Cod & Discard Avoidance Plans (CDAP) for Area VIa –Discussion Document for Formulation of A Pilot Plan

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1 Background

Clearly the best way to help cod stocks rebuild is not to catch it in the first place – or at least minimize its capture to levels that are as low as practically possible. It is apparent, however, that the current regulations have failed to accomplish this and have not reduced fishing mortality on cod to sufficient levels. There is therefore a need to consider new implementation approaches and move from:

- Prescriptive to adaptive management.
- From crisis management to positive strategic management.
- From top-down complex management to industry led management within defined limits and targets that obtain real reductions in cod mortality. Management measures should be sympathetic to local conditions and based on clearly defined goals that allow industry flexibility in adopting measures tailored to the specific fishery.

A good analogy is environmental regulations where industries are given maximum limits on emissions and are required to document and prove that emissions are kept within these limits. The regulation in this case defines the outcomes but does not define the means to achieve the outcomes; this is the industry's responsibility. Thus a similar results or target based management system for fisheries in which the burden of proof is reversed from the managers to the industry to implement, document and prove to society as a whole seems an attractive option. Nonetheless it still requires extensive monitoring and fiscal penalties to be effective.

It is proposed by the NWWRAC that cod recovery could be achieved by the adoption of such an alternative management strategy using a target-based approach using demersal fisheries in Area VIa as a pilot study. The current level of cod stock size in Area VIa is such that even low levels of removal of catch (landings and discards) causes significant fishing mortality, which prohibits stock recovery. Under the proposed pilot, the management system would focus on the avoidance of targeted fisheries for cod and a considerable reduction in the capture of cod as a by-catch. This could be achieved through a combination of measures such as the use of spatial/temporal avoidance, gear modifications and temporary voluntary tie-ups. The overall objective of the plan would be to reduce the capture of cod to levels, which are as low as practically possible and certainly well below the annual TAC. Ultimately for this system to be acceptable to managers the absolute reductions in cod mortality must be at least (preferably higher) than what is achievable from restrictive effort as pertains currently. The plan must also ensure that it does not offer any detrimental effects (increased fishing mortality/discards) on other stocks that are harvested unsustainbly and should seek to encompass not only to avoid cod capture but also to reduce discarding.

This document outlines a proposal for the formulation for such a pilot management plan referred to in this document as a Cod & Discard Avoidance Plan (CDAP). The plan outlined is specifically for Area VIa, given the perilous state of cod stocks in this area but it is written in such a way as to be a template for the development of similar plans in other areas. The approach is designed to be consistent with the objectives of the cod recovery programme; the Commission's initiative on discards; and the general need to improve the selectivity of fishing gears.

2 Definition of Fleets

There are a multitude of fisheries in Area VIa but the trawl fisheries are generally considered to have most impact on cod stocks and/or have reported discard probelms. Therefore the trawl fisheries in the area will be the focus of the pilot.

Most demersal otter trawl fisheries in Area VIa, are essentially mixed fisheries with many species exploited together in various combinations in different fisheries. The majority of the vessels are locally based Scottish trawlers, but trawlers from Ireland, Northern Ireland, England, France, and Germany also participate in the fisheries of this area. There is a great deal of overlap between fisheries with vessels switching between different fisheries with different trawl gears but ICES WGNSDS has broadly identified 4 trawl fleets (see Table 1) as follows:

- Mixed roundfish otter trawl fleet targeting cod, haddock whiting with a by-catch of saithe, squid, rays.
- Mixed demersal trawl fleet targeting monkfish, megrim, hake, *Nephrops* (Stanton, West Of Barra Head), haddock, whiting, sole (Donegal Bay, Broadhaven Stags), ling.
- *Nephrops* directed fishery in the Clyde and Minches with a by-catch of whiting, haddock, cod, saithe.
- Saithe and/or deepwater species shelf edge fishery with a by-catch of monkfish, megrim and hake.

To a large extent, the roundfish fishery in Division VIa is an extension of the similar fishery in the North Sea, occurring mainly in offshore areas to the north and west of the Hebrides and off the north of Ireland. Cod, haddock and whiting form the predominant catch of these vessels, although there can be important by-catches of other species, notably saithe, squid and monkfish. Part of this trawl fleet has diversified into a fishery for monkfish that has been expanding into deeper water off the northern coast of Scotland. There was a traditional codling fishery off the Greencastle coast in North Donegal but this has essentially become a mixed fishery in recent years with a greater emphasis on species such as squid, rays and mixed flatfish species. Similarly the importance of Scottish seiners targeting mainly haddock has declined in recent years as many of these vessels have switched to pair seining or have been decommissioned. This fleet segment has a medium to high impact on cod mortality.

The mixed demersal fleet incorporates quite a large number of mostly Scottish and Irish vessels essentially targeted monkfish, megrim and hake along the shelf edge to the north and west of the Hebrides, west of Achill, the Stanton Banks and further inshore in areas such as Donegal Bay and the Broadhaven Stags. In recent years Irish vessels have also been targeting *Nephrops*, mainly on the Stanton grounds and further north off Barra Head, although *Nephrops* catches are quite sporadic and seasonal. This fleet also has a medium to high impact on cod mortality although this is dependant on the area being worked.

About 200 Scottish trawlers, as well as vessels from Northern Ireland take part in the fisheries for *Nephrops* on inshore grounds in the Minches and the Clyde. These *Nephrops* vessels also land smaller quantities of haddock, cod, whiting, and small saithe, but are reported to discard large amounts of whiting and haddock. These vessels have a low impact on cod stocks, although may discard juvenile cod.

The fishery for saithe essentially takes place on the shelf edge to the west and northwest of Scotland and is prosecuted by deepwater French trawlers although the number of these vessels has declined in recent years. These vessels also target deepwater species particularly blue line, grenadier and black scabbard with a by-catch of monkfish, megrim and hake.

Several of the larger Scottish vessels also fish in this area although there catch composition tends to be more "mixed". These vessels have a low to medium impact on cod stocks again depending on the area and depth being fished.

Fishery Description	Area	Mesh Size Range	Member State	No of vessels	Main Species/Species Mix
Roundfish	North & West Hebrides, Donegal coast	100-120mm	IE,UK (Scotland)	??	Haddock, whiting, cod. By-catch of monkfish, squid, saithe
Nephrops	Minch & Clyde	70-99mm	Ireland, UK (Scotland & N. Ireland),	200 (??)	*Nephrops* By-catch of haddock & whiting
Mixed Demersal	Stanton, West of Hebrides, Donegal Bay, Broadhaven Stags, Achill	80- 100mm	Ireland, UK (Scotland)	??	Monkfish, megrim, hake. By-catch of *Nephrops*, saithe, haddock, whiting, sole
Saithe	Shelf Edge	110-120mm	France, UK (Scotland), Germany	??	Saithe & deepwater species, By-catch: monkfish, hake, megrim

Table 1: Summary of Main Fleet Segments in Area VIa

Cod landings in Division Area VIa by country for 2004, 2005 and 2006 are given in table 2.

Country	2004	2005	2006
France	91	79	101
Ireland	34	28	18
Norway	10	0	30
UK	413	403	332
Others	2	0	2.8
Total Landings	**596**	**510**	**484**

Table 2 Cod Landings in Area VIa

Question: Are these well enough defined?

Question: Are there are other fleet segments that should be included e.g. other gears?

Question: Is a" fishery audit" required in the first instance to better define the fisheries?

3 Consultation & Selection Process

In order to formulate and agree a Cod and Discard Avoidance Plan (CDAP) for vessels a number of steps are envisaged as follows:

1) Formation of an independent review group comprising scientists, NWWRAC members and managers to oversee the process.

2) A general call for expressions of interest from vessels fishing in Area VIa made through the NWWRAC and/or PO's.

3) Formulation, categorisation of the fleets and agreement of targets to be carried out by the independent review group using the guidelines detailed in Section 4. Plans would have to be generic rather than on an individual vessel basis as individual plans would be impossible to enforce or evaluate scientifically.

4) Selection of eligible vessels on the basis of five key criteria:

   a) Level of activity in Area VIa (minimum of 50% of total effort in 2006 and 2007).

   b) Fishery.

   c) Gear type.

   d) Cod Landings.

   e) Level of discarding (although discard data may not be at a sufficient resolution to allow a proper assessment of this).

5) Ratification of plans by EU and National Administrations.

6) Formal offer to participate in the scheme detailing targets, reporting obligations and penalties for non-compliance. (Derogations from the competent authorities in the Member State may also be required for the pilot project if the targets agreed conflict with national management plans).

Question: Are individual vessel plans realistic or should vessels working in the same fisheries with more or less the same species mix be grouped together?

Question: What should the involvement of the EU and national administrations be in the consultation & selection process?

Question: Who should ratify the plan?

Question: What level of effort by individual vessels in VIa should be required for them to be eligible to participate in the scheme (e.g. 50%)?

4 Formulation & Target Setting

For the purposes of the pilot CDAP, it is proposed to run the project initially over a 12-month period, broken down into monthly management periods. The independent review group as indicated in Section 3 above would carry out formulation and target setting. To initiate discussion, however, an outline of how a system might be formulated and indicative targets is given below:

Fleet Categorisation

The first step for the review group would be to divide the Fleets identified in Section 2 into 4 categories based on their recorded cod landings and also on the indicative level of discarding reported in the fisheries. Logbook, VMS and discard sampling data for 2006 & 2007 would form the basis of this analysis.

The suggested categories are as follows:

High Cod Impact Vessels

> 5 tonnes cod landings in VIa

Baseline (non-CDAP vessels): 96 days total with no more than 8 days per management period

CDAP: 216 days for vessels signed up to CDAP plan with no more than 18 days per management period

Medium Cod Impact Vessels

1-5 tonnes of cod landings in VIa

Baseline (non-CDAP): 144 days total no more than 12 days per management period

CDAP: 216 days for vessels signed up for CDAP plan with no more than 18 days per management period

Low Cod Impact Vessels

< 1 tonne of cod landings in VIa

Baseline (non-CDAP): 180 days total no more than 15 days per management period

CDAP: 216 days for vessels signed up for CDAP plan with no more than 18 days per management period

Targets – Cod Catches

High & Medium Cod Impact Vessels

Catches (landings + discards) of no more than 1 tonne of cod per management period or no more than 10 tonnes in any 12-month period.

Low Cod Impact Vessels

No more than 1 tonnes of cod (landings + discards) per management period or no more than 5 tonnes in any 12-month period.

All participating vessels will be required to land all cod regardless of size.

Targets – Discards

All vessels

In any 24 hour observed period or on the basis of inspection by a Fisheries Protection vessel no more than 2 hauls to have greater than 20kg discards of quota species per 100kg of total marketable catch of quota species. (Equates to around 1 box in 5 or 20%).

If a vessel breaches this target or information from a reference vessel shows high discarding in the immediate area then the vessel will be required to move out of that area as per the guidelines described in Section 5 below.

Given the need to sample the catch to measure the discard rate, discard targets will be strictly on the basis of observed tows but will be crosschecked against observed catches from the reference vessels as described in Section 6.

Question: Other than the obvious sources of data is there other information that could be considered in categorising vessels?

Question: Are monthly management periods appropriate?

Question: Is the available data at good enough resolution to allow the independent group to categorise fleets and individual vessels?

Question: Will the targets conflict with current Member State Quota Management systems?

Question: Are the cod targets realistic?

Question: Does there need to be specific provisions for vessels in the case when they catch an accidental "good" shot of cod in excess of the management period target?

Question: Are the discard targets realistic?

Question: Can discard rates be easily sampled and estimated and more importantly enforced sufficiently to be meaningful?

5 Available Tools

To achieve the targets set for the CDAP two major tools have been identified as outlined below:

Selective Gears

Technical advances in the ability to make fishing gear more selective have not been matched by an institutional structure which incentivises the application if such gear. By specifying and agreeing the outcome (low catches of cod and reduced discards) the ingenuity and knowledge of fishermen will be directed to finding ways to improve gear selectivity. The increased fishing opportunities in terms of effort and the greater flexibility potentially afforded by the CDAP provides a strong motivation for fishermen to fish selectively.

Apart from simply increasing codend mesh size there are a number of other gear modifications and selectivity devices that can be used to improve selectivity depending on the catch composition and gear design. Rather than specify which modifications vessel should adopt under the CDAP system, Gear technologists would advise fishermen on what options are available and appropriate to their circumstances and facilitate the correct installation. Initial monitoring at sea to ensure the results expected are achieved would also be desirable.

Spatial/Temporal Avoidance

The introduction of a system of voluntary spatial and temporal real-time closures potentially provide vessels participating in the CDAP with another effective means of protecting concentrations of cod and also areas with high discards. The Scottish Executive has introduced a system of real-time in the North Sea on a voluntary basis and initial indications are good. In this system a minimum of 60 undersized cod per hour fished is used as indicator for high abundance, and if from sampling 3 positive counts (i.e. over 60 cod per hour) within a 48 hour period then an area of 15 miles^2 is closed on a voluntary basis for a fixed period of 21 days. These closures are notified by the Scottish Executive to other UK administrations and other Member States and all vessels are encouraged to observe them.

It is suggested this type of approach could be adopted in formulation of the CDAP adapted to meet the specific needs of the individual vessel and linked closely to the operation of the reference fleet described in Section 6. The triggers used to voluntary close an area would need to be defined accordingly. In addition based on existing biological data backed up with fishermen's knowledge, other areas that at certain times of the year are known to have a high concentrations of cod or high discard rates could also be either avoided or closed voluntarily. A pre-condition of the CDAP would be that CDAP vessels would respect voluntary closures and this would be monitored by VMS to ensure compliance.

Other Options

In addition to the adoption of selective gears and a system of voluntary closures or voluntary avoidance of high-risk areas other options could also be utilised to keep within the targets set for the fisheries. Vessels could voluntarily tie-up for periods, switch to a different fishery with no impact on cod or simply move from Area VIa altogether provided they have legal entitlements to do so. To stop vessels flitting in and out of the area, however, provision should be made in the conditions of the CDAP that if a vessel does shift out of the area then it cannot return to that area within the remainder of the 12 month management period.

Question: Do we need to specify what selective gear options there are?

Question: Can the Scottish system be adapted to meet the requirements of CDAP or are they trying to do two different things?

Question: Should avoidance and designation of closed areas be at the individual vessel basis i.e. he decides what he does but does not necessarily worry about anyone else?

Question: Are there other options?

6 Verification, Validation & Monitoring

In order for the CDAP approach to work, constant verification, validation and monitoring is essential to convince managers and control and enforcement agencies that such a target based system can be adhered to consistently and transparently. Ultimately the burden of proof must lie with the fishermen and the onus must be on them to demonstrate compliance on a regular basis. It is also important to stress that catches i.e. landings + discards rather than just landings must be the basis for this system to be effective and how accurately this can be monitored should be a major objective of the pilot project.

A number of tools are identified as being appropriate as follows:

1) VMS: All vessels regardless of size signing up to the CDAP must have a functioning VMS system installed. The possibility of increasing the transmission rate for CDAP vessels could be considered.

2) Port monitoring: Participating vessels should be required to report in 4 hours prior to landing (as per current effort regulations requiring notice to land more than 1 tonne of cod) although in this instance it should be regardless of cod catch on board.

3) Cod Catches: All participating vessels should be required to land all cod regardless of size. This will require a derogation from current regulations but is in line with the EU discard initiatives. Potentially this could be extended to cover all vessels.

4) Observers: Monitoring through observer schemes is essential as an independent means of determining if a vessel or fleet breaches the target levels rather than adhering to these through discarding of cod over and above these levels. Full observer coverage is desirable, but at a practical level it isn't feasible (unless there are few vessels). Thus a partial observer scheme is the only realistic alternative. A suggested requirement for vessels signing up to CDAP would be to carry an observer on board during at least every fourth management period and not less than 4 trips encompassing 16 days over the 12-month pilot period. Given the above points, however, it is clear that the role of the observers will inevitably have to change. As it stands, observers are taken out on a good will basis purely for biological monitoring primarily to estimate the level of discards. Under the avoidance programme, the observers will have to take on a monitoring and control role in addition. While this shouldn't pose any problems in principle, it is something that needs to be considered and discussed with control and enforcement agencies as well as national institutes that currently run the observer programmes. **The availability, cost and role of the observers are all potentially major obstacles for the successful working of the CDAP.**

5) Self-sampling: In addition to agreeing to observer coverage, all participating vessels would be required to carry out a degree of self-sampling, in keeping catch records on a haul by haul basis and providing discard samples at regular intervals from designated tows. A derogation for vessels to land discard samples which may contain undersize fish will be required. **Again the availability and cost for self-sampling programmes are potential obstacles for the successful working of the CDAP.**

6) Reference Fleet: As a partial observer programme is the only realistic option but provides only limited coverage, a reference fleet system similar to as exists in Norway and Alaska would seem essential to supplement the observer programme. This reference fleet would comprise vessels representative of the different fleets identified in section 2 and include a combination of both CDAP vessels and non-CDAP vessels. The role of the reference vessels would be to provide real-time catch information on the fishing grounds and signal and report on areas with high cod catches and discards. When an area is identified this information would be reported back to vessels in the vicinity and also to the control authorities. For the CDAP to operate properly **All** participating vessels would have to agree that the cod and discard catches from the observed vessels (reference vessels) are reflective of the entire fleet operating in the vicinity and can be used for the purpose of management. For the system to be more robust catches from the reference vessels should trigger total closure of an area. Catch data from the reference vessels would also be used to crosscheck the reported catches of a CDAP vessel working in the immediate vicinity. Potentially a stipulation could be written into the plan that if the catches from a reference vessel differed significantly, that CDAP vessel would not be able to return to sea without an observer aboard. **The use of reference vessels seems essential to the system but the status and number need to be considered. These vessels must have 100% observer coverage so obviously the number realistically will be small.**

7) Electronic Logbooks: The CDAP would seem an ideal opportunity to test electronic logbooks system and would provide another monitoring tool. This is suggested as a requirement for vessels participating in the CDAP.

In summary a participating vessel would be subjected to the following verification and monitoring procedure:

- At least 16 days of observer coverage;
- Monitored by VMS/Electronic logbook at sea;
- Landings monitored ashore with requirement to give 4 hours notice prior to landing;
- Provide catch logs and discard samples;
- Land all cod;
- Have catches cross-reference to the reference fleet.

Question: What is a realistic level of observer coverage?

Question: Can observers have a control and enforcement role legally as in the NAFO area?

Question: Who pays for additional observers if they are needed for the pilot and in the future?

Question: Is the use of reference vessels realistic?

Question: Would the use of electronic logbooks make the system more robust?

7 Penalties for non-compliance

The following penalties are proposed for non-compliance by vessels participating in the pilot CDAP:

1) Failure to comply with cod targets in any management period: Compulsory tie-up for 8 days in the following management period.

2) Failure to comply with cod targets in subsequent management periods: Immediate expulsion from scheme and exclusion from fishing in Area VIa for the rest of the 12-month management period.

3) On reaching annual target cod catch: Exclusion from fishing in Area VIa for rest of the 12 month management period but vessel to be allowed to move to another area if occurs during management period 1 - 10 or tie-up for remainder of year if in management periods 11-12.

4) Failure to comply with discard target during any management period or from: Move out of area immediately. Vessels should also move out of the area on the basis of information on high discards from a reference vessel in the immediate vicinity.

5) Failure to comply with verification and monitoring conditions: Immediate expulsion from the scheme and exclusion from fishing in Area VIa for the rest of the 12-month management period.

6) Failure to comply with other regulations e.g. logbook, reporting in, and technical measures: Immediate expulsion from the scheme.

In all cases the vessel's total annual allocation will be reduced by the number of days imposed as a penalty on the vessel. Where a vessel faces expulsion from the scheme, and the vessel does not have entitlements in other areas, the vessel will be allocated the baseline number of days for the high impact vessel non-CDAP category (i.e.96 days) pro-rata for the number of management periods left in the 12 month management period.

Question: Are these penalties too stringent and effectively would limit participation in the scheme?

Question: Do such penalties conflict with national legislation?

Question: Can control and enforcement agencies enforce these or do they create too much of an admin burden?

Question: Is it unfair to exclude vessels from the area altogether f they have legitimate quota entitlements for species other than cod?

8 Review Process

At the end of the pilot period the independent group in conjunction with representatives from control and enforcement agencies will carry out a full review of the CDAP on the basis of the following:

- How the CDAP vessels performed;
- Was there a difference in reporting when an observer was not present;
- What actions were taken to avoid catching cod and reduce discarding;
- Was economic viability hindered by adopting the CDAP;
- How quickly could the vessels react;
- Did Fishermen's reaction to the system better or worse than the current system (i.e. compliance);
- How easy is it to monitor or enforce;
- Did the fisheries information received back from participating vessels improve the quality of the information for stock management purposes?