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SOCIOEC LEGACY BOOKLET

SOCIOEC was an EU FP7 interdisciplinary project bringing fisheries economists, social scientists and biologists together with industry partners and other key stakeholders to look into the Socio Economic effects of management measures of the European Common Fisheries Policy (CFP). The SOCIOEC Legacy Booklet aims to capture the main highlights and outcomes from the SOCIOEC project.

INTRODUCTION TO SOCIOEC

The SOCIOEC project ran from March 2012 until February 2015 and aimed to develop fisheries management measures that enable stakeholders to agree and comply with fisheries legislation in Europe.

During the 20th century many fish stocks in European waters were harvested above a sustainable level which led to a lot of overfished stocks making it necessary to regulate the fishing industry. At present, the interests of fishermen, fishing communities and consumers of fish products are supported through the European Union’s CFP. The main objective of the CFP is to make sure the needs of today’s EU fishing industry are met without jeopardising fish stocks...
for future generations. It also aims to provide a guaranteed income for fishermen and ensure a regular supply of top quality seafood at reasonable prices for consumers while maintaining healthy coastal ecosystems.

When **SOCIOEC** started in March 2012, the previous CFP was still in place but review of the CFP (Green Paper - Reform of the Common Fisheries Policy, European Commission 2009) had identified several deep-rooted problems in European fisheries: overcapacity; imprecise policy objectives; a framework that did not give sufficient responsibility to the industry; lack of compliance; and a decision-making system that encouraged a focus on short-term management.

A substantial reform of the CFP was needed, which has come into effect on 1 January 2014. With this in mind the **SOCIOEC** project was developed to assess the social and economic impacts of the new management measures of the reformed CFP (2014), namely the introduction of the discard ban, spatial closures and possible use of transferable concessions in some fisheries. The project also aimed to review and improve the social and economic impact assessment methodology for fisheries management.

**SOCIOEC at a Glance**

**TITLE:** SOCIOEC – Socio Economic effects of management measures of the future CFP  
**PROGRAMME:** FP7, Cooperation, Food, Agriculture and Fisheries, and Biotechnology (KBBE)  
**TOTAL BUDGET:** €3,830,000  
**EC CONTRIBUTION:** €2,999,939  
**DURATION:** March 2012 – February 2015  
**COORDINATOR:** Johann Heinrich von Thünen - Federal Research Institute for Rural Areas, Forestry and Fisheries, Germany  
**CONSORTIUM:** 25 partners from 12 countries  
**WEB:** [www.socioec.eu](http://www.socioec.eu)
A major criticism of the previous CFP was the lack of region specific regulations. SOCOEC addressed the social and economic complexity of the different European fisheries by basing the project methodology on fishery-based case studies. These areas included the Baltic Sea, North Sea, Western Waters (Celtic Sea and Bay of Biscay), Mediterranean and the Black Sea, Pelagic and non-EU fisheries. The six different Case Studies were chosen as they were representative of most fisheries management systems in operation in EU waters and their geographical areas were designed to represent the geographical areas of the different Regional Advisory Councils (RACs). RACs have been established to involve stakeholders in the fisheries sector more closely in the decision-making and implementation processes in this field, and they were therefore an appropriate platform of exchange and participation of the different stakeholders involved.

Each case study examined the environmental, social and economic realities of each area and considered how to adopt EU requirements into management measures suitable to the different fisheries.

Another important aspect of the reformed CFP was the fact that it did not take stakeholder opinions into consideration sufficiently when the new legislation was designed. The SOCOEC project created a two-way dialogue between researchers and key stakeholders at regional/local and European level through workshops and working groups. Here they analysed the new CFP policy in more detail and discussed how new management measures should be implemented, also taking the diverse stakeholder opinions into account.

### SOCIOEC CASE STUDY REGIONS

The six individual case study regions investigated by SOCOEC:

1. Baltic Sea Demersal Fisheries
2. North Sea Demersal Fisheries
3. Non-EU Fisheries
4. Western Water Fisheries
5. Mediterranean and Black Sea
6. Pelagic Fisheries
INDIVIDUAL CASE STUDY DESCRIPTIONS:

**Baltic Sea Demersal Fisheries:** Fishing in the western Baltic Sea is mainly performed by small and medium sized vessels operated from local communities and thus dependent on local resources with limited possibilities to reallocate effort to other areas. The Baltic Sea Case Study discussed governance issues in relation to area based management measures and increasing complex regulations to reduce negative impacts of fishing on the ecosystem.

**North Sea Demersal Fisheries:** The North Sea case study focused on the catch quota system for mixed roundfish and the Individual Transferable Quotas (ITQ) system for flatfish fisheries for human consumption. Furthermore, the North Sea Case Study investigated the nephrops fishery in Kattegat. This is an example of a fishery with good stock levels and with an economic importance for the fleet but there is also a negative impact on the cod stocks. The nephrops fishery case study composed an important management challenge on the one hand to maintain a sustainable and economic lucrative fishery for nephrops and on the other hand to ensure measures that will ensure cod avoidance enabling the cod stocks to recover.

**Western Waters Fisheries:** The fisheries selected were the sole fishery exploited by the French fleets (trawlers and netters) managed under individual quotas and a decentralised procedure by delegation (co-management by delegation). The Irish Celtic Sea herring fishery is currently managed as a partnership which makes operational level decisions such as the length of the season or the size of weekly allocations. Basque purse seiner fisheries are managed under a centralised regime via the Spanish State. The centralised regime applied to the mackerel fishery is combined with self-management for quota pooling in the case of the bluefin tuna (co-management by partnership). For Basque trawlers, the ITQ system comes from a centralised regime except for some issues. The English FQA/PO system can be best characterised as “co-management by partnership” since, given the quota allocation system decided at central government level the POs have a considerable degree of flexibility to manage quota at the local/sectoral level.

**Mediterranean and the Black Sea:** The fisheries selected were the Greek Aegean Trawl fishery (GSA 20), the Italian clam fishery in the Adriatic Sea (which is included in the project as being a successful example of the territorial use of rights in fisheries – (TURFs)), the demersal
Tyrrhenian fishery (GSA 10 - proposed in order to explore the future implementation of Individual Transferable Effort (ITE) allocation), and the Black Sea Turkish Anchovy fisheries (where the majority of the catch is harvested by purse seine vessels of which half of the fleet registered to the Black Sea ports).

**Pelagic Fisheries:** This case study investigated at the EU and government level how to best address migration of stocks within EU countries as well as non-EU countries based on different migration scenarios. Specifically, the Pelagic Fisheries Case Study considered investments in fishing rights, which is a central management instrument for the majority of the pelagic fleets, and changes in and utilisation of capacity, which is underutilised for many of these highly specialised vessels.

**Non-EU fisheries:** This case study aimed to analyse the incentives, socio-economic impacts and governance of the ITQ management system employed in the Icelandic demersal fisheries.
ACCEPTABILITY OF OVERARCHING OBJECTIVES:

As highlighted previously, the green paper on reform of the CFP (Green Paper - Reform of the Common Fisheries Policy, European Commission 2009) identified unclear management objectives as one of the five key problems contributing to the failure of the previous CFP. The SOOCOE project analysed and grouped the existing management objectives by sectors (ecological/biological, economic, social, governance or cross cutting objectives). A list of overarching objectives was produced following discussions with stakeholders (see Figure 1) in order to assess the regional applicability in certain fisheries.

SOCIOEC RESULTS:

The SOCCOE project found the following results were most important for acceptable sustainable objectives:

- General sustainability objectives (where all three major sustainability pillars: ecological, economic and social are taken into consideration) have been identified as important and were given high priority by stakeholders.
- Maximisation of Gross Value Added (GVA - measuring contribution of fishing sector to regional/local economies) was regarded as important by most stakeholders.
- Stronger integration of the fishing sector into the management process is considered important by stakeholders.
MANAGEMENT INCENTIVES AND FISHERS’ BEHAVIOURAL RESPONSES:

Governments often try to change the behaviour of fishers by applying an incentive based approach. However often the behaviour of fishers cannot be easily predicted, and some management measures have been creating unwanted incentives. With a transdisciplinary, case study based approach with involvement of stakeholders, the SOCIOEC project investigated past management systems, their incentives and fishers’ behavioural responses.

Incentives can be grouped into three distinguishable groups: Financial (reward for following rules), coercive (punishment for not following the rules), social/moral (following the rules set by the community). All three types of incentives have previously been applied in European fisheries management. Examples of financial incentives are ITQs or Individual Quotas (IQ), and subsidies to compensate high fuel expenses or to increase the efficiency of vessels. Coercive incentives examples are technical measures and effort limitations. The idea behind these incentives is that because of the threat, fishers will conform to the rules. A downside is that this requires a high level of enforcement, especially when rules are considered unreasonable or illegitimate. Therefore, nowadays more and more social incentives are in place, for example providing alternative livelihood opportunities or transparent and participatory management approaches.

Involvement of fishermen in the management process or fisheries regulation by the community (e.g. producer’s organisation) often creates incentives to obey the rules to avoid stigmatisation or punishments by the group. Therefore, in many European countries the management tasks have been decentralised, often leading to increased legitimacy and compliance rates while at the same time partly shifting management costs from the government to the fisheries industry.

SOCIOEC RESULTS:

The SOCIOEC case studies results show that instead of applying just financial or coercive incentives, governments should apply a combination of financial, coercive, and social incentives. This has the best chance for success, i.e. reaching the aim of a policy:

• It was found that fishers are not only driven by financial motives, but are largely influenced by the behaviour of other fishers.
SOCIOEC has also found that governance structures strongly influence the fishers’ behaviour. In general, co-management systems create better incentives than traditional top-down management.

SOCIOEC recommends that the creation of the ‘right’ incentives starts with a clear objective describing what the management measure is aiming for as well as a better understanding of the behaviour, and norms and values of fishers.

GOVERNANCE STRUCTURES AND STAKEHOLDER INVOLVEMENT IN MANAGEMENT:

SOCIOEC has highlighted the need for regionalisation and decentralisation of European fisheries management during the consultation process with stakeholders regarding the reform of the CFP and in the new CFP. The project investigated possible scenarios for decentralisation of the governance structures on different management levels (regional, national or local) for each of the specific case studies. SOCIOEC also assessed the acceptability of proposed changes of governance structures among the key stakeholders. The development of regional structures and processes to implement regionalisation under the reformed CFP currently (early 2015) remains a work in progress.
SOCIOEC completed the first preliminary assessment on governance structures and stakeholder involvement in fisheries within the reformed EU policy framework.

**SOCIOEC RESULTS:**

A comprehensive legal analysis of the new CFP regarding regionalisation and stakeholder involvement highlighted a fundamental shift in the fisheries management paradigm under the new CFP. The highlights included:

- ✔ removing micro-management decisions from the co-decision level within the EU institutions
- ✔ the decentralisation of technical decisions away from the European Council and Parliament’s power to adopt legal acts
- ✔ the regionalisation of fisheries management decisions
- ✔ increasing the role and responsibilities of industry in the fisheries management and conservation of the resources
- ✔ increasing legal power and responsibilities at the Member States level without prejudice to the Union Treaties

The EC identified micro-management, centralised decision making and little buy-in of the fishing sector to fisheries management measures as some of the key failures of the previous CFP. Therefore, the removal of micro-management decisions from the co-decision level within EU institutions, the regionalisation of decisions and increasing efforts to strengthen the role of the industry are considered as a major step forward. However, it is questionable if this is right for every aspect of the new CFP. The newly introduced discard policy is very complex and increases the necessity for micro-management decisions again – this time at the regional level.

SOCIOEC carried out research in relation to the new regional governance structures and processes, which have been established subsequent to the adoption of the new basic regulation of the CFP (Art. 18), which stated ‘Member States... may... agree to submit joint recommendations for achieving the objectives of the relevant Union conservation measure’. However legislation doesn’t oblige the European Commission to take these proposals into account. In connection with this research, a SOCIOEC workshop with participation of
primarily fisheries industry stakeholders but also representatives from NGOs and member states was carried out in Paris in November 2014. The outcomes of the workshop confirmed that there are still significant challenges to overcome to make regionalisation (and the associated co-management) functional. Among the issues raised was the need for more room to manoeuvre when designing regional solutions, sufficient time for the process, as well as a general call for everybody to adopt the ‘spirit of co-management’.

Regionalisation provisions of Regulation 1380/2013 could also be considered as a new level of multi-stakeholder cooperation and involvement in the EU decision making process. At the same time it created a possibility for stakeholders to be included in management decisions by consulting relevant RACs when formulating joint recommendations. Generally, discussions organised by the SOCIOEC project on EU and case studies level showed some distrust between fishers, management authorities and NGOs. In some cases stakeholders felt their opinion was not taken into account during the reform of the CFP. Stakeholder feedback gathered throughout the SOCIOEC project suggests that “Intelligent Management” can be defined as the way towards better fisheries management. This type of regulation must include:

- Technology (Global Positioning System [GPS]; Vessel Monitoring System [VMS] etc.) with precise regulation and documentation of compliance
- Fisher behaviour must be taken in consideration when regulation is developed and implemented
- Fisher knowledge must be heard and used in management
- Dialogue between the fishers and other interested parties, e.g. authorities, scientists or NGOs
SOCIOEC’S RECOMMENDATIONS TO FACILITATE THE MOVE TOWARDS REGIONALISATION:

These policy recommendations are ‘modest’ in the sense that they do not require revisions of the provisions contained in the basic regulation. SOCIOEC’s policy recommendations in relation to regionalisation are as follows:

- Strengthening transparency and accountability of the regional member state bodies by providing for instance websites, online calendars and public minutes; giving the Advisory Councils (ACs) more responsibility; or having a dedicated secretariat. Good examples of this shift in regionalisation are the Baltic Sea Fisheries Forum (BALTFISH) and the Scheveningen group (a North Sea working group). BALTFISH is a regional body providing a platform for discussion on important fisheries issues in the Baltic Sea. BALTFISH is based on the regionalisation of the EU Common Fisheries Policy as referred to in the Basic Regulation and its main objective is to promote cooperation among fisheries administrations and other key stakeholders in developing sustainable fisheries in the Baltic Sea region. The Scheveningen-Group has been set up to provide advice on the management of the fisheries of the North Sea on behalf of stakeholders and to coordinate the implementation and enforcement of CFP rules and regulations.

- Consider how a ‘spirit of co-management’ can be fostered.

- Outline more clear working procedures at regional level (and between regional and central level); the procedures are currently too dependent on individuals.

- Evaluate solutions to the resource problem by either making funding available (from member states or central EU level) or provide clearer indications of what the priority is at central and regional levels respectively.

- Ensure that there are sufficient feedback loops in the system (at regional level and between regional and central level) so that it is clear that one part is not just giving advice but that there is actually an on-going interaction.

- Consider more deeply what role the ACs should play at regional level; should the AC be one among many access points for stakeholders, or should it be the access point?
SELECTED CASE STUDY RESULTS:

The Kattegat case-study focused on experiences from two cod-avoidance initiatives in the Kattegat in the light of implementation of the discard ban. The study points at warnings and ideas for implementation. When agreeing on discard plans and implementation to be accepted (and followed) by the fishers, it is important that agreements cover all nations in the sea area (not national/bilateral) and that control measures are regarded as proportional by fishers and goals of the measures are clear (discard reduction or sea bed protection or protection of juveniles etc.). Further, the study describes a fisher initiated idea of real-time closure that was never realised, which also holds the seed for a fleet information system to provide skippers with information about hotspots of unwanted species and which allows them to plan the selective fishery on a better informed basis. Such an initiative of industry responsibility requires time to establish (a stable regulative framework of incentives) and probably also organisational experiences to build on. Marine Policy journal article: Cod avoidance by area regulations in Kattegat – experiences for the implementation of a discard ban in the EU doi:10.1016/j.marpol.2013.11.020

The Western Waters case-study used a participatory process in the form of a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis to collect information and organise ideas from stakeholders concerned with the European Western Waters fisheries (Spain, UK, France). Two SOCIOEC workshops were organised, one in Brest, France (15-16 October 2013) and the other in Derio, Spain (4-5 November 2014) where fishers’ representatives, NGO representatives and scientists discussed regionalisation and co-management in the Western Waters. Two SWOT analyses on (i) regionalisation and (ii) fishing concessions were repeated three times for the three pillars of a sustainable development (environmental, economic and social dimensions) Therefore, a total of six SWOT analysis results were obtained. Marine Policy journal article: The regional management of fisheries in European Western Waters doi:10.1016/j.marpol.2014.09.022
IMPACT ASSESSMENT OF MANAGEMENT MEASURES:

The recent improvements and developments in the Impact Assessment (IA) methodologies increasingly move toward the concept of a Sustainability Impact Assessment (SIA). SIAs are based on several key principles, of which the most important are:

- Three sustainable dimensions: short versus long-term effects; spatial impacts; global, regional and local objectives
- Social science forms of analysis
- Stakeholder involvement

There were several sub case studies chosen for IA on the level of different fisheries in regions:

1. Baltic Sea (International Western Baltic Sea fishery; grey seal regulation; German small scale fishery in Fehmarn island)
2. North Sea (North Sea mixed demersal fisheries; plaice and sole fisheries)
3. Western Waters (French demersal mixed fisheries in the Eastern English Channel; Spanish Basque trawlers; Bay of Biscay sole; Bay of Biscay purse seiners fisheries; Irish fisheries)
4. Mediterranean and Black Sea Fisheries (implementation of Individual Effort Quota in: demersal fishery in Italian GSA 17; Greek demersal trawl fisheries in GSA 22)
5. Pelagic Fisheries (international ITQs in the North East Atlantic pelagic fisheries; Northeast Atlantic Mackerel exploitation by Spain with focus on the Basque fleet)
6. Non-EU fisheries (Icelandic inshore open access fishery)

The IAs conducted in SOCIOEC were divided between qualitative assessment (step 1) and quantitative assessment (step 2). Stakeholders were involved at each of these main stages and their contribution was used for the improvement of IA results at each of the steps. At the final stage (step 3), management options were rated and results were assembled in a user friendly manner.
QUALITATIVE ANALYSIS

The qualitative analysis (using social science methods such as focus groups and interviews) provided a general overview of the case study under analysis and identified the potential impacts (in social, economic and biologic terms) of the possible fisheries management measures.

The gathering of qualitative data for different case studies highlighted the importance of a differentiated approach to impact assessment for each fishery. In many of the cases institutional and governance aspects strongly influenced the effect of some measures implemented. For example, stronger regulation by producer organisations, such as those involved in co-management of French sole fleets, was enough to improve the compliance with quotas, while Basque mackerel fleets required external controls to keep the daily limits. The effects on those fisheries were effort reallocation throughout the year (in the sole fishery) and quota overshooting (for the mackerel fishery), and the qualitative approach showed many external factors influencing this behaviour such as low prices or behaviour of competing fleets for mackerel.

The licence system in the Black Sea Turkish fisheries is another example of the different effect of the same measure depending on the local institutional setup. In this case the fuel subsidies for the Black Sea Turkish fisheries are not distributed equally between fleets as small scale fisheries have problems to fulfil the bureaucratic requirements to access the subsidy.
While co-management, certification and long-term management plans are seen as having a positive impact, other management measures such as decommissioning subsidies and the discard ban lead to more diverse qualitative results depending on the type of stakeholder. For example, while environmental stakeholders agree with the discard ban and disagree with decommissioning schemes, the opposite is observed for fishers. The effect of overlapping management measures has arisen when considering various technical measures and closed areas (in conjunction with other closed areas or effort restrictions). Finally, the effect of co-management and ITQs are different across fisheries, depending among other things on external effects (such as prices) and governance.

QUANTITATIVE ANALYSIS

Quantitative analysis provides clear and quantifiable information on the impacts of the policy options by comparing them against one another and against the status quo (baseline scenario) in addition to ranking them in terms of the general criteria of acceptability, effectiveness, efficiency and coherence.

The SOCIOEC project has applied this methodological approach to a very wide range of management options, areas, and fisheries and by means of different models. Case studies covered include:

- All the EU regions (Baltic, North Sea, Western Waters and Mediterranean) and non EU (Iceland).
- Different fisheries, from small scale to distant water, from demersal to pelagic fisheries.
- Different management measures: already implemented (but subject to change), to be implemented but effects unknown (e.g. landing obligation), proposal of novel policy options (e.g. effort quota in the Mediterranean Sea).
**QUANTITATIVE ANALYSIS CRITERIA DEFINITIONS**

* **Acceptability:** The sector is more likely to accept and comply with regulatory management they perceive as easy to apply, effective and fair, which will therefore improve compliance.

* **Effectiveness:** Extent to which the main specific objectives set by policy makers (or in this case by SOCIOEC in consultation with stakeholders) in terms of biological, economic and social sustainability are achieved.

* **Efficiency:** Which objectives can be achieved for a given level of resources/costs (the best rate between resources employed and results achieved).

* **Coherence:** The extent to which management options are coherent with the overarching objectives of CFP and the operational objectives as defined in the management options.

**SOCIOEC HIGHLIGHTS OF IMPACT ASSESSMENT AT THE CASE STUDIES LEVEL**

The variability and complexity of the models used during the SOCIOEC project makes it difficult to provide any definitive conclusions beyond case studies level. However, some qualitative and quantitative results of the IA done by the project are presented below.

**MEDITERRANEAN SEA**

In the Greek case study (**mixed demersal fishery in Aegean Sea - GSA22**), the management measure of closing hake nurseries to trawling so as to reduce unwanted catches of hake juveniles, would serve the aims of the landing obligation in EU waters. Simulations performed within the SOCIOEC project suggested that this proposed management measure would not only reduce unwanted catches including discards, but would also result in improvements of the socioeconomic indices of Greek fishermen as early as the second year of its implementation.

In relation to the **demersal fishery in Italian GSA 17**, policy objectives would be partially achieved through a new management system based on Individual Transferable Effort Quota (ITE) when combined with a reduction in the allowed days at sea. Tradability of effort quotas induces an increase in fishing mortality as effort quotas would be concentrated in favour of the most profitable fishing fleets, which are also those...
impacting the most on biological resources. However, the positive effect of a reduction in fishing effort seems to be stronger than the negative effect associated to the ITE system. Reducing fishing activity can have positive effects in the long term from both a biological and economic point of view, but the short term effects could be less acceptable for the fishing sector. Less efficient vessels would not be able to cover fixed costs and this would result in a low level of compliance with the measure. In this context, the transferability of effort quota would increase the level of compliance and acceptability of the management measure. Indeed, assigning a value to the quota held by each vessel would allow less efficient vessels to sell (or rent) their quota at a price higher than the profit they could have by using that quota for fishing. Furthermore, a stronger reduction in the allowed days at sea would result in a higher value of the remaining fishing days and a higher income for less efficient vessels. Scenario simulations showed a good coherence between biological, economic and social objectives when a reduction in the allowed days at sea is assumed.

**WESTERN WATERS**

In the UK responsibility for the management of national catch quotas has been extensively devolved to fisheries Producers’ Organisations (PO) since 1984. The results from surveys of PO members reveal mixed views on how well the UK’s devolved quota management system works and on the trading of quota. Although the UK system is not set up to allow quota trading, significant trading nevertheless takes place between PO members. Support for the quota management system in general appears to depend
on how involved fishers feel, including involvement in trading activity. Quota trading is clearly accepted by the majority of PO members, but a significant minority remains opposed.

The **Bay of Biscay sole fishery** has been under a management plan since 2002. Following an initial recovery plan, a multiannual management plan was implemented in 2006 (EC N° 388/2006). The first step of the multiannual management plan in 2008 was the restoration of the sole stock at a level of precautionary spawning biomass. Following the new framework of the CFP Reform, the Bay of Biscay sole management plan will become a Bay of Biscay multi-species management plan. Quota management by POs mainly relies on a quota pooling system with redistribution among members.

The bluefin tuna, in the **Basque Purse Seiner case study**, is currently managed by individual rights managed by POs in a common pool. This management measure entails a homogeneous distribution of the fishing rights among all vessels operating in this area and fishery. The main effect of the pooling of bluefin tuna fishing rights is the homogeneous distribution of the revenues from fishing between all the boats. This issue favours those fishing boats whose catch ability of bluefin tuna used to be lower. Obviously, there are boat owners who lose while others win. Inshore boat owners agree to manage quotas collectively since fish trade, in this case study, is also done collectively, and one of the most important advantages of common pooling is the fact that they have greater bargaining power when selling fishing rights. Based on this positive experience, the inshore sector feels that it is better to work together in this way for all species. So-called cofradías (associations) under the umbrella of POs have played a key role in recent decisions of the inshore fleet. According to the Basque Purse Seiner stakeholders, the IQ with common pooling has a social benefit for the fishers. The simulation results support the findings that the establishment of individual rights managed in a common pool improves the social indicator, that the number of vessels leaving the fishing activity is reduced, and that the biological and economic indicators improve within a time horizon of 15 years. However, if individual rights are not
transferred or are transferred forever, the economic and social results will be worse than in the previous top-down regime.

Eastern English Channel mixed fishery. The management plan decided for sole, based on a transition to Maximum Sustainable Yield (MSY) in five years, allows objectives to be reached only if the landing obligation is implemented. Nevertheless, it is the most effective of the five harvest control rules tested for sole (which include the data-limited stocks rule based on the indicator of mean length in the stock). Management for sole also benefits plaice that is caught simultaneously but the effects on red mullet vary according to the level of opportunism hypothesised for fishermen. As for discard reduction, the “de minimis” system (Commission Regulation No 69/2001) would need to be clarified before results can be properly assessed. In terms of economic performance, effectiveness of measures mostly depends on the fleet considered and their dependency on sole. However the SOCIOEC simulations evidenced a good coherence between biological and economic objectives in the long term, and particularly for the management strategies that were the most constraining in the short term, such as the landing obligation. The external factors only marginally change the results. Overall, SOCIOEC found that the more opportunistic the fleets are, the less effective the management both in terms of biological and long-term economic objectives.
**BALTIC SEA**

In the case of the German small scale fisheries around the island of Fehmarn, the management process involves setting restrictions on fisheries to protect other species (harbour porpoises and sea ducks) under the Natura 2000 umbrella. With the tools developed in **SOCIOEC**, the aim was to further develop the methodology of IA for data poor cases. For example, when analysing objectives of the management measure in this case study, it became apparent that the survival of the fishing community is one of them. As the impact of the management has to be checked against this objective, a lack of operational instruments (e.g. adequate economic and social indicators) to measure the fulfilment of this objective as a defect in the current IA was identified. An improvement of the methodology of the IA requires taking the case study into context, asking for a broader view at objectives of the policy as well as the incentives arising from the management measures and finally trying to evaluate the effects of different levels of governance on their implementation. These aspects are especially important as the interaction between the fishery and the Natura 2000 area is managed through a voluntary agreement. Cooperation itself and the opportunity to learn from each other and obtain better scientific data have been incentives to participate in the management agreement. The challenge to extend the agreement to other neighbouring areas is one of the threats to a possible bottom-up regionalisation. All these aspects of management and the specific methodological and data requirement issues that apply to them give us a better understanding of the concrete effects of the CFP on small scale fisheries and protected areas.

Under the International Western Baltic Sea fisheries sub case study, an individual vessel based model evaluating the bio-economic efficiency of fishing vessel movements from recent high resolution spatial fishery data has been further developed. The assumption was constant underlying resource availability. **SOCIOEC** developed a new version of the model which considers the underlying size-based dynamics of the targeted stocks for Danish and German vessels harvesting the North Sea and Baltic Sea fish stocks. The stochastic fishing process is specific to the vessel catching power and to the
encountered population abundances, based on disaggregated research survey data. The impact of the effort displacement on the fish stocks and the vessels’ economic consequences were evaluated by simulating individual choices of vessel speed, fishing grounds, and ports. Some scenarios led to increased energy efficiency and profit while others such as fishing closures or fishers’ behaviour optimisation sometimes lowered the revenue by altering the spatio-temporal effort allocation. On an individual scale, the SOCIOEC simulations led to gains and losses due to either the interactions between vessels or to the alteration of individual patterns. SOCIOEC demonstrated that integrating the spatial activity of vessels and fish abundance dynamics allows for more realistic predictions of fishers’ behaviour, profits, and stock abundance.

**NORTH SEA**

In the North Sea, an in-depth analyses of the Danish Fully Documented Fisheries trials run since 2008 have demonstrated that Catch Quota Management with appropriate Electronic Monitoring has successfully reduced discards without additional technical rules, improved compliance to registering all catches in logbooks, and enhanced controllability of the TAC management system. Considerations have been given to the possible implementation of this in a Mixed Demersal Consume Fishery and it was
concluded that the sustained use of REM could contribute to implement and enforce the landing obligation policy. The Danish FDF trials have revealed that the incentives to engage voluntarily in a trial with Electronic Monitoring with videos are not necessarily financial or regulatory. Some skippers want to document that their fishery is “clean”, for example that the occurrence of marine mammals bycatches is low. The action of registering discards in logbooks is also in itself raising the awareness of skippers on the amount of discards, as a necessary first step to engage in mitigation actions.

The **North Sea flatfish fishery** is in a special situation. The biological status of the stocks of sole and plaice are within safe biological limits but the global economic context has forced the fishery to change their operation to remain economically viable. The increase in fuel prices in the early 2010s led more and more fishers to seek alternatives to the traditional beam trawl. This resulted in the development of the pulse fishery (using electric pulses rather than tickler chains to lift the fish from the ground) which uses lighter gears and consumes less fuel. However, because the development of the fleet is still new and only involves a few vessels, the economic and discards data available was limited and therefore was not used in the models. In addition, the stock of plaice is at its highest since the levels observed during the Second World War and projections suggested that it will grow even larger. This made biologists and fishers uncomfortable and the model parameters were corrected to fit the most recent ICES estimates.
OTHER SOCIOEC PROJECT HIGHLIGHTS

ECOOCEAN – GAMETABLE SOFTWARE:

ecoOcean is an overfishing simulation game (www.ecoocean.de). This game is based on an earlier version of the ecoOcean overfishing simulation game, which was originally developed by the “Future Ocean” Cluster of Excellence at Kiel University, Germany, as an engaging, interactive tool for illustrating the challenge of sustainable fisheries to the public.

The updated SOCIOEC version of the game can be used to inform fisheries stakeholders and the wider public about the effects of different management scenarios, specifically the effect of closed areas and the Landing Obligation, a new measure that eliminates the wasteful practice of discarding. The game allows players to directly investigate the effects of different fisheries management measures on fishermen’s behaviour. It was also used to engage fishermen in discussions about possible incentives of different management measures aiming to conserve fish stocks in European waters. To download the latest version of the game please visit www.naymspace.de/en/projects/ecocean.

SOCIOEC FINAL SYMPOSIUM:

Experts in the field of European fisheries management discussed the latest developments in policy and research related to the new CFP at the final symposium of the SOCIOEC project, which took place in the Royal Flemish Academy for Sciences and the Arts, Brussels, from 17-18 February 2015.

The opening introductory session of the symposium set the scene and provided background information on how the SOCIOEC project came about, with keynote presentations from Dr Döring, Dr Nikos Zampoukas (the SOCIOEC DG Research & Innovation scientific officer) and Dr Christian Tritten (a member of the SOCIOEC reference advisory board from DG Mare).

The first thematic session presented the contribution of the project towards achieving a more integrative impact assessment, addressing the challenging topics of incentives and governance constraints. The keynote presentation was given by Dr Birgit de Vos
(Wageningen University and Research Centre (WUR) Agricultural Economics Research Institute (LEI), The Netherlands), which was followed by presentations on EU case studies where these concepts have been implemented.

The second thematic session focused on the need for improvements in social, economic and integrative impact assessment methodologies. Loretta Malvarosa (NISEA, Italy) gave a keynote on impact assessment, and Dr Gunnar Haraldsson (Institute of Economic Studies (IoES), University of Iceland) provided a keynote on non-EU SOCIOEC case studies in Iceland, New Zealand and Australia. Additional presentations from invited experts focused on management measures and methodology proposals.

The final session of the symposium centred on the most important new management measure of the 2014 CFP reform, the landing obligation. Dominic Rihan, from DG Mare, gave a keynote on the implementation of the landing obligation, followed by presentations illustrating the social and economic impacts of the landing obligation as observed by the SOCIOEC partners.

Please visit [www.socioec.eu/events/final-symposium](http://www.socioec.eu/events/final-symposium) to view presentations from the symposium.
SOCIOEC CONCLUSIONS

SOCIOEC analysis and research of various aspects of fisheries management (incentives, government and co-management, impact assessment of new management options) showed that the same management options might produce different results, depending on implementation and stakeholders’ involvement. However, below are the main general conclusions and recommendations based on the results obtained during the SOCIOEC project.

- In all stages of the decision making process the involvement of stakeholders has the potential to improve the understanding of the fishery modelling process making the implementation phase more acceptable to stakeholders.
- Stakeholders’ involvement before the quantitative IA and acceptability check of proposed new management options for specific fisheries makes the process more targeted on the sectors’ preferred management options. This may help to improve compliance in the future as management options ‘driven by the sector’ may be easier to accept by the sector.
- IA should take into account the government structures and incentives, which might affect the implementation and results of impact assessment. A good example is the use of co-management. This has the potential to increase the responsibility of the sector for the resources and as a result increases compliance with the management measures, while many ‘top down’ management approaches often result in difficulties in implementation and control.
- The general process of issuing IAs by the European Commission was discussed by the participants at the final SOCIOEC Symposium. Several participants argued that impacts are assessed after the decisions (about specific options) have already been made rather than before the options are assessed against different objectives. In many cases there will be trade-offs between measures but they may address different objectives and this would give policy makers more information on possible alternatives. IAs are especially useful to design policy and to find the best option to reach a certain objective or to show trade-offs between measures to reach different objectives.
- The experience with IAs for long-term management plans is also rather limited as
in many cases time was an issue. For example, STECF working groups did not have sufficient time to incorporate the IAs into the long-term management plans. In most cases a few simulations of bio-economic models are possible but many effects, including those for which data have to be collected, are simply not assessable. There is a need for a more realistic approach when integrating social and economic issues with biological considerations. This could be done partly by a further improvement of bio-economic models but much more by further integrating stakeholders into the process. This would allow a much better ex-ante assessment than at the moment.

The CFP was criticised for a top-down management approach and for a lack of decisions been taken at a regional level. The project analysed how the new Art. 18 of the CFP* has been implemented so far and how a more regionalised management would allow for example, a more adaptive management, the better integration of stakeholders (more experienced in certain fisheries) and the implementation of management measures. Article 18 of the CFP regarding regionalisation is a first step in the right direction. It will have to be seen how this will work in the next few years. If management only changes in the sense from a top-down approach from Brussels to a top-down approach in a region not much will be gained.

The project participants analysed a wide variety of management measures including measures with the individualisation of rights, different ITQ and IQ systems, the possible introduction of effort quota, the effects of area or seasonal closures, management options for multi-species fisheries and the effects of the landing obligation.

The regulation regarding the landing obligation was not adopted before the SOCIOEC project commenced. It was, therefore, very difficult to do a quantitative IA of the landing obligation beyond case studies level, however it is clear that in many cases it will bring additional economic costs for the sector. In some cases the exchange of quotas between member states may help to avoid some of the negative effects.

Choice experiments on different case studies level revealed negative attitudes towards the landing obligation. However the rate of un-satisfaction was higher in the demersal fishery (e.g. Greek demersal fishery) compared to pelagics (e.g. Danish pelagic fishery).

The SOCIOEC project worked with existing models and in some cases developed them further but it did not totally develop new tools. These models have been used in the
past (e.g. DISPLACE, FISHRENT, Mefisto, etc.) but this has not automatically led to a more integrated look at fisheries management.

**SOCIOEC** results and integrated analysis of objectives, incentives, governance and impact assessments showed an importance of all these fields in the decision making process and the need to integrate economists in the management advice system in order to create the basis for continuing social and economic assessment. In this case the most important factor is to create a basis to facilitate the continued improvement of tools to be ready for the new reform in the future. The tools have been developed and therefore the process should be changed to allow these tools to be available for use in the future. A good example of this type of policy is the Marine Strategy Framework Directive. It consists of a continuous, adaptive process including impact assessment steps. Nevertheless, there are great concerns that no actions will be taken and then the same situation will occur in the next reform.

During discussions on the future, the question regarding integration of socio-economic advice into the ICES advisory process has been raised. There are a lot of associations with ICES (including ICES backing the final **SOCIOEC** symposium and the formation of the special Working Group on Integration of Economics, Stock Assessment and Fisheries Management (WGIMM) which looks to couple economic expertise directly with the ecological understanding within ICES to enhance the quality of fisheries assessments and the value of the advice). However, social and economic considerations are still not part of the ICES assessment work. Therefore, we must find a way to increase the involvement of economists in the process. ICES needs to set-up a structure for that to happen, but so far there is a lot of reluctance to integrate economics in ICES.

The advantages of a stronger integration of economic analysis could also help to improve the policy design process in the EC. The major objects of economic and social studies are humans and their behaviour. Different management options and the incentives created by these options can change fishers’ behaviour and thus influence stock status. For example the new landing obligation has caused a change in fishing patterns in the saithe fishery. By avoiding cod bycatches to stay within the quota limits for cod, the saithe fishermen have experienced losses. Discard plans should be formulated now in a way that allow fishers to avoid some of the negative effects.
*Article 18 of the Common Fisheries Policy

Regional cooperation on conservation measures

1. Where the Commission has been granted powers, including in a multiannual plan established pursuant to Articles 9 and 10, as well as in cases provided for in Articles 11 and 15(6), to adopt measures by means of delegated or implementing acts in respect of a Union conservation measure applying to a relevant geographical area, Member States having a direct management interest affected by those measures may, within a deadline to be stipulated in the relevant conservation measure and/or multiannual plan, agree to submit joint recommendations for achieving the objectives of the relevant Union conservation measures, the multiannual plans or the specific discard plans. The Commission shall not adopt any such delegated or implementing acts before the expiry of the deadline for submission of joint recommendations by the Member States.

2. For the purpose of paragraph 1, Member States having a direct management interest affected by the measures referred to in paragraph 1 shall cooperate with one another in formulating joint recommendations. They shall also consult the relevant Advisory Councils. The Commission shall facilitate the cooperation between Member States, including, where necessary, by ensuring that a scientific contribution is obtained from the relevant scientific bodies.

3. Where a joint recommendation is submitted under paragraph 1, the Commission may adopt those measures by means of delegated or implementing acts, provided that such recommendation is compatible with the relevant conservation measure and/or multiannual plan.

4. Where the conservation measure applies to a specific fish stock shared with third countries and managed by multilateral fisheries organisations or under bilateral or multilateral agreements, the Union shall endeavour to agree with the relevant partners the measures that are necessary to achieve the objectives set out in Article 2.

5. Member States shall ensure that the joint recommendations on conservation measures to be adopted pursuant to paragraph 1 are based on the best available scientific advice and fulfil all of the following requirements:
(a) they are compatible with the objectives set out in Article 2;
(b) they are compatible with the scope and objectives of the relevant conservation measure;
(c) they are compatible with the scope and meet the objectives and quantifiable targets set out in a relevant multiannual plan effectively;
(d) they are at least as stringent as measures under Union law.

6. If all Member States do not succeed in agreeing on joint recommendations to be submitted to the Commission in accordance with paragraph 1 within a set deadline or if the joint recommendations on conservation measures are deemed not to be compatible with the objectives and quantifiable targets of the conservation measures in question, the Commission may submit a proposal for appropriate measures in accordance with the Treaty.

7. In addition to the cases referred to in paragraph 1, Member States having a direct management interest in a fishery in a defined geographical area may also make joint recommendations to the Commission on measures to be proposed or adopted by the Commission.

8. As a supplementary or alternative method of regional cooperation, Member States will be empowered, in a Union conservation measure that applies to a relevant geographical area, including in a multiannual plan established pursuant to Articles 9 and 10, to adopt within a set deadline measures further specifying that conservation measure. The Member States concerned shall closely cooperate in the adoption of such measures. Paragraphs 2, 4 and 5 of this Article shall apply mutatis mutandis. The Commission shall be associated and its comments shall be taken into account. Member States shall only adopt their respective national measures if an agreement on the content of those measures has been reached by all the Member States concerned. Where the Commission considers that a Member State’s measure does not comply with the conditions set out in the relevant conservation measure, it may, subject to providing relevant reasons, request that the Member State concerned amend or repeal that measure.