Socio-economic effects of management measures of the future CFP

Grant agreement no: 289192

Deliverable D 2.2

Reports by case study defining a locally appropriate suite of second level objectives consistent with the overarching objectives.

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Lead contractor: MI

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<thead>
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<td>PP Restricted to other programme participants (including the Commission Services)</td>
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<td>RE Restricted to a group specified by the consortium (including the Commission Services)</td>
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<td>CO Confidential, only for members of the consortium (including the Commission Services)</td>
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1. Abstract

The necessity for fisheries to have well specified management objectives has been repeatedly stressed. Also the European Commission saw this as one of the five most significant problems of the Common Fisheries Policy (CFP). This deliverable explores the extent to which objectives can be specified for the case study fisheries in order to set up reference levels for the analysis of policy effect. It also analyses the relative importance attached to high level objectives under the biological, economic and social pillars of sustainability which were developed in the first phase of the project (Deliverable 2.1). Traditionally most fisheries management regimes have been defined by biological goals and hence an understanding of the priorities and trade-offs associated with broader objectives is an important area of research. SOCIOEC is taking a pragmatic approach to the choice of objectives by focusing on those which are both manageable (i.e. they are likely to be achievable through current or potential management measures) and consensual (i.e. they are likely to be acceptable to a broad range of stakeholders).
2. Introduction - Why focus on objectives?

The necessity for fisheries to have well specified management objectives has been repeatedly stressed (Mardle et al., 2002; Bonfil, 2005; Hilborn, 2007; Kjaersgaard et al., 2007; Morishita, 2008). The lack of clear objectives has also been highlighted as one of the 5 most significant problems in European fisheries (European Commission, 2009). In SOCIOEC Deliverable 2.1, and a subsequent paper currently being revised (Goti et al., 2013, in preparation), a shortlist of high-level sustainable fishery objectives was developed (Table 1 below). These policy objectives were developed as a joint exercise between the Socioec and Myfish projects and largely based on a workshop with stakeholders in Vigo in 2012, interviews with stakeholders and a review of the on-going CFP reform process, legislation and academic literature.

This deliverable explores the extent to which objectives can be specified for case study fisheries in order to set up reference levels for the analysis of policy effect. It also analyses the relative importance attached to high level objectives under the biological, economic and social pillars of sustainability. Traditionally most fisheries management regimes have been defined by biological goals and hence an understanding of the priorities and trade-offs associated with broader objectives is an important area of research.

SOCIOEC is taking a pragmatic approach to the choice of objectives by focusing on those which are both manageable (i.e. they are likely to be achievable through current or potential management measures) and consensual (i.e. they are likely to be acceptable to a broad range of stakeholders) (Goti et al, 2013, in preparation).

The promotion of social and economic objectives can be seen in the extracts below from the websites of the Danish fisheries ministry, the UK Marine Management Organisation (MMO) and the Scottish government. The challenge is in developing criteria and indicators to address these strategic national objectives.

“The Danish Ministry of Food, Agriculture and Fisheries aims to create flexible conditions for the fishing industry and to reduce administrative burdens on the basis of sustainability...
The Ministry of Food, Agriculture and Fisheries aims to promote Danish points of view in the EU, in order to ensure that both sustainability and Danish industry and consumer interests are taken into account to the greatest possible extent...
The key concern is to make the most of the quantity of fish available to us. This means to obtain maximum value from the catches of fish and to conserve resources. The employment of optimal fishing methods – conserving catch and limiting discards - is an important focal point.“
The UK MMO has the following strategic outcomes, the first of them being economic and numbers 3 to 5 being about social welfare and governance
http://www.marinemanagement.org.uk/about/mission.htm:

1. Marine businesses support sustainable growth in the UK economy
2. The marine environment is protected for current and future generations
3. Coastal communities are thriving and engaged
4. Our decisions are trusted
5. Be a highly effective public body

As a third example, Scotland puts prosperity before sustainability for marine management, within the overall purpose of sustainable economic growth and Scotland’s primary objective is “wealthier and fairer” before anything else.
http://www.scotland.gov.uk/About/Performance/scotPerforms/indicator/marine
Table 2.1: High level objectives for fisheries management developed from the combined SOCIOEC-MYFISH workshop.

<table>
<thead>
<tr>
<th>Sustainability pillar</th>
<th>Population level</th>
<th>Time span</th>
<th>High level objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecological</td>
<td>Society</td>
<td>Long term</td>
<td>Maximize yield in tonnes of commercial species</td>
</tr>
<tr>
<td>Ecological</td>
<td>Society</td>
<td>Long term</td>
<td>Gradually eliminate discards on a case-by-case basis</td>
</tr>
<tr>
<td>Ecological</td>
<td>Society</td>
<td>Long term</td>
<td>Minimizing bycatch of vulnerable and protected species</td>
</tr>
<tr>
<td>Ecological</td>
<td>Society</td>
<td>Long term</td>
<td>Minimizing negative impact on seabed habitats</td>
</tr>
<tr>
<td>Economic</td>
<td>Society</td>
<td>Long term</td>
<td>Maximization/optimization of present value</td>
</tr>
<tr>
<td>Economic</td>
<td>Society</td>
<td>Short term</td>
<td>Maximization/optimization of gross value added (or rent)</td>
</tr>
<tr>
<td>Economic</td>
<td>Firm/ Individual</td>
<td>Short term</td>
<td>Maximization of profits (within ecological and social constraints)</td>
</tr>
<tr>
<td>Social</td>
<td>Society</td>
<td>Long term</td>
<td>Ensure viable coastal communities</td>
</tr>
<tr>
<td>Social</td>
<td>Society</td>
<td>Long term</td>
<td>Improve policy and decision making through improved inclusive governance structures</td>
</tr>
<tr>
<td>Social</td>
<td>Individual</td>
<td>Long term</td>
<td>Ensure fair living standard, improved working and security conditions on board of fishing vessels</td>
</tr>
</tbody>
</table>
3. Research methods

The information in this report was gathered from a combination of individual and group meetings with a range of fishery stakeholders, telephone interviews, email surveys and analysis of existing relevant material on specific case study fisheries objectives. Appendix 1 contains the template document used for compiling the information in each of the selected case studies.

Pre-existing sources of material on fishery objectives directly relevant to this deliverable which complemented and also minimised the necessity for repetitive direct contact with stakeholders included:

- Previous and current EU projects which have involved discussion and in some cases prioritisation exercises for fishery specific objectives e.g. ECOFISHMAN, MEFEP0, GAP2, SOCIOEC, MYFISH & BENTHIS.
- Long-Term Management Plans and Recovery Plans particularly in relation to biological objectives
- Documents from Marine Stewardship Council certification processes which cover objectives under all three pillars
- Submissions from relevant regional stakeholder organisations to the CFP reform process consultations or other policy consultation processes.

3.1 Relevant stakeholders.

As far as possible a broad range of stakeholder views were sought on what fishery specific objectives should be and not simply those of the fishing industry. Stakeholder categories consulted included:

- Fishermen and fishermen’s organisations – care was taken to include the views of small-scale fishermen where relevant to the specific fishery
- Managers and policy makers
- Environmental NGO’s
- Consumer NGO’s
- Recreational fishery NGO’s
- Coastal community organisations
- Fish processors and retailers

Where direct stakeholder contact was made the stakeholders were presented with the list of high level fisheries objectives in Table 1 and then asked a series of questions aimed at identifying and specifying the most appropriate objectives for their fishery. They were also asked to identify which objectives complemented or conflicted with others and also to identify management measures most appropriate for the achievement of these objectives (See Appendix 1 for full details of this process).
4. Western Waters Regional Case study

4.1 Celtic Sea Herring fishery case study

*The fishery and its management*

The Celtic Sea herring fishery is a single species pelagic fishery predominantly targeted by Irish fishing vessels off the South coast of Ireland in International Council for the Exploration of the Sea (ICES) areas VIIj, VIIg and the southern part of VIIa (Figure 4.1).

Fig. 4.1. ICES areas in Irish waters and Celtic Sea and Aran fishing grounds. The hatched area marked by a star represents the Dunmore Box.

The fishery is predominantly an inshore one and is conducted by a diverse fleet of vessels ranging from under 10m multi-purpose inshore vessels up to modern 50m pelagic vessels equipped with refrigerated seawater tanks. It has traditionally been a very important fishery for both the fleet and processing sectors in the south of Ireland.
although landings in the last 10 years have been well below their previous peaks and the length of the fishing season has also significantly decreased.

The fishery has in recent years been exploited almost entirely by Ireland with small reported catches by other nations. The only other significant players involved in the fishery are Dutch vessels and Dutch owned vessels registered in France and Germany. It is essentially a single species fishery.

The history of the fishery over the past 50 years has been one of an alternating boom and bust cycle (see Figure 4.2).

**Fig. 4.2 Landings, spawning stock biomass and fishing mortality in the Celtic Sea herring fishery since 1958 (Source: Marine Institute Stock Book 2012).**
The TAC in 2010 was increased by 70% over the 2009 figure and in 2011 increased by a further 30%. In 2011 the rebuilding plan achieved its aim of maintaining SSB above the precautionary biomass level, B_{pa} for the third consecutive year. In 2011 the parameters of a long term management plan were agreed by the CSHMAC and the Marine Institute and supported by the Pelagic RAC but still await ratification by the European Commission. Discussions have focused on the optimal balance between fishing mortality (F), stock biomass (SSB), total catch (TAC) all of which are aimed at minimising the risk of stock collapse. There is also a 30% constraint on annual TAC fluctuations. Under the current management regime the fishing mortality rate is at its lowest estimated level in the past 50 years.

**Current management institutions and approaches**

In 2001 the ICES advice for the Celtic Sea herring stock recommended a cut from the previous year’s TAC of 20,000 tonnes to a precautionary level of 6,000 tonnes for 2002. This was mainly based on a poor age profile for the stock which showed an over dependence on juvenile fish. Although eventually the scientific advice for the stock was amended and the TAC was set at 13,000 tonnes, stakeholders in the fishery were concerned enough to establish a Celtic Sea Herring Management Advisory Committee (CSHMAC) in 2001. The committee consists of representatives of fishermen, processors, scientists and control authorities. The Committee was established with the overarching goal of being able to maintain annual catches of 20,000 tonnes and to rebuild the stock if necessary to achieve this. Another strong objective was to improve the partnership between industry and scientists.

In 2005 the Committee was officially recognised as an advisory committee by the Irish fisheries minister and tasked with providing advice to the minister and managers from the fisheries department. Although officially only advisory, following ministerial recognition the committee has found that more of its advice has been accepted and the partnership between industry and science has strengthened. In this
sense the management of the fishery could be considered to represent a semi-formal version of co-management.

One of the most significant measures taken was the closure for several years between 2002 and 2006 of a large area off Dunmore East known as the Dunmore Box (Figure 4.1) where herring spawning takes place and where fishing effort had previously been concentrated. This was aimed at reducing catches of small first time spawning herring. However, despite this initiative the TAC continued to decline so in 2007 a rebuilding plan was developed by the CSHMAC in conjunction with scientists from the Marine Institute. The rebuilding plan set a very low fishing mortality level, allowed for a small-scale fishery with a guaranteed quota allocation and strengthened the annual closure of the spawning area. In 2011 the stock was deemed to have recovered (i.e. was above $B_{pa}$ and fished below $F_{pa}$) and from 2012 a long term management plan (LTMP) will replace it. The LTMP also sets a very low fishing mortality level (well below the fishing mortality estimated to achieve maximum sustainable yield, $F_{MSY}$) and retains the closure of the spawning area.

Another significant development in the fishery within the past decade has been the strengthening of control and enforcement in both legislative and operational terms. These changes have been driven mainly by the introduction of the pelagic weighing regulations and the establishment of an independent fisheries control agency. These factors have increased confidence in the precision of the scientific assessment and the Marine Institute in their most recently published advice state that “under the current management regime the quality of the catch data has improved” (Marine Institute 2012).

**Information sources**
- The original management objectives for the CSHMAC first defined in 2001.
- Various reports produced during the MSC accreditation process.
- Elements of PhD research conducted by Mike Fitzpatrick which was focused on Celtic Sea Herring and which included a prioritisation of management objectives for the fishery using the Analytic Hierarchy Process (AHP) method.
- Submissions made during a 2011/2012 Ministerial Policy review of access arrangements for the Celtic Sea Herring fishery.
- The results of a Choice Experiment survey on management measure preferences conducted as part of WP3 in SOCIOEC.

**Celtic Sea Herring fishery objectives**

The Celtic Sea Herring fishery has operated under a set of objectives which were agreed by its management advisory committee in 2001 and which served it well during the recovery of the stock between 2004 and 2011. However this original set of objectives required updating due to changes in the biological, market and governance
contexts of the fishery. Revised objectives were introduced as part of the LTMP and MSC processes and these are detailed below.

**Original CSHMAC objectives and those in the Recovery and Long-Term Management Plans.**

The objectives of the CSHMAC when it was established in 2001 were:

1. To build the stock to a level whereby it can sustain annual catches of 20,000 tonnes.
2. In the event of the stock falling below the level at which these catches can be sustained the Committee will take appropriate rebuilding measures.
3. To introduce measures to prevent landings of small and juvenile herring, including closed areas and/or appropriate time closures.
4. To ensure that all landings of herring should contain at least 50% of individual fish above 23 cm.
5. To maintain, and if necessary expand the spawning box closures in time and area.
6. To ensure that adequate scientific resources are available to assess the state of the stock.
7. To participate in the collection of data and to play an active part in the stock assessment procedure.

These objectives were drafted specifically in response to a stock crisis and a potential closure of the fishery at the time. They are focused on a specific catch target and a set of measures aimed at achieving this. The CSHMAC appears to have achieved its objectives, as following the implementation of a Recovery Plan in 2006 the stock was officially deemed to have recovered in 2010. During 2010 and 2011 the CSHMAC, along with the Marine Institute scientist responsible for assessment of the stock, developed and agreed the parameters for a Long Term Management Plan (LTMP). This plan includes as parameters; the Spawning Stock Biomass (SSB) level, the level of fishing mortality (F) and an annual constraint on changes in quota. Over the course of this development process some frustration at the limited scope of the plan was evident. This frustration was expressed both by the CSHMAC and the participating scientist. His view was that rather than complicating the LTMP by incorporating too many social and economic factors, that the committee should update their management objectives to reflect these concerns. He had also recommended, as far back as 2006, that the objective for an annual catch of 20,000 tonnes was unrealistic (Minutes of CSHMAC meeting, 9th March 2006). CSHMAC participants have also moved away from a rigid definition of target annual yield and towards a more long term approach to sustainable catch levels (authors observations from CSHMAC meetings attended during drafting of Recovery Plan and LTMP).

**MSC certification process**

The Marine Stewardship Council (MSC) in 2011, as part of their assessment process for Celtic Sea Herring, made a number of recommendations related to updating
objectives (Food Certification International Ltd., 2012). These recommendations included:

- That the CSHMAC should evaluate its objectives against scientific advice. Specifically, the objective to sustain catches around 20 000 t may be too optimistic and raise unrealistic expectations causing later problems for management.
- That the objectives in relation to Principle 2 (maintenance of the ecosystem) should be made more explicit both in short and long term contexts.
- That the CSHMAC operate with greater transparency and improve communications with stakeholders not directly involved in the management committee.
- That an overall management plan, encompassing the aspects covered by the LTMP, but also covering governance and environmental aspects, should be developed.

The MSC assessors also scored “Fishery Specific Objectives” as the lowest of 30 sub-criteria in their assessment.

The CSHMAC, in response to the MSC assessment report, developed a client action plan which contained the following commitments:

“The Celtic Sea Herring Management Advisory Committee will;

- Develop short and long term objectives for the Celtic Sea Herring in line with the EAFM. This approach will be consistent with MSC’s Principles and will help develop an improved fishery management system.
- Develop an Environmental Management Plan for the Celtic Sea Herring Fishery which, tuned by policy, will demonstrate clear and achievable fishery specific environmental management objectives and which will shape management advice through consideration of wider ecosystem elements. Proposals will be sought to help drive this process.
- Support an informed and transparent decision making process This process will clearly and transparently demonstrate how environmental targets and objectives guide decision making and overall management advice provided for this fishery. The process will be open to wider stakeholder consultation.”

(Food Certification International Ltd., 2012).

AHP prioritisation (from Fitzpatrick, 2013, in press)

All of the above evidence points to the need for a redrafting of the management objectives for the CSHMAC. Based on objectives expressed during cognitive mapping interviews, the commitments in the LTMP and the MSC action plan the hierarchy of objectives shown below in Figure 4.3 was developed and agreed with the close co-operation of the CSHMAC chairman. The hierarchy also includes socio-economic objectives which were not covered by either the LTMP or MSC environmental plan commitments.
Figure 4.3 CSHMAC Management Objectives Hierarchy

Committee Goal – Rebuild and sustain a viable Celtic Sea Herring Fishery

Overarching Objective

High-level Objectives

Ensure the long-term health of the Celtic Sea Ecosystem
- Support research & policy on the Ecosystem approach to fisheries management
- Improve decision making by inclusion of advice from relevant experts
- Minimise fishery impacts on other fish species
- Minimise fishery & other impacts on sensitive habitats & endangered, threatened or protected species
- Maintain ecosystem productivity through pollution reduction & managing vessels environmental impacts

Support the further development of an efficient & equitable fisheries governance system
- Ensure that decision making is based on consensus of all participants
- Ensure representation of all interests & improve transparency & consultation processes
- Support improved compliance, control & governance for all fleets involved in the fishery
- Strengthen industry-science partnership

Maintain & develop the socio-economic value of the fishery
- Maximise fishing & processing employment
- Maximise profitability
- Ensure that the interests of smaller vessels are protected
- Maintain access for young fishermen
- Pursue certification & branding initiatives to enhance market share & add value

Ensure conservation of the Celtic Sea Herring stock
- Adhere to the CSH Rebuilding Plan & implement an agreed Long Term Management Plan
- Support measures such as spawning box closures & continued closure of the Dunmore Box to increased fishing effort
- Support management measures & scientific advice aimed at minimising discards
- Protect all spawning components in the stock
- Support the use of observer programs to enhance science & management
AHP survey participants and method

15 CSHMAC participants completed the AHP survey. The decision to base it on this set of stakeholders, although it excludes some decision-makers with an influence on the governance of the fishery at a higher level (DAFM officials and the Fisheries Minister), was a pragmatic one. It was based on the researchers access to individuals and previous lack of involvement at Departmental and Ministerial level in the wider project within which this research was conducted. One respondent was eliminated from the analysis due to extremely high inconsistency levels (indicating that the respondent didn’t fill out the survey properly or didn’t understand how to complete it).

Respondents included 1 NGO representative, two representatives of fishermen's organisations, 1 participant in the small vessel or sentinel fishery, two RSW vessel fishermen, two traditional dry-hold fishermen, one retired fisherman, two scientists, one manager of a certification program, one fishery officer, and one owner of a Herring processing plant.

As the preference elicitation using AHP is cognitively quite straightforward, with only two elements being compared at a time, it has been found to be suitable for use either as an online or postal questionnaire survey (Leung et al., 1998). An online survey was set up and the target respondents were emailed an invitation to complete the survey. As stated above, only one of the completed surveys was invalid, so the online method of conducting AHP surveys was successful in this case. Outputs from the online survey were in the form of excel spreadsheets which could be analysed with AHP software. The software used was a freely available Excel based application called AHPCalc¹. This software calculates the AHP priorities for individuals, internal consistency ratios and group priorities based on the geometric mean.

**AHP survey results**

**Figure 4.4. Mean high-level objective priorities**

There is a clear preference across the group of respondents for conserving the herring stock above all other high-level priorities. 9 out of 14 respondents had stock conservation as their top priority and all others had it as their second priority. Only one respondent, the NGO representative, had ecosystem health as a clear first priority with one of the scientists and the certification scheme manager splitting first priority evenly between ecosystem health and Herring stock conservation. The three highest priority scores for stock preservation are from fishermen either operating RSW vessels or planning to. A significant proportion of fishermen operating smaller or older vessels did not give stock conservation their highest priority. Two of them had governance as their first priority and one had socio-economic value.
<table>
<thead>
<tr>
<th>Overall Management Objective Priorities</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservation of the Celtic Sea Herring stock</td>
<td>0.504</td>
</tr>
<tr>
<td>Protect all spawning components in the stock</td>
<td>0.126</td>
</tr>
<tr>
<td>Adhere to Long Term Management Plans</td>
<td>0.121</td>
</tr>
<tr>
<td>Support Dunmore and other spawning box closures</td>
<td>0.111</td>
</tr>
<tr>
<td>Support measures aimed at minimising discards</td>
<td>0.091</td>
</tr>
<tr>
<td>Use Observers to enhance science and management</td>
<td>0.055</td>
</tr>
<tr>
<td>Socio-economic value of the fishery</td>
<td>0.183</td>
</tr>
<tr>
<td>Ensure smaller vessels are protected</td>
<td>0.054</td>
</tr>
<tr>
<td>Maintain young fishermen’s access</td>
<td>0.042</td>
</tr>
<tr>
<td>Enhance value through Certification</td>
<td>0.037</td>
</tr>
<tr>
<td>Maximise fishing and processing employment</td>
<td>0.035</td>
</tr>
<tr>
<td>Maximise Profitability</td>
<td>0.014</td>
</tr>
<tr>
<td>Equitable fisheries governance system</td>
<td>0.175</td>
</tr>
<tr>
<td>Strengthen industry-science partnership</td>
<td>0.053</td>
</tr>
<tr>
<td>Support improved control &amp; compliance</td>
<td>0.053</td>
</tr>
<tr>
<td>Ensure fair representation, consultation &amp; transparency</td>
<td>0.044</td>
</tr>
<tr>
<td>Ensure decision-making is consensus based</td>
<td>0.024</td>
</tr>
<tr>
<td>Long-term Celtic Sea Ecosystem health</td>
<td>0.138</td>
</tr>
<tr>
<td>Improve decision-making through expert advice</td>
<td>0.037</td>
</tr>
<tr>
<td>Maintain ecosystem productivity by managing vessel pollution and environmental impacts</td>
<td>0.030</td>
</tr>
<tr>
<td>Minimise impacts on vulnerable habitats &amp; protected species</td>
<td>0.028</td>
</tr>
<tr>
<td>Minimise impacts on other fish species</td>
<td>0.022</td>
</tr>
<tr>
<td>Support EAFM research &amp; policies</td>
<td>0.021</td>
</tr>
</tbody>
</table>
Submissions made during a 2011/2012 Ministerial Policy review of access arrangements for the Celtic Sea Herring fishery.

The move towards consideration of a more expansive suite of management objectives illustrated in the AHP hierarchy above were reinforced by a submission made by the CSHMAC to the Irish Fisheries Minister in 2011. This submission was in response to a proposed move to a more restricted access regime and it refers to broadening management objectives from a purely biological focus to include economic and social objectives. Although these objectives were not made explicit the most noteworthy elements of the submission mentioned the use of a number of management measures which would contribute to the achievement of multiple objectives. The most important of these was the expressed necessity to limit access to the fishery.

Additional recommendations included the use of the closure of a spawning area to all fishing apart from inshore vessels and the management of quota by weekly allocations. Weekly allocations were intended both to maximise socio-economic benefits through the prolonging of the processing season and to limit spatial and temporal effort concentration on stock sub-components.

Choice Experiment survey on management measure preferences conducted as part of WP3 in SOCIOEC.

The most significant outputs from a choice experiment survey conducted in 2012/2013 among fishermen involved in the Celtic Sea Herring fishery were that the strongest preferences were for management measures which promoted the importance of fishing in the local community and also the long-term health of the stock. A co-management regime was also preferred to management at regional sea level. Strong and highly significant negative preferences were expressed for the use of either nationally- or internationally-tradable individual quotas.

The survey also included some additional questions on objectives and management measures relevant to this deliverable.

Table 4.2 High level objective rankings (Lower values indicate stronger preference)

<table>
<thead>
<tr>
<th>Average Ranking</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.6</td>
<td>Importance of fishing in the local community</td>
</tr>
<tr>
<td>2.2</td>
<td>Catch in tonnes from the fishery</td>
</tr>
<tr>
<td>3.1</td>
<td>Productivity of the ecosystem</td>
</tr>
<tr>
<td>3.1</td>
<td>Profits and return on investment</td>
</tr>
</tbody>
</table>
Table 4.3 Ranking of CFP proposals (Lower values indicate stronger preference)

<table>
<thead>
<tr>
<th>Proposal</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase industry input, role and responsibilities</td>
<td>2.7</td>
</tr>
<tr>
<td>Focus on socio-economic aspects of management</td>
<td>4.3</td>
</tr>
<tr>
<td>Reduce fleet overcapacity</td>
<td>4.3</td>
</tr>
<tr>
<td>Focus decision-making on long-term goals</td>
<td>4.7</td>
</tr>
<tr>
<td>Fish at levels guaranteeing MSY</td>
<td>4.8</td>
</tr>
<tr>
<td>Clarify management objectives</td>
<td>5.1</td>
</tr>
<tr>
<td>Improve the regional decision making structure of CFP</td>
<td>6.4</td>
</tr>
<tr>
<td>Improve compliance with rules</td>
<td>6.8</td>
</tr>
<tr>
<td>Make quotas individual and transferable</td>
<td>7.6</td>
</tr>
<tr>
<td>Ban discards</td>
<td>8.4</td>
</tr>
</tbody>
</table>

Summary of Celtic Sea Herring Fishery Objectives

The AHP prioritisation results in particular are relevant and useful not just in clarifying what objectives are supported by stakeholders but also the relative importance of those objectives and the degree of support across stakeholders. The combined results confirm that stock issues are prioritised over any other concerns and that ecosystem matters are not a major priority for the majority of participants in the fishery and its management. This is a significant finding because the stakeholders priorities are likely to be linked to their actions and the support they will have for future management measures. So measures which allow for further protection and enhancement of the Celtic Sea Herring stock are likely to be strongly supported. Measures, on the other hand, which consider the critical food web role played by herring, and which may require that the needs of other fish, mammal or seabird species are accounted for, may not be well supported. It is important not to overstate this as a lower priority score for an objective does not mean that it is unsupported or rejected but simply that the stakeholder group, at this time, prioritise other objectives more highly. The relative priority afforded to ecosystem issues in the AHP survey of 14% is very much in line with findings from other similar surveys. Leung et al., (1998) found that Hawaiian industry stakeholders gave a weighting of 14% to bycatch and protected species, Mardle et al., (2004) found that UK fishing groups gave a combined weighting of 13% to non-commercial species and quality of the marine environment while Pascoe et al., (2009) found that Australian industry representatives afforded a priority of 17% to all environmental objectives. The MSC certification process and in particular the recommendation that the management committee develop an environmental management plan and initiate a cetacean observer programme means that broader environmental issues are being included as objectives, albeit without being explicitly supported by many of the stakeholders.
Economic objectives present a difficulty in this fishery as there is no reliable or detailed economic dataset available. Additionally across all of these surveys presented here economic factors are mainly given a low ranking. The most curious result in the AHP survey is that the “Maximising Profitability” objective ranked lowest of all objectives in this survey. This is significant as it differs from some of the literature which shows that economic concerns rank highly for fishing industry stakeholders. Pascoe et al., (2009) found that economic and stock objectives were of equal concern for Australian fishermen. Mardle et al., (2004) found that stock sustainability issues were ranked slightly higher than concerns about profits. The lack of prioritisation of profits in this survey is an exception which may be due to a number of issues. The wording used in the survey, “Maximise profitability”, may have functioned as a disincentive as many respondents could view that as a very narrow objective with some negative implications if it is not qualified by social or biological constraints. A different choice of wording, such as “Optimise Profitability”, “Optimise Fishery Value” or “Stabilise income” may have resulted in a higher priority. The fishery is also going through a change in the access regime, which has created a significant increase in conflict, including accusations of CSHMAC participants being motivated by personal greed (Notes from interview with CSHMAC participant, October 2011). As a result profit-making motivations may be deliberately downplayed. There is significant evidence that the management committee have moved to a more long-term approach to the economic benefits from the fishery. A recent decision not to re-open a roe fishery due to concerns about inevitable high discard rates, despite a buoyant Japanese market and large potential profits highlight that maximising net present value is more of a viable economic objective than maximising profits. Maximising GVA is a possible objective for the fishery although if an integrated valuation of the Herring as a forage fish were conducted and it was found that its greatest value lay in building up the stock in order to benefit higher value predator species or marine mammal species then this objective would not be supported.

Social objectives were moderately ranked in the AHP survey but were very strongly supported in the Choice Experiment survey. A decrease in the importance of fishing to the local community was strongly rejected and this can be considered as a close proxy for the high level SOCIOEC D2.1 objective “Ensure viable coastal communities”.

The high-level objective “Improve policy and decision making through inclusive governance structures” is a strongly supported objective within the Celtic Sea Herring fishery in so far as it points to the need for a dedicated management forum. This support is mainly due to the long standing presence of the management committee and its perceived benefits by many, if not all, of the stakeholders. However the extent to which the management advisory committee is inclusive of broader interests is a more contested objective as some CSHMAC participants feel that too many diverging
interests will increase conflict levels, reduce decision-making efficiency and destabilise the committee (Fitzpatrick, 2013).

When considering the original objectives of the CSHMAC and comparing them with the list in Figure 4.3 it can be seen that the original objectives all belong under the Conservation of Herring Stock category. So the new suite of objectives, even though some are not strongly prioritised, at least provide a basis for assessing how EAFM implementation, including social, governance and economic aspects may be addressed. These AHP results indicate that the formal adoption of a similar set of objectives should be possible without significant conflict. The majority of the objectives were broadly supported with very few notable conflicts between individual and group priorities. Such a formal adoption would give a baseline against which future management plans and outcomes could be measured.

**Preferred management measures and associated objectives.**

- **Reduction of overcapacity through access restrictions** – this is primarily intended to address the economic objectives of the fishery, i.e. that there should be a reasonable match between the number of vessels and available quota. Secondarily it addresses biological objectives as too many vessels will create political pressures for the setting of higher quotas and incentives for overfishing.

- **Spawning Box closure** – this measure primarily addresses biological objectives as it is intended to reduce both spatial and temporal effort concentration with the associated risk of damage to stock sub-components. The secondary target of this measure are social objectives as there is a derogation for smaller or sentinel vessels which ensures that they do not have to compete with larger vessels further offshore. The sentinel fishery also provides useful scientific information which would be unavailable in the case of a full closure.

- **Weekly quota allocations** – this measure addresses social and economic objectives – the lower allocations under a weekly regime disincentivises participation by larger vessels and also ensures a longer processing season with associated local employment benefits.
4.2 The Basque Country inshore and offshore fleets

**Offshore Fleet**
The offshore fleet is a multispecies fleet which main technology employed is trawling but also employs pair trawling and long-lining. The fleet is a multispecies fleet that traditionally distributes its activity across the year but July and August. The Basque fleet comprises 11 otter trawlers fishing vessels, having an average of 38 m and an average power of 461 Kws. In average, an otter trawler employs 13 fishermen, thus the fleet shall directly employ around 143 people. The main target species are northern hake (*Merluccius merluccius*), anglerfish (*Lophius picatorius* and *Lophius budegassa*), megrim (*Lepidorhombus whiffiagonis*) and pelagic species such as mackerel (*Scomber scombrus*). Catches of northern hake and other demersal stocks exploited by this fleet occur in ICES areas VI, VII (Grand Sole) and VIIIabde (Bay of Biscay). The European hake is a widely distributed species along the Northeast Atlantic. Since the end of the 1970s, ICES assumes two different stock units; the northern stock, in Division IIIa, Subareas IV, VI and VII and Divisions VIII abde, and the southern stock in Divisions VIIIc and IXa, the latter occurs along the Spanish and Portuguese coasts (Figure 1).
The fleet is a multispecies fleet that traditionally distributes its activity across three seasons: the mackerel; the anchovy, and the tuna seasons. The fleet is composed basically of purse seiners, which can shift fishing gear to pole & line (using live bait), hand lines and trolling, depending on the species and fishing season. In this study we will focus on the purse seiner and pole & line. Currently, the Basque fleet comprises 42 fishing vessels, having an average of 32 m and an average power of 467 Kws. In average, a purse seiner employs 12 fishermen, thus the fleet shall directly employ around 500 people. The main target species are anchovy (*Engraulis encrachicolus*), albacore (*Thunnus alalunga*), mackerel (*Scomber scombrus*), bluefin tuna (*Thunnus tynnus*) and horse mackerel (*Trachurus tranchurus*).

**Pelagic Case study (Mackerel)**

Mackerel is a species that can be found throughout the Atlantic, from Norway to Portugal. It is distributed throughout both the Eastern (Baltic, Mediterranean & Black Sea) and Western areas of the North Atlantic. Currently, it is considered the existence...
of a single stock of mackerel in the area of Northeast Atlantic (ICES 1996), instead of the three stocks that were distinguished before (ICES, 1992). In 1995 it was agreed to combine the stocks of North, West and South in a single population, the Northeast Atlantic mackerel (ICES, 1996) with some spawning components (North Sea, West and South). These components set for mackerel are not totally independent but there are, to some extent, reproductive exchanges. See in Figure 1 the different spawning components. South component comprises Division VIIIc and zones IX and X.

Spanish fleet harvesting mackerel comprises vessels from all the regional autonomous communities along the northern seaboard (Basque Country, Cantabria, Asturias and Galicia), plus some vessels from Andalusia. The Basque Country fleets fishing mackerel are trawlers, coastal traulers, purse seiners, gillnet and hand lines.

Average annual catches of this species from 1989 to 2011 was 687,000 tons, although with significant differences between years. The Spanish fleet in general and the Basques in particular perform more than 90% of their total catch in the South area (ICES Div., IXa and VIIIC). Of the total area of South TAC, Spain is responsible, through the principle of relative stability, 82% of the total, the remainder being allocated to Portugal and to a much lesser extent, France. The evolution of South TAC shows a decline from 41,100 tons for the year 2002 to the 29,600 tons in 2011.

The Spanish catches in recent years have reached double (or even triple in 2009) the TAC allocated. Moreover, in 2008 and 2009, only landings from the Basque fleet exceeded the entire TAC allocated to Spain. Specifically related to the Basque fishery, the importance of fishing in Basque ports has meant an average of 43% of all landings of the Spanish fleet in the period 1989-2011, which sets the Basque fleet as the most important to mackerel fishing in Spain.

**Current management institutions and approaches**

**OFFSHORE FLEET**

Basque demersal fisheries are managed on the basis of a TAC’s share allocated to Spain. The International Council for the Exploration of the Sea (ICES) plays an advisory role in the setting up of the TAC for the main species of the offshore fleet. ICES is responsible for collating data on fish stocks collected by scientists from member states and associated states. The ICES’s working group in charge of providing the scientific advice for demersal stocks is the WGHMM -Working group on the Assessment of the Southern Shelf Stocks of Hake, Monk and Megrim-. Then, ICES’ Advisory Committee (ACOM), former Advisory Committee on Fisheries Management (ACFM), reports to the EU Commission on the status of the stocks, and on the consequences, in the long and short-term, of various limits on catches.

Regarding the main demersal species, once the European Commission receives the report from ICES’s ACOM consults its own Scientific, Technical and Economic Committee for Fisheries (STECF), which is composed of national experts. Having received the outcome of this process, the Council of Ministers establishes the TACs,
which are subject to revision by the Regional Advisory Councils (RAC). Management issues concerning the demersal and pelagic species dealt with in this report are discussed in the Southern Waters and Pelagic RACs, respectively.

Decisions on TAC setting are taken at the Council of Ministers having the ICES an advisory role in the setting up of that TAC. The Southern RAC plays only a consultative role. Despite their role as members of the Southern RAC, Basque offshore stakeholders grouped under the umbrella of their Producers Organizations (POs) have limited effective influence in fisheries management. The POs can manage the rights of their associates and also to take decisions on management measures that can be extended by the government to other POs exploiting the same resources, the so called extension norms (Aranda et al. 2012). These rules have been defined by Council Regulations EC 104/2000 and 1886/2000.

**INSHORE FLEET**

Basque pelagic fisheries of anchovy and horse mackerel area managed on the basis of a TAC’s share allocated to Spain. ICES plays an advisory role in the setting up of the TAC for these species. ICES is responsible for collating data on fish stocks collected by scientists from member states and associated states. The ICES’s working group in charge of providing the scientific advice for anchovy is the WGHANSA (Working Group on Southern Horse Mackerel, Anchovy, and Sardine). Then, ICES’ Advisory Committee (ACOM), former Advisory Committee on Fisheries Management (ACFM), reports to the EU Commission on the status of the stocks, and on the consequences, in the long and short-term, of various limits on catches.

Regarding anchovy and horse mackerel, once the European Commission receives the report from ACFM consults its own Scientific, Technical and Economic Committee for Fisheries (STECF), which is composed of national experts. Having received the outcome of this process, the Council of Ministers establishes the TACs, which are subject to revision by the Regional Advisory Councils (RAC). Anchovy and horse mackerel fisheries issues are discussed in the Southern Waters and Pelagic RACs, respectively.

As pointed out before, decisions on TAC setting are taken at the Council of Ministers. Spain allocates its shares of the TACs to the fishing fleets concerned. In the case of anchovy, the share of the TAC is harvested by the fishing fleet without imposed individual limits on quotas and fishing effort. However, the inshore fishing organizations (i.e. cofradias, currently organized under the producer organization’s umbrella) can agree, and actually they have traditionally agreed, on limitations on landings and limits on days at sea by week. In the case of horse mackerel, national regulations impose an allocation of catches by fishing technology. Inshore organizations can also impose complementary measures such as individual catch limits per fishing vessels. These management measures, which are proposed at the level of the Producer Organization (PO), are extended by the Government to other POs exploiting the same resource, using the same fishing technology, through the so
called extension norms. PO’s power to introduce technical management measures for a given fishery derives from the EC Regulations 104/2000 and 1886/2000.

Basque fisheries of albacore and bluefin tuna are based on TAC shares allocated by the ICCAT (The International Commission for the Conservation of Atlantic Tunas) to the EU, which are in turn allocated to Spain. The establishment of the bluefin tuna TAC is decided by ICCAT in attention to scientific advice provided by the Working Group on Bluefin Tuna, which compiles all biological data, review fisheries data for this species and conducts the assessments for their relevant species. This is presented to the Standing Committee on Research and Statistics (SCRS). This agrees or modifies the recommendations from the working group. The chair of the SCRS then presents the recommendations to the ICCAT commission, who agrees on the final TAC. The albacore TAC follows the same process but in this case the assessment is run by the Working Group on albacore.

On the side of tuna species, once the ICCAT Commission establishes the TACs it allocates the TACs amongst the diverse Commission’s members. The EU receives a share of the TAC and in turn allocates this to its member states, including Spain.

In the case of albacore, the Spanish government has not provided a mechanism to allocate the share of the TAC on a fishing technology basis. In the case of the bluefin tuna, the allocation of the Spanish share of the TAC is done first by fishing technologies (e.g. Basque purse seiners fishing with live bait) and then, within each fishing technology, allocation is done on an individual vessel basis. Rights holders can take decisions on the use of their fishing rights either at the level of the individual boat owner or at the level of their respective PO, for example, by pooling their fishing rights.

**PELAGIC CASE STUDY (Mackerel)**

Basque pelagic fishery of mackerel is managed on the basis of a TAC’s share allocated to Spain. The International Council for the Exploration of the Sea (ICES) plays an advisory role in the setting up of the TAC for that species. ICES is responsible for collating data on fish stocks collected by scientists from member states and associated states. The ICES’s working group in charge of providing the scientific advice for mackerel is the WGWIDE (Working Group on Widely Distributed Stocks) with support from WGMEGS (Working Group on Mackerel and Horse Mackerel Egg Surveys), in relation to sea campaigns. Then, ICES’ Advisory Committee (ACOM) reports to the EU Commission on the status of the stocks, and on the consequences, in the long and short-term, of various limits on catches.

It is worth recalling that a discarding ban is one of the main issues being discussed at the level of the EU institutions involved (i.e. Council, Parliament and Commission) in the framework of the current reform of the CFP. Hence, a ban on discarding in Spain may first require the reform of the CFP to incorporate such a prohibition, to establish a regulation and then to transpose that regulation to the Spanish fisheries normative. It
is worth pointing out, however, that in the inshore fishery discarding is low. This is
due to the nature of the fishing activity.

The linkages between science, stakeholders and managers is done by using different
tools, among which it is for mention the Pelagic Stock RAC (Regional Advisory
Council), which role is to submit opinion to the Commission and Member States on
different aspects of mackerel stock, among others (blue whitting, horse mackerel and
herring,…). However, this RAC is used as a linkage tool between fishing sector
representatives and the managers. Thus, another important issue is that Spanish sector
organizes meetings - with different regions stakeholders: administrations, scientists,
and fishing sector representatives - to discuss different issues related the fishery. In
particular, the inshore fishing organizations, so-called cofradias, and currently
organized under the Producer Organization’s umbrella, take decisions on limits by
day, on rules to share the Spanish TAC among the different technologies, among other
issues.

Decisions on TAC setting are taken at the Council of Ministers having the ICES an
advisory role in the setting up of that TAC (see section 4.1). Besides, the Pelagic
Stock RAC together with the inshore fishing organization or cofradias represent the
main ways used in the decision-making process.
**Information sources**

**Fishery objectives**

**OFFSHORE FLEET**

The Basque offshore fleet is subject to the Law 3/2001, which is the general law of Spanish fisheries. This legal instrument aims at being consistent with the Common Fisheries Policy (CFP). It aims at ensuring a sustainable exploitation of the fishing resources, targeting to adapt fishing effort to resource status, and ensuring an efficient and competitive fishing sector, amongst other aims. It establishes the rules to access and exploit the fishing resources such as census of fishing vessels, fishing authorizations, permits, distribution of fishing rights criteria of allocation and characteristics of fishing rights, close areas and seasons and the establishment of a system of Monitoring, Control and Surveillance. Role, scope and characteristics of fishermen organization are also defined and regulated by this law.

**INSHORE FLEET**

The Basque inshore fleet is subject to the Law 3/2001, as offshore fleet.

**PELAGIC CASE STUDY (MACKEREL)**

The Basque inshore fleet is subject to the Law 3/2001, as offshore fleet. Other specific regulation (European, national and regional) mainly related to resource and gears used by the so-called artisanal fleet (see Murillas et al., 2012 for a detailed description).

**Hake in the Recovery Plan (Offshore fleet).**

Unless the northern hake stock is currently classified as being harvested sustainably, in the early nineties the estimated spawning stock biomass was under the safety limits, this is, under the Blim. In view of this situation, and following concerns about the low level of the biomass and the possibility of recruitment failure, a range of technical measures were introduced by the Council of the European Union (Council Regulations 1162/2001, 2602/2001 and 494/2002) aimed at improving the selectivity and protecting juveniles. Subsequently, a Recovery Plan was implemented in 2004 (Council Regulation (EC) 811/2004). The recovery plan consisted on setting a TAC equivalent to a target F of 0.25 (=Fpa) or lower in order to avoid the SSB decrease, and with the constraint that annual TAC change could not exceed +/-15%. The overall objective was to rebuild the spawning stock biomass to 140.000 t (Council Regulation EC No 811/2004). Besides the TAC, some other regulations were implemented, as the MLS (Minimum landing size) in 27 cm or some technical measures; The technical measures comprise a 100 mm minimum mesh size for otter-trawlers when hake comprises more than 20% of the total amount of marine organisms retained on board, with a dispensation for those vessels less than 12 m in length and which return to port within 24 hours of their most recent departure. Further, two areas have been defined, where a 100 mm minimum mesh size is required for all otter-trawlers, irrespective of the proportion of Hake caught. Some other measures were also adopted; landings only permitted in designated ports, especial prior notifications before landing, etc.
From 1983 to 2005 there was a decline in landings of northern hake. Since 2006 (when the Recovery Plan was introduced) until 2009, landings of the Spanish fleet has doubled, except in 2010. ICES considers that the spawning biomass and the yield in the long run could be substantially improved by reducing juveniles’ mortality. Predictions on spawning biomass and catches are strongly influenced by the low recruitment in years 2009 and 2010. Regarding megrim, in divisions VIIb-k y VIIIab catches should be reduced since stock tendency is uncertain. Catch levels and discards are only partially known. In the case of anglerfish in divisions VIIb-k and VIIIab, the state of the stock is unknown. It has not been possible to quantify the spawning stock biomass, fishing mortality and recruitment. The data of the surveys show that the biomass has shown a growth since mid-2000 as a consequence of some good recruitment. There are evidences of a strong recruitment in 2009.

**Anchovy Recovery Plan (Inshore fleet).**

A draft management plan was proposed by the EC in 2009 in cooperation between STECF and the South Western RAC. This plan has not yet been formally adopted by the EU, and it has not been presented to ICES for evaluation. However, the plan has been used in the last two years (2010 and 2011) for establishing the TAC for the period between 1st July and 30th June. (ICES, 2012 a).

**Mackerel Recovery Plan (Pelagic case study).**

In the case of horse mackerel, in 2007 the Pelagic RAC, in collaboration with a group of scientists, developed and proposed a management plan for the Western Horse Mackerel stock. The plan sets a three-annual TAC using a harvest rule that comprises a fixed TAC component and one that varies with the trend in egg production as recorded during the previous 3 egg surveys. Currently, the last plan adopted set a TAC for 2011-2013 (ICES, 2012 b).

There is a current management plan which aims to establish the fishing mortality in a determined ranged. Implementation of the management plan resulted in reduced fishing mortality and increased biomass. Since 2008 catches have greatly exceeded those given by the plan.

**Summary of Fisheries Objectives**

The summary of objectives are detailed in table 3. In general terms the main objectives for the are:

**Offshore fleet:**

Ecological:

- Maximize yield in tones of commercial species (No in case of mackerel).
- Gradually eliminate discards on a case-by-case basis.

Economic:

- Maximization/optimization of present value.
- Maximization of profits.
- Optimize the number fo vessels.
SOCIOEC – Deliverable 2.2

- Reduction of fuel price and/or consumption.
- Fish quality and price level.

**Inshore fleet:**

Ecological:

- Maximize yield in tones of commercial species.

Economic:

- Maximazation/optimization of present value.
- Reduction of fuel price and/or consumption.
- Fish quality and price level.

Social

- Improve policy and decision making through improved inclusive governance structures.
- Ensure consumers have transparent information and choice of fish from healthy stocks.

**Pelagic fleet (Mackerel)**

Economic:

- Maximazation/optimization of present value.
- Reduction of fuel price and/or consumption.
- Fish quality and price level.

Social

- Improve policy and decision making through improved inclusive governance structures.
Table 4.4: Summary Table of Objectives for Basque case study fisheries

<table>
<thead>
<tr>
<th>High level objective</th>
<th>Do you agree with this as a general fisheries objective?</th>
<th>Under each pillar indicate which objectives are most important for your fishery</th>
<th>For the selected objectives indicate how they could be further specified in your fishery</th>
<th>Level of fishery to which objective is relevant - regional sea, national or local level</th>
<th>Appropriate time-scale for objective - short, medium or long</th>
<th>Indicate which objectives strongly support or conflict with each other?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximize yield in tonnes of commercial species</td>
<td>YES (in general)</td>
<td>X</td>
<td>In general terms all fleets intend to maximize yield in tonnes, through:</td>
<td>Local</td>
<td>Medium/long</td>
<td>Conflict with economic objectives if the long term management plan do not accomplish with economic level (J.M Da rocha and M.J. Gutiérrez, 2011).</td>
</tr>
<tr>
<td></td>
<td>NO (mackerel)</td>
<td></td>
<td>• Long-term management plan for anchovy in the Bay of Biscay.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Long-term management plan for northern hake.</td>
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<td></td>
<td></td>
<td></td>
<td>• Accomplish TAC- Quota.</td>
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<td></td>
<td></td>
<td></td>
<td>• Establish individual day</td>
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<tr>
<td></td>
<td>In the case of mackerel this is not an objective due to:</td>
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<tr>
<td></td>
<td>• the big capacity of the fleets.</td>
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<tr>
<td></td>
<td>• the fishermen’s perception</td>
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</tbody>
</table>
about the good situation of the mackerel stock, the low prices, The seasonality of the fishery.

- Seasonal stop.
- However, not in the particular case of mackerel fishery (see conflict with other objectives in last column)

| Gradually eliminate discards on a case-by-case basis | There is no an important discard problem in the inshore fleet, reason why it does not represent an objective for this fleet
YES (offshore) | Technical measures: mesh size. | Local | Long | Conflict with economic objectives |
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<tbody>
<tr>
<td>Minimizing bycatch of vulnerable and protected species</td>
<td>NO</td>
<td></td>
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<tr>
<td>Minimizing negative impact on seabed habitats</td>
<td>NO</td>
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</tbody>
</table>
In some cases, fishermen consider it as an objective, only because it represents the way of increasing profits. But, from an ecological point of view the answer to this question is NO.

### Economic Pillar Objectives

<table>
<thead>
<tr>
<th>Maximization/optimization of present value</th>
<th>YES (Offshore)</th>
<th>Inshore: RACs involved in developing a long term management plans. Daily limits of catches. Seasonal stops. Scrapping subsidy.</th>
<th>Local</th>
<th>Medium/long</th>
<th>Conflict with ecological objective only if optimization is done with an economic model. If using a multidisciplinary model, there will be no conflict.</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES (Inshore - anchovy)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ünstenthetodynamisch in dieser Wechselwirkung berücksichtigen. Ein multidisziplinärer Ansatz würde jedoch eine Konfliktsituation vermeiden.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Economic Pillar Objectives</th>
<th>YES (Offshore)</th>
<th>Inshore: RACs involved in developing a long term management plans. Daily limits of catches. Seasonal stops. Scrapping subsidy.</th>
<th>Local</th>
<th>Medium/long</th>
<th>Conflict with ecological objective only if optimization is done with an economic model. If using a multidisciplinary model, there will be no conflict.</th>
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<tr>
<td>YES (Inshore - anchovy)</td>
<td></td>
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<td></td>
<td>ünstenthetodynamisch in dieser Wechselwirkung berücksichtigen. Ein multidisziplinärer Ansatz würde jedoch eine Konfliktsituation vermeiden.</td>
</tr>
</tbody>
</table>

SOCIOEC – Deliverable 2.2
<table>
<thead>
<tr>
<th>Maximization/optimization of gross value added (or rent)</th>
<th>YES (inshore - Anchovy : maximization revenues through prices/ Mackerel : through quantity)</th>
<th>X</th>
<th>Individual day limits by vessel internally (PO) established (anchovy) not to saturate the market and to produce and increase in prices. In the case of mackerel the fishermen strategy is the more they catch the more they earn. In this case, the day limits (established by national regulation) is not accepted by fishermen except if there is strong controls at ports, and other coercive measures established by administration.</th>
<th>local</th>
<th>Short</th>
<th>Conflict with ecological objective only if optimization is done with an economic model. If using a multidisciplinary model, there will be no conflict.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximization of profits (within ecological and social</td>
<td>YES (offshore)</td>
<td>X</td>
<td>ITQ: To facilitate exchange of rights to</td>
<td>Local</td>
<td>Short</td>
<td>Conflict with ecological</td>
</tr>
<tr>
<td>Constraints</td>
<td>Adjust capacity to opportunities.</td>
<td>Objective only if optimization is done with an economic model. If using a multidisciplinary model, there will be no conflict.</td>
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</tr>
<tr>
<td>Optimize the number of vessels (to adjust the size of the fleet to fishing possibilities).</td>
<td>YES (offshore)</td>
<td>Reduction of the number of vessels. Reduction of capacity. Re-allocations of fishing effort. Interest to maintain the scrapping subsidy.</td>
<td></td>
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<tr>
<td></td>
<td>Local</td>
<td>Medium/long</td>
<td>Conflict with ensuring coastal viable communities. Support ecological objectives and also economic objectives (e.g.)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Reduction of fuel price and/or consumption

(We specify this objective apart from maximization of profits due to its great importance)

| YES, In fact, some fleets carry out agreements with fuel producers to fix prices. Similar to the future prices on other commodities. | X | Technological innovation is introduced as a way of reducing the fuel consumption given the high prices. | Regional | Support ecological objectives. The lower the fuel price and/or consumption the lower the fishermen’s behavior to fish more and more. Also support economic objectives (lower prices, possible access to subsidies in the future?,...). |

### Fish quality and price level

(within the point of view of)

<p>| YES (very important for | x | Technological innovation is introduced to improve | local | Medium | Support economic and also ecological |</p>
<table>
<thead>
<tr>
<th></th>
<th>fishermen)</th>
<th>the processing of fish on board</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish quality and price level</td>
<td>YES (very important for consumers and administration)</td>
<td>X</td>
<td>A good quality-price product is pursued. “Kalitatea” Label in the Basque Country is also important for a specific group of consumers with high willingness to pay. These consumers value both the price and the identification of the origin of the fish product</td>
<td>Regional</td>
</tr>
<tr>
<td>Social Pillar Objectives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure viable coastal communities</td>
<td>YES (Public administration of Basque Country)</td>
<td>Enhancing the sustainability of artisanal fleet.</td>
<td>Regional</td>
<td>Medium/long</td>
</tr>
<tr>
<td>Improve policy and decision making through improved inclusive governance structures</td>
<td>YES (Inshore)</td>
<td>X</td>
<td>Cofradías gather under the umbrella of POs and can propose conservation and management measures that may be adopted by the Spanish government and imposed at national level.</td>
<td>Regional</td>
</tr>
<tr>
<td>Ensure fair living standard, improved working and security conditions on board of fishing vessels</td>
<td>NO (this is an objective but only because it represents the way of increasing the fishing effort)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protect interests of smaller vessels</td>
<td>YES (Public administration of Basque Country)</td>
<td>X</td>
<td>Enhancing the sustainability of artisanal fleet.</td>
<td>Regional</td>
</tr>
<tr>
<td>Ensure consumers have transparent information an</td>
<td>YES (Inshore - case of)</td>
<td>X</td>
<td>Protected Geographical</td>
<td>Regional</td>
</tr>
</tbody>
</table>
### Choice of fish from healthy stocks

- **anchovy**

### Indication (PGI) and correct labeling of anchovy of the Bay of Biscay due to the fact that anchovy is appreciated fish in the Cantabrian area.

### Ecological objectives.

Are there other high level objectives which should be included or should the wording of any of the objectives above be changed to reflect a different emphasis?

**YES,** there are other objectives we have introduced new row in the table in red color.

What are the other objectives? Please complete a new row in the table in the same form as the existing ones.

---

**Brief description of the Case Study for which this table has been completed.** The case study is referred to the **inshore and offshore fleets in the Basque Country.** Inshore fleet is composed by **inshore purse seiner** that can shift fishing gear to pole and line (using live bait), hand lines and trolling. This fleet is a **multispecies fleet fishing mackerel, anchovy and tuna.** Offshore fleet refers to the trawlers in ICES areas VI and VII and VIIIabde. Is a multispecies fleet which main technology employed is trawling. The target species are northern hake, megrim and anglerfish.

- The responses given in the template have been deduced from several focus groups that have been organized and developed with some stakeholders:
  - Interview with offshore fleet PO’s representative in Ondarroa.
SOCIOEC – Deliverable 2.2

- Interview with the inshore organizations (cofradías) representative of Gipuzkoa.
- Focus group with fishermen below to the purse seiners of Gipuzkoa in Pasaia.
- Focus group with fishermen below to the artisanal fleet (mackerel stock is specially attended by Socioec covering all the fleets involved in this fishery more than purse seiners and trawlers)

- In addition, AZTI knowledge and literature has been used to complete the template.
- Finally, AZTI knowledge about Basque Country administration and consumers objectives has also been used to complete the template.
5. North Sea Regional Case Study – North Sea Demersal Fisheries

5.1 Introduction

The North Sea demersal fisheries are a well-known and well-studied example of international mixed-fisheries. This fisheries has received very strong political attention over the past decades after a long poor record of overexploited stocks, unprofitable fleets, unreliable catch statistics and among the world largest discards estimates due to unbalance in both size selectivity of the fisheries (in the case of plaice) and/or low quotas (in the case of cod). Since the beginning of the 2000s a suite of initiatives to overcome this situation have therefore been launched by the various parties involved, including not only managers, stakeholders and scientists, but also, increasingly, consumers and the civil society. Such initiatives have been launched largely independently from each other, but all with the same aims of restoring sustainable fisheries and improve the overall governance and trust across key actors. The most remarkable achievements over the last ten years would include for example:

- Managers: implementation of single-stocks long-term management plans for the main fish stocks (cod, saithe, haddock, sole, plaice, whiting); Implementation of an effort control regime in 2003, revised in 2008 and which includes for the first time a mechanism for results-based management rewarding demonstrated cod avoidance behavior with additional days at sea; improved landings control;
- Stakeholders: Regional collaboration within the RACs; Implementation of a range of industry-led initiatives to reduce discards via e.g. real-time closures, changes in selectivity and catch-quota management with fully documented fisheries, increased collaboration with scientists in partnerships projects;
- Scientists: Improvements in regional data collection schemes, development of the first mixed-fisheries and multi-species advice, various research projects involving fishermen
- Consumers and civil society: raising demand of MSC certified products and via campaigns with a high echo in the media as the FishFight campaign.

This focus on North Sea fisheries has propagated towards Europe, leading ultimately to the most iconic achievement of the negotiations around the reform of the Common Fishery Policy, i.e. the proposal for a discards ban in European fisheries.

All together, these many initiatives have started to bear results, first halting the decline and, now recently, rebuilding the stocks towards sustainable levels of biomass and fishing mortality in spite of low productivity and continuous low recruitment for most stocks.

In this situation, the North Sea fisheries are paving the way for the future. The need for urgent rebuilding of fish stocks is being is progressively replaced with more long-term thinking for future management. Therefore, an analysis of the future management objectives as undertaken in SOCIOEC and other projects is timely and useful.
Various sources of information have been gathered for this chapter.

5.2 **Review of management objectives based on current policies and frame**

*Current management objectives within EU policy*

**Long-term management plans**

As mentioned above, an increasing number of commercial (fish) stocks in the North Sea demersal fisheries are now managed by long-term management plans (see MIXFISH report, annex 7). All these management plans are based on clear management objectives, but which are exclusively ecological and single-stock oriented (provide sustainable fisheries and high yield). They are constructed around the definitions of harvest control rules settings TACs levels for the next year based on target fishing mortality rates, those being usually dependent on the current stock status (spawning stock biomass). Additionally, a constraint is applied limiting the interannual variability of TACs (typically 15-20%).

In the case of cod, sole and plaice, some mechanisms linking fishing mortality target to fishing effort have also been introduced.

The target fishing mortalities have been established by scenarios analysis (Management Strategies Evaluations). In most cases these are also consistent with the ICES MSY approach, but not always. For North Sea cod in particular, the current Fmsy (0.19) estimated by ICES is half of the management plan target (0.4). NS cod reference points are however notably uncertain due to the central assumptions on future multispecies relationships, both across species (predation) and within the species itself (cannibalism), and ICES is currently progressing towards the estimation of multi-species reference points for the North Sea (http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2013/2013/mult-NS.pdf). The most updated analyses show however that uncertainty around these is large and that there is no single maximum sustainable yield solution in a multispecies context, so policy choices will have to be made.

**MSC objectives**

An increasing number of North Sea demersal fisheries are being MSC certified (www.msc.org). The Danish Fishing Producent Organisation (DFPO) and the Danish Fishermen Association have given themselves the ambitious objective that all Danish commercial fisheries where it lies within their own power to fulfill the requirements should be certified. Certified fisheries for the relevant stocks are as follows:

- North Sea/Skagerrak Haddock: Scottish Fisheries seine and trawl; Danish demersal Trawl (including Scottish Seine), Danish Seine, Longline, Set Nets (Gill and Trammel);
- North Sea plaice: various Dutch otter trawls (CVO, Osprey trawlers, ekkofish); Danish Set net, Danish seine and demersal trawl
- North Sea sole: Dutch trawl and gillnet, Danish demersal Trawl, Set Nets (Gill and Trammel)
- North Sea saithe: most of French, German, Norwegian Scottish, Danish and UK demersal trawl.

Additionally, the Danish North Sea hake fishery is currently in assessment, pending on progresses on ICES hake assessment. Two North Sea Nephrops fisheries have been withdrawn from the MSC program, not least because of no integrated long-term management plan for the various Nephrops Functional Units has been successfully developed so far.

One of the key merits and strengths of the MSC certification process is that it is extremely explicit and transparent with regards to formulating and achieving objectives. It builds on a standard suite of specific objectives and requirements dealing with the sustainability of the exploited stock (P1), the maintenance of the ecosystem (P2) and an effective management system (P3). These objectives must be achieved within an established time frame and deadline, and the measurement of success is quantified using scores across a number of criteria. Recommendations are made to address the weakest points, and the fisheries must demonstrate that they are taking actions to address these. Objectives within P1 are largely consistent with the ICES framework, avoiding thus having to deal with conflicting targets, whereas targets within P2 and P3 are more specific to MSC and do not really conflict with other EU policies.

### 5.3 Experiences drawn from related studies and other EU projects.

As has been described in D5.3, only limited focus groups/interviews with stakeholders were held so far within the sole remit of the SOCIOEC project for the North Sea.

On the other hand, over the last couple of years, the lead SOCIOEC participants for this case study have participated in several similar “stakeholders events” in the broad sense, where objectives, constraints and management measures for the North Sea demersal fisheries were addressed. Participation to such events occurred on behalf of the SOCIOEC project and/or as part of the general advisory work. These events include such focus groups organized by other related EU projects (e.g. MYFISH, GAP, ECOFISHMAN etc), by stakeholders themselves (e.g. NSRAC) or by other international initiatives (ICES, STECF, Nordic Council of Ministers etc).

Therefore, it was felt that organizing another round of workshop or interviews for the North Sea demersal fisheries, albeit useful, could potentially play against the purpose of trust building and inclusive governance sought by these clusters of initiatives, by creating a feeling of confusion, “deja-vu” and meeting fatigue among the key stakeholders. Additionally, it was felt that the experience from these previous events already suggested that results and perceptions vary often from person to person and from meeting to meeting, depending on the scope, timing and representativeness of the participants. Therefore none of these various workshops taken in isolation can steer the future direction of North Sea fisheries management; However, all together, they allow the emergence of a common understanding of the key challenges among the many and diverse players, and this contributes in turn to creating a favorable governance environment.
for achieving some consensus and acceptance around future policies. With this aim in mind, a synthesis of this existing knowledge is necessary, in order to identify the common traits across these various recent qualitative analyses.

On this basis, it was therefore decided to initiate this deliverable 2.2 by an overall summary of the known experience from the leading authors. Other workshops in the recent years not known to the authors may have been omitted, but the authors believe that the material gathered here represents an important and significant part of the current moves around North Sea mixed fisheries.

A review of the workshops is presented, which is largely similar to what was described in D5.3. However, D5.3 focused on the outcomes of these previous workshops in terms of appropriate management measures, whereas this present deliverable 2.2 focuses only on the outcomes in terms of appropriate management objectives.

A large part of the text below is copied from the corresponding project deliverables and public communications, and references to this are given in footnote.

**MYFISH/SOCIOEC Vigo workshop and follow-ups meetings**

**Presentation**

The EU FP7 MYFISH (http://www.myfishproject.eu) project was launched together with SOCIOEC, and started by a major stakeholders event conducted on April 24\(^{th}\) to 26\(^{th}\) 2012 in Vigo, Spain. 60 participants attended, including representatives from 12 universities, 14 fisheries research institutes, 8 industry organisations, 3 NGOs and 3 management organisations. A subsequent smaller workshop was held to investigate the priorities of constraints in two regions, the Baltic and the North Sea. This workshop was organised in cooperation with ICES (ICES WKMTRADE) and was dominated by stakeholders and managers to investigate if this would lead to different results. The 18 participants included representatives from 6 management organisations, 5 fisheries research institutes, 5 industry organisations and 2 NGOs.

The objective of this study was to, in discussion among the stakeholders and scientists, suggest acceptable and feasible management strategies aiming at MSY in European fisheries. To achieve this purpose, management strategies aiming at MSY were decomposed into three aspects: What to maximize (MSY variants, implicitly requiring a selection of ‘exchange rates’ between yield of different species), what to sustain (constraints to sustainability) and how to manage (fisheries management measures). The two first aspects relate therefore to management objectives and are relevant for the present SOCIOEC deliverable. The answers to these questions are likely to depend on both geographical area and the compositions of the groups discussing them and parallel group sessions were therefore used in discussions. The groups were first tasked with

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\(^2\) From MYFISH D2.2: Regionally relevant and acceptable MSY variants, constraints and management measures
identifying a generic list of possible candidates under each sub-heading. The groups were then redefined and regional groups tasked with identifying region specific acceptable and feasible MSY variants, constraints to sustainability and management measures.

To facilitate the discussions and the documentation of conclusions, the project partners from Imperial College London prepared a specially designed graphical tool. The tool is programmed in Excel and lists the various conceivable MSY variants, tradeoffs/constraints, and management measures identified in the open discussion on the previous day. Workshop participants were asked to provide ratings (R) for each of the option and to document the degree of uncertainty or disagreement in the group (U) after deliberation of each option. For MSY variants and constraints, ratings and uncertainty where queried separately with respect to three aspects (does necessary information exist, does the measure react to management and how preferable is it as an MSY variant or constraint). For management measures, only two aspects were queried (will it aid in attaining MSY variants and constraints and how preferable is it as an MSY variant or constraint).

**Results for the North Sea**

The objectives ranked highest for the North Sea during the workshop were the following:

1. Maximise inclusive governance (Maximum Social Yield - MSOY)
2. Maximise yield in value of key commercial species (MSY)
3. Maximise consumer welfare/happiness (MSOY)
4. Maximise yield in value (MSY)
5. Maximise yield in tonnes of key commercial species (MSY).

No direct economic objectives focusing on profit were ranked very high, reflecting the implicit assumption that if the yield is maximized and that the system works in a good governance scheme then the private economy of fishing companies should improve, so this is not a high level objective in itself.

Additionally, the GES constraints were ranked high in terms of important factors affecting the formulation and achievement of the objectives, and especially the constraints on the bycatch of sensitive species and impact on the sea floor.
ECOFISHMAN Edinburgh workshop⁵

Presentation

EU FP7 ECOFISHMAN (http://www.ecofishman.com) is another EU project, which deals with Results-based management as a contribution to the CFP. This project is by definition heavily based on interactions with stakeholders. One of the case studies is the North Sea mixed demersal bottom trawl fishery, and as part of that a stakeholders workshop was held in Edinburgh on 4-6 September 2012, together with a more generic Seminar on Responsive Fisheries Management System (RFMS). The meeting was attended by 38 people, including 15 stakeholders from diverse affiliations, and made use of a variety of qualitative methods, including brainstorming, focus groups, questionnaires, discussions rounds, ranking exercises and wrap-up sessions in a well-organized and efficient way. This allowed and encouraged the active involvement of all participants, balancing between personal opinions and groups interaction. As for the MYFISH/SOCIOEC workshop, the ECOFISHMAN workshop addressed both the objectives (names Outcomes Targets, OTs in this project) and the means of fisheries management for this case study, with a specific focus on management measures addressing the discards issue.

Results

As it was observed in the MYFISH workshop, it proved to be a challenging task to identify outcomes targets. It is difficult for stakeholders to state concrete and measurable objectives for their fisheries.

The North Sea stakeholders were requested to identify desirable goals, indicators and outcomes through working groups (30 minutes) and a wrap up plenary session (30 minutes). The figure below summarises the ranking of suggested objectives (OTs) from the EcoFishman workshop, classified according to wheres they are ecologically, economically, socially or governance oriented.

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⁵ Chapela et al., 2012. ECOFISHMAN deliverable D7.4 report on seminar on RFMS
Figure 5.1 – EcoFishMan ranking of outcome target

It was remarked that many outcome targets might just result in a new form of micro-management. In order to achieve the OTs, it is necessary to have the capability to handle and affect them, controlling their underlying factors. There was then an intensive debate among stakeholders. Key findings are consistent with the other studies: (i) it is easy to define and agree on ecological and biological OTs (similarities in current management systems); ii) there are more polarized positions among stakeholders in setting economic and social OTs, based on stakeholders background and employment: i.e., scientists relaying on the bio-ecological and fishing industry on the social to support their traditional positions in fisheries management.
**COMFISH seminar**

**Presentation**

COMFISH (http://www.eusem.com/main/ComFish/comfish) is an EU project focusing on dissemination of scientific knowledge on fisheries research. The initiative explores innovative mechanisms to improve communication between scientists, policy makers, fisheries stakeholders and society at large. The project is also articulated around a number of Regional Participatory Stakeholder Events (RPSE). One of these dealt with the “**mixed-fisheries** issues in the North Sea”, and was held onboard the Norwegian Hurtigruten Nordlys ferry as a meeting location, travelling from Bergen to Trondheim during 25-27 February 2013. 29 participants attended from the US and eight European countries, representing the European Commission, the North Sea Regional Advisory Council, research institutions, fishers associations, government and other key stakeholders in the fisheries sector.

The workshop methodology for qualitative analyses followed the COMFISH guidelines, and ensured that the participants’ wide fields of expertise were spread equally throughout three working groups. With the help of facilitators, the participants of each group identified and described challenges related to mixed fisheries. After grouping challenges from four different perspectives (expert knowledge, management, economic and social), experts prioritised challenges and, most difficultly, suggested possible solutions. Being onboard a ferry facilitated also the exchange of ideas and networking among participants.

**Results**

The group did not really reach any obvious consensus during the meeting, but the discussions were useful in clarifying a number of complex issues for the participants, and in reaching common understanding of the challenges. A large part of the discussion focused on FMSY as management objective and the issue of multispecies interactions. It was argued that the point estimate of FMSY should be replaced with a range of fishing mortalities with similar performance. It was discussed whether the management objectives should apply to all stocks or only those of high economic importance. The MSY approach for all stocks would lead to under utilization of most stocks.

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**BENTHIS North Sea Stakeholder Seminar**

Under the EU FP7 BENTHIS Project there was during spring 2013 conducted Regional Stakeholder Workshops (RSE1) to obtain feed-back from stakeholders on a row of management, governance, ecological and technical issues relevant for the project. In advance of the regional stakeholder workshops a questionnaire covering the above mentioned areas was forwarded to the stakeholder participants to be filled in. Some of the questions put forward and the resulting stakeholder answers to those are relevant also in context of the SOCIOEC project with respect to the second level objectives pointed at by stakeholders directly or indirectly as well as in relation to issues which need to be considered and included into second level objectives.

For the BENTHIS North Sea case study the RSE1 workshop was held in Ijmuiden during spring 2013 with participation of 21 stakeholders representing Service Organizations (3), Fish Processing Industry (4), Wholesalers and Retailers (1), Fishing Industry Catch Sector (4), Gear Manufacturers (1), Managers (1, State Government), and Fisheries Scientists (7). The answers from these stakeholders to the selected relevant questions in SOCIOEC context are shown below.

![Graphs showing distribution of answers to various questions](image)

**Figure 5.2. Distribution of the combined feed-back from the North Sea fishery stakeholders involved in the stakeholder workshop under EU FP7 Benthis in spring 2013.**

With respect to ecology, as well as management objectives concerning ecology, about half of the stakeholders disagree (and about 25% is indifferent in relation to) that the discards of undersized fish are an ecological concern, and accordingly needs to be covered in management objectives, while only about 25% agree in this. About half of the stakeholders agree that the diversity of the seabed fauna needs to be improved, and accordingly management objectives should be formulated in relation to this issue, while about the other half is indifferent in relation to this issue, and only very few disagreed. With respect to management, about 75% of the stakeholders agree that discard should not be totally banned, and only 1 disagree. Accordingly, the stakeholders are also split here in their feed-back on whether additional ecological based
management objectives should be formulated in relation to protection against impacts from fisheries. Furthermore, in relation to management, around 2/3 agree that it is necessary to enforce a maximum fishing effort level, while about half of the stakeholders support an ecosystem based approach to fishery management as well as a management approach based on MSY, while the other half either disagree or are indifferent on these issues. Again, the stakeholders seem split in their attitude on the necessity to formulate ecosystem based management objectives.

In relation to Governance more than half of the stakeholders agreed in that the fishery is over-managed (too many and too complicated regulations in the system) today. By far the majority found that co-management is an advantage for them and of importance for them. About half of the stakeholders support decentralized (regional based) fisheries management, while about the second half did either support or reject this. Only 25% of the stakeholders agreed that the transparency of information/management in the EU demersal fisheries is appropriate, while 50% disagreed and 25% were indifferent on this. Accordingly, there seems to be some support to formulate management objectives which results in more simple management measures, and with a higher degree of involvement of the stakeholders and regional based management. In relation to socio-economy, then more than half of the stakeholders support subsidies in demersal fisheries, i.e. that economic objectives should be formulated for the fishery e.g. enabling release of subsidies.

5.4 Synthesis: Common points and differences in perceived objectives for North Sea demersal fisheries yielded from previous experience.

The lack of clear objectives has been repeatedly pointed out as one of the key failures of the CFP. Therefore, it is remarkable that a lot of focus has been given to overcome this specific issue over the recent years, across a range of dedicated forums, meetings, EU projects etc. Many stakeholders events have been organized, making efficient use of a diverse panel of qualitative tools and innovative techniques for mapping out the cognitive preferences of stakeholders.

Very interesting lessons can be drawn from this experience. First, the North Sea demersal fisheries are an incredibly dynamic environment, which demonstrates a great willingness to solve the issues and promote sustainable fisheries. Managers, stakeholders and scientists have had many opportunities to meet and get acquainted with each others. Stakeholders have participated to scientific projects and scientists have attended RACs meetings. Also, the civil society is increasingly taking part in the debate and influencing the political agenda. However – or maybe rather because of this -, the governance remains inherently complex, involving so many different countries, institutions and persons that there cannot be one single North Sea demersal consensus. No one can attend all the various meetings and forums dealing with this fishery at international level, and no meeting can gather all key players at one time. So it must be acknowledged that the observed progresses are the emerging results of a multiplicity of largely independent initiatives, each of them contributing to a small part of the elephant. Therefore, none of these interactions with stakeholders can be considered as the ultimate truth writing in stone what will be the future
objectives for the North Sea fisheries. Rather, by offering regular opportunities to exchanges ideas in discussion forums, they contribute to progressively reaching common understanding of the issues and challenges across the various players. It can thus be expected that whatever objective that will ultimately emerge in the near future will rather reflect the consensual points of agreement on facts and values across a majority of key players than a given ranking defined by a given group in a given situation.

Second, it can be seen that all the interactions with stakeholders tend to point out towards the same global pattern, which is that it seems clearly easier to agree on ecological objectives than on any other type of objectives. Most studies demonstrate that a form for overarching MSY approach across species and fisheries is the most consensual high level objective (although the exact definition of this is still to define, e.g. whether it is in weight or in value, whether it is for all species or for commercial species only), and that involving stakeholders in the general decision-making and advisory process is a priority for operating in good governance. All other potential objectives involving economic and social objectives or ecosystem objectives are both more loosely identified and less consensual, as they are mainly weighted according to people’s background and employment. They are therefore more based on personal values than on facts. This pattern has been observed throughout the studies, regardless of the actual persons involved and ranking techniques used.

5.5 **Roadmap for future objectives for the North Sea demersal fisheries.**

These two key findings are now being acknowledged and new levels of discussions regarding the objectives are now emerging.

The ICES Stakeholder Workshop on North Sea and Baltic Sea Multispecies Trade-offs (WKM-Trade; ICES, 2012b) made substantial progresses in bringing these aspects together and agreeing on common objectives for the future. Main results can be summarized as follows:

- Inclusive governance will take place through ICES and RACs as the key institutional players. ICES scientists develop also their work as part of various research projects, but the findings should be brought up within ICES as a more global and more legitimate institution. In the same way, RACs are the most legitimate body for representing stakeholders interests.
- There is no single maximum sustainable yield solution in a multispecies context, so a simple MSY does not exist and trade-offs are necessary. Reaching a solution would imply setting priorities and weighting of species against each other by value or other means, which is difficult and politically sensitive. Therefore a unique overall ecosystem MSY is little supported.
- Ecosystem-wide MSY should not affect relative stability.
- ICES should define a ‘safe area’ and an ‘close-to-MSY area’, and the F target should be within the close-to-MSY range.
The main management objective would be that we should always be in the ‘safe area’ and on average in the ‘close to MSY area’. But it is not a scientific task to define where exactly in the ‘close to MSY area’ one should be. Additional constraints are the Good Environmental Status objectives defined by the Marine Strategy Framework Directive, mainly the Bycatch of sensitive species and sea floor integrity.

This summary is a very important progress. This states that ICES can delimit the space for sustainable exploitation within acceptable good environmental status. However, optimizing the fisheries through e.g. a unique MSY or a unique MEY is not an agreed objective. It was for example argued that optimizing profit is not at MEY scale, but lies rather within the remit of the individual fishing enterprises to optimize their own profit within the agreed sustainable area. There is however a need for further input from stakeholders on potential additional management objectives, constraints, and risk tolerance to reduce the number of possible options to the most relevant ones. Following this, ICES published the first multi-species considerations for the North Sea in June 2013\(^7\), illustrating the main trade-offs and challenges.

A presentation of this approach was presented by C. Ulrich, PI in SOCIOEC/MYFISH, to the NSRAC in April 5\(^{th}\) 2013\(^8\), together with options for reaching these objectives. It was suggested that it would be possible to balance the TAC of various stocks in order to limit the ‘choke species’ effect while staying in the ‘close-to-MSY’ area. Harvest control rules could be set up which would account for mixed-fisheries and economic trade-offs within the acceptable window of sustainability. These Harvest Control Rules could still be further optimized by stakeholders acting on technical interactions, in order to limit bycatches of sensitive species.

This overall roadmap yielded positive echo from the stakeholders, and this was brought further in the following draft advice paper “The future for cod recovery in the North Sea“ that was discussed at the NSRAC Demersal Working Group in July 9\(^{th}\) 2013\(^9\). This paper has endorsed the idea of defining flexible mixed-fisheries harvest control rules based on Fmsy ranges.

### 5.6 Conclusion

As underlined in the introduction, the North Sea demersal fisheries have evolved within a decade from a very poor crisis situation to a much more sustainable and forward-looking situation within an improved governance scheme. Substantial effort has been dedicated by scientists over the last couple of years to overcome the acknowledged failure of unclear management objectives, and a variety of discussion forums have taken place aiming at mapping cognitive preferences of stakeholders and formulating more specific objectives and management measures.

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\(^7\) [http://www.ices.dk/sites/pub/Publication\%20Reports/Advice/2013/2013/mult-NS.pdf](http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2013/2013/mult-NS.pdf)


The synthesis of these various initiatives has demonstrated that an overarching MSY approach accounting for multi-species and mixed-fisheries interactions was the primary consensual management objective for the North Sea demersal fisheries, and that this overall goal should be further defined within an open and inclusive governance process involving ICES and the NSRAC. Building on such a variety of interactions with stakeholders has also contributed demonstrating that any other objective, be it ecosystemic, economic, or social, is usually more difficult to define and rather reflects the individual stakeholders’ own values than an agreed consensus.

The steps are now being started towards translating this into more specific and measurable targets such as multispecies Fmsy ranges, which could then be used to define flexible mixed-fisheries harvest control rules in integrated management plans for the North Sea demersal fisheries.
6. Western Baltic Sea fishery case study

6.1 The fishery and its management

The western Baltic fisheries targeted by the German fleets are mainly based on three species: cod, herring and sprat. The targeted area in the western Baltic includes ICES subdivisions 22,23 and 24, which, in addition to the German länder of Schleswig-Holstein and Western Pomerania cover also part of the coasts of Denmark, Sweden and Poland. The German fleets are one of the main fleets fishing in the area, with the second largest TAC (21%) only below that of the Danish fleets (43%, Council Regulation (EC) 1322/2008).

The Western Baltic German fleets are mainly formed by gillnetters (over 1000) followed by trawlers (both pelagic and demersal) and a minor proportion of pots, traps and long liners. These segments constitute the main German fleet in European waters in economic terms, that can only be compared to the brown shrimp fishery in the North Sea. At the end of the period of study, the German fleets fishing in the Western Baltic represented a total of 1438 vessels, with 69222Kw and a Gross tonnage of 29488. The employment they generated is of approximately two thousand fishermen, either full time or part time.

The trend in the number of vessels for this period has been towards a strong decline, together with a decrease in the employment. The impact of the reduction in the number of vessels on the people employed in the fishery was clear, with 998 people that lost their job in the fishery, either part time or full time.

The evolution of the stock of cod has been stable, with a fishing mortality (F from year classes 3 to 5) decreasing steadily. (see figure 1). The two pelagic species, herring and sprat do not have a long term management plan at the moment, but a multispecies management plan is in preparation and in the meantime ICES advice uses the overall management objectives of the CFP: precautionary approach and MSY.

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**Figure 6.1: SSB and fishing mortality of year classes 5-5 of Baltic cod (Western stock)**
Current management institutions and approaches

The stocks in the Western Baltic area are managed through TACs and technical measures and, in the case of cod, a multiannual plan which includes additional effort limitations. It is foreseen that the current cod plan will be substituted by a multispecies plan after the CFP reform.

The management institutions are, beyond the EU, the Helsinki Commission, which coordinates environmental aspects across the whole Baltic region and the federal and regional governments in Germany, the former with jurisdiction from 12 to 200 sea miles and the latter, in our case corresponding to the region of Schleswig-Holstein, with jurisdiction from the coastline to the 12 miles line.

The Federal Ministry of Food, Agriculture and Consumer Protection (BMELV), represented by the Federal Office for Agriculture and Food (BLE) is in charge of the quota allocation. There is a certain degree of co-management as producer organizations take part in a hearing before the annual allocation of the quota, and once the general allocation is done they are free to re-allocate the quota assigned to them among their partners. Producer organizations are also allowed to exchange quota with other countries, as long as there is no monetary compensation and the process is undertaken with participation of the BLE. On the other side, the regional government, in our case the government of the federal state of Schleswig Holstein, is the entity responsible for the administration of the European Monetary Fund for Fisheries (EMFF).

Given the great quantity of vessels in the Baltic fleets there is both fishermen that are associated to a producer organization and others that act individually. The latter receive a “catch permit” or individual quota allocation and are able to negotiate further quota allocations directly with the BLE.

The target from the cod long term management plan is a fishing mortality of 0.6 for ages 3 to 6 years with a harvest control rule based on TACs set at 10% yearly reduction of fishing mortality with certain restrictions to avoid, when possible, excessive changes in TAC. Finally, according to the plan, all Community vessels having a length of eight metres or above carrying on board or using any gears for cod fishing in the Baltic Sea must hold a special permit for fishing for cod in the Baltic Sea.

Additional management measures include capacity ceilings, and certain national and regional measures that for example restrict the access of trawlers to a minimum distance from the coast or limit the distance that a small vessel can travel, due to safety regulations. In the case of study, the forthcoming application of the Natura 2000 management plans (still in study period) will be an important aspect of management for many fishermen, specially the mentioned small scale, due to the abundance of those protected spaces in some particular areas of the German Baltic as is the case around the island of Fehmarn.
6.2 Information sources

The primary information sources for this study are the stakeholder contacts performed during the first half of the project. After a methodology workshop that took place in 2012 and a pilot presentations of the objectives in an internal seminar in the institute, it was decided that the best way to undertake the stakeholder contacts was to do semi structured interviews, where at the same time the interviewer had more control of the topic (as it was judged to be a very abstract one, and leading to open and long discussions) and also the chance to give each stakeholder more room to explain their opinions freely and without group pressure.

In addition to this, a desk research was done given the rich variety of documents that cover the theme of policy objectives for the Baltic fisheries. A selection of those included:

- Multiannual management plan
- National and regional fisheries policy
- European level strategies (Natura 2000)
- other European research projects

With this combination of sources the objective is to strike the appropriate balance between more general approaches, often bottom up oriented, and the required proximity to the stakeholders that would foster legitimacy and thus compliance.

6.3 Western Baltic Sea fishery objectives

Objectives in the Long-Term Management Plans

The objective of the multiannual management plan of Baltic cod is, as stated in its preamble (EC) No 1098/2007, “to ensure that Baltic cod stocks can be exploited under sustainable economic, environmental and social conditions.” This is the classical formulation of the three pillars of sustainability which is also present in the Common Fisheries Policy basic regulation.

The preamble further mentions Council Regulation (EC) No 2371/2002 and its requirement in the form of intermediate objectives to attain the one mentioned above. These would include, apart from the mentioned sustainable exploitation, the reduction of the impact on the marine ecosystem and the efficiency of the fisheries industry, together with the guarantee of a fair standard of living and the consideration of the interests of consumers. It is therefore a full declaration of intentions that touches the three pillars of sustainability, while at the same time mentioning the ecosystem approach to management as a way of achieving those goals.

Some ways to attain the biological objective of Bmsy (through Fmsy) include a reduction in fishing mortality but also a reduction of effort. The reduction in fishing mortality includes a
certain flexibility depending on the state of the stock, providing also some stability to the fishermen that TAC will not (outside limit circumstances) vary more than a 15% but the reduction in effort does not include this flexibility and must be of an annual 10%.

These two management measures (TAC or quota and effort restrictions) leads to a conflict of intermediate objectives, as it can be the case that the stock of cod recovers and the effort still has to be reduced, without taking into account the situation of the fishermen. As it has been the case, there can be more cod but due to low market prices the fishermen may need a larger catch in order to increase their revenue. In this situation effort limitations may be preventing them from reaching their allocated quota. At this stage it could be the case that there is a conflict at a lower level, that is, a conflict between the managament measures instead of a conflict between the objectives, as both management measures have the primary objective of ecological sustainability.

In addition to the multiannual plan for cod, there are certain technical measures also aiming at the ecological sustainability of the stock, in this case at the prevention of discards of undersized cod. A series of technical measures have been implemented from 1994 onwards to introduce changes in mesh sizes and landing sizes and also technical innovations as the BACOMA window or the T90 net. The evaluation of these measures has shown certain conflicts with the objectives of proitability of the fishery, due to reduction of catches of fish of the allowed size (SGMOS 10 06)

**National and regional fisheries policy**

In Germany the national objectives for the fisheries policy are stated by the Federal Ministry of Food, Agriculture and consumer protection (BMELV) on its website. Sustainable fishing methods and active marine protection are seen as leading to the economic success of the industry. The European policy on the other side is seen as having to balance the interests of the economic agents of the fishery and the requirements of nature conservation. Therefore the objective seems to be more the economic survival of the sector, with the conservation of the resource and the environment as restrictions.

As instruments, the reform of the CFP (including the discard ban), the introduction of the long term management plan, and the control of illegal fishing are also seen as tools for the stability of the industry. The BMELV also has objectives on the international level, which tend more towards ecological sustainability as they refer to the preservation of living marine resources, as whales or also to the protection of the marine environment.

On a more local level, the Schleswig-Holstein Ministry of Energy, Agriculture, the Environment and Rural Areas (to which the management of most of the protected areas around the island of Fehmarn belong) advocates for a balance between the fishing opportunities and fishing capacity, the strengthening of the competitiveness of the fishing firms, the protection of the resource and the environment, always with the participation of the fishermen and finally the
sustainable development and improvement of living standards in the areas where the fishing activity takes place.

**European level strategies**

The main area of study in the Baltic Sea case study, the area around the island of Fehmarn, comprises various Natura 2000 spaces, both Danish and German, including in the German side both federal and federal state managed areas. The management plans have not been approved yet, but there are objectives from the Natura 2000 net that need to be considered for all of them.

Inside the Natura 2000 framework there are conservation objectives, where a conservation objective is considered to be “the specification of the overall target for the species and/or habitat types for which a site is designated in order for it to contribute to maintaining or reaching favourable conservation status”. (European Commission 2012). Furthermore, “conservation status” entails maintaining population dynamics on the long term, keeping the natural range of species and maintaining the habitat of a population on a long term basis.

On the side of the environment-related stakeholders present in the area, the Baltic Sea Scorecard developed in 2009 by WWF considers that the objectives set by the CFP are “impossible to achieve”. The position of WWF on the Baltic states that the CFP "must be reformed to make ecosystem-based long-term management plans mandatory for all EU fisheries, introduce effective regionalisation, while maximising the value from catch to consumer and thus ensuring that fish stocks recover and European fisheries return to prosperity (WWF 2009).

**Other European projects**

Previous EU projects which have involved discussion and in some cases prioritisation exercises for fishery specific objectives include e.g., Ecofishman, MEFEO, GAP2, and MYFISH. However, only the latter had a case study or regional group on the Baltic.

From the Baltic regional workshop of MYFISH that took place in Vigo in 2012 a key issue in the discussion was the stability of the objectives. This aspect was also taken into account for example in the setting of quotas in the management plan and would also appear later in the consultation with the stakeholders in SOCIOEC.

At the MYFISH workshop concerns were raised about the definitions, especially of the social indicators and also about the distinctions between indicators, particularly the economic ones. Definitions, understanding and rating of indicators was seen as varying between stakeholders and sectors.

Another issue that turned up in the workshop was the availability of historical data and the uncertainty and quality of the data where highlighted as an issue. This issue would also appear later when discussing the objectives with other stakeholders in SOCIOEC, specially relating to conservation measures.
Finally, it was considered that the objectives from the Marine Strategz Framework Directive (MSFD), the accomplishment of good environmental status (GES), was also a good objective for the fisheries policy. SOCIOEC also includes in its project tasks a consideration of other European policies related to the CFP, as the MSFD (see SOCIOEC deliverable 4.1)

**Semi structured interviews**

Inside the SOCIOEC Baltic Sea case study a total of eight semi structured interviews have been carried out with different types of stakeholders, including fishermen, producer organizations (also involved in processing and marketing), management and environmental NGOs.

The method included the standard methodology from this WP, letting the interviewees propose management measures for the objectives presented, propose also new objectives and comment on relationships between the objectives and any other relevant aspect that might have been missed by the interviewer.

Regarding the ecological objectives a first conclusion could be that more research is needed in order to obtain legitimacy of objectives and the desired consensus. In the particular case of the Western Baltic fisheries, and even more concretely in the fisheries around the island of Fehmarn when there is an unusual concentration of protected areas of different categories (HELCOM, Ramsar, Natura 2000 etc...) the problematic of the harbour porpoise is considered by the fishermen not to be sufficiently researched, and therefore rendering an important bias to the objective of minimizing the bycatch of protected species. The fishermen recognize that they would be more open to management measures in that direction (allbeit consensuated) if there were more clear, quantifiable results regarding the number of porpoises and the their sources of mortality.

On the other hand, participants have positions that not always are those expected, as PO giving a higher priority to societal objectives or an environmental NGO considering key the economic survival of the small scale fisheries, promoted if necessary by certain very targeted subsidies.

The objective of bycatch reduction is also considered to be in need of international agreement, specially with Denmark, as managment measures are perceived by the fishermen to be unjustly diffeent, with regard for example to the bycatch of seabirds.

A summary of the answers by the interviewees can be seen in Table 1.
Table 6.1 Ecological objectives as seen from semi structured interviews results

<table>
<thead>
<tr>
<th>High level objective</th>
<th>Do you agree with this as a general fisheries objective?</th>
<th>Priority</th>
<th>Further specification</th>
<th>Relevant Level of fishery</th>
<th>Appropriate time-scale for objective</th>
<th>Strongly support or conflict with each other?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximize yield in tons of commercial species</td>
<td>Yes (with environmentalists moving even further to “MSY plus a buffer”)</td>
<td>Most important for most interviews</td>
<td>It should be expressed as Fmsy and in some cases even further, as the same mesh size can have different catches depending on the area</td>
<td>All levels</td>
<td></td>
<td>Supports profitability objective in the long run</td>
</tr>
<tr>
<td>Gradually eliminate discards on a case-by-case basis</td>
<td>Yes, only one saw problems in the implementation (quotas)</td>
<td>The percentage should be specified, as some fisheries have already a very small one.</td>
<td>Regional sea</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimizing bycatch of vulnerable and protected species</td>
<td>Partially (further scientific knowledge is needed and objectives is seen as discriminatory compared to other industries)</td>
<td>Specially important for NGOs</td>
<td>Needs to specify (for the case of harbor porpoise) if closures will be full or subject to alternative measures (pingers etc..), and for how long.</td>
<td>Local and national (potential measures not yet approved)</td>
<td>In around 5 years it would mean a closure or serious decay of the fishery.</td>
<td>Strongly conflict with all economic objectives</td>
</tr>
<tr>
<td>Minimizing negative impact on seabed habitats</td>
<td>Partially, as effects of gear on seabed are considered difficult to quantify</td>
<td>Needs further quantification of current effects on seabed, also considering different states of the (seabed ) ecosystem</td>
<td>Regional sea</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

With respect to the economic objectives, their priority was mostly clear for the stakeholder, in the broad sense of a prerequisite for the survival of the sector, not only economically but also in all that is derived from it in social terms. The discussion goes well beyond the mere profit maximization, with a rich conversation on aspects that can be included in the total economic value.
Here the definition of the concrete economic objective is therefore key to its acceptance by the consulted stakeholders. An environmental NGO representative considers that the survival of the fisherman that goes fishing everyday and contributes to his community should be the first priority while a representative of the management would formulate it in terms of “development for the region”. When consulting the fishermen, the more basic definition of “profit maximization” is seen as a first step to being able to provide all the rest of the economic values proposed. It is also noticeable that despite this priority given by the fishermen to the profit maximization it is always clear and accepted by them that this must take into consideration the good state of the stock.

The objective of the optimization of present value was best understood in relation to tourism (first non-fishery activity mention by most stakeholders) but soon followed by other auxiliary industries. The value of natural spaces raised more discussions, specially due to the economic consequences of protected areas to the fishermen, but the overall economic value of a more sustainable, wider approach to fisheries was accepted.

The maximization of gross value added, and more concretely the aspect of wages, was also clearly accepted by the stakeholders, that also considered their importance for the community. A summary of the answers by the interviewees can be seen in table 2 below.
### Table 6.2 Economic objectives as seen from semi structured interviews results

<table>
<thead>
<tr>
<th>High level objective</th>
<th>Do you agree with this as a general fisheries objective?</th>
<th>Priority</th>
<th>Further specification</th>
<th>Relevant Level of fishery</th>
<th>Appropriate time-scale for objective</th>
<th>Strongly support or conflict with each other?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximization/optimization of present value</td>
<td>Partially, depending on how it is specified. For some environmentalists not sufficient to attain sustainability</td>
<td>Most important for most interviews (different definitions of present value accepted)</td>
<td>It should be clearly expressed, and include for example the full supply chain of fisheries due to globalization</td>
<td>Regional sea*</td>
<td></td>
<td>It is insufficient to cover ecological sustainability and should not substitute for it</td>
</tr>
<tr>
<td>Maximization/optimization of gross value added (or rent)</td>
<td>Yes</td>
<td>Not only the value, but also the development of the region and jobs should be included</td>
<td>Regional sea*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximization of profits (within ecological and social constraints)</td>
<td>Yes, subject to compliance with regulation and, when possible, also certification</td>
<td></td>
<td></td>
<td>Regional sea*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Regional sea*
The social objectives were mentioned not only when presented by the interviewer, but also throughout the discussion of the ecological and economic objectives, specially by representatives of environmental NGOs and by a manager. Working conditions are not considered a problem in Germany, only in the case of lack of investment and more as a risk to the vessel as to the skipper. Ensuring the viability of the coastal communities was on the contrary mentioned under different headings in most conversations.

More debate was raised with respect to the objective of better governance. Both the environmentalists and the fishermen and fishermen representatives agreed in two basic issues. The first one was a structural one, considering the institutional arrangements related to the CFP as too complex and leading to slow decision-making processes. The second issue was a larger inclusion of scientific results in the decision-making process. A summary of the answers by the interviewees can be seen in table 3.
## Table 6.3 Social objectives as seen from semi structured interviews results

<table>
<thead>
<tr>
<th>High level objective</th>
<th>Do you agree with this as a general fisheries objective?</th>
<th>Priority</th>
<th>Further specification</th>
<th>Relevant Level of fishery</th>
<th>Appropriateness time-scale for objective</th>
<th>Strongly support or conflict with each other?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure viable coastal communities</td>
<td>Yes</td>
<td>Most important for management</td>
<td>Should include aspects such as regional commercialization, marketing, labeling and education</td>
<td>Local</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improve policy and decision making through improved inclusive governance structures</td>
<td>Yes</td>
<td>Important for all</td>
<td>Should include that 1) decisions should be based on science, not politics; 2) the existence of double regulation and inconsistencies should be checked; 3) MS should be devolved capacity by strengthening and making more efficient use of the EMFF</td>
<td>Regional sea, national</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure fair living standard, improved working and security conditions on board of fishing vessels</td>
<td>Yes</td>
<td>Most important for fishermen and environmental NGO</td>
<td>Should ensure a level playing field with conditions related to imported fish</td>
<td>Local</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Finally, a series of objectives were proposed by the interviewees in addition to the ones that were presented by the interviewer. These objectives regarded only ecological sustainability, but other aspects regarding participation and economic sustainability were also more loosely formulated during the interviews, under the form of a more simplified regulation and political process and subsidies as incentives for sustainable fishing practices. The reduction of the carbon footprint was seen as a continuation of the effort of sustainability promotion already undertaken with the certification process, and an impulse to the consumption of local produce. This was seen by the consulted manager as a possible way forward in the differentiation of the local product and the materialization of more value in the community. The reduction of sea garbage was seen as a logical follow up of the effects of fishery on the seabed. A summary of relevant aspects form the newly proposed objectives can be found in table 4 below.
Table 6.4 New objectives proposed by stakeholders at semi-structured interview results

<table>
<thead>
<tr>
<th>High level objective</th>
<th>Do you agree with this as a general fisheries objective?</th>
<th>Priority</th>
<th>Further specification</th>
<th>Relevant Level of fishery</th>
<th>Appropriate time-scale for objective.</th>
<th>Strongly support or conflict with each other?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce carbon footprint from fisheries</td>
<td>Yes (environmentalist and regional manager)</td>
<td></td>
<td>Carbon footprint should be included in the labeling</td>
<td>Local</td>
<td>May conflict with profitability objective</td>
<td></td>
</tr>
<tr>
<td>Reduce sea garbage from fisheries</td>
<td>- (only presented by one environmental NGO)</td>
<td></td>
<td>Technical means should be allocated to reduce the production of sea garbage</td>
<td>Regional sea</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Are there other high level objectives which should be included or should the wording of any of the objectives above be changed to reflect a different emphasis?

What are the other objectives? Please complete a new row in the table in the same form as the existing ones.
6.4 Summary of Baltic Sea Fishery Objectives

The ecological objectives maybe the type of objectives where there is the most interest or maybe more room for debate from the stakeholders. Mainly both the long term management plan and the MYFISH workshop put an emphasis on MSY, the former setting fish mortality targets and the latter considering different definitions and indicators, from which an important one would be the achievement of good environmental status. The higher definition of the MSFD objectives has already been pointed out by Goti et al. (2013), as a way forward. The fact that the multiannual plan for cod defines MSY by using fishing mortality as an indicator, instead of biomass, was already discussed by some fishermen representative, who added the complexity of multispecies and different fishing ground productivities to the already rich debate. The objective of reducing bycatch is also a source of conflict between environmental NGOs and fishermen, specially in the case of the harbor porpoise and Natura 2000 areas a deeper scientific knowledge of the species and better dialogue with the fishermen are considered part of the solution. The seabed habitat is not considered to be an issue for this particular fishery, dominated by passive gears.

The economic objectives are not considered explicitly in the multiannual plan, however, effort measures used as instruments to achieve Fmsy are sometimes a source of economic losses, specially in the situation where fishermen cannot catch their full quota due to the effort restriction. This affects specially the smaller vessels, which are often those with smaller financial means. Short term profitability is seen by the fishermen as the first requisite to be able to reach other objectives, as the maximization of value added (seen as being able to pay the salaries of the skipper and the additional crew) and the net present value. The objective of optimizing net present value has been found easy to agree among the different stakeholders, always considering the region, with a preference for the small scale fishermen and with a wide variety of measures including targeted subsidies, certification, tourism promotion etc.

The most important social objective, once fulfilled the minimum restriction of survival of the community (seen in terms of the first economic objective) is the improvement of the decision-making process. In the discussion with the different stakeholders more information was seen as a common demand by the fishermen, fishermen representatives and the MYFISH workshop, especially in conflictive issues as the discard ban. The multiannual plan is seen to be adaptive only in a very limited way (the 15% restriction to F reduction enable the fishermen to have some prediction of their catches) and further steps in the direction of better participation are considered useful.

Further contacts with stakeholders are planned in order to adapt the conclusions of this deliverable to the qualitative impact analysis that is foreseen for this case study.
7. The Black Sea purse seine fisheries case study

7.1 The fishery and its management

The pelagic fisheries in the Black Sea covers capture of anchovy, horse mackerel, sprat and sardines. The main target is usually anchovy and followed by horse mackerel and the others. Majority of the anchovy landings was obtained by the Turkish purse seine fleet not only in Turkey’s EEZ but also in northern Georgian waters (Abhasia) during their wintering migration (Fig.1).

Fig. 7.1 Distribution of the anchovy in the Black Sea.

There are two stocks in anchovy Engraulis encrasicolus populations in the Black Sea: the Black Sea and the Azov Sea stocks (Ivanov and Beverton, 1985). Spawning and feeding of Azov anchovy take place in the Azov Sea and distributed along the northern Caucasian and Crimean coast of the Black Sea while the Black Sea stock is the dominant one distributed in the whole Black Sea. It has higher ecological and commercial importance comparing the Azov stock. It migrates to the wintering grounds along the Anatolian and Caucasian coasts in southern Black Sea October-November. In these areas it forms dense wintering schools from November to March, which are subject to intensive commercial (purse seine) fishery. After March, migration to the spawning grounds towards to the shelf areas manily in the northwestern Black Sea. But, according to the studies carried out in the southern Black Sea (Turkey’s EEZ), anchovy has also spawn in that area (Niermann et al. 1994) (Fig 2).
During the last 10 years, the ages in the catch have been represented as 0 to 4, which older ages were observed not in the wintering areas. Growth parameters can be summarised as $L_\infty$: 14.61 cm, $t_0$: -1.6591, $K$: 0.503. In the last years, the anchovy individuals presented a total length which ranged between 106.14 mm and 115.88mm and the average weight of 6.79 -9.56g. The age of individuals oscillated between 0;0+ - 3;3+, dominant being the groups 1; 1+ - 2; 2+, as a consequence of the high fishing pressure in the wintering area.

Mortality rates for 2011 was determined as $F$: 1.0514, $M$: 0.859.

First maturity age is year 1 for anchovy. It spawns during the summer, which is also the main feeding and growth season. The main feature characterizing the summer habitat is the strong stratification of the water due to the seasonal thermocline and reinforced in coastal and shelf waters by the river plumes. Anchovy was found to spawn mainly in the surface layer of these warm and stratified areas. Eggs and larvae are retained in the coastal layer stabilized in depth by the thermocline and protected from the offshore by thermo-haline fronts. A large convergence zone is formed on the northwestern and the western shelf (the main anchovy spawning area) due to the river Danube inflow, which favors fish offspring retention.
1.1. Fisheries

Purse seine net is the main fishing gear to catch anchovy in Turkey but coastal trap nets and beach seines can be used in Bulgaria, Romania and Ukraine. Thus, the majority of the production has been obtained by Turkey by purse seine vessels. In recent years, midwater trawling has also been started in anchovy fisheries. Anchovy catch of the Black Sea countries increased until 1988-1989, then sharply declined due to invasive ctenophore Mnemiopsis leidyi, overfishing and climate change.

Reduction of the anchovy caused to increase in population of planktonic predators (jelly fish and ctenophores) which have competed for food with fish and preyed on their eggs and larvae. The total anchovy catch was progressively increasing since 1980 to 1988, when the maximum yield was obtained (606,401 t), then decreasing up to a minimum of 102,904 t in 1990, 90% from this quantity was harvested by Turkey. The state of the anchovy stock has improved after the collapse in late 1980s, and in 2000-2005 the catch reached levels of about 300,000 tons.

However, in 2006 the anchovy catches dropped to 119,000 t in Turkey (TUIK, 2007), showing that the stock is not in a good condition. This year, bonito catches reached the maximum amount of the last 50 years (70797 tons) and most of the purse seiners preferred to catch bonito due to considering its high market value. On the other hand, the possible causes of the drop ranges may be attributed to the climate effects (increased water temperature may cause a dispersal of fish schools, making them less accessible to the fishing gears), abundant predators (bonito) or overfishing. In 2006, the catch increased again to 212,000 t.

In 2010, total Black Sea catch has reached 248049 t and the major part was harvested by Turkey – 203026 tons, and then gradually decreased to 173824 t of which 126331 t belongs to Turkey (Fig 3).

The purse seine fishery fishery is usually carried out in the coastal waters of the Black Sea coast within 5 miles zone less than 75 m depths while anchovy migrating from west to east and vise versa. Purse seine fishing fleet is composed by the vessels in the range of between 10 to 64 m OAL. Vessels over 25 m are specifically designed for purse seining, carrying at least one net and operated by high powered towing vessel. Smaller ones can be multipurpose vessels used for trawling too. There are about 195 purse seiners and 112 carrier boats operating in the Black Sea of Turkey.
1.2. Management regulations

The lack of an adequate management in the Black Sea fisheries is also underlined by the fact that in spite of the obvious decline of stocks, the fishing effort continued to increase not only by the numbers of vessels but also the increased efficiency of fish finders, fishing nets and gears, modernization of the vessels and navigation instruments.

In the Black Sea countries, anchovy fishing are generally regulated by using closed seasons (May April to October to October/November for Bulgaria and Romania, April to October/November for Turkey, and no closed season for Ukraine), closed areas, mesh size regulations, minimum landing size (9 cm total length in general).

After the membership of Bulgaria and Romania, The Black Sea became an interest area of EU. Thus, while assessing the sprat and turbot TAC for Bulgaria and Romania, STECF EWG started to invite experts from Turkey and Ukraine and increased the number of species for the assessments by adding anchovy, horse mackerel and red mullet by the data abtained from Turkey and Ukraine. Though the TACs determined are not obligatory for Turkey and Ukraine, there are specific advices produced from the assessments for both countries. In case of anchovy, horse mackerel and sprat thes advices were given for the fisheries carried out in Turkey mainly by purse seine fisheries.

Management options for anchovy, horse mackerel and sprat fisheries by EWG-12 16:
Figure 7.4. – Short term prediction of the Black Sea anchovy stock parameters assuming status quo fishing in 2012 and $F_{msy}$ in 2013

Since 1994 the recruitment and SSB has varied without a trend. In the absence of a biomass biological reference points the EWG 12-16 is unable to fully evaluate the stock status in respect to it. There is no fishery independent recruitment index (survey) available as none of the surveys cover the entire stock area.

Due to somehow contradictory results from XSA, and not entirely reliable age composition and CPUE data the STESF EWG 12 16 consider the assessment to be indicative of relative trends in anchovy stock in the Black Sea.

After dropping from about 1 500 000 t in 1995-2000 the anchovy SSB has remained rather stable around 800 000 t since 2007. In the absence of a precautionary reference point the EWG cannot fully evaluate the stock size. During the period 2002 to 2009 the recruitment has varied without a clear trend.

STECF EWG-12-16 proposes $E \leq 0.4$ as limit reference point consistent with high long term yield and low risk of fisheries collapses. The EWG classifies the stock as being subject to overfishing
as the estimated $F_{(1-3)} = 1.81$ exceeds such exploitation rate $E \leq 0.4$, which equals $F_{msy}$ proxy).

Following some drastic changes in stock size, the SSB is indicated to have remained rather stable around 600 000 -700 000t since 2007. Since no precautionary level for the stock size of anchovy in GSA 29 was proposed, EWG 12-16 cannot fully evaluate the stock status in relation to the precautionary approach.

**State of the juveniles (recruits):**

During the period 2002 to 2011 the recruitment has varied without a clear trend.

**State of exploitation:**

STECF EWG-12-16 proposes $E \leq 0.4$ as limit reference point consistent with high long term yield and low risk of fisheries collapses. The EWG classifies the stock as being subject to overfishing as the estimated $F(1-3)=0.1295$ exceeds such exploitation rate $E \leq 0.4$, which equals $Fmsy(1-3)$ in the range of 0.54 given $M_{1-3} = 0.81$

The EWG-12-16 recommends the exploitation of anchovy should be reduced 41 % to be sustainable and the catch in 2013 not to exceed 141 616 t.

**Source of data and methods:**

International landings at data at age were constructed while discards are considered negligible. XSA analyses tuned by a single commercial CPUE of the major Turkish purse seiner fishery is applied. Short term prediction is provided based on short term geometric mean recruitment.

**Outlook and management advice**

The EWG-12-16 recommends the exploitation of anchovy to be sustainable and the catch in 2012 not to exceed 141 616 t. Considering the short life span of anchovy in the Black Sea and the high variation in estimated recruitment, EWG 12-16 emphasises that the short term projections based on a geometric mean recruitment are subject to high uncertainty. In the absence of an allocation key for the international anchovy catches, EWG 12-16 is unable to
advice on a specific EU TAC for anchovy in the Black Sea. In the case of better assessments from landing data, assessments should be supported by hydroacoustic surveys.

Short and medium term scenarios:

A short term prediction of stock size and catches assuming a sustainable status quo fishing scenario has been provided together with a range of management options. Considering the short life span of anchovy in the Black Sea and the high variation in estimated recruitment, EWG 12-16 emphasises that the short term projections based on geometric mean recruitment and the resulting catch advice are subject to high uncertainty. The poor knowledge about the recruitment dynamics prevented the formulation of medium term projections.

Limit and precautionary management reference points

\[ E=0.4 \text{ equals } F_{\text{msy}}(1-3) \leq 0.54 \]

7.2 **Legal Framework**

Fish move across borders and seas, and fishing fleets have done the same for centuries. As the mismatch between fish stocks and fishing capacity has become more and more blatant, and its impact has begun to show up in the deteriorating profitability of the industry, the incentive to bend and break rules has grown. For the vast majority of honest fishers, the actions of the small minority who breaks the law represent a form of unfair competition and an additional obstacle to the survival of their increasingly fragile businesses. This raises the need for common fisheries legislation for the Black Sea countries (Table 9).

7.3 **Information sources**

- National fishery statistics of Black Sea countries,
- National fishery regulations,
- Data obtained from scientific surveys and commercial fisheries,
- Reports and articles on purse seine fisheries

**National objectives of Turkey on Purse seine fisheries**

Being a candidate country to EU, Turkey try to harmonise her fishery legislations to EU acquis since 2002 as well as reconstructing administrative, technical and research capacities. Following actions were taken into consideration by the designated authority:

1. Amendment of existing (42 years old) Fisheries Law and implementing secondary legislations (still waiting for ratification in General Assembly of Turkish Republic)
2. Ministry of Food, Agriculture and Livestock re-structured as more appropriate to carry out works inline with CAP and CFP.
3. Union of fishery cooperatives and producer organisations empowered, supported and encouraged.
4. Minimum catch sizes for economically important species are determined for the sustainable exploitation of the stocks. It is 9 cm for anchovy, 13 cm for horse mackerel, and no size limitation for sprat.
5. Closed fishing seasons for determined. For purse seine fisheries in the Black Sea it is 15 April to November for anchovy and horse mackerel, (May and June is free for sprat fisheries by midwater trawl),
6. There are no fishing zones on the Black Sea coasts.
7. Minimum operational depth is increased to 24 m in order to allow safe path to migrating species. More effort is spending to raise depth limit to 50 m by many of the stakeholders.
8. Decommissioning of the vessels (including purse seiners) is ongoing process to reduce fishing fleet to the considerable levels with the stocks.
9. New entries are not permitted to the fishing fleet except modernisation purposes which is equal GT removed from the fleet.

In order to better manage the purse seine fisheries, stakeholders recommend:

1. Establishment of marine protected areas in nursery and spawning ground to prevent growth and recruitment overfishing.
2. More MSC services (including on land) not to catch, trade and consume undersized fish.
3. Decommissioning scheme should be continued and the supports should be increased to be more effective.
4. The size of vessels encouraged to be constructed within 20-25 m which is scientifically advised especially for the Black Sea.
5. Stock assessments and TACs are very urgent and essential for sustainable management of the stocks.
6. Collaboration is needed among Black Sea countries starting from common surveys, application of common methodology, common technical measures and collaborative actions to combat IUU fisheries.

Participation to decision making process in management of fisheries on national and international level is very important.

7.4 AHP prioritisation

Some of the objectives were presented to a group of stakeholder participants; consumer NGO, purse seiner fisherman, scientist from university, staff from research institute, representatives from fisheries union and Ministry, and fish processing industry. Using AHP prioritisation methods the following results were obtained (Figure 5).
First priority is application of decommissioning scheme. All parties agreed on the fishing effort are over for the sustainable exploitation of the commercial fish stocks. Number of vessels and onboard equipments as distant ranged sonars, modernized big sized purse seine vessels over 24 m OAL, better social and technical conditions provided onboard to stay longer at sea, powerfull engines and longer purse seine nets are not compatible with the existinf fragile anchovy, horse mackerel and other small pelagic stocks. Reduction of fishing fleet is very essential. There is overinvestment in the fishing fleet and fishermen are hopeless from the future of fisheries and changes in the ecosystem, climate and environmental problems.

Second priority is the insufficient MSC in Turkey. All the parties are aware that there limited efforts to monitor and control the stocks. Besides the assessments monitoring and data collection is very important to understand the changes on the stock dynamics in time and place. There are no national survey plan and data collection programs. Surveillance services are limited with the patrolling activities of coast guards. Better surveillance services not only at sea but also on land, fish markets, fishing ports and on retailes might be very useful to fight with IUU fisheries and prevent the sale of undersized fish in the markets, and harvesting these species from the sea.

Third priority was given to the objective of establishment of MPAs where necessary. This objective (actually is a tool) is supported by all stakeholders other than purse seine fisherman. Because all types of no fishing zones limits their activity in the sea.

The fourth one is the ecosystem based approach on management and stock assessments. Actually, after the main collapse in fisheries in the late 1980’s even scientific community could
not be able to answer the reasons other than overfishing, some years after it was explained as the main reason was a ctenophore preying on anchovy eggs and larvae, and its food competition. That’s why all parties agreed on this priority. Single species based assessments are not sufficient to decide the dynamics of any stock.

Following priorities were given to the need of fisheries management plans, international corporation and stock assessments. Abundance estimation of the stocks due to shared migratory stocks needs international collaboration as it is applied in STECF Black Sea EWG. The last priority was given to the reduction of bycatch which need selectivity studies and new/different fishing gears. It needs financial support of the government to implement more selective fishing methods in the Black Sea.

Actually this priority list is the classification of the priorities as short, mid and long terms. In short term considerations decommissioning of the vessels (still ongoing process), efficient MSC, and MPAs can be included, Mid term objectives can be assumed as reduction of bycatch, international corporation, and stock assessments.

Preparation of fisheries plans based on ecosystem approach needs longer time period to implement.
8. North Aegean Sea mixed demersal fishery in Greece

8.1 The fishery and its management

The North Aegean Sea demersal fisheries have an essentially multispecies nature with up to 100 species in some sub-areas, typical of Mediterranean fisheries (Caddy 2009). There is a high interaction between gears and fleet segments, since most of the main target species are exploited by more than one fishing technique or strategy, each often concentrating on individuals of different sizes. The fishery is generally managed through effort control rules and technical measures, such as closed seasons, closed areas, limited issue of new licenses, minimum landing size (MLS), mesh size regulations, and maximum size of fishing gears. Stock assessment in the fishery has been seriously constrained by data limitations in the past. Occasionally, samplings over a short period were conducted for a small part of the target species, providing static pictures of the current situation and requiring restrictive equilibrium assumptions (Caddy 2009). The situation has been considerably improved the last decade in the Mediterranean EU member states, after the implementation of the Data Collection Regulation (DCR) programme (EC 1543/2000; EC 1639/2001; EC 199/2008; EC 949/2008) that enabled a time series of effort and landings data in the Mediterranean to be build. The selected study area was the northern part of the GFCM GSA 22. According to EU legislation, logbooks in the Mediterranean are not compulsory for vessels of <10 m total length (EC 2847/1993) or for landed net weight of fish <15 kg per species (EC 1967/2006). Under the Data Collection Regulation framework (EC 1543/2000; EC 1639/2001; EC 199/2008), data on effort and landings have been collected in Greece since 2002, from 30 major sites including 209 landing ports on a monthly basis, according to a systematic sampling procedure. The active Greek trawler fleet in the Aegean Sea consists of 299 vessels that use bottom trawl net as the main gear. The gear used is more or less the same (40 mm diamond mesh size) irrespective of the target species, with only minor modifications.
Figure 8.1. Marine fisheries landings (in metric tons) and wholesale value of landings (in million €) in Hellenic waters between 1964-2003 provided by the National Statistical Services of Greece (National Statistical Services of Greece 1967-2005).
Fig. 8.3. Spatial Distribution of the total fishing effort ($GT^\ast$days at sea) of bottom-trawlers in 2009.
Current management institutions and management objectives

The fishery is mainly operating on local stocks, i.e., stocks that mainly live in Hellenic national coastal waters and are captured only by Hellenic fleets. The fleet is fishing within the 6 nm of Hellenic coastline. The common rights on the resources have lead to a high level of competition among fishermen and between trawlers, coastal and recreational fishers; furthermore, the control of fishery activities is difficult due to the large number of operators involved (over 15000 in Greece) and the limited sizes of the vessels. The EU and the National state intervene in the management, in accordance with EC regulations. The specific fishery is under the jurisdiction of: a) the Directorate General of Fisheries, which is under the Ministry of Rural Development and Food. (FEK 160/10-8-2012 http://www.minagric.gr/). The general directorate is made up of 3 Directorates: (i) marine fisheries; (ii) aquacultures and inland waters; and (iii) fisheries applications and production inputs, b) the decentralized fisheries authorities that operate under the Prefectures and have the form of a Directorate, Department or Fisheries office. Their main role is the resolution of local fisheries issues, c) the directorate of Fisheries Control (www.hcg.gr/alieia/main.php) that is responsible for the implementation of fisheries regulations, by means of the Coast Guard and finally d) the Board of Fisheries that mainly palys an advisory role on aspects of the Greek fisheries policy and legislation, and to hear appeals regarding fishing violations.

The bottom trawl fishery is prohibited in the Greek national waters from June to September (4 months). This closure, which is enforced since the middle 60s, aims to the protection of spawners and recruits of several demersal fish that reproduce in late spring-early summer. Additionally, there are local closures either throughout the year or seasonally, on certain regions, mainly mouth rivers and gulfs.

The fishers of the specific fishery argue that they are subject to a wide variety of legislative documents. Specifically in Greece the structure of the Hellenic national legislation system, in general and for fisheries more specific, comprise of a number of (a) Royal decrees, issued from 1953 (the first one on 23-3-1953 regarding fishing with purse-seines) till 1967; (b) Legislative decrees, stemming from the period of the military government (1967-1973); (c) Presidential decrees, issued from 1973 to date; (d) Laws; (e) ministerial decisions and/or joint ministerial decisions, and (f) post regulations. This legislation, along with the EU law, form the frame of management and conservation of fisheries in Greece, and concern matters of operation (Table 4.1) and geographic restrictions for the Hellenic fishing fleet.
Fig. 8.4. Regions with specific additional closures to the bottom trawl fishery (Note: from June-September is closed in all Greek national waters)
Evidently, the objectives of the Common Fisheries Policy are the same in the northern Aegean Sea as in other Community waters, namely, to ensure the exploitation of living aquatic resources that provides sustainable environmental, economic and social conditions. The most important component of fishery management in the area is effort. For a long time an effort-regulating regime was considered - in line with the advice of most international fisheries agencies, particularly the General Fishery Commission for the Mediterranean (GFCM) - as the most appropriate management strategy. This is quite clear when considering the large multispecificity of Mediterranean stocks and competition of different gears for the same stocks. For many years, effort control tools have been implemented by introducing permanent and temporary withdrawal schemes; the management toolbox included also licensing schemes, closed areas and technical measures.

Technical measures foreseen in the Mediterranean Regulation touch different issues affecting the specific fishery, including: protection of sensitive habitats, prohibition to use dangerous fishing practices, improvement of the selectivity of trawlers, limitation of the active fishing gears operations in coastal areas (distance to coast, depths etc), limitations on the minimum size of fish and other marine organisms which can be caught.

One of the most important measures taken was the increase in the mesh size used, i.e. 40 mm diamond mesh size irrespective of the target species, with only minor modifications. There is anecdotal evidence that this has resulted in slightly improvement in the status of major stocks. The fishers argue for the opposite. A further significant development has been the greater enforcement and control/inspection that has been carried out during the last years by the relevant authorities, i.e. directorate of Fisheries Control and coast guard.

Finally the prohibition of bottom trawling within 1.5 nautical mile from the coast (independently of depth), which has been implemented in Greece since 2011 in accordance with EC Regulation 1967/2006, may seriously affect the spatial distribution of effort of the bottom trawlers. Although, at the time of preparation of this report compiled VMS data were not available for 2012, it is likely that this measure have altered the exploitation pattern by shifting further the fishing pressure towards relatively deeper waters.

**Information sources**

- Various HCMR reports, publications and literature produced.
- The results of a Choice Experiment survey on management measure preferences conducted as part of WP3 in SOCIOEC.
- Interview with main fleet PO’s representative in Michaniona (PEPMA).
- Onboard interviews with individual fishers belonging to PEPMA.
Focus group with fishermen belonging to PEPMA in Michaniona.
Fisheries inspectors of the Ministry
Fisheries administrators

Northern Aegean Sea fishery objectives
The Mediterranean Regulation (Reg. (CE) 1967/06) which entered into force on January 2007 replaced the previous “Regulation on technical Measures in the Mediterranean” dating from 1994, represents an important evolution of the Mediterranean management system. The aim of the Regulation is to ensure the sustainable exploitation of resources through an ecosystem approach to fisheries management by implementing technical measures (i.e. minimum distances from the coast, minimum mesh sizes, maximum overall dimensions of fishing gears, minimum size of organisms, etc), and to promote a different approach to fisheries management based on a decentralized decision-making process and on setting up multi-annual management plans both at national and community level. This Med Reg is the overarching legal instrument of the northern Aegean Sea demersal fishery aside of the National Legislation.

Preferred management measures and associated objectives
Although maximisation of economic terms such as net present value, resource rent and gross value added received a high rank in MYFISH Vigo workshop for Mediterranean, it need to be pointed out that the Greek trawl fishermen were not present there. This is not to say that economic objectives are less in weight for them. There are still the driving factors for their fishing behavior. However, economic objectives are difficult to deal with in this fishery due to the lack of detailed economic dataset and information.

Stock related issues especially discards and yield in value of commercial species are preceding other ecological and environmental issues. Social objectives such as the importance of fishing in the local community was also prioritised high. Profits and return on investment followed in concern for the participants.

In summary:

- Reducing discards - this mainly addresses biological, ecological and economic objectives as it aims to decrease the ecological and economic calamity caused by the discards. This could also serve social objectives as there could be clear benefits for the coastal fisheries and communities from the survival of undersized specimens and unwanted catches. Corrective shifts in spatiotemporal distribution of fishing effort in order to investigate likely reduction of the discards of unwanted catches of undersized specimens and species. As the timeframe for the complete ban of discards could easily reach 2020, it is considered essential to reduce the amount of discards in certain areas and periods of fishing season sooner than 2020. Such measure will benefit both the target and non-target stocks and species and
will also contribute to improved management of the resources and biodiversity goals. The possibility of introducing or reopening closed areas either permanently or seasonally could also be examined.

- Limiting the number of licenses and reducing fleet’s overcapacity through access restrictions - these were initiated to address both the economic and ecological objectives as for example there should be a balance between the productivity of the stock with the harvesting capacity of the fleet, while managing to ensure the long-term profitability of the fleet along with the sustainability of the resource (Maravelias et al. 2010). This is hampered by the lack of detailed economic dataset.

- Clarifying management objectives and improving the regional decision making structure of the CFP - targeting social objectives as these will improve inclusive governance and ensure a more fair standard of living for fishery dependent communities.
Table 8.1: Summary table of fisheries objectives for the Greek Aegean demersal trawl fishery

<table>
<thead>
<tr>
<th>High level objective</th>
<th>Do you agree with this as a general fisheries objective?</th>
<th>Under each pillar indicate which objectives are most important for your fishery</th>
<th>For the selected objectives indicate how they could be further specified in your fishery</th>
<th>Level of fishery to which objective is relevant - regional sea, national or local level</th>
<th>Appropriate time-scale for objective - short, medium or long</th>
<th>Indicate which objectives strongly support or conflict with each other?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecological Pillar Objectives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximize yield in tonnes (in VALUE) of commercial species</td>
<td>YES (in general) BUT fisher’s perception is to maximise yield in VALUE of key commercial species (rather than tonnes)</td>
<td>X</td>
<td>Trawlers tend to maximize yield in tonnes (or value), through setting individual spatial and temporal limits by vessel. This is considered a form of self-management as is agreed internally within their PO.</td>
<td>Local</td>
<td>Short/Medium</td>
<td>Conflict with economic objectives if this is not followed by maximum Net Present Value. Conflict with social objectives and coastal fisheries for the resources.</td>
</tr>
</tbody>
</table>
Gradually eliminate discards on a case-by-case basis | YES | X | Spatial and temporal distribution of fishing effort to reduce and gradually eliminate discards and unwanted catches of undersized specimens and species. | Local/National | Short/Medium | Conflict with ecological, economic and social objectives as it jeopardizes resources, economic prosperity and viability of coastal communities |

Minimizing bycatch of vulnerable and protected species | NO |

Minimizing negative impact on seabed habitats | NO |

Economic Pillar Objectives

Maximization/optimization of present value (net) | YES | X | Seasonal stops. Scrapping | Local | Short | Conflict with ecological and social
### Maximization/optimization of gross value added

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>subsidy.</th>
<th></th>
<th>objectives (other fleets, e.g coastal).</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Maximization of profits (within ecological and social constraints)

<table>
<thead>
<tr>
<th>YES</th>
<th>X</th>
<th>The specific fishery has a clear profit maximisation orientation by considering fishing an economic activity which should provide a maximization of profits.</th>
<th>Local</th>
<th>Short</th>
<th>Conflict with ecological and social objectives (other fleets, e.g coastal).</th>
</tr>
</thead>
</table>

### Optimize the number of vessels (to adjust the size of the fleet to fishing possibilities).

<table>
<thead>
<tr>
<th>YES</th>
<th>X</th>
<th>Reduction of the number of vessels. Reduction of capacity.</th>
<th>Local</th>
<th>Short/Medium</th>
<th>Conflict with social objectives e.g. ensuring coastal viable communities</th>
</tr>
</thead>
</table>
## SOCIOEC – Deliverable 2.2

<table>
<thead>
<tr>
<th>Fish quality as related to price level</th>
<th>YES</th>
<th>Technological innovation is introduced to improve the processing of fish on board</th>
<th>local</th>
<th>Medium</th>
<th>Support economic and also ecological objectives (if prices are better after innovation is put in force).</th>
</tr>
</thead>
</table>

### Social Pillar Objectives

<table>
<thead>
<tr>
<th>Ensure viable coastal communities</th>
<th>YES</th>
<th>Retaining the fair standard of living of fishermen and their communities.</th>
<th>Regional</th>
<th>Medium/long</th>
<th>Conflict with the objective of adjusting the number of vessels (social dimension) and with other stakeholders (e.g. coastal fisheries)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Improve policy and decision making through improved inclusive governance structures</th>
<th>YES</th>
<th>X</th>
<th>The PO wants to be able to propose conservation and management measures (including derogations) that should be</th>
<th>Regional</th>
<th>Long</th>
<th>Support to both ecological and economic objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure fair living standard, improved working and security conditions on board of fishing vessels</td>
<td>NO (this is outweighed by the first two social objectives)</td>
<td>considered and likely adopted by the Greek government and imposed at national level.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Brief description of the Case Study for which this table has been completed.

The case study is referred to the Greek demersal mixed trawl fishery in the northern Aegean Sea (GFCM GSA 22). This fleet is a **multispecies fleet targeting mainly hake, red mullet and shrimps**.

- The responses given in the template have been deduced from several focus groups that have been organized and developed with stakeholders:
  - Interview with main fleet PO’s representative in Michaniona (PEPMA).
  - Onboard interviews with individual fishers belonging to PEPMA.
  - Focus group with fishermen belonging to PEPMA in Michaniona.
  - Fisheries inspectors of the Ministry
  - Fisheries administrators
- In addition, HCMR knowledge and literature has been used to complete the template (see ref list).
- Finally, HCMR knowledge about the administration and consumers objectives has also been used to complete the template.
9. Pelagic Case Study – Icelandic Mackerel Fishery Objectives

9.1 Organization of contact with stakeholders

The work on impact assessment in the Icelandic case study involved individual consultation by means of semi structured interviews with different kinds of actors. The actors included a senior level fisheries manager, representatives of industrial fisheries, small-scale fishermen and artisanal fishermen.

9.2 Discussion of objectives

Maximization of value within the restraints of sustainability

With regard to the Icelandic mackerel fishery, all representatives of industrial fisheries stated the same opinion on main objectives. They all described the optimal management system as one that in the long run promotes the maximization of catch value or produce value, the minimization of cost, and thereby the maximization of company profits. Furthermore, they all said the profit maximization needed to be reached within the boundaries of sustainability, including the preservation of biological diversity and vulnerable habitats.

On these two issues there were no real dissenters. Political intervention should be minimized or eliminated, to insure a stable and transparent environment for the companies to plan their operations and economize on their efforts. One representative however noted that perhaps pure maximization of profits, although optimal, was not a realistic option since some sort of political intervention might be necessary to reach a long lasting consensus on the system.

Another noted that for a management system to be sustainable it needed to promote a threefold sustainability. First the biological sustainability of the resource, second the economic sustainability of the companies engaged in its utilization, and third the economic sustainability of communities depending on those companies. If a system failed to meet all three demands, it could not be considered sustainable in itself.

Representatives showed little interest in policy objectives such as equal access for all, easy access for newcomers and for young people. One of them replied, when asked specifically about this, that although it no doubt being a benevolent idea, regrettably it was difficult to harmonize a system promoting such measures with the more important goal of value maximization.

International disagreement is a big problem

In the short run, most representatives said the main objective in Iceland’s management of the mackerel fishery should be to reach an international agreement on the stocks utilization. The lack of such an agreement was, they said, the single biggest problem in the fishery today. Iceland had not been let to the negotiating table with the EU and Norway, despite its willingness. Most said they believed the TAC, unilaterally decided upon by the Icelandic authorities, was fair in proportion to the mackerels
presence in Icelandic waters. This situation leads Icelandic fisheries to catch all of its share in home waters. That is a problem, they all said, because although the mackerel spends much time around Iceland, and extracts large amounts of biomass feeding there, it often does not reach its maximum value per kilo while in Icelandic waters. The value of landings could therefore be largely increased by an agreement permitting Icelandic vessels to catch mackerel in foreign and international waters, based on a cooperation scheme with one TAC decided for the stock as a whole.

Another prominent problem in the short run, most said, is that a political decision has been taken in Iceland to disperse the individual quotas rather evenly to many fishing companies. Therefore, mackerel has been fished by Icelandic vessels of different makes and sizes, many of them not well suited for it. This has been a cause of higher-than-necessary costs. They however all agreed that this problem would in the long run best be solved by a system of ITQs, similar to that which governs most other species in Iceland.

Positive attitudes towards science, a more complex relationship with scientists in practice

Attitudes towards scientists and science proved very positive in general. All believed that marine biology should play a vital role in setting the TACs and in deciding upon where and where not to fish at each time. Some said they believed the setting of TACs should be solely governed by scientists, while others thought this should be done in more of a cooperative manner.

Scientists should be entrusted with the decision of how much to fish each season. Other than that, free enterprise should be allowed, within a system of ITQs, to find the most efficient way of utilizing the stock, said one interviewee. In other words, it should be a specific objective of the system to minimize political intervention, while biological management should reside with scientists.

A representative said that co-management, between authorities, biologists and stakeholders, should be extensive, and consultation with the stakeholders should be much more than it is today. Stakeholders should have a say in such things as the decision of the TAC, and marketing issues should play more decisively into that decision. As an example he noted that it was possible to fish less than suggested by biological information alone, in a tight market situation, and invest the fish in the sea until a more favourable market emerged. Another said co-management was desirable to a certain extent, but not too much. He was not convinced that some of his colleagues could function in a role such as deciding on a TAC. „Sure, co-management, but not total stakeholder control over policy,“ he said.

„Scientific, biological management should be a part of the system with its box closures and ban on certain fishing gear to protect habitats. Such measures work and hinder the catching of non-valuable fish and unwanted bycatch,“ said yet another interviewee. However, he also noted that sometimes too much power was placed in
the hands of scientists. Not to say that scientific knowledge shouldn’t govern when it exists, but that scientists go further than the reach of their knowledge and take disproportionate power over management. For example foreign scientists have proclaimed no mackerel to exist in Icelandic og Greenlandic waters, while it was being caught there in great quantity, he said.

One proclaimed supporter of box closures and temporary bans on types of fishing gear also said that such measures needed to be used with a sense of proportionality. Another man disagreed. He said he was not in favour of technical measures such as box closures, bans on certain gear and so forth, coming from the authorities. With fishing experience and secure property rights all the proper incentives would be in place for proper behavior towards unwanted bycatch and vulnerable habitats, given that the aforementioned surveillance authority be strong and active. „The company soon sees at what times and in what places fishing is not in our longterm interest. Even though our vessel’s captain would request permission to go fish in such a place, he would not be allowed to by the companys managers. This has happened frequently in our fishing of other species,“ he said.

A representative said he was very positive towards an increased co-operation between fisheries companies and scientists. He however noted that extensive taxation and lessened profits due to political intervention decrease the company's willingness to fund or aid with research in a costly manner. Heavy taxation and radical intervention create an incentive for him to redirect scientists to the state for funding and support. Another representative said the same thing. Such a collaboration could be strengthened greatly with a larger fishery profit and increased security of ownership, and weakened by the opposite.

**Firmly against subsidies**

When asked whether the management system should contain a subsidies scheme of some sorts, and if so, what objectives it should promote, the answer was a resounding „no“ from all. All were firmly against it. One representative said: „Never. They interfere with all the proper incentives and call for the system to adjust to them. It should absolutely not be a part of our system.“ „No,“ said another. „They disturb all equilibria and make fishing about subsidies and not about efficient use of resources.“ „They only promote declining value and declining ambition,“ a third representative said.

**Little discarding, but differing opinions on how best to minimize it**

Those who commented on discarding said the state of affairs was very good. On how to minimize discards, the interviewed representatives differed somewhat in their opinions. Some said the best measure to counter discarding was an active and strict fishing surveillance authority, along with penalties for those caught discarding. Others placed greater emphasis on the need for the system to promote the right incentives against discarding. Meaning that with secure ownership rights, the right incentives
would be in place. Although fishermen’s interest might not coincide with that of the owners, the owners had the final say on the matter. One noted that fishermen’s opportunities to secretly discard were very limited in pelagic fisheries, given that whole dumps of lousy fish were prevented from happening. When catching great amounts at a time with a purse seine, the sheer multitude of fish in each catch and the fact that it is brought straight to land, rather than being processed on board, greatly limit the fisherman’s opportunities to discard. This, he said, was very different from the fisherman’s opportunity to discard in demersal fisheries.

**In favor of certification**

Most were in favor of some sort of certification, but at the same time realized that without an international agreement on the mackerel fishing, there would hardly be any sustainable fishing, and therefore no certification until. One representative said that such certification was not a top priority in the market where most of the Icelandic mackerel is sold. He was however in favor of it. Another said that the certification needed to be conducted reasonably, and not in the aim of maximizing the scale of some certifying agency.
10. Synthesis across case studies and conclusion

Summary of Case Study discussions

Celtic Sea Herring Fishery Objectives

- Stock issues are prioritised over any other concerns
- Ecosystem matters are not a major priority
- Ecosystem considerations being introduced by MSC process
- Difficulties with economic objectives due to data
- Move to more long-term economic approach points towards net present value as more of a viable economic objective than maximising profits
- Community or social issues highly ranked in Choice Experiment
- Mixed feelings about inclusive governance.
- Reducing overcapacity through access restrictions a major priority
- Spawning box closure – addresses both biological and social objectives
- Weekly quota allocations – this measure addresses biological, social and economic objectives

Basque country fishery objectives

Offshore trawlers targeting Hake, Monk, Megrim & Mackerel

- Maximize yield in tones of commercial species (No in case of mackerel).
- Gradually eliminate discards on a case-by-case basis.
- Maximization/optimization of present value.
- Maximization of profits.
- Optimize the number of vessels.
- Reduction of fuel price and/or consumption.
- Fish quality and price level.

Inshore fleet:

- Maximize yield in tones of commercial species.
- Maximization/optimization of present value.
- Reduction of fuel price and/or consumption.
- Fish quality and price level.
- Improve policy and decision making through improved inclusive governance structures.
- Ensure consumers have transparent information and choice of fish from healthy stocks.

Pelagic fleet (Mackerel)

- Maximization/optimization of present value.
- Reduction of fuel price and/or consumption.
- Fish quality and price level.
- Improve policy and decision making through improved inclusive governance structures.
North Sea mixed demersal fishery summary

- Inclusive governance through ICES and RACs.
- No single MSY solution in a multispecies context, so a simple MSY does not exist and trade-offs are necessary. Therefore a unique overall ecosystem MSY is poorly supported.
- Ecosystem-wide MSY should not affect relative stability.
- ICES should define a ‘safe area’ and a ‘close-to-MSY area’, and the F target should be within the close-to-MSY range.
- It is not a scientific task to define where exactly in the ‘close to MSY area’ one should be.
- Additional constraints are the GES objectives defined by the MSFD, mainly the bycatch of sensitive species and sea floor integrity.

So ICES can delimit the space for sustainable exploitation within acceptable good environmental status. However, optimizing the fisheries through e.g. a unique MSY or a unique MEY is not an agreed objective.

An overarching MSY approach accounting for multi-species and mixed-fisheries interactions was the primary consensual management objective for the North Sea demersal fisheries

Other objectives – whether ecosystemic, economic, or social – are more difficult to define.

Baltic fisheries objectives summary

- Biological objectives are the main focus
- The economic objectives are not considered explicitly in the multiannual plan
- Effort restrictions causing economic losses
- Short term profitability is seen as a prerequisite to more long-term maximization of gross value added and net present value objectives.
- The most important social objective is the survival of the community
- The second social priority is improvements in the decision-making process and in participation.
- This would help to resolve conflictive issues such as the discard ban.
**Black Sea anchovy fishery objectives**

- Stock related issues especially discards and yield in value of commercial species are preceding other ecological and environmental issues.
- Social objectives such as the importance of fishing in the local community were also prioritised highly.
- Profits and return on investment followed in concern for the participants. However, economic objectives are difficult to deal with in this fishery due to the lack of detailed economic dataset and information.
- Reducing discards - this mainly addresses biological, ecological and economic objectives as it aims to decrease the ecological and economic calamity caused by the discards.
- Clarifying management objectives and improving the regional decision making structure of the CFP - targeting social objectives as these will improve inclusive governance and ensure a more fair standard of living for fishery dependent communities.

**Icelandic Mackerel fishermen's objectives**

- The optimal management system promotes the long-term maximization of profit within the boundaries of sustainability, including the preservation of biological diversity and vulnerable habitats.
- Little interest in policy objectives such as equal access for all, easy access for newcomers and for young people. Difficult to harmonize a system promoting such measures with the more important goal of value maximization.
- In the short run, most representatives said the main objective in Iceland's management of the mackerel fishery should be to reach an international agreement on the stocks utilization.
• The political decision to disperse the individual quotas rather evenly to many fishing companies of different sizes has been a cause of higher-than-necessary costs. All agreed that this would in the long run best be solved by a system of ITQs.
• Scientists should make the decision of how much to fish each season. Other than that, free enterprise should be allowed, within a system of ITQs, to find the most efficient way of utilizing the stock.
• A representative said that co-management, between authorities, biologists and stakeholders, should be extensive, and consultation with the stakeholders should be much more than it is today.
• Technical measures such as box closures – some support but property rights advocates felt that this system had all the necessary incentives.
• Firmly against subsidies - All were firmly against it.
• Little discarding, but differing opinions on how best to minimize it – strong control vs property rights
• Certification - Most were in favor of some sort of certification

Overall conclusions

Biological Objectives

Biological objectives are the main focus across the case studies reported on here. Issues related to stock levels and fishing opportunities appear to still be the main priority for industry representatives, but also for a wider range of stakeholders. This is probably still widely seen as the proper concern for fisheries management and less in terms of ecosystem, economic or social objectives. This is likely to remain the main area of consensus, where all tend to agree that commercial stocks should be fished sustainably, although not all agree what that might mean, with MSY derived sometimes being treated sceptically. Discarding of commercial species was broadly seen as a reasonable objective, but again, not the means.

Ecosystem Objectives

There is less consensus and more limited bottom-up support for ecosystem objectives such as the protection of vulnerable species or maintenance of sea floor integrity. However both legislative (MSFD) and consumer (MSC) drivers are pushing these objectives up the agenda. There is a recognition that ecosystem objectives are important particularly in the context of certification (e.g. MSC), but less for the demands of the MSFD.

Governance Objectives

Generally there is strong support for more inclusive forms of governance. Greater participation by stakeholders in management is understood to be a way to mitigate the conflict caused by poorly designed policy measures such as the discard ban. There was support for structures like the RACs and also for stakeholder involvement in ICES, and other RMOs. However some stakeholders involved in co-management
expressed concern about a trade-off between inclusive governance on one hand and decision-making efficiency on the other.

**Social Objectives**

Where social objectives were raise, they attracted considerable attention, e.g. in the Irish, Baltic and Aegean case studies. The main focus was on maintainance of fishing communities. No other obvious social objectives were raised suggesting that this should be the main focus for the project under the social pillar.

**Economic Objectives**

Economic objectives were harder to define than biological, however, there was some consensus in areas such as net present value, maintaining profitability, and returns on investment. Difficulties in defining and in agreeing on economic objectives were identified as being widely due to poor, and poorly integrated economic data. Some involved considered that economic objectives were beyond the domain of fisheries managers who should define the biological, and possibly ecological objectives. Economic objectives were considered to be issues for the industry and the market.

**General issues**

The specific objectives will obviously depend on the characteristics of the fishery – e.g. pelagic fisheries in general are far more supportive of discard bans while neither pelagic nor static gear fisheries see the necessity for objectives related to the status of the benthic environment as a high priority.

Some fisheries and industry stakeholders more comfortable with an economically driven set of objectives than others e.g. Iceland.

With Regional approaches given priority in the new CFP, there is no specific need for a one-size-fits-all approach to objectives, and it is clear that objectives in, say, Aegean demersal fisheries will have quite different specific objectives than the Icelandic pelagic fisheries. However, there are clear examples, under all three pillars of sustainability, where there are coherent approaches in many of the case studies. While discarding is perhaps not important in pelagic fisheries, it is often cited as an objective in demersals. Broadly similar social objectives, centred around communities, appeared in many case studies. Net present value, and profitability were also regular candidates for objectives in the economic field. Ecosystem objectives are likely to be the most obvious area where objectives will differ between case studies. In the North Sea attention has focused on MSY amd MMSY objectives. For most others, clear ecosystem objectives are lacking, although the need to obtain accreditation e.g. from the MSC appears a key driver. This in itself is likely to lead to locally appropriate objectives within a broader overarching objective scheme and will likely focus on seafloor integrity, and on biodiversity issues, e.g. Protected, endangered and threatened species.
A Way Forward

The North Sea mixed demersal case study in particular gives a clear indication of the direction that both SOCIOEC and MYFISH can go to develop this issue. The space for sustainable exploitation can be delimited in both biological (MSY) and environmental (MSFD GES) terms. This can be done through an inclusive governance process involving chiefly ICES and the RACs and the MYFISH project has a clear role to play here. An overarching MSY approach accounting for multi-species and mixed-fisheries interactions was the primary consensual management objective for the North Sea demersal fisheries.

However economic and social objectives are more difficult to define and there is a clear need for some further work and guidance to both policy makers and stakeholders in developing practical economic and social objectives. This is a both a challenge and an opportunity for the SOCIOEC project. Because of this issue, it may be better to take an approach where we consider economic and social objectives as representing constraints rather than objectives per se. This would possibly suggest that there should be an impact assessment made in social and economic terms of achieving proposed objectives under the biological and ecosystem pillars. For example, multi-species MSY objectives could be evaluated in terms of their impact on net present value, profitability, and on the communities where fishing is a key activity. Solutions under MSY that also maintain or improve these dimensions might then be preferred.
11. References


Council Regulation (EC) No 779/97 of 24 April 1997 introducing arrangements for the management of fishing effort in the Baltic Sea


European Commission note on setting conservation objectives for Natura 2000 sites (Final version 23/11/2012).


SOCIOEC Deliverable D 6.7 Critical report of current fisheries management measures implemented in the Baltic Sea Leyre Goti, Ralf Döring, J. Rasmus Nielsen, Jesper Levring Andersen


Website of the German Federal Ministry of Food, Agriculture and consumer protection. http://www.bmelv.de/DE/Landwirtschaft/Fischereipolitik/EU-Fischerei/EU-Fischerei_node.html (last retrieved 1.8.2013)
12. Appendix 1: Guidance Notes on discussing fishery specific objectives with stakeholders for WP2

In Deliverable 2.1, and a subsequent paper currently being revised, a shortlist of high-level sustainable fishery objectives was developed (Table 1 below). These policy objectives were developed as a joint exercise between the Socioec and Myfish projects and largely based on a workshop with stakeholders in Vigo in 2012, interviews with stakeholders and a review of the on-going CFP reform process, legislation and academic literature.

Socioec is taking a pragmatic approach to the choice of objectives by focusing on those which are both manageable (i.e. they are likely to be achievable through current or potential management measures) and consensual (i.e. they are likely to be acceptable to a broad range of stakeholders). Further research is required as part of D2.2 on the adaptation of those high level policy objectives to specific regions in order to set up reference levels for the analysis of policy effect. (D2.2: Reports by case study defining a locally appropriate suite of second level objectives consistent with the overarching objectives).

This note is intended to provide some guidance on discussing with stakeholders which specific objectives are appropriate and agreeable for their fishery. Many work packages in Socioec have strong elements of stakeholder input. It is unlikely that separate meetings for each work package are feasible without incurring some resistance to the project so it may be preferable to try to include this work with that for other work packages. However if a stand-alone meeting can be organised to discuss high-level and operational objectives that would be the ideal situation.

Existing sources of information on objectives.

There are, in particular for some of the fisheries, pre-existing sources of material on fishery objectives directly relevant to this deliverable which will complement and also minimise the necessity for direct responses from stakeholders. These additional sources of information could include:

- Previous EU projects which have involved discussion and in some cases prioritisation exercises for fishery specific objectives e.g. Ecofishman, MEFPEO, GAP2, SOCIOEC (those fisheries where the Choice Experiment was run).
- Long-Term Management Plans and Recovery Plans particularly in relation to biological objectives
- Documents from Marine Stewardship Council certification processes which may cover objectives under all three pillars
- Submissions from relevant regional stakeholder organisations to the CFP reform process consultations (http://ec.europa.eu/fisheries/reform/consultation/received/index_en.htm).
Relevant stakeholders.

We are interested in a broad range of stakeholder views on what fishery specific objectives should be and not simply those of the fishing industry. Possible sectors which could be included are:

- Fishermen and fishermen’s organisations – care should be taken to include the views of small-scale fishermen where relevant to the specific fishery
- Managers and policy makers
- Environmental NGO’s
- Consumer NGO’s
- Recreational fishery NGO’s
- Coastal community organisations
- Fish processors and retailers

This list is not inclusive of all interests relevant to fisheries and is intended merely to give a guideline on the kind of contacts who may be relevant to this deliverable.

Direct stakeholder contact:

The list below is presented as a set of questions that could be asked of stakeholders but is not meant to be prescriptive. In order to facilitate and simplify the process of gathering stakeholder responses on objectives we have included a template covering the key requirements (see Table 3 below). Table 3 is intended to be suitable for sending out as an email to relevant stakeholders and to avoid the necessity for face-to-face meetings.

- First present the high level objectives to the stakeholder(s).
- Ask them about their impression of these objectives as a suite of high-level generic fisheries sustainability objectives? This would be the first element of obtaining consensus, where stakeholders could agree, at least, on the principles of the overarching objectives.
- Then ask them to consider the objectives in relation to the specific case study fishery and to indicate which are the most important for that fishery under the ecological, economic and social pillars of sustainability.
- Ask if there are other important objectives that are not included in the high level list, and if so, and where possible, articulate appropriate new high level objectives.
- Seek to define a new set of locally appropriate sustainability objectives that would fit under all or some of the high level objectives. We should ideally aim to define a local objective linked to each high level objective, or to explain why this is not appropriate in the specific case. It is possible that some issues of general importance may not be relevant at the more local level. For instance, discarding is not believed to be an important issue in many pelagic fisheries. In such a case, the objective might be to definitely confirm that this is the case, and the objective given a lower priority.
- Which of the local objectives do they feel are the most manageable, given local management and data collection conditions? For instance, there may be little point in defining objectives for discard limits where there is no possibility of putting on observers???
Which are the most consensual? *i.e.*, which objectives have support from more than one sector within the stakeholder community, and particularly across NGOs, industry, science and governance? Also which are the least consensual, and if possible identify where the disagreement lies, and what might be the basis of that disagreement. Ideally this should also identify which sectors are involved in a conflict, or indeed where the conflict lies within a sector. Additionally, it would be useful to know in the case of conflict how each actor regards the others.

Which objectives are related to others? Identify where there are likely to be synergies or conflicts in their mutual achievement. For instance, maximising yield in tonnes of commercial species, may conflict with minimising bycatch of vulnerable and protected species.

Discuss, and ideally, agree, management measures best suited to the objectives – ideally management measures should aim to satisfy more than one objective and be designed to avoid conflicts with the achievement of any other objectives.

See Table 2 below for a list of potential management measures if respondents are struggling to think which are relevant to which objectives.

At the end of the session each operational objective identified should be specified as far as possible. For example, for an objective aimed at reducing discards to an acceptable level, respondents might focus that objective on:

- Particular species that were commonly discarded
- Particular sectors of the fleet or areas that had high discard rates
- Switching from discards to landings

Where discussion of operational objectives is happening at an individual level there may need to be a number of iterative steps in deciding which are broadly agreeable to a range of stakeholders.

While the aim would be to have reasonable numbers of the key stakeholders and across the sectors, this may not be possible in a single meeting. In cases where one or more sectors are NOT represented in the consultation, it is important that they get a chance to respond to the agreed set of objectives, before these are finalised.

Table 1: High level objectives for fisheries management developed from the combined SOCIOEC-MYFISH workshop.

<table>
<thead>
<tr>
<th>Sustainability pillar</th>
<th>Population level</th>
<th>Time span</th>
<th>High level objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecological</td>
<td>Society</td>
<td>Long term</td>
<td>Maximize yield in tonnes of commercial species</td>
</tr>
<tr>
<td>Ecological</td>
<td>Society</td>
<td>Long term</td>
<td>Gradually eliminate discards on a case-by-case basis</td>
</tr>
<tr>
<td>Ecological</td>
<td>Society</td>
<td>Long term</td>
<td>Minimizing bycatch of vulnerable and protected species</td>
</tr>
<tr>
<td>Ecological</td>
<td>Society</td>
<td>Long</td>
<td>Minimizing negative impact on seabed</td>
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<td></td>
<td>term</td>
<td>habitats</td>
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<td>----------------------------------------------</td>
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<tr>
<td>Economic</td>
<td>Society</td>
<td>Long term</td>
<td>Maximization/optimization of present value</td>
</tr>
<tr>
<td>Economic</td>
<td>Society</td>
<td>Short term</td>
<td>Maximization/optimization of gross value added (or rent)</td>
</tr>
<tr>
<td>Economic</td>
<td>Firm/ Individual</td>
<td>Short term</td>
<td>Maximization of profits (within ecological and social constraints)</td>
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<tr>
<td>Social</td>
<td>Society</td>
<td>Long term</td>
<td>Ensure viable coastal communities</td>
</tr>
<tr>
<td>Social</td>
<td>Society</td>
<td>Long term</td>
<td>Improve policy and decision making through improved inclusive governance structures</td>
</tr>
<tr>
<td>Social</td>
<td>Individual</td>
<td>Long term</td>
<td>Ensure fair living standard, improved working and security conditions on board of fishing vessels</td>
</tr>
</tbody>
</table>
Table 2: Management measures and governance frameworks relevant to Socioec project (from earlier WP6 case study description table).

<table>
<thead>
<tr>
<th>Mgmt Measure</th>
<th>Conservation</th>
<th>Access</th>
<th>Others</th>
<th>Processes</th>
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<tbody>
<tr>
<td>TAC</td>
<td>IQ</td>
<td>MPAs</td>
<td>Regionalisation</td>
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<td>Catch quota</td>
<td>ITQ</td>
<td>Spawning Box Closures</td>
<td>Co-management</td>
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<tr>
<td>Effort regulation</td>
<td>ITE</td>
<td>Vessel size-based restrictions</td>
<td>Self-management</td>
<td></td>
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<tr>
<td>Long-term plans</td>
<td>TURF</td>
<td>Certification</td>
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<tr>
<td>Technical measures</td>
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<td>Subsidies</td>
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<td>Over-quota landing tax</td>
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