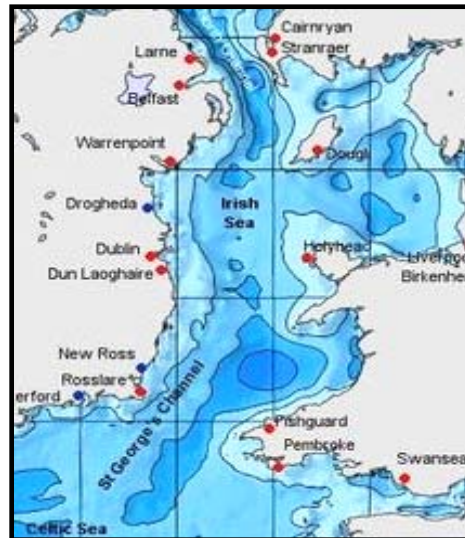


**Evaluating the Cod Recovery Plans of the Common
Fisheries Policy
- a case study from the Irish Sea**



by

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Preface

I would like to thank my supervisor Petter Holm for help and assistance during this process, and maybe especially for the suggestion of theme which turned out to be extremely interesting. I have to thank Wiktor Sørensen for interesting discussion and superb inputs. My mother deserves praise for babysitting, and my husband and son deserve praise for their effort to be patient. In addition I have to thank my friend Solfrid who has contributed with proofreading.

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Abstract

This thesis focuses on the Cod Recovery Plan that was implemented in the Irish Sea in 2004. The plan was constructed within the Common Fisheries Policy, and applied to several European cod stocks that was fished unsustainably. It involved a system of measures including drastic reduction in TACs, closed spawning area, technical conservation measures and effort restriction in the form of “Days at Sea.” This was not new to the fisheries in this area since the three former measures had been applied from 2000 as ICES gave warnings about the poor state of this particular stock.

The implementation process has been characterised by conflicts, horse-trading and lack of evaluation. For many in the industry the measures have been draconian, others will claim they should have been tougher. Many differing but entangled factors and interests are involved and together with a high degree of complexity and unclear objectives the lack of legitimacy may be undermining the plan. This work sets out to evaluate the implementation process of the Cod Recovery Plan

Chapter 1: Introduction	6
1.1. Fisheries science.....	7
1.2. The European Union and the Common Fisheries policy (CFP).....	9
1.3. Reform of the CFP	10
1.4. Recovery plans as a tool to counteract crisis.....	12
1.5. Precautionary approach, ecosystem approach and recovery plans	13
1.6. Objectives of the study	16
1.8. Method	17
Chapter 2. Theoretical background	19
2.1. Wicked and Tame problems.....	19
2.2. Nies drivers of natural resource-based political conflicts	21
2.3. Conflict in political perspective	25
Chapter 3. The Irish Sea Cod Recovery Plan.....	27
3.1. The area and its fisheries	28
3.2. The state of the cod stock.....	30
3.3. Interim measures and the Cod Recovery Plan as they appear on paper.....	32
Chapter 4. Interim measures and Recovery Plan in public and political perspective	43
4.1 Why the needs of a Recovery plan?.....	43
4.2. Output control: The social circumstances of TACs and the reduction of quotas.....	44
4.3. The social aspects of closure and technical measures.....	53
4.4. Introducing input Restriction into the plan – “Days at Sea”	61
4.5. Compliance, control and surveillance:	64
4.6. Decommissioning tie -ups and some social aspects.....	66
4.7. The Northern Ireland proposition.....	68
4.8. General points	71
Chapter 5. Analysis	73
5.1. Summary: the cod recovery process- an area of conflict	73
5.2. The Irish Sea cod crisis- a wicked problem?.....	75
5.3. The drivers of the Irish Sea “cod recovery conflict”.....	79
5.4. Conflict in political perspective	83
5.5. Evaluation of the Research questions against the empirical and theoretical findings. .	84
5.6. Future prospects of the Cod Recovery Plan	86
References	88
Appendix I: Basis for setting TACs in the Recovery Zone.....	96
Appendix II: Details closed are and technical measures.....	97
Appendix III: Additional information “Days at Sea”.....	100
Appendix IV: Background information compliance, control and surveillance	102
Appendix V: Decommissioning	104
Interview map.....	106

Chapter 1: Introduction

“Almost every way you look at fisheries the trends are in the wrong direction: decreasing catch per unit effort despite improved technology, reduced fish abundance, average size and reproductive output, loss of genetic variation, replacement of high-value species by trash fish, increased by-catch mortality, recruitment failures, habitat degradation...the litany continues.” These are the words of Callum M. Roberts (1997). Over-fishing due to intensive exploitation is frequently cited as an important factor contributing to the collapse of marine fish stocks (Hutchings 2005, Roberts 1997).

Recovery Plans in the management of fisheries resources are sets of measures introduced when there is a resource crisis in terms of depleted fish stocks. The measures can vary, but often include reduced quotas, closed areas and technical measures; the goal is to rebuild the fish stock. In the wake of the last reform of the Common Fisheries Policy recovery plans have been included and applied for several European fish stocks.

In 2004 a recovery plan was implemented for cod in the Irish Sea because this stock had been estimated to be under safe biological limits since the end of the 1990s. The recovery plan included reduction in Total Allowable Catch (TAC), closed spawning area, technical conservation measures and effort restriction in the form of “Days at Sea” in addition to some control measures. But already since 2000 the first three measures had been restricting the fishery in this area in the form of interim recovery measures. In other words, the cod fishery in the Irish Sea had been under recovery measures already for 3 years when the actual Recovery Plan came along.

The interim measures and the Cod recovery Plan have been painful for the industry and fishermen involved, while unclear and immeasurable goals have made it difficult to achieve legitimacy. Thus incentives to commit to the plan must be assumed to be poor and the implementation process has been difficult, involving conflicts and horse-trading. This is of no surprise since management of scarce natural resources tend to be controversial where uncertainty in scientific models and diagnostics combined with vested and multiple interests often represent major obstacles. There are theories addressing different drivers of conflicts based on natural resource management (Nie 2003).

Such implementation processes need to be analysed in order to evaluate whether the lack of legitimacy is preventing the measures in fulfilling their objectives. In this thesis I will discuss the measures taken for the recovery of cod in the Irish Sea in order to reveal the

possible drivers involved in this resource conflict, starting with the implementation of the interim measures from 2000 and continuing with the actual plan until 2006.

The main research questions are:

1. Is the Irish Sea Cod Recovery Plan likely to achieve its objectives of rebuilding the cod stock?

2. What aspects are interfering with the objectives of the Recovery Plan?

This introductory chapter is meant to give the reader background information on the different aspects that will be touched upon in this thesis. In addition the main objectives of the thesis will be outlined together with the applied method.

1.1. Fisheries science

What is going on underneath the sea surface is difficult to observe and control, and grasping the full effect of fishing is therefore a difficult and maybe even impossible task. There are however, techniques and models worked out in order to monitor for instance the effect of fishing. Beverton and Holt introduced in 1957 a book on the dynamics of Exploited Fish Populations leading directly to the formation of fishery catch equation. This was the initiation of modern fishery science and management, although the computerised techniques applied in fisheries science today is difficult to compare to what was presented by Beverton and Holt.

The International Council for the Exploration of the Sea (ICES) is an organization created to coordinate fisheries research. It was established as early as in 1902, with the objective of conducting international investigations of the Atlantic Ocean and its adjacent seas with a primary focus on the North Atlantic. The Council aims at being independent and objective providing research-based non-political advice and information to managers of fish resources. 19 countries are members of and fund this organization, and all member countries contribute with their scientific results concerning fish stock assessment amongst other things. The whole operation involves more than 1600 scientists and is coordinated through a system of committees. The Council has regular meetings once a year, and the result is a report which includes the estimated state of the different fish stocks. In addition the proposed catch

amounts of the different stocks for the subsequent year are made public. These are called Total Allowable Catches (TACs) and have been the core of much controversy throughout the years since the tendency in the last decades has been that the proposed TACs have been too low to avoid reactions and consequently the applied TACs have been too high to avoid concern. The advices are provided by the Advisory Committee on Fisheries Management (ACFM) in an Advisory report. Because life history traits such as mortality, growth, age at maturity, size at maturity etc., are affected by fishing and are also critical in determining the population growth rate, they may be used as indices of population viability (Rochet 2000). These indices have been applied in many assessment and catch models where particularly the mortality rate and the size of the spawning stock biomass (SSB) in different stocks have proven to be useful indicators of the state of the stock. The motivation is to keep exploitation within safe biological limits. A number of different criteria such as the size of the spawning stock in relation to the historical trends, the fishing pressure on the stock, the age structure and exploitation pattern of the stock and its distribution indicate when a stock is outside safe biological limits. In considering whether a stock is within or outside Safe Biological Limits the responsible scientists use all indicators available to them. Some reference points or indicators, used by ICES include Minimum Biological Acceptable Level (MBAL) which is the spawning stock size level below which depletion might be the result if current levels of exploitation continue. The MBAL is used by ICES as an indicator of those stocks, for which quick restorative action is needed (Miljøverndepartementet 2001: <http://odin.dep.no>). In relation to predefined negative limits, reference points should be considered as bench marks giving information of the status of stocks in the management quest for keeping exploitation within safe biological limits (Collie and Gislason 2001, Miljøverndepartementet 2001: <http://odin.dep.no>). In 1997 a Study Group for the ICES Advisory Committee met in order to incorporate the precautionary approach into the process of providing advice. It needs to be mentioned here that the precautionary approach includes taking action before it is too late, we will however return to this concept more thoroughly later. It was consequently decided that ICES were to consider uncertainties of the status of stocks into their assessment models of which for instance both rate of fishing mortality and biomass reference points are parts in addition to thresholds ensuring that limit reference point are not exceeded. From this time on the precautionary mortality reference point, F_{pa} , and the precautionary SSB reference point, B_{pa} have constrained the advices from ICES following the recipe of the Annex II of the United Nations Fish Stocks Agreement of 1995 (Kell et al 1999, United Nations Fish Stocks Agreement 1995). By introducing these reference points, the hope is that the fishing mortality

will remain below F_{lim} and the spawning stock biomass will remain above B_{lim} according to figure 1:

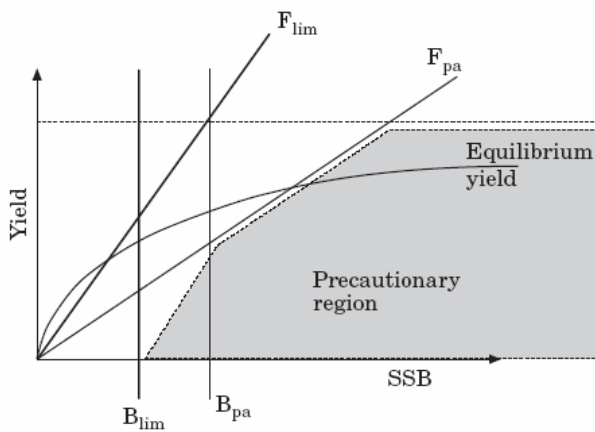


Figure 1: fishing mortality and spawning stock biomass reference points ICES uses to define precautionary region.

If SSB falls below B_{pa} because F_{pa} is set too high or is exceeded, and shows no prognosis of recovering to above B_{pa} in the short term, a recovery plan will be advised. By successfully implementing a plan that within reasonable time is expected to reduce fishing mortality to no higher than F_{pa} and rebuild SSB to above B_{pa} , management would be considered to act in consistency with the precautionary approach (Kell et al 1999).

The role of ICES has been debated because the proposed TACs have been overlooked by governments and managers, and therefore the proposed TACs for the next year have been further reduced. A lot of uncertainties are involved in the process of determining the reference points, and the credibility of the precautionary approach is questionable if the limits that one should strive to achieve are decided based on untrustworthy assessment inputs. ICES have also included the ecosystem approach which will be addressed later, into their management advices.

1.2. The European Union and the Common Fisheries policy (CFP)

The European Union is the third largest fishery producer in the world with a fleet of approximately 92.000 vessels. In 2000 EU fishermen took 7.2 million tonnes of fish and shellfish, and 86% of the catch took place in the northeast Atlantic. The fishing sector's overall share of the gross national product of the member states is less than 1%, but it still quite influential because it is crucial to many regions. Initially the EU countries all had national fishery policies, which were destabilised by the Common Fisheries Policy (CFP),

recognised by the Court of Justice of the EC in 1976. This was together with the common agricultural and trade policy, one of the rare policies placed under the sole authority of the European Community as it was called at this time. Accordingly the fishing sector of Europe is thought of as being fragmented consisting of many fishing industries with products from the sea as a common denominator. The CFP is a complex policy that covers all aspects of fisheries such as conservation, control and surveillance, marketing and agreement with non-EU members. It actually manages fisheries for all vessels fishing within community waters (Sustainable fisheries through regional Management 2000).

The CFP has been based on the system of relative stability, implying that the fish is shared between member countries according to their historical level of fishing. The basis for this division is the scientific advice, which together with social aspects defines a TAC that is agreed upon by Member States each December in the Fisheries Council. The Scientific, Technical and Economic Committee of Fisheries (STECF) is made up of representatives from each member state and is composed of biologists, economists and fishing gear technologists. The STECF is asked by the Commission to examine and comment on the advice it receives from ICES (Lequesne 2004).

But the CFP has for a long time suffered a bad reputation of failing its intentions. Fish stocks have been steadily declining and in spite of scientists' repetitive warnings since the early 90s some stocks are on the verge of collapse. Thousands of fishermen have lost their jobs and a lot of money has been spent on building up the fishing fleet only to scale it back down again. The marine environment is said to be damaged due to fishing which has led to uncontrolled death of other species, such as turtles, harbour porpoises and sea birds. By ignoring the scientists the politicians and managers are accused of having favoured short-term interests before long term sustainability resulting in many fish stocks being near a state of commercial extinction. European Union fishermen have also been encouraged to fish elsewhere, due to overcapacity in their own waters, resulting in decimation of local fisheries in some of the poorest areas of the world in the process

1.3. Reform of the CFP

Increased public awareness of the severity of the state of some fish stocks led the Union to the acknowledgement that a reform was called for. The plan had been to make a review of the CFP in 2002, ten years after the last one, and this provided an opportunity for revising the policy (Foodaware 2002: <http://www.net-consumers>).

In 2001 a Green Paper was launched presenting a new fisheries policy with advice and propositions for future conduct in accordance with the precautionary approach and the ecosystem approach. Prior to this many regional meetings and hearings were held in order to reveal the problem areas (Report from the Commission 24.01.2000 COM(2000)). Long-term management, increased stakeholder participation, integration of environmental concerns, more uniform and better regulations and reduction of the capacity of the fishing fleet were some of the main areas that needed upgrading (European Commission Green Paper 2001). For instance was the forth Multi Annual Guidance Program (MAGP IV) accepted to be a failure as a fleet reduction program since the situation in 2002 was that all in all 10 vessels were chasing fish that no more than 5 or 6 could catch in order to act sustainable. The fleet reduction targets of the MAGP IV were said to be too low and the rules too complicated and it was proposed replaced by the general multi-annual management plans that will lead to restrictions of the fleet. (Europea Press releases 2002 (28/5): <http://europa.eu.int/rapid/pressReleases>) The Financial Instrument for Fisheries Guidance (FIFG) was started in 1999 and is planned to end in 2006. It was in serious need of reform in order to avoid funding of replacements for the scrapped ships which counteract the intended effort reduction of the MAGP. It was suggested that the money saved would be spent on scrapping vessels in addition to social measures helping fishers find alternative employment (Hagan 2003 OceanLaw online: <http://www.intfish>)

From 1st of January 2003 the EU has followed a new fishery policy based on the suggestions of the Green paper. Focus is more strongly on protection and preservation of the marine environment, and in the wake of this, effort have been put on proposing common management strategies for marine areas of shared interest. One example is the European Marine Strategy elaborated in the framework of the Community's 6th Environment Action Programme aiming at protecting the European Seas.

A brand new forum has been established as a result of the endeavour to increase stakeholder involvement which was one of the main points of the reform. These are the Regional Advisory Councils (RACs) which are stakeholder-led organisations functioning as consultative organs for the Commission in matters concerning proposals for measures that relate specifically to fisheries in the area concerned. RACs are at present established for: the Baltic Sea; the Mediterranean Sea; the North Sea; north-western waters; south-western waters; pelagic stocks; high seas/long distance fleet. The Irish Sea is included in the north-western waters RAC (including ICES areas V (excluding Va and only EC waters in Vb), VI, VII).

1.4. Recovery plans as a tool to counteract crisis

One definition of the word recovery is “the act of regaining or saving something lost.” (Answers.com 2006:<http://www.answers.com>). A recovery plan must in this respect be measures added to regain or save something lost. The concept of recovery plan is used in many fields, but a trend is that it appears after catastrophes or along with the acknowledgement of crisis. Crisis can occur in any part of society and can involve economic, natural and social aspects amongst others. Situations leading up to crisis can be caused by disasters such as earthquakes, epidemics, man-made negative impacts, market failures etc. Considering many living natural resources in this respect, the last century at least has born witness of over-exploitation and other indirect negative impact of human behaviour. The United States Endangered Species Act (ESA) of 1973 states that there are species that have been so depleted that they are threatened by extinction, and provides programs for the recovery and conservation of such species (Endangered species act of 1973). This act defines recovery as the process by which the decline of an endangered or threatened species is arrested or reversed, and threats removed or reduced so that the species' long-term survival in the wild can be ensured” (US Fish and Wildlife Service 2005: <http://www.fws.gov>, U. S. Fish and Wildlife Service 2004: <http://www.fws.gov>).

Experiences with recovery plans mostly stem from 1990s onwards and the concept was initially used for terrestrial organisms. The first fishery recovery plans historically were fish closures, where more successes was documented for pelagic fisheries than demersal (Caddy and Agnew 2004).

The foundation of recovery plans in fisheries is laid in several United Nations reports. Although not used directly in article 61 of the United Nations Convention on the Law of the Sea of 10th of December 1982 (UNCLOS), coastal states are encouraged to ensure that living resources are not endangered by over-exploitation. This is to be achieved through proper conservation and management measures based on the best scientific advice. The UN Code of Conduct for Responsible Fisheries was created as a result of the acknowledgement that fisheries resources could no longer sustain the excessive extent of exploitation. It started as an initiative at the 1992 UN Conference on Responsible Fishing held in Cancun where FAO was requested to prepare an international Code of Conduct. The work was initiated in 1993 and completed in 1995 at a conference in Rome. The code addresses proper conduct for all involved in fisheries in one way or another, including advice and measures that should be taken into consideration. It is formulated to be in accordance with

many relevant instruments such as the above mentioned UNCLOS, the 1992 Declaration of Cancun, and the 1992 Rio declaration amongst others. The Code is not legally binding although parts of it will be recognised in national jurisdiction (Juda 2001). The Code of Conduct does not actually use the exact words recovery plan, but the word recovery is mentioned in relation to sustainable management. For instance in article 7 it is applied under the objectives of management where it is stated that appropriate measures should be adopted to provide that depleted stocks should be allowed to recover or, be actively restored. Later in the same article it is written that: “States and subregional fisheries management organisations and arrangements should introduce measures for depleted resources and those resources threatened with depletion that facilitates the sustained recovery of such stocks.” The importance of long-term management planning and of implementing the precautionary approach into the management scheme is also addressed here (FAO Code of Conduct for Responsible Fisheries).

1.5. Precautionary approach, ecosystem approach and recovery plans

The United Nations Fish Stocks Agreement of 1995 (entered into force in 2001) was created to help fill the gaps of the UNCLOS concerning straddling and highly migratory fish stocks. It emphasises the importance of implementing the precautionary approach in management of fisheries and also to concentrate on ecosystem-based measures instead of considering each stock isolated (Stokke and Coffey 2004). In article 6 of this document the application of precautionary approach is addressed, and states are encouraged to take action to restore stocks that have been pushed too close to reference points, before they are exceeded. Target reference points are to be guidelines for management, whereas the limit or conservation reference points are supposed to give the boundary between sustainable and non-sustainable harvesting. The guidelines for such reference points are given in annex II of this agreement, where it is also written that management strategies shall include action to be taken when precautionary reference points are approached (United Nations Fish Stocks Agreement 1995)

The precautionary principle derives from the German Vorsorgeprinzip which comprised the idea that society should seek to avoid environmental damage by careful forward planning. The principle developed in the early 1970s into a fundamental part of German environmental law. Initially the concept was recognised in the World Charter of

Nature, adopted in 1982 by the UN General Assembly, and subsequently adopted by the First International Conference on Protection of the North Sea in 1984 (Guldberg 2003). After being used excessively in many international statements and policies, it was included in the Rio Declaration of the 1992 United Nations Conference on Environment and Development (Agenda 21). The principle was formally adopted by countries of the European Union in the Treaty of Maastricht in 1992 where it plays a crucial role in environmental health policy development, and in general forms the basis for European environmental law (Foster et al 2000, Guldberg 2003). It is evident that the approach springing from this principle has become an important tool for policy making, but there is controversy concerning its application. The most crucial problem concerns its definition, or definitions which consist of many slightly differing ones. This opens up for abuse and misinterpretations that in turn may lead to mischief such as trade protectionism (Foster et al 2000). In the Rio Declaration the 15th principle states that: “In order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.” This definition of the precautionary approach has been widely used, although looking at it closely it is not actually a definition, rather a recipe for the application, with many undefined words. It is however clear that the application of this principle is motivated by a wish to be safe rather than sorry in the sense that lack of scientific knowledge shall be no excuse for postponing precaution. Guldberg (2003) is criticising this very statement saying that we are asked to curb actions on the basis of what we do not know instead of what we do know. Keiding and Budtz-Jørgensen state in their article from 2005 that in searching for effects in statistical analysis, the results may either be too weak or too noisy (Type II error) to draw precise conclusions. They continue by saying that in drawing precautionary conclusions from empirical evidence, the type II errors are said to be the main problem. This is because there are two very different reasons for the available data not containing evidence against a hypothesis: *either* there may indeed be no effect or an effect of a size below biological interest, *or* the data may be too noisy often because there are too few of them, to enable any precise conclusion (Keiding and Budtz-Jørgensen 2005). In other words however good the idea of staying within precautionary limits is, there will always be uncertainty concerning the validity of the reference points

The Ecosystem Approach is another new tool for management of natural resources. The Convention on Biological Diversity is an international agreement that was adopted at the

Earth Summit in Rio on 1992. The agreement is often seen as the key document regarding sustainable development and the aim is to develop national strategies for the conservation and sustainable use of biological diversity. The convention defines the Ecosystem approach as “a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. “ (The Convention on Biological Diversity). In order to keep the track straight, I will move on to the understanding of this concept in terms of fisheries management where the emphasis is put on managing human activity in a fashion that provides sustainable use of goods and services while maintaining ecosystem integrity. This is to be achieved by undertaking the best scientific knowledge of the ecosystem and its dynamics in order to avoid action that compromises the health of the marine ecosystems. The approach is based on long-term perspective and emphasises the dependence of economic and social sustainability on ecological sustainability. Economic and social objectives should be met without compromising ecological objectives (ICES 2005). Addressing this approach even more specifically to fisheries, it implies that factors such as the physical environment and other species such as prey influences the harvested species. The Ecosystem-based approach to management of fisheries seeks to consider the biological, chemical and physical components of the ecosystem, and their interaction. The emphasis is put on appreciating the dynamics of natural ecosystems but in addition seeking to include stakeholders in management decisions in recognising that man is a part of the ecosystem. In the modern fisheries management quest to consider biological diversity and provide sustainable ecosystems, it is suitable to adopt an approach that takes into consideration that the environment influences fisheries and vice versa. In addition taking account of ecological interactions and stakeholder participation. The approach has gained territory as traditional single species fisheries management have failed to consider the influence of the physical environment and other species such as prey, on the harvested species in addition to social aspects and human behaviour.

According to the Joint Nature Conservation Committee the process towards complete integration of the approach must be incremental and include

1. The identification of the relevant ecosystems, and their boundaries and characteristics;
2. the agreement of management objectives for each ecosystem. These should encompass wider ecosystem factors and not just the target stock, and all stakeholder groups should be involved in their development;
3. long-term management objectives should be developed as well as short to medium-term objectives;

4. the establishment of sustainability indicators (including reference points, targets and limits) and the accompanying monitoring;
5. a decentralised regional approach to fisheries management in EU waters, enabling management measures to be taken that are appropriate to biologically distinct areas. These could include technical measures, spatial management (including No-Take Zones), effort-related controls and systems of access rights;
6. there should be better tailoring of research and information provision to support the ecosystem approach, including better knowledge of ecosystem interactions, and of fishing-related impacts, and also improved monitoring bycatch and discards to include information of non-commercial bycatch;
7. application of Adaptive Management and the Precautionary Principle given the degree of uncertainty and dynamics of the ecosystem;
8. an effective enforcement capability;
9. Furthermore, fisheries management should not be seen in isolation from the wider management of the marine environment. Over time, fisheries management will need to become much better integrated with other sectors of marine management.
(<http://www.jncc.gov.uk/page-1576>)

The precautionary approach and the ecosystem approach are important backgrounds for recovery plans in general.

1.6. Objectives of the study

Recovery Plan is a concept or system of tools aiming at rebuilding something on the verge of being lost. In the Common Fisheries Policy of the European Union it is implemented in order to rebuild depleted fish stocks. This thesis aims at evaluating aspects and traits of implementing such recovery plans and in order to do this an investigation and evaluation of the Cod Recovery Plan of the Irish Sea has been conducted. Because this has not been done before, this thesis will put emphasis on enlightening the empirical parts as much as possible in order to give a thorough introduction and evaluation of the states of affair in the period of the Cod Recovery Measures in the Irish Sea. As will be revealed in this thesis is that the informants will be let to tell the story of the Cod Recovery Plan through quotes from the interviews because this was the best way of communicating the story. In addition a presentation of the Recovery Measures withdrawn from the Council Regulations will be presented. The latter in order to emphasis the high degree of complexity surrounding this issue.

1.8. Method

The methods I have used to achieve the information I am presenting here are first of all open ended interviews. The choice of method can be explained by the fact that this is a new practice in fisheries management, one for which the implementation process has not been investigated previously, thus there was a need to reveal what has been taking place. Because this could not be found in previous research an empirical basis was called for. Scientific articles, EU regulations, on-line articles and information in addition to some governmental debates have been applied as backup information. One of the aims of this project was to reveal what has been going on in society under the implementation process and this is the reason for the extensive use of internet sources and some parliamentary debates.

The interviews all took place Ireland from the 27th of March to the 1st of April 2006. A list of questions had been prepared and forwarded to the interviewees in advance, but used mainly as a helping document during the interviews. Five interviews were conducted and this is the list of the informants:

Joe Maddock, Chairman of the Irish Fishermans Organisation

Dominic Rihan, Marine Technical Executive at the Irish Sea Fisheries Board (BIM)

Emmet Jackson, Marine Technical Officer of the BIM

Patricia Comiskey, Quality and Environment Project Co-ordinator of the BIM

} One
Interview

Lorcan Ó Cinnéide chief executive officer (CEO) of the Irish Fish Producers' Organisation

Alan McCulla Chief Executive of Anglo-North Irish Fish Producers Organisation

Ciaran Kelly Fisheries Scientist Pelagic Section, Fisheries Science Services (FSS), Marine Institute

In addition I made a brief telephone interview with **Barrie Deas**, Chief Executive of The National Federation of Fishermen's Organisations (UK).

I would have liked to hear the story from someone working with this from within the EU system, and from someone in the government of Ireland and UK. In addition it would have been interesting to get some input from the Isle of Man, as they take share in this fishery. This was however, not possible to achieve, the first and last because the resources did not allow a second trip, or an extended one, the latter because I could not get in touch with anyone willing to talk at the actual department in Ireland. This is why this thesis includes the

story told from the perspective of the industry mainly, but also from the scientific point of view.

In order to record the interviews I used a video camera to which no one objected. This proved to be very valuable because by watching the tapes you get more information than from simply listening to people speak.

Chapter 2. Theoretical background

There are several theories I could have included in this thesis such as Fisheries Governance, Co-management and adaptive management. Several of these might however have demanded removal of essential parts of the empirical testimonies. The choice of theory is a result of searching for one that would grasp the interdisciplinary nature of this conflict area, and in addition would include as much of the total story as possible. This is why I have landed on Martin Nies *Drivers of natural resource-based political conflicts* (2003), because it starts out with investigating tame and wicked problems, which can be viewed as natural science vs. social problems, and in addition provides an opportunity to reveal some of the drivers that make this resource conflict wicked.

2.1. Wicked and Tame problems

The overall theme of Martin Nies article (2003) is the difficult nature of some natural resource-based political conflicts (that seem to share a row of not very positive features such as being controversial, acrimonious and intractable). In his opinion conflicts need to be analysed according to multiple drivers that interact in a complex manner. It is important to find ways around such environmental political conflicts because they seem to be increasing in number and intensity. Controversial political conflicts over natural resource policy have become the norm, and finding solutions to such problems require going beyond scientific, economic and techno-rational analysis and methods.

According to Rittel and Webber (1973) problems can be either wicked or tame, the latter indicating problems for which there is a right and a wrong answer, the problem is well defined and the problem solver will know when he has the solution at hand. Such problems will often be dealt with within the natural sciences (Nie 2003). A wicked problem is one for which there is no definite formulation, there is no true or false answer rather a good or bad solution. In the formulation of the solution lies the formulation of the problem. One fictive example could be: “the safety condition of fishermen on the boats is poor” This is a problem brought forth as a statement which if you turn it around will become the solution: “we need to improve the safety conditions of fishermen on the boats.” The problem represents many

wreathed factors and constraints. The nature and understanding of the problem will also be different depending on the position of the problem solver.

Because there is no stopping rule (no criteria to tell when the solution has been reached), the solution process stops when there is no money, time or patience left. But the solution to a wicked problem is never true or false rather good or bad and there will always be a possibility to find a better solution.

Contrary to the tame-problem, evaluation of a solution to a wicked problem is very complicated because implementation of the solution will generate waves of consequences, some of which may outweigh the intended advantage of the proposed solution. With tame problems one can determine quite accurately how good a solution has been. What intensifies the complex nature of the wicked one is the fact that each problem is unique depriving the problem-solver of learning by trial-and-error. To make it even worse every implemented solution to a wicked problem leaves traces that cannot be undone.

There is a lack of a predefined potential set of solutions to wicked problems against which one can evaluate solutions to a problem and thus feasible action plans must rely on judgement of the proposed solutions. For tame problems there are explicit characters that define similarities among them but for wicked ones no matter how similar they may appear, there may always be one or more small difference that is of overriding importance. So, they are essentially unique, and the art of dealing with them is not knowing too early what solution to apply.

Problems in general can be described as discrepancy between what is and what should be and the process of resolving the problem involves explaining the causes of the discrepancy. By removing one cause for discrepancy, another problem may appear for which the original problem is a symptom. For instance if the remedy for improving the safety on fishing boats is decided to be handing out money to each fishermen to improve his boat, it may end up with fishermen investing in better equipment because it is more important for them to secure steady income than to improve safety. The original problem will be a symptom of a “higher level” problem, and although the higher level of a problem the more complicated it gets, one should try to settle the problem on as high a level as possible.

The choice of explanation decides the nature of the resolution to wicked problems. This choice is decided by the “world view” of the analyst. There will always be many stakeholders involved in wicked problems each representing varying ideas of what the problem is, what causes it and how to solve it, in addition these ideas may change along the line.

Planners are liable for the consequences of possible solutions to wicked problems and such solutions are not based on finding the truth but improve some characteristics of the world. The effects of the solution may have large consequences on the people affected by actions it generates. Planners do not have the benefit of testing possible solutions in the form of hypothesis that prevails in the world of science.

2.2. Nies drivers of natural resource-based political conflicts

In the article Nie lists several factors that contribute to the conflicts around natural resources and a summary of these will follow:

Scarcity:

Within this concept lies the notion that resources become more valuable when they are scarce and even more so when the point is reached where many scientists and conservationists believe that the evolutionary process itself may be at stake. Scarcity goes hand in hand with the population growth and new technological development coinciding with increased pressure on the natural resources. In some areas such as many fisheries, there may be over-appropriation and too many people want too much from the same resource base, a scarcity factor that will propose a major challenge to finding a resolution. Collaborative conservation may also fail because many conservationists feel that compromise on top of compromise eventually leads to nothing left to compromise.

The Policy Surrogate:

Some policy problems can be used by political actors as surrogate to put larger and more controversial issues on the agenda and in this way they become multidimensional conflicts with a variety of interests involved. The issues arising from addressing surrogate agendas are contributing to the complexity of finding resolutions to problems, but they must nevertheless be confronted. In this way relatively straight forward policy problems may turn wicked because they are used as surrogates.

The sacred and spiritual, and importance of place:

Some areas or resources may be significant to people beyond providing some goods to be extracted, because they represent something sacred either from a religious point of view or

simply for habitual and cultural reasons. The latter can explain people's reluctance to move from an area of depleted resources to find employment elsewhere.

Policy design:

Some conflicts are rooted in policies designed in a specific historical context, and we need to go to the history to explain their occurrence. These are in the article termed "lords of yesterday." From a contemporary point of view such "Lords of Yesterday" may contribute to an absurd way of dealing with political aspects since they do not represent logic in their present context. But in spite of being outmoded they continue to exert tremendous influence (Cortner 2000). According to an article by Daniels and Walker (1996) ecosystem based management of natural resources have helped federal agencies of natural resource management to move away from the "Lords of yesterday."

Policy frames:

Framing a conflict involves interpreting it, identifying who is involved, why it occurs, what it deals with and how it could be resolved and this process is according to Nie one reason why so many conflicts are intractable. Policy frames can be explained by the same story told by different political actors, and the story will be edited as how to best represent the opinion of each party. The fundamental story in policy writing may be hidden by surface details. The policy frames need to be identified in order to fully understand a conflict.

Scientific disagreement and uncertainty:

According to Nie in natural resource policy and management are more and more characterised by conflicts between different aspects of science, and such "science wars" have further complicated an already difficult decision making process. Uncertainty complicates matters even further because it makes every decision into a risky business. If a species wellbeing is at stake there is no certainty as to whether a measure will be hazardous or beneficial or simply not matter. In order to reveal this more research is needed and this can take time during which decisions have to be made, and this opens up for making decisions that everybody might not agree upon. Scientific disagreement is interrelated to the other drivers of conflict because value- and interest based political conflicts may be framed as scientific ones, the scientific language complicates matters and different groups may use different science to forward their objectives. Nie is not saying we should not use science in decision making, but we should be careful about asking science to resolve them.

Electoral politics and wedge issues:

A wedge issue is a social or political issue, often of a divisive or otherwise controversial nature, which is used by one political group to split apart or create a "wedge" in the support base of an opposing political group (Wikipedia 2006 wedge issue: <http://en.wikipedia.org>)

Political campaigning for electoral advantage involves using symbolic issues to win territory or to keep voters. Such issues have a tendency of reoccurring every 2-4-6 years for short term political advantage, but has the unfortunate effect of deepening conflicts.

Political and interest group strategy:

Other actors such as environmental interest groups and the wise use movement (American opposite to environmental movements) also use environmental issues for political advantage such as gaining or maintaining members and raise money. Crisis orientation is an effective way to get attention, and some of these are actual crisis due to the scarcity factor discussed above. In other cases this crisis maximisation is abused and the result is lost credibility, questionable legitimacy and "cry wolf" impression. This can result in public debates being run by incentives to win and not to reach consensus and in such represent a polarisation driven by propaganda and "wolf-crying."

In such interest strategies framing and reframing the conflict will be used in competing information campaigns in which the goal is not to communicate with each other but to the public and political decision makers. The groups answer to the previous move of its opponent and this is what drives the conflict further. This is according to Nie a dysfunctional communicative strategy that makes it difficult to stop such conflicts.

Media plays an important role in such wicked environmental conflicts and unfortunately the result is often increased confusion and biased impressions. David Symes points to a European example in his article from 2005 when he comments on the way a report of the Royal Commission of UK called "Turning the Tide: addressing the impact of fisheries on the marine environment" was treated by the media. The subsequent media headlines included several doom and gloom forecasts of the sea areas around the UK, taken out of context and out of proportion. Media is a driver of dramatising environmental conflicts because it emphasises conflicts and extremism in order to sell their story. In this way they are constructing a frame that excludes a range of alternatives, and thus makes it unfit for public discourse.

Adversarial governance:

Adversarial governance will be the result of a system where two major political parties dominate the elections. This can lead to the opposition disagreeing with everything the government proposes for the sake of disagreeing and thus blocking for important decisions. (Wikipedia 2006 two-party system: <http://en.wikipedia.org>) The incentives will not be to generate opposing views but produce input that is for or against something, in other words extreme position-taking. In such, environment institutions may encourage disputes to start from the extremes, polarizing environmental conflicts more than necessary.

Constitutional, statutory and administrative language

Political language can be vague and contradictory and combined with multiple and competing statutes can be drivers of conflicts, and sometimes conflicts can even be caused or maintained due to a particular law. This vagueness can for instance result in situations where the choice to either continue production or preserve areas or species is changed into a median resting place where management is intensified. If we introduce vague and changing management philosophies differing in interpretation depending on who includes them into the conflict areas, it is understandable that resolutions are not found. According to Nie “Ecosystem approach” is one example of such vague philosophies which have been superimposed on top of agency missions rather than replaced them. The vagueness of the Ecosystem Approach has resulted in application in terms of adjusting it to the already present policy and in this way adopting a new name for an old conduct. As Lynn Corn expressed it in her article from 1993 concerning amongst other things definition of ecosystems: *“When nearly all of these disparate groups are advocating "ecosystem management" as a solution to current issues one thing is clear: there is not enough agreement on the meaning of this concept to hinder its popularity”* (Corn 1993).

Distrust:

Distrust is a driver of conflict because it plays a malignant part in the resolution processes undermining constructive debate and participation. Finding common approaches to problem solving may be undermined by distrust, which often is a result of previous policies and policy makers failing to hold what they promised. Distrust can also manifest itself in lack of support to agencies that one may suspect will either abuse the trust or fail to deserve it.

2.3. Conflict in political perspective

Nie ends his article by making a few points to help put natural resource-based conflicts in political perspective. First he says that conflicts are a sign that democracy is working and therefore must not be dreaded but expected in pluralistic democracies. But Nie wish to draw focus to the negative effect of some unhealthy, wicked conflicts. They can lead to for instance stalemate or pendulum swings between two extremes. Such pendulum swings can have harmful effects when conflicts are about ecological restoration and recovery of endangered species. Such conflicts can be difficult to stop, slow down or change direction of since the starting point often are the extreme and the harder one interest push the harder the other pulls.

The problem is to distinguish the healthy conflicts from the unhealthy ones and Nie lists some questions that can help us make the distinction. First it is important to analyse to find out weather the conflict is internally driven by competing human values or by external factors such as political institutions, processes, budgets and communication strategies that prevent the common interest from being realized. It is most likely driven by both, but the hope is that the latter outweigh the former because it is easier to negotiate governance than deep-core human values. However, focusing on natural resource governance can help clarifying the central values, determine if they are compatible with others and what to do about it if they are not, even in value-based conflicts.

Secondly it is important to reveal the role of the manager and public administrator in the conflict. Sometimes their role is by default and can spring from conflict and decision avoidance, and it is important to make the administrators acknowledge these conflicts and not just either wishing them away, leaving it up to experts to come up with a resolution or push them aside as nefarious efforts of sabotage. Administrative leadership can be used to promote and facilitate constructive debates among governmental and non-governmental actors and constructive framing and reframing of conflicts.

Central to natural resource governance are political institutions and decision making processes, but political factors like electoral politics, wedge issues, media coverage and interest groups also play important parts. This implies that in order to fix what is wrong with natural resource governance the political-type drivers must be examined in addition to focusing on institutions, statutory mandates, administrative rulemaking and public law. Changes in politics may result in changes in governance.

Thinking of conflict in terms of drivers may facilitate in finding the right resolution. Maybe we find that the conflict is driven primarily by questions of finance, and then we can focus on finding a budgetary configuration that is as mutually agreeable as possible. If there are legislative weaknesses we can focus on legislation, and if the conflict is largely about adversarial policy frames collaborative conservation strategies and increased public participation might help. If a conflict is driven primarily by scientific disagreement and uncertainty, the first step would be to ensure that the conflict really is science based and not just framed as such. If this is actually the case we can suggest applying some tools such as adaptive management strategies (with increased knowledge of resources and ecosystems as a common goal to use in adjusting and changing plans or approaches), civic science (in which stakeholders contribute to a pluralistic science that incorporates local knowledge directly into environmental decision making and research (Reed and McIlveen 2006) or collaborative monitoring. Each of these involving collaboration between stakeholders, managers and science.

If it is revealed and ensured that the conflict is value-based, it is best to go straight to the point of telling each other what we like and thus bring the debate to a solvable, concrete one instead of an abstract one that is difficult to reconcile.

Chapter 3. The Irish Sea Cod Recovery Plan

IN February 2004 Council Regulation (EC) No 423/2004 of 26 February 2004 *establishing measures for the recovery of cod stocks* was published. This represented the start of the Irish Sea Cod Recovery Plan and introduced a system of closed area, technical conservation measures, effort restriction and new control measures that was to be implemented. The basis for this was a proposition from the Commission that presented propositions for the establishment of long-term recovery plans for a number of cod stocks threatened with collapse (Commission Proposal COM (2002) 773). The proposal was examined at the following Fisheries Council and was adopted and presented in the above mentioned regulation. This regulation provided a common recipe for all the cod recovery programs of the EU, which included cod in the North Sea, where interim measures had been in place since 2001, cod to the West of Scotland and cod in the Kattegat. The Commission itself called the 2004 Recovery Plans the “first application of the reformed Fisheries Policy” because it included many of the main areas of reform.

But, some will argue that the recovery plan started already in 2000 and this is because interim emergency measures were implemented at this time, and continued to apply up until 2004. These included reduction in TACs, closed area and technical measures. In 2004 these measures were put into a system, and coupled with effort restrictions and additional control measures into an official plan. This is why in this thesis the measures applied prior to 2004 will be called temporary or interim recovery measures, while what happened from 2004 and on will be called The Irish Sea Cod Recovery Plan or the Recovery Plan for short. This is according to information achieved from Council Regulations and is thus considered the correct application and it also follows the logic that if the interim measures would have worked, there would be no need to start a Recovery Plan. Very often in the literature there will be references to the entire period as the Cod Recovery Plan. It is however, necessary that the first three years after recovery measures were introduced is dealt with in this thesis firstly because they made quite an impact on the industry, secondly they made an impact on the Recovery Plan and thirdly because the same measures were maintained also after 2004. So, the stock was actually subject to recovery measures from 2000 and to a Recovery Plan from 2004.

3.1. The area and its fisheries

The Irish Sea is 103,600 sq km with a total volume of approximately 2,400 cubic km. It surrounds the Isle of Man and is itself surrounded by Ireland, Northern Ireland, Scotland, England and Wales. It is relatively shallow, less than 90m deep in most places with shallow sandbanks off the Irish and north-west English coasts and it connects to the Atlantic Ocean (the Celtic Sea) by St George's Channel between the Republic of Ireland and Wales to the south and by the North Channel between Northern Ireland and Scotland to the north-east. The length of the sea is 209 km and it is up to 230 km at the widest and 315 meters at the most narrow point (Beaufords dyke between Northern Ireland and Scotland).

The sea is of high economic importance to fishing, shipping and transport, regional trade and power generation in the form of nuclear plants (Wikipedia 2006 Irish Sea:<http://en.wikipedia.org>, HighBeam 2006 Irish Sea:<http://www.encyclopedia.com>). The fisheries include Nephrops (Norway lobster), cod, haddock, whiting, plaice, sole and ray and are conducted by boats from Ireland, Northern Ireland, England, Wales, Isle of Man, as well as Belgium, France and the Netherlands. The main types of gear used is otter trawl which is applied mainly in the western areas targeting nephrops, cod, whiting, haddock, ray and plaice and beam trawls targeting sole and plaice mostly in the eastern Irish Sea. The demersal species are the most important and they are caught in mixed fisheries with many stocks exploited together in different combinations. Most of the vessels target nephrops predominantly in the muddy areas west of the Isle of Man, either with single or twin rigged otter trawls. Bycatch from this fishery includes haddock, cod and plaice which is also landed and provides an important economic contribution to the prawn fishermen (whiting is also caught but discarded). Although the number of vessels has declined in recent years, the herring fishery is still the main pelagic fishery in the Irish Sea There is also fishing targeted directly at cod, haddock, whiting and plaice with commercially important bycatch such as anglerfish, hake and sole. Recent studies show that the use of twin-rigs, which were first introduced in the 1990's, increases the proportion of roundfish bycatch in *Nephrops* fisheries compared with single-rig otter trawl (ICES WGNSSDS Report 2006)

Because the sea is towards the southern limit of the distribution of cod in the North Atlantic, the warmer waters provides rapid growth with fully maturing cod by the age of three. The value of the cod fishery in 2002 was about €9 million, and the stock is important as a target or bycatch in many fisheries. Ireland, UK, France and Belgium all fish for cod in the

Irish Sea. In 2002 this comprised 32 fleets and the main catches by gear were: Midwater-trawls – 64%, Nephrops trawls – 22% (bycatch), beam trawls – 7%, other gears – 7% (Codling and Kelly 2004) A Northern Irish semi-pelagic trawling for cod and whiting developed in the early 1980s, and as the availability of whiting declined this fleet switched to mainly targeting cod and haddock. (ICES WGNSDS report 2006) The main fleets targeting cod include whitefish otter trawlers operating out of ports in Northern Ireland, England, Wales and Ireland, and midwater trawlers operating out of Northern Ireland. Midwater trawlers target spawning cod and haddock in spring, and cod, hake and haddock in summer and autumn in the deeper offshore waters. Twin trawling increased during the 1990s mostly in the western Irish Sea but also some in the North Channel and Clyde. These vessels target either Nephrops or cod and haddock. The vessels fishing Nephrops also take cod as a by-catch. As the prawn boats drag their nets along the muddy bottom of the Irish Sea, cod are scooped up along with the nephrops. Some French trawlers operating mainly in the Celtic Sea extend their activities into the Southern parts of the Irish Sea fishing for cod. Vessels from Northern Ireland fish mainly in the western Irish Sea, but about one fourth of the effort is directed to the North Channel and Clyde (VIa/VIIa boundary). Effort is highest in spring, when cod is easily available. Irish whitefish vessels fish mainly in the western Irish Sea and the St George's channel, and the majority of Irish vessels presently target Nephrops. The English and Welsh whitefish fleets operate mainly in the inshore waters of the eastern Irish Sea where mixed demersal species (plaice, cod, rays) are targeted depending upon availability and season, but this fleet declined substantially through the 1990s. A high fraction of the cod catch of this fleet comprises immature cod. Belgian, Irish, English and Welsh beam trawlers targeting sole and plaice in the eastern Irish Sea and off the Isle of Man in addition to single-rig Nephrop trawlers from Northern and Southern Ireland fishing in the western parts have by-catches of cod. Tagging studies (England and Wales in 1970's and 1980's, and Ireland in 1990's) show that although limited movement of cod between the western and eastern parts occurs, a major southwards movement of adult cod takes place seasonally from spawning grounds in the western parts. Some fish move as far as the Celtic sea (ICES ACFM Report 2003)

The Irish Sea is under CFP management and is by this undertaken the management schemes and measures introduced (Sustainable fisheries through Regional Management, 2000). This includes TACs and minimum landing size and mesh size restrictions For 2006 the TAC and the allocations were according to table 1 below:

Table 1: The cod TAC and the allocation of the ICES division VIIa, Irish Sea

TAC	Belgium	France	Ireland	The Netherlands	United Kingdom
1 282 tonnes	24 tonnes	67 tonnes	1 204 tonnes	6 tonnes	527 tonnes

(From: Council Regulation N0 51/2006 of December 2005)

3.2. The state of the cod stock

The Stock Books of the Fisheries Science Services of the Marine Institute of Ireland for 2004 and 2005 (The stock book 2005) paints a gloomy picture of the state of the Irish Sea cod stock. SSB is said to be under B_{lim} , recent recruitment is estimated to be the lowest ever and F is above F_{lim} . In other words this stock is not harvested sustainably according to the scientists. This is far from being a new development since already in December 1999 the European Council adopted a drastic reduction in the Irish Sea cod TAC based on warnings from ICES in November 1999 on the detrimental state of the stock. ICES have been calling out warnings concerning this stock every year since, and there is little doubt within the scientific world that Irish Sea cod is, and has been for quite some time, overfished.

According to figures taken from the Stock Book of 2005, the spawning stock biomass has been gradually reduced since the late 80s (See figure 3.2), while the fishing mortality shows a gradual increase in the same time period (see figure 3.1). Recruitment has been very low since 2002 (see figure 3.4) and the total removals have been estimated to be above the TACs from 2000 to 2004 (See figure 3.3, no record for 2005 and 2006). The spawning stock biomass of this particular stock is below B_{pa} and has been below B_{lim} since 1995 while fishing mortality has been above F_{pa} since 1980 and close to or above F_{lim} since 1989 (The Stock Book 2005).

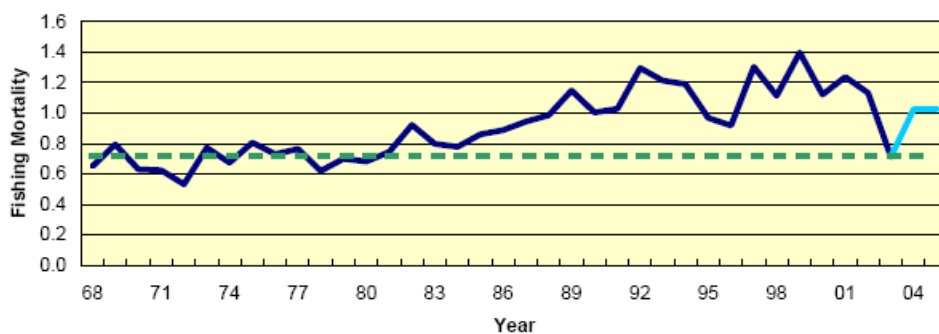


Figure 2: History of fishing mortality of Irish Sea cod

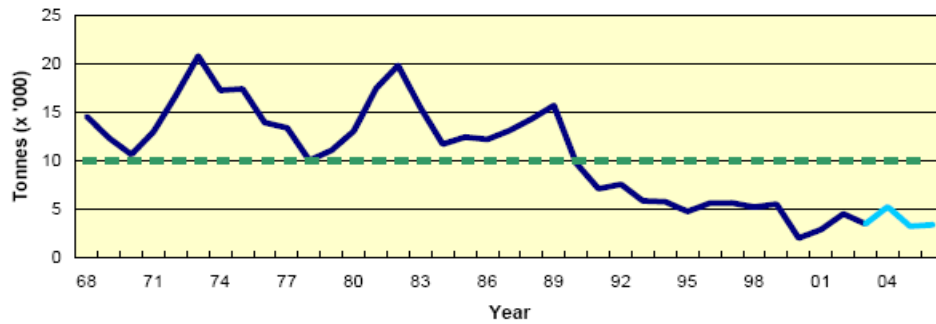


Figure 3 : History of spawning stock biomass of Irish Sea cod

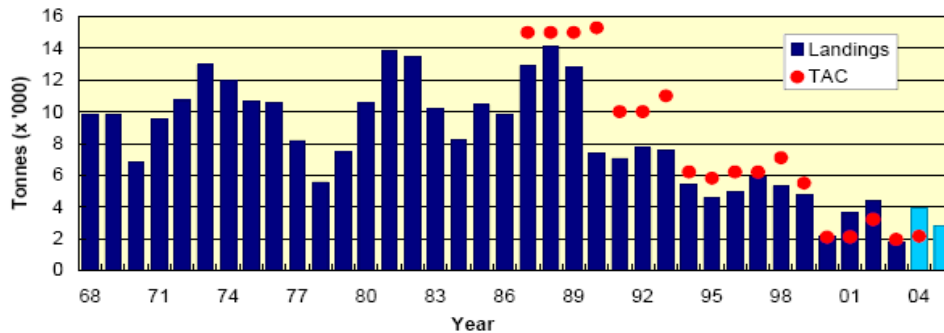


Figure 4 : History of landings and TACs for the latest 18 years

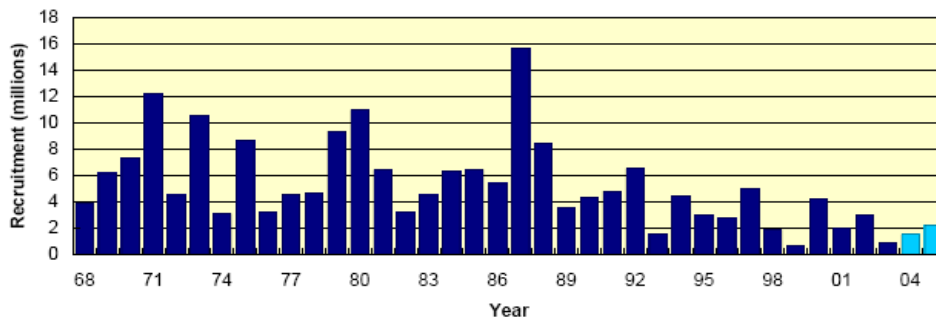


Figure 5 : History of recruitment Irish Sea cod

(all figures taken from the Stock Book 2005)

Based on the bleak prognosis on the cod stock of the Irish Sea in 1999, interim emergency measures were established for the fishery on this stock in January 2000. This marked the very beginning of recovery programs within the EU, and the proceeding year emergency measures were applied to the cod fishery of the North Sea as well well (The European Integration 2000:<http://www.xanthi.ilsp>).

3.3. Interim measures and the Cod Recovery Plan as they appear on paper

Total Allowable Catch

The main thrust of the first emergency measures implemented in 2000 included a large reduction in the TAC coupled with closed areas and technical conservation measures. In order to reveal the history of TACs and quotas we need to go back to 1983 when they were included in the CFP as a basis for the allocation of quotas among the nations. TACs and quotas are what we call output control measures, designed to regulate the amount of fish taken out of the sea. The TACs are decided upon according to the maximum quantity of fish that scientists have assessed can be caught from a specific stock (The Stock Book 2005). For the EU ICES is where they get this information and once the TACs and quotas are decided each Member State is in charge of distributing the quotas to the vessels. Quota means the State's share of the TAC fixed by the Council relating to certain species each subsequent year. National quotas are divided into quarterly quotas, which secure a spread of fishing activities over the year. These quotas are allocated to individual vessels through rations for a given period. All fishermen who are entitled to fish have a right to such a ration, which is not transferable. The amount of the ration depends on the number of fishermen that participates in a specific fishery (Shepherd 2003).

The allocation of the TACs between member states happens according to the Principle of Relative Stability which is based on using historical fishing tradition in deciding a certain percentage of the annual TAC for each fishing nation of the EU (Morin 2000). The principle still pertains in spite of reoccurring debates concerning its future application. Article 4 of Council Regulation (EEC) No 170/83 of 25 January 1983 states that: *"The volume of the catches available to the Community referred to in Article 3 shall be distributed between the Member States in a manner which assures each Member State relative stability of fishing activities for each of the stocks considered."* Consequently, each member state was to retain a fixed percentage determined with reference to the base years between 1973 and 1978 (Debate in the Parliament of Ireland 2002: <http://www.irlgov>) The incentive of the principle was to safeguard the particular needs of regions where local populations are especially dependent on fisheries and related industries, a commitment to stability in the allocation of fishing rights (quotas) among Member States (Council Regulation (EEC) No 172/83). The Spanish and Portuguese applications for memberships to the EU, is probably what encouraged the construction of the Principle. Because if accepted they would bring with them the largest

fishing fleets of Europe and the fear of having Spanish and Portuguese efficient fishing fleet targeting fish wherever they wanted was not pleasant.

Table 2: TACs and landings from 1999 to 2003

Year	TAC	Estimated landings	Nominal catch/ official landings
1999	5,500 tonnes	4,780 tonnes	2,960 tonnes
2000	2,100 tonnes	2,190 tonnes	1,417 tonnes
2001	2,100 tonnes	3,875 tonnes	2,026 tonnes
2002	3,200 tonnes	4,420 tonnes	2,708 tonnes
2003	1,950 tonnes	n/a	1,457 tonnes

Reducing the TACs

Returning to 1999 and cod in the Irish Sea, scientists from ICES had recommended the lowest possible fishing effort, but as mixed fisheries necessarily has by-catches of cod a certain amount had to be allowed fished to keep discards to a minimum. The Council fixed a TAC of 2,100 tonnes for 2000 as compared to 5,500 tonnes in 1999 in other words a more than 50% reduction (see table 2)

The result of the reduced TACs was felt primarily in Northern Ireland since they were more dependent on the cod. This comes forth in a BBC News Online article from 17 December 1999 which states that the Irish Sea cod quota was cut by 62% while cod quota of the North Sea was cut by 39%. In the same article one can read: *“A number of Northern Irish trawlermen are reported to be on the verge of giving up fishing following the cuts which will almost entirely eliminate catches of white fish species such as cod.”* The same article suggests that many fishermen had been waiting for this news in order to decide whether to stay in or leave the industry because of previous cuts in quotas. The nephrops quota was also proposed to be cut, but Northern Ireland’s agriculture and fisheries minister at that time, Brid Rodgers succeeded in reducing the cuts. She emphasised the importance of having someone from Northern Ireland present at the negotiations, someone explaining how difficult the situation was for them (BBC news online 17 December 1999: <http://news.bbc.co.uk>). This was probably an extremely important decision for the Northern Irish fishing industry.

The following year, 2000, the reduced TACs were put into a system of temporary recovery measures together with closed area and technical measures which prevailed for three years with some modifications.

TACs involved in the recovery system and harvest control rules

In 2003 a new course was plotted as the reform of the CFP promised strict management for stocks in danger with long-term setting of TACs as part of the plan. Measures would be taken within the framework of a long-term strategy with estimated time frame of 5 to 10 years for achieving the recovery objectives. Propositions for such a long-term cod recovery plan were presented in an amended proposal for a Council Regulation establishing measures for the recovery of cod and hake stocks (Commission Proposal (2002)773). The measures were to be imposed on the following fish stocks: Cod in the Kattegat, the North Sea, Skagerrak and the Eastern Channel, cod to the west of Scotland, cod in the Irish Sea and hake in the Northern area (hereafter referred to as the Cod Recovery Zone). This is an important point to consider because from this time on measures were no longer tailored for the Irish Sea but one and the same system was to be applied to all the depleted cod stocks of the EU.

For these stocks a TAC was to be decided upon each year directed at a 30% increase in the cod stock at the end of the year compared to the beginning of the year. This TAC was not to be more or less than 15% different in either direction from that of the previous year and a certain fishing mortality target was to be the basis for its decision. For the Irish Sea the fishing mortality rate to be targeted was 0,72, while if the quantity of mature fish was to fall below a certain number, the fishing mortality should be drastically reduced (See Appendix I, table A) But a fishing mortality rate of 0.72 is quite high, at least compared to other cod stocks under similar conditions around the world (Rosenberg and Mogensen 2005). This is also the stock with the highest mortality rate in the Cod Recovery Zone, with the North Sea cod at 0.62 (Appendix I table A). The intention of such a system was to set a TAC that makes it probable that the amount of fish at the end of each year is higher than it was at the beginning of each year. This implies that the fishing mortality rate will vary from year to year (Information Sheet No 1: <http://www.scottishfishermen>) In cases like this where recovery plans have been modified to include rules on how the TACs will be set in the years before recovery has been achieved they have come to be called Harvest Control Rules (HCR) (The Stock book: 2005). However, the cod TAC of 2004 was 2,100 tons, which means an increase

from the 2003 TAC of 1,950 tons. In other words the new way of setting the TACs resulted in an increase. The cod TAC agreed for 2005 was the same as for 2004.

(Kelley et al 2006, Rosenberg and Mogensen 2005)

In February 2003 as scientists came to the ports in Northern Ireland they were met by angry fishermen who denied the scientists access to the catch. According to the scientists they missed out on valuable information in order to make a justifiable assessment of the fish stocks (Report on the ANIFPO Workshop 2003:<http://www.mmedia.is>).

The Hague Preference

Before we leave the TAC's and quotas let us take a look at a part of the Principle of Relative Stability called "the Hague preference" which gives derogations to Ireland and UK in cases when quotas for certain stocks fall below determined trigger levels (House of Commons, UK Parliament 2004 *Column 1220W*:<http://www.publications.parliament.uk>).

The origin of this agreement lies back in 1976 when Ireland agreed to the EU declaring 200-mile fishing zone around the Irish coast. It recognised the underdeveloped state of the fishing industry and the fact that a large burden was put on Ireland in the control of its EEZ that was not proportionate to the benefits the sector provided. The same accounted for some parts of the UK. The Hague Preference is to be found in Annex VII to a document referred to as the "Hague Resolution" (Resolution of 3 November 1976). The annex is a secret document which has not been published and its legal validity has been questioned. But apparently Ireland should be ensured a doubling of its 1975 catch (representing 6 954 tonnes of cod and 7 196 tonnes of whiting) and the United Kingdom catches of a volume equivalent to that of landings in 1975 by vessels of less than 24 metres in its northern regions, in the Irish Sea the 'Hague Preference' system represents 1 223 tonnes of cod and 2 334 tonnes of whiting for the United Kingdom (Court of Justice of the European Communities 1998: <http://www.worldlii.org/eu>, Parliament of Ireland 2002: <http://www.irlgov.ie>, UK Parliament, House of Commons 2002 *Column 17W*: <http://www.europarl.tory.org.uk>) In other words the Hague Preference secures Ireland and UK a minimum amount of fish at times when stocks are low and this also means that they have a minimum fleet size below which they do not need to reduce further. This is fulfilled at the expense of the other states fishing in the areas surrounding these States. As long as the TACs and quotas were high this was not a problem but since 1989 they have been low and Ireland and UK have invoked the Hague Preference. Under such circumstances Ireland and the United Kingdom are granted annual quotas calculated on the basis of the mid-point between the notional quotas resulting from the application of the 1983 allocation keys

alone and the notional quotas corresponding to their Hague Preferences. According to a review of fisheries Issues in Northern Ireland from 1993 The Republic of Ireland has always been a net gainer by this process as has England, while Northern Ireland has been a net loser something which has caused great frustration among Northern Irish fishermen (Northern Ireland Forum for Political Dialogue 1996:<http://www.niforum.gov.uk>). Barrie Deas said during his telephone interview that the UK has tried to compensate the effect of the Hague preference upon the Northern Irish fishermen by swapping quotas for other species for cod.

Closed areas and technical conservation measures

Closure of the estimated cod spawning ground of the Irish Sea together with technical measures was implemented in 2000 and followed up and adjusted in 2001 and 2002, aiming at maximum possible protection during the spawning season and to maximize egg production of the existing stock (Kelly et al 2006). There were derogations from the first year on for fishing Nephrops in the closed area because of socio-economic concerns and the notion that this fishery was unlikely to have a significant negative impact on the cod (Kelly et al 2006, Scottish Executive: Press Releases 2000: <http://www.scotland.gov>). The consecutive years more derogation was pushed for, resulting in a quite complicated, heavy body of instructions. The details and maps of the closed area and technical measures for 2000 until 2003 are given in Table B and C of Appendix II. The revised closed area for protecting the spawning stock and the technical measures have been maintained also after 2003 but the latter was then attached to the Days at Sea regime in addition to the closed area. The minimum landing size for cod in the Irish Sea is 35 cm (ICES ACFM 2005 Quality Handbook Annex 2005: <http://www.ices.dk>)

Effort restrictions

Since 1 February 2003 fishing effort limitations (days at sea restrictions) have been introduced to the cod fishery of the Skagerrak, Kattegat, the North Sea and west of Scotland (Annex XVII of Council Regulation (EC) No 2341/2002). In 2004 the Irish Sea and eastern Channel cod fishery was included in the effort restrictions which were now part of the official Recovery Plan, and the same measures applied to all the areas (For details see Table D, Appendix III). Each year, the Council were to decide by a qualified majority, on adjustments

to the number of fishing days in direct proportion to the application of the TACs (Council Regulation (EC) No 423/2004) The reduction in effort was to be distributed throughout the Community according to historic fishing data from a three year reference period. Article 9 of a proposal for a Council Regulation establishing measures for the recovery of cod stocks (Commission Proposal (2003) 237) under chapter IV “Fishing Effort Limitations” the establishment and composition of such a data base is addressed. It states that for any vessel flying the flag of or registered within the Community which has landed any quantity of cod, sandeel or Norway pout in the three year reference period 2000, 2001 and 2002 in the following areas: Kattegat, North Sea, Skagerrak, Eastern Channel, Irish Sea and West of Scotland shall establish a data base containing the following information: Name and internal registration number of vessel; installed engine power of the vessel in kilowatts (measured in accordance with Council Regulation (EEC) No 2930/86); the number of days absent from port; the quantity of cod landed in tons; the quantity of sandeel landed in tons; the quantity of Norway pout landed in tons; the kilowatt-days as the product of the number of days absent from port, the installed engine power in kilowatts and average fishing effort during the reference period. This data base was to be the reference from which days at sea could be allocated.

In the Irish Sea, temporary closing of an area during the cod spawning period was maintained and in 2004 the reduced fishing mortality was to be compensated for in terms of additional days for certain gears. The specific measures of this effort regime were given in Annex V of the Council Regulation (EC) No 2287/2003 of 19 December 2003 *fixing for 2004 the fishing opportunities and associated conditions for certain fish stocks and groups of fish stocks, applicable in Community waters and, for Community vessels, in waters where catch limitations are required* (Council Regulation (EC) No 423/2004). All vessels of 10 metres or more in overall length carrying certain gears in the Cod Recovery Zone were subject to limits on the number of days they could spend at sea (Effort Control Measures 2005: <http://www.scotland.gov.uk>) The Days at Sea instructions for 2005 were given in Annex IV of Council regulation (EC) No 27/2005, and differed slightly from those of 2004. The main difference was that there was an overall reduction in the number of days for almost all of the gear-classes. Several instructions are included in this measure and the details are provided in the list below. The allocated days and the derogations for the different gear types are given in Table E, Appendix III.

Annex IIa of Council Regulation (EC) No 51/2006 provides the effort control regime for 2006. This time the gear is classified in much more detail and so there are more gear

classes and a higher degree of quibbling. The derogations are no longer derogations but included in the list as categories, so the list comprises 35 different ones. It is therefore no longer directly comparable to the previous instructions. Another obvious difference is that it is no longer the number of days per month but the number of days per year that is presented

In order to see some trends I have compared a few categories (those that I could be sure was the same) from 2004, 2005 and 2006 and divided the number of days per year for 2006 by 12 months (see Table 3). The result shows that that the days for almost all these categories have been reduced even further in 2006.

Table 3: Comparison of days at sea for the main gear categories for 2004, 2005 and 2006

Gear category	Days pr month 2004	Days per month 2005	Days per month 2006
<i>Demersal trawl, seines or similar towed gears of mesh size equal to or less than 100 mm except beam trawls</i>	10	10	9.5
<i>Beam trawls of mesh size equal to or greater than 80 mm</i>	14	13	11.9
<i>Static demersal nets including gill nets, trammel nets and tangle nets</i>	14	13	11.67
<i>Demersal longlines</i>	17	16	14.42
<i>trawls, seines or similar towed gears of mesh size between 70 mm and 90 mm (99mm in 2005) except beam trawls with mesh size between 80 mm and 99 mm</i>	22	21	18.9
<i>demersal trawls, seines or similar towed gears of mesh size between 16 mm and 32 mm except beam trawls</i>	20	19	19

(Annex V of the Council Regulation (EC) No 2287/2003, Annex IVa of COUNCIL REGULATION (EC) No 27/2005, Annex Iia of COUNCIL REGULATION (EC) No 51/2006)

Compliance, control and surveillance

In the Commission proposal for a Council regulation *establishing measures for the recovery of cod stocks* from 2003, specific monitoring, inspection and surveillance measures are presented for the cod recovery plans. This was followed up by Council Regulation No 423/2004. The measures involve fishing effort messages, prior notification, designated ports, separate stowage of cod, transport of cod and specific monitoring programs. The vessels for which these measures apply are the ones included in the lists of Article 9 of the proposition which deals with the establishment and composition of the data base (the same data base referred to under the “effort restriction part”) The next article (Article 10) opens up for Member States to implement alternative control measures to ensure compliance with reporting obligations provided they are as effective and transparent as the above mentioned (For background information see Appendix IV)

In Article 11 you can read that the master of a vessel shall 4 hours in advance of entry give the name of the port or landing location, the estimated time of arrival and the quantities in kg live weight of all species of which more than 50 kg is retained on board, to the competent authorities of the Member State, if it carries more than one ton of cod on board. The authorities may require that the discharge of catch retained on board a vessel carrying more than one ton of cod, shall not begin until authorized. If the master of a vessel wishes to tranship or discharge at sea any quantity landed on board, or to land in a third country shall inform the competent authorities of the flag Member State at least 24 hours in advance of the above mentioned information.

Landings of more than two tons of cod are addressed in Article 12, and this should be made only at designated ports and each Member State shall designate ports for this objective. A list of such designated ports should be transmitted to the Commission together with associated inspection and surveillance procedures including the terms and conditions for recording and reporting the quantities of cod within each landing. The normal margin of tolerance in the estimation of quantities in kg retained on board is according to Article 5(2) of Commission Regulation No 2807/83, 20%. Article 13 comes with derogation from this rule and states that in these recovery circumstances the margin of tolerance shall be 8%.

According to Article 14 it shall be prohibited to retain on board a Community fishing vessel in any container any quantity of cod mixed with other species of marine organisms. Containers with cod shall be kept separate from other containers. The next Article deals with

transport of cod and how the competent authorities of a Member State may require that any quantity of cod landed in that Member State shall be weighed in the presence of controllers before being transported elsewhere.

Transport of cod is addressed in Article 15, and the authorities of a Member State of first landing may require that any quantity of cod landed in the actual areas are weighed in the presence of controllers before transported elsewhere. If more than two tons of cod is landed at designated ports (Article 12), at least 20 % of the landings shall be weighed under supervision before being sold. The Member States must submit to the Commission details of the sampling regime. In addition must all quantities of cod greater than 50 kg which are transported to a place other than that of first landing or import shall be followed by a declaration indicating the quantities landed of each species and the area where they were caught, as a minimum. This is by way of derogation from Article 13 of Regulation (EEC) No 2847/93 in which all processed or unprocessed fisheries products transported to a place other than that of landing or import, and for which neither a sales note or a take-over declaration has been submitted shall be accompanied by a document including certain pieces of information. Article 13 (4)(b) gives an exception to this rule, but for the Cod Recover Zone this exception does not apply.

The final Article (16) of the Regulation deals with a derogation to Article 34c(1) of the Regulation which addresses specific monitoring programs which can be laid on some fisheries involving two or more Member States. The Commission together with the Committee for Fisheries and Aquaculture and the Member States concerned shall decide on the conditions for such a program and which fisheries should be subject to it. These programs are not to last longer than two years, but the derogation for the cod recovery zones eliminate this time limit.

Council Regulation (EC) No 2371/2002 of 20 December 2002 *on the conservation and exploitation of fisheries resources under the Common Fisheries Policy* is an important document published in the wake of the reform of the CFP. It gives directions on how to deal with different aspects of fisheries with a reference to sustainability and conservation of the resource. In Article 23 which deals with the responsibilities of the Member States it is emphasized that it is the responsibility of the Member State to control activities carried out in their territory. It also says however that Member States are required to ensure effective control, inspection and enforcement of the rules of the common fisheries policy also in cooperation with each other and with third countries. It is not an easy task and in order to facilitate this part a Community Fisheries Control Agency is under establishment according to Council Regulation (EC) No 768/2005). A Community agency is according to EUs own web-page

“Europa,” a body governed by European public law. It has its own legal personality and is to be kept apart from Community Institutions such as the Council, Parliament, Commission, etc. It is set up in the framework of the European Union’s “first pillar” which concerns economic, social and environmental policies and aims at accomplishing a very specific technical, scientific or managerial task. In this particular case its main tasks are to organise operational coordination of fisheries control and inspection activities by the EU Member States and to assist them to cooperate in order to ensure compliance with the rules of the Common Fisheries Policy and their effective and uniform application. The Agency is still under preparation and is meant to be situated in Vigo in Spain.

Decommissioning

In retrospect the decommissioning programmes of the CFP have all failed and one overriding reason is that the reduction targets have been too low, something that has been pushed forth by the industry of the individual Member States. Weak and confusing objectives led to abuse of the programmes to renew the fleet and get rid of old vessels for instance or relocate old vessels to other areas where fishing pressure may also have been high. The end of MAGP IV was also the end of the Multiannual Guidance Programmes, which were scrapped under the reform of the CFP (For background information on MAGP, see Appendix V). Unfortunately nothing replaced this and instead each Member State was given a certain capacity limit which it should not exceed according to Article 7 of Council Regulation (EC) No 2792/1999. This concludes a short review of the history of the effort to balance fishing capacity with fish availability within the CFP which is included in order to get an idea of what obstacles the CFP are facing.

Although fishing effort reduction schemes are not a direct part of the Cod Recovery Measures, they are included under “Effort Reduction.” Member States are encouraged to decommission according to Council Regulation (EC) No 2792/1999, in which case they will be rewarded with additional days of fishing (Annex V of Council Regulation (EC) No 2287/2003, Annex IVa of Council regulation (EC) No 27/2005, Annex IIa of Council Regulation (EC) No 51/2006)

In December 2002 a Council Regulation *establishing emergency measures for scrapping fishing vessels* was launched. This Regulation opened up for member states to apply for additional financial contribution for their decommissioning schemes for 2003. According to Article 7 of this Regulation the necessary funds for further financing of

emergency scrapping of vessels were to be made available for the years 2004 to 2006 by reprogramming of some structural funds. So far I have found no papers supporting this and it has not been addressed under the decommissioning measures for the Recovery Plans.

According to the stock book of 2005 one decommissioning scheme in 2001 removed 29 Northern Irish nephrops and whitefish vessels, and 4 English and Welsh vessels registered in Irish Sea ports. In 2003 another round of decommissioning resulted in permanent removal of 19 UK vessels representing 9, 3 % of the effort in tonnage.

An increased percentage of EU funding (20%) will be available for decommissioning; however, this aid will only become available where recovery plans call for a 25% or greater effort reduction. Hopefully this measure will prove to be an incentive for decommissioning (Council Regulation (EC) No 423/2004).

Chapter 4. Interim measures and Recovery Plan in public and political perspective

In a press release from the Department of Communications, Marine and Natural Resources of Ireland one can read that the first phase of a Stock recovery program for cod has been agreed upon 11th of February 2000 at the December EU Fisheries Council after negotiations between the EU Commission, fishing representatives and fisheries officials from Dublin, Belfast and London in addition to Belgium and France. The words of the, at that time Minister of this Department, Frank Fahey on the matter was: "*this is a ground breaking initiative which has been drawn up in partnership with our fishermen. The co-operative approach resulted in a practical initiative that will have long term benefit for fishermen*". "*This important initiative will protect the spawning cod stock in the Irish Sea and will doubtless show the way to achieve effective conservation measures for other stocks which are under pressure. I am sure that fishermen will recognise the long term benefits of this approach*", he added. (Department of Communications, Marine and Natural Resources 2000: <http://www.dcmnr.gov>). The already mentioned interim measures were followed up and adjusted in 2001, 2002 and 2003.

4.1 Why the needs of a Recovery plan?

Ciaran Kelly started his interview by explaining the situation when the Recovery Plan was called for: "*In 1990 the stock began to drop, and the advised TACs and landings began to drop. The TACs were lowered. The relationship within the stock was different, not as high recruitment. In 1996-97 and 98 there was a feeling of stability in the stock. But scientists say this is a dangerous situation because the recruitment is so low. The first year of the plan was 2000 and the advice was zero catch. The recruitment dynamics were so low, and the stock was suffering from many years with low recruitment. Something drastic needed to be done and this is why we came to the Recovery Plan situation. The industry and managers realised they needed to come up with some plan because the scientists were actually suggesting closing down the fishery.*" He also said that part of the reason in his opinion could be that science used to be quite arrogant. Particularly fisheries science which used to give advice in a deterministic, unequivocal fashion, based on assessments and presented to the industry in

terms of a specific number of the stocks. He also said that the level of precision with which the scientists gave advice in the past and the precision of potential impact of catch at different levels did not reflect the level of uncertainty. Based on this he could understand if people had lost confidence in science, and commented “*so those levels of precision were based on assumptions that the figures we were dealing with were as precise as we were treating them.*” He also mentioned that a lot was based on assumption for instance that the natural mortality was assumed to be 0,2, and pointed to the problem if an increase in natural mortality should occur which would be pinned on fishing mortality because natural mortality was treated as a constant. “*Scientists were like this: you look at a sample of the world and you think this is it, you sample the world.*” He continued by saying that medium distribution of possibilities is good enough to manage from when the stock is good, but when stocks move into a situation of less productivity, there is a problem because the medium has a distribution around it: “*you want to find Bpa, and looking at the medium will not actually be where you are,*” he concluded.

The problem for the stock intensified as managers did not follow the advices given by the scientists, and when in addition the unreported catch and bycatch was presumably much higher than the official numbers indicated. Discards are not included in the estimates of fishing mortality and abundance because discard data is not required within the CFP. So, the stock may well have been overestimated (Rosenberg and Mogensen 2005). One of the well known problems of quota management is that when quotas are exhausted for fish caught as bycatch, this fish that could have otherwise been sold is being discarded (Shepherd 2003).

Ciaran Kelly explained that although the idea of recovery plans is new, it may just be another labelling of a situation that has occurred in the past. It is a new way of formalising structures of communication between managers, scientists and the industry.

4.2. Output control: The social circumstances of TACs and the reduction of quotas

The management of fisheries within the European Union as already mentioned, is based on TACs which are decided for each stock for each year. Whether this is a successful system or not, is under constant debate. According to the above mentioned article by J.G. Shepherd 2003, managing stocks based on TACs and quotas presents certain difficulties including the need for accurate scientific assessment of the stocks that also track fluctuations, accurate reporting and registration of catches (without under- or misreporting) and efficient enforcement when quotas are exhausted. These are extremely costly operations that will only

add up for the most important commercial stocks (J.G. Shepherd 2003). According to the scientists themselves, the assessments are unreliable and not able to take into account predictions. Dominic Rihan of the BIM said this about the TACs in general: *“No one except the French think the quota system works. I think it is time for fundamental change.”* In his opinion the present system is too complex and has too many layers because people are putting scientific, political, economic, social and technical aspects into the equation which eventually are irrelevant. Patricia Comiskey remarked that the current system does not encourage good data collection because it is based on an attacking quota system where you are penalised if you get over your catch: *“It does not encourage people to give the right. The French have problems catching their quotas, and they do not want to show this. If you catch less you will be reduced next year if you show this if you catch more, you will be penalised,”* she concluded. Lorcan Ó Cennéide touched upon one of these preconditions when commenting on the cod fishery of the Irish Sea: *“...Commission proposes (good people in the commission). Those proposals are then the subject of a whole political horse trading, science goes off the table fairly early. It drives me nuts to go to all the meetings. People are talking bullshit and they know that. We have a serious problem of underreporting, let’s be honest about it. We need a discussion on what is the reason for this. Is the answer more control more enforcement. System failure, miscalculation. Or else the states of the quotas and tax is unrealistic or fishermen are greedy. But we need a useful discussion”* The problem is that increasingly restrictive TACs imposed on the fishing industry have presumably led to misreporting, and consequently the scientists do not know how many fish have been landed. This leads to a vicious circle where negative biases in the catch data result in low stock abundance estimates by scientists leading to even lower TACs and finally even more misreporting (Beare et al 2005). In other words the low quotas inspire to a higher degree of underreporting which counteracts, and maybe evens out the effect of reduced quotas. When situations like the Northern Irish fishermen denying scientist access to the catch occurs, the accurate reporting and registration of catches is of course a lost cause. This was an act of opposition because of increasingly lowered TACs, and must be regarded as the result of a lot of frustration caused by the feeling of being unjustly treated, of not being listened to and of not being able to debate the decisions. Ciaran Kelly explained the situation like this: *“there was a lot of acrimony around the plan because there had been very little thought about what the fleet would do. Everything was concentrated around saving the cod. People felt they were penalised and the industry began to withdraw cooperation. In Northern Ireland the scientists got opposition because the industry felt that the scientists had led them into this situation and thus could not*

be trusted anymore. The result was increased uncertainty in the assessments because data was becoming sparse. If you think that in order to be able to measure the outtake of the stock we need to be able to measure the length frequency distribution and the age-length distribution of the catch. If the catch is 5000 tonnes and you are measuring 500 tonnes you have a reasonable chance of accurate measurements. If landings are reduced and you are only measuring 50 tonnes...as you reduce sample size, you get less and less precise version of the overall state of the stock. First of all being able to estimate the age distribution.... normally the scientists would go down to the fishing boats but they were not allowed, in Northern Ireland primarily. That is one element of uncertainty but not the whole. If people do not declare the landings and underreporting.....combinations of those factors have led to the assessment becoming less and less certain because the scientists do not know the actual catch.” He continued by explaining the two methods of assessing the stock where one is fisheries dependent based on reported landings, discards etc and the other is through stock assessment surveys. But as stock size shrink you have the same problem with the surveys as with the fisheries dependent because you do not get a high degree of accuracy. Incorporated in the TAC system is the Precautionary Approach. In practice this means that warnings are expressed a while before the critical downward limit of a stock is reached and it represents a concrete limit as to what can be considered sustainable or non-sustainable fishing. This is a good example of the precautionary approach being put into practical use. But, there are problems concerning the application of the approach and they lie in the nature of it. First of all some say it will only lead to even greater uncertainty into the advices from ICES. And increased uncertainty leads to decreased confidence. The definition of the precautionary approach is vague and as already mentioned critics claim that it sets out to take action based on what we do not know instead of what we do know (Guldberg 2003). Ciaran Kelly said this about the approach: *“The Precautionary Approach is based on the precautionary principle, they redefined the principle to an approach. And the principle said that we should avoid undesirable outcome. They defined an undesirable outcome purely from the point of view of the fish stock and not from the point of view of people living from this. You need to redefine what is an undesirable outcome,”* In my opinion there is a possibility that the approach actually counteracts its purpose since there might be suspicion that the warning of crisis about overfished stocks may be expressed before the actual crisis is a fact and therefore people get the notion of a time lag before they need to take action. Lorcan Ó Cinnéide commented during his interview on the Precautionary Approach: *“The PA says when we don’t have the information---you die. The tools for measuring and managing the Irish Sea exist, high degree*

of knowledge of the Irish Sea. Application of the PA, is we have poor data and we apply the PA. This is not acceptable. It should be we will make every effort to try and make sure that the data is as reliable as possible!” Joe Maddock consented to this and said that what fishermen argue strongly against is that there is not enough information about the stock. *“PA, that drives the fishers crazy.”*

Another theory that influences the setting of the TAC is the ecosystem approach which requires a holistic way of thinking about harvested resources and their ecosystems. Within this principle lies the notion that management should act in conduct with the species that is most threatened. In this particular case when we are dealing with a mixed fishery, the fishery for other species ends when the cod quota is fished in order to avoid bycatch of cod. Ciaran Kelly had strong doubts about including ecosystem approach into the present management system: *“I can see that it makes sense to embrace the fact that these species do not live in isolation. But weather you can micromanage stocks on the basis of TACs and quotas as we have in an ecosystem context...I have great doubts as to weather that is possible. I think you have to move t o a different management paradigm, you have to begin to look at exploiting stocks sin a much different context. For instance we spent a lot of time in the past looking at concepts such as MSY thinking it is achievable. It is not. If environment is changing than MSY is changing, and anyway we cannot even measure the productivity of the stock with enough precision to actually say exactly what happens to the MSY. We can say it when we have passed it but by that time it may be too late”*. Dominic Rihan shared his view on this approach: *“a lot of European regulations are driven by cod. Huge issue. Irish Sea is totally different to the North Sea, yet always the commission has used the cod conservation of the North Sea. It cannot be done like this.”* Lorcan consents to this by saying that: *“The focus on cod being the measure for all fisheries management, the lowest common denominator for management. Might as well do woodoo”* he concluded. It is clear from looking at the TACs of other fished species of the Irish Sea. When the cod quota is taken the fishery for other species ends (WWF Tuesday 21 October 2003: <http://www>). For cod in 2004 for instance, the advice from ICES was for zero catch until SSB had been rebuilt above Blim. They also recommended that only demersal fisheries which can demonstrate that they fish without catch or discards of cod and whiting may be permitted in order to include the characteristics of mixed fisheries. ICES also stated that: *“unless ways can be found to harvest species caught in mixed fisheries within precautionary limits for all those species individually then fishing should not be permitted”* (ICES WGN SDS report 2005 <http://www.ices>). Although the result has not been zero catch, reduced quotas on haddock and whiting is an example of effectuating

the Ecosystem Approach. For the fishermen this may appear as an extremely irrational procedure since they see a lot of for instance haddock but they cannot fish it. For a long time the nephrops quotas were not reduced, in spite of the fact that cod is a bycatch here. But the threat above all for Northern Ireland in particular, is if the nephrops quota is attacked. Cod is valuable for the Northern Irish industry but it makes up less than £1.4m Northern Ireland boats land about 450 tonnes each year. By contrast, the prawn catch is huge and is worth more than £10m each year. Prawn landings total 5,000 tonnes and help sustain many of Northern Ireland's 150 boats (BBC News Friday, 25 October 2002:<http://news.bbc.co.uk/>). The practical obstacles to ecosystem management were addressed in a debate in the House of Commons where this question was posed to the fisheries minister in 2004: *“First, fisheries scientists now estimate that the prawn stock in the Irish Sea is three times the size that they had previously estimated. Secondly, as a result of the DEFRA-sponsored fishery science partnership, observers on local vessels have indicated and proven that the by-catch, particularly of cod, from the nephrops fishery is, in their terms, minimal. In view of those two factors, will the Minister ensure not only that there is no further reduction in the TAC or quotas for nephrops in the Irish Sea, but that there is an increase”* (FISHupdate.com: <http://www.fishupdate.com>)?

The Principle of Relative Stability is as already mentioned, the allocation key used to divide the TACs among the Member States, and it has become the most important principle of the CFP (Morin 2000). It provides a rigid system which defines a static balance in the resource distribution among the Member States. The lack of flexibility may not agree with the free market economy that the “Inner market” of the Union favours with freedom to establish enterprises or freely find employment in any of the Member States. In this way the Principle may be said to represent a paradox. The one flexible element of this distribution system is the so called “quota hopping,” which renders possible the exchange of quotas between states as is stated in Article 5 of Council Regulation (EEC) No 170/83, where the Principle was first introduced.

If we take a closer look at the basis for the Principle it is stated in the preamble of the above mentioned regulation (in addition to EEC Regulation 3760/92 which actually has substituted Regulation (EEC) No 170/83) that one of the aims is to “safeguard the particular needs of regions where local populations are especially dependent on fisheries and related industries” (Court of Justice of the European Communities 1998:<http://www.worldlii.org/eu>). The problem here is that fisheries dependent regions and industries are not properly defined (Morin 2000), something that can result in controversies and unjust allocations. How will for

instance a region be regarded that is dependent on fisheries conducted in another States sea area (Morin 2000)? And what about a region where something occurs that makes it natural to change into a fisheries dependent region?

Although the Principle has served its purpose concerning protecting regions from large fishing fleets from other States, it has had to endure a lot of criticism. According to “EU in Ireland,” an informative web-site on EU matters relevant to Ireland, The Republic for instance, did very badly in relation to the quota allocations back in the 80s because the division was based on catch records and Ireland’s fleet comprised mainly of small boats with poor track record in most of the fisheries. Ministers responsible for fisheries have tried to amend this for many years, but it is difficult because all such changes require majority votes. In additions some States such as France has such a high share that it barely manages to fish it. Dominic Rihan commented that quota sharing is still based on 25 years ago, even though a lot has changed. For the rest of the countries the average fishery of 1973 to 1978 was the basis of allocation while for Ireland the quotas are based on 1975 multiplied by 2. *“They did not even have landing figures and such at this time,”* he said. From the perspective of Joe Maddock however, the Irish fishers of the Irish Sea are self-sufficient, whereas the Northern Irish being part of UK has only fractions of the share out. He said: *“We did very well when the share-outs of tax and quotas because the fishing was very good at the time when quotas were decided”* He is actually saying that Ireland get a large portions of the quotas something that is confusing and contradictory to what is claimed elsewhere. The explanation may lie within the part of the principle of Relative Stability called the Hague Preference which allows the Republic of Ireland to have twice the amount of fish it would nominally have been entitled to at times when stocks are low and this is on behalf of the share of other parties. Alan McCulla brought this system to my attention during his interview when he stated that: *“Then in the Irish sea there is a system called the Hague Preference. It is a mechanism whereby if the quotas fall below a certain threshold, Ireland is more dependent on fish than UK, we cut from UK to Ireland.”* In order to get some idea of what it accounts for in recent times I am referring to a written answer to a question posed by Iris Robinson who represents the Democratic Unionist Party of Northern Ireland to the UK fisheries minister at that time, Elliot Morley, regarding the Hague preference. The answer is from 2 April 2003 and goes as follows: *“Discussions with Ireland are continuing, but it has not to date proved possible to agree swaps which compensate UK fishermen for 2003 quota lost as a result of the operation of Hague Preference”* (TheyWorkForYou.com House of Commons Written answers Wednesday, 2 April 2003: <http://www.theyworkforyou>). The cod fishery in Div. VIIa is dominated by the

UK (NI) pelagic and bottom trawl fleets and by the Irish trawl fleet, which mainly operates in the western Irish Sea. (ICES CM 2002 ACFM 09). In other words the effect of The Hague Preference concerning cod is felt primarily in Northern Ireland. (Northern Ireland Forum for Political Dialogue 1996 (appendix c):<http://www.niforum.>, UK Parliament House of Commons 2002 Column 923 and 924: <http://www.parliament>)

During a debate in the House of Commons of the United Kingdom Parliament the 2nd of December 2004 the warped nature of The Hague preference was addressed. The great disadvantage this embodies for the Northern Irish fishing industry was emphasized and the absurdity that the two fishing industries of the island of Ireland was mentioned as they can see one another fishing across “Carlingford loch,” a water border not even one mile wide. *“To have one regime on one side of it and another on the other is nonsense. The Hague preference greatly militates against Northern Ireland fishermen in that respect.”* Mr. Eddie McGrady of the Social Democratic and Labor Party said. This is a Northern Irish Unionist party and without entering the field of political aspects of UK vs Ireland, I will only draw the attention to the fact that both the nationalists and the unionists of Northern Ireland see this as a problem, and so it may not be ignored as political agenda. In another debate in the House of Commons from Thursday, 16 January 2003, Elliot Morley rejoiced the retention of the Hague preference since it is beneficial to UK (TheyWorkForYou.com House of Commons debates Thursday, 16 January 2003 <http://www.theyworkforyou>) and this mirrors the fact that the UK fishery in the Irish Sea is of minor importance as the amounts in tonnage of the North Sea and other areas concerning cod is so much bigger than that of the Irish Sea. This was a point also made by Barrie Deas during his telephone interview.

It is tempting to indicate that as quotas go down, it is of benefit to Ireland that they go beyond the threshold for invoking the Hague Preference. This could mean that the Cod Recovery Plan is beneficial to the Republic of Ireland. Without drawing any conclusions, I need to mention the threat the ecosystem approach in combination with the Hague Preference renders to the fishing industry of Northern Ireland, because they are so dependent on the nephrops. Because cod is a by-catch of the nephrops fishery, there is a chance that these quotas will be reduced, and what happens if they are reduced to a point where Ireland can invoke on the Hague Preference?

All in all the Hague preference seems to be a mythical and blurry part of the quota allocation in this area, but it was originally created as a means to protect regions in special need of fisheries. The bottom line is that it seems as though an old resolution designed at times when situations were different, still have not been replaced or erased. The UK fisheries

minister Ben Bradshaw in answering questions in the House of Commons in December 2004 said this about the UK application of the Hague Preference:” *We have refrained from invoking Hague Preference in some cases where stocks are seriously depleted, as in these cases the full operation of Hague Preference could transfer the bulk—or in some cases all—of other member states' allocations to the UK*” (UK Parliament House of Commons Column 1220 2004: <http://www.publications.parliament>).

As the official Recovery Plan was implemented in 2004, it brought with it harvest control rules aiming at a 30% increase of the cod stock by the end of each year. Although the industry is frustrated over the low quotas there are people claiming that the quotas are still too high for recovery of the cod stock to happen. Ciaran Kelly pointed out that the 15% limit for variations in the quota, may end up counteracting cod recovery.

Alan McCulla brought to my attention further problems of the industry in terms of quotas:” *and there is another agenda here and this agenda is POLITICAL. In terms of green lobby vs. our level of fisheries politic and it is obvious who will bring in most votes, and then competition between fishermen .Now even deeper mess, happens in Iceland, and now in the UK and northern Ireland. Some groups of the fishing industry are less concerned with setting the quotas at a level where fishers can fish and reflecting what fish is in the sea and more concerned with setting quota where they can earn money leasing the quota. And they do not want the quota to be too high. So from within the industry they are counteracting and stabbing the others in the back. For most fishermen they want to be out fishing, but some will always be different*”. He also explained how the TAC system has reduced quotas since the 70s when quotas were incredibly high and no one ever managed to fish all. Because of this the quotas were reduced the next year, and this has continued and the fishermen feel it is a cunning system. He claimed there are some dinosaurs left in Brussels and mentioned that Northern Ireland has more capacity to fish for herring than the three boats that are allowed to fish now. But because of measures that were said to be temporary 29 years ago, they are not allowed to increase the effort even though there is a lot of herring now. He continued commenting on the cod situation: “*Throughout the 70s the quota was 10,000, and Ireland caught maybe 3000, we caught 4000. Someone in Brussels said that 70000, that is 70%of the TAC. So the fishers don't need the 10,000tons. They cut it down.*” This year for instance the cod quota was cut by 15% and the nephrops quota reduced by more than 10% in the Irish Sea although the nephrops stock is in a good state. Northern Ireland this time gained some benefits on a small increase in their prawn quota however. (BBC News Wednesday, 7 December 2005: <http://news.bbc>)

Dominic Rihan criticises the fact that the quota system makes management for all species according to the cod-system. He thinks it should be driven by fisheries management rather than cod, by trying to control the amount of effort and he doesn't think there will be a lot of people arguing with that. *"You do not need quotas, a fishing boat can only fish for 24 hours of day. Can only catch a certain amount. And this can be established it is not difficult. Best managed fisheries in the world, do not have quotas."* He also commented that: *"Fishermen become totally anti to any regulation recovery end of world cod is disappearing, makes fishermen anti"*

In a WWF article on the European recovery plans, the harvest control rules of the plans is criticised because the TAC appears to only account for the catch and no effort to reduce bycatch and discard has been included. In addition it has a 15% limit to quota change, which is expected to undermine the recovery (Rosenberg and Mogensen 2002, Kelley et al 2006). A third aspect is the high mortality reference level of 0,72 set for cod in the Irish Sea, which is more than the double of the reference level for cod stocks in other parts of the world. According to the authors of this article only the recent history of abundance and recruitment has been used in the calculations of the fishing mortality rate thus giving, ignoring the fact that this was registered during heavy exploitation. If earlier history had been included, one would see that the stock was more productive under lower exploitation rates (Rosenberg and Mogensen 2005). The Harvest Control Rules introduced in 2004 actually resulted in an increase of the cod TAC from 2003 to 2004 (Kelley et al 2006).

I will let the words of Lorcan Ó Cinnéide end this part of the discussion: *"The numbers of cod is so low people tell us. We don't know if we will have reproduction this year. This has been for the last 10 years. If this is right we would be on the minus side. People have announced the doom and gloom for as long as I have been on the planet. The management system is not capable. We have to go on to systems that will give us the best inputs. We need good planning"*

Major points of discussion:

- Reduced quotas may have encouraged underreporting of catch and maybe even self-justifiable underreporting because fishers do not have confidence in the management system or the scientists, and feel that they have not been listened to. Such remnants as the Hague Preference contributes to increase the feeling of being unjustly treated. So, the Hague preference may indirectly be undermining the recovery of cod.

- **In order to manage fisheries with TACs and quotas successfully, assessment must be very good! As soon as assessment is impaired because of low degree of accuracy, the advised TACs are based on too much uncertainty to be reliable.**

- **Introduction of the Ecosystem Approach to the present management may turn out to be very complicated and may require a change of management system**

- **The ecosystem approach represents a constant threat to the fisheries because quotas for other species are decided according to the cod quota. As long as the nephrops quota is not reduced the remaining fishermen in the Irish Sea are doing ok, but the moment it is decided that the nephrops quota be reduced according to the cod quota, there will be a social crisis. This probably creates an unpleasant anticipation that increases the frustration within the industry.**

- **This system gives room for opportunism within the industry because the quotas are so low and people have to pay a lot of money just to lease them.**

- **Biological and ecological advice from scientists end up in political horse-trading and the quest of not losing access to the resources becomes more important than scientific advices.**

The result of these factors may be that TACs and quotas have become obstacles to cod recovery during the Cod Recovery Plan.

4.3. The social aspects of closure and technical measures

In 2000 an area of the Irish Sea where cod used to spawn was closed to fishing from February to the end of April. This was based on the idea that there would be more cod left to spawn undisturbed by closing the area to fishing activity. The nephrops boats were allowed to fish in certain patches within the area, because they claimed they had very little cod bycatch, they did not affect the spawn and they were dependent upon fishing in certain areas when tides were low. Marine protected areas (MPAs) or closed areas have been around for quite

some time but the last three decades there have been a lot of changes in the number of areas, their size and location, and the restrictions imposed. The wide definition that FAO uses for Marine protected area is the following "any area of intertidal or subtidal terrain, together with its overlying waters and associated flora, fauna, historical and cultural features, which has been preserved by legislation or other effective means to protect all or part of the enclosed environment" (Kelleher and Recchia. 1998). The most famous example of fishery closure is the 1994 Grand Banks southeast of Newfoundland where three large areas totaling 17,000 km² were closed to groundfish fishery, a multispecies group including cod and Haddock among many others. (Gell and Roberts. 2003, Wikipedia Marine Protected Areas 2006: <http://en.wikipedia.org>).

An article by Botsford et al (2004) lists three categories upon which sustainability and yield in marine reserves depend: "(1) uncertainty in population response to management (less when employing marine reserves than in conventional management), (2) uncertainty in the slope of the stock-recruitment relationship at low abundance (affects both reserves and conventional fishery management), and (3) uncertainty in the pattern of larval dispersal affects management by reserves much more than conventional fishery management." The article also points to the need of empirical information on both sustainability and yield since most available results are from models, and to the importance of thorough knowledge on what kinds of reserves (i.e., Size and spacing) sustain and show increased yield for which kind of species (i.e., dispersal distances) (Botsford et al 2004) Another important issue addressed is that implementation of closed areas typically will increase yields only in fisheries with excessive effort (Botsford 2005)

In a work by Jaworski et al 2005 the effect of area closure was tested on two different locations. The two different sites showed different results. In one area increase in abundance was generally evident in haddock and small size classes of long rough dab suggesting that indirect fishing mortality (such as discards) had been substantial before the closure. While exploitable size classes of haddock and cod showed an increase in abundance in the other site, small size classes of cod and haddock were adversely affected by the closure. This can be explained by increased predation by the more abundant cod. The goal of preserving 3-5 year old cod was however reached in one of the areas, but no effect was apparent in the other. The reason for this may be that the fishing effort prior to the closure was ten times lower in the latter area. This supports the already mentioned theory that a heavy initial level of exploitation is required in order to detect changes in a fish community based on closed areas. Although area closure is considered to be most efficient for more sedentary species the conclusion of

this investigation was that species with great mobility such as cod and hake, may benefit from area closures, but there will always be transfer of fish between closed and open areas (Jaworski et al 2005)

According to World Wildlife Fund, there seems to be a distinction between fishery closures and protected areas. They define fishery closures as “areas temporarily closed to fishing for one or more species or to specific fishing gears or vessel size employed to help rebuild depleted stocks, reduce gear conflicts, protect vulnerable life stages of exploited species or protect sensitive habitats from damaging gears” (Gell and Roberts 2003). Closed area is a tool for conservation and restoration of fish habitats providing insurance against uncertainties in fisheries science. Although there are several examples of closed areas having a beneficial effect on pressured stocks, (Cote et al 2001, Roberts et al 2001, Fisher and Frank 2004, Stonea et al 2004) the process of creating, deciding on, implementing and enforcing it can be confrontational (Link and Demarest 2003). Stakeholders on the verge of losing their privileges may be in opposition because of lack of trust towards managers and scientists. Unfair allocation of privileges may add to the tension and these problems are particularly predominant when stakeholders are not fully involved in the design and planning of the closed areas (Kelleher and Recchia 1998). In addition as groundfish populations continue to decline in areas open to fishing, pressure to allow access to the closed areas increases, or at least a reevaluation of the design of it. Although they have been in effect for some time, hardly any evidence is available that demonstrates the effectiveness of closed areas at protecting fishery resources (Jaworski et al 2005). If closed areas are to be useful in contributing to sustainability, they need to control catch better than conventional fisheries management (Botsford 2005). According to Kaplan and Botsford (2005) there is a poor understanding of the size and configuration of closed areas best suited to reaching fisheries and conservation goals.

Baskett et al 2005 concluded in their article that although closures may be more robust to uncertainty, traditional management approaches, such as adjustments to harvest rate and maximum size limits, can lead to equivalent or greater long-term biomass yield. Botsford (2005) claims that fishery closures can produce greater catches than conventional management for migratory fish, this will however require knowledge about movement patterns. They are more robust to uncertainties in abundance estimates and effect of fishing regulations, but they depend equally on the level of lifetime reproduction patterns and larval dispersal distances which are highly uncertain. The relationship between habitat type and the ability of fish populations to survive, the growth, feeding etc are factors that fishery managers

and other stakeholders are pushing for information about, and these relationships and the reasons for maintaining area closures remain difficult.

Nevertheless closure of the estimated cod spawning ground of the Irish Sea together with technical measures was implemented and is still effectuated.

”The initial plan was to have all boats out of the horseshoe area,” Joe Maddock recalled during interview when he was describing the events of the initiation of the protective measures, and he continued: *“the prawn fleets from UK and Ireland, the semi-pelagic trawlers from Northern-Ireland, and demersal trawlers from Ireland and beam trawlers became worried when they saw the plan on paper. They started looking for derogations for rights to continue fishing. The prawn fisheries wanted to continue since they were not targeting cod. It was allowed, and this caused people to feel unjustly treated. Experiments carried out with pelagic, semi pelagic and rockhopper trawlers and beam trawlers. To see weather they could fish without catching cod during the season. If they caught more than 15% the experiments failed. The results were 17-18% average for the ones fishing for haddock, beam trawlers and rockhoppers caught over 15%. It proved that all these would catch cod, but it also proved that there were cod in the closed area. The spawning area is from March. The idea of the large box was to protect on the way to the areas and also after the spawning. They spawned mid-march. When the cod spawn, the spawn rises and this a mitigating factor for the prawn boats, they meant they weren’t affecting the cod.”* Joe Maddock also added: *“The semi-pelagic fleet from the north of Ireland, scientists predicted that if this type of fishing vessels continued to operate as it was doing the stock will continue to decline. The people who have this fleet were very worried that they would be held responsible. The southern fleet specialized in trawls with lift. The northern fleet fish more efficiently. Easy to target the fish. People have argued against these types of boats, but also against beam trawlers and gillnetters and other boats. From our own perspective we need to believe that complete closure must be beneficial.”*

Ciaran Kelly said that they closed the area with the notion that this would benefit the stock, but the mechanisms of how this should happen are not very clearly explained. In his opinion if you close an area the effort may just move to other areas, so the instrument of the Recovery Plan should not be focused on just closing the area, it should be focusing on reducing exploitation. By which measures, is up to the managers to decide, he added.

Alan McCulla pointed in his interview to the fact that the Northern Irish fishermen were the ones affected hardest by the closed area: *“because the closures were posed on us as part of the Irish Sea cod recovery plan engineered so the Irish was not affected. Towards the end of 1999 there was a big push to bring on a plan. We took up the issue with our*

administration in Belfast. We argued that the situation was not as black based on own observations,” he said. He went on explaining that they had responded to the proposition of implementing a recovery plan by telling their fishermen to come up with their own measures designed to protect the cod in order to avoid the overall plan. These measures were intended as a package and included amongst other things closed areas and technical measures. “But finally we got to Brussels sitting around the conference table the British team, the Irish team, Belgian etc. The UK team were presented as amateurs no one agreed, no one knew. The Irish had a common goal, they were well organised. They said that yes cod needs protecting, it is not our fault, so don’t punish our vessels. Ireland successfully blamed that we have statistics and the 40 trawls fishing cod in the Irish Sea. A lot of closures and measures based on statistics. Our scientists have a lot of data and the Irish delegation did not have that because they said that they did not catch any cod in the Irish Sea, while our scientists had to say that yes we have statistics and we did catch cod. Consequence of not being united that measures were imposed right on our doorstep!” The result of this according to Alan Mc Culla was that in 2000 more than 40 of the Northern Ireland whitefish trawlers were in trouble because the three months of closure was when most fishing was done. *“We had more than 40, now we have 12 boats catching white fish. Some decommissioned, some switched for prawn -problems. Some fishers retired, some have found other jobs, big problem.”* He also explained how Northern Ireland by some had been blamed for having 40 super efficient trawlers that were responsible for fishing the cod: *“Well these boats were no more than 24 metres long with 4-500 KW engine power and average age was about 30 years. Absolute rubbish!”* he concluded According to Lorcan Ó Cinnéide the process of implementing the closed area was more political than biological. *“We know there was an element of horse trading, because the areas are not where they should be. The idea was that there would be zones where there would be no fishing, zones with selective fishing gear, and then derogations for beamers from certain areas. The effect of the whole thing was lost because of the derogations. Should have closed the whole area. Secondly it wasn’t enforced. No effort to enforce. Quite a high degree of compliance the first year, but only 1.2 arrests since the start, and that sends the wrong message to people”* he concluded. Dominic Rihan said something similar: *“The fishermen see themselves that this has helped, but I think fishers would prefer a total closure, because they will see that oh he goes in there, I have to go in there tomorrow. If the fishery is closed times of the year. Where you have different derogations it is difficult for fishermen to deal with.”*

Many argue that the derogations are the reasons why the recovery plan doesn’t or will not work. According to Alan McCulla another reason is that the cod might migrate from other

areas. He continued by saying: *“this is why we suggested a rolling closure, following the stocks on the way to the spawning area. Like dragging a flock of sheep, we want to make sure that as many sheep get there as possible. As it is now with the cod closure when we get them to the other town, only half of the herd is left and this is when we start protecting them.”*

He also pointed to another possible factor why the cod stock had been so much reduced, which was a large gillnet fishery that had been developed for cod in the Celtic Sea (on the southern border of the Irish Sea). *“Last year the Irish all of a sudden wanted a closure of the gillnetting there in the Celtic Sea. The only reason that was brought on was to get off the days at sea regime. So previously they had not wanted any restrictions on the gillnetters in the Celtic Sea, but suddenly they turned, and only because they knew otherwise days at sea would come along.”* This emphasises the point made by Lorcan Ó Cinnéide that everything comes down to politics and that the scientific aspects are lost in the process. It also shows the lack of trust that prevails in this area concerning fisheries matters, and the fact that everything seems to be driven by political agendas eventually. There are however investigations made on the seasonal migration of cod between the Irish Sea and the Celtic Sea that showed very little interchange of cod between the two areas (The stock Book 2005).

A cod closure was also introduced in the North Sea from February to the end of April 2001 according to Commission Regulation (EC) No 259/2001, where no fishing was to take place with the exception of purse seining and trawling for sandeels and pelagics. There has been a lot of debate as to the positioning of the closed areas, and whether they have been covering enough space to result in the expected reduction in fishing mortality. Another debate has been on the effect of area closure as long as effort is reallocated instead of removed.

According to a recent work, traditional management approaches, such as adjustments to harvest rate and maximum size limits, can lead to equivalent protection against anthropogenic selection (fishing) and equivalent or greater long-term biomass yield than establishing MPAs; however, the protection and yield from establishing no-take MPAs appears more robust to uncertainty (Baskett et al 2005). It seems to me as closed areas are applied as a means to avoid the enormous challenge it would be achieving enough knowledge to trust traditional management to rebuild stocks, when the fact is that a lot of knowledge about the ecosystem is also required in order to be certain that we benefit from closed areas in terms of increased recruitment.

In 1995 the Commission presented a communication on implementing technical measures into the CFP. The reason for this was to create conditions to minimise capture of juvenile fish. This was to be conducted by improving the selectivity of fishing gear. The

communication addresses recovery of the Arctic cod in the Barents Sea which in 1995 showed a total stock biomass at the highest level since 1978 due to technical measures coupled with catch limitations and favourable environmental conditions (Commission COM (95) 669)This means that technical measures was something fishers were familiar with prior to 2000. The application of such measures has been debated since fishers have often been reluctant because many claim they will reduce the catch, or in mixed fisheries to reduce the catch of one species. Alan McCulla commented: “*scientists are saying we want fishermen to adopt a net that is not going to catch any fish, which means we have to catch more prawns to make a living. And what impact will this have on the prawn stock?*”

Dominic Rihan of the BIM recalled this from the initiation of the plan: “*when the first cod recovery was introduced we were approached by the industry in order to find technical solutions to release cod from the gear for the nephrops fishery to keep fishing without catching cod. The area was about one third of the nephrops fishing grounds. Also physically quantify the actual bycatch of cod in the fishery. What our fishermen in nephrops were saying was that the catch was very small for a majority of the year less than 5-6%. Commission questioned that theory, and after the first year of the regulation, they put in something new; Belgium, Ireland and Uk had to do an observer program during the closed time to quantify the by-catch*”. He admits it is true they had 18% cod by-catch checking out the nephrops fishery, but this was based on VERY small catches: “*Catch of 40 kilo and 4 cod. But there is a by-catch there and that’s an issue. But as I said on the trials we got by-catch down to 2-3% of the nephrops catch.*” He continued by stating that unless some benefits are provided for using selective gear or some punishment is handed out for not using them there may be little incentive for fishers to go the extra mile. He also pointed to a highly irrational decision made by the Commission concerning technical measures connected to the “Days at Sea” regime. Although increasing mesh sizes is working for reducing bycatch of cod, silly decisions in the Commission has resulted in a contradictory situation where those fishing with 100mm mesh size or more were not allowed because they were chasing the cod, while those fishing with smaller mesh sizes were not targeting cod and were allowed. This resulted in more large boats going to nephrops fishery, and this added to the already existing bycatch problem of the nephrops fleet. This will however be more thoroughly addressed later.

According to the web-page of the Joint Nature Conservation Committee (JNCC) discarding of small juvenile cod, haddock and other species in the nephrops, roundfish and flatfish fisheries are very high, and the proportion of total catch discarded have increased gradually. Although EU has decided on increasing the mesh size of the roundfish fishery, the

Nephrops fishery still uses 70 and 80 mm meshes. This is in accordance with what Dominic Rihan said and continues his line of thought by commenting on the need for additional measures such as increasing the mesh size of the cod end and square mesh panels, and the introduction of separator grids in the trawl to enable undersized fish to escape. There are however also ongoing debates as to whether technical measures are working according to plan. One investigation conducted by ACFM showed that increased mesh sizes for cod in the North Sea was expected to contribute to only insignificant increase in SSB in the short term, and only a 5% increase in the long term. One comment from the Fisheries Science Services of the Marine Institute in this respect is that as a general rule because of fast growth and large size of the fish, cod will not be significantly impacted by larger cod end mesh sizes. For haddock and whiting larger mesh sizes will have a significant effect (The Stock Book 2005). Looking at the closed areas and technical measures as they have been applied since 2000 in the Irish Sea, there is one obvious characteristic: they get increasingly complex and extensive for each year the first three years of the interim measures. (See Appendix II) This is the result of derogations being pushed and provided for as a result of pressure from the fishermen and the rest of the industry. Fishermen had been consulted about the cod closure but according to Alan McCulla fishers often say that we are making ourselves heard but are people listening to them? *“Consultation exercises, be it about closed areas or whatever they want to introduce, they have to consult, but the feeling is that after the consultation exercise, the government go home and do whatever they want. This is a big problem for the fishermen,”* he concluded. Also for Northern Ireland it is positive as long as the recovery measures have come to stay, that the cod closure is remained because the alternative may be only days at sea, which is worse.

Major points of discussion:

- Closed areas require a lot of knowledge about particular areas and stocks and their ecosystems in order to reveal the usefulness of potential closed areas, and thus do not differ from classical measures in this respect. It may seem as though this is implemented without any concrete knowledge that it will help. At worst it may counteract its purpose of protecting spawning cod, because it may create a false impression of protection leading to reduced responsibility for cod recovery elsewhere.

- The unfair manner with which these measures strike may indirectly result in disillusion among the fishermen and the industry and less confidence in the system. In turn that may lead to poor incentive to follow regulations in general.

-Closed areas are expected to be more robust to uncertainty

- There are no incentives for fishermen to use selective gear beyond those requirements that come under “Days at Sea”

- The Commission has made regulations for technical measures that counteract their own intentions of reducing cod bycatch. The reason is probably the high degree of complexity that these measures are comprised of, and because of this the necessity to look in every direction and to think every possibility before making decisions. The result is, however, a notion that the Commission does not understand the industry, and that they are not able to correct errors spontaneously. This leads to distrust in the ones making the regulations.

- The industry needs to interpret and follow these regulations so the complexity of the measures comprises a problem for them. In my opinion this may lead to irritability and lack of incentive to cooperate.

These factors together may contribute to the plan not meeting its goals

4.4. Introducing input Restriction into the plan – “Days at Sea”

When there is justified suspicion that the management schemes effectuated result in underreporting of catches, restricting the number of days fishing boats may go to sea to fish can be a good solution (BBC News Wednesday, 7 December 2005: <http://news.bbc>). In 2004 following the reform of the CFP and the promise for stricter measures, effort restrictions under the name of “Days at Sea,” were imposed on some of the Irish Sea fishermen. The instructions were necessarily quite complicated because this regime requires definitions of the vessels and gear, in addition to derogations. But for 2004 and 2005 the regulations were quite similar. The days were provided per month and there was an overall reduction in days per month from 2004 to 2005. In 2006 the regulation follows a new, more detailed setup, where

days are provided per year instead of per month. According to Barrie Deas the instructions were so complicated that it took the industry until April to sort them out. He also added that days per year instead of per month provide more freedom for the fishermen because this means they can spread the fishing activity as they please. The overall number of days was reduced further in 2006. Alan McCulla is comparing the Days at Sea regime to pulling the plug out of the plughole in your sink: ever decreasing circle. He explained: *“they start by setting the level very high; fishers said oh I never fished for all those days. But for every year the days at sea is cut lower and lower, and now there are too few days, and in addition to all these measures and still the scientists say that this does not help.”*

According to Dominic Rihan the days at sea makes a mockery of gear selectivity because the Commission wants to stop all fishing with 100mm or greater because they are fishing the cod while the smaller mesh sizes are not used for fishing cod and would be allowed. This has in addition caused the larger boats to move to nephrops fishing because they would get more days to fish, but the situation with cod bycatch did not improve. Fishers will always be looking to maximise days at sea, so in his opinion, this adds to the problem of getting fishers to use selective gear. He continues: *“They have tried to do something, if you have less than 5% of cod in your track record you are not affected by the days at sea. But this has not made the cake. Problem is they haven’t defined the fisheries well enough, they want to define it according to one mesh size, or a single mesh size range but fisheries in the north sea, west of Scotland, Irish sea, off the west of Ireland is much more complex much more elements and more mixed fisheries. You need to define those better and then to find the days at sea. It is nearly best if days at sea should be tailored to the individual vessel. Not an easy thing to do for the commission, but if you do not define the fleet groups better or do something it will not recover cod stocks. Driving fishers into the 80 mm range so everyone will be there will not do the trick .The other thing is the cynical way they drew the area of days at sea. Particularly area 6 along the continental shelf, done to exclude the French!! Very little to do with science. We did some trials on juvenile cod and spawning grounds in 6a, a lot of hauls 4-500 and the by catch was almost zero. But still they are affected. And they would like to fish with higher mesh size, but they will then be affected by days at sea.”*

Alan McCulla explained that the fishermen feel they have been confined into smaller and smaller boxes because of the gear regulations and the fact that that they can no longer fish in areas they used to and cannot target other species. They used to fish herring, cod and prawns but first the herring fishery was removed, so the fleet adapted to two species. *“Then funnily enough there was too much pressure on the cod, and now the three fisheries we had is*

reduced to one. What happens if the scientists say that oh, the pressure is too high on the prawn? Management decisions are forced, and the flexibility is gone. You will fish in one area, with one gear for one species. What is the result going to be?" he said.

Joe Maddock said that many argue that Days at sea is a better alternative than the closed box because if you only have half the year to fish, the pressure will be efficiently reduced and there is no way people can make up the time they lose fishing, particularly for the demersal species. In his opinion this is why the fishermen are so opposed to days at sea because it does the job. Joe thinks that closed boxes will be abandoned to purely days at sea: *"Big fear for fishermen days at sea. The French has no real worry because they have big quotas, but days at sea are a very big threat to them. When fishermen get very opposed to something we are getting closed to what is working,"* he concluded.

As it turned out the Irish industry apparently did not have that much to complain about the first three years of the interim measures, as the closed box linked to the technical measures did not affect them much and the reduction in TAC regarded cod only. But as the measures of 2003 including massive cuts in the TACs of a range of species in addition to the threat of reduced days at sea, the Irish fishermen reacted. The Industry arranged a day of protest on the 13th of December 2002 where all fishermen gave up one day of fishing in order to protest (Media Release 2002: <http://www.beara.info>)

There can be little doubt that days at sea are good measures in order to reduce fishing pressure, but this requires that the number of days is sufficiently reduced. According to Rosenberg and Mogensen (2005), the baseline used for the effort reduction system are the highest years of effort implying that effort will remain near the highest level. Additionally exceptions for steaming time are given, and this was already accounted for in the calculation of the baseline, and becomes excess fishing time. The authors also point to the fact that a 5% bycatch of cod which is the downward limit for extra fishing time, can present a substantial amount for those vessels in a high volume fishery. It also encourages bycatch as long as it remains under 5% (Rosenberg and Mogensen 2005, Kelly et al 2006) Another factor of the effort restriction is that it is much easier to monitor and control than other measures, because it is easy to keep track of the boats when they are at port.

When fishermen in Scotland were asked what kind of fisheries management they would propose to replace TACs, an input and effort control system with a certain number of days to fish was proposed as a more viable alternative according to 94% of those asked (Rossiter and Stead 2002.) They were however reluctant to having to answer such a question.

Major points of discussion:

- Days at Sea is indirectly resulting in a maintenance and maybe even increase in the cod baycatch.

- It seems to me as some fishermen feel that the system of effort reduction is cunning because in their opinion they were introduced to it under false pretences and days seem to be reduced each year. This may give them an excuse to be uncooperative in complying with the measures.

- The before mentioned problem with pushing fishermen towards 80mm range of fishing (nephrops) may be undermining the authority of the Days at Sea regime, since the overall goal of reducing effort results in a reallocation of effort. And there is a good chance this reallocation results in increased bycatch of cod.

- Days at Sea were the last measure of the recovery plan and so it was introduced “on top of everything else.”

- “when the fishermen react the measures are working,” if this is the case this regime should be efficient.

- According to some scientists the degree of reduction in days to fish is not large enough to achieve the goal of rebuilding the cod stock.

The other measures introduced before Days at Sea may have given the industry an argument that they had been suffering all the other reductions and now this in addition and such made it difficult to be as harsh as necessary.

4.5. Compliance, control and surveillance:

According to the above mentioned article (Rossiter and Stead 2002) the overall opinion of the fishermen interviewed was that the enforcement of fisheries regulations throughout the EU was poor, and although they were against the TAC system, they agreed that if properly enforced, the system would have worked (Rossiter and Stead 2002). Shepherd

1999 listed some requirements for managing according to TACs and Quotas, two of which were dealt with under that part. The third precondition concerns enforcement, and this is a problem area for most fisheries, and maybe especially within the EU. There are specific instructions within the frameworks of the Recovery Plan, such as instructions for communication of entry and exit to and from ports and to and from areas, reporting of catch, what to include in the logbook, how transportation of cod shall happen, and many more. These are logical measures of control introduced in order to keep a closer look on the cod situation in this area. But except from the obligation of the member states to provide lists of infringements to the commission, the same problems with enforcing these regulations remain. The Member States are left to control and enforce regimes that have been constructed far away from where the fishery takes place. In my opinion this is bound to reduce the efficiency of the Recovery Plan. As long as Member States are in charge of enforcing regulations of the CFP, there will always be a chance of national opportunism. This chance increases as some Member States may be less serious about enforcement than others.

There are some attempts centrally within the EU to improve this situation resulting in the planning and establishment of a Community Fisheries Control Agency with the primary task of coordinating fisheries control and inspection activities by the Member States. According to Harm Koster the Chief Executive elected mid-June 2006, the agency can be expected to be progressively running as from 2007 (e-mail).

According to a press release the creation of the Agency will not change the fact that the responsibility for control and enforcement of the Common Fisheries Policy lies with the Member States. The Agency is led by an Administrative Board, made up of one representative per Member State and six representatives of the Commission. The Agency will be depending on input from Advisory Boards made up of stakeholders nominated by the Regional Advisory Councils (RAC's), in order to ensure transparency and contact with stakeholders

Major points of discussion:

- In a Recovery Plan context control and enforcement are very important factors which need to be working optimally. There are indications that control, surveillance and enforcement of the Recovery Plan is not conducted to such a degree required in order to get the wanted results.

- The new Fisheries Control Agency is to be situated in Spain, and with the Spanish history of opportunism, this may lead to less confidence in the Agency.

It is common knowledge that making laws and regulations without enforcing them is not very efficient. In a Recovery Context control and enforcement need to be even better than under normal circumstances as long as the regulations come from centrally in the CFP. ‘

4.6. Decommissioning tie -ups and some social aspects

Decommissioning has been a controversial part of the CFP for many years. It was supposed to be a means for balancing the fishing effort within the union to the size of the resource, but the systems were not capable of performing this task. One of the reasons is that rather than changing the long-term economic incentive generating overcapacity it must be regarded as a short term firefight solution. Decommissioning schemes can actually counteract permanent reduction in fleets because it reduces the risk of investing in a fishing vessel since it opens for the possibility to obtain subsidy (Lynge Jensen 2002)

Alan Mc Culla presented some of the social problems they had experienced in the wake of the Recovery Plan: *“Some decommissioned, some switched for prawn, and that is a problem. Some fishers retired, some have found other jobs. Cod closure has been a massive influence in undermining the profitability of the industry. Many have left the industry and the profitability is low, fleet is very dependant on emigrants from east of Europe. The fishers haven’t left the area, not a big place easy to commute. They have left the industry. A year ago we estimated that almost 30% of the crew members originated from Eastern Europe. If not for emigrant labour many of the trawlers would be tied up.”* He also said that they had suggested more decommissioning, but that during the last six years there had only been two two schemes; one in 2001-2 and one in 2003-4. he continued: *“According to EU and the FIGF (Financial Instrument for Fisheries Guidance) there should be plenty of money, and as far as I am concerned, they said they were going to allocate 1,5 million pounds new money. Two years later this new money has not come. Yes you are entitled to tie-up but it is your own government that is refusing.”* He also explained that in 2001 calls went on for a tie up scheme compensation which was ignored. He explained in more detail: *“(Some said we were lucky having our own government in Belfast) In 2001 we had a debate in parliament, everyone of the politicians spoke in favour of compensation, and everyone voted in favour of tie up. But after the debate was over minister went back to office and decided not to give tie up in 2001, 2002 or 2003. In 2004 20 fishermen were rewarded tie up. In 2005 criteria were changed and*

only 14 fishermen got it. In 2006 no tie up scheme. Still a piece of legislation from EU says that the government is allowed to pay, but government says no money is there. Big debate even as we speak.” Joe Maddock was also in favour of paying the fishermen to stay out of the fishery. He was also controversial enough to argued for taking out the efficient vessels instead of the inefficient since they are the biggest threat to the stock

Ciaran Kelly expressed his view of the social aspects of the Recovery Plan in this way: *“I fully agree that management measures that tend to target only particular segments of the industry are unfair, of course they are! And if there are no compensation mechanisms in place then I think the one sector of the fishing has been penalised without compensation. I think that is a lot of the conflict which is ongoing at the moment with the Recovery Plan, people don’t think it is a level playing field.”*

Major points of discussion:

- It seems to me as if scientists and the CFP agree that there is a need for drastic, permanent reduction in fishing effort in general, and this is what they are trying to achieve. At the same time the industry is looking for short time solutions just to get passed this unfavourable low stock size, and be ready when the stock is rebuilt. In such this may represent a ratchet effect. It does appear as though the two parties are speaking different languages when it comes to the future of the fleet.**

- When there are signals from the CFP that there is money available to get fishermen through this period of crisis, the industry feels conned when this money does not appear. This leads to distrust and loss of incentive to follow regulations constructed by the same agency.**

- Time and money is spent in order to hear what the stakeholders have to say, but it appears to me as management and bureaucrats know that they have to act contrary to the opinion of the industry in this particular case. So, arrangements to hear what the fishermen have to say may eventually become patronising because the industry may find that this is done because it is according to expectations and not to get their opinion.**

There seems to be a lack of coordination or interaction between those making the regulations and implementing them and the industry and this can be seen as two horses

pulling the cart in different directions, which means that you will not make it to the destination.

4.7. The Northern Ireland proposition

Accurate reporting of bycatch and discards through observer programs are urgently needed to design a workable recovery plan. These data need to be made available in real time for monitoring the fishery as well as for stock assessment (Rosenberg and Mogensen 2002).

All the people I interviewed (except for Ciaran Kelly where I brought it on before he had a chance to) including Barrie Deas talked about this initiative of Alan McCulla and the Anglo-North Irish Fish Producers Organisation to a proposition that has been presented through the Irish Sea Working Group of the North-Western Waters Regional Advisory Council. This proposition is basically saying that in order to get around the vicious circle of low quotas leading to underreporting and discarding because the industry does not trust science, we need to do something new. The suggestion implies a discarding pilot scheme where during an initial period of two years Irish Sea fisheries would be invited to participate. The participation would include landing all commercial species caught under scientific monitoring. During the test period those participating would be under derogation from TACs and quotas and respond only to days at sea, and the goal would be to generate more accurate data on the stocks in the Irish Sea. This would indicate a strong cooperation between industry and scientists and this could prove fruitful in both directions (for the entire proposition see appendix _)

Joe Maddock was the first person to mention this proposition and he described it like this: *“At first meeting of the Irish Sea sub-group. Alan came in and he would be arguing along different lines. Scientists saying they have lack of data. They need to get a clearer picture. Scientists say that if they don’t know figures, they will estimate ex bycatch. Alan is advocating that the vessels to fish without hindrance with an observer on board recording everything that is caught giving better input data. It has some merits.”* Joe was however sceptical that this is a new mechanism to secure continued fishing.

Domnic Rihan first commented on an incident in the UK where Cefas (Centre for Environment, Fisheries & Aquaculture Science) got fishermen to register the catch, also called fishermen’s surveys, but the fishermen were arrested as they handed it over to Cefas This causes a credibility problem, and in his opinion as long as fishermen are being fined or imprisoned for having caught too many fish they will not be willing to show their records

easily. He continued: *“And they would have the best records if we could have a collection. Alan McCulla has the idea of trial fishery for two years and fishers will hand over all data, because they will be managed by days at sea. They fish as much as they want for the days. And in this way test if you throw this over to the fishers themselves weather you will get clearer view of the stock. Fishermen have several regulations that they need to keep track of. You would need some level of scientific monitoring to get credibility. But it is.... I do not think the commission will burn, but it is not a bad idea.”* Patricia Cominskey commented that the proposition has got positive feedback in first instance in the form of an initial conversation and the Commission said they are interested in hearing more.

According to Lórcan Ó Cinnéide the recovery measures are not working because the scientific advice remains the same: 0 fishing! According to him it is obvious that something different is called for: *“Now, have you seen the northern Ireland proposal? Essentially the theory behind it is that scientists are continually complaining about the data lack. We have a different understanding from them on the reality. The quota applies more to the N-Ireland because they fish cod, but they have come up with proposal to put limit on effort only, without any quota. And then you will get a true picture of the landings, fishing mortality and etc. So we can come up with a truer picture of what is going on. RAC has been positive to this, but we need to look at it more closely”*

Ciaran Kellys comment on the proposition was: *“I do not consider weather this is possible or not, that is a managers responsibility. Our best scientific advice at this moment is that the stock is at a very low level suffering from recruitment impairment. Opening the fishery in any form will be unadvisable purely from the point of view of the stock situation. We are not economists, sociologists we don’t know any other skills than looking at the biological parameters.”* He also said that it was up to management to decide these things. But he emphasised that opening a fishery if the stock is low would be unadvisable because you could drive that stock to extinction: He also mentioned the responsibility that has been place upon managers by the Code of Conduct to bring all stocks to Bpa before 2012. He concluded: *“the scientific advice will always be the best advice available. It is certainly. And it will say we cannot estimate with certainty. But we can say that the size of the stock is much lower than it was.”* This is principally what Rosenberg and Mogensen also claimed in their WWF article from 2002, that when the stock is so low, any further increase in fishing may bring the stock further towards commercial extinction.

When I came to Kilkeel to interview Alan McCulla I was given a more thorough explanation of the background for the proposition: *“So, we debated the whole need for cod*

recovery, disagreed the cod stock crisis. We needed to go and get a second opinion. We found Jon Kristjansson¹ who had done some things in Scotland. We met with him and discussed with him. We laughed at first. But now maybe what Jon said was not as far out. So we brought him here and he made his own observations interviewed fishers met scientists and managers in Belfast.” The culmination of this was a conference or workshop arranged by ANEFPO and held in Kilkeel where Jon Kristjansson was joined by Dr. Rick Officer from Ireland's Marine Institute, Sigurjon Thordarson, a Member of the Icelandic Parliament and Mr. Jorgen Niclasen, a Member of the Faeroese Parliament and the Faeroe's former Fisheries Minister (Report on the ANIFPO Workshop 2003) “In Marh 2003 the scientific observers came down to Kilkeel and they were met by 50 fishers protesting as a result of everything. Because of this the scientists were scared off coming.” Alan McCualla continued, “But we got another scientist from the Irish republic, Australian Rick Officer. They debated and neither beat one another. But it was increasingly obvious that the science behind the cod recovery plan and driving issues like quota is flawed and has many errors. This encouraged us to continue the fight. This continues now. We are encouraging fishermen to collect their own data. I was bored and sat up and read through all of ICES advice one night. How many times the ICES used lines words and phrases underlining the uncertainties was 77! The science is broke everyone admits it is broke. What can we do about it. We have come up with an idea. It has been approved in London, and it has been approved as a concept. To let the fleet go to sea and fish as much and land and declare all they get, and we can provide the science with all. After we can sit down with the scientists, and find the number of all the species, and see what the impact climate and fishing is causing. Afterwards we can adjust the situation and know it is based on accurate data, instead of the fantasy we are living now.”

Ciaran Kelly defended the role of the scientists saying: “I don't know what people think science stands for, weather it is some kind of different moral than the industry would have about maintaining stocks at certain levels. I see science as having the function as purely giving advice to the stakeholders including the government and the industry about what it is we can measure and say about the state of the stocks. What we are asked to in terms of the P.A. is to frame that advice in relation to levels of risks which are associated with purely the events of something bad happening from a biological perspective, not from an economic or social perspective. So the element of scientific advice should and could only be necessarily one component of the considerations that as to how you should manage a fishery. I don't think that fisheries should only be managed according to the scientific advice. I think always

a requirement for socio-economic considerations and the considerations of the society in large, so also non-governmental organisations and such.”

Alan McCulla expressed the interdependence between the scientists and the industry in this way: *We need the science, I want to work with the scientists, I want to work with ICES. I need science, science need fishermen. They don't trust us, and we trust them even less. This organisation is trying very hard to develop the trust. If after three years or whatever, we do come to an agreement that there are too many boats, If that's the case, fine lets decommission. But we need to get to a level where we can be confident in science that we can agree that this is the situation in the Irish Sea....The marine institute scientist haven't responded to the proposition. Our own scientist in Belfast and Uk agree with this.”*

Major points of discussion:

- It appears as though the industry sees science as the cause of their problems because of the scientific recommendations.**
- The industry seems to have lost confidence in science, and this lack of confidence can be used as an argument for not complying with the rules.**
- The fisheries scientists may agree that science is uncertain but say that this is the information we have**
- Scientists say that their advice should only be one part upon what management should be based. Then why is the industry so afraid of the science?**
- If opening the fishery to a test period could be detrimental to the stock, not being able to get past the large amount of unreported catch that scientists are claiming may be huge, may be equally detrimental. Underreporting will naturally not happen during such a test period as described above.**
- The Irish Sea may be a very suitable area for doing such a discarding pilot scheme since it is surveyable because of its geographical and natural configuration, the industry is restricted and there is already a lot of information about the Sea.**

4.8. General points

The actual cod recovery plan was implemented in 2004, thus it has lasted for almost 2 years. The estimated time frame for recovery of the stock is 5-10 years. But many people are claiming that the plan, in fact all of those I spoke to said this either directly or indirectly, is not working. According to the article written by Kelly, the plan doesn't work largely because of the derogations given. This was also partly the opinion of Dominic Rihan and Lorcan Ó

Cinneide. According to Ciaran Kelly the big problem is that no one knows how to evaluate the plan. He explained that in order to implement a plan to improve the cod stock you need objectives and you need a suite of actions that you can carry out and you need to be able to measure the actions. He uses the goal of the Recovery Plan to have the stock level increased by 30 % by the end of each year as an example: *“you cannot possibly measure the result. You need to set objectives that you can measure. Another fallacy people believe is that all you need is a fancy model. They are good ways of explaining complicated interactions and to make a model clear you have to simplify and this is done by making assumptions and the more assumptions the more uncertainty. Or you can make them more and more complex in order to get rid of the uncertainty.”*

Ciaran Kelly also mentioned that the communication of risk is not well between what scientists do and what the managers decisions are: *“So, in other words we made a point of this: if you have an objective for instance, simplistic models of the Irish Sea situation. We looked at the risk that different management decisions would end in the stock being below the Bpa or not achieving above it. The Recovery Plan tries to limit the fluctuation with 15% each year. You are such actually increasing the risk that the stock will not recover. You are maintaining a high level of fishing. The managers need to make an assessment of the risk. Science would say that under a strategy for recovery of cod you can introduce as many measures as possible, but when you allow fishing to take place you increase the risk.”* He said this in the wake of commenting on the article he wrote together with his co-workers where they indicate that the derogations may have constituted a large part of the reason why the cod recovery plan has not resulted in a large increase in cod, or in other words have not reached its goals.

In 2003 as the stock did not show signs of improvement, an official plan was decided on. If the interim measures had been working, there would be no need for a Cod Recovery Plan, so the question is if it is right to include the three years of interim measures into the equation, since the state of the stock was still poor enough for the Commission to decide on the Plan.

Chapter 5. Analysis

Even though the emphasis of this thesis will not be on the theoretical analysis, rather on observing and retelling what has actually happened, I will make an effort to look at the cod recovery process with reference to the theory that was dealt with in chapter 2.

5.1. Summary: the cod recovery process- an area of conflict

The state of the cod stock in the Irish Sea was towards the end of the 90's so bad that in 2000 the European Commission established measures to aid recovery. The stock was said to be below the safe limit B_{lim} which was 6000 tonnes. The first consequence was a severe reduction of the cod TAC. Then a fishery closure was introduced of an area stretching across the Irish Sea in order to let as many cod as possible spawn. The period of closure was between 14th of February (15th in 2001) to 30th of April. The area was modified and made smaller only reaching from the east coast of Northern Ireland/Ireland towards the Isle of Man (for map see appendix X) in 2001. The Northern Irish fishermen felt that they were the ones hit hardest by this closure since it was placed "right outside their doorstep" in the area where most fishing was done, and in the period when most fishing was done. Derogations were provided for fishing for nephrops (Norway lobster) in certain areas of the closed box. This was because of the severe impact the closures would otherwise have on the industry and because this fishery was considered more harmless to the cod stock.

In order to check the bycatch of cod, BIM carried out a major programme in the Irish Sea in 2000 and designed a new separator panel to allow escapement of cod from nephrops trawls (Rihan and McDonnell 2003). So, the closure was followed up by technical measures giving instructions of what kind of gear and devices that was and was not allowed applied in the fishery. The background was that fishing for shrimp, nephrops and flatfish should be allowed to take place, representing as little harm to the cod as possible. Because of pressure from the industry each consecutive year from 2000 until 2003, the closure included more derogation with more technical instructions.

So far the measures applied had been temporary ones, but there were signals that the cod stock was not improving. In 2003 in the wake of the reform of the CFP, and as the stock was still estimated to under B_{lim} , the Commission decided it was time to cut to the chase and implement a recovery plan involving the application of a system of more and stricter measures. In February 2004, the European Union introduced regulatory measures aiming at an

increase in the quantity of mature fish to more than 10,000t over the next five to ten years. These measures included harvest control rules for the setting of total allowable catch (TAC), fishing effort limitation (number of days at sea and gear restrictions) and restrictions on landing ports, stowage and transport of cod. The closed area was kept and the technical measures were applied both to the effort restriction scheme and the closed area. The yearly objective of the harvest control rule was to increase the stock by 30% towards the end of each year compared to the beginning.

The interim measures were tailored for the Irish Sea Cod Stock, but the official plan involved measures that were to be implemented in all the CFP areas where cod recovery was called for. So, it involved one recipe for all the areas where numbers were modified to fit the particular stocks.

Prior to the cod recovery plan EU had held out expectations for economic compensation for those who were affected hardest. This money was allocated to the Member States but as a total package, and not earmarked for this purpose. It has been up to the Member States themselves to distribute this money. According to people within the industry they have seen little of this compensation, aside from a couple of decommissioning and tie-up schemes.

According to science unreported catch of cod in this area is extensive and assumed to be affecting the recovery of the cod. This has probably increased since the recovery program started because it is often a result of reduced quotas. Control of the fisheries is up to Member States to conduct, and although EU calls the situation a crisis, Member States may not take the necessary steps.

The result of the cod crisis on the industry has been some vessels scrapped some switching to take advantage of the nephrops derogations and displacement to other areas further away (The Stock Book 2005). In addition the future prospects are putting a constraint on the industry making it hard to be a fisherman.

The cod recovery period (2000 to 2006) has caused a lot of anger, frustration and confrontation from within the industry. In 2003 Northern Irish fishermen physically denied scientists access to the catch because of the frustration of the continuously decreasing TACs. As long as the crisis measures applied included closed areas, technical measures and reduced TACs the Irish Industry was not strongly affected. But in 2004 as the effort restrictions came along including all who fished in the Irish Sea, Irish fishing industry arranged a day of action as a protest against "Days at Sea."

There have been arranged hearings where fishermen and the industry have been able to present their points of view, but the impression is that they have been heard but not listened to.

5.2. The Irish Sea cod crisis- a wicked problem?

One criticism of managers has been that they leave it up to science to decide on controversial matters. Scientists base their analysis on scientific procedures in order to solve what can be referred to as tame problems. The solutions to such problems will be suitable to deal with the biological problem in isolation, but cannot represent the resolution that is required to wicked problems. This is bound to result in wicked conflicts because the resolution will fail to deal with the drivers of the problem. It is however not as straight forward as this, because There is one critique of the application of this theory in this context since fisheries science has been very little known for having straight-forward problems. After the introduction of the Ecosystem approach, this situation is deteriorated because of the lack of competence that is a basis for actually managing according to this approach. In such the theory may not be a perfect fit, but it provides an interdisciplinary platform from which to address the conflict.

In order to refresh the theory of chapter 2 a short summary should be in place. One can distinguish between two types of problems or conflicts according to Rittel and Webber (1973): tame and wicked. The first describes problems that are dealt with in the natural sciences, where you have a right or wrong answer and the problem solver will know when the solution is found. Evaluation of the solution is straightforward. The second characterises problems for which there is no definite formulation, there is no true or false answer only good or bad solutions and in the formulation of the solution lays the formulation of the problem. The nature and understanding of the problem will differ depending on the position of the problem solver. There are no criteria to tell when a solution has been reached and evaluation of the solution is very problematic because of the consequences that the implementation of the solution may aggregate. Each wicked problem is unique so there is no learning from trial-and-error, and there is a lack of predefined potential set of solutions which makes it important not to know too early what solution to apply. Problems can be described as discrepancy between what is and what should have been, and in removing one cause for the discrepancy, it may have been a symptom for a higher-level problem that will appear. There will always be many

stakeholders involved in wicked problems each with a subjective world-view deciding how to explain the problem, and consecutively the nature of the resolution.

The cod crisis in the Irish Sea may be described as a tame problem as long as it is on the table of the scientists because it will only involve the one dimension of it namely that there is too few cod in the Irish Sea. The scientist can then go through different scenarios and find a solution that will fix the problem purely from a biological point of view. This is the privilege of the scientist and he can now present the problem along with his proposed solution to the public. The argument here is that in society the Irish Sea cod crisis is a wicked problem because of many factors that will be dealt with in the following text. First: there is no definite formulation of the problem. Let us try one formulation: too heavy fishing on the cod has resulted in depletion of the stock, this is probably true, but only on small part of it all Second of all the solution lies in the formulation of the problem and is to reduce fishing, secondly this is only one presentation of the problem, and the presentation of the problem will change depending on the presenter. If you ask a fisherman he might say that there is no crisis and the solution is business as usual. If you ask a politician he might say that the cod crisis is about people loosing their jobs, and the solution may be find other employment and so on. In order to illustrate this in this particular context, I will present to you the proposed solutions and thus also the personal view of the problem of my informants:

Joe Maddock seemed to think that the industry would regulate itself according to the resource crisis. *“The amazing thing is that fishermen keep fishing, those who cannot deal get out of the industry. People fish as long as it is economically defyable, and no-one can meddle with this reality”*

Intervention is the problem

Dominic Rihan said that we need to go from TACs and Quota system to purely effort regulated management supplied by selective gear: *“TAC and quota system this has not worked, effort control is much simpler also for inspector control. I think they should be looking at effort control with technical conservation, gear has developed a lot, it is not easy but achievable to adapt gear to target fish and species much better.”*

The TAC and Quota system is the problem

Lorcan O cinneidre said that we need to change the system and get good planning and get rid of unreported catches. *“It is obvious to us that we need something different.” “We do not have confidence that pulling out livelihoods based on what we know today.”*

The management system is the problem

Alan McCulla is trying to debate science because he doesn't believe there is a crisis. His solution would be to get science and fishermen together in the quest of scientific results that can be clear to both fishermen and scientists: *“That science is based on data provided by the fishermen and now the fishers are not allowed to fish. So how can we provide the scientists with data?”* If after three years or whatever, we do come to an agreement that there are too many boats, if that's the case then fine let's decommission!”

Science is the problem

Ciaran Kelly thinks the solution to the managerial problems is higher degree of transparency into the work of the scientists. A solution to the scientific challenge would be to move towards models that can grasp uncertainty and give ideas to the trends of the stocks instead of one concrete answer to the size of the stock: *“I think the first thing we need it trust, and trust comes from transparency. I am not a fisherman but I can see that if I was looking at the system by which the stocks are assessed there are a lot of stuff that is not transparent to me. I am not present, I am not invited. The first interaction a fisherman gets is the quota suggestions in December. Oh my god, that's what happens this year, and that may be a shock. That process takes an entire year and a lot of meetings. There should be a lot more openness”* *“One side of science want to get the models as complicated as possible in order to get rid of errors. We are saying lets forget about it, look instead at the major factors here. This means we can no longer manage according to TAC and MSY.”*

The scientific models and the non-transparent nature of science is the problem (Kelly and Codling 2006)

There is no definite formulation of the overall problem here and therefore there are no true or false answers only possible solutions, and the understanding and nature of the problem differs from person to person. This problem includes many wreathed factors such as values of the actors involved, practical obstacles, socio-economic concerns, financial concerns, market concerns and so on and so forth. Naturally any effort to solve it will have effect in many layers.

In order to see weather it is possible to evaluate a solution to this problem, let us try this one: we implement a system that is going to reduce fishing on the depleted stock. The possible evaluations might be: *“... I think it is a good solution because if this happens, there*

will be some fishers that will be unemployed, and the industry will be struggling for a while, but we might get a permanent downscaling of the fishing fleet and this is good, and there will be some protesting but as people can see that this is working, everyone will be happy eventually....” The problem is that the possible effects of this solution are limitless. Trial and error is not an option because as soon as you try something out, there will already be many consequences that cannot be undone. We cannot either go to look for similar situations because there will always be some differences that can blow the whole solution.

In removing one cause of discrepancy of a wicked problem it may have been a symptom for a higher-level problem that will appear. In order to shed light on how one solution can result in revelation of unexpected, higher-level problems, I will present another example from the field work: One part of the solution to the overall cod crisis was to close an area to fishing for the cod spawning season. This area was positioned where mostly Northern Irish boats fished. This uncovered a new problem because the northern Irish said this was unfair. As a solution to this problem, derogations were given to the nephrops fishers. But the real nature of the problem started to unravel as complaints did not stop, and the next was that the Northern Irish protested against the low quota and the technical measures and so on. The higher level problem was that the measures hit hardest in a region that already had a history of being unjustly affected, it cut to the quick. In this case the quick is represented by Northern Ireland. Because they constitute such a small fraction of the UK fishing fleet there may be a tendency of dealing with other interests before the ones of Northern Ireland. In addition an old resolution provides for increased allocation of quota to Ireland when stocks are low, on the expense of Northern Ireland. This resolution is also beneficial to UK, but in other areas that in the Irish Sea and both Ireland and UK will fight in order to keep it. The consequence of this may have been increased frustration for the Northern Irish fishermen, leading to an already present hostility to measures. This may play an overriding part in fishermen denying scientists access to the catch, and increased public effort to fight the recovery plan. The indirect result may have been reduced incentive to follow regulations resulting in for instance increase in unreported catch. In general I guess it is appropriate to say that there is one problem present here that is on a very high level, and that is the CFP, or rather the malfunctions of it. One example is the control of fisheries measures that is left to the Member States and therefore highly uncertain and arbitrary.

The cod crisis is a resource-based political conflict and based on the above analysis we can call it a wicked problem or conflict. In such a conflict it is important to reveal the drivers in order to find workable resolutions.

5.3. The drivers of the Irish Sea “cod recovery conflict”

According to Martin Nie there are several factors that play a part in making natural resource-based conflicts very controversial. Looking at the implementation of the cod recovery plan as such a conflict, it will be analysed here with reference to Nies drivers of conflict that were addressed in the theory chapter.

Scarcity: If there were plenty of cod in the Irish Sea there would of course not be a recovery program and thus also not a recovery conflict. So, the whole basis for this conflict is scarcity, and scarcity to a point where scientists and conservationists fear that the evolution process is at stake. The more scarce the more valuable the resource is, and the more considerations and voices need to be taken into consideration. There are too many boats fishing too few cod in the Irish Sea and this can represent an over-appropriation, and the fact that the stock is assumed to be so small proposes large challenges to finding a resolution. The derogations that were given may be referred to as compromises and can be seen as a result of collaborative management since fishers have pushed for these derogations and which been granted to them. This may have lead to conservationist feeling that there have been too many compromises, and soon there might not be any cod to compromise. Too many people want too much of this resource and this proposes a major challenge to finding a resolution

Policy surrogate: The Irish Sea Cod Recovery Plan has been used as a political surrogate for discussing the Common Fisheries Policy and the regionalisation of fisheries management in general. In this way this problem has become a multidimensional conflict involving many different interests.

The sacred and spiritual, and importance of place: I think that the fishermen in Ireland and Northern Ireland are bound by old and strong traditions to the areas of fisheries, as is the case many other places. This is one of the factors that make resource conflicts so intense because they often involve change of activity or change of traditional place of living, making the effects very painful.

Policy design: There is at least one “Lord of yesterday” present in this conflict and it is the Hague Preference. It is a resolution that had its merits a long time ago when times were different, but now has lost its meaning. Still it persists and contributes to increase the feeling of fraudulent preference which in turn leads to less confidence in the management system. Such lack of trust may lead to poor incentives to follow rules and eventually may undermine the effect of the recovery plan.

Policy frames: According to Nie policy frames can be seen as a type of story that is told by various political actors. This case study is a testimony of this with regard to the cod recovery process where the emphasis and points of views altered slightly from one informant to another. In addition there were underlying stories that I could reveal only after thorough analysis and additional reading of information. There is one particular frame problem that I would like to point to however, and that concerns the future prospects of the fishing fleet. There seems to be two opposing frames as to what is one of the main solutions to the resource scarcity depending on if you talk to the industry or relate to the view of the CFP and ICES and many others. The former seems to be awaiting better times, trying to stick it out through the bad times, and then when the cod returns they are ready to get back into business. This can be referred to as a ratchet effect. The latter parties are working towards a permanent reduction in the fishing fleet, not only in the Irish Sea but almost everywhere. It is important to develop common interpretations of a conflict, why it occurs, the motivation for the parties involved and how it should be settled (Nie). This may be a reason why the industry doesn't think much of the consultation exercises arranged for the fishers to have a voice, because afterwards the government go home and do whatever they want. This discrepancy in interpretation can make such activities a waste of time and money.

Scientific disagreement and uncertainty: The scientific background for the Cod Recovery plan has been questioned because of the high degree of uncertainty that prevail in the input data of the assessments. The Northern Irish fishing industry has called for a second opinion on the so called cod crisis, because they do not believe there is a fisheries induced crisis. Nie is warning against turning conflicts into science wars because value-and interest based political conflicts may be framed as scientific ones. The scientific language is complicated and the scientific uncertainty makes matters worse because it makes every decision into a risky business. Science should have their place in decision making but we should not leave it up to science to resolve problems. It is my opinion that the role of science in decision making has changed in many areas of fisheries management. This may be due to the harsh and unpopular decision that is required from managers, and it is easier to blame it on science but therefore also putting science forth as something that can be debated.

Another aspect that should be mentioned concerning science is that very often the focus is on basic science and this is because of the scientific system where prestige and money lies therein. This provides few incentives for scientists to engage in applied research projects.

Electoral politics and wedge issues: In this particular context it is difficult for me to point to specific incidents where the cod recovery program has been used as political wedge in one direction or the other although I am certain it has. Alan McCualla for instance, said in his interview: *“It is more attractive for the politicians to say well stop the fishermen. Green movements arguing with the politicians, the most votes will come from the once sympathetic to the green companies, and not from the fishing community.”*

Political and interest group strategy: If you search the net for WWF cod recovery you will find an endless number of hits. Many of these deal with the necessity of making tough decisions in order to save the cod stock. Although it is admirable that someone is speaking up for threatened species, one should always be careful not to include the money aspect into this industry. There have been tendencies in the past of green movements leaning a little too far towards where the money lies, thus offering a biased, but often apparently well-documented, presentation of reality. The same accounts for media. On 3rd of November there was an article in one of the biggest Newspapers in Norway “Dagbladet” with the title: *“In 50 years the sea will be empty”* The article is, obviously, about the poor condition that prevails for the fish in the world seas, and that the industry needs to take more action towards reducing the fleets. One of the arguments put forth in the article is that in 200 years, 40% of the species have disappeared from the sea. This sounds horrific and it may be true, but it is taken out of context and if we could see the context it might not sound so scary. I am not saying that the newspaper article is not right, just that it is very easy to take things out of context and out of proportion and present the worst parts of the worst parts. This is an example of the media constructing a frame that excludes alternatives and makes it unfit for public discourse. Media involvement in wicked conflicts has a tendency to increase biased impressions and increased confusion. And of course in the media it is about selling, because this is the way to get money.

Constitutional, statutory and administrative language: This point includes introducing vague and changing management philosophies differing in interpretation depending on who interprets them. The ecosystem approach and the Precautionary approach play major parts in the recovery programs and they can both be applied to the above definition. But there are concrete results of both of these approaches set into the management. Ecosystem approach is the background for adjusting fisheries for all species according to the cod. Most cod in the Irish Sea is taken in mixed fisheries so this is a logic decision as long as one cannot fish on isolated species. This is one example of the ecosystem being usable. The precautionary approach also plays a concrete role here, because the reference points upon which the recovery program has been built are the precautionary reference points. So both approaches

put into practice. But the precautionary approach is said to force decisions based upon what we don't know instead of what we do know, it also may create a sense of time lag from crisis is called for until the real crisis occurs, and create an even larger degree of uncertainty in the scientific advices. In other words it contributes to increase confusion and decrease confidence in management. Another aspect of the approach as Ciaran Kelly said is that it sets out to avoid undesirable outcome, but the undesirable outcome is defined from the point of view of the fish and not from the people living from it.

The ecosystem approach is “a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way.” This is as vague as it can get, but there are many recipes on management according to the ecosystem approach. This is actually the problem, that its applicability is so vague that it can be used almost anywhere, also as a cover-up for continuing usual practice. Another problem is that the approach requires revealing the entire ecological aspect of exploited species, its prey, its predator, responses to different conditions, migration patterns, regeneration patterns, feeding patterns etc, in other words an impossible task. But we should at least strive towards this knowledge. Ciaran Kelly also commented on the ecosystem approach saying that this will require micromanaging of stocks and this is difficult to obtain under the present management approaches. In order to have the precondition for ecosystem approach we need to move to a different management paradigm.

The vague nature of the ecosystem approach may lead to abuse, or at least suspicion of abuse (Corkeron 2006).

Distrust: In every level of the cod recovery process I could reveal some sort of distrust, and as Nie puts forth; distrust is a driver of conflict because it undermines constructive debate, and problem solving. In this particular case the Northern Irish distrusted the Irish incentives to support the recovery plan, and they felt that Ireland was able to influence the design of it. - the managers do not trust the Commission because they have made some strange decision counteracting other decisions, signalling they do not understand the complete picture - science and managers do not trust the fishermen's incentives not to underreport catch – industry does not trust science because of uncertainties and such principles as the precautionary approach – fishermen, managers, the Commission and science itself does not trust the scientific approach used in assessments, but it is “what we have” – the Northern Irish fishing industry have little trust in the government – Joe Maddock suspects the Northern Irish proposition is just an excuse to keep fishing – fisheries scientists distrust the ability of technological devises to work – the uncertainty of the measures applied leads to distrust in their ability to accomplish

the goals and so on and so forth. As Lorcan O Cinnedire put it: *“We do not have confidence that pulling out livelihoods based on what we know today”*

Everyone except for Dominic Rihan however, had faith in the ability of the Regional Advisory Councils to make things better.

5.4. Conflict in political perspective

I think it is obvious that the cod recovery conflict is driven by both competing internal values and external political ones, but I have the impression that as the process has moved along, the internal values have to some degree been put aside. I think this may be a result of the different parties acknowledging that they are all affected and maybe the RAC providing an arena for the parties to meet, and this may also lead to some trust developing. Now we have analysed the first step of the resolution process according to Nie, and the verdict is that as the conflict appears today it is more a matter of external factors.

Secondly, the role of the administrator or manager in this conflict should be revealed and this is one area I cannot say too much about. Maybe this is actually saying enough, namely that in my field work I have not been able to reveal their role here. Well, the role of the Commission is clear enough, they have made the recovery program, but the national administrators and managers I have missed, of course partly because I was not able to get an interview with any of those. But in general in my opinion, it seems as though science has been given a bit too much of the responsibility and from this we could try and suggest that management is hiding behind science.

In any case, thinking of this conflict in terms of drivers might facilitate in finding the solution because we can find the weak spots and generate action here. There are for instance, several places suggested that science is the main problem of this conflict. As Nie writes: if a conflict is driven primarily by scientific disagreement the first step would be to reveal if this is actually the case, or if it is just framed as such. But if it is the case he suggests applying some tools such as adaptive management strategies, civic science or collaborative monitoring. All include collaboration between stakeholders, managers and science. Maybe the Northern Irish proposition is as close as you can get to a good resolution of this contentious affair. If it turns out that this is only an attempt to frame a value-based conflict as a scientific one, then it is better to go straight on to the point of telling each other what we like.

In any case what I think Nies drivers of conflicts together with Ritter and Webbers tame and wicked problems has shed light on, is that each single effort to reveal and introduce resolution into the public arena, is and must therefore be treated as, unique. This is why one pattern for all is not a good solution to such resource based natural conflicts. The starting points of each area are different in terms of different political drivers, and therefore the responses to a resolution will be different. In this particular case the overall goal is getting the cod stock above reference points. Because this process involves human conduct, human distress, human interplay, human problems etc, the management resolutions must include human aspects. Or they must eliminate the human factor, which is stopping all fishing activity.

5.5. Evaluation of the Research questions against the empirical and theoretical findings.

Based on the conclusions drawn during the empirical review and the theoretical discussion which has been applied on the Cod Recovery Plan, I would like to present an answer to the research questions posed in chapter 1.

1. Is the Irish Sea Cod Recovery Plan likely to achieve its objectives of rebuilding the cod stock?

- There are no signs that the spawning stock biomass or the stock in total show increase worth mentioning
- The interviews call attention to underreporting
- Apart from "Days at Sea" there are few indications that the applied measures have contributed to limit the fishery and thus rebuild the stock.
- Bycatch comprises the large part of the cod taken to port and there are few indications of reduction in bycatch due to the measures applied
- The scientific (biological and ecological) advices have ended up in political horse-trading instead of efficient action.
- In addition to this, I refer to my main conclusion of the empirical chapter regarding TACs: the result of these factors may be that TAC and quotas have become obstacles to cod recovery during the Cod Recovery Plan

These findings appear to be confirmed by the theory I have chosen, indicating that they are common and general, and this strengthens the credibility of the analysis. Nies drivers can be identified several places in the empirical part. This accounts for drivers like “scarcity”, “political surrogate,” policy design”, ”policy frames”, ”scientific disagreement and uncertainty,” ”distrust” and ”Constitutional , statutory and administrative language”. Based on the above mentioned empirical findings, my conclusion is that it is doubtful that the objectives of the Cod Recovery Plan of rebuilding the cod stock have been reached and it is probable that the objectives will no be reached with the present form of the plan.

2. What aspects interfere with the objectives of the Recovery Plan?

This research question can be illuminated by the following empirical and theoretical findings:

- The main problem is that the plan has become too complex: too many measures with too little effect, continuous changing of rules and regulations in order to adjust to the gravity of the situation, contrasts of interests combined with poor communication between interests. In addition the new goals of Precautionary approach and Ecosystem approach lead to increased complexity.
- The issue is not important enough o achieve the interest in the fisheries policy of UK, which directs its efforts towards the areas of high economic importance.
- The Irish interests differ from those of Northern Ireland in this matter and Ireland can invoke on the Hague preference when quotas are low.
- The cod fishery of the Irish Sea constitutes in large part bycatch something that complicates matters because you cannot just stop all fishing activity in this area.
- “The reallocation of efforts seem to result in increased bycatch of cod”
- “There are indications that control, surveillance and enforcement of the recovery plan is not conducted to such a degree required in order to get the wanted results”. “Making laws and regulations without enforcing them is not very efficient”.
- Scientists and industry appear to have opposing interests and lacking the ability to cooperate, or they actually work against each other.
- The CFP measures (decommissioning, financial support etc) implemented in order to get fishers out of the fishery are not working.

- There seems to be a lack of coordination or interaction between those making the regulations and implementing them and the industry. “There is no confidence in the management system.”
- “The industry seems to have lost confidence in science and this lack of confidence can be used as argument for not complying with rules”
- Underreporting takes place without anyone appearing to do something about it.

As was the case for the first research question, the theoretical concepts of the chosen theory support and confirm the empirical findings. All the above mentioned theoretical concepts can be applied and increase the depth of the empirical insight. If I was to emphasise one factor, that indirectly influences the process to such a degree that it nearly sums up the empirical findings, it will have to be distrust. It seems as though no one trusts anyone. In addition to contribute to the present situation, this factor helps reveal that unless something is done, the future prospects are bleak.

One of the theoretical drivers of conflict was the different levels that needed to be revealed, and the resolution should be dealing with a high a level as possible. The control issue together with the absence of supervision may point to the Common Fisheries Management as a higher level problem in this particular case. .

My answer to the second research question is that all those aspects mentioned above interfere with the objectives of the Cod Recovery Plan.

5.6. Future prospects of the Cod Recovery Plan

There are ways out of the tunnel and first of all a thorough evaluation is called for. Holm and Nielsen (2006) has written an article dealing with the evaluation of fisheries management processes. They provide a model that can be the starting point for such an evaluation:

1. Selecting criteria of merit - Finding the goals and values to evaluate against.
2. Setting standards of performance, i.e. levels that must be exceeded to obtain a certain value term - setting of some standards of comparison that the investigated object must exceed in order to be valued as good or bad.

3. Collecting data pertaining to the performance of the object under evaluation on the criteria relative to the standards - in order to link the evaluated object to a certain standard, there is a need for measurement instruments. This is a challenge when dealing with fisheries because of the technical difficulties in providing accurate information on the state of fish stocks
4. Integrating results into a final value judgement – this is a difficult task since very advanced evaluation forms may have inbuilt biases, while a less advanced system will be too weak against the prejudice and idiosyncrasies of the evaluator.
(Holm and Nielsen 2006)

Scientists and Fishermen need to initiate a new cooperation where fishermen are involved in the scientific assessments and scientists are involved in the fishery. This is the only way to get past the vicious circle that locks the situation today. The Northern Ireland Proposition can provide a very useful possibility for doing this, because there are so many positive factors in place already. First of all this initiative comes from within the industry and this should increase incentives, secondly the sea area should provide a very suitable place for trying out such an assessment program and thirdly the RAC is in place which can be an initiator of the project. By fishing with effort control as the primary measure, assessing and registering everything that is caught, the problem of underreporting would disappear and because the initiative lies within the industry self-justice will provide for compliance.

The RAC provides new opportunities. It can for instance contribute in making the system less unjust and initiate in an evaluation of the Cod Recovery Plan.

Finally, there is a need for further research to follow up the Cod Recovery Plan, that should include social and managerial aspects in addition to biological and ecological. Because this is a new system of tools worldwide in connection with fisheries resource crisis there is a need to learn as much as possible from the implementation for future practice and usage. Otherwise the concept of recovery plans may end up discredited

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Commission Regulation (EC) No 259/2001 of 7 February 2001 establishing measures for the recovery of the stock of cod in the North Sea (ICES subarea IV) and associated conditions for the control of activities of fishing vessels

Commission Proposal COM (2002) 773 20.12.2002 final 2001/0299 (CNS) Amended proposal for a Council regulation establishing measures for the recovery of cod and hake stocks (presented by the Commission pursuant to Article 250 (2) of the EC Treaty)

Commission Regulation (EC) No 2244/2003 of 18 December 2003 laying down detailed provisions regarding satellite-based Vessel Monitoring Systems

Council Regulation (EEC) No 170/83 of 25 January 1983 establishing a Community system for the conservation and management of fishery resources

Council Regulation (EEC) No 172/83 of 25 January 1983 fixing for certain fish stocks and groups of fish stocks occurring in the Community's fishing zone

Commission Regulation No 2807/83 of 22 September 1983 laying down detailed rules for recording information on Member States catches of fish

Council Regulation (EEC) No 2908/83 of October 1983 on a common measure for restructuring, modernising and developing the fishing industry and for developing aquaculture

Council Regulation (EEC) No 2930/86 of 22 September 1986 defining characteristics for fishing vessels

Council Regulation 3760/92 establishing a Community system for fisheries and aquaculture

Council Regulation (EEC) No 2847/93 of 12 October 1993 establishing a control system applicable to the common fisheries policy

Council regulation (EC) No 1447/1999 of 24 June 1999 establishing a list of types of behaviour which seriously infringe the rules of the common fisheries policy.

Council Regulation (EC) No 2792/1999 of 17 December 1999 laying down the detailed rules and arrangements regarding Community structural assistance in the fisheries sector

Council Regulation (EC) No 2341/2002 of 20 December 2002 fixing for 2003 the fishing opportunities and associated conditions for certain fish stocks and groups of fish stocks, applicable in Community waters and, for Community vessels, in waters where catch limitations are required, (amended by Council Regulation (EC) No 671/2003 of 10 April 2003) Annex XVII

Council Regulation (EC) No 2371/2002 of 20 December 2002 on the conservation and exploitation of fisheries resources under the Common Fisheries Policy

Commission Proposal COM (2003) 237 final 2003/0090 (CNS) 6.5.2003 Proposal for a Council Regulation establishing measures for the recovery of cod stocks

Council Regulation (EC) No 2287/2003 of 19 December 2003 fixing for 2004 the fishing opportunities and associated conditions for certain fish stocks and groups of fish stocks, applicable in Community waters and, for Community vessels, in waters where catch limitations are required

Council Regulation (EC) No 423/2004 of 26 February 2004 establishing measures for the recovery of cod stocks

Council Regulation (EC) No 768/2005 of 26 April 2005 establishing a Community Fisheries Control Agency and amending Regulation (EEC) No 2847/93 establishing a control system applicable to the common fisheries policy

Council regulation (EC) No 27/2005 of 22 December 2004 fixing for 2005 the fishing opportunities and associated conditions for certain fish stocks and groups of fish stocks, applicable in Community waters and, for Community vessels, in waters where catch limitations are required

Council Regulation (EC) No 51/2006 of 22 December 2005 fixing for 2006 the fishing opportunities and associated conditions for certain fish stocks and groups of fish stocks, applicable in Community waters and, for Community vessels, in waters where catch limitations are required

Report from the Commission (2000) on the regional meetings arranged by the Commission in 1998-1999 on the Common Fisheries Policy after 2002
Brussels, 24.01.2000 COM(2000) 14 final

European Commission (2001) Green Paper on the Future of the Common Fisheries Policy,
COM(2001) 135

Council regulation (EC) No 1447/1999 of 24 June 1999 establishing a list of types of behaviour which seriously infringe the rules of the common fisheries policy.

Appendix I: Basis for setting TACs in the Recovery Zone

Table A: basis for cod and hake recovery measures in EU 2003

Concerned fish stocks	Target level in tonnes	Estimated stock size in tonnes	Fishing mortality rate	Fishing mortality rate if stock below target level
Cod in the Kattegat	10 500	6 400	0,60	0,23
Cod in the North Sea, Skagerrak and Eastern Channel	15 000	60 000	0,65	0,22
Cod to the West of Scotland	22 000	14 000	0,60	0,16
Cod in the Irish Sea	10 000	6 000	0,72	0,26
Hake – Northern area	143 000	103 000	0,24	0,06

(from: amended proposal for a Council Regulation COM(2002)773 final 2001/0299)

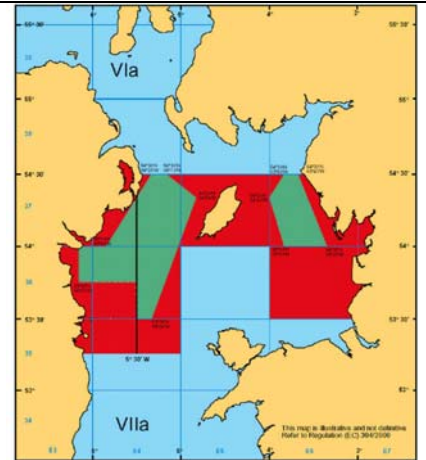
Appendix II: Details closed are and technical measures

Table B : The measures of 2000-2003 Irish Sea cod recovery plans in detail:

2000: From the 14th of February to the 30th of April a defined area is closed to all fishing with any demersal trawl, seine or similar towed net, any gill net, trammel net or similar static net, or any fishing gear incorporating hooks:

Area: 53°15'N, 05°00'W; 54°00'N, 05°00'W; 54°00'N, 04°00'W; 53°30'N, 04°00'W (red area on the map)

derogation: Fishing is permitted with a prawn net in the areas of the closed boxes coloured green provided that a minimum of 35% live weight of prawns (*Nephrops*) is on board; only one mesh size range is carried on board, 70-79 or 80-99.; no mesh in any part of the nets is greater than 300mm



2001: From the 15th of February to the 30th of April a defined area is closed to all fishing with any demersal trawl, seine or similar towed net, any gill net, trammel net, tangle net or similar static net, or any fishing gear incorporating hooks

Area: 54°30'N, 04°50'W; 53°15'N, 04°50'W (red area on the map)

Derogation 1: fishing is permitted with a prawn net (demersal otter trawl) in the area of the closed box coloured green provided: a minimum of 35% of live weight of prawn is on board; only one mesh size range is carried on board (70-79mm or 80-99mm); no other type of gear is carried on board; no mesh in any part of the net is greater than 300mm.

Derogation 2: fishing is permitted with a prawn net (separator trawl) in the yellow area provided that; in addition to the above it complies with the conditions made for the green zone; it includes an inclined separator panel; if the total weight of cod retained on board is greater than 18% of the total catch, the vessel must stop fishing in this area for at least 24 hours.

Derogation 3: fishing is permitted with semi-pelagic trawl in a certain area from 15th of April to 24th of March provided: The nets used are 100mm diamond mesh size as a minimum; the nets incorporate at least 500 individual meshes of mesh size at least 300mm; if the total weight of cod retained on board is greater than 15% of the total catch, the vessel must stop fishing in this area for at least 24 hours.

On at least 50 fishing voyages, observers shall be present on board fishing vessels deploying either semi-pelagic trawls or separator trawls registering the catch



2002: From the 14th of February to the 30th of April a defined area is closed to all fishing with any demersal trawl, seine or similar towed net, any gill net, trammel net, tangle net or similar static net or any fishing gear incorporating hooks.

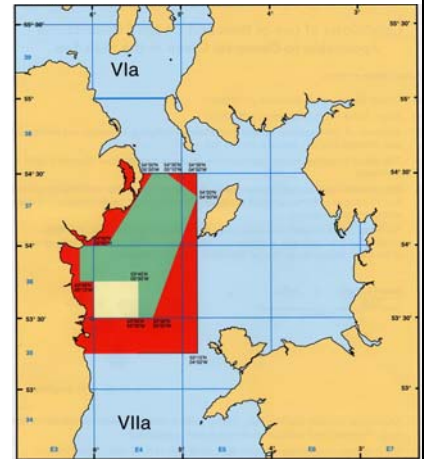
Area: 54°30'N, 04°50'W; 54°15'N, 04°50'W (red area on the map)

Derogation 1: fishing is permitted with a prawn net (demersal otter trawl) in the area of the closed box coloured green provided: no other type of fishing gear is retained on board; only one mesh size range is carried on board (70-79mm or 80-99mm); no mesh in any part of the net is greater than 300mm

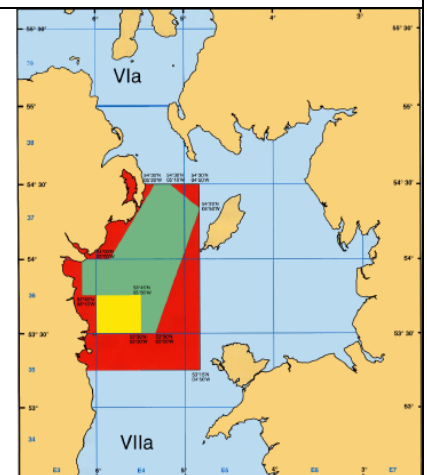
Derogation 2: fishing is permitted with a prawn net (separator trawl) shall be permitted in the entire box provided that; in addition to the above it complies with the conditions made for the green zone; it includes an inclined separator panel

Derogation 3: fishing with demersal otter trawls of mesh size 80-99mm shall be permitted even if the entire upper half of the anterior part of such a net does not consist of a panel of netting material attached directly to the headline of the net, extending towards the posterior of the net for at least 15 meshes and constructed of diamond-meshed netting material of which no individual mesh is of mesh size less than 140 mm; nor a square-meshed panel of mesh size of at least 80 mm is included in such a net, as are the conditions laid down in Article 7 of Regulation (EC) No 850/98; provided that the catch on board consists of at least 85% scallops and only 5% of cod .

Derogation 4: it shall be allowed to carry on board or deploy beam trawl of mesh size equal to, or greater than, 80mm as long as the entire upper half of the anterior part consists of a panel of diamond-meshed netting material of which no individual mesh is of mesh size less than 180mm attached directly to the headline or to no more than three rows of netting material of any mesh size attached to the headline. The extent of the panel shall be decided by a specific recipe.



2003: the same technical measures applies as for 2002!



(Council Regulations (EC) No 304/2000, 300/2001, 1456/2001, 254/2002, 2287/2003.)

Table C: details of technical measures of the 2002 recovery plan

Requirements	Mesh size 70-70mm	Mesh size 80-89mm	Mesh size 90-99mm	Mesh size 100mm+	Beamers 70mm – 99mm
Bars of each mesh of same length	X	X	X	X	X
Codend knotted to rest of net	X	X	X	N/A	N/A
Maximum twine thickness	2x4mm double or 6mm single	2x4mm double or 6mm single	2x4mm double or 6mm single	2x4mm double or 6mm single	N/A
Square mesh panel required ¹	Yes 80mm	Yes 80mm	Yes 80mm	No	No
Headline panel required (yes/no)	Yes ²	Yes	Yes	No	Yes ³
Maximum no of meshes in codend circumference	120	120	100	100	N/A

¹ This requirement does not apply when the catch consists of more than 85% queen scallops or more than 40% sole and less than 5% cod.

² Attached to head rope. Must be at least 140mm mesh and extend towards rear of net for at least 15 meshes (does not apply when the catch consists of more than 85% Queen Scallop or more than 40% sole or less than 5% cod).

³ Beam trawls with mesh of 80mm+ must have 180mm mesh panel fitted to headline (or 3 meshes abaft headline) of length found by – Beam Length in M/12 x 5400/Min mesh size panel.

(Table from: ICES Report ACFM/2004/WGNSD)

Appendix III: Additional information “Days at Sea”

Table D: Instructions for “Days at Sea”

Instructions of Days at Sea

- A day present within an area shall be any period of 24 hours during which a vessel is present at any time within an area defined in point 2 and absent from port. The time from which the 24-hour period is measured is at the discretion of the Member State whose flag is flown by the vessel concerned.
 - Member states may aggregate the days at sea in management periods of up to 11 months. When a vessel has used its allocated days it may no longer leave port within this management period
 - If higher allocation is given to a vessel based on a low percentage of by-catch of a species as given in table_ , that vessel shall at no time retain more than that percentage.
 - Before the first day of a management period the master of a vessel shall notify which gear or gears he intends to use. A vessel may be allowed to use two types of gear and the days shall be allocated as half of the days for each gear type added together, but only one type of gear is allowed on board at any given trip, and the master of the vessel shall inform the authorities prior to the trip of which gears he intends to use (2005: unless the type of fishing gear has not changed from the one notified for the previous trip). If either of these requirements is not followed the vessel will no longer be allowed to use two gear types (2005: a vessel wishing to combine the use of one or more of the mentioned fishing gears with any other unregulated gear, shall not be restricted in the use of the unregulated gear. Must pre-notify when the regulated gear is to be used, if no gear mentioned will may be carried on board. Such vessels must be authorised and equipped to undertake the alternative fishing activity.)
 - A vessel fishing in any of these areas may not at any time carry on board two of the gear types in the table
 - A vessel which in any given management period has used the number of days present in the area or absent from port to which it is eligible, shall remain in port or out of any area referred to in point 2 for the remainder of the management period. (2005: unless using only unregulated gear.)
 - A vessel which has used its allocated days in a management period may engaged in non-fishing activities that has been notified to the Member State together with the nature of its activity and that it surrenders its fishing licence for this time. Such vessels shall not carry any fishing gear or fish on board during that time.
 - Transfer of days between vessels of the same gear grouping in the same area within the same management period shall be allowed as long as the number of days multiplied by the engine power in kilowatts of the donor vessel equals the number of days multiplied by the receiver vessel engine power (2005: a member state may allow a transfer of days when a licensed donor vessel has temporarily ceased its activity without public help.)
 - No transfer of days will be allowed for those vessels benefiting from the derogations listed in table_ , nor for those vessels allowed to use two fishing gears.
 - On request from the Commission, Member States shall provide reports on the transfers that have taken place
 - A member state shall not permit fishing in any of the areas with any of the mentioned gears if no record of such fishing activity for 2001, 2002 and 2003 exist. Unless it ensures that equivalent capacity is prevented from fishing in the regulated area (2005: a vessel with a track record of using one of the mentioned gears may be authorised to use a different gear defined in point 4, provided that the number of days allocated to this latter gear is greater than or equal to the number of days allocated to the first gear)
- (2005: - a member state shall not count against the days allocated to any of its vessels under this annex either any days when the vessel has been absent from port but unable to fish because it was assisting another vessel in need of emergency aid or any days when a vessel has been absent from port but unable to fish because it is transporting an injured crew member for emergency medical aid. The member state shall provide justification to the Commission within one month of any decisions taken on this basis with associated evidence of the emergency from the competent authorities.)

Table E: Days at sea restrictions as the number of days in a calendar month a vessel may be present in the area or absent from port, including derogations for 2004 and 2005

<i>Fishing gears</i>	Days at sea 2004	Days at sea 2005	<i>Derogation 1:</i>	<i>Derogation 2</i>	<i>Derogation 3</i>
<i>demersal trawls, seines or similar towed gears of mesh size equal to or greater than 100 mm except beam trawls;</i>	10	10	If the 2002 vessel track record show less than 5% of each of cod, sole and plaice= No restrictions OR: If the 2002 vessel track record show less than 5% cod and is using either: 100-120mm nets= extra 4 days. Or more than 120mm nets=extra 5 days 2005- 100-120mm nets = extra 3 days, and more than 120mm nets= extra 4 days	derogations for the saithe fishery without the requirement for a track record in previous years of fishing with less than 5 % by catch may be allocated if called for by member states. Along with its request the Member State shall submit details of the vessels that would benefit, with evidence of their quota holding and planned activity 4 weeks ahead of management period 2005: this derogation does not apply	An additional TWO days will be available for vessels of this fishing gear operating in the Irish Sea in recognition of the area closure and the assumed reduction in fishing mortality of cod. 2005: An additional ONE days will be available for vessels of this fishing gear operating in the Irish Sea in recognition of the area closure and the assumed reduction in fishing mortality of cod.
2005: New category for this year: <i>Demersal trawl of mesh soze greater than 120mm</i>		10	One additional day may be allocated by the Commission on a request from the member state on the condition that the member state concerned has developed a system of automatic suspensions of fishing licences in respect of infringements. During such a prerequisite that vessel may not at any time carry on board any fishing gear of mesh size less than or equal to 120 mm.		
<i>beam trawls of mesh size equal to or greater than 80 mm</i>	14	13	An additional two days will be available for vessels of this fishing gear operating in the Irish Sea in recognition of the area closure and the assumed reduction in fishing mortality of cod.		
<i>static demersal nets including gill nets, trammel nets and tangle nets</i>	14	13	If these gear are of mesh size equal to or greater than 220mm and the 2002 vessel track record show less than 5% cod and more than 5% of turbot and lumpfish= up to 6 extra days 2005: this derogation does not apply to the Irish Sea	If the vessels carrying these gears of mesh size equal to or less than 110 mm, is less than 15 metres in length with landings of over 35% unregulated species and absent from port for no more than 24 hours up can be allowed to fish up to 20 days 2005: this derogation does not apply in 2005	
<i>demersal longlines</i>	17	16			
<i>trawls, seines or similar towed gears of mesh size between 70 mm and 90 mm(2005: 99mm) except beam trawls with mesh size between 80 mm and 99 mm;</i>	22	21			
<i>demersal trawls, seines or similar towed gears of mesh size between 16 mm and 32 mm except beam trawls</i>	20	19	If the 2002 vessel track record show less than 5% of each of cod, sole and plaice= No restrictions		

Appendix IV: Background information compliance, control and surveillance

Both in the proposal and in the subsequent Council Regulation (No 423/2004), the provisions of TITLE IIA “Control of Fishing Effort” of Council Regulation 2847/93 are addressed. While the proposal mentions the whole TITLE IIA, the Regulation points to Article 19a, 19b, 19c, 19d and 19 k (the last one is as far as I can find not existing) in its article 9. This Title starts by defining the fishing areas and resources for which these arrangements apply. This is done by referring to Articles 2, 3 (5) and 9 of Council Regulation (EC) No 685/95 These articles concern themselves with vessels over 18 metres (or over 15 metres between perpendiculars) and here follows an effort to summarize the main points. Article 19b deals with something called the “Effort Report” which shall include communication from the Master of Community vessels on

- the name, external identification mark, radio call sign and name of the master
- the geographical location of the vessel to which the communication refers
- the date and time of:
 - each entry into, and exit from, a port located inside the area
 - each entry into an area
 - each exit from an area
- the catch retained on board by species in kilograms live weight

It also addresses the requirement for vessels conducting trans-zonal fisheries during a period of 24 hours to communicate their first entry and last exit within that time period and for the member states to ensure that masters of fishing vessels comply with the reporting obligations. The Article ends by referring to article 36 concerning the detailed rules for implementation. In other words this reference is to the 1992 decision on establishing a Management Committee for Fisheries and Aquaculture consisting of representatives of the Member States set up in order to assist the Commission. In Article 4 and 7 of Council Regulation (EEC) No 2847/93 the duties of these Committees are described. First the Committees are to comment on propositions of measures to be taken from the Commission and secondly each committee shall adopt its own rules of procedure. Now we return to Article 19c and continue with control of fishing effort. Article 19c lists how these effort reports should be communicated (by fax, telephone or radio) to the flag member state or the state(s) under which jurisdiction the fishing activities takes place and therefore is responsible for monitoring, immediately before each entry and exit. The rest deals with specifications of reporting duties for trans-zonal fisheries, fishing in waters in which the vessel is registered and for vessels that spend less than 72 hours

at sea and conduct fishing in waters under the sovereignty or jurisdiction of another member state. Article 19d is short and states that Member States shall ensure that the effort reports are recorded in computer-readable form. The last relevant article (If we look away from 19k) is 19e and it addresses more specifically the logbooks of the vessels and how the Masters shall account for the time spent in an area. For towed gear the date and time of entry into an area or exit from a port in that area and the date and time of the vessel from an area or of entry into a port located in that area shall be registered. In the case of static gear the date and time of entry into an area or exit from a port in that area, the date and time of setting or re-setting of static gear in the area concerned, time and date of the completion of the fishing operation and the date and time of exit from that area or of entry into a port located in that area.

After this short time travel back to the 90s, we return to Council Regulation (No 423/2004) *establishing measures for the recovery of cod stocks* reveals more on the Monitoring, Control and Surveillance of the Cod Recovery Plan.

Article 31 2(a) of Council Regulation (EEC) No 2847/93 invites the Council to draw up a list of types of serious infringements against which the Member States shall take serious and deterrent action. Such a list is presented in Council regulation (EC) No 1447/1999.

The list includes the following infringements:

- A. Failure to cooperate with the authorities responsible for monitoring
- B. Failure to cooperate with observers
- C. Failure to observe the conditions to be met when fishing
- D. Failure to comply during fishing operations
- E. Failure to comply in connection with resources for monitoring
- F. Failure to comply in connection with landing and marketing of fishery products

In order to improve the transparency in the CFP Member States shall inform the Commission on a regular basis of the infringements that have been revealed and all information regarding action taken by the authorities. Each year a Communication shall be published by the Commission publicly detailing the infringements of fisheries rules detected by Member States with specifications on the type of procedure taken and the penalties imposed in these

As long as we are looking at Council Regulation No 2371/2002 let us take a look at Articles 22(1)(b) which goes as follows: “ a fishing vessel shall have installed on board a functioning system which allows detection and identification of that vessel by remote monitoring systems. This requirement applies to vessels exceeding 18 metres length overall as from 1 January 2004 and to vessels exceeding 15 metres length overall as from 1 January 2005.” Such a

system is called satellite-based Vessel Monitoring System (VMS) and article 23(3) touches upon the same theme when it instructs Member States to set up administrative and technical structures necessary for ensuring effective control, inspection and enforcement, including satellite based VMS. Commission Regulation (EC) No 2244/2003 provides the provisions for this.

Appendix V: Decommissioning

Ever since 1983 there have been measures taken in order to reduce or balance fishing effort within the European Union. Decommissioning is permanent reduction in capacity through voluntary scrapping of redundant vessels with financial compensation to leave the fishery. In 1983 the first Multiannual Guidance Programme (MAGP I) was launched in Council Regulation (EEC) No 2908/83. It was to last until 1986 and by this time it was clear that it had been a failure as there had been a continued expansion in many fisheries. The reasons for this were that capacity was measured in different ways; there were no annual targets or objectives and little experience in structural policy. MAGP II lasted from 1987 to 1991 and tried to mend the fallacies of the previous programme. This was not achieved and another failure was a fact partly due to the increased competition in the wake of Spain and Portugal entering the Union and more than doubled the fishing fleet. MAGP III (1992-1996) came with a new scope which was setting different reduction targets for different species. Fishing for demersal species was to be reduced by 30 %, fishing on benthic stocks reduced by 20 % and no reduction for pelagic stocks. After strong objections from Member States these targets were reduced to 20 % and 15% respectively. Several new aspects were introduced under this programme, first of all that reduction was expressed in terms of effort and not capacity as it had been previously. Effort was defined as the product of capacity (tonnage), installed power and the number of days spent at sea per reference period. A common set of vessel measurements, creation of a community register of fishing vessels and the possibility to keep vessels at port for set periods (Tie-up) were also novelties. Technical progress was estimated to contribute with a 2 % increase in fishing effort and a corresponding decrease was called for. In spite of the new regimes of segmenting the fleets adding to confusion and providing Member States with new ways of bending the rules, the overall reduction target for the EU was met by the end of 1996. But the incentives were uneven, and states like UK and Netherlands were far from meeting their individual reduction objectives. Other concerns at this time were that effort reduction often failed to happen for the most overexploited stocks.

These were logically enough, in areas of strong dependence on fisheries and the lack of socio-economic support complicated the process. Decline in fish prices resulted in increased fishing and the overall goal of capacity reduction, namely keep stocks at sustainable level, failed. This encouraged the introduction of different reduction objectives for stocks in different situations under MAGP IV (1997- 2001 (02)). Fishing effort for stocks in danger of collapse was to be reduced by 30 %, and for overfished stocks a 20 % reduction target was set.

Interview map

