



Monitoring and Evaluation of Spatially Managed Areas

Deliverable 3.6

Zoning plan of case studies: Evaluation of spatial management options for the case studies

ANNEX 1

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1 Introduction

Here, we provide the full reports that are at the base of the summary provided in this deliverable. As such, it is possible to retrace how each subject was reported on by the CS. We provide the reports for the subCS, in those cases where CS were split in subCS. Again, this overview reveals the high diversity in SMAs within Europe.

2 Synthesis report from the Southern North Sea (SNS) case study

2.1 Geographical area/surface/administrative boundaries

The MESMA “Southern North Sea” (SNS) case study is situated within the “Greater North Sea”, a shallow continental shelf region. The area lies within OSPAR region II, an ecological entity, characterized as cool-temperate Boreal biogeographic zone. The SNS “case study is an international region covering territorial waters and (parts of) the EEZs of Denmark, Germany, the Netherlands, Belgium, and the United Kingdom (i.e. England)...” (MESMA D3.3, Part I, p.2). Applying GIS, the total surface area of the MESMA SNS case study is estimated at 280.000 (279.504) km². This area represents roughly 37% of the entire “Greater North Sea” area, which comprises about 750.000 km² (OSPAR 2000, chapter 2).

Due to the large size of and ecological and economic heterogeneity within the SNS area, the MESMA SNS case study has selected four smaller subareas within the SNS region for targeted in-depth analyses with relevance for spatial management (cf. MESMA D3.1-3.2 Annex). The four subareas are: Skagerrak Sea Danish Natura 2000 sites (SK), Belgian part of the North Sea (BPNS), the Wadden Sea (WS), and the Dogger Bank (DB). Both, the WS and the DB are highly transnational subareas, with the former being an inshore area and the latter an offshore area. The BPNS and the SK represent a national and a subnational area.¹

An overview of the different types and levels of administrative boundaries in the SNS area is presented further below (section “administrative boundaries”).² One can distinguish between administrative boundaries that are legally binding, and those that are governed by a managerial entity but that are NOT legally binding. In short: “The different EEZs are governed on individual national or sub-national levels, and are subject to different governance regimes. On the international level, the most important influence comes from the EU, the OSPAR convention, and the trilateral Wadden Sea Cooperation.” (MESMA D3.3, Part I, p.2). Furthermore, ecological entities can be identified within the larger SNS area. Often, ecological boundaries do not match administrative boundaries. For example, the national N2000 administrative

¹ NB: The identification of smaller subareas within the SNS area is in line with OSPAR’s identification of ‘focus areas’: “Many areas in the Greater North Sea region consist of a typical and valuable habitat for marine life, are under (anthropogenic) stress or of strategic or economic importance, and as such deserve special attention.” (OSPAR 2010). The Danish and German Wadden Sea coasts, the Skagerrak and the Belgian coast are among those OSPAR ‘focus areas’.

² This overview is based on the following definition of “administrative boundary”: “A limit or border of a geographic area under the jurisdiction of some governmental or managerial entity. (Source: RHW)” (see: <http://www.eionet.europa.eu/gemet/concept?cp=14932> (last accessed on 31 July 2012)).

boundaries do not fully match the ecological boundaries of the DB sandbank habitat (cf. Van Moorsel 2011).

Current zoning plan, reflecting the complexity of the area and short description.

On the scale of the SNS, no zoning plan currently exists or is planned (cf. MESMA D3.3 p.2).

However, several sectoral maps have been produced – from science as well as from different international, national and subnational management bodies – illustrating the following activities and/or ecosystem components in the central and southern North Sea or parts thereof:

(sectoral) maps, produced by the EU project Windspeed³, showing the distribution of existing activities (shipping, oil and gas extraction, fisheries, cables and pipelines, military use, sand and gravel extraction, radar interference, nature conservation) in different parts of the North Sea (Van der Wal et al. 2011).

The Windspeed project has also developed a decision support system that produces maps to illustrate different offshore wind energy (OWE) production zoning scenarios (Schillings et al., 2012). Additionally, when testing the MESMA WP2 framework, the SNS case study produced a combined overview map of areas planned for OWE development, Natura 2000 areas (N2000 areas), and fishing activity (see map “SNSmap_OWP-F-N2000.png”, uploaded on the MESMA sharepoint and in MESMA D3.3, p. 17).

Nonetheless, no map nor zoning plan for the entire (Southern) North Sea area exists that has a formal, legal status. On national level, the existing initiatives and maps are high level plans that assign space to specific activities. Marine spatial planning and management has developed at different pace in the different member states. In Belgium, for example, the federal government developed a ‘Master Plan’ for the Belgian Part of the North Sea in 2003-2005. This Master Plan is, however, not a plan in the sense of a book or a map, but is a combination of several decisions in the federal council of Ministers. In Germany, a legal basis for the spatial management plans in the German EEZs was adopted in 2009 (BMVBS 2009).

Short description of your application of the FW/MESMA tools

Representing one of the nine “laboratories” of the MESMA project, the SNS case study tested whether the MSP-monitoring and evaluation (M&E) methods developed in MESMA can be useful in an MSP process in the SNS case, and how various types of information for MSP can be used for this purpose. In the initial case study description, the idea of “integration from subarea scale to SNS scale” was highlighted in order to “feed a fundamental discussion on scales: do priorities shift when “zooming out”? Is there a need for management at the SNS scale?” (MESMA D3.1-3.2). Thus, the SNS case study focused particularly on aspects of spatial scale: The work started off at the large SNS scale in the first WP2-Framework-test, then zoomed in on four SNS subareas for the second WP2-Framework-test and the WP6-governance analyses, and is now in the process of finishing on SNS scale again⁴. This final step of synthesizing all the information and, where possible, extrapolating from SNS-subareas to SNS scale is currently still on-going. The diversity of the four subareas (inter-/transnational, national, subnational, inshore, offshore) allowed us to compare marine spatial management initiatives and the respective governance institutions at different spatial scales, and relating to different marine ecosystems (and biotopes).

Brief overview of how the SNS case study has applied the individual MESMA work packages (WP)⁵:

- WP2: The SNS case study tested the MESMA framework (FW) developed in WP2 to monitor and/or evaluate the performance of spatial management in the Southern North Sea by focussing on initially four operational objectives:
 - reaching the total MW OWE target to be installed by each MS (from NREAPs)
 - SAC 20-60% of habitat area listed in annex of HD: N2000 management plans by MS

³ www.windspeed.eu

⁴ see figure in MESMA D3.1-3.2, p.20 (Southern North Sea case study description): “Flow diagram of the suggested 3-step approach, combining the integral SNS analysis and the four in-depth subarea analyses.”

⁵ NB: Here, these answers are based on our experience with testing the WP2-Framework on SNS scale in 2011.

- GES descriptor 3 - commercial fish species within safe biological limits
- GES descriptor 6 - Sea-floor integrity ... not adversely affected.

During the testing process, only the first two objectives were considered to be SMART and were finally used in the FW-test.

Additionally, the SNS case study carried out four FW-tests on SNS subarea level (cf. the individual subarea reports).

- WP4: The SNS case study did not apply any specific tool for testing the WP2-FW in 2011, except for GIS and Excel.
- WP5: The SNS case study provided all the metadata information for those data that were explicitly used in the SNS FW-test, namely for offshore wind parks and N2000 areas⁶. Additional metadata sets were provided for fishing effort, bathymetry (Greater North Sea and Celtic Sea⁷), exclusive economic zones, modelled seabed habitats (EU-SeaMap), a comprehensive dataset covering the Dutch EEZ (Noordzeeloket), including cables, pipelines, offshore oil and gas platforms, VSS (vessel separation scheme), offshore wind energy etc.
- WP6: The governance research analysis is currently under way for the four SNS subareas, investigating the institutional settings that steer MSP. Focus of these analyses in all four subareas is on the governance around marine nature conservation and/or offshore wind park development.⁸

2.2 Administrative boundaries⁹

Description of the administrative boundaries in the SNS CS

Within the large and heterogeneous SNS area, administrative boundaries are manifold, complex and not always aligned, not only in terms of match of different boundaries, but also in terms of time or responsibilities (cf. Table 1). Also, various ecological boundaries can be identified (e.g. WS, DB). Setting clear boundaries and acknowledging them officially, can be a driver to force different administrations to work together across boundaries. Examples:

- Wadden Sea (WS): The existence of the Wadden Sea as an ecological entity (i.e. a coherent tidal flat area) is officially acknowledged by the three governments of The Netherlands, Germany and Denmark; the trilateral WS cooperation (TWSC) was established and is functioning.
- Dogger Bank (DB): The administrative boundaries, as defined under the Habitats Directive, have been accepted by the four co-operating member states, based on the awareness that the Dogger Bank forms a coherent ecological area. Cooperation across these administrative boundaries started in 2011 as a result of cross-border fisheries management processes in three adjacent (UK, NL, DE) Natura 2000 sites in the area.

Table 1: Examples of different types and levels of boundaries in the SNS area

Level	Legally binding boundaries	Non-legally binding boundaries
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⁶ See: <http://mesma.ucc.ie/geonetwork/srv/en/main.home>

⁷ Celtic Sea is a required dataset to get full coverage of the MESMA SNS area. It adds the north-western corner, which is not included in the Greater North Sea dataset

⁸ Detailed information can be found in the four individual SNS subarea reports.

⁹ NB: The answers are based on the definition of administrative boundaries, as given above.

International (non EU)	<ul style="list-style-type: none"> ○ IMO shipping routes 	<ul style="list-style-type: none"> ○ OSPAR: the SNS is part of OSPAR region II (Greater North Sea) ; ○ Wadden Sea Area (TWSC)
International EU	<ul style="list-style-type: none"> ○ CFP 	
National	<ul style="list-style-type: none"> ○ MS EEZ (up to 200 nm) ○ MS territorial waters (12 nm) ○ MS N2000 areas (HD, BD) ○ MS OW park areas 	
Sub-national	<ul style="list-style-type: none"> ○ Legislation in German states/ provinces/ Dutch provinces, Danish municipalities, etc. ○ National Parks; PKB (in NL) ○ Coastal zone: 6 nm ○ 3nm fisheries zone 	<ul style="list-style-type: none"> ○ informal subdivisions that in some case cut across formal regions, that also exist. E.g., in NL: "Kop van Noord-Holland"
Sectoral	<ul style="list-style-type: none"> ○ Shipping routes (IMO) ○ Conservation (N2000) 	
Bio-geographical regions(coherent systems)	<ul style="list-style-type: none"> ○ The three national Dogger bank N2000 sites could be a future example 	<p>Ecological units:</p> <ul style="list-style-type: none"> ○ Wadden Sea Area (TWSC) ○ Dogger Bank sandbank habitat ○ OSPAR biogeographic zones

Impact of boundaries on the monitoring and evaluation in the SNS CS

On the scale of the SNS, no common, internationally agreed objectives for marine spatial planning and management exist. Hence, there is no reason/motivation yet for setting the next step of collaborative monitoring and evaluation (M&E) on SNS scale.

It has to be acknowledged that high level objectives exist for all European waters, as stated, for example, in the MSFD, IMP or CFP (e.g. GES, sustainable fisheries). However, these objectives are neither spatially explicit nor operational yet. The process of translating high level objectives into concrete, operational objectives for a particular regional sea is still on-going. It can only be speculated now, that the existing administrative boundaries (cf. Table 1) might complicate the M&E, because there are so many different and diverse levels of administration. For example, in the national EEZs, some member states delegate specific competency to sub-regional institutional levels (e.g. "provinces" in BE and NL). In other member states, competency is just distributed between different Ministerial departments). No clear administrative structure and responsibilities exist for the North Sea nations to cooperate on international level. The existence of so many different boundaries within the SNS area plus the geographic but non-administrative boundary of the SNS area renders administration complex/complicated, and makes analysis of the situation around M&E unfeasible.

Concluding from the WP2-framework test on SNS scale, we highlight two aspects where administrative boundaries complicated the M&E process:

1. Data resolution of available data might not be appropriate for M&E. Example: The resolution of fishing effort that is currently freely accessible from the EU (STECF) is too coarse for meaningful analyses on smaller scales.
2. Seeking for authorisation to use data that is not freely accessible can take a lot of time and effort. Example: Fishing effort data on a higher spatial and temporal resolution is collected by national authorities of individual EU member states (MS). The MS have their own ministry/ institutional level that deal with data storage and manage data accessibility, and it is complicated and time-consuming to identify and get authorization from every single relevant national institution.

Additionally, it should be noted in general, that many environmental objectives are influenced not only by the marine environment but also by land (river runoff) or air (emissions). Hence, depending on the

objectives, boundaries for M&E should be extended to include areas that are beyond one coherent ecological unit, if there are external activities that strongly influence the environment in that area, e.g. terrestrial areas: eutrophication with respect to water quality, employment on land with respect to windfarms.

Also from a socio-economic point of view, it might be necessary to set administrative boundaries that do not match ecological boundaries. In the Wadden Sea, for example, the boundary of the Wadden Sea Forum (WSF), the “independent platform of stakeholders [...] of the trilateral Wadden Sea Region” is set much wider and more flexible than the boundary of the Wadden Sea Area, as defined by the Trilateral Wadden Sea Cooperation (TWSC). The former covers relevant parts of the EEZs and includes a vast inland area, where Wadden Sea stakeholders are living.

On SNS scale, it might also be necessary to include the coastal and coastal land areas for the M&E of sustainability objectives.

Examples of functioning M&E within and beyond the SNS area:

- In the Wadden Sea TWSC area, the TWSC has established the Trilateral Monitoring and Assessment Program (TMAP), a coherent (and functioning) M&E system.
- In the Dogger Bank N2000 areas, no official cooperation has been established yet, but collaboration and informal thinking about joint M&E has started.
- Within OSPAR, pollution issues are harmonized. There are drivers to cooperate on transboundary issues such as pollution and migratory fish, but not yet on benthic/ demersal ecosystem values.
- In all European Waters, monitoring of economic and biological data relevant for all aspects of fisheries management is regulated through a “Data Collection Framework” (DCF 2008)¹⁰. A lot of these data are used for carrying out fish stock assessments via the International Council for the Exploration of the Sea (ICES). The CFP has set aside funding (currently € 50 million per year for national programmes)¹¹ since 2001 to help national authorities with this data collection and make the data publically available. Member states (MS) are to prepare (multi-annual) national programmes (NP) depicting which kind of data (fish species, fleets, regions, etc.) will be sampled and monitored. Also, MS are to “coordinate their national programmes with other Member States in the same marine region” (Article 5(1) EC 199/2008). The EC organises Regional Coordination Meetings (RCM) “in order to assist Member States in coordinating their national programmes and the implementation of the collection, management and use of the data in same region.” For example, MS seek agreement bilaterally during RCMs on specific sampling schemes and allocation of sampling effort and make sampling deals. The DCF also obliges MS to justify and evaluate what has been done/ sampled and how the funds have been spent by submitting “annual reports” (Article 7 of EC 199/2008/1999 and Article 5 of EC 665/2008/). The execution of the NPs and the quality of the data collected by the MS is evaluated by the Scientific, Technical and Economic Committee for Fisheries (STECF).

2.3 Key Drivers

Various European environmental legislations, namely the MSFD, the WFD, the BD and HD (N2000), can be considered as the main environmental drivers in the North Sea area. They specify high level environmental goals/objectives, such as achieving GES by 2020. These high level objectives evolved due to an increased awareness about marine environmental problems, such as overfished fish stocks in the North Sea, pollution by litter, heavy metals, organic pollutants, eutrophication, etc.

¹⁰ DCF 2008: Commission Regulation (EC) No. 665/2008 of 14 July 2008:
http://datacollection.jrc.ec.europa.eu/c/document_library/get_file?uuid=17c246aa-aa19-401c-b1b3-6354a1ca2ebd&groupId=10213

¹¹ http://ec.europa.eu/fisheries/cfp/fishing_rules/data_collection/index_en.htm

At the same time and despite environmental deterioration, there are also high level economic and political drivers, since the North Sea is a continental shelf area that is heavily used for human activities. Table 2 presents an overview of important human activities in the SNS area and the types of drivers they might represent.

Table 2: Overview of important human activities taking place in the SNS area, and corresponding driver type classifications.

Activity	Driver type
offshore wind farm development	<ul style="list-style-type: none"> ○ environmental ○ socio-economic ○ political
fisheries	<ul style="list-style-type: none"> ○ environmental ○ socio-economic ○ cultural, aesthetic
Sand/aggregate extraction	<ul style="list-style-type: none"> ○ environmental ○ socio-economic
Maritime transport	<ul style="list-style-type: none"> ○ Socio-economic
Oil/ gas extraction	<ul style="list-style-type: none"> ○ Socio-economic
Tourism	<ul style="list-style-type: none"> ○ Socio-economic

The focus of the MESMA FW-test on SNS level was on nature conservation and offshore wind energy, hence, we refrain from expanding the list of drivers any further. Nonetheless, below a brief reflection on the activities that were not considered in the MESMA FW-test:

- Maritime transport is an important economic sector. Its environmental impact consists mostly of fuel and underwater noise emissions, and the potential contribution to marine litter. In terms of fuel emissions, increasing fuel prices, political restrictions and societal attitudes may drive innovations to save fuel and decrease emissions.
- Sand/aggregate extraction has a large local impact where the extraction takes place and where the material is dumped for coastal protection (e.g. beach nourishment). Based on several references, it can be argued that the total impacted area is low (Van der Wal et al. 2011, RWS 2004, RIKZ 2003, Provincie Zuid-Holland 2010, Cleveringa et al. 2012). Because of its importance for coastal protection, it is an activity that will likely not be reduced or prohibited despite any negative environmental impacts.
- Oil and gas extraction is still an important economic factor in the SNS and is thus not likely to be reduced before existing and future oil fields have been exploited. Given the existing environmental surveillance, the expected impacts (arising from normal operations) can be considered as low (see e.g. Van der Wal et al. 2011, Tamis et al. 2010, data from the OSPAR quality status reports (OSPAR 2007, 2010). Nonetheless, there is the ever present risk of extreme and widespread environmental impacts in case of major oil spills. The total area occupied by oil and gas extraction activities is small with respect to its ecological footprint and economic value.
- Tourism is mainly an activity that is of importance onshore and near shore. It is thus not that relevant for the SNS case study, where we focus mainly on offshore areas (except for the two SNS subareas that include a part of the North Sea coastline (i.e., WS and BPNS).

2.4 *Progress and obstacles towards sustainability*¹²

Progress towards integration of sectors and activities:

With the initiation of the EU Integrated Maritime Policy, a clear movement towards more integrated marine management and cross-border MSP can be noticed in the North Sea area in general. However, coordination from an international level (e.g. by OSPAR) is lacking. Officially, the EU appears to be the initiator, asking for cross-boundary cooperation when implementing EU directives (e.g. MSFD, BD, HD) nationally. In practice, cross-boundary cooperation easily stops when national (economic) interests are likely to become affected.

In theory, as a regional convention OSPAR appears to be predestined to be able to organise and steer international cooperation and cross-border MSP in the North Sea, but in practice, it is not happening. One reason might be that OSPAR activities are primarily driven by MS's requests, and apparently MS lack political will for requesting steering from an international level such as OSPAR. In contrast, HELCOM has a more active steering/motivating role in the Baltic Sea. This might be due to a history of cooperation and the obvious existence of many competing claims, and MS clearly see the advantage of cooperating via HELCOM.

Positive examples of progressing integration and cross-border cooperation:

- Dogger Bank: The mediated stakeholder dialogue has resulted in thorough exchange of views of different stakeholders, created more understanding, and the on-going discussions deal much more with content than before, when discussions were dominated by political negotiations only.
- Wadden Sea: Since the start of the Trilateral Wadden Sea Cooperation (TWSC) in 1978, the environmental status of the WS has improved to such a degree that the key priority of the TWSC has gradually started to shift from a purely nature conservation focus to a sustainable development/ sustainable use focus during more recent years. In contrast, the SNS area has been intensively used historically by humans for anthropogenic activities – there had not been an emphasis on nature conservation but predominantly on human use only. European directives such as the Birds and Habitats Directive and the MSFD have introduced an environmental management focus in the EU, including in the North Sea. Thus, on the larger SNS or North Sea scale, the shift seems to be in the opposite direction – from unsustainable use towards more nature conservation. Hence, priorities are shifting on different scales.
- The establishment of Regional Advisory Councils (RACs)¹³ for EU fisheries management since 2004, and in particular the North Sea RAC, has fostered regular exchange between different fisheries stakeholders from industry, NGOs, science and policy and has triggered their involvement in fisheries management.
- The designation of Natura 2000 areas in the EEZs of the respective EU MS in the North Sea is well under way and contributes to a growing awareness that the North Sea is home for a rich and diverse marine fauna and flora that needs to be protected and conserved.
- North Sea Commission: The North Sea Commission, one of the seven CPMR (Conference on Peripheral Maritime Regions), sees managing maritime space as one of their key challenges for the North Sea region 2020. In 2010 they proposed a stakeholder platform for the North Sea and they suggested that they can co-ordinate such a platform. The Commission was founded in 1989 to facilitate and enhance partnerships between regions which manage the challenges and opportunities presented by the North Sea.

¹² Our answers are now based on the 1st framework test on SNS scale and on the four preliminary FW runs and governance work done on the four subarea scales.

¹³ Council Decision 2004/585/EC of 19 July 2004 establishing Regional Advisory Councils under the Common Fisheries Policy: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:256:0017:0022:EN:PDF>

Progress towards sustainability considerations:

Sustainability and “progress ... towards sustainability considerations” represents a high level goal, an agreement on striving for a better balance of environmental, economic and social objectives. However, in order to be able to measure or estimate progress in this direction, concrete operational objectives from environmental, economic and social perspectives are needed. Moreover, since sustainability also includes socio-economic considerations, agreement on concrete operational objectives would require intensive stakeholder participation, including science, industry, politics. As any official management at SNS level does not exist at the moment (except for larger scale activities such as maritime transport, cables, pipelines), concrete objectives are still lacking for the SNS area, and hence, progress towards sustainability, specifically considering the SNS area, cannot be estimated as yet. Organisations representing international industry interests do already exist, and they are present in stakeholder fora. All in all and despite being able to measure progress, we state that, in principle, all three pillars of sustainability (environmental/ ecological, economic, and social) are meanwhile taken on board and appear on the agenda of marine policy and MSP in the North Sea.

Obstacles towards achieving integration and sustainability:

- The existence of institutional ambiguity (van Leeuwen et al., 2012) and the complexity of multi-level governance
- Existence of administrative boundaries that are not aligned with each other or other governance levels
- Political developments in MS that impact the financing of initiatives (e.g. windfarms)
- Financial crisis in the EU may hamper innovation in fisheries techniques, windfarm construction, ...
- Lack of control and enforcement on day to day basis – depends on MS implementation. Also, implementation needs to be controlled. Enforcement mechanisms should be in place, if implementation and performance fail. Performance needs to be monitored, evaluated,
- The inherent dilemma of participatory approaches (Jacobsen et al., 2011): Who should be invited to the table? It is generally difficult to identify all relevant stakeholders, because smaller and less visible parties can easily be forgotten about, in the presence of many large and visible parties. Additionally, there can be practical and financial reasons for not inviting everyone. When does a fair participatory process end and does a biased one start?
- Skagerrak subarea case study example: Here, the ecological focus of this N2000 area is to protect harbour porpoise (Annex II species of the EU Habitat Directive, as well as falling under the ASCOBANS¹⁴ agreement and other treaties that attempt to protect harbour porpoises). In theory, the species is thus legally protected anywhere in European waters, however, in practice, this protection is ineffective/ insufficient in the real world where the species largely has an unfavourable status.

2.5 *Reflection on MESMA*

How and why did MESMA tools and methods (taken from WP1, 2, 4, 5 and 6) help you to answer the questions above in your CS?

The WP2 framework test on SNS scale forced us to assemble and compile a huge amount of information about existing marine management initiatives and/or policies in our case study area. Also, the related mapping activities facilitated illustration of different types of boundaries. As a result of the WP2 framework related work, we developed an awareness of the complexity of the institutional landscape dealing with marine management and of the multitude of existing marine policies, laws and sectoral management initiatives in the SNS area.

¹⁴ <http://www.ascobans.org/>

A deeper understanding of the implications of the existence of different administrative boundaries was mainly facilitated by the governance analysis, carried out under WP6. This work is still underway and it is being carried out specifically on the four SNS subarea levels. The governance guidelines are helping us to gain an understanding of the marine management and planning processes in the different North Sea member states as well as on sub-regional and local levels.

The analysis of documents and stakeholder interviews in the four subareas has helped inform the questions on key drivers.

The question on progress and obstacles towards sustainability has been answered mainly based on individual expert knowledge within our case study team.

More specific reflections per Work package:

- WP1: based on work on SNS level and on subarea level!
 - In general, the review texts produced in WP1 gave a broad overview on MSP and associated environmental, economic and social issues, and they increased our awareness of the amount of existing literature.
 - Every time when definitions of specific terminology, relating to WP2, 4, 5, 6 were lacking, we searched for definitions in the WP1 deliverables. Sometimes we could find useful definitions in WP1 (e.g. on MSP, MPAs, EU legislation). Nonetheless, there is still a lack of definitions (e.g. administrative boundaries, drivers).
 - However, the WP2 framework refers to only a few parts of the WP1 review, and WP6 does not refer to WP1 deliverables at all. Hence, the specific connection of the WP1 deliverables for other MESMA work was not clear/ evident. Due to the vast amount of text produced in WP1 and the lack of guidance of what information to gather, the SNS CS has only used the information produced in WP1 to a very small extent.
 - The data and information mining exercise carried out within WP1 proved to be a very large task that on a case-by-case level may have been more than one could expect a civil servant to complete. However, once this exercise is carried out once and for all, the data collected can, if properly digested, provide a wealth of baseline information, much like a library. We and others could revert and refer to this information in future aspects of MSP evaluation, including the various steps of the WP2 and WP6 frameworks.
- WP2: based on 1st FW run on SNS level (subareas answers can be found in the D3.6 subarea answers)
 - In particular step 1b of the FW helped to gain a broad overview of the institutional landscape in the SNS area.
 - However, the overview remained on a very general level. The FW questions and tables did not help to get a deeper insight into the hierarchical structure of this “landscape”, i.e., of the legal status of the existing policies, conventions, regulations, management initiatives, etc. Also, chapter 1.1.3 of D1-1 did not help to get this deeper insight.
 - In essence, the FW should help to carry out M&E of whether EBM objectives are achieved. The objectives determine data requirements, and data requirements are not always based on best available data. Objectives need to be defined previously and communicated. This implies that environmental, economic and social objectives should be considered and kept in “a particular” balance. All three aspects (people, planet, profit (PPP)) need to be included in M&E. Discussing the ecological, economic and social targets should be done and agreed on by all involved stakeholders. Ideally, this participatory step should start already at the beginning of an MSP process, and then, it might not be necessary to tightly involve stakeholders in the M&E. However, whenever there are high uncertainties (e.g. in data) and high stakes (related to the outcomes of M&E) involved, stakeholder participation might be beneficial also during those more scientific steps, as their indigenous knowledge can potentially improve the quality of the knowledge base for M&E (e.g. (Dankel et al., 2012, Hanssen et al., 2009, Röckmann et al., 2012, Van der Sluijs, 2002). This collaborative step is missing in the FW (lack of integration between WP2 and WP6 (governance institutional analysis)). For example, the identification of data that is

relevant for M&E and the discussion of data quality should not be done by scientists alone but together with all parties that have a stake in the area.

- WP6: based mainly on subarea work and first synthesis ideas on SNS level
 - Acknowledging that we are not all governance experts, the WP6 governance guidelines are helpful, teaching non social scientists about governance issues and how to deal with them, and we expect that they will help us to structure our governance analysis and to write a coherent “story”.
 - The work carried out for governance chapter C1.3 (overview of regional policies), in combination with the information gathering work carried out in WP2-Framework step 1.b, created more in depth understanding of the institutional landscape and of the activities on-going in the four SNS subareas and also on SNS level. For example, we have produced informative overviews of the following regional policy documents:
 - UNESCO MAB,
 - UNESCO Cultural heritage site,
 - ASCOBANS
 - OSPAR
 - RAMSAR
 - UNCLOS and MARPOL + PSSAs (IMO)
 - North Sea ministerial conferences
 - So far, we have not completed all four SNS subarea governance analyses.
 - We consider the governance guidelines as a tool that can help to analyse the institutional landscape and the governance situation in an SMA. The “governance framework” offers a structured way (to the untrained eye) to get a clear overview and understanding of a given scenario, in particular, analysing (existing or lacking) institutional linkages, and forces and incentives that are pushing them in different directions. This is useful because it creates an awareness about conflicting objectives and potentially resulting conflicts.
 - The guidelines cannot be used to monitor whether ecological goals in an SMA have been reached. If this was wanted, then a direct coupling to the WP2 FW was necessary at some point (--> lack of integration between WP6 and WP2).
 - The governance guidelines helped us to phrase targeted interview questions, carry out interviews and analyze them.
- WP4: based on 1st SNS FW run and all four subarea work
 - No experience yet. We did not apply any specific WP4 tool when testing the FW on SNS level.
 - On subarea level:
 - The Dogger Bank will test two specific tools (SPAM and SLAM) in step 4 of the FW (scheduled for summer 2012)
 - In the Skagerrak case study, new approaches will be used to analyze bycatches of marine mammals in order to evaluate existing boundaries of a Natura 2000 site. This method will be described once completed.
 - Additionally, on SNS scale a tool called “GRID” will be tested, for mapping of activities and pressures. It can be used in FW action 2.2 and specifically in action 4a.3.
 - The applicability of the WP2 (and WP6) FWs may improve considerably if WP4 would be able to specify which specific tools are suited for specific steps in the individual FW steps. The already existing tool table on the MESMA Wiki¹⁵ should be transposed, showing the suitable tools per FW-step/ action, and not the other way around, as it is now.
- WP5: based on 1st SNS FW run and all four subarea work!!
 - We were able to (partly) test the WP2 FW on SNS level without collaborating with WP5 and without applying the GN, because we already had the necessary data ourselves.

¹⁵ <http://publicwiki.deltares.nl/display/MESMA/TOOLS>

- On subarea level, we cannot evaluate yet, whether the GN is useful, because work is still underway.
- The SNS case study thinks that the database should support M&E, and should not be a purpose on its own.

2.6 Maps

Along with this report, the following three maps are provided:

- **MESMA_SNS CaseStudy and EEZs.jpg**
a map of the SNS case study area, including the EEZ boundaries of the UK, BE, NL, DE, DK.
- **MESMA_SNS CaseStudy incl4subareas.jpg**
Same map as above, but also including the boundaries of the four SNS subareas: Dogger Bank, Belgian EEZ, Wadden Sea, Skagerrak.
- **SNSmap_OWP-F-N2000.png**
a GIS map of the SNS case study area, giving a combined overview of our three chosen foci for this WP2 framework test run on SNS scale: (1) areas planned for OWE development, (2) N2000 areas, (3) fishing activity.

The maps can be found at the following location on the MESMA sharepoint:

<https://teamsites.wur.nl/sites/mesma/WP3Casestudies/Forms/AllItems.aspx?RootFolder=%2Fsites%2Fmesma%2FWP3Casestudies%2FCase%20Studies%20Folder%2FSouthern%20North%20Sea%2FD3%2E6%20%2D%20SNS%20and%20subareas%2Fmaps&FolderCTID=0x01200092746E790CCDD24FB0BB39793287BB47&View={EB550589-2F2A-4E35-8BB6-C6B19F6F4C54}>

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3 Synthesis report for The Belgian Part of the North Sea (BPNS) (subcase of SNS)

3.1 Description of CS

Geographical area

The Belgian part of the North Sea (BPNS) is a relatively small and shallow area. It is up to 46 m deep and extends about 87 km from the coast. The coastline is about 65 km long. Despite its small size (only 3600 km²), the BPNS is intensively used and is characterized by several valuable habitats. This is partly due to the presence of a complex system of sandbanks, stretching out from Zeeland to Calais. A similar system can only be found in the southeast of England (Maes *et al.*, 2005a). Besides the sandbanks, the BPNS also comprises 'reef' habitats, which are formed by either gravel banks or bristle worm aggregations (e.g. the sand mason, *Lanice conchilega*).

In the BPNS, a territorial zone (up to 12 nautical miles from the coastal baseline) and an Exclusive Economic Zone (EEZ) can be distinguished. The Belgian EEZ was established by law in 1999 (EEZ law), and its boundaries coincide with the outer boundaries of the Belgian Part of the North Sea. The boundaries of the BPNS with France, the Netherlands and the UK were established in treaties (cf. Vlimar gazetteer website). The boundaries of the fishery zone, which was established in 1978, were adjusted by the law on the Belgian EEZ and coincide with the EEZ boundaries. Conservation and protection of the marine environment in the Belgian EEZ is regulated by the Law on the Protection of the Marine environment (Law Marine Environment).

Description of the zoning plan

In Belgium, several steps were taken towards Marine Spatial Planning (MSP).

On a scientific level, several research projects on MSP were designed and carried out. One example was the three year SPSP II research project GAUFFRE (cf. Maes *et al.*, 2005b). This project provided a thorough analysis of the existing spatial planning structure in the BPNS and paved the way for MSP. An ongoing research project is C-scope (2007-2013), where an innovative approach of coastal and marine spatial planning is developed¹⁶.

On a governmental level, equally important steps were taken towards MSP. In 2002, a federal Minister responsible for the management of the BPNS was appointed. Between 2003-2005, a Master Plan for the Belgian Part of the North Sea was developed by the federal government. This Master Plan is not really a plan in the sense of a book or a map but is a combination of several decisions in the federal council of Ministers, which are executed by a number of Royal Decrees and a change of the Marine Environment law. Despite the lack of a legal basis, the Master Plan provides a translation of current and future management objectives of various sectors into a spatial vision (Douvere *et al.*, 2007). This led to spatial delimitations for sand and gravel extraction, a zone for offshore wind energy and the delimitation of marine protected areas as part of the EU Natura2000 network. The borders of these original delimitations have slightly changed due to various reasons (all stated in Royal Decrees¹⁷).

¹⁶ Cf. website C-scope

¹⁷ Cf. www.Ejustice.just.fgov.be

As for the delimitation of marine protected areas, some major changes were implemented. Originally, 5 MPA's were delimited: 3 Special Protection Areas (SPAs) protected under the Birds Directive and 2 Special Areas of Conservation (SACs) protected under the Habitats Directive. One SAC (called "Vlakte van de Raan") was canceled by the Council of State in 2008¹⁸ because scientific proof was lacking that the area's ecological characteristics were such that a protection was needed. The second area ("Trapegeer-Stroombank") has been expanded to a larger area. This area, called "Vlaamse Banken" was delineated as a Natura 2000 site in 2011.

Application of the Mesma framework.

In the Belgian case study, the MESMA framework/tools were used to analyze and evaluate the Belgian marine policy.

There is no integrated spatial management yet, so we used the existing sectoral plans that are in use in the area. Because of the lack of SMART operational objectives in the majority of the plans, we also used the document "Description of the Good Environmental Status and the settlement of the environmental goals for Belgian Marine Waters¹⁹". This document is not really a plan in *sensu strictu* but it sets clear environmental objectives to obtain GES. In the WP2-framework test, we particularly focused on answering the question: "Is it possible to obtain a Good Environmental Status in the SAC "Vlaamse Banken" without additional management measures?"

A risk analysis was executed for each of these environmental goals in the SAC "Vlaamse Banken".

In the last steps of the framework, we give some recommendations for future management.

3.2 Administrative boundaries

In Belgium, there is a multi-level government. This means that all competences are scattered across the European, federal, regional and local levels. Additionally, the competences within each level are fragmented over several departments (Bogaert *et al.*, 2009). This implies important consequences for the SAC "Vlaamse Banken", which has been designated as a Natura2000 site to Europe. The federal government is the competent authority for the marine environment from the coast onwards, with the exclusion of specific activities that have been transferred to the competence of the Flemish region, such as fisheries, dredging, and pilotage. In other words: The federal government cannot set management measures related to those activities.

Especially the implementation of management measures for fisheries within marine protected areas is a difficult matter, due to the multi-level government structure and due to the fact that fishing activities have not been assigned to a well-defined area. In theory, fishing can occur anywhere in the BPNS except in places where it is forbidden by law (e.g. the munition dumping area 'de Paardenmarkt'). In general, the rules for fisheries also differ in the territorial sea and in open water. Within the 12 nautical mile territorial sea, fishing is exclusively reserved for Belgian fishers and, under certain conditions, also for French and Dutch fishers. Outside the 12 nautical mile zone, the general principle of free access applies (Maes *et al.*, 2005b). For the part of the territorial sea that lies within the SAC "Vlaamse Banken", the Flemish government will have to propose fisheries management measures, and the European Commission will have to approve them. These measures will apply to Belgian and foreign fishing vessels. Fisheries measures outside the twelve-mile zone also have to be prepared by the Flemish government but must then be formally proposed to the European Commission, discussed and ultimately, the European

¹⁸ Council of State's decision nr. 179.254 of February 1st, 2008

¹⁹ In Dutch: "Omschrijving van Goede Milieutoestand en vaststelling van Milieudoelen voor de Belgische mariene wateren (2012)"

<http://www.health.belgium.be/eportal/Environment/Inspectionandenvironmentalrigh/Environmentalrights/PublicConsultations/MMEvalStateObj/index.htm?fodnlang=nl> or directly the PDF document: http://www.noordzeeloket.nl/krm/Images/Belgi%C3%AB%20MSFD%20Art%209-10%20GMT-Doelen%20NL_tcm19-5117.pdf

Commission must adopt the Belgian proposal into European regulation. It remains unclear who will be in charge of the monitoring and enforcement of these management measures.

In terms of fisheries science and scientific management/policy advice, administrative boundaries hamper a smooth flow of international data exchange in the BPNS. Since vessels of different flag states fish in the BPNS, total fishing effort within the area has to be calculated based on all the present fleet segments and métiers. However, there are (still) difficulties in exchanging and sharing satellite based vessel monitoring systems (VMS) data between different countries for scientific purposes. There are, for example, serious gaps in the data on foreign ships fishing in Belgian waters. Furthermore, the installation of a VMS is obligatory for fishing vessels larger than 15m only. This makes it extremely difficult to get a correct assessment of the dimension and impact of fishing in the BPNS.

3.3 Key Drivers

Marine spatial planning in the BPNS was previously done on an *ad hoc* basis, driven by both economic and legal forces. The economic driving forces were the increasing opportunities for the exploitation of marine resources (sand and gravel extraction and renewable energy); the legal driving forces were the evolution of the Belgian legislation and the development of the Law of the Sea.

Additionally, decisions by the European Commission on, amongst other, renewable energy and nature conservation have also been and still are an important driver of marine spatial planning. The resulting directives force member states to come into action.

The main reason for the designation of the MPA 'Vlaamse Banken' was to meet with the European obligations on nature conservation (Habitats Directive). This designation should –as prescribed in the directive – purely be based on ecological information. Socio-economic issues should not be, and hence were not taken into account in the designation of the 'Vlaamse Banken' SAC. Those issues will be considered during the next phase (= setting management measures).

3.4 Progress and obstacles towards sustainability

Progress

A proper Marine Spatial Plan will eventually lead to more sustainability (Ehler & Douvere, 2009). Users of the sea also demand for MSP as it is expected to solve economic uncertainties and attract investors.

Recently, progress has been made towards MSP in the BPNS by the development of a legal basis. An amendment of the Marine Environment law from 1999 is planned. This will include the formulation of royal decrees establishing the Marine Spatial Plan and the procedure for its adoption. This is all coordinated on ministerial level.

MSP might contribute to the success of other policy competencies. It might, for example, serve as a tool for the achievement of a Good Environmental Status by 2020 (as required by the Marine Strategy Framework Directive of the European Union). For this requirement, Belgium has also moved forward by describing Good Environmental Status and the assessment of Environmental Goals for Belgian marine waters. Additionally, an initial assessment of the status of the BPNS and a socio-economic analysis have been carried out.

In the near future, management measures to obtain the conservation goals in the marine protected areas will be proposed. Other than the attempts to stop the deterioration of the ecological status, Belgian policy makers also decided to choose for a more offensive policy. An example of this policy is the "Seal Action Plan²⁰", in which some proactive management measures are proposed. A first measure is to create artificial reefs by placing structures on the seafloor mimicking the properties of a natural reef. They can protect, regenerate and stimulate the production of marine living sources. Next to favoring fisheries and nature conservation, this measure can promote scientific research, recreation and educational use. A

²⁰ http://www.samenaanhetwerk.be/media/uploads/johan/broch_plan_zeehond_nl.pdf

second management measure is to provide artificial resting places for grey seals. These positive management measures will first be tested for 5 years within an experimental zone, i.e. the windmill park area. After the experimental phase, these biodiversity measures will be further developed. The Seal Action Plan is an initiative of the present minister of the North Sea. The fact that this initiative is not framed in a European Directive or long-term vision might be an obstacle. It remains uncertain if this initiative will continue with a new legislation.

Obstacles

Administrative boundaries can be obstacles towards sustainability. For example, the process of banning (foreign) fishing vessels from fishing in Belgian N2000 areas is complicated.

The Belgian multi-level government can slow down the process.

In spite of several adaptations to the fishing vessels to make them more sustainable, still 95% of the Belgian fishing fleet are beam trawls. It seems difficult to find a balance between available budget and investments that can be done.

Belgium also has an elevated group of recreational fishing vessels. This sector still is not properly managed.

3.5 Reflection on MESMA

In the first steps of the WP2 framework, a library was compiled of all activities, plans and ecosystem components that were relevant for the case study area. This information provides a good general overview of what is going on in the region. Within the framework, a thorough analysis of the strengths of the used indicators and operational objectives was carried out. For step 4, i.e. the risk analysis, an expert workshop was organized to discuss and evaluate to what extent the proposed environmental objectives can be achieved in the protected area “Vlaamse Banken” without taking additional management measures. During this workshop, additional measures that could help to achieve a good environmental status were identified, and were then used in further steps of the framework (recommendations for the future).

In the WP6 governance analysis, the history of marine conservation in the BPNS between 2006 and 2012 was studied. What has happened in that period? Who were the initiators, who were the driving forces? What were the conflicts? By conducting interviews with representatives of the various sectors and the government, we could retrace the steps taken towards more sustainability, and identify difficulties and obstacles on this path.

Both the interviews and the information from the framework were needed to see (1) whether there is progress towards more sustainability and (2) what the driving forces are.

The drafting of maps and other tools from WP4 were used during the framework run and the governance work.

3.6 Maps

The following three maps are provided along with this report²¹:

- The different zones of the activities occurring in the area. (Note: fisheries is not included in this map as it occurs everywhere.)

²¹ Accessible on the MESMA sharepoint at:

<https://teamsites.wur.nl/sites/mesma/WP3Casestudies/Forms/AllItems.aspx?RootFolder=%2Fsites%2Fmesma%2FWP3Casestudies%2FCasestudies%20Folder%2FSouthern%20North%20Sea%2FD3%2E6%20%2D%20SNS%20and%20subareas%2Fmaps%20BPNS&FolderCTID=0x01200092746E790CCDD24FB0BB39793287BB47&View={EB550589-2F2A-4E35-8BB6-C6B19F6F4C54}>

- The nature conservation areas in the BPNS.
- The spatial distribution of the habitat type 1110 in the “Vlaamse Banken”.

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4 Synthesis report for The Dogger Bank case study (subcase of SNS)

4.1 Description of CS

Geographical area/surface/administrative boundaries

The Dogger Bank is the largest sandbank in the North Sea, and it is divided among the Exclusive Economic Zones (EEZs) of the United Kingdom (UK), the Netherlands (NL), Germany (GER) and Denmark (DK). The relatively shallow flat top of the sandbank is more dynamic than the surrounding slopes which are considered to be more stable. The sandbank is 300 km long in with an east-northeast/ west-southwest orientation and the maximum width is approximately 120 km. The total surface area of the feature is 17,600 km² and the nearest land is the UK at a distance of 100km.

As a submerged sandbank the Dogger Bank potentially qualifies as a special area of conservation (SAC), i.e. a Marine Protected Area (MPA) under the Habitats Directive. The current status of the Dogger Bank is that, at different points in time, Germany, the Netherlands and the United Kingdom have proposed their part of the Dogger Bank as a SAC under the habitats directive to the EC, and Denmark has not assigned a specific status to their part of the sandbank. The delineation of the Natura 2000 sites (SACs) is shown in figure 1.

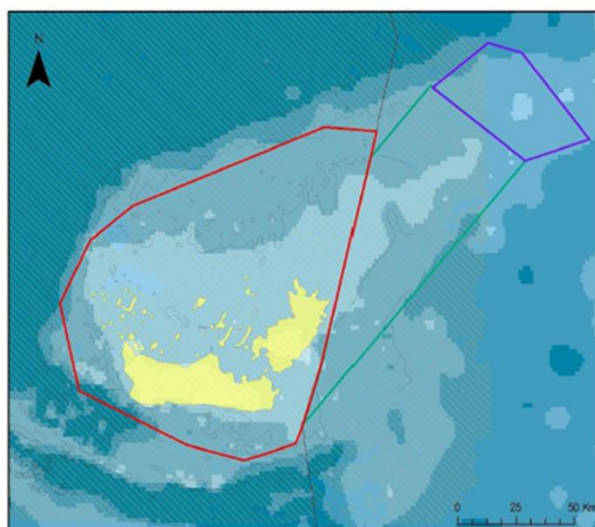


Figure 1 Delineation of the German, Dutch and UK Dogger Bank SACs.

Current zoning plan, reflecting the complexity of the area

The focus of this study is on the spatial planning process that is currently in progress on the Dogger Bank. The focus of this spatial planning is to produce a fisheries management plan that will meet the nature conservation objectives. As mentioned before this is carried out within the Natura 2000 legal framework, specifically the Habitats Directive. Therefore the proposed spatial plans are all limited to the SAC areas as shown in figure 1. On the UK part of the sandbank a large offshore wind farm is being developed and this wind farm is expected to effect the fisheries management in the area in the future. Work on this fisheries management plan is carried out in collaboration by the four Dogger Bank member states, united in the Dogger Bank Steering Group (DBSG), with scientific support from ICES and participation of the EC. The

DBSG objective is to achieve international coherence among fisheries measures on the Natura 2000 sites (SACs) on the Dogger Bank and to develop a fisheries management plan in relation to nature conservation, including a zoning proposal for the combined area, covered by the 3 national Natura 2000 sites (SACs) of the Dogger Bank.

The starting point for the current spatial planning was a FIMPAS (Fisheries Management in Marine Protected Areas) workshop in January of 2011. At this meeting the cross boundary nature of the Dogger Bank SACs and their fisheries was recognized, and consequently an inter-governmental Dogger Bank Steering Group (DBSG) was set up, with as members: NL (chair), UK, GER, DK, ICES and the EC. The DBSG then invited the North Sea Regional Advisory Commission (NSRAC) to propose a fisheries management plan for the combined Dogger Bank SAC area. This stakeholder-led spatial planning process ran for over a year and stakeholder meetings were held regularly.

The original DBSG process, see figure 2, was scheduled to be completed within 1 year, but due to the complexity, the process is still on-going.

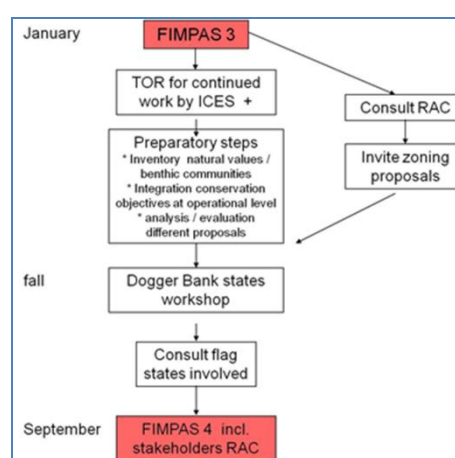


Figure 2 The 2011 proposed DBSG process.

Short description of this Zoning Plan

During the spatial planning process several zoning proposals were produced. The first NSRAC process NSRAC only led to the proposal of a preferred zoning approach, including example scenarios, with three zones (NSRAC, 2011). To support the on-going spatial planning process Hans Lassen (ICES) prepared three scenarios and these were presented at a stakeholder meeting in Dublin, November 7 & 8, 2011 (Hans Lassen-ICES Secretariat, 2011). These scenarios were all limited to two zones and figure 3 is an illustration of scenario 3, Minimal impact on gross value from fishing (source ICES).

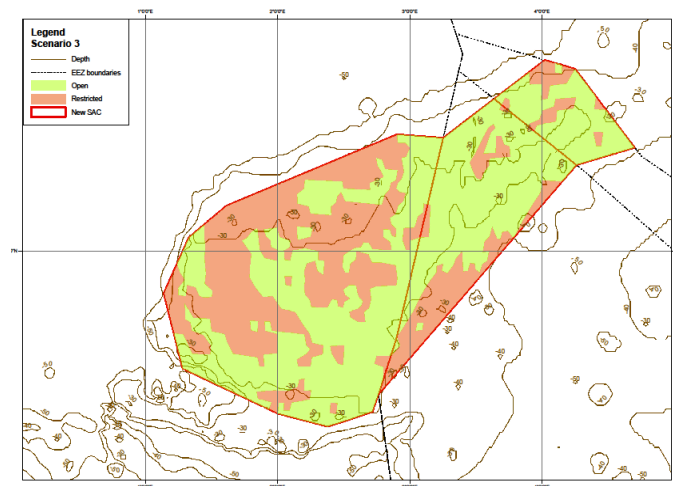


Figure 3. Scenario 3, minimal impact on gross value from fishing (source ICES).

In the later stages of the process NSRAC stakeholders did produce concrete zoning proposals, but in the end they were unable to reach final agreement on a joint zoning proposal (NSRAC, 2012). Figure 4 shows the NGO zoning proposal and figure 5 the Fishing Industry zoning proposal.

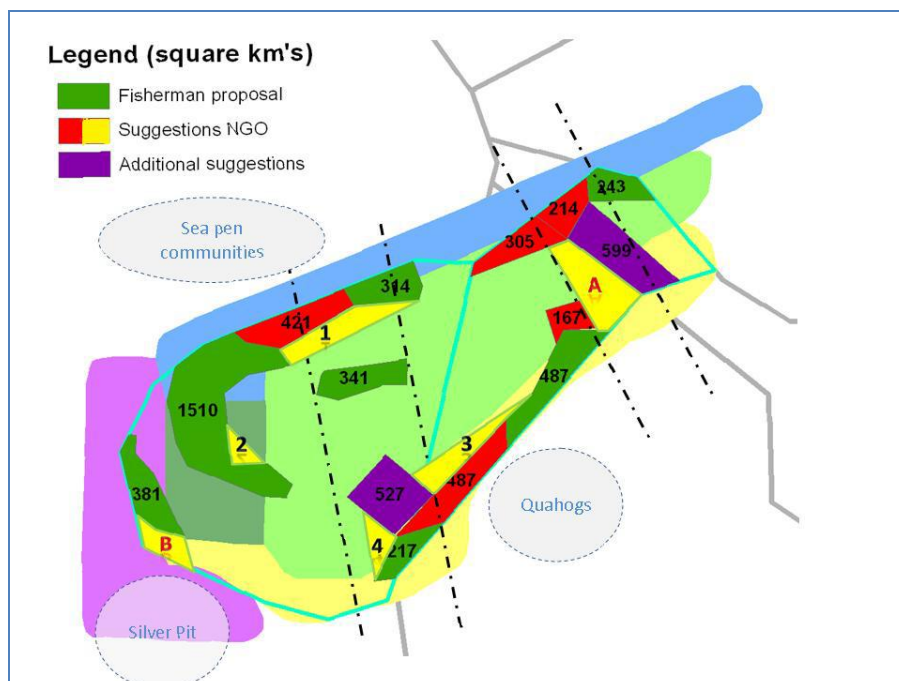


Figure 4. NGO proposed additional areas, January 23rd 2012 (NSRAC, 2012)

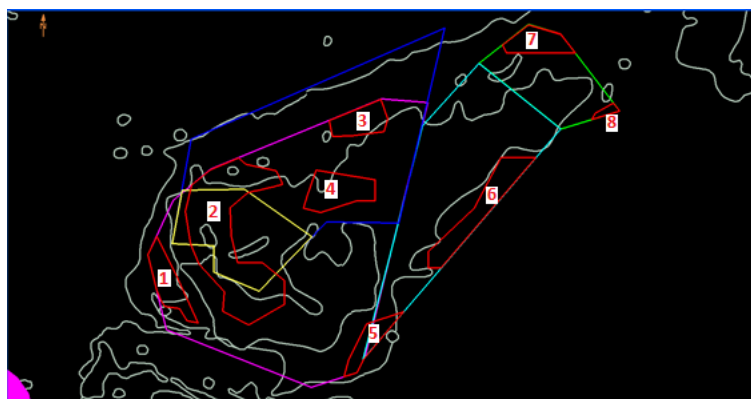


Figure 5. Representation of industry Zonation Proposals. Boundary key: red = fisheries management zones; Blue/yellow = Dogger Bank Round 3 planning zone and tranche 1 projects area (NSRAC, 2012).

Short description of the application of the FW/MESMA tools

Until now the MESMA framework for monitoring and evaluation of SMAs (work package 2) has not been used to support the spatial planning process on the Dogger Bank. For the proposed second test run of the framework the point of view is that no plan is currently in place. Initially it was thought that a DBSG spatial plan would be available to use as starting point for this framework application, but at this time (August 2012) that is not the case. To test the effect of proposed zoning proposals two Sand eel models will be run in work package 4 (development and evaluation of management tools). During the spatial planning process no contribution was made to work package 5 (data standards and infrastructure) as most used data was provided by ICES and stakeholders with strict limitations to use and distribution. Most work has been related to work package 6 (Governance) as the Dogger Bank spatial planning process is a very complex governance issue.

4.2 Administrative boundaries

On paper the administrative boundaries are clear but in real life, i.e. application on the Dogger Bank, it is often not completely clear. Issues arise from differences in timing of required actions by member states, and within member states responsibilities are sometimes shared between several ministries leading to different viewpoints. Although the member state Natura2000 boundaries and member state EEZs are clear this does pose limitations. From a pragmatic point of view it can be argued that a proposed fisheries management plan should also include areas outside of the SACs, but due to the legal framework, i.e. the Habitats Directive, that is not possible. Because the delineation of SACs is not only a scientific exercise, but also involves subjective choices, the boundaries of the Dogger Bank SACs do not include all areas that can be considered to be part of the feature the Dogger Bank. In his report on the Dogger Bank, van Moorsel (2011) shows that several areas of ecological interest are on the edges of the Dogger Bank. Another issue is the requirement of a joint cross-border monitoring and evaluation program. Such a joint program is to be preferred over national monitoring and evaluation programs but who pays for such a joint program? And consequently who carries out the monitoring and evaluation and how is quality assurance dealt with?

4.3 Key Drivers

Key drivers for the Dogger Bank are:

1. Member State Natura2000 legal obligations
2. EC natura2000 legal obligations
3. Socio-economic value of area for fishing industry
4. Ecological value for NGOs
5. Economic value for renewable energy (UK)

These five key drivers are not equally applicable to each of the four involved countries. Denmark for instance has no Natura 2000 legal obligations and no current economic value for renewable energy, but does have a high socio-economic value of the area for their Sand eel fishing industry. The UK on the other hand has to balance these three key drivers.

4.4 Progress and obstacles towards sustainability

Based on our evaluation of the on-going marine spatial planning process on the Dogger Bank a number of observations can be made:

1. Although the draft marine spatial plans that were produced are compromises between objectives they have provided a platform for stakeholders to discuss conservation of the Dogger Bank. This can be seen as progress towards sustainability.
2. Conservation, restoration and sustainable use are not clearly defined for the Dogger Bank. As this is the main reason for doing the spatial planning exercise it is difficult, if not impossible, to explain to stakeholders what the exact conservation and restoration objectives are. An additional problem related to this obstacle is that the conservation and restoration objectives are not clearly linked to specific geographic areas.
3. The stakeholder process (dialogue) has led to more progress towards sustainability. In previous years the emphasis of stakeholder collaboration had been on negotiation and not on fact finding. By focussing on the latter, the NGOs, the fishing industry and the authorities now have a better understanding of the issues at stake and the available and missing data and knowledge: this is clear progress.
4. Although several arguments can be made that favour a cross-border joint approach for the Dogger Bank, member states have a tendency to prefer national interests over joint interests, i.e. conservation of the Dogger Bank. This is clearly an obstacle in producing a strong, coherent cross border management plan.

4.5 Reflection on MESMA

WP2 Framework for monitoring and evaluation of SMAs

To what extent the WP2 Framework (FW) can support the spatial planning process on the Dogger Bank is not yet clear. The scheduled second FW run with one or more proposed zoning proposals from the Dogger Bank process will have to shed light on this.

WP4 Development and evaluation of management tools

As part of the WP2 SMA evaluation framework we plan to refine and test three models to carry out risk analysis scenarios. The selected models are SLAM & SPAM (Sandeel Larval Drift and Population Analysis Models) in combination with SMS (multispecies) model of predation and maps of sizes and distribution. As starting point we will use the two maps (figure 5 and 6) that were proposed by the NSRAC stakeholders in their final position paper (NSRAC, 2012).

WP5 Meta-data

Meta-data on the Dogger Bank subarea is limited and it is not always clear what is available via geo-portals. In his report 'Species and habitats of the international Dogger Bank', which was commissioned by WWF, van Moorsel (2011) refers to a few sources where data on the Dogger Bank can be obtained. For example habitat, depth and sediment data from the EUNIS database, but detailed Dogger Bank ecological data is not available. At this point it is not clear if the WP5 meta-data can help resolve this issue.

The Dogger Bank case study will contribute to improved discoverability by generating metadata records for the MESMA GN-portal for some more important datasets that have been identified and used.

WP6 Governance analysis

The governance analyses has studied the spatial planning on the Dogger Bank that started in 2011. Several interactions between the NSRAC stakeholders, i.e. NGOs and fishing industry, and their interactions with the DBSG have been studied. These observations in combination with proposed spatial plans help us to better understand the dynamics that take place in cross-border marine spatial planning. In the process we have also looked at the role of scientists (ICES and other research institutes) and how they influence the content and the process. Part of the governance analysis is also a reflection on the relationship between stakeholders (NGOs, fishing industry, member states, EC, renewable energy industry).

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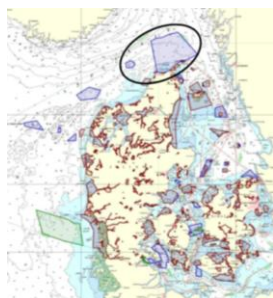
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5 Synthesis report for Skagerrak case study (subcase of SNS)

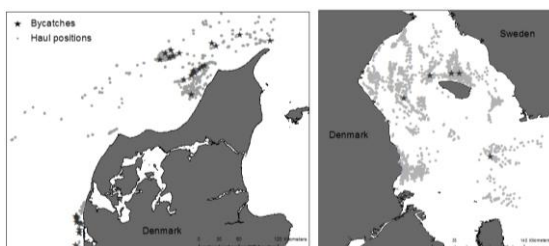
5.1 Description of CS



The focus of the *Skagens Gren & Skagerrak* (and *Store Rev*) case study is on conservation of harbour porpoise populations within and around SAC's in the Danish part of the Skagerrak; and reducing impacts of fishing. The primary objective is to restore and maintain the harbour porpoise conservation features represented in the SAC's. The main conflict that the case study addresses is between the gillnet fishery and conservation of the harbour porpoise.

One of the main identified threats to harbour porpoises is the risk of drowning in fishing nets. Fishing is generally regulated by the EU council regulation 812/2004, which calls for the use of acoustic deterrent devices (so called *pingers*) on gillnets with mesh sizes larger than 220 mm and any gillnets with a total length that does not exceeds 400 metres. Monitoring of bycatch of marine mammals is also an obligation in relation to gillnetters larger than 15m.

Results from trials with on-board closed circuit TV monitoring (Kindt-Larsen et al. 2012; see figure below left) provide some indication of the areas in which the conflict between gillnet fishing grounds and porpoises are present.



Due to the fact that harbour porpoises are included in Annex IV of the Habitats Directive the case study therefore also focuses on general interactions between fisheries and harbour porpoises.

Geographical boundaries

The study focuses on two large Natura 2000 SAC's on the northern tip of Denmark: *Skagens Gren & Skagerrak* and *Store Rev*. *Skagens Gren & Skagerrak* (approx. 2.686 km² / 268.622 ha), which is the main focus of the sub-case study, is designated to protect especially harbour porpoises, although sandbanks are also included as a habitat to be protected. Subarea work has revealed that it is highly relevant to also include *Store Rev* in the subarea analyses. *Store Rev* (approx. 109 km² / 10.892 ha) is an SAC also designated to protect harbour porpoises, along with reefs and bubbling reefs. The geographical boundaries of both SAC's are clearly defined in Danish legislation and reported to the EC.

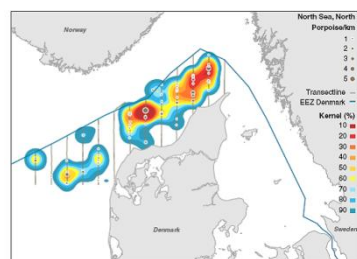


Figure Kernel density map of harbour porpoises based on 3 aerial surveys conducted in Skagerrak/ northern North Sea in 2006-2007 covering the summer and fall from August to October. Observations and track-lines as well as the national border are shown (Teilmann et al 2008).

The *Skagens Gren & Skagerrak* site was expanded to include harbour porpoises and sandbanks in 2010 and *Store Rev* was designated in 2010. As a result of administrative timing/reporting issues, the current management plans do not apply fully to harbour porpoises in the two sites but will be included in the next revision of the plans in 2015. However, already now Member States are legally obliged to prevent damage to habitats and species in designated N2000 sites. In addition, the harbour porpoise is an Annex IV species (to be protected where it occurs) so it will likely be included in current planning of management for these sites.

The two sites were designated to protect high density harbour porpoise areas which were identified based on monitoring results from aircraft line transects and towed hydrophone arrays (Teilmann et al. 2008).

Application of FW and tools:

Within MESMA, the Skagerrak sub-case study has especially focused on applying both WP2 and WP6 frameworks/ guidelines for monitoring and evaluation.

Within WP2

On the basis of existing data and information the Skagerrak case study applies the MESMA FW and tools to assess the already existing SMAs in order to determine if the chosen boundaries and overall management strategy are effective in facilitating the achievement of the two Natura 2000 sites' objectives. Maps of porpoise densities, gillnetters' fishing effort and bycatches of porpoises will be overlaid within GIS in order to determine if the selected boundaries of the SMA includes areas with high risk of bycatch. As bycatch is determined as one of the biggest threats to porpoises we believe that SMA's containing the high bycatch risk areas have the highest potential to fulfil the objective.

Within WP6

Much emphasis within the Skagerrak case study is on governance. Here the approach is to consider the process of the implementation of the SMA and the involvement of stakeholders. Until now all work on stakeholder involvement from the ministry has been conducted on a high level. MESMA governance case study work includes interviews with directly affected fishers that have very detailed knowledge and are very reliant on access to fishing grounds within the areas. Interviews also provide advice and suggestions from affected fishermen regarding future management of the SMA's.

Within WP4

GIS- within GIS it is possible to overlay data from all necessary factors collected under WP2.

REM- Remote Electronic Monitoring systems has been implemented on-board 4 gillnet vessels documenting bycatches of porpoises within the area. The systems have not been implemented under MESMA but all data are made available for MESMA use. The on-board camera system has proven very effective in gathering bycatch data from small gillnet vessels that has not previously been available, adding new aspects to our knowledge of the main threats towards achievement of the SMA's primary objective.

5.2 Administrative boundaries

When administrative boundaries are in place, how does it affect/influence monitoring and evaluation of an SMA?

National

In Denmark it is the central government that has the responsibility for Natura 2000 in marine areas and not e.g. municipalities. The Danish Ministry of the Environment has the responsibility for the proper implementation of the Habitats Directive. This responsibility is in this case lifted by the Ministry's Nature Agency. However, the Ministry of the Environment has delegated responsibility to the various sectoral ministries. As a result, the Ministry of Food, Agriculture and Fishery has the responsibility to ensure that the fisheries and aquaculture sectors are not a hindrance to the achievement of favourable conservation status for species and habitats incl. harbour porpoises. If it is deemed necessary the Ministry of Food, Agriculture and Fishery must carry out measures to protect the species and habitats from any threats originating from fishing activity. This legal obligation is written into Danish fisheries legislation (LBK nr 978 of 26/09/2008). This delegation of responsibility is effective in ensuring clarity when monitoring and evaluating spatial management of Danish Natura 2000 sites and to a high degree allows respective authorities to concentrate on sector specific challenges (e.g. bycatch of porpoises), drawing upon their respective areas of expertise, data, etc.

In general, Denmark reserves exclusive rights to fish within 12 nm of the coastal baseline; there are many exceptions to this rule due to historical rights and other agreements. In the Skagerrak Swedish, Norwegian, Dutch and Belgian vessels may fish beyond 4 nm of the baseline.

International

According to the legally binding CFP, any management actions that affect fishing opportunities for EU Member States must be carried out through the EC or through multilateral agreements with affected states. When developing spatial management plans for fisheries within Natura 2000 sites such as the ones in the case study, this ultimately adds an extra level of uncertainty, as the final outcome of spatial management planning is not completely in national hands.

Denmark is Party to the non-binding "**Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas**" (ASCOBANS), which aims to promote close cooperation amongst its Parties with a view to achieving and maintaining a favourable conservation status for small cetaceans.

Denmark is also Contracting Party to OSPAR, the mechanism by which fifteen Governments of the western coasts and catchments of Europe, together with the European Community, cooperate to protect the marine environment of the North-East Atlantic incl. the North Sea. However, as many of the potential measures to protect and conserve harbour porpoises fall within the remit of fisheries organisations or ASCOBANS, OSPAR has not adopted separate measures.

Non-binding agreements do not tend to influence national planning to a high degree; in many cases such agreements support existing binding agreements and obligations and therefore play a more supplementary role in management.

5.3 Key Drivers

What are the key drivers in the MSP process in your CS area?

Key driver: *Conservation*

The main driver for conservation in the case study area is rooted in the *legal obligations related to implementation of the EC's Habitats Directive*. However, there are other aspects pertaining to conservation that are more difficult to accurately pinpoint. These drivers may be related to *society's increasing demands for sustainable exploitation of natural resources* (e.g. fish without harbour porpoise bycatches), which in turn promotes the development of ecolabelling for seafood products. Ecolabels such as the Marine Stewardship Council, Friends of the Sea and others have in recent years gone from grassroots to supermarket staple in a short time span. Leaving issues relating to bird and harbour porpoise bycatch issues out of account, static fishing gears such as gill nets have less impact than most mobile, bottom contacting gears.

Other drivers:

Economy/livelihood

Ultimately fishing, fish processing, handling and sale make up the livelihoods of thousands of citizens (cf. Danish Statistics website), often in rural areas with relatively limited employment opportunities.

Society

Fishermen catch fish which are needed and sold as food/protein in local or foreign markets. In addition to processed products there is also a large market for fresh, high quality fish caught locally. In the Skagerrak case study, often such fish are caught by small scale fishermen, many of whom are gill netters.

Culture

Fishing as an activity is linked to local cultural heritage that is considered essential to many coastal communities in the Skagerrak area. In many cases fishing grounds are closely linked to e.g. family traditions and may not necessarily be replaceable, which in turn has implications in connection with displacement of fisheries due to establishment of MPAs.

Tourism / culture

Fishing communities often represent attractive areas for tourism with a maritime atmosphere and lively harbours. However, local fishing communities are often impacted by e.g. fishing moratoria due to MPA

establishments, capacity reduction measures, transferable quotas (small vessels selling quotas and vessels to larger vessels) or other events, i.e. potentially changing the overall character of an active harbour.

At present, harbour porpoises are not considered a tourist attraction in the Skagerrak area.

5.4 *Progress and obstacles towards sustainability*

- **Is there progress towards integration of sectors and activities and towards sustainability considerations?**

As such there is not much progress towards overarching integration of sectors in the Skagerrak SMAs. This is likely to be due to the sharp legislative division of responsibilities between sectoral ministries and corresponding authorities. Although some central working groups and stakeholder fora aim to convene representatives from all sectors, it is the ministry responsible for fishing that has the final say in all future fisheries management measures. However, this does not preclude progress towards sustainability, as the main actions currently in place are to facilitate the management planning, and the final management will be implemented to achieve the SMAs' primary objective. It is nevertheless too early to determine whether or not the outcome will be effective.

- **Are there obstacles towards achieving integration and sustainability?**

Legislation/division of responsibility

The legislative division of Natura 2000 management responsibilities between sectoral ministries is currently a general obstacle in the sense that challenges become very sector specific (e.g. reduce bycatch of harbour porpoises in gill nets, prevent trawl damage to reefs, etc.), preventing a more integrated and holistic ecosystem approach to management of the marine environment and its living resources. In the case of the Skagerrak, the main challenge regarding the threat of bycatch of marine mammals is in fact highly sector specific and must be dealt with explicitly through fisheries management. In general, however, issues regarding availability of food for marine mammals, birds and other organisms or more generally the role of e.g. marine habitats in providing goods and services (such as e.g. important habitats for commercial fish), are very rarely dealt with in a holistic, integrated fashion.

Data

Spatial satellite data for fishing vessels (VMS data) is limited to vessels larger than 15 meters (12 meters from January 2012), while most small scale gillnetters employ vessels that are smaller, i.e. making conflict analyses and overlap analyses difficult. For instance, in the case of the *Skagens Gren & Skagerrak* site, VMS data gives the impression that there is little to no gillnetting taking place in the site. However, camera monitoring on 4 vessels and interviews carried out as a part of the WP6 governance work in MESMA has revealed that gillnetting does in fact take place. This is also the case for many other Natura 2000 sites in inshore areas, potentially giving a false impression that there are no conflicts to be managed.

Data for porpoise distribution may be considered a snapshot for a given year or season and may not be representative of the actual distribution of the animals at a given time.

Administrative boundaries

While harbour porpoises may have very large ranges (i.e. regional or sub-regional in scale), spatial protective measures to conserve porpoise populations are implemented on the national scale.

5.5 *Reflection on MESMA*

How and why did MESMA tools and methods (taken from WP1, 2, 4, 5 and 6) help you to answer the questions above in your CS.

WP1: The initial review of existing information was a useful beginning step, establishing a state of the art science and policy background for current and future planning.

WP2: The WP2 framework has thus far been utilised on an *ad hoc* basis when and where applicable but has proven useful in mapping of the conflicting objectives, institutional landscapes etc. and in

deconstructing and dissecting the case study into isolated components. As a whole, however, the framework was more complex than is necessary for dealing with a relatively simple SMA setup in contrast to a full blown marine spatial plan for a larger sea area.

WP2 & 6: If an integrated assessment for monitoring and evaluation of an SMA is carried out, both from a social/ economic/institutional perspective using the governance analysis framework of WP6 and from a natural science perspective using the WP2 framework, it is important to be aware of the substantial overlap in the information that one needs to gather.

WP4: Apart from GIS, the tools used for Skagerrak subarea work are not included in the list of MESMA tools, because they are case study specific and can currently not be transferred to other cases. However, other tools have been utilised such as results of on board camera monitoring and potentially novel methods to analyze data. These tools will be entered into the WP4 wiki once they are tried and tested.

WP5: The Skagerrak case study has neither utilised nor contributed to WP5 and the GeoNetwork. The data rights to the used data are very strict with tight user limitations and are therefore not included in geoportal. Most of the data that was needed to start the subarea work had been available to the Skagerrak case study team beforehand.

WP6: The WP6 governance analysis is still underway. It has so far been useful in getting to the core of the Skagerrak case study's governance aspects, characterisation of stakeholders and stakeholder engagement, identifying conflicts, incentives and cross-cutting issues as described in the guidelines. Direct interaction with WP6 has helped in phrasing targeted interview questions and carrying out interviews. Overlap between the guidelines and the WP2 framework could be identified and highlighted for those who intend to carry out analyses using both procedures.

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6 Synthesis report for the Wadden Sea case study (subcase of SNS)

6.1 Description of CS

The Wadden Sea (WS) is internationally recognized as biologically highly productive ecosystem of great natural, scientific, economic and social importance. Its outstanding value is reflected in numerous designations, such as UNESCO World Heritage Site, RAMSAR, PSSA, Natura 2000. The WS is the largest (14,700 km²) temperate zone tidal-flat expanse in the world. It stretches along the North Sea coasts of The Netherlands, Germany and Denmark. The governments of these three Wadden Sea states officially cooperate on management, monitoring, research and political matters relating to the Wadden Sea. They defined a Wadden Sea Cooperation Area and within this a Nature Conservation Area as the geographical basis of their cooperation. The Wadden Sea Area itself represents a bio-geographical zone, which includes several administrative boundaries.

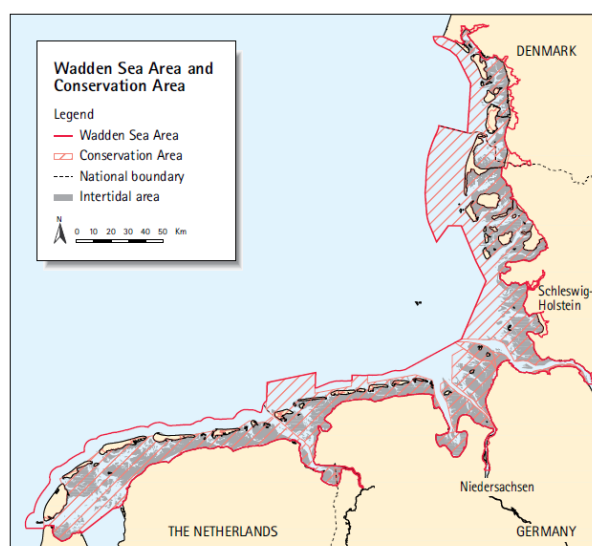


Figure 1: Trilateral Wadden Sea Area and Conservation Area (Marencic 2009).

Focus of the Wadden Sea case study is to analyse spatial management processes related to monitoring and evaluation on trilateral and national scale. The “Trilateral Wadden Sea Cooperation” (TWSC), which is the governmental cooperation between the Netherlands, Germany and Denmark on the protection and conservation of the Wadden Sea has existed since 1978. Within the TWSC organizational structure, the Trilateral Wadden Sea Governmental Council is the politically responsible body (Ministers) for the Cooperation and the Common Wadden Sea Secretariat (CWSS²²) takes care of implementation and support. Based on the “Joint Declaration on the Protection of the Wadden Sea” from 1982, two trilateral management plans are in place for the Wadden Sea Area:

(1) The “Wadden Sea Plan” (WSP) provides a framework for the management of nature conservation, considering certain human activities (CWSS 2010). The WSP sets out a series of targets, as well as policies, measures, projects and actions to achieve these targets, to be implemented by the three Wadden Sea countries. The WSP is legally non-binding.

²² <http://www.waddensea-secretariat.org/>

(2) The “Seal Management Plan” (SMP) has existed for more than twenty years; the first version was adopted in 1991. Currently, the third SMP (SMP 2007-2010²³) is still in operation and the fourth version is in preparation. It is seen as a model for species management and monitoring (Moser & Brown 2007). The SMP is legally binding, according to the Seal Agreement concluded under the Convention on the Conservation of Migratory Species of Wild Animals (CMS, Bonn Convention). To assess the progress in the implementation of the Wadden Sea Plan target(s), i.e. the monitoring and evaluation process, the Trilateral Monitoring and Assessment Program (TMAP) has been established. The TMAP provides the basis for the overall evaluation of the Wadden Sea ecosystem quality (Quality Status Report: QSR).

Apart from the official cooperation on ministerial level, there is also “an independent platform of stakeholders ... to contribute to an advanced and sustainable development of the trilateral Wadden Sea Region”, the “Wadden Sea Forum”²⁴ (WSF). The WSF was established in 2002. It is not part of the formal organizational structure of the TWSC (schedule below).

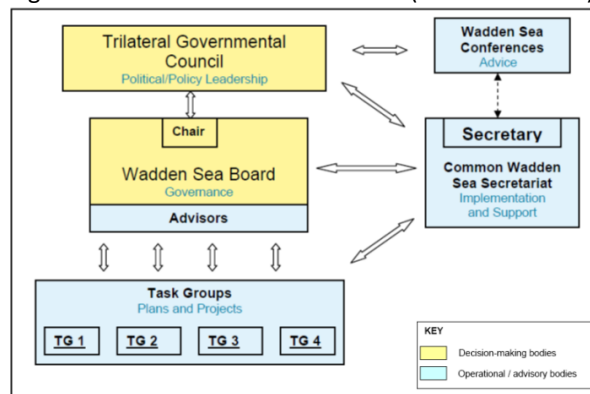


Figure 2: Organizational structure Trilateral Wadden Sea Cooperation.

Description of the application of the FW and MESMA tools

In this sub-area of the Southern North Sea case study, the focus of the WP2 analysis is on the management of seals as laid down in the trilateral “Wadden Sea Plan 2010” (WSP 2010) and the “Seal Management Plan 2007-2010”, including the data and science behind these spatial management plans. The approach is therefore a “process analysis”: The WP2 framework is tested and compared with the monitoring and evaluation process as practised in relation to the Seal Management Plan. The SMP is considered an exercise and example to study the monitoring and evaluation process within the trilateral cooperation. In our analyses we consider the Trilateral Wadden Sea Cooperation as a successfully established international cooperation in spatial management. Lessons learned will be identified for improvement of international cooperation elsewhere. In addition, testing the framework may identify recommendations to the TWSC and SMP.

The WP6 governance research of the Wadden Sea case has focused on analysing the success factors, as well as conflicts and failures, in the trilateral WS cooperation. In consultation with key policy makers and stakeholders, monitoring and evaluation of the Wadden Sea has been related to the trilateral guiding principle for the Nature Conservation Area: “To achieve, as far as possible, a natural and sustainable ecosystem in which natural processes proceed in an undisturbed way” (Joint Declaration 2010²⁵). The targets of the WSP 2010 are consistent with the national conservation objectives of EU directives, such as MSFD and N2000. Main focus of the analysis is on the Wadden Sea Plan in general, and the management of seals and fisheries in particular.

²³ <http://www.waddensea-secretariat.org/management/SMP/SMP%202007-2010.pdf>

²⁴ <http://www.waddensea-forum.org/>

²⁵ http://www.waddensea-secretariat.org/tgc/DocumentsSylt2010/2010%20Joint%20Declaration_final.pdf

6.2 *Administrative boundaries*

The Wadden Sea is an ecological entity, but the Wadden Sea Area itself is not delimited by a legally binding boundary, despite the existence of the trilateral cooperation. The TWSC is based on a joint ministerial “declaration”, which is rather a voluntary agreement of political will/ intention to cooperate, but it does not entail legal obligations.

Within the Wadden Sea Area, several administrative boundaries can be identified: There are the national and sub-national boundaries (provinces in NL, Länder in DE, provinces in DK), as well as the boundaries within the national WS Nature Conservation Areas. These boundaries of the Nature Conservation Areas delimit in the Netherlands the area of the Key Planning Decision Wadden Sea, in Germany the three Wadden Sea national park areas and the protected areas under the Nature Conservation Act seaward of the main dike and the brackish water limit, and in Denmark the Wildlife and Nature Reserve Wadden Sea. In addition, parts of the Wadden Sea in each of the three Member States have been designated as Natura 2000 sites. In conclusion, the Trilateral Wadden Sea Cooperation has clear boundaries, but without legal status, and therefore, the national and local boundaries within the cooperation area are more important than the cooperation’s boundaries.

Seen on a generic level, the complex administrative boundaries do not hamper an international monitoring and evaluation process. Both monitoring and assessment takes place in trilateral governance arrangements at different organisational levels. The existence of the legally non-binding boundary of the Wadden Sea Area has influence on decisions on national level, e.g. the trilateral cooperation can support single countries to reach certain goals. In addition, the collaborative management of the large Wadden Sea Conservation Area has reached a harmonized protection status and includes areas, on which single states have no influence by legislative competence. Seen on a more detailed level, administrative boundaries appear to complicate harmonisation, for example due to differences in the national implementations of definitions of the Habitats Directive.

6.3 *Key Drivers*

What are the key drivers in the MSP process in your CS area?

The key driver in the Wadden Sea process is nature conservation for preserving the natural processes in the unique ecological entity, comprising e.g. EU environmental legislations. This process has been initiated by coalitions of science, policy and NGOs in the 70ies; hence, these coalitions can be considered the driving forces for the start of the TWSC, and they have been driving forces since then.

The Wadden Sea Plan serves to implement the objectives stated in the Joint Declaration. The WSP “constitutes the common framework for the protection and sustainable management of the Wadden Sea”²⁶ (CWSS 2010). The WSP, adopted in 1997 and renewed in 2010, can be considered a nature conservation plan, as it sets mainly ecological targets. Additionally, the WSP specifically mentions “sustainable use”, “integrated ecosystem management”, and states that “[w]ithin the constraints of suitable protection and natural development of the Wadden Sea, economic activities and development remain possible”. Constraints include exclusion and limitations of (specific) usage. Hence, human use is possible as long as it is sustainable. In addition, management plans are prepared for the WS Natura 2000 sites, in order to meet the conservation targets of the Bird and Habitat Directives by regulating human activities.

Despite the fact that the TWSC has a clear focus on conservation and nature protection, the WSP 2010 does refer to on-going socio-economic activities: “Tourism and recreation, agriculture, industry, shipping, and fisheries have considerable economic significance for the Wadden Sea and sustainable human uses will continue.” In addition, in terms of assessing possible ecosystem impacts of human activities in the WS, the latest Quality Status Report (QSR 2009) considers the following activities:

- Coastal defence
- Harbors & Shipping

²⁶ <http://www.waddensea-secretariat.org/management/Plan.html>

- Fishery (blue mussel, other shellfish, shrimp)
- Tourism
- Military activity
- Energy (oil, gas, wind energy)
- Extraction/Dredging
- Marine Litter

6.4 Progress and obstacles towards sustainability

Based on the answer to question 2:

Progress

Overall, there do not appear to be major obstacles in achieving sustainability in the Trilateral Wadden Sea Cooperation Area. On trilateral governmental level, consensus exists on the goal of the Wadden Sea management, namely to protect the Wadden Sea, and to achieve a sustainable ecosystem. The 2010 synthesis of the Quality Status Report (QSR 2010) concludes that the ecological conditions of the Wadden Sea have been well preserved, and that this high level of environmental quality should be maintained.

The main programme for assessing progress in the implementation of the targets of the Wadden Sea Plan is the TMAP. It covers the entire Wadden Sea area including islands and offshore areas and spans a broad range from physiological processes over population development to changes in landscape and morphology. This trilateral programme is considered valuable and useful by both scientists and governments.

Within the Wadden Sea management a shift from conservation to sustainable management is taking place. This is visible in the development of the Wadden Sea Forum, which has been supporting sustainable development in the Wadden Sea for ten years now, in cooperation with the TWSC. Although the development to more sustainability is seen positive, the balance of nature protection and use is a general conflict issue in the Wadden Sea between conservation and all other sectors.

As stated in the WSP 2010, the development of fisheries into the direction of more sustainable activities in the Wadden Sea has started and will be continued. Existing national management plans and policies for mussel fisheries are considered a step in this direction. Currently, the TWSC is working on a trilateral strategy for fisheries in the WS. The 2010 Joint Declaration (TWSC 2010) states the ambition to develop a concept to define sustainable fisheries for the Wadden Sea.

Seal management is an example for a Wadden Sea policy which has already led to progress concerning the seal status in the WS. It is also an example for trilateral cooperation despite nationally differing approaches, i.e., the individual national approaches are respected. Although the Seal Management Plan is more a “formula compromise”, representing a trilateral management plan “umbrella” for three individual national approaches, a continuous cross-border discussion on common objectives takes place, and the SMP appears to be a helpful tool to steer the seal management on trilateral level. The common seal management goal has been reached, realized on the basis of consensus.

There are also breakthroughs outside of the trilateral governmental management that help to achieve ‘sustainability’.

Covenants are in place between NGOs and sectors in order to increase the sustainability of on-going human activities and improve the quality of natural features of the Wadden Sea. An example is the ‘mussel transition’ process in the Netherlands, where fisheries for mussel seed is being replaced by artificial mussel seed collectors, thereby reducing sea floor disturbance by the mussel seed fishery and increasing the natural development of mussel beds. This mussel covenant was agreed between several NGOs and the mussel sector, and developed to overcome conflicts that arose from the European and national legal framework.

Another development is the certification of ‘sustainable’ fisheries, the certification process is usually initiated by an individual fishing company. Almost all forms of fishing in the WS are currently in a MSC certification process, and a few fisheries have already been certified. However, it appears that MSC certification does not guarantee neither sustainability nor the adherence to conservation objectives of protected areas.

Obstacles

Administrative boundaries appear to complicate and slow down processes. Under the trilateral framework, the cooperation tries to find trilateral solutions whenever possible, and respects national solutions, if they are unavoidable. This sometimes leads to bilateral cooperation in the first step, and trilateral cooperation might follow. For example the Dutch-German Wadden Sea is on the World Heritage list since 2009, while the nomination of the Danish part of the Wadden Sea is still open. National differences in the implementation of definitions of EU directives also complicate international harmonisation.

The required horizontal cooperation of the diverse ministries/agencies that have authority for the Wadden Sea Area can be very complex and slow down processes. While the TWSC predominantly collaborates with the national ministries responsible for environmental issues, other ministries may also need to be involved, for example when dealing with the implementation of management measures for fisheries. Fisheries policy that is regulated on EU level by the Common Fisheries Policy, but different national ministries can be involved when it comes to national implementation. Trilateral cooperation can be very hard due to different competence and claims of power.

In interviews with stakeholders and subsequent analyses, further potential obstacles were identified:

- National focus: There is too much emphasis on national targets instead of trilaterally established targets.
- Stakeholder connection: Communication and coalitions between stakeholders and stakeholder groups need to be improved.
- Science-policy connection: Improved translation of scientific findings is needed such that these are accessible for managers and applicable to management.
- Dialogue: There is dialogue, it appears to be not as effective as it could be. More organised dialogues between relevant stakeholders/partners might be a valuable support.
- Money: Not enough money, e.g. for research, monitoring.
- Time: Not enough time to cope with (new) complex issues. This is valid particularly for members of the Wadden Sea Board.

6.5 Reflection on MESMA

How and why did MESMA tools and methods (taken from WP1, 2,4,5 and 6) help you to answer the questions above in your CS.

Since the Wadden Sea sub-area focuses on governance aspects, most of the information has been extracted from the WP6 governance analysis, including interviews with key stakeholders. In addition, the WP2-framework helped in identifying the major management plans, their high level goals and operational objectives and structuring the information. Background information was retrieved from the reviews produced in the initial phase of the MESMA project (WP1).

6.6 References

CWSS 2010. Wadden Sea Plan 2010. Eleventh Trilateral Governmental Conference on the Protection of the Wadden Sea. Common Wadden Sea Secretariat, Wilhelmshaven, Germany.

Moser, M. & Brown, A. 2007. Trilateral Wadden Sea Cooperation – External Evaluation Report.

Marencic, H. (Ed.), 2009. The Wadden Sea - Introduction. Thematic Report No. 1. In: Marencic, H. & Vlas, J. de (Eds), 2009.

QSR 2009. Quality Status Report. Wadden Sea Ecosystem No. 25. Common Wadden Sea Secretariat, Trilateral Monitoring and Assessment Group, Wilhelmshaven, Germany.

QSR 2010. The Wadden Sea 2010 – A universally outstanding tidal wetland. The Wadden Sea quality status report synthesis report 2010. Wadden Sea Ecosystem No. 29 – 2010. Common Wadden Sea Secretariat, Trilateral Monitoring and Assessment Group, Wilhelmshaven, Germany.

7 Synthesis report for Pentland Firth and Orkney Waters (PFOW), Scotland

7.1 1. Description of Case Study

Case Study 2 examines the development of the **non-statutory pilot marine spatial plan** for the PFOW in Northern Scotland. Preparation of the plan started in 2008 and it will be published probably in 2014, two years later than planned because of the complexity of the process. The boundaries of the plan area are irregular following the 12nm limit of the part of the UK territorial sea around the Orkney Islands. The area is roughly rectangular measuring about 120km x 100km (12000km²). It is of strategic importance to the development of wave and tidal energy and the Government has ordered the preparation of the plan in advance of the statutory plan required by new legislation. The implementation of the statutory process will result in a statutory plan about 2016/2018. The non-statutory pilot plan will temporarily substitute for the statutory plan and will be used to inform the licensing process for commercial wave and tidal energy farms which are the subject of current consenting applications.

The area has been designated by the UK Government as one of the two first 'Marine Energy Parks' in the UK, the other being in the South West of England off Cornwall. The purpose of the 'park' designation is to foster *"...a collaborative partnership between local and national government, local enterprise partnerships, technology developers, academia and industry creating a physical and geographic zone with priority focus for marine energy technology development..."*²⁷. It is the policy of the Government to encourage clusters of renewable development in UK waters thereby limiting development areas and making best use of shared services and infrastructure. Priority is given to sites rich in marine energy resources where support infrastructure and power export are practicable. On these criteria, the PFOW represents one of the best such sites in the world.

The research, development and testing of wave and tidal energy in the PFOW is already of world significance. The European Marine Energy Centre (EMEC) in Orkney is recognised as the leading centre in the world for the testing of wave and tidal energy devices. More than five wave device technologies and ten tidal device technologies are on test in the sea at full scale. Several have delivered electricity to the national grid. EMEC is also acting as consultant for the establishment of similar centres in the USA, China and Australia. Commercial developers have been awarded agreements to lease eleven seabed sites for the purposes of wave and tidal energy farms. Applications for licences have been made.

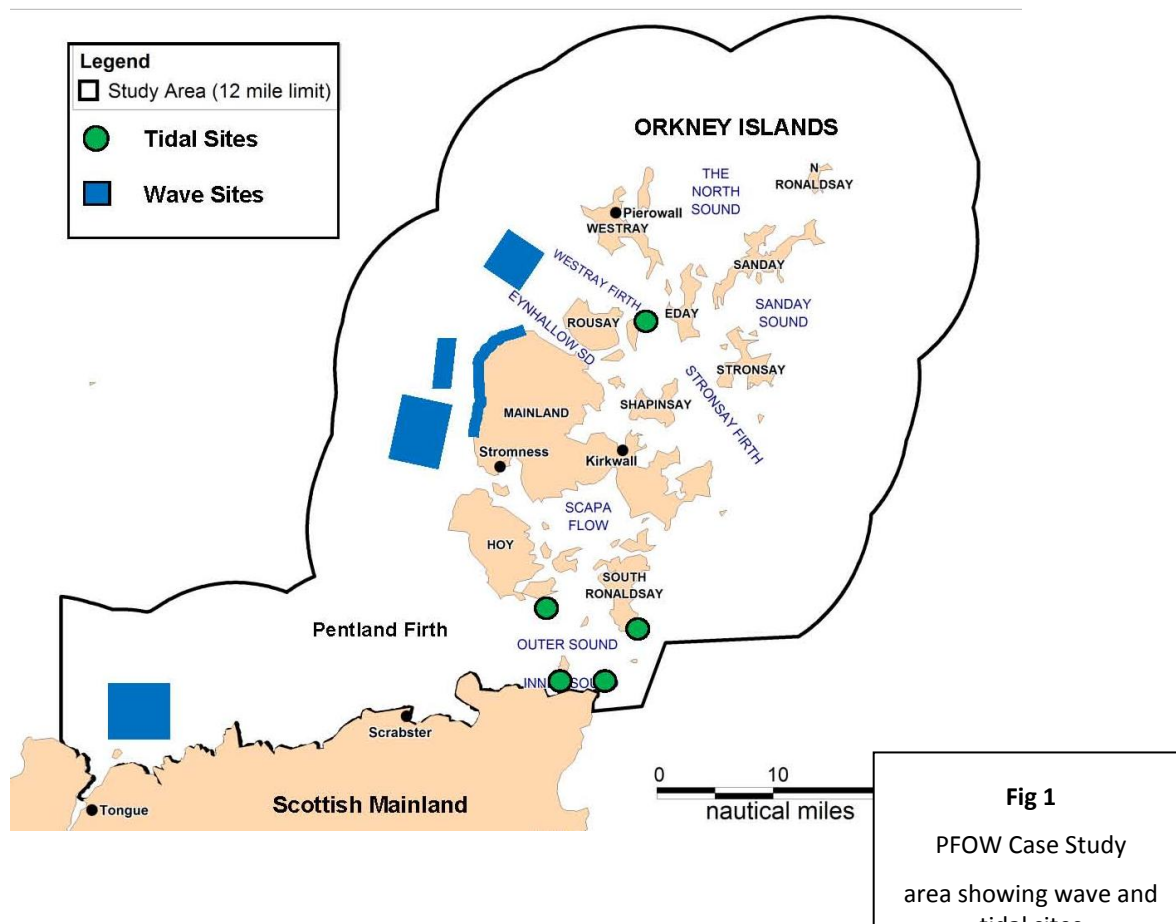
The area also contains important habitats and species protected by SAC and SPA designations. Large parts of the coastal regions have national designations such as 'National Scenic Areas' and 'Sites of Special Scientific Interest'. Other activities include a thriving community based fishery, international shipping, marine archaeology and extensive recreational interests. The adjacent island and rural coastal communities retain strong cultural and economic links with the seas around them. The implementation of the Marine Strategy Framework Directive (MSFD) and the Scottish contribution to the European network of Marine Protected Areas are under study.

The purpose of the Case Study is to examine evidence from the PFOW Plan preparation and identify issues relevant to a generic framework for marine spatial planning. The monitoring and evaluation arrangements are considered in relation to the WP2 MESMA Framework. A test run of the Framework is populated with PFOW data.

²⁷ South West Marine Energy Park Prospectus, Cornwall Council and Plymouth City Council, January 2012

7.2 Administrative Boundaries

Zoning and boundaries have to be considered at a number of spatial scales. The PFOW as a whole is a renewables development zone by virtue of its designation as a 'Marine Energy Park'. Within the PFOW there are numerous designated areas (zones). The boundaries of these areas have varying degrees of definition but none could be described as 'exclusive zones'.



The past and present policies of the Government encourage the integration of activities and conservation into multi-use areas where possible. However, certain areas have defined priorities including:

- Wave and Tidal Energy Development Areas: Eleven sites amounting to about 500km² in total have been agreed for lease between commercial developers and The Crown Estate²⁸ [Fig 1]. The development areas were selected through an invitation to the market to tender for sites. Awards were made in 2009 but are subject to licence by Marine Scotland²⁹. Devices in commercial arrays will be protected by a so far undefined safety zone giving rise to a certain degree of exclusivity. In the

²⁸ The Crown Estate administers 'Crown Lands' under statute. Crown Lands, which include the seabed in the territorial sea, are a form of public land.

²⁹ Marine Scotland is the department of the Scottish Government responsible for marine affairs

case of offshore wind turbines elsewhere, the law enables safety zones to be declared of 500m radius during construction and 50m radius during operation.

- Shipping: International shipping routes nominated under IMO procedures pass through the area. Ferry routes link all the islands and the mainland. In the UK there is a public right to free navigation.
- Habitats and Species protection areas: mainly coastal SPAs with marine extensions. In some cases they are coincident with wave and tidal development areas and fisheries. Legal priority is given to preventing harm to what is protected. Scottish Natural Heritage (SNH) is the statutory conservation organisation with the responsibility to advise the Government about conservation needs.
- Marine Protected Areas: New legislation empowers Ministers to designate MPAs and their management. None have been declared in the PFOW so far. SNH are evaluating sites and their contribution to a European network. Scottish Government policy makes a presumption in favour of use (activities) in MPAs³⁰.
- Fisheries: The community based fishery mainly targets shellfish species of lobster, crab, and scallops. These are not subject to quota restrictions and the fishery has derogation from the CFP (being inside 6 nautical miles from the coast). Individual fishers have their favoured areas and a survey has been undertaken to see which areas are fished³¹. In the UK there is a public right to fish.
- Aquaculture: Aquaculture sites are the only marine activities which are subject to the terrestrial planning regime under the authority of Local Government.
- Community links: the island communities of Orkney retain very close links with their marine environment. These extend beyond social and economic links into culture and well-being. Considerations for marine development include the community benefits of marine activities and marine planning.

The PFOW plan process is driven by the policy need to construct wave and tidal generation systems. The urgency attached to renewables deployment (and the scale of the unknowns about technology, ecosystems, activities and interactions), has resulted in a pragmatic approach and a Government decision to employ a policy of 'Deploy and Monitor'. The deployment of wave and tidal devices will proceed in parallel with research into effects. Future policy and permissions will be adapted accordingly.

Having identified and presented as much existing knowledge as possible the PFOW preparation team are taking an overarching 'issues and consultation' approach to planning. The subsequent plan will inform the licensing process for marine renewables. A later monitoring and research programme will be used to adapt future policy and management. The PFOW process has included:

1. **Pre-Plan:** Before the plan was started: a number of formal and informal spatial designations were already established in the area. The major change was the assignment of areas for wave and tidal energy in 2010.
2. **Boundary setting and existing information collation and mapping:** Plan work started in 2009. A draft report and maps of existing knowledge was published in 2010 and the final report in 2011. Critical knowledge gaps were highlighted. Draft regional guidance for the location of wave and tidal energy sites (sectoral plan) was also published. The Marine (Scotland) Act establishing statutory MSP, streamlined licensing; and MPA powers came into force in 2010.
3. **Additional research:** A series of research projects to fill the most critical gaps in knowledge were carried out in the period 2010-2012 and continue.

³⁰ Scottish Government Policy Memorandum to the Marine (Scotland) Bill, Paragraph 54; 2008

³¹ Marine Scotland, Draft report on ScotMap, The Inshore Fishing Study Pilot in Pentland Firth and Orkney Waters, 2012. <http://www.scotland.gov.uk/Topics/marine/marineenergy/wave/rlg/pentlandorkney>

4. **The Plan Scheme:** The 'Plan Scheme' will be published in September 2012. It will set out the plan process, key stakeholders and proposals for consultation/participation.
5. **The Main Issues Paper:** The 'Main Issues Paper' will be published around March 2013. It will set out the main issues/policy areas and the options for addressing them. It will be followed by the formal consultation process with stakeholders, users and communities leading to:
6. **The Draft Plan:** The 'Draft Plan' is targeted for publication in December 2013.
7. **The Plan;** The completed first version of the PFOW non-statutory pilot marine spatial plan will be published in 2014.

There are good areas of fit between the actuality of the PFOW Plan process and the MESMA Framework concept. The main logic of assessment, objectives, indicators, monitoring and adaptation are the same. However, there are significant differences of definition and roles. In the PFOW example, the 'Plan' is one element of integration. However, it is not the defining instrument. It is just part of a much larger framework of 'Marine Spatial Planning' which includes the GES process [Fig 2]. The PFOW Plan itself is concerned with boundaries, overlaps, conflicts and consultation. It is 'issues' based and not 'objectives' based although it 'may' include some targets. The principal integrating factor is the 'Decisions Process' which in the case of renewables and other new activities is the 'Consenting and Licensing' process. Issues are resolved in the consenting process; a large part of which is the developer's Environmental Impact Assessment which has to show how it has complied with all the requirements of the MSP Framework [Fig 3]. This is a pragmatic approach which avoids zoning because of the high level of unknowns and places much of the onus on to the developer. It supports the 'Deploy and Monitor' policy of the Government. This was also the conclusion of the Shetland Islands pilot marine spatial plan completed in 2008.

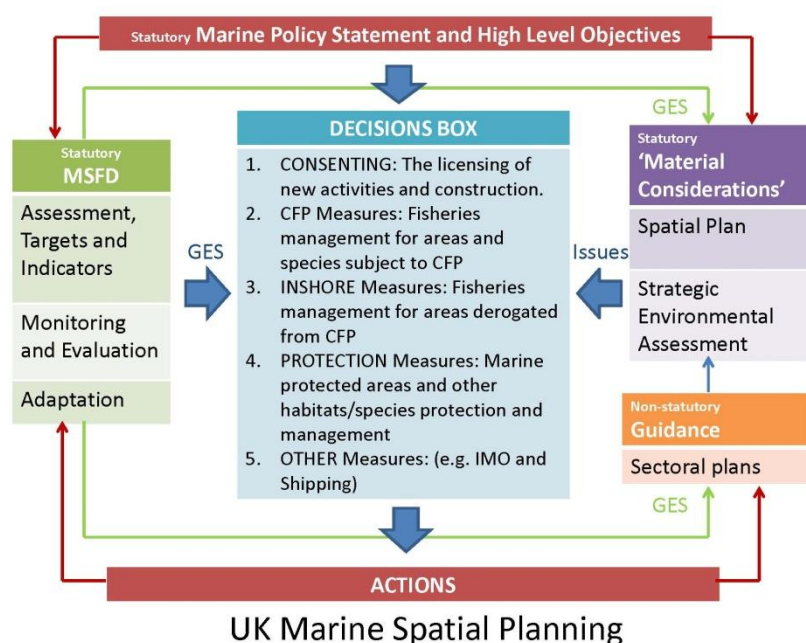
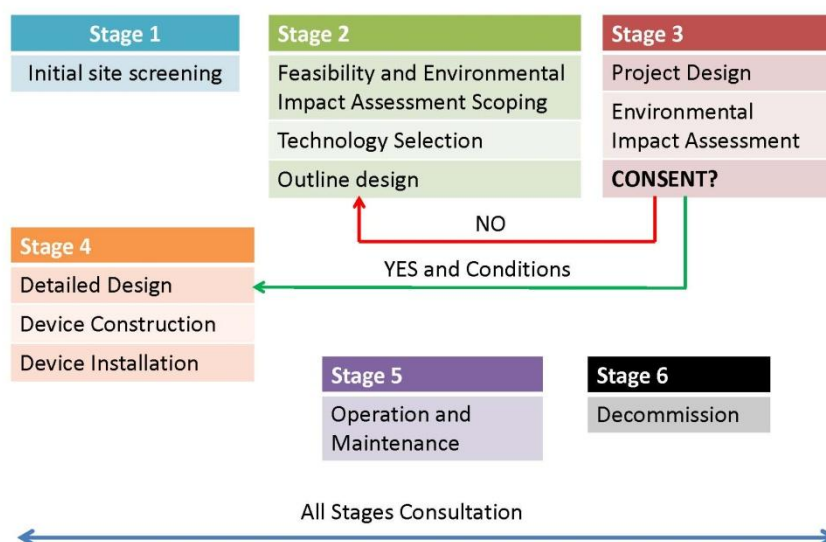


Fig 2

The PFOW Plan is not being used to set hard and fast zones. Rather, it is being used to identify issues, priorities and guidance which the consenting process will be required to take into account in reaching a licensing decision [Fig 3]. Each development application will require the developer to complete a project specific Environmental Impact Assessment demonstrating how it complies with the PFOW plan.



The life of a renewable project

Fig 3

It is not yet clear how the high level social, economic and cultural objectives of the Marine Policy Statement/National Marine Plan will be transposed into targets and indicators [Box 1]. The MSFD process makes provision for socio-economic assessment and identification of those ecosystem measures which may be excepted on the grounds of cost. However, social, economic and cultural objectives requiring positive incentive are not, so far, accounted for; nor, do they fit readily into the MESMA Framework. The 'Productive Seas' objectives of the statutory Marine Policy Statement (MPS) are summarised in Box 1.

Box 1 High Level Social, Economic and Cultural Objectives from the MPS

Productive Seas, contributing to the needs of people

- Marine businesses are acting in a way which respects environmental limits and is socially responsible. This is rewarded in the marketplace. (HLMO 4)
- People appreciate the value of the marine environment, its natural and cultural heritage and its resources and act responsibly. (HLMO 5)
- The marine environment plays an important role in mitigating climate change. (HLMO 8)
- Infrastructure is in place to support and promote safe, profitable and efficient marine businesses. (HLMO 1)
- **Long-term wealth is generated by the responsible use of the marine environment and its resources. (HLMO 2)**

- **The use of the marine environment is benefiting society as a whole, contributing to resilient and cohesive communities. (HLMO 6)**
- **There is equitable access for those who want to use and enjoy the coast, seas and their wider range of resources and assets and recognition that for some island and peripheral communities the seas play a significant role in their community. (HLMO 9)**
- Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population ages and size distribution that is indicative of a healthy stock. (GES 3)

These issues are addressed further in Section 5 of this report ('Reflection on MESMA').

7.3 Key Drivers

The most direct and immediate drivers of the non-statutory pilot PFOW marine spatial plan (CS2) are the proposals to develop the marine area for the purposes of wave and tidal energy. These are the reasons why the plan is being drawn at this time. The area is already at the centre of wave and tidal energy research, development and testing and is designated as a 'Marine Energy Park'. The Government aspiration is to facilitate developers to construct a marine electricity generating capacity of 1.6GW by 2020. The drivers of this policy are both socio-economic and ecological. There are socio-economic drivers because this new industrial sector is expected to create jobs and economic growth. It contributes to the economic credibility in a case for Scotland to be independent from the United Kingdom. Scottish independence is a key policy of the present Scottish government, but opposed by the UK government. More renewable energy is viewed by the Scottish Government as a vital Scottish industry meeting national needs and exporting knowledge and hardware around the world. An independence referendum will be held in 2014. Decisions about renewable energy are also essential to the debate about energy balance and energy security. The drivers of this policy are also ecological because of the role of renewables in mitigating the effects of climate change and reducing carbon emissions.

7.4 Progress and obstacles towards sustainability

In Scotland, including, the PFOW, there is considerable progress towards the integration of sectors and activities towards sustainability and ecosystem based management. The Marine (Scotland) Act of 2010 sets the statutory framework for integration and encompasses measures in three critical areas which support the introduction of the Marine Strategy Framework Directive and GES. First, the introduction of statutory marine spatial planning; the statutory process will take some years to roll out across the whole country. However, the PFOW pilot is the most comprehensive of several pilot plans and one which has immediate use to inform the development licensing process. Second, the adoption of Government powers to declare marine protected areas and their management; SNH are evaluating the Scottish contribution to the European network. Third, streamlined licensing procedures and authority for the licensing of new marine activities; Marine Scotland is a 'one-stop shop' for the granting of development licences. This means that a developer can make a single application to Marine Scotland who will assess 'all material considerations' (legal and otherwise) before granting a licence.

The most serious potential obstacles to achieving integration and sustainability in the PFOW concern the introduction of new activities, such as marine renewables, and the licensing decisions made. The principal existing activities of the inshore fishery and international shipping raise various concerns which are being addressed and do not, at present, represent a serious obstacle to EBM. The most potent instrument of

control of activities is the licensing process which will be informed by a number of 'material considerations' of which the Marine Spatial Plan is just one.

A key GES descriptor of relevance to marine renewables is GES 7. This states that any permanent alteration of prevailing hydrographical conditions resulting from human activities does not have an adverse effect on coastal and marine ecosystems. The extraction of wave and tidal energy has clear implications for the hydrographical regime. A full description of the GES 7 characteristics state that:

"The nature and scale of any permanent changes to the prevailing hydrographical conditions (including but not limited to salinity, temperature, pH and hydrodynamics) resulting from anthropogenic activities (individual and cumulative), having taken into account climatic or long-term cyclical processes in the marine environment, do not lead to significant long term impacts on those biological components considered under Descriptors 1, 4, and 6."

The proposed UK targets/indicators for Descriptor 1 (biodiversity); Descriptor 2 (food webs); and Descriptor 4 (sea floor integrity) are specific and SMART. The target/indicator for hydrographical conditions is less so stating that:

*"All developments must comply with the existing regulatory regime and guidance should be followed to ensure that regulatory assessments are undertaken in a way that ensures the full consideration of any potential impacts, including cumulative effects at the most appropriate spatial scales to ensure that GES is not compromised"*³²

The consultation document explains that this target is chosen "...because there is currently high confidence in the robustness of the existing licensing regime in ensuring significant negative impacts on hydrographical conditions are appropriately considered. The proposed target reflects the fact that **we expect to achieve GES under current licensing regimes.**" (Author's emphasis)

The most serious single obstacle to integration and sustainability is probably the 'political process'. Ehler and Douvère³³ gave a widely quoted definition of marine spatial planning:

"...Marine spatial planning is a public process of analysing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives usually specified through a political process..."

In this respect the 'Governance' regime is most influential. The WP6 Governance Analysis will report on each case study in 2013. Few things are more political than the debate about marine renewables concerning as they do, fundamental questions about energy security, climate change and the role of the state. The emerging industry is heavily subsidised with, for example, wave and tidal development attracting more than five times the subsidy applied to onshore wind. Sharp divisions are apparent between proponents of renewables and proponents of a revived fossil energy regime based on gas. Widespread use of hydraulic fracturing methods (fracking) might make such a gas policy feasible.

³² MSFD Consultation - UK Initial Assessment and Proposals for Good Environmental Status, UK and Home Nation Governments, London; March 2012

³³ Ehler, C. and Douvère, F., 2007. Visions for a sea change (report of the first international workshop on marine spatial planning, Intergovernmental Oceanographic Commission and Man and the Biosphere Programme), UNESCO, Paris.

7.5 *Reflection on MESMA*

Reflecting on MESMA and the PFOW Case Study highlights three areas of conclusions

1. **The lessons of the case studies**
2. **The role of MESMA and the MESMA Framework**
3. **Unanswered questions in the PFOW Plan**

7.5.1 The lessons of the case studies

From the outset of MESMA the CS2 team have emphasised the role of the PFOW study as a source of evidence about what is happening in practice. The PFOW case study emphasises the huge diversity in the subject of marine spatial planning and the difficulties of deriving a generic European approach to the discipline at this stage in its development. There are fundamental differences in the use and conservation needs of each area and deep contrasts in the relationships of the various European nations to their marine environments and the ways they are governed. The United Kingdom and Germany, for example, make far more industrial use of their waters than, say Spain or Greece³⁴. A common factor is the Marine Strategy Framework Directive but, here too, it is for nation states to decide on implementation measures.

We think that the Pentland Firth and Orkney Waters plan is a very important case study because it represents a relatively undeveloped marine area under intense and immediate pressure of development from marine renewables. A detailed plan is under preparation which will be used to inform the various decision making institutions for sectors such as fisheries, shipping, conservation and new activities. In Scotland, marine spatial planning is a process in which the Marine Spatial Plan plays an integrating role by identifying 'issues' and their overlap. However, the Plan is not the deciding instrument; it is a statutory 'material consideration' in decisions made in a consenting process which is pragmatic in nature. Monitoring arrangements have not been yet announced but it is stated that ecosystem indicators will be measured as part of the MSFD/GES implementation procedures³⁵.

The overarching feature of the case study is pragmatism. The unknowns and urgencies of the competing objectives are mitigated by measures to ensure clarity in the planning framework aimed at decisions guided by policy. Two important elements of policy are:

1. Deploy and Monitor: A decision to proceed with the deployment of wave and tidal energy in parallel with monitoring to measure effects and guide future policy.
2. Multi-use of marine space: Exclusive use zones do not form part of current policy and plans. There is a policy of presumption of use in marine areas (including within MPAs) where each case is looked at on its merits. Defined areas will have assigned priorities and statutory management plans will be applied in some cases. Some examples are given in Box 2.

Box 2: Priority purposes in areas

³⁴ Webers H., The role of Maritime Clusters to enhance the strength and development of maritime sectors, Policy Research Corporation, Rome; 2008

³⁵ MSFD Consultation - UK Initial Assessment and Proposals for Good Environmental Status, UK and Home Nation Governments, London; March 2012

- Coastal SACs and SPAs with marine extensions: Multi use allowable but a statutory requirement not to allow harm to protected habitats and species.
- Marine Protected Areas: a policy of presumption of use in MPAs but may be subject to a statutory management plan.
- Marine Renewable Energy Array Safety Zones: Statutory provision for the declaration of safety zones around marine renewable installations which may exclude certain activities.
- Fisheries Management Provisions: Wide powers under CFP regulations but limited powers under inshore fisheries legislation to control fishing activity.
- International Shipping Lanes: Internationally agreed and monitored lanes for international shipping
- Public Rights to navigate and fish

7.5.2 The role of MESMA and the MESMA Framework

MESMA has provided a valuable investigative base from which to examine in detail the emerging practice of marine spatial planning in Scotland, and in the PFOW in particular. As well as specific tools (WPs 4&5) and the WP2 Framework, important outputs will be the Position Paper (D3.4); Comparison Paper (D3.5); and the WP6 Review of (Governance) Approaches (D6.2). These latter outputs will contrast emerging practice from all nine case study areas across Europe and identify what might be considered generic. At the outset of the programme, WP1 provided a foundation of existing knowledge to work from

The status of the PFOW as a 'Marine Energy Park' under current and immediate pressure from development has made it good study of new governance approaches in coastal waters. It is, therefore, the WP6 Governance Analysis which has proved most valuable in seeing how one national government has responded to making decisions between so many competing objectives of ecosystem management, economic growth and social responsibility. Detailed analysis will be published with the D6.2 review next year but it is clear that governance tends to a 'top-down' approach with subsequent consultation.

The MESMA WP2 Framework is another important output. It has not been easy to apply to the PFOW Case Study because the PFOW Plan is under preparation. However, two runs of the Framework have been populated with PFOW data and, as noted in Section 2 above, there are good areas of fit between the actuality of the PFOW Plan process and the MESMA Framework concept. The main logic of assessment, objectives, pressures, indicators, monitoring and adaptation are the same. However there are differences in the definition of marine spatial planning as broad pragmatic network in the PFOW Case (Fig 2), and a Marine Spatial Plan as a complete entity envisaged in the MESMA Framework. There are places where the MESMA Framework could be used in the PFOW Case but it does not address the same range of interests.

7.5.3 Unanswered questions in the PFOW Plan

There are several as yet unanswered questions about the PFOW Plan which are to be expected because the Plan is not yet complete and it faces a rapidly changing set of conditions in the area. The basic framework of planning and governance is taking shape and the supporting legislation has been enacted. The programmes of measures and institutions to implement the MSFD and achieve GES are well advanced. It can be seen how the ecosystem objectives of the statutory Marine Policy Statement might be implemented and monitored. The spatial plan itself is past the halfway mark to completion.

However, it is less clear how the high level socio-economic and cultural objectives, and especially the cultural objectives, of the MPS (Box 1) are to be implemented and measured. Consider the example of HLMO 9 that there should be: “...equitable access for those who want to use and enjoy the coast, seas and their wider range of resources and assets and recognition that for some island and peripheral communities the seas play a significant role in their community.” Another area lacking clarity is the relationship between marine planning and terrestrial planning which is also fundamental to the interests of the coastal communities.

The most significant element in the PFOW Plan preparation, the Main Issues Paper, will be published in March 2013. This will also start the formal process of consultation. At the same time, some of the consenting applications for marine renewables will be approaching the critical point of decisions being made. These actions may start to answer some of the, so far, unanswered questions in this new and rapidly developing area of activity.

As far as zoning is concerned, the overarching conclusion from the PFOW Case Study has been the need to retain flexibility to adapt to individual cases. The high numbers of unknowns combined with the urgency of objectives have resulted in pragmatic policy led solutions. Multi-use is planned with no exclusive use zones. A similar conclusion was drawn in the case of the Shetland pilot marine spatial plan published in 2008 saying:

*“The Shetland Marine Spatial Plan brings together authoritative spatial data on the marine and coastal environment and its various uses. It establishes an overarching policy framework to guide the placement of activity, from marine renewable energy to aquaculture. This Plan is not prescriptive about what can occur where and when in specific areas of the Islands. Rather it demonstrates what is occurring where and when, and clarifies the distribution of planning constraints and important assets that require safeguarding.”*³⁶

³⁶ A Marine Spatial Plan for the Shetland Islands, Part One: Policy Framework, NAFC Marine Centre, Scalloway; 2008

8 Synthesis report for the Barents Sea Case Study

8.1 *Description of CS*

The Norwegian Integrated Management plan for the Lofoten – Barents Sea area (hereafter the Barents Sea plan) covers approximately 1,4million km² of the Norwegian EEZ and the Norwegian Fisheries protection zone around the Svalbard archipelago. It is bordered towards the coast by the coastal baseline (outermost scurries), in the east with the border with Russia and to the west by an administrative border following the base of the continental shelf.

The Barents Sea plan is a comprehensive and integrated marine spatial plan covering all ecosystem components and all human activities in the area, even extending to how human activities outside the plan area (eg. Land and coastal) affect the plan area. Zoning is limited to petroleum and shipping in addition to various levels of marine protection. For petroleum activities the zoning designates areas where activities are allowed, not allowed or allowed under stricter conditions than normal. IMO approved shipping lanes (traffic separation scheme) constitute the zoning for shipping. So far no systematic assessment has been made of which marine habitats in the Barents Sea–Lofoten area are to be classified as endangered or vulnerable. MAREANO, a cross-sectoral programme to develop a marine areal database for Norwegian waters, has been set up to conduct more thorough surveys of the seabed, including vulnerable benthic communities. In the period 2005–2010 the programme concentrated mainly on the northern areas. Moreover, as part of the changeover to ecosystem surveys by the Institute of Marine Research, the monitoring of benthic fauna at certain sampling stations has been started. The above monitoring and survey activities will provide a much sounder foundation for deciding on measures to prevent further damage to vulnerable marine habitats, and on which areas should be closed to fishing with certain fishing gear or to other activities that could damage these habitats.

The Government has taken the initiative for a new mandatory routing and traffic separation scheme for maritime transport about 30 nautical miles from the coast. The Government also stresses the importance of a cautious approach to the expansion of petroleum activities in the Barents Sea–Lofoten area. On the basis of an evaluation of the areas that have been identified as particularly valuable and vulnerable and an assessment of the risk of acute oil pollution, the Government has decided to establish a framework for petroleum that prevent activities in several of these areas. This framework will be re-evaluated on the basis of the information available each time the management plan is updated. In 2010 it was decided to maintain the closure and continue mapping and monitoring seabirds and seabed to gain more knowledge.

Application of MESMA tools

Application of FW and tools:

Within MESMA, the Barents Sea case study has especially focused on applying WP2 and WP6 frameworks/ guidelines for monitoring and evaluation of the case as part of WP3.

Within WP2

The Barents Sea area a management plan has been in place since 2006. In 2010/11 the management plan was revised based on a state assessment including new information gained in the period 2005-2009. We have been using two approaches when applying the MESMA FW. These two approaches involve different scales and available environmental data.

1. Assessing the whole Barents Sea management area following the approach in the FW from step 1 to step 7. We have used the background data that was available when the management plan was developed in the first steps and the evaluation and revision of the plan in 2010/11 in the later.

2. A detailed assessment of an area of 70 000 km² where bottom environment and fauna has been mapped by MAREANO to fill knowledge gaps that was identified in the Barents Sea management plan. This area, which was closed to petroleum activities while gaining new knowledge before a revision of the management plan, was prioritized for mapping by the government.

For the assessment humane activities and ecosystem components were mapped using a grid size of 5 x 5 km. Based on the collided information of humane activities pressures were estimated and were together with the sensitivity of ecosystem components quantified to produce impact maps.

Within WP6

The governance analysis is currently not completed, but the WP6 framework has presented us with new perspectives and research questions to ask. The structured approach in evaluating the drivers, policy and legal setting, incentives etc. has also been useful in structuring the analysis of a complex governance situation. The MSP initiatives are analyzed in the context of its “institutional landscape”. These institutions represent the complexities of participation, conflict management and implementation processes. Analysis of the institutional landscape and the influence of MSP on these institutions are necessary to gain an understanding of the options for MSP and the development of “good practice” for MSP processes. The rich contextual institutional analyses of governance issues through case studies are complementing the MESMA framework.

Within WP4

GIS- Used to overlay data from all necessary factors collected under WP2.

VMS- Vessel Monitoring Satellite systems was used to quantify fisheries intensity.

Mapping Seafloor- Using visual observation for sensitive and threatened benthic megafauna.

8.2 Administrative boundaries

The BSMP is the first of three regional management plans that Norway has started developing for its EEZs outside of the coastal baseline. The Barents sea plan was developed from 2002-2006, passed in parliament in 2006 and revised in 2010. Currently Norway has a second management plan in place for the Norwegian Sea and one for the North Sea – Skagerrak under development (due in 2013).

Development has been led through a hybrid top-down process steered by the government through an intern-ministerial steering group tasking three working groups (Management Forum, Monitoring Group and Risk Forum) to report on an annual basis and prepare background reports for the revision. This structure has led to higher integration of the sectoral ministries and underlying institutions although management decisions for each sector still remains within each sectoral ministry/directorate.

The BSMP includes zoning plans for petroleum and shipping, while there is no zoning plan for fisheries - current largest user of the area. This is due to both historical rights of fishing in all sea areas, but also because fisheries are in parts regulated in a spatial manner within its sectoral ministry/directorate.

8.3 Key Drivers

Key drivers for starting the Barents sea integrated plan were both an international move towards developing ecosystem-based marine management (e.g. North Sea Ministerial Conferences, Johannesburg declaration) as well as a national economic push to open new (and promising) sea areas to petroleum activities.

Norway's integrated management plan for the Barents Sea has had as a main goal to achieve better integration of the sectors. Structures such as a multi-ministerial steering group, management forum, risk form and monitoring group have all brought key decision-makers and managers from all sectors together for discussing common topics. Still, most of the management is sector-based with each ministry still making decisions within its own sector, but the change now is that it has to be coordinated and the other

ministries have to be informed and get to voice an opinion. Also, the objectives of the plan have changed the way of work and priorities within the sectoral ministries.

Achieving sustainability through sustainable human uses is one of the main goals of the Barents Sea plan. It is thus not only a nature-protection plan, but a plan which allows and promotes human activities. The main discussion is what can be defined as sustainable, especially in relation to managing the risk of disasters associated with shipping and petroleum production.

8.4 Progress and obstacles towards sustainability

Progress: The management plan as adopted in 2006 stated that there were serious gaps in the knowledge of the conditions of the seabed and seabird populations. As part of the implementation of the management plan the government initiated two mapping and monitoring programs: the MAREANO (seabed mapping) and SEAPOP (seabird mapping and monitoring) programs to systematize and improve knowledge about the Barents Sea. The objectives for the MAREANO program was to develop a marine areal database for Norwegian waters and conduct seabed mapping to increase knowledge of the ecologically important benthic communities such as coral reefs and sponges and the condition of the seafloor including pollutants. This seabed mapping was focused to the particularly valuable and vulnerable areas that was identified in the management plan and closed to petroleum activities. Thus, the plan clearly affected what areas to prioritize when more information on ecosystem components was needed. This new information was later to be an important part of the background for the revision of the management plane in 2010/11 and the decision to keep certain areas closed to petroleum activities.

Extensive monitoring and research has been going on in the plan area for decades but the establishment of the Barents sea plan has changed the focus of the monitoring as a new intergovernmental group on monitoring the state of the marine ecosystems has been set up to report annually to the inter-ministerial steering group governing the plan. Actual monitoring activities have thus become more integrated, e.g. by creating ecosystem surveys monitoring the state of all ecosystem components each autumn. Such integrated surveys complement component specific monitoring and are analyzed and evaluated jointly.

Obstacles: The development of the management plan was motivated by the need to reconcile different concerns and needs. The most significant conflicts in the plan area are between the petroleum industry, the fisheries, and the need to protect the marine environment. Also marine transportation represents a potential risk to the environment and fisheries in the event of accidents. There are a number of measures that are aimed at reducing conflicts and reconciling differing concerns. Primarily, the plan and its implementation is born out of the need to address potential conflicts as the petroleum industry moves north into areas where its previous presence has been marginal and therefore not much of an issue for other industries or interests. Secondly, an important aspect of the plan is that it addresses the total impacts of all activities and external influences on the marine environment. This creates a foundation for informed action to reduce potential conflicts and reconcile different interests. Third, a number of the measures in the plan explicitly address the need to reconcile interests, as for example the limitation placed on the activities of the petroleum industry in time and space. Also, the various knowledge-related activities are aimed at establishing an informed basis for making such decisions. Fourth, the institutional measures are designed to assist in addressing real and perceived conflicts. The three working groups all have broad representation from agencies representing all the interests that are likely to be affected by conflicts. The Reference group allowed for participation of all stakeholders in the plan process and its continual development, however this group was disbanded following the 2011 revision. Also, the inter-ministerial steering group has representation from all relevant ministries, providing for a process in government where all sorts of concerns can be addressed. Finally, the plan is adopted by a genuinely political process at the highest level in government where environmental concerns, the needs of the petroleum industry, the concerns for the long-term income brought by the petroleum sector to the country, the needs of the fishing industry as well as foreign policy concerns are brought to the table and weighed against each other. The final step in decision-making is the adoption of the plan by the Storting, bringing the ultimate political authority.

8.5 Reflection on MESMA

Positive experience with the framework

Through applying the MESMA framework on the BSMP several clear possibilities for improvement of the process related to the Barents Sea management plan, implementation and revision. The most important of these are:

- Need objectives linked to indicators defined through a comprehensive scientific process. MESMA clarified that a thought-through MSP planning process by advocating that there should be a natural progression from objectives to indicators of state and pressure. In the Barents Sea case there are only official indicators for ecosystem state and these were developed independently from the development of the objectives. This has led to difficulties in reporting and follow-up on the achievement of the objectives as many of them are difficult to measure.
- BSMP groups need mandate to suggest management actions to remedy failures of objectives
- Ministries and directorates should be charged by government to follow up on failures of objectives in a better way
- More openness.

The central message here is that although the BSMP has come a long way in integrating sectors in Norway much still remains in terms of integrating management actions across sectors. Also MESMA has identified the need for comprehensively developing objectives and indicators, not just for ecosystem state, but also for pressures.

The MAREANO seabed mapping project has shown the value of high-resolution knowledge to identify habitats and human impacts (eg. Trawl marks). This shows the potential of managing human activities in higher resolution thereby allowing for both a reduction in negative impacts and finding areas suitable for human activities – a win-win situation for both conservation and sustainable use.

Weaknesses in the MESMA approach

There has been a lack of interaction between the many WPs in MESMA and as a result the deliveries from the cases (WP3) related to the different steps in the FW produced in WP2 has not related to the other WPs (WP1, WP4, WP5 and WP6). Most of the tools needed were available mainly as suggestions and examples in the manual for the FW and not in the WP4-tool box.

As an example the tools and methods for pressure and impact analysis were available only as suggestions in the manual with different tables and categories as examples. However, the terms and tools were not consistent or clear and the suggested methodology on how to quantify and accumulate pressures, based on available information of humane activities and sensitivity of ecosystem components to these pressures, was not transparent. This is most likely because scientific knowledge is still lacking to allow for a detailed analysis based on quantifying and adding up specific pressures from different humane activities and the sensitivity of different parts of the ecosystem to these pressures to produce impact maps. Thus, to complete this delivery following the FW we have had to fill in gaps by developing tools that was fit to our case but that are not based on scientifically proven causality.

9 Synthesis report for the Celtic Sea case study

9.1 Description of CS

Introduction & geographical area

The Celtic Sea CS focuses on Finding Sanctuary, a stakeholder-centred MPA planning tasked with delivering recommendations to the UK Government on the location, boundaries and conservation objectives for Marine Conservation Zones (MCZs) in south-west England. MCZs are a type of MPA designation required under national legislation, the Marine and Coastal Access Act (2009), and together with other types of designation (including Natura 2000 sites) will contribute to the meeting of national obligations under the MSFD. Finding Sanctuary delivered its recommendations in September 2011. Since then, they have been reviewed and commented on by England's statutory nature conservation bodies, and passed to Defra (the responsible Government department), whose minister will designate MCZs in 2013, following a public consultation. It is very unlikely that all the recommended sites will be implemented in 2013.

Finding Sanctuary's planning region encompassed the coastline of England's south-west peninsula and 93,000km² of the surrounding territorial sea and UK Continental Shelf area

Zoning plans

There is no single, integrated, multi-sector zoning plan for the region, as different sectoral activities are managed separately. There are many types of spatial restrictions and regulations in place within the region, many of which overlap (especially inshore). They include:

- 46 relevant existing MPAs, most of which are small, coastal sites. They consist of Natura 2000 sites, and Sites of Special Scientific Interest (SSSIs – a national designation).
- Spatial restrictions on fishing (fisheries management measures)
- areas licensed for the development of offshore windfarms
- areas licensed for disposal of dredged material
- areas licensed for aggregate extraction
- shipping lanes / traffic separation schemes

Maps showing the Finding Sanctuary area with the boundaries of the recommended MCZs and existing MPAs (including Natura 2000 sites) are included at the end of this document, and are also provided as separate PDF files. They are listed at the end of this document.

Application of MESMA tools

The operational objective for this case study is the designation of a configuration of MCZs in south-west England as part of an ecologically coherent UK MPA network. The process of planning and implementing MCZs is on-going: at present, no decisions have been made on which sites will be designated. Because of this (and other reasons), we have found the MESMA WP2 Framework difficult to apply to this case study (see the report from the first run of the framework, available on the MESMA sharepoint³⁷). We have not carried out a second run because the obstacles that prevented the completion of the first run remain unresolved.

A detailed Governance analysis of Finding Sanctuary is being carried out using the WP6 Governance analytical framework, which will also include some analysis of the on-going MCZ process since the end of Finding Sanctuary.

³⁷ the relevant folder is WP3 case studies/Case Studies Folder/Celtic Sea /Feedback on WP2 framework_Celtic Sea

9.2 *Administrative boundaries*

The study area spans across several administrative boundaries, and there are additional relevant boundaries within the adjoining terrestrial region, as well as offshore boundaries which form the study area boundary. The administrative boundaries complicate the implementation of MCZs in a number of ways. The most significant complication is posed by the EU Common Fisheries Policy (CFP), which significantly complicates the implementation of fisheries restrictions for nature conservation purposes in MCZs beyond six nautical miles (because non-UK vessels have grandfather rights up to the six nautical mile limit within the Finding Sanctuary region).

In terms of monitoring and evaluation, the administrative boundaries pose less of a problem. However, they do require several agencies to work together in order to deliver the most effective monitoring and evaluation strategy possible. At this stage, it is not entirely clear how the monitoring and evaluation process will work in detail (in part, because site designation and conservation objectives have not yet been decided upon). The following lists describe some of the administrative boundaries within the region and the significance they might have for future monitoring and evaluation.

Territorial Seas limit (12 nautical miles from baseline):

This marks the boundary between the remit of the JNCC and the NE as responsible statutory advisory bodies. Natural England's remit extends to 12 nautical miles, while the JNCC's covers offshore waters.

Under section 124 of the Marine and Coastal Access Act (2009), the responsible Secretary of State has to report to Parliament every six years on the state of MCZs, and whether or not conservation objectives are being met. He/she can task the statutory nature conservation bodies with monitoring the sites – so, in effect, Natural England and JNCC will be responsible for monitoring and reporting on the status of MCZs on a six-year cycle.

At this stage, MCZs do not yet exist in any other form than as sites recommended to Government. Nevertheless, the two organisations have already worked together to split those recommended sites that straddle the 12nm boundary between them in terms of their responsibilities (at this stage, this means leading on the formal delivery of the recommendations to Government, and advice packages on any sites that get designated).

When it comes to monitoring and evaluating sites, they will co-ordinate their activities with each other and other organisations (Government organisations, NGOs and academic organisations) through the UK Marine Monitoring and Assessment Strategy ([UKMMAS](http://www.defra.gov.uk/environment/marine/science/ukmmas/)³⁸).

Six nautical mile limit:

This boundary is significant for site implementation, as it marks both the limit of responsibility for Inshore Fisheries and Conservation Authorities (IFCAs - who are responsible for management and enforcement of inshore MCZs, while the Marine Management Organisation is responsible beyond six nautical miles), and the limit of autonomous fisheries management (there are non-UK vessels that have historic rights to fish between 12 - 6 nautical miles in south-west England, so any fisheries restrictions in MCZs beyond 6 miles need to be implemented through the EU's CFP). It has less immediate impact on site monitoring and evaluation.

IFCA districts:

IFCAs are responsible for managing and enforcing inshore waters within 6 nautical miles. There are several IFCAs whose districts fall fully or partially within the Finding Sanctuary region, so IFCA district boundaries are another administrative boundary with significance for MCZs. They are unlikely to have much direct relevance for site monitoring.

Relevant administrative boundaries beyond the study area:

There are several other administrative boundaries of relevance for the case study, though they do not specifically impact on monitoring and evaluation of MCZs. The England / Wales median line, England /

³⁸ <http://www.defra.gov.uk/environment/marine/science/ukmmas/>

France median line and UKCS limit all form part of the boundary of the case study area. There are several counties and unitary authorities (local government areas) within the south-west peninsula, whose coastlines lie alongside the FS area.

9.3 *Key Drivers*

The reason that the MCZ process is happening is because of the requirements of the Marine and Coastal Access Act (2009). The MCZ requirements under this national legislation will form a contribution to meeting MSFD requirements, and this piece of European legislation can also be seen as a driver.

The drivers behind the decisions taken during Finding Sanctuary's planning process are more complex:

- Environmental criteria (i.e. a practical interpretation / application of the requirements set out in the Marine and Coastal Access Act)
 - Policy guidance from the Department for Environment, Food and Rural Affairs (Defra), setting out the broad design principles for the MPA network of which MCZs will form part (e.g. [this guidance document](#)³⁹)
 - Detailed MCZ design guidelines produced by the statutory nature conservation bodies (see [here](#)⁴⁰) which specified the ecological criteria that the MCZ recommendations had to meet (this document was a key driver in stakeholder discussions, because it was provided as a benchmark against which their work was assessed during the process). This guidance was driven by the broader principles in Defra policy guidance.
- Socio-economic concerns. These were very important drivers throughout the stakeholder work and had a great deal of impact on the shape of their recommendations. Particularly strong drivers were:
 - An attempt to minimise negative impact on fisheries by avoiding heavily fished areas for MCZs. Because of a great degree of uncertainty over how MCZ designation might impact on different types of fishing activities, this was a complex driver. In general, there more pressure to site MCZs away from areas used for bottom-towed fishing, as it was assumed this would be less compatible with MCZs than static gear types. Several inshore recommended MCZs cover areas that are important grounds for static gear fishermen (e.g. using crab and lobster pots). These recommendations were made based on the assumption that the static gear fishermen will be able to continue with their activities, and may even benefit if mobile gears are restricted (through a reduction of gear conflict).
 - Concern about impact on the development of offshore wind farms. Because of a great degree of uncertainty over how MCZ designation might impact on wind farms, in general this led to pressure to select MCZ sites away from areas of interest for future wind farm construction.
 - Concern about impact on ports and activities associated with ports (including construction, navigational dredging, and dumping of dredged materials)

Other socio-economic considerations that were made during the shaping of the recommendations cover a wide range of activities. Some recommended sites (especially reference areas) had locations selected and boundaries adjusted to try and avoid submarine cable routes, or areas used as anchorages for recreational vessels. These considerations tended to be more site-specific than the key drivers mentioned

³⁹ <http://archive.defra.gov.uk/environment/biodiversity/marine/documents/guidance-note1.pdf>

⁴⁰ http://jncc.defra.gov.uk/pdf/100705_ENG_v10.pdf

in the above bullet points, which impacted on the shaping of the recommended network at a more generic level. Additional concerns were discussed relating to a range of other marine sectors and activities, including recreational angling. On the whole, however, it was assumed that these (low-impact) activities would be compatible with MCZs.

Since the end of the stakeholder process, there has been another driver, which has been ‘scientific evidence’, in that only MCZs which are underpinned by detailed scientific information (recent survey data on the distribution and condition of species and habitats within the site) are likely to be implemented in the near future. This driver is coming largely from Government, though it is most likely as a response from pressure from marine industry. If high levels of detailed evidence are required for sites to be designated, this will delay or prevent many sites from going forward.

9.4 *Progress and obstacles towards sustainability*

Progress towards integration of sectors and activities and towards sustainability considerations.

Whilst the MCZ process in itself is a ‘single-sector’ process (aimed at achieving conservation goals) the Finding Sanctuary project contributed towards multi-sectoral integration through the stakeholder group. As stated above, socio-economic considerations influenced the MCZ site selection and design considerably, during discussions in which a cross-section of maritime sectors were represented. This means that the needs and concerns of different sectors and interests were weighed against each other, and MCZs designed to ‘fit in’ as much as possible whilst meeting ecological criteria (based on the best available information, and within the time constraints of the project).

With the end of the Finding Sanctuary process, this cross-sectoral stakeholder platform is no longer in existence.

In the longer term, there may be some progress towards better integration of sectors and activities through marine planning being led by the MMO. This has not yet covered the Finding Sanctuary region, and such ‘integrated planning’ will unlikely affect decisions already made on MCZs and offshore wind farms. For more information, see [here](#)⁴¹.

It is difficult to assess the actual progress towards sustainability (particularly the environmental pillar of sustainability) at this stage. Although significant achievements have been made in delivering the MCZ recommendations and in involving a wide range of stakeholders in the Finding Sanctuary project, the project is only part of a longer-term national process to implement an ecological coherent network of MPAs in south-west England. It still remains uncertain as to when the recommended sites will be designated, and how they will be managed (i.e. which and how economic activities will be restricted). The degree to which the momentum generated through the Finding Sanctuary project can be sustained, and how it contributes to sustainability will largely depend on how major obstacles (see below) will be addressed. *Obstacles towards achieving integration and sustainability*

Since the Marine and Coastal Access Act (2009), the work of the MMO on marine planning has started to attempt better integration between different sectors and activities. The MMO’s marine plans are being developed region by region (regions within UK waters, that is), and have not yet been developed for the Finding Sanctuary area. The marine planning process is not linked to the MCZ process.

There are significant obstacles towards achieving environmental sustainability:

- In offshore waters, there are the practical obstacles posed by the CFP, both to effective fisheries management and to fisheries restrictions for biodiversity conservation purposes. For the MCZ process, it will make effective offshore MCZ management more complex. It is not clear yet whether a reformed CFP will contribute to more effective fisheries management in Natura 2000 sites and sites designated under national legislation.
- Industry pressure to maintain status quo / prevent restrictions on industrial activities

⁴¹ <http://www.marinemanagement.org.uk/marineplanning/about/index.htm>

- Limited political appetite to put strong environmental measures in place in the face of opposition from industrial sectors. It is likely that to some extent, it is this lack of political will that underlies the 'evidence-based policy' on designating MCZs mentioned under the previous question. This contrasts with the policy on industrial activities with unknown environmental impacts, e.g. new wave and tidal devices, where Government policy encourages a 'deploy and monitor' approach.

9.5 *Reflection on MESMA*

How and why did MESMA tools and methods (taken from WP1, 2,4,5 and 6) help you to answer the questions above in your CS.

The work carried out for the governance analysis to date has helped inform several of the questions. The analysis has helped us gain an understanding of the MCZ process in England (not just Finding Sanctuary, but also the wider on-going national process), helping to answer the question about administrative boundaries. The analysis of documents and stakeholder interviews done for the governance analysis has helped inform the questions on key drivers and progress towards sustainability.

10 Synthesis report for the Basque Country Case Study

10.1 Description of CS

Geographical area/surface/administrative boundaries

The local (Basque Country) political and socio-economic context is significantly different from that of the national context (Spain). The Basque Country is located in the most southern-eastern part of the Bay of Biscay. It has a surface area of 7,234 km². The designation of the Basque Country as an autonomous community dates back to the Spanish Constitution of 1978 and it is based on the Devolution Act of the Basque Country. The Devolution Act served as the basis for the development of Basque Country regional autonomy (2010). It established a system of parliamentary government which has responsibility over a broad variety of areas, including agriculture, industry, culture, health, tax collection, fishing in interior waters, policing and transportation.

The case study area for MESMA will be the entire Economic Exclusive Zone (EEZ) in front of the Basque coastline. The bio geographical boundaries should be taken into account to provide the basis for an ecologically significant management plan e.g. Bay of Biscay (BoB) but it is not affordable for this study: different countries bordering the BoB are not included in the MESMA project, different management strategies and difficulties in the implementation of integrated management plans. The management plans are implemented at the country level.

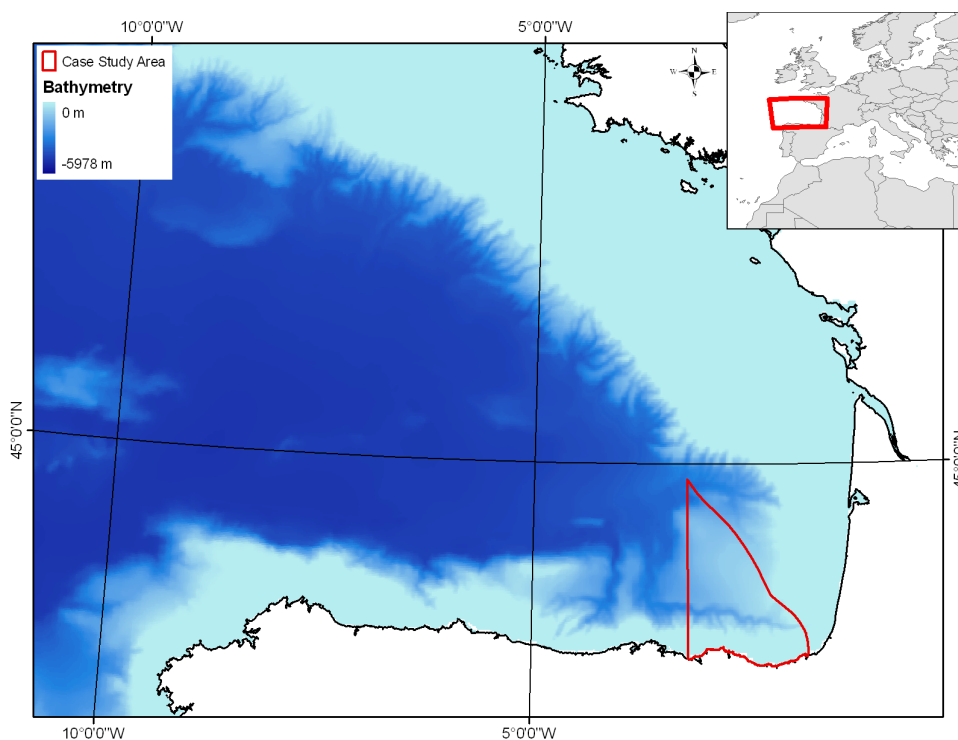


Figure 1. Case study location within the Bay of Biscay.

Current zoning plan, reflecting the complexity of the area

The Basque continental shelf is located in the southeastern part of the Bay of Biscay (see Figure 1), in the border between France and Spain. This case study is considered as representative of the eastern Atlantic area of the MESMA study area. The area shows some specific characteristics in terms of biodiversity and marine resources, but it also shares common human activities with other European regions. The Basque continental shelf is small in extent but human activity is intense and diverse. It is

characterized by holding some specific (or nearly specific) economic activities such as red seaweed extraction (*Gelidium corneum*). Moreover, new activities are foreseen to develop such as wave energy converter installation which may involve conflicting interests.

Currently, there is not a marine spatial planning/management in place. Most of the policy/regulations are sectorial, or at least, they just take into account one activity and, in most cases, there is not spatial boundary definition for these regulations. The main problems that could be highlighted are the different governance issues at local, regional and international level and the lack of coordination and iteration between different stakeholders' uses and interests in the marine environment.

The application of the FW was focused on the analysis of the interactions of the present management plans and the development of a new activity in the area. An exhaustive analysis of the administrative process of the implementation of the new activity has been analyzed, focusing mainly on the stakeholders participation and interaction.

The FW has also been used, to identify Ecosystem components and indicators in a spatial basis, that could be used to evaluate the effectiveness of the present management plan

10.2 Administrative boundaries

When administrative boundaries are in place, how does it affects/influence monitoring and evaluation of an SMA?

As it is described before, the case study is defined by the EEZ in front of the Basque country. It borders with France. It considers the Spanish administrative boundary and territorial sea. The area also includes the inner waters managed by the local government of the Basque country

The defined boundaries do not complicate the monitoring of the area but it has to be highlighted that a big difference in the amount of data and quality of information exists between the two administrative zones, both in terms of ecosystem components and human activities distribution and intensity. This makes difficult the evaluation of the SMA.

10.3 Key Drivers

As pointed out before, currently there is not an MSP process in force the BoB but there are some disperse initiatives that require managing the spatial component. Such initiatives respond to socio-economic and ecological drivers.

A combination of socio-economic and ecological drivers is seen in the case of the construction of the wave energy caption pilot zone (bimep), which is going to take place in one or two years from now. Socio-economic factors comprise the strategic development of technological knowledge and developing of livelihoods, bringing new stakeholders to the area and creating employment. Ecological drivers comprise fighting against climate change, by reducing emissions of CO₂.

Regarding national heritage conservation, declaration of 10 % of the area as protected area by 2012 is driven by a mix of ecological and socio-economic drivers; moreover, it is a legal driver for this objective. The development of offshore aquaculture (with a goal of up to 3,000 t of fish by 2013) is driven by a socio-economic driver that responds to the need to create new sources of income, employment and knowledge in the marine sector.

Drivers are not the same as goals/objectives!! Objectives can be ecological (i.e. protecting biodiversity), but the actual drivers to reach the goal can be economic.

10.4 Progress and obstacles towards sustainability

As identified in the WP6 analysis of the bimep case, there is no attempt to inter-sectorial integration in the BoB case. In bimep, the only official stage where diverse sectors are being approached occurs when the government branch is in charge of the decision to request (or not) an environmental impact

assessment request opinions on the potential effect of the project to the environment. The integration of diverse sectors related to a given marine area in the Basque Country, and in Spain, may require the devising of a MSP, where policies and management measures are revisited, stakeholder's roles could be defined, and administrative processes redesigned to eliminate overlapping and redundancies and means identified to prevent conflict or at least to minimize it.

The main obstacle for the integration of the diverse sectors and activities seems to be the lack of MSP in the BoB. Political obstacles may also arise in case spatial initiatives are carried out between waters under the jurisdiction of the Basque Country and those under the jurisdiction of Spain. Other obstacles are related to the conflicts that may arise when allocating space to diverse activities, which may conflict with other uses of the sea, especially those with a long tradition in a given area. It seems that conflicts with fishing activities, for example, will likely be the main obstacle in introducing new activities to a given marine area. However, as our governance analysis in WP6 shows, the experience with the bimep project shows that mechanisms can be found to compensate for the economic lose and that knowledge of fishers on a given area can be used in the decision making process.

11 Synthesis report for the Strait of Sicily Case Study

11.1 *Description of the CS*

The Strait of Sicily is defined as the part of the Central Mediterranean Sea comprised between the international waters off the African coast, the southern coast of Sicily and the waters surrounding the Maltese archipelago. It roughly coincides with the FAO Geographical Subareas (GSAs) numbers 15 and 16, plus a tiny part of the GSAs 12 (northern tip of the Egadi Islands) and 13 (Pantelleria Island).

Up to date, there is not any integrated zoning plan covering either the whole or a substantial part of the study area. The Strait of Sicily area holds very different human populations that heavily exploit a vast array of marine resources from ancient times. Therefore zones are defined not only by political boundaries and legal obligations, but also by traditional uses. Zones are also defined ad hoc for specific sectoral uses. As a result, several zoning schemes arise locally and often overlap.

The wider zoning scheme is provided by political boundaries. Territorial waters extend up to 12 nm from the shoreline and Malta has established an EEZ that expand up to 25 nm from the shoreline. The high seas are subjected to zoning for the exploitation of subsoil resources. In Italy establishes three wide zones (namely C, D and banned zone) which underneath most of Italian waters and a substantial portion of the high seas. Smaller zones are nested within zones C and D.

Navigation channels are also present due to the large volume of traffic through the area, which is necessarily crossed by the navigation routes between the Suez Canal and the Gibraltar Strait.

The zoning scheme for fisheries cover most of the area. The trawl-fishing zones are defined beyond 3 nm from the shoreline and between 50 and 1000 m depth. Zones close to the shoreline are open to traditional fishing, generally at less than 200 m depth albeit with seasonal noticeable exceptions like the dolphin-fish fishery.

Marine Protected Areas (MPAs) present a zoning scheme with 3 or 4 types of zones at a much smaller scale. There are 5 MPAs within the study area. An additional area excludes the exploitation of subsoil resources around MPAs. Fishery plans establishes additional zones to protect essential fish habitats, nursery grounds, protection areas around shipwrecks and artificial reefs. There are also a number of proposed Specially Protected Areas of Mediterranean Interest (SPAMIs) on a larger scale although they are not established yet.

Gas pipelines, electrical networks and submarine communication cables require buffer zones that form a network of linear strips zones where any activity interacting with the bottom is not allowed. Due to the geographical position of the Strait of Sicily, such network is dense and pervades the whole area.

Minor administrative zones are established in the coastal areas, notably those defined in the Local Management Plans (LMPs) that extend up to 12 nm from the shoreline. There are five LMPs in the Italian territory of the Strait of Sicily and seven in Maltese waters. Zones defined under two different Integrated Coastal Zone Management plans, as well as specific Beach Management Plans, are also present in Malta.

The application of the MESMA FW to the Strait of Sicily focuses on fisheries and nature conservation as they are specially relevant for EU policies. The use of MESMA FW and Governance Analysis prove particularly useful to analyze the feasibility of the MSFD objectives in the area. This is specially the case at present, since the whole area undergoes rapid change promoted by new external drivers.

11.2 *Administrative boundaries*

The main administrative boundaries in the study area are national jurisdictions, which define three main areas corresponding to Italy, Malta and the high seas. Minor administrative boundaries define zones of shallow waters within 3 nm from the shoreline and open sea waters up to 12 and 25 nm in Italy and Malta, respectively.

A more complex picture appears when considering the competent administrative bodies for the single sectoral activities. In this later case, there is a complex mosaic of competences that includes lags, overlaps, redundancies and conflicts.

In addition, sectoral approaches add further complexity to the study of the Strait of Sicily area because different sectors apply distinct criteria for zoning the study area, resulting in incoherent schemes.

The implementation of the MESMA FW to the Strait of Sicily is affected by the complexity of administrative boundaries in two ways. First, different national jurisdictions generates differences between the legal and administrative structures in Italy and Malta, plus those applied to the high seas. Second, the heterogeneity and complexity of administrative structures the information is fragmented, sometimes redundant or contradictory, difficult to reach and hardly available at times. Third, the overlapping of different sectoral approaches with competence on the very same matter generates lags and incoherence.

In summary, once data and documents are obtained, the lack of harmonization among them stress the difficulties of the FW tasks. This can be seen in the multiplicity of legal instruments, lags in data monitoring programs, heterogeneity of the data at hand, delay in the publication of fundamental documents, ambiguities in the available texts, and poor match between high level policy goals and management operative objectives. As a result, the implementation of the FW becomes demanding.

11.3 *Key drivers*

Key drivers are fundamentally of economic nature in the Strait of Sicily, and change rapidly. In the recent past, economic revenue drove industrial fisheries, navigation and tourism. Currently, EU directives have already become the main driver for fisheries and nature conservation through economic subsidies and penalties. In the next future, energy provision and security will probably become the main driver shaping the whole study area.

11.4 *Progress and obstacles towards sustainability*

In the Strait of Sicily CS, sustainability has a strong environmental component since prime economic activities, like fisheries or tourism, are based on the preservation of natural resources and values.

There is a substantial progress toward sustainability mostly driven by EU directives, particularly by the cross cutting inclusion of environmental considerations in other policies. Regarding fisheries and nature conservation, there has been important progress in the reduction of the industrial fishing effort and the enhancement of the environmental quality in order to meet sustainable levels. It is probably that, if such effort is maintained and enhanced, local resources will become sustainably exploited in the medium or long term. Open and highly mobile resources display a less optimistic trend due to the lack of coordination among countries and bodies over the relevant spatial scales, but integration is growing progressively, including the necessary engagement of the African countries in the process.

There are also factors strongly hampering the attainment of sustainability in the study area. The main difficulties are the weak diffusion of a culture about sustainability, the still remaining administrative disorganization, the predominance of top-down impositions against bottom-up initiatives in the management of the resources, and the asymmetry between the strength of opportunistic private interests and the long-termed collective ones.

The ratio between progress and obstacles becomes less optimistic taking into account a wider context and the external drivers. The prevalence of inadequate political actors, more concerned with short-term electoral constraints than long-term views, make difficult the genuine implementation of the policies in line with the inspiring principles. In this context, the irruption of exceptionally strong stakeholders can wipe out any interest on sustainability.

11.5 *Reflection on MESMA*

The MESMA tools and methods were useful in the analysis of the Strait of Sicily CS in several ways.

WP1 provided updated conceptual elements in a synthetic fashion that facilitated the introduction to the topics to be worked later on.

The WP2 FW facilitated the implementation of an interdisciplinary approach to sustainable management that would be otherwise complicated by the disparity of the fields involved, ranging from economy to social sciences and ecology. In such approach, necessarily wide, the FW helped in maintaining the process within feasible limits. The FW also provided objectivity and transparency to the analysis, as well as guidance to convey the findings to the public.

The WP4 allowed the comparison and evaluation of alternative available tools to carry out specific tasks.

WP5 brought new possibilities of information cataloguing and sharing, enhancing the consciousness about the value of available data and giving them a new potential for future uses.

WP6 GA gave us the tools for the assessment of fundamental factors, namely local stakeholder perceptions and the functional relationships between the distinct structures involved in the management of the area. Such elements provided the key to interpret the obtained results.

Maps

Several maps are provided along with this report, as separate PDFs. These maps were created by the Finding Sanctuary project, and have been extracted from the project's [final report](#)⁴², or have been taken from collection of maps created for the project's stakeholder meetings (accessible via the project's [website](#)⁴³). In addition to these maps, reference can also be made to Finding Sanctuary's iPDFs (these are available on the MESMA sharepoint⁴⁴).

The set of maps shown here has been selected to illustrate not just Finding Sanctuary's recommended MCZs, but also the diversity of regulations and voluntary agreements in place for different maritime activities in the region, and the lack of an integrated 'zoning plan'. It is not an exhaustive set of maps illustrating the full range of activities that take place, or of all existing regulations.

List of maps provided:

- Map FR_001: Shows the configuration of Finding Sanctuary's final recommended MCZs (at the scale of the whole region)
- Map FR_002: Shows the configuration of Finding Sanctuary's final recommended MCZs (zoomed to show a bit more detail for the inshore region⁴⁵)
- Map FR_003: Existing MPAs in the Finding Sanctuary area
- Map IWG_01: Shows, amongst other things, inshore areas licensed for dumping and development of renewable energy installations (note that the area of the planned extent of the Atlantic Array wind farm has been reduced since the creation of this map, though the licence area shown in blue hatching remains the same)
- Map IWG_02: Shows inshore fisheries restrictions in place at the time of MCZ planning (these are subject to change). Note that the Sea Fisheries Committee regions no longer apply, as the SFCs no longer exist since the IFCA's were created under the Marine and Coastal Access Act (2009).
- Map IWG_14: Shows shipping regulations (areas where there are traffic separation schemes in place)
- Map IWG_21: Shows the location of heritage wrecks, which have small exclusion zones around them
- Map OWG_01: Shows, amongst other things, offshore fishing regulations and voluntary agreements
- Map OWG_31: Shows some of the offshore areas utilised by the UK's Ministry of Defence

⁴² http://findingsanctuary.marinemapping.com/FindingSanctuary_FinalReport_14Sep2011.pdf

⁴³ <http://www.finding-sanctuary.org/>

⁴⁴ the relevant folder is WP3 case studies/Case Studies Folder/Celtic Sea /Feedback on WP2 framework_Celtic Sea

⁴⁵ Much more finescale, site-specific maps were also created by the project, they are in the final report (see link above)

12 Synthesis report for the Inner Ionian Archipelago, Patraikos and Korinthiakos Gulf

12.1 Description of CS

The Greek case study area is the Inner Ionian Archipelago, Patraikos and Korinthiakos Gulf, located at the central-western part of Greece. It has well defined spatial boundaries and is a semi-closed marine region, especially at the eastern part (Korinthiakos gulf) which has limited connectivity with open sea water masses. It includes coastal waters but also high seas and deep waters. It encompasses a great variety of habitats and species, including 10 NATURA 2000 marine sites and more than 25 Special Protection Areas for the conservation of wild birds (79/409/EEC). It hosts several endangered marine species such as the Monk Seal (*Monachus monachus*), the loggerhead sea turtle *Caretta caretta*, the bottle-nosed dolphin *Tursiops truncatus*, and the common dolphin *Delphinus delphis*. Enhanced anthropogenic activities occur both along the coasts of the study area and in offshore waters. Human pressures in the coastal zone include fisheries, urbanization, heavy industry, tourism, aquaculture, and shipping, while in offshore waters the main pressures come from fisheries and shipping. Growing conflicts exist among human uses and between uses (mainly fisheries and tourism) and nature conservation.

In relation to management plans:

- There is no integrated spatial management plan – only sectoral national and regional ones.
- Very general national plans for the development of urbanization, tourism, fisheries and aquaculture
- Detailed spatial management plan in the MPA of Zakynthos island (National Marine Park).
- Short description of your application of the FW/MESMA tools:

In the Greek case study, the FW/MESMA tools were used to evaluate certain existing sectoral plans that are in use or will be soon implemented in the area, identify gaps in basic knowledge that is vital for the decision-making under EBM, gain insight on issues related to MSP, and recommend appropriate initiatives to be implemented in the future. More specifically to:

- Investigate whether current management activities/initiatives are sufficient to reach GES as defined by MSFD.
- Investigate possible locations for the establishment of new marine Natura2000 sites, in order to fulfil legal obligations derived from the Habitats Directive.

12.2 Administrative boundaries

When administrative boundaries are in place, how does it affect/influence monitoring and evaluation of an SMA?

- The Greek CS study area is shared between five different administrative Regions or “Peripheries”. The implementation of the WFD in Greece gave to the Peripheries the jurisdiction and obligation to decentralize the decision-making and reduce the cost of water management and monitoring. The Peripheries usually follow the guidelines of the central government, but they have to implement the legal obligations at the regional level.
- Monitoring and Evaluation of the CS area should be organized on an interactive basis with stakeholders from the respective Peripheries. Seeking successful implementation of

recommended initiatives, and proceeding with suitable adaptations with regional authorities which should be thoroughly informed and take part in the process.

- Another issue raised in our CS is the jurisdiction issues over international waters and the implementation of monitoring schemes and specific management measures that need to be taken in order to manage ecosystem components spanning over both national and international waters (e.g. conflicts between international shipping and the protection of the endangered population of sperm whales and Russo's beaked whales). ACCOBAMS has already proposed the creation of an international High Seas MPA in the area, but it should be based on international cooperation to ensure proper establishment, viability and effectiveness.

12.3 Key Drivers

- As far as ecological objectives are concerned, key drivers are mostly in the form of legal obligations derived from the implementation of the Habitats Directive, the WFD, the MSFD and the EU Mediterranean Fisheries Regulation.
- As far as socio-economic objectives are concerned, key drivers are sustainable development of certain key human activities namely tourism and fisheries specifically in the form of lowering the level of unemployment and raising the GDP.

12.4 Progress and obstacles towards sustainability

Progress to sustainability

Although local stakeholders realize the importance for the development of management plans with sustainability considerations, the process is on a top-down level, and hence little progress has been achieved so far (see second point below). The need to establish relevant bottom-up mechanisms was underlined in many occasions.

Moreover, the ongoing reform of the Greek public sector had a negative impact on the management of the MPAs, as in every Region all the existing administrative bodies supporting the MPAs are merged bringing further dysfunctionality in the pre-existing problematic administrative structures.

Obstacles

- Lack of coherent and effective management plans.
- Lack of effective legislative framework to promote the development of management plans and regulate socio-economic activities.
- Very low cooperation between the local stakeholders and the central government, resulting to low compliance of existing management measures, which is also favoured by weak law enforcement.
- Collaboration between stakeholders is based only on common goals, thus only promoting their own economic interests. The latter also influences their perspective on sustainable development, which they define rather subjectively and according to their occupation.
- Insufficient role of central government, incompatibility of laws and lack of collaboration between stakeholders are obstacles in developing and implementing MSP, which should be introduced in a practical and understandable way.

- The socioeconomic effects of the establishment of MPAs are not well known, since they depend on many factors that are not easily managed.

12.5 *Reflection on MESMA*

How and why did MESMA tools and methods (taken from WP1, 2,4,5 and 6) help you to answer the questions above in your CS.

Experience gained through MESMA has been very valuable to the scientists involved. It has enabled better understanding of the EBM approach, underlining the necessity for an action-research-based process integrating socio-economic with environmental drivers, shedding light on the complex relationships that lie behind the general MSP process.

The FW has proven valuable in linking various components of the marine environment reflecting the underlying mechanisms of ecosystem structure and function with possible conflicts with socio-economic activities, highlighting weaknesses of the existing administrative structure arising from the lack of holistic management plans.

The application of MARXAN has further allowed investigating different scenarios compiling conservation needs with sustainable development of the relevant conflicting human activities. It has provided a platform for proposing further expansion of the marine Natura-2000 sites, in order to fill the gaps arising from obligations placed by the Habitats Directive in a systematic way based on solid scientific knowledge.

Also activities undertaken within the governance analysis that took place in the frame of our CS and particularly through the open interviews with key stakeholders, certain policy recommendations were drawn that can be summarised under three dimensions:

- Management Plans: Need for developing management plans for MPAs with clear guidelines, rules and penalties for the involved actors.
- Implementation measures: Most interviewees seem to believe that penalties and control mechanisms are efficient tools for managing MPAs.
- Involved actors: The involved actors have an important role for managing MPAs. All stakeholders suggest that the central government should develop mechanisms for supporting a network of MPAs sharing the same basic principles and objectives that should however be flexible enough to be adapted to local needs.

13 Synthesis report for the Black Sea Case Study

13.1 Description of CS

The Black Sea is isolated from the world oceans, and is only connected to the oceans via the Mediterranean Sea through the Bosphorus Strait, the Sea of Marmara and the Dardanelles strait. The large European rivers, the Danube, Dnieper and Don flow into the Black Sea (Figure 1). For this reason, the Black Sea is very vulnerable to pressure from land based human activity and its health is dependent on the coastal and non-coastal states of its basin. Six countries have a Black Sea shoreline: Bulgaria, Romania, Ukraine, Russian Federation, Georgia, and Turkey (Table 1). (BSC, 2012). Bulgaria and Romania are members of the European Union and Turkey is an accession state. The Russian Federation, Georgia and Ukraine have less intensive relations with the EU, although they all have a 'partnership and cooperation agreement' with the EU.

The Black Sea in Figures:		
Geographical Coordinates:	46°33' - 40°56'N and 27°27' - 41°42' E	
Drainage area	2 000 000	km ²
Total shoreline (without Sea of Azov shoreline)	4 340	km
Bulgaria	300	km
Georgia	310	km
Romania	225	km
The Russian Federation	475	km
Turkey	1 400	km
Ukraine	1 628	km
Area of Water Surface	432 000	km ²
River inflow	340,6	km ³
Water volume	547 000	km ³
Maximal depth	2 212	m
Salinity	18 - 22	pro mil
Average fresh water balance	3.7 - 441	km ³

Table 1: Black Sea in figures BSC, 2012



Figure 1: Geographical context Black Sea (www.worldatlas.com, 2012)

At present, the Black Sea Commission (BSC) executes management and ecological evaluation of the Black Sea waters based on a zoning plan (BSC, 2010). The Black Sea Commission has a strict organizational structure (Fig. 2), with the member states Bulgaria, Romania, Ukraine, Russian Federation, Georgia, and Turkey. The BSC appoints its executive director and the other officials of the permanent secretariat. The permanent secretariat is composed of nationals of all Black Sea states. Concrete activities and work of the permanent secretariat are based on the Annual Work Programs of the BSC and Strategic Action Plan for the Rehabilitation and Protection of the Black Sea (1996) which shall be elaborated in the next section (Fig. 3).

Human activities have changed the original land and sea ecosystems. Along the Black Sea coast chemical pollution from industrial discharge, particularly metal pollution in suspended matter in the water column, is a problem for input of detrital particles (Galatchi and Tudor, 2006; Yiğiterhan, 2011). Intensive chemical discharge via wastewater from ships (Ocak et al., 2004) and the influence of river inflow (Yiğiterhan, 2011) has also impact on the environmental Black Sea ecosystem. The number of fish species harvested in the

Black Sea decreased caused by the fishery management regimes that applied are not sustainable (Caddy et al., 2005; Uras, 2006).

In line with the maritime spatial planning (EC, 2010) the BSC aims to recommend the creation of processes that will stimulate the development of maritime activities, focusing on cross-border issues and benefiting strongly from Marine Spatial Planning (MSP) in a way compatible with the good environmental status of the seas as laid down in the Marine Strategy Framework Directive (MSFD) (BSC, 2010). The lack of protected marine areas and protected fish species can be added to the list of challenges for the Black Sea countries. To develop a network of marine protected areas in the Black Sea, the BSC has developed guidelines (BSC, 2010). The main functions of the BSC defined in the convention is to promote and make recommendations on measures to improve the implementation of the Convention (Fig. 3). Decisions made by the BSC are taken only in full consent of all Black Sea member States in which every state maintains its sovereignty on all issues (Vogel et al., 2012). This makes it hard to be decisive on cross-boundary issues as, every member can use his or her veto.

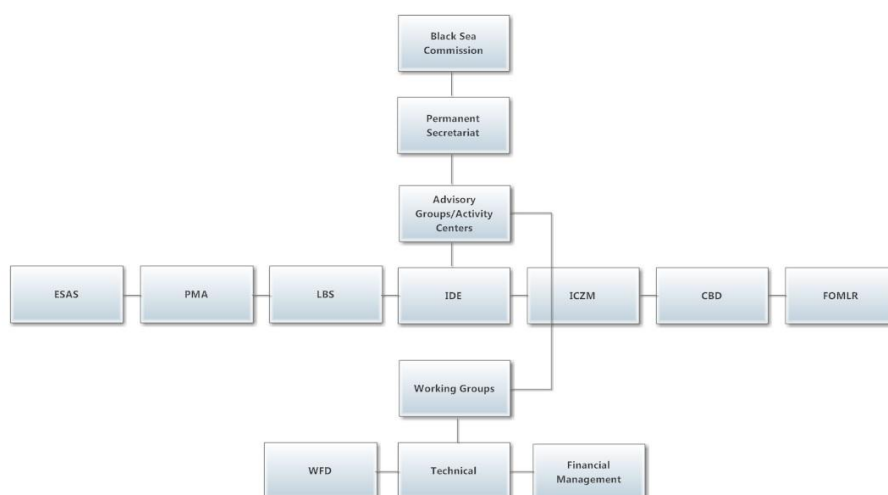


Figure 2: Organogram of the Black Sea Commission (BSC, 2012)

In 2009 the 'Sofia Declaration' was accepted recognizing the need to preserve the Black Sea ecosystem as a valuable natural endowment of the region (Fig 3) to ensure the protection of its marine and coastal living resources as a condition for sustainable development of the Black Sea coastal states, well-being, health and security of their population. Further, the 'Black Sea Action Plan' (BSC, 2009) provided that each Black Sea state had to adopt regulations and planning instruments for the need to establish a regional conservation strategy for protected areas.

The BSC member states share a common desire for the sustainable management of the natural resources and biodiversity of the Black Sea and recognize their role and responsibility in conserving the global value of these resources. However in the EU member states Bulgaria and Romania an extensive plan the 'Natural Habitats' (Natura 2000) is introduced to ensure biodiversity by conserving natural habitats and fauna and flora. Within Bulgaria and Romania an ecological network of special protected areas is being set up for this purpose. The network is given coherence by other activities involving monitoring and surveillance, reintroduction of native species, research and education.

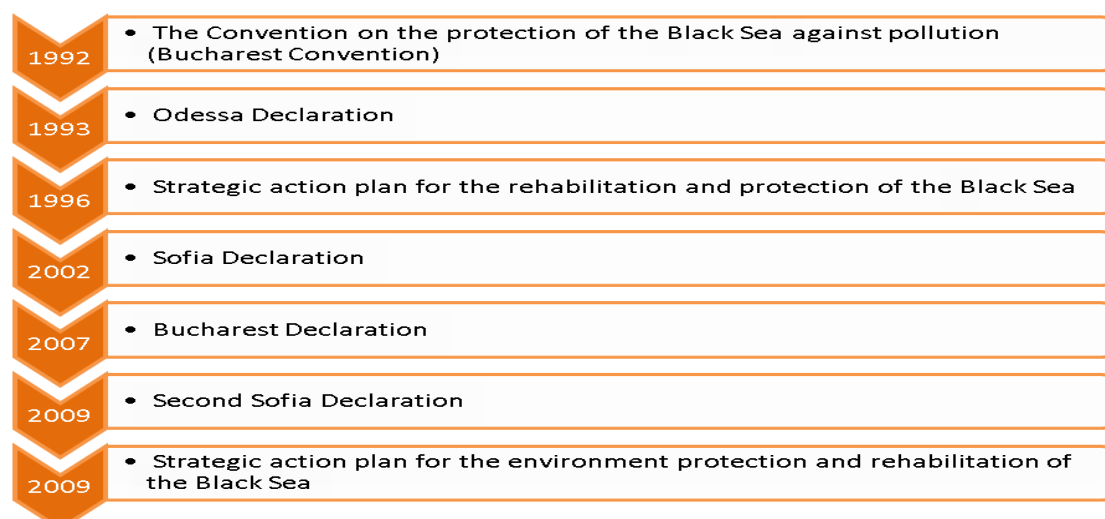


Figure 3 Timeline of declarations between the BSC member states

Application of the MESMA tools

At present, the planning, management and ecological evaluation of the Black Sea waters in Bulgaria are executed by the Black Sea River Basin Directorate (BSBD), which is subordinate to the Bulgarian Ministry of Environment and Waters. In Bulgaria the BSBD has developed the current Black Sea River Basin Management Plan, which is aimed at implementing the requirements of the WFD for all surface (including coastal marine waters) and ground waters in the Black Sea River Basin. Within the WFD the existing Black Sea River Basin Management Plan is achieving “Good ecological status” of all waters, including coastal marine waters by 2015. A list of ecological objectives are defined, among which those concerning the marine waters including reduction of contamination with organic matter and nutrients, prevention of contamination with oil products and priority substances, conservation of habitats and species. In the formulation of the Management Plan all national, regional and municipal plans, programmes, strategies were taken into consideration. Major pressures (especially land-based) are mapped, ecological monitoring and assessment are made and risk analysis is carried out to identify waters at risk to not achieve GES by 2015 (Oral, 2012). No information of Romania is available yet.

13.2 Administrative boundaries

The existing marine Management Plan in Bulgaria and Romania are spatially bound to the territorial waters (12 nm). However, there are activities and pressures such as shipping, fisheries, gas extraction/pipelines, invasive species and nature conservation which effects beyond the limits of the territorial waters. In addition, the Marine Strategy Framework Directive (MSFD) applies to all marine waters, seabed and subsoil where a EU Member State has and/or exercises jurisdictional rights, in accordance with the United Nations Convention on the Law of the Sea (UNCLOS). The national Bulgarian EEZ should be defined as the spatial boundary of the national Marine Strategy that has to be developed. The existing Management plan will operate until 2015. All EU member states pursuant to MSFD by 2015 at the latest, Bulgaria and Romania may implement their national Marine Strategy, including a programme of measures will be developed and good environmental status of marine waters shall be achieved or maintained by the year 2020.

For the Bulgarian Black Sea SMA in this case study ecological operational objectives have been defined and chosen for evaluation:

- Natura 2000; Maintain or restore, the natural habitats 1110 and 1170
- MSFD; Achieve good environmental status in Bulgarian Black Sea EEZ

In Bulgaria at present the marine Natura 2000 network of Sites of Community Importance encompasses 14 coastal sites including the marine area. The marine area covered by the network of sites is currently

limited to the 20 m isobath and is for the most part contained within the coastal marine waters with only one site extending towards the territorial waters. Due to fact that the sites were evaluated as insufficient by DG Environment of EC, the marine Natura 2000 in Bulgaria is currently under revision (Todorova et al., 2012) and will be extended towards open sea to cover larger portions of reefs (1170), sandbanks (1110), and the habitats of *Alosa spp.* (American Shad) and small cetaceans (sea mammals). No management plans exist yet for the marine Natura 2000 sites in Bulgaria.

The operational objectives of the Bulgarian Black Sea Basin Directorate Management Plan for the WFD are of very general character (Todorova et al., 2012). There are furthermore no quantitative targets set and easily measurable and verifiable criteria for monitoring of their achievement. Therefore the management performance and the effectiveness of measures cannot be evaluated.

The countries in the Black Sea region have transboundary issues (UNDP, 2007) that are described as insufficient public involvement, with poor legal framework at the regional and national level and inadequate implementation of available regulatory instruments. Moreover, it seems that the inadequate planning at all levels around the Black Sea cause inadequate financial mechanisms and fragmented scientific support.

The conservation of the marine habitats and species under the Habitats Directive is not adequately addressed in the existing management plan in Bulgaria (Todorova et al., 2012). The objectives formulated are not specific and measurable, and the measures are not targeted but practically copy the objective “conservation and maintenance of species and habitats of European importance”. It seems that no additional objectives (e.g. additional to good ecological status) have been identified for the protected areas: the shellfish protected areas, the bathing water areas or Nature 2000 sites.

13.3 Key Drivers

Also the Black Sea Member States existing policy driver is the influential ‘Convention on the protection of the Black Sea against pollution’ initiated by the Commission on the Protection of the Black Sea Against Pollution. Long term structural trends will influence the future. Demographics are a key driver, with potentially positive as well as negative effects.

In Romania and Bulgaria the key driver in MSP is the ‘Natural Habitats’ (Natura 2000) legislation introduced by the European Union to ensure biodiversity by conserving natural habitats and wild fauna and flora. In Bulgaria there is no clear link between the programme of measures taken and the pressures should respond to. Firstly the measures are mainly targeted to the sectors, but not to the substances responsible for the pollution (Todorova et al, 2012). Secondly, no analysis of the expected ecological effect of long term pollution is presented. Finally there is no indication of uncertainties in the effects of the measures taken. In general is unclear whether the measures taken are sufficient to tackle the pressures from all the sources were the majority of investments are allocated. It is not clear if there are dual conflicts in spatial planning of some sectors (e.g. tourism, fisheries)

13.4 Progress and obstacles towards sustainability

Progress

The BSC has on topics pollution monitoring and assessment discussions of advisory groups each one focal point of themes (e.g pollution, environmental safety, data exchange, fisheries), with a representative of the BSC member state, and one scientific expert. There is sometimes a dual role between the scientific expert, who is also the contact person from the ministry, which complicates discussions due to lack of knowledge (Vogel et al., 2012).

The lists of species of Black Sea importance and the species whose exploitation is regulated for further development are regularly updated. Mapping of habitats was undertaken (fish stocks, fish nursery grounds, spawning areas and sensitivity areas mapping), as a step towards designation of MPAs in the Black Sea, thus progress towards sustainability.

In Bulgaria for the WFD a high number of water bodies are subject to an extension of the deadline to achieve the objectives. In case of monitoring and status assessment the exemptions based on disproportionate costs are not verifiable. Firstly, there is a general statement that the total costs of the

Programme of Measures are compared with the overall (expected) funds available. Secondly, the underlying data and assessment for concluding on disproportionate costs is not available (Todorova et al., 2012). Finally, the exemptions based on technical infeasibility are not verifiable either. It should be clarified which are the technical reasons for applying these exemptions per water body.

Obstacles

The Black Sea Commissions makes work plans which explicitly describe what activities have to be done and which nations are responsible for it. However due to gaps in the international legislation between the Black Sea member states and poor coherence in policy, no conservation of natural habitats by the Natura 2000 and WFD can be made.

The Black Sea EU countries Bulgaria and Romania and the non-EU Members States relate to each other on subjects such as an EU representative for the Black Sea Commission. Next to this the EU has indicated that it wants to be a member of the Commission on the Protection of the Black Sea Against Pollution. However that is not yet possible, as only national states can be a member of the convention. Amendments should be made, yet that is not easy as there are different opinions about the EU joining and every country can use its mandate to veto EU partnership.

In Bulgaria current obstacles were published (Todorova et al, 2012) when implementing the MSFD in Bulgarian waters. In general, the financial commitment with the MSFD implementation is unclear. The BSBD Management Plan provides information on the estimated costs of measures and the expected financial resources. However, in Bulgaria there is not a clear commitment at governmental level on the funding allocated for the implementation of the programme of measures and thus there is no guarantee that this will materialized. Besides the obstacles towards achieving integration and sustainability in the implementation of the Bulgarian MSFD were summarized (Todorova et al., 2012):

Obstacles with measures:

- There are no clear numerical criteria to define the significant pressures on the marine environment and in most of the cases the expert judgement approach of the WFD was used to assess significance of the pressures due to point sources, diffuse sources, water flow regulation, morphological alterations or others.
- There is no clear link between the programme of measures and the pressures that are supposed to respond to. There is no indication of uncertainties in the effects of the measures taken, because there is no evolution step.
- No analysis of the expected ecological effect is presented.
- It is unclear which substance-specific measures have been taken for the substances responsible for achieving a good ecological status
- No specific measures for the conservation of the marine habitats and species were defined. The definition of the measure as “conservation and maintenance of species and habitats of European importance” is a copy of the objective definition so it is not clear how it will be achieved in policy.
- In development and implementation of plans, programmes and measures for the conservation and restoration of rare and threatened fish species, aquatic species and habitats the responsible are unclear.

Obstacles with pressures:

- No information is found on how agricultural point sources will be controlled.
- Monitoring data on pollutants and nutrients, the significance is defined based on expert judgment.
- It is not clear how the invasive species impact will be mitigated and how new introductions will be prevented.

- There is no information reported on monitoring of pollutants in sediments.

Obstacles with indicators:

- There are no indicators developed for assessment of the conservation status of the habitats and species of European importance. No monitoring data on the conservation status of protected habitats and species are available.
- There are no indicators developed for assessment of the status and impact of invasive non-indigenous species. Also no monitoring data are available on the invasive species.

Obstacles with the environmental status:

- There are no historical monitoring data related to biological and chemical elements and this is a reason for low confidence of the assessment of their status.
- The classification systems for the assessment of ecological status for all biological quality elements are not fully developed.
- The relationship between selected biological quality elements and pressures is not clear.
- There are no environmental quality standards for specific pollutants.
- There are no additional monitoring points for Natura 2000 sites.
- Due to the lack of knowledge and monitoring data, the confidence of the assessment of ecological status is generally low.

13.5 *Reflection on MESMA*

The complete WP2 Framework is analyzed and recently updated in the MESMA WP3 Case Study: Monitoring and evaluation of the Bulgarian Black Sea Waters (Schipper et al., 2011; Todorova et al., 2012).

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14 Synthesis report for the Östergötland County (sub-case study in the Baltic Sea)

14.1 *Description of CS*

The marine area of Östergötland County in Sweden is 2533 km². The marine area is divided by the three coastal municipalities of Norrköping, Söderköping and Valdemarsvik.

The municipalities are responsible for the physical planning and must, according to the Planning and Building Act, have a current comprehensive plan covering the entire municipality. The County Administrative Board cooperates with the municipalities and other governmental bodies by giving guidance, providing regional basic data for the municipal spatial planning, and reviewing the municipal comprehensive plans to ensure that they regard national and regional interests.

The comprehensive plan accounts for public interests as well as environmental and risk factors that should be taken into account when making decisions about the use of land or water areas. The significance and consequences of the plan have to be formulated in such a way that they can be understood without difficulty.

The following should be clear from the plan: the outline of the intended use of land and water areas, the municipality's view of how the built environment should be developed and be preserved and how the municipality intends to provide for the presented areas of national interest according to the Environmental Code and the environmental quality standards, if these affect the municipality.

The comprehensive plan constitutes the basis for the drawing up of detailed development plans and for the examination of permit applications. At least once during each term in office, the local council must determine if the plan remains current. The comprehensive plan is not legally binding for the authorities or individuals but is to give guidance when making decisions.

Regarding objectives relevant for MSP, one of the most important steering documents are the 16 Swedish environmental quality objectives. In addition to these there are regional environmental quality objectives contributing to the national objectives, and in some cases also municipal objectives. The municipal environmental objectives and the actions needed to reach the objectives are presented in the nature conservation strategies that complement the municipal comprehensive plans.

The MESMA framework has been used to review the current status of spatial management plans and nature conservation objectives for the marine area of Östergötland County, including identification of strengths and weaknesses of these. The output of the evaluation and gathered spatial information will be used in a Marxan analysis of the marine area of the County. The Marxan analyses will be carried out after August 2012, wherefore no information is now presented for step 7 of the MESMA FW.

A complexity map of national and regional sectoral interests in Östergötland County is shown in Figure 1.

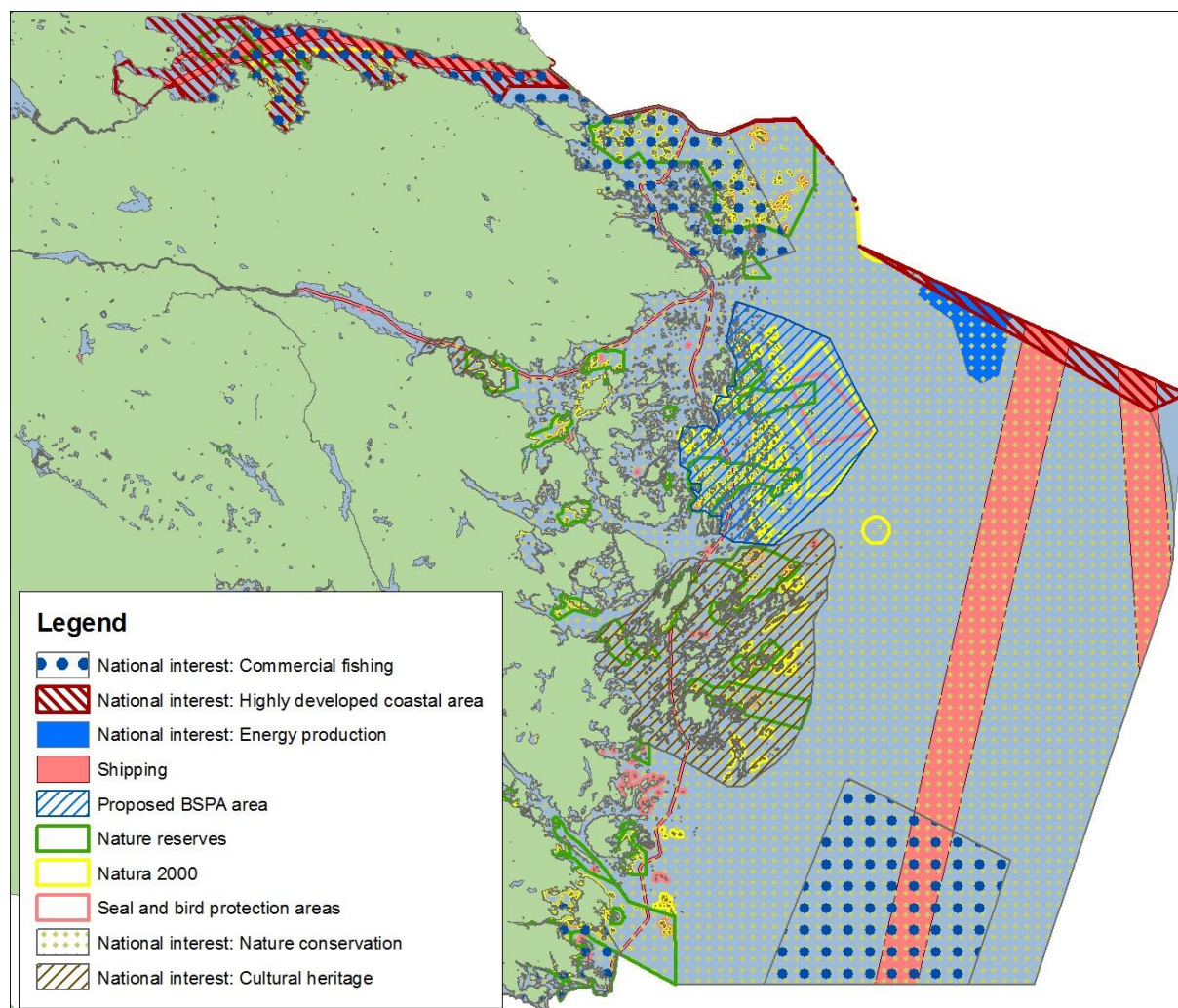


Figure 1. National and regional sectoral interests in Östergötland County.

14.2 Administrative boundaries

In Sweden the major levels for administrative boundaries are national, regional (county) and local (municipal). Objectives are top-down managed. For example, the national environmental quality objectives are a national steering document that has to be regarded in the development of regional environmental quality objectives. On the local level, both the national and the regional objectives have to be taken into account in the development of municipal specific objectives. Similarly to the objectives there are several types of areas of national interest that have to be regarded at regional and local level. However, it is the municipalities that are responsible for the development of comprehensive management plans, which are to be reviewed by the County Administrative Board to secure that they fulfil the national and regional interests.

In addition to the various levels for objectives and spatial planning, there is more than one document that is relevant for MSP in each municipality. All municipalities have a comprehensive management plan supplemented by other plans, such as a nature conservation strategy, a climate strategy, and/ or a wind power supplement. Naturally these plans are of various dates and thereby do not always match in time. A comprehensive management plan and a nature conservation strategy have been available for all three coastal municipalities (although one nature conservation strategy has not yet been adopted and two comprehensive plans are outdated), wherefore the evaluation has been based on these documents. Although the municipalities must determine if the comprehensive plan remains current have at least once during each term in office (every four years), two of the plans are outdated (from 1990).

In summary it has been complicated to get an overview of all these plans and objectives and to understand at what level the MESMA actions have been suitable to carry out.

Key drivers

The key drivers at the municipal level are:

- The obligations to follow the national and regional objectives (for example regard areas of area of national interest for the purpose of nature conservation, conservation of the cultural environment, outdoor recreation and commercial fishing).
- The needs for local business to create job opportunities balanced by sustainable use and conservation of natural, cultural and recreational values.

14.3 Progress and obstacles towards sustainability

Progress towards integration and sustainability

There is apparent progress towards integration of sectors and activities towards sustainability considerations. A clear example of this is the municipal comprehensive plan and the nature conservation strategy of Valdemarsvik. The comprehensive plan from 1990 is overall unspecific, without clear targets, based on limited knowledge (especially for the marine environment) and treats all sectors separately. On the contrary, the proposed nature conservation strategy from 2012 has clear objectives and actions integrating all (?) relevant sectors of the society.

In the nature conservation strategies of all three municipalities, there is an action within the category “Physical planning and exploitation” with the following wording (minor differences among the municipalities):

“Regard the interests of natural and recreational values in all physical planning, building permits, dispensation in shore protection areas or other exploitation. Decisions affecting these interests shall be taken on satisfactory knowledge basis. EIA methodology is applied and when needed an EIA is established.”

To be practical definitions are needed for “satisfactory knowledge basis” and “when needed an EIA is established”, but that the intention to integrate sectors and activities towards sustainability considerations is obvious.

Several more examples are to be found in the municipal nature conservation strategies. On the national level, the most important objective for the marine environment is the national environmental quality objective “A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos”. The Parliaments definition for this objective is as follows:

“The North Sea and the Baltic Sea must have a sustainable productive capacity, and biological diversity must be preserved. Coasts and archipelagos must be characterized by a high degree of biological diversity and a wealth of recreational, natural and cultural assets. Industry, recreation and other utilization of the seas, coasts and archipelagos must be compatible with the promotion of sustainable development. Particularly valuable areas must be protected against encroachment and other disturbance. This objective is intended to be achieved within one generation.”

Again, the integration of sectors and activities towards sustainability considerations is clear.

Regarding the process of the environmental quality objectives, 15 objectives were adopted in 1999, replacing a list (of seven?) major environmental problems. On a number of subsequent occasions, it passed resolutions introducing a total of 71 interim targets. In 2005, a 16th environmental quality objective was adopted by the Parliament. At the same time, some interim targets were withdrawn and others set or revised. In 2009, an additional target was introduced under the objective Reduced Climate Impact, bringing the number of interim targets to 73. In 2010, the Parliament established a new goal structure for environmental efforts, a new organisational framework, and a new basis for assessing

progress towards the environmental quality objectives. The process has served to integrate the environmental objectives with relevant sectors and to set clear targets.

Obstacles to achieve integration and sustainability

The evaluation for Östergötland County has not covered management actions, wherefore limited information has been studied on obstacles towards integration and sustainability. However, the known major obstacles are:

- The knowledge and interest in nature conservation and spatial planning, and thereby also the allocation of municipal resources for this, varies among the municipalities. For example has the has not been favourable in Valdemarsvik Municipality, but the proposed nature conservation strategy is a clear improvement.
- In many areas there is distrust towards authorities and nature conservation as that is seen as a threat to the utilisation of the area. For example in the HELCOM Baltic Sea Protected Area (BSPA) in Östergötland archipelago, a common interpretation among local residents is that the designation of a BSPA area is a indirect way by the authorities to designate a marine national park in which several activities will be restricted, and thereby obstructing the living in the area. Examples of activities that residents do not want to be obstructed are; fisheries, forestry and farming, housing and development, and hunt of seals and cormorants. In addition there is often a negative view on non-residents utilising the area, such as sports fishermen and fishing guides. This can make the situation complicated for tourist enterprises.

In summary the society in the archipelago area has been a depopulation area undergoing drastic changes during the last decades; from making their living of a combination of fishing and farming/forestry (and before the 1960's also seal hunt), to an unsecure situation where the traditional living is not sustainable and not enough new business opportunities have been found.

Offshore there are no major conflicts among any sectors. Outside the archipelago the bathymetry is fairly even and deep with no offshore banks. Shipping is of high importance, especially to Norrköping harbour. The potential conflict with commercial fisheries has decreased as the fishery has ceased due to regulations and decreasing fish stocks (due to overfishing). There is one area of national interest for the purpose of energy production, but that has not been identified as a priority area for wind power by Norrköping Municipality. All prioritised areas prioritised for wind power by the Municipality are on land. As the entire archipelago of Östergötland is an area of national interest according to the Swedish Environmental Code Chapter 4, potentially natural, cultural and recreational values may be in conflict with all other sectors if their activities are not sustainable.

14.4 Reflection on MESMA

The questions above are based on the information gathered during the application of Deliverable 2.2 Protocol for application of generic framework (i.e. WP2). Through the application of D2.2 an overview has been achieved of the spatial plans and objectives on the national, regional and local level, and how these interact.

The answers are not based on any specific tool or method taken from WP1, 4, 5 or 6. However information has been fed into WP2, 4 and 5. As stated previously this FW application has not included WP6 analyses, although the first FW run focussing on the HELCOM Baltic Sea Action Plan covering the entire Baltic Sea and its catchment area did cover WP6 analyses as well, and information has also been fed into WP6.

15 Synthesis report for the Puck Bay case study (sub-case study in the Baltic Sea)

15.1 A. Description of CS

The Puck Bay is located in Poland off the shores of the Pomeranian Voivodeship. The area is under the great influence of the Tricity agglomeration, which has the population of about 760,000 inhabitants. The Tricity metropolitan area is even larger – it has the population of over 1 million. The Puck Bay is the part of the Gulf of Gdansk, which is the system of estuaries with a mix of brackish and marine waters. The entire areas is designated as NATURA 2000 sites, protected under Birds and Habitats directives. Additionally national and HELCOM regulations apply. The part of the bay waters is the Coastal Landscape Park as well as Baltic Sea Protected Area (BSPA).

For the purpose of MESMA project, the Puck Bay area was defined following the first draft marine spatial plan developed under the PlanCoast Project⁴⁶. It is therefore defined as the marine territory between Cypel Helski (18°48'29,12"E, 54°35'33,71"N) and the border between Gdynia and Sopot municipalities (18°33'43,15" E, 54°27'51,46"N; Fig. 1). The total region equals 405 km². The coastal belt area is 55 km², and the coastline length equals 117 kilometres. The draft plan is not legally binding, but maritime administration considers it be a kind of guide or a set of good practices.

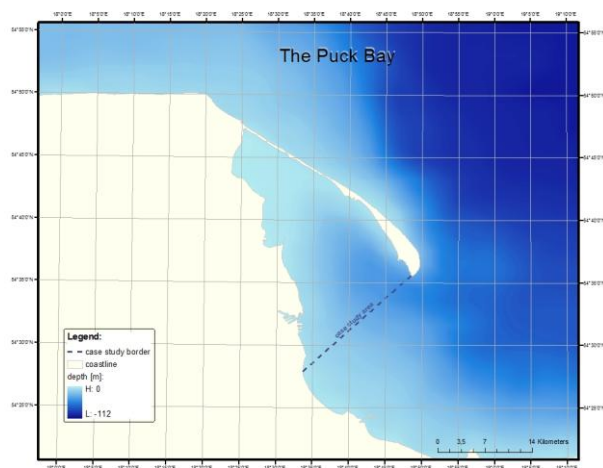


Fig. 1. Case study area

The concept of marine spatial planning (MSP) is present in the Polish legal framework through article 37a of the legal act on "Maritime Areas of Poland and Maritime Administration". However, this policy lacks implementing regulations and bylaws, which practically makes it impossible to introduce the legally binding marine spatial plan. Integrated sea-use planning and management is also undermined by unclear and overlapping competences of different Ministers.

The Pilot Draft Plan for the Western Part of the Gulf of is considered by the maritime administration as a synthesis of the best available knowledge and good practices. It also practically tests the methodology to be applied in the future, when the required regulations are formally introduced. The pilot plan defines different uses of the water surface, water column, sea bottom and air. It covers marine areas only (apart

⁴⁶ The title of the plan reads: the Pilot Draft Plan for the Western Part of the Gulf of Gdansk

from the harbours), but the future development plans of the bordering coastal municipalities were also considered. The general objectives of the spatial plan were to minimize and prevent, wherever possible, spatial conflicts and to enhance the ecological, social and economic sustainability of the region. In particular the pilot plan aimed to decide on (a) the use of the sea space, (b) limitations in these uses, (c) public investment requirements, (d) goals for environment and cultural heritage protection.

No zoning plan exist. However, the area is divided into basins. Major and complementary function(s) are described for each basin, but so-called “additional activities” are only sometimes defined.

The area is divided into 30 basins defined by the coordinates of their corners. The basins are of different size and are marked by a number and a letter code. This letter code defines the lead function of the area. Major, complementary and sometimes “additional functions” are described. The plan includes nine functions, which reflect sectors active in the area, i.e., (a) transportation, (b) tourism, sport and recreation, (c) fishery, (d) surface and underwater installations, (e) linear infrastructure, (f) nature conservation, (g) extraction of natural resources, (h) waste deposition, and (i) defence and safety (military uses). However, these uses are considered at a high level of generality. No limitations or trade-offs within each sector are discussed, e.g., various, often excluding, types of leisure and recreation activities.

Detailed arrangements are additionally set for each area. These arrangements provide specific requirements or conditions regarding: (a) protection of the environment, (b) protection of the cultural heritage, (c) technical infrastructure and marine vessels traffic, (d) public purpose investments, and (e) economic use of the area.

Table 1. Summary of the major uses in the Puck Bay.

Lead function of a basin	Number and area of basins in which the sector indicated holds the status of a major function	Total area of basins where the sector is either leading or complementary
Nature conservation	12 / 174 km ²	393 km ²
Fishery	6 / 151 km ²	366 km ²
Sport and recreation	6 / 151 km ²	364 km ²
Transport	4 / 18 km ²	32 km ²
Linear infrastructure	2 / 25 km ²	39 km ²
Sand extraction	1 / 1 km ²	1 km ²
Waste deposition	1 / 6 km ²	12 km ²
Area closed for military reasons	2 / 16 km ²	16 km ²
Surface and underwater installations, including artificial islands	2 / 14 km ²	14 km ²

Application of the MESMA tools

MESMA FW represents the methodological tool to monitor and evaluate spatially managed marine areas. Through the application of MESMA FW, we aimed to evaluate the pilot draft plan and to identify its weaknesses and strengths. We aimed to identify not only shortcomings of the plan itself, but also more generic gaps in data availability, in knowledge on marine environment and related social and economic aspects. Finally, our goal was to issue recommendation for improvement for the marine spatial planning in the future.

15.2 Administrative boundaries

Administrative boundaries in the CS

- Area between Cypel Helski (18°48'29,12"E, 54°35'33,71"N) and the border between Gdynia and Sopot municipalities (18°33'43,15" E, 54°27'51,46"N);

- Gdynia, Puck, Jastarnia and Hel harbours are excluded from the plan; they are subject to other regulations;
- Total area covered by the plan: ~405 km²;
- Coastal belt: 55 km²;
- Coastline length: 117 km;

The Puck Bay is the part of the Polish internal waters according to the international law of the sea, and is under the jurisdiction of the Maritime Office in Gdynia. Parts of the Puck Bay are subjected to different legal regimes and sometimes under the jurisdiction of competing state/local authorities. Therefore, apart from the administrative boundaries set artificially by the PlanCoast project, there are other legally binding boundaries present in the CS area. The most important include the borders of the Coastal Landscape Park, NATURA 2000 sites, the coastal belt or 3 nautical miles fisheries zone.

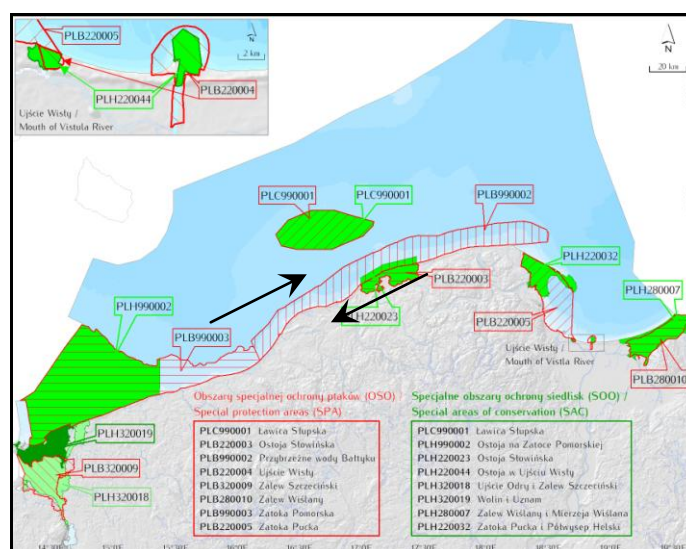


Fig. 2. NATURA 2000 sites (please compare with Fig. 1)

Ministry of Transport, Construction and Maritime Economy is responsible for marine areas in Poland. It acts through maritime administration. NATURA 2000 sites are under the jurisdiction of the Ministry of the Environment at central level. The General Directorate for Environmental Protection is an institution responsible for the management of NATURA 2000 sites. At the regional level it performs the tasks entrusted through the Regional Directorates for Environmental Protection. However, NATURA 2000 sites situated within national parks or marine areas are excluded from this jurisdiction. Management activities are performed by the directors of the national parks or of relevant maritime offices. Another example of the overlapping competences are the waters of the Inner Puck Bay located within Coastal Landscape Park. Although they are formally part of the park, the park director has no legal tools to implement protection measures in the marine areas.

Poland is a contracting party to international conventions, e.g., ASCOBANS, and therefore the Puck Bay is a subject to set of national and international regulations concerning the species protection. Active protection is required for seals and common porpoises, there are also legal acts for commercial and rare fish species. Fishing with drag tools is forbidden at the depths smaller than 20 meters and within 3 nautical miles from the coast. The same rules apply to the vessels longer than 15 meters. These regulations are not framed in clear administrative boundaries, but the obligations arising therefrom are important for case study management. These regulations could pose additional challenges or issues, e.g., concerning cross-border monitoring programs.

The administrative boundaries were defined specifically for the plan. This plan is in fact a scientific exercise, and there is no strong justification why this part of the Gulf of Gdansk was chosen. At the moment there are no management/protection plans for the Coastal Landscape Park or NATURA 2000

sites (their preparation is in progress). Limitations and prohibitions exist and these forms of protection and had to be considered in the marine spatial planning. The same situation applies for species protection. The management plan for harbour porpoises and grey seals is under preparation, and transformation of the MFS into Polish legal framework is still delayed. Therefore it is not clear how the high level objectives will be translated into operational objectives, and what will be the level of consistency between various goals arising from management/protection plans of the sub-areas in the Puck Bay. Monitoring programs and cost-effective evaluation can pose a serious challenge.

There are no clear administration structure and well-defined competences for marine areas, so it can be assumed that this situation will hinder integrated approach to management and monitoring of the Puck Bay. Cross-border issues are not relevant, but even though it is clear that this kind of coordination would not be easy.

The ecological status of the marine waters is highly influenced by the coastal urbanization and other on-land activities, e.g., eutrophication or air-borne pollutions. One of the objectives of the draft plans underlines that the plan should ensure good ecological status of the marine and coastal ecosystems. Hence the monitoring and evaluation objectives should consider land-sea interactions and planned development of the terrestrial areas. Terrestrial and marine plans should be coherent, yet at the moment these are two different realms ruled by different regulations. The pilot draft plan is not simply an environmental initiative. It includes both environmental, social and economic objectives. The Puck Bay as a case study was perhaps chosen because it is a well-investigated area and a lot of archival data is already available. However, this study shows that knowledge gaps on land sea-interactions, especially related to socio-economic data and limited knowledge on dynamics of the marine processes, are still an important drawback in planning activities on the sea. This remark should not be understood as an excuse to delay marine spatial planning initiatives, but perhaps problem oriented research or long term monitoring should be considered.

15.3 *Key Drivers*

It is hard to assess the most important drivers in marine spatial planning processes in Poland. The idea of marine spatial planning is introduced in Polish legislation since 2003. It seems that there is lack of political will as no implementing regulations and bylaws have been issued since then. Although marine spatial planning is the most evident tool for spatial management, there are complementary initiatives, e.g., management and protection plans for NATURA 2000 sites or of landscapes and national parks. High level policy (EC directives, HELCOM BSAP objectives or international conventions) make some kind of marine spatial management inevitable. Increased pressures from different industrial sectors can be considered as another driver. These pressures are more relevant for the coastal zone, but obviously influence the state of marine ecosystem. In addition developers and other investors are especially sought for by the local municipalities because their investments are an easily accessible source of additional income and create job opportunities. Bearing in mind that PMA and especially the Puck bay are multi-stakeholder areas (Fig. 3), conflicts are only a matter of time. And spatial management is a tool to resolve or minimize these conflicts.

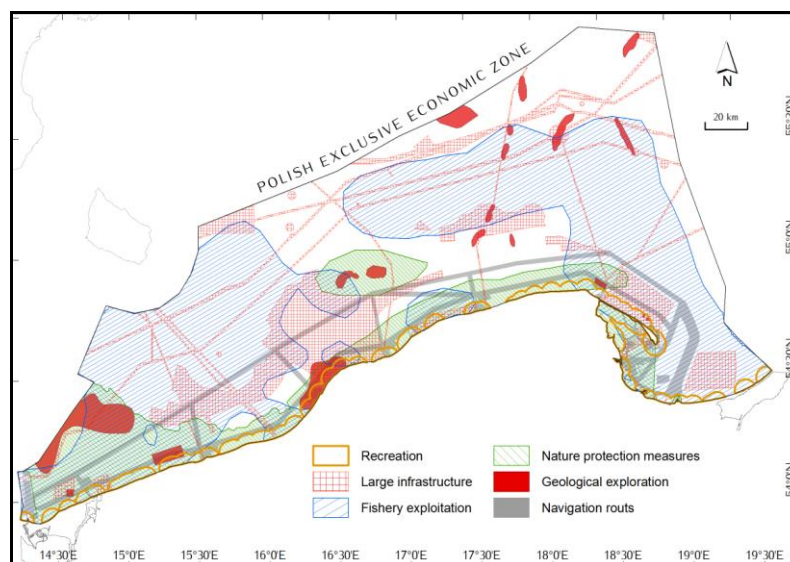


Fig. 2: Uses of the PMA (after Weslawski et al. 2010).

There are also some bottom-up initiatives predominantly raised by environmental NGOs, e.g., on marine reserves, protection plans for harbour porpoises and grey seals), but also ideas of local communities (coastal municipalities) are to be concerned (e.g., limitations for offshore wind farms). This increased awareness will definitely facilitate implementation of protection measures, although of course local governments will also put forward economic objectives.

However, the proper recognition of the marine related problems by the maritime administration (at least in the Puck Bay) is a key driver for the spatial initiatives. The maritime administration has supervised the preparation of the draft plan (initiated within the PlanCoast project), the Strategic Environmental Assessment (SEA) for this plan (within BaltSeaPlan project), and it is commissioning and supervising preparation of NATURA 2000 management plans in the Puck Bay. Maritime Offices are responsible for these tasks by legal arrangements, but activities in the Puck Bay are pioneering in comparison to other parts of the Polish coast. There is an ongoing discussion if all proposed solutions are environment friendly, and what is the overarching principle. For example the draft plan does not include clearly defined SMART objectives and indicators for their monitoring and evaluation. Only a small part of the coastline is planned to be kept natural. Most of it is designated for industrial and technical measures to prevent the coastal erosion. This is against the HELCOM Recommendation for the protection of natural processes on the sea shore. The expression “area shall be declared as free from any form of aquaculture” might limit the reconstruction of reeds, seagrass and other forms of renaturalisation of the Puck Bay. There is also relatively little consideration for the management of the local net fishery, which is a major pressure for the Puck Bay ecosystem.

15.4 Progress and obstacles towards sustainability

Sustainability is explicitly listed as one of the draft plan objectives (“sustainable and durable development of coastal communities”), but at the same time the plan aims to ensure “good condition of marine and land-sea ecosystem”. However, protection of the environment is considered to be one of the uses, and as described in paragraph C1 not necessarily the most important. Although not formally required, especially for the scientific exercise, public consultations were organized. The stakeholders involvement can be viewed as a step towards sustainability, especially that environmental NGOs are usually active in this process.

The authors of the plan, and consequently the maritime administration, are aware that developing a pilot plan is not sufficient to practically implement integrated and sustainable development of the marine and coastal areas. The authors underline that the initiative to prepare the draft plan should be viewed as “practical attempt at testing the possibility for drawing up the maritime plans under Poland’s legal, information and staff-related conditions” (Zauchka 2009). As a result a final section of the draft plan refers to barriers to marine spatial planning development, and points out the need for further research.

Maritime administration is aware that the draft plan is a local initiative and underlines that it is much more important to prepare the strategic spatial plan for the whole PMA.

Table 2. Major recommendation arising from the Pilot Draft Plan for the Western Part of the Gulf of Gdansk*

Most important drawbacks of the pilot plan	<ul style="list-style-type: none"> • imperfect legislation • lack of necessary data • problems concerning data availability • methodological problems, but they were not described in detail; the only issue explained referred to the three dimensional nature of the sea space • knowledge gaps on land sea-interactions, especially related to lack of socio-economic data and limited knowledge on dynamics of the marine processes
Need for further research	<ul style="list-style-type: none"> • further habitat mapping • better monitoring of fish species and sea mammals • detailed information on mineral deposits under the sea bottom • socio-economic research including the strategic evaluation of the development plans and strategies of the most important stakeholders (e.g., local municipalities and industry) • information on already existing or planned investments (e.g., already issued licences and permits)
Problems concerning overall strategy for the environment protection	<ul style="list-style-type: none"> • what are the most probable directions of the future development in the protection of marine environment? • what types of conservation measures enable to protect marine environment in long term? • which phenomena/systems/functions should be fully protected and which can spatially co-exist with other uses? • what is the relationship between climate change, socio-economic factors, protected areas and development of the coastal municipalities?

* Recommendations copied from MESMA D3.1 and D3.2

The sustainability issues can be viewed from a wider perspective. The idea of sustainability is present in the Polish legislation and sustainable use of the natural resources is for example mentioned explicitly in the "Nature Conservation Act" (2004) or in the "Environmental Law" (2001). The precautionary principle is applied to all activities that are likely to have negative impact on the environment. The Environmental Impact Assessment (EIA) is the major legal instruments designed to implement the precautionary principle. This procedure is regulated in detail in a separate legal act on "Public access to information about the environment and its protection, public participation in environmental protection and environmental impact assessment" (2008).

However, there are also some general or high level obstacles to achieve sustainability. There are no regulations that would allow marine spatial planning in the PMA as well as some loopholes in the environmental legislation concerning the protection measures on the sea (e.g., on marine reserves).

Existing administrative boundaries do not always follow the governance structures and overlapping competences pose additional problems (see paragraph B). There is also apparent lack of data (Table 2), but issues concerning stakeholders participation are increasingly important. Although the administration is aware that stakeholders need to be a part of the governance processes, it is still learning how to implement public consultations properly. In the meantime the consultation process is rather of poor quality and as a result Polish citizens rarely participates in different forms of decision making (Kolarska-Bobinska 2003). This also reflects distrust and disillusionment with the functioning of public institutions.

In addition according to Zaucha (2009), “National Spatial Development Concept 2030”⁴⁷ defines following issues concerning implementation of marine spatial planning and/or integrated coastal zone management:

- the deteriorating quality of land around the coast, i.e., seasonal urbanization, increasing anthropogenic pressures and spatial conflicts;
- lack or poor cooperation between local and regional governments and private sector;
- poor spatial policy at the local level, including problems with law enforcement;
- coastal erosion (70% of the Polish coast is subject to erosion processes both from natural and anthropogenic causes);
- lack of coordination between development in terrestrial and marine areas;
- seasonality of economic activities, changes in traditional way of life, e.g., in fisheries;
- lack of modern approach to maritime economy (it is considered to be a sector that focuses on shipping, fisheries, shipbuilding industry and coastal tourism);
- lack of strategies concerning development of ports, offshore renewable energy sector and aquaculture;
- no systematic approach to exploration and exploitation of natural resources;
- sectoral approach and lack of integration between marine and terrestrial planning;
- incomplete legislation, especially on rational planning of marine areas;
- lack of national maritime policy that would integrate sectoral policies and strategies;
- uncertainty in decision making.

15.5 *Reflection on MESMA*

MESMA FW seems to be a useful tool to assess objectives, indicators and different levels of governance. However it is a bit unclear if it actually can support the implementation of marine spatial planning in reality. MESMA WP2 FW was applied to the document that is the outcome of a process and not to a process itself. Therefore some steps could only be indirectly applied (based on publicly available knowledge) as we have had no insight to data and methods used in the preparation of the draft plan.

⁴⁷ “National Spatial Development Concept 2030” is predominantly dedicated to terrestrial planning

15.6 *References:*

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