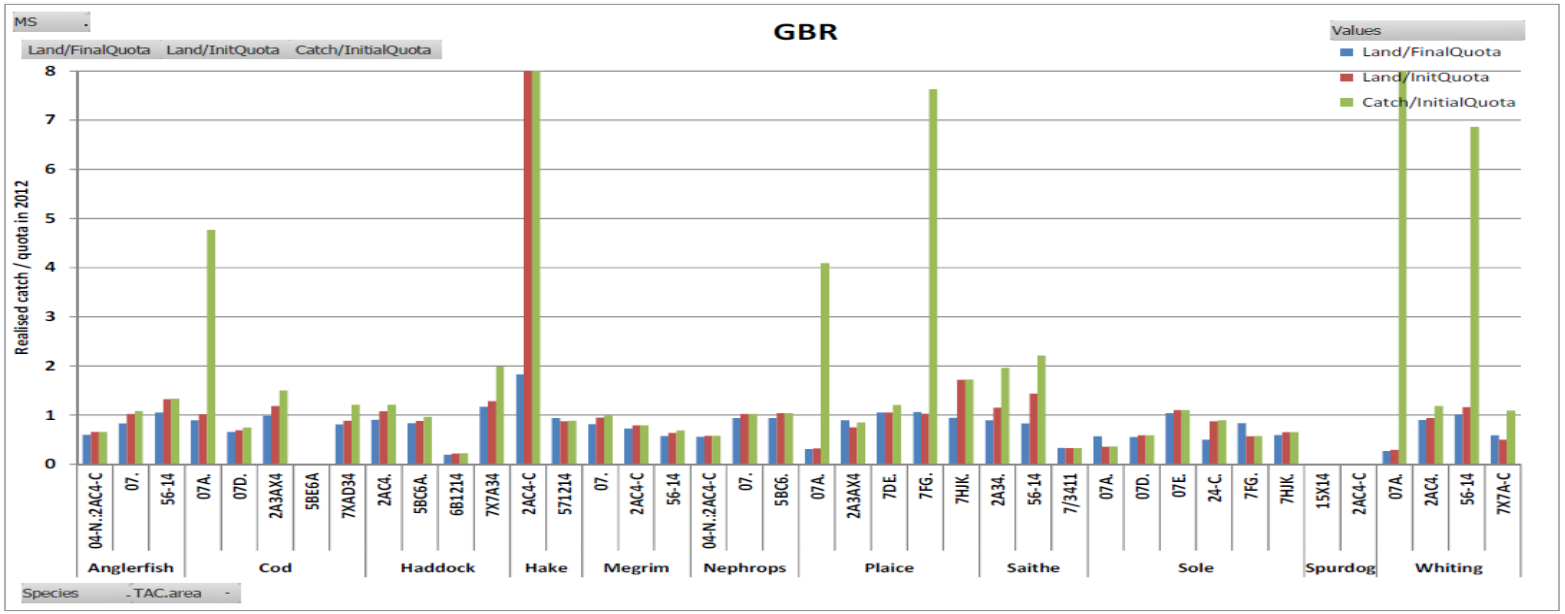
For Germany:

- Cod catches in IIIa are well in excess of initial and final quota
- *Nephrops* catches in IV are well in excess of initial quota although the final quota was able to cover all catches although quota/catches are small
- Hake catches in IV are well in excess of initial and final quota



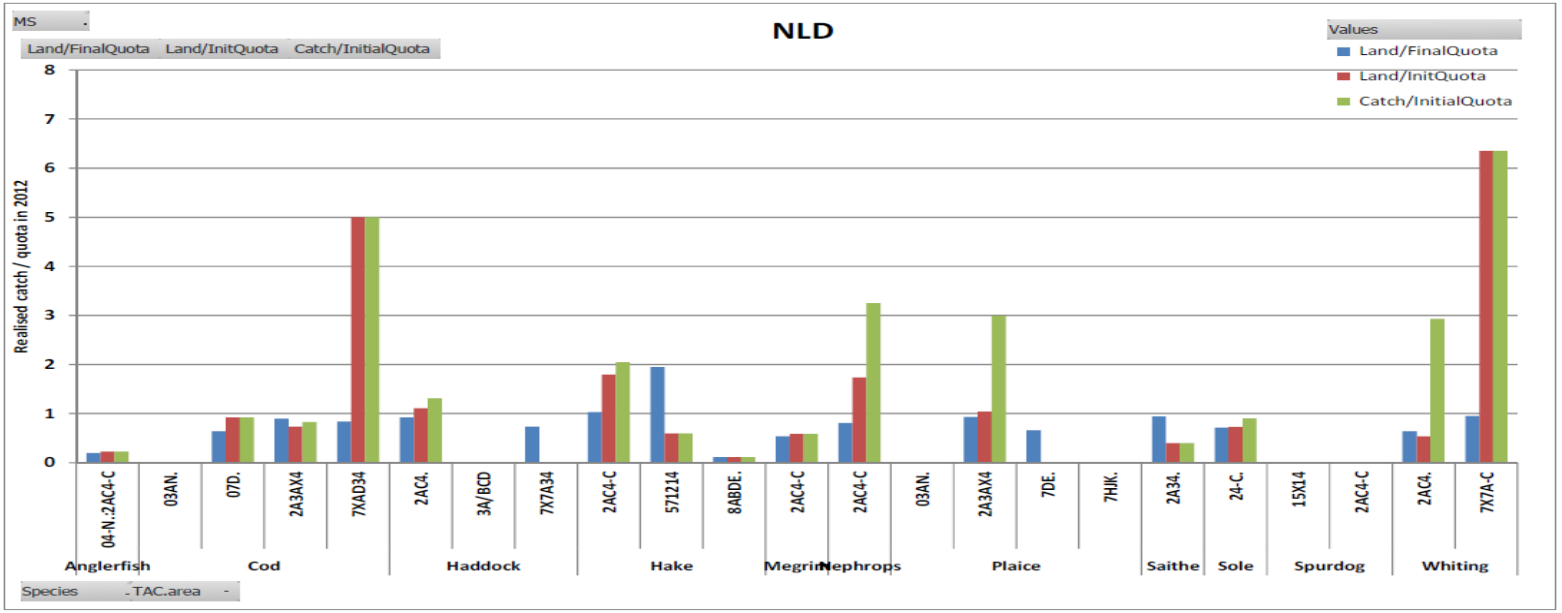
For Denmark:

- Cod catches in IV and IIIa are in excess of initial quota and final quota
- Megrim catches in IV are above the initial and final quota although catches are low
- Hake catches in IV are in excess of initial and final quota and the initial quota is higher than the final quota
- Haddock catches in IIIa are in excess of the initial and final quota
- Saithe catches in IV are in excess of initial and final quota



For the United Kingdom:

- Catches of cod in IV are in excess of initial and final quota
- Catches of haddock in IV are in excess of initial quota but aligned with final quota
- Catches of hake in IV are well in excess of initial and final quota
- Catches of saithe in IV are in excess of initial and final quota



For the Netherlands:

- Catches of haddock in IV are in excess of initial quota and broadly in line with final quota
- Catches of hake in IV are in excess of initial quota
- Catches of *Nephrops* in IV are well in excess of initial quota and in excess of final quota
- Catches of plaice in in IV are well in excess of initial and final quota
- Catches of whiting in IV are well in excess of initial and final quota

ANNEX IV

NORTH SEA DEMERSAL STOCKS AND FISHERIES

ICES divides the area under consideration into the following sub-areas,: the North Sea (ICES Sub-area IV, sub-divided into ICES Divisions IVa, IVb and IVc); the Skagerrak & Kattegat (ICES Division IIIa); the Eastern Channel (ICES Division VIId). These areas are shown on the map in the figure below (Figure A.IV.1.)

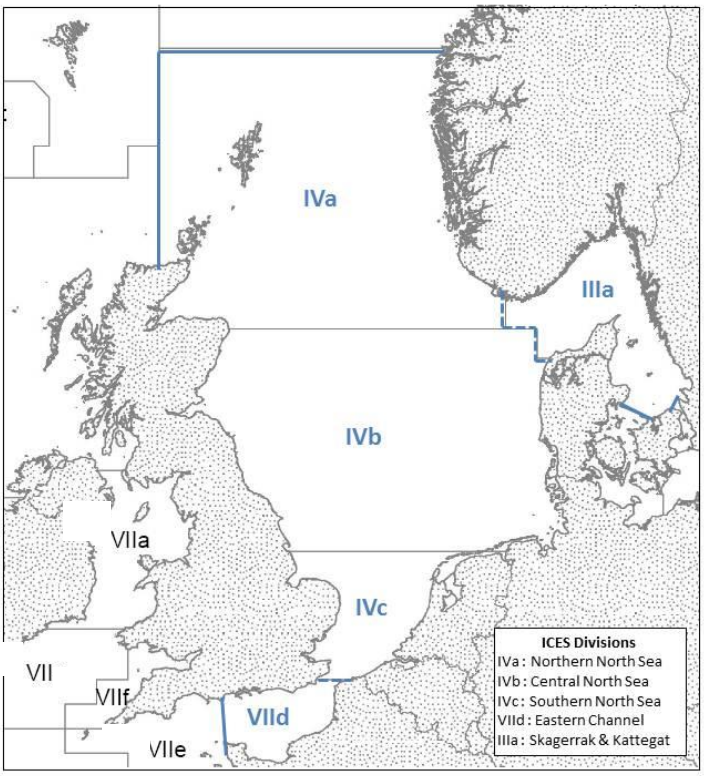


Figure A.IV.1. The North Sea area showing ICES reporting areas.

DEMERSAL STOCKS IN THE NORTH SEA AREA

The fish populations within this broad area form a number of stocks, some of which are distributed across several ICES reporting areas. Some of these stocks are already subject to management plans (see Table A.IV.1). In addition to these fish stocks, there are important fisheries for Norway Lobster (*Nephrops norvegicus*). This crustacean occurs in number of separate populations in different parts of the North Sea. These are called Functional Units (FU). The Functional Units in the North Sea area are further described in Table A.IV.2 and Figure A.IV.2. No management plans are currently in place for the Norway Lobster fisheries although a plan has been proposed by the North Sea Advisory Council (NSAC)[76]. This was recently reviewed by the STECF[77]. STECF concluded that the measures and instruments described in the LTMP for North Sea *Nephrops* fisheries proposed by the NSAC are worded such that the intention is to deliver the objectives of

[76] http://www.nsrac.org/category/reports/meetings-c/nfg/

[77] http://stecf.jrc.ec.europa.eu/documents/43805/991908/2015-04_STECF+PLEN+15-01_JRC95802.pdf

the CFP (Council Regulation (EU) No 1380/2013). However, there is an absence of specific detail on how any of the measures listed will be implemented in practice. Hence, STECF concludes it is not possible to assess whether the plan is likely to deliver the objectives of the CFP.

Table A.IV.1. Management and advice status in 2014 for North Sea demersal stocks.

Species	**Area**	**EU mgt plan**	**EU / NO strategy**	**Advice basis[1]**	**F_{MSY} ranges[2]**	**Biomass safeguards[2]**
Anglerfish, *Lophius piscatorius* & *L. budegassa*	IIIa, IV & VI			DLS		
Blonde ray, *Raja brachyura*	IVc & VIId			DLS		
Blue ling, *Molva dypterygia*	I, II, VIII, IX, XII, IIIa & IVa			DLS		
Brill, *Scopthalmus rhombus*	IV, IIIa & VIId,e			DLS		
Cod, *Gadus morhua*	IIIa East			PA		
Cod, *Gadus morhua*	IV, IIIa West & VIId	Reg. 1342/2008		MP	Y	Y
Cuckoo ray, *Leucoraja naevus*	IV & IIIa			DLS		
Dab, *Limanda limanda*	IV & IIIa			DLS		
Flounder, *Platichthys flesus*	IV & IIIa			DLS		
Grey gurnard, *Eutrigla gurnardus*[4]	IV, IIIa & VIId			DLS		
Haddock, *Melanogrammus aeglefinus*	IIIaN, IV & VI		Y[3]	MS	Y	Y
Hake, *Merluccius merluccius*	IIIa, IV, VI, & VII, & VIIIa,b,d			MSY		
Lemon sole, *Microstomus kitt*	IV & IIIa			DLS		
Lesser spotted dogfish, *Scyliorhinus canicula*[4]	IV, IIIa & VIId			DLS		
Ling, *Molva molva*	IIIa, IVa, VI, VII, VIII, IX, XII, & XIV			DLS		
Megrim, *Lepidorhombus whiffiagonis*	IVa & VIa			MSY	Y	Y
Northern shrimp, *Pandalus borealis*	Fladen ground IVa			DLS		
Northern shrimp, *Pandalus borealis*	IVa East & IIIa West			MSY and PA		
Norway lobster, *Nephrops norvegicus*	IIIa			MSY		

Norway lobster, *Nephrops norvegicus*	IV			mixed	Y for some	Y for some FU
Norway pout, *Trisopterus esmarki*	IV & IIIa			PC		
Plaice, *Pleuronectes platessa*	IV	Reg. 676/2007		MP	Y	Y
Plaice, *Pleuronectes platessa*	IIIa			DLS		
Plaice, *Pleuronectes platessa*	VIId			Y	Y	Y
Pollack, *Pollachius pollachius*	IV & IIIa			DLS		
Saithe, *Pollachius virens*	IIIa, IV & VI		Y	MS	Y	Y
Sole, *Solea solea*	IV	Reg. 676/2007		MP	Y	Y
Sole, *Solea solea*	IIIa			MSY	Y	Y
Sole, *Solea solea*	VIId			MSY	Y	Y
Spotted ray, *Raja montagui*	IV, IIIa & VIId			DLS		
Striped red mullet, *Mullus surmuletus*[4]	IV, IIIa & VIId			DLS		
Thornback ray, *Raja clavata*	IV, IIIa & VIId			DLS		
Turbot, *Scophthalmus maximus*	IV			DLS		
Turbot, *Scophthalmus maximus*	IIIa			DLS		
Tusk, *Brosme brosme*	IIIa, Vb, VIa, & XIIb, & IV, VII, VIII, & IX			DLS		
Whiting, *Merlangius merlangus*	IV & VIId		Y	DLS		
Whiting, *Merlangius merlangus*	IIIa			DLS		
Witch	IV, IIIa & VIId			DLS		

[1] advice basis: MP: EU management plan; MS: EU/Norway management strategy; DLS: data limited approach; FU: functional unit; MSY: F_{MSY};PA: precautionary approach; PC: precautionary considerations.
[2]http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2015/Special_Requests/EU_FMSY_ranges_for_selected_NS_and_BS_stocks.pdf; [3] under review; [4] ICES advice given but no TAC.

Amongst the main North Sea demersal stocks, cod is currently the one of greatest concern. The stock biomass has been below its limit reference point (B_{lim}) for over ten years, and it was forecast to reach that biomass at the start of 2014[78]. Fishing mortality has also been high, and while it has shown some recent reduction to below the precautionary level, the stock is still over-exploited with respect to MSY. In contrast, the spawning biomass of the haddock stock is above the relevant reference points and the stock is being harvested below the target level associated with MSY. The main stocks of sole and plaice in the North Sea are subject to a combined management plan, reflecting the close link between the fisheries for the two species. This has contributed to a plaice stock which is currently at a historic high level and which is being fished at below the MSY target level. The spawning biomass of the North Sea sole stock is above the relevant reference points but the stock is being harvested above the target level associated with MSY.

NORWAY LOBSTER FUNCTIONAL UNITS IN THE NORTH SEA AREA

Norway lobster (*Nephrops*) stocks have been identified by ICES experts on the basis of their population distribution and characteristics, and established as separate Functional Units. The Functional Units (FU) are defined by groupings of ICES statistical rectangles; they are illustrated in Figure A.IV.2 and detailed in Table A.IV.2. The statistical rectangles making up each FU encompass the distribution of mud sediment on which *Nephrops* live. There are two FUs in Division IIIa and nine FUs in Subarea IV. Management of *Nephrops* currently operates at the ICES Subarea/Division level.

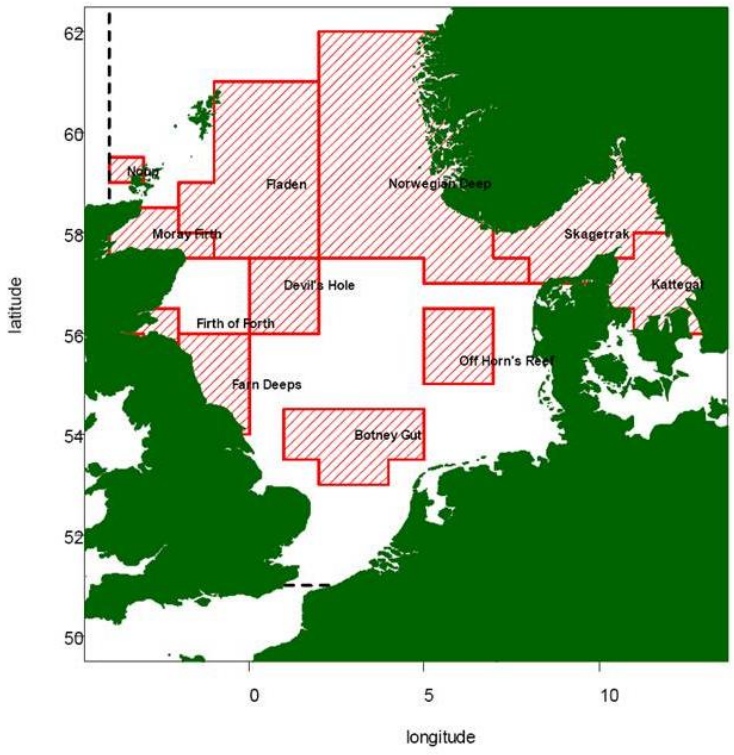


Figure A.IV.2. Name of each Norway Lobster Functional Unit in the North Sea area.

[78] ICES Advice 2014. Cod in Subarea IV (North Sea) and Divisions VIId (Eastern Channel) and IIIa West (Skagerrak).

Table A.IV.2. Name and number of Norway Lobster Functional Units in the North Sea area.

FU No.	FU name	ICES Division	Scientific advice
3	Skagerrak	IIIa	Y
4	Kattegat	IIIa	Y
5	Botney Gut – Silver Pit	IVb,c	N
6	Farn Deeps	IVb	Y
7	Fladen Ground	IVa	Y
8	Firth of Forth	IVb	Y
9	Moray Firth	IVa	Y
10	Noup	IVa	N
32	Norwegian Deep	IVa	N
33	Off Horn Reef	IVb	N
34	Devil's Hole	IVb	N

DEMERSAL FLEETS IN THE NORTH SEA AREA

Data from the STECF Annual Economic Report (AER) on the EU fishing fleet[79] [80] suggest that the EU North Sea fleet spent a total of around 471 thousand days at sea in 2012, in line with 2011. Vessels predominantly using demersal trawls and seines and beam trawls accounted for 36% of the total number of days at sea in the North Sea.

Demersal trawls and seines and beam trawls were the two most important gears with respect to both the total weight of species landed (64%) and the total value of species landed (68%) by the EU North Sea fleet in 2012 (Table A.IV.3).

Table A.IV.3. Percentages of total landed weight and of landed value by the EU North Sea fleet by gear type, across all fleet segments, in 2012.

	% of total landed weight	% of total landed value
Demersal trawls and seines and beam trawls	64	68
Pelagic trawls and purse seines	25	13
Other gears	11	19

Although around 30 species of fish and shellfish are caught in the mixed demersal fishery, around 23% of the total landed value and 44% of the total landed weight in 2012 was accounted for by the top ten demersal species alone. In terms of value landed these

[79] The 2014 Annual Economic Report on the EU Fishing fleet. STECF 14-16.

[80] The STECF Annual Economic Report (AER) on the EU fishing fleet gives summaries by both individual Member State and by sea basin area. In the latter category, the North Sea is combined with the Eastern Arctic area, hence some of the figures summarised here may also include some catches from the latter area. However, these are likely to be relatively small, and should not change the overall picture. The data summarised in the 2014 AER report cover the years up to 2013. However, the data for 2013 are incomplete, so only data up to 2012 are used here.

were, in order of importance: sole, plaice, *Nephrops*, cod, saithe, haddock, turbot, anglerfish, whiting and lemon sole. In terms of weight landed, the order was slightly different and dab replaced turbot in the species list: plaice, saithe, haddock, cod, *Nephrops*, whiting, sole, dab, anglerfish and lemon sole.

Capture in demersal trawls and seines and beam trawls accounted for around 90% of the top ten demersal species caught across all North Sea fleet segments, both by weight and by value landed, in 2012 (Table A.IV.4).

Table A.IV.4. Percentages of total weight and of value landed by the EU North Sea fleet by gear type, across all fleet segments, for the top ten demersal species, in 2012.

	% of total landed weight	% of total landed value
Demersal trawls and seines and beam trawls	92	87
Pelagic trawls and purse seines	0	0
Other gears	8	13

The STECF 2014 AER[79] provides detailed fleet and segment information for the top 35 Member State fleet segments with the highest landed values[81]. Table A.IV.5 shows the vessel size categories as percentages of both the total weight and total value landed by the different fleet segments in 2012. These data show that around 70% of the landed weight and 40% of the landed value came from the two important demersal gear categories. The vessels using these gears tended to be the larger vessels in the fleet, with the majority greater than 18 m length.

Table A.IV.5. Percentage of the total landed weight and total landed value by the different fleet segments, for the different vessel size categories, in 2012, for the top 35 Member State fleet segments by landed value.

	% of total landed weight (t)			% of total landed value (€)		
Vessel length category (m)	**Demersal trawls and seines and beam trawls**	**Pelagic trawls and purse seines**	**Other gears**	**Demersal trawls and seines and beam trawls**	**Pelagic trawls and purse seines**	**Other gears**
< 10	0	0	3	0	0	1
10 - 12	0	0	3	0	0	1
12 - 18	6	0	3	2	0	1
18 - 24	20	0	1	9	0	0
24 - 40	25	0	1	15	0	1
> 40	18	20	0	14	32	0
Total	**69**	**20**	**11**	**41**	**32**	**4**

[81] A fleet segment is a group of vessels from the same Member State using the same gear type.