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Contents

Executive summary	1
1 Housekeeping, opening of the meeting	3
2 Adoption of the agenda	3
3 Terms of Reference.....	3
4 Activities of WGMPCZM during 2011/2012	4
5 WGMPCZM Session at ASC 2012 in Bergen.....	4
6 Developments within ICES during 2011/2012.....	5
6.1 Multi-annual Terms of Reference for Expert Groups	5
6.2 WGMARS review of WGMPCZM reporting.....	6
7 Guest presentation on the Seanergies 2020 project	7
8 Update on ICZM and MSP in different ICES countries with a focus on the need for knowledge for the development of management strategies including scientific advice required in each stage of the process (ToR a)	7
9 Re-examine ICES Member States' progress in quality assurance in MSP and ICZM towards producing guidance and advice in implementation based on the results of the recommended workshop (WKQAMSP) on this matter (ToR b)	8
10 Review how the social-cultural dimensions of ecosystem services are (or can be) incorporated in MSP and ICZM and preparation of a specific workshop (WK) and/or a scientific paper (ToR c)	9
11 Review methods for capturing fisheries information for inclusion in MSP and based on the review planning of follow up activities (ToR d).....	13
12 Receive a report on the collaboration with the Strategic Initiative on Coastal and Marine Spatial Planning and plan for further cooperation (ToR e).....	16
13 Discussion of requests from other EGs to WGMPCZM and evaluation of potential for collaboration with other EGs and other ICES initiatives in relation to the ICES Science Plan (ToR f).....	17
Annex 1: List of participants.....	19
Annex 2: Agenda.....	20
Annex 3: Presentation of Angeliki Koulouri on Seanergies 2020	22
Annex 4: Update on ICZM and MSP in different ICES countries (ToR a)	33
Annex 5: Presentation on WKQAMSP by Roland Cormier (ToR b).....	41

Annex 6: Presentation on MESMA by Vanessa Stelzenmüller (ToR b).....	43
Annex 7: Presentation on socio-cultural dimensions of ecosystem services by Kira Gee (ToR c)	53
Annex 8: Case studies on cultural dimensions (ToR c)	67
Annex 9: Case studies on the use of fisheries activity data in marine planning (ToR d).....	70
Annex 10: Resolution for an ICES Internal Publication (Category 1).....	83
Annex 11: Resolution for an ICES supported Workshop (Category 2).....	84
Annex 12: Resolution for an ICES Internal Publication (Category 1).....	86
Annex 13: Resolution for an ICES Internal Publication (Category 1).....	87
Annex 14: Recommendations	88
Annex 15: Recommendations as response to requests from WGMHM and WGMASC	89
Annex 16: Terms of Reference for 2013	90

Executive summary

The ToRs of the WG for 2012 mainly evolved out of the ToRs in 2011. A new ToR was ToR d (Review methods for capturing fisheries information for inclusion in MSP). For 2012 these ToRs have been further elaborated and additional activities to move these ToRs forward are proposed in this report. During the 2012 meeting WGMPCZM also discussed several issues outside its specific ToRs, in particular the future structure of ICES EGs with Multi-Annual Terms of Reference.

Between the meetings in 2011 and 2012 WGMPCZM was involved in several activities, in particular in WKMCMS in November 2011 in Lisbon, worked on two Cooperative Research Reports and organised a workshop on Quality Assurance for MSP (WKQAMSP) in Dartmouth, Canada in February 2012. In 2012 the WG will also chair a session at the ASC2012 in Bergen, Norway. WGMPCZM actually consists of members representing science as well as people involved in administrative decision making and is therefore truly transdisciplinary in its nature. Several activities, in particular WKQAMSP, have increased the interest of people involved in MSP research or practice in the WG and the issues it tackles.

On the first day of the meeting the WG received a guest presentation from the European Wind Energy Association (EWEA) on the Seaneergies 2020 project. The presentation provided a good insight into the work done in this project and its findings for the North and Baltic Sea. However, these findings were rather critically commented by WGMPCZM. A recommendation was made to EWEA to update the information and to ensure quality of information in that project before submitting its final recommendations.

Concerning ToR a) the group discussed questions concerning knowledge gaps in MSP, particularly those which were identified in the joint ICES/OSPAR/HELCOM/VASAB workshop on MSP (WKMCMS) in Lisbon (2–4 November 2011). Further, the group referred to the requirements of the Strategic Environmental Assessment (SEA) Directive to identify knowledge gaps which showed up in the process. Out of this discussion the issue of how transboundary cumulative environmental assessments should be carried out in the context of national planning processes evolved. Out of this a new ToR (“Examine the opportunities for population based assessments at an ecosystem level regarding cumulative pressures on the environment related to development plans from a cross-boundary perspective”) has been formulated for 2013, which however needs to be explored together with WGECON because WGMPCZM lacks the specific expertise needed.

ToR b) was mainly discussed along the results from WKQAMSP. Three main topics were reviewed during the WKQAMSP workshop, (1) quality assurance of scientific advice, for example through application of peer review advisory processes, (2) quality assurance of mechanisms or processes involved in planning aspects of MSP, and (3) auditing of implemented management plans and their performance. In topic 1 the importance of unbiased scientific peer review processes in the formulation of management advice was highlighted. The idea of the development of decision-making risk criteria, similar to the context of Maximum Sustainable Yield used in fisheries management, was supported as means of applying this to planning and setting decision rules. In topic 2 quality assurance aspects in terms of governance, objective setting, regulatory processes and adaptive management systems from an ecosystem-based management approach were reviewed. From the perspective of a quality assurance system, tools such as the Ecosystem-Based Management System (EBMS)

elaborated in the EU project KnowSeas (KnowSeas Deliverable 6.1, www.knowseas.com) would ensure that the ecosystem approach and adaptive management concepts are fully embedded in the planning and decision-making processes. In topic 3 quality assurance aspects and perspectives related to environmental effects monitoring, regulatory decision-making as well as regulatory verification and auditing of environmental management plans, were reviewed. In addition, the use of environmental management policy gap analysis was discussed as a form of quality assurance to ensure that spatial management strategies are being developed in accordance with existing policies and practices.

Concerning ToR c) it needs to be noted that despite much knowledge about the sea, there is still insufficient knowledge of actual sea values, in other words, what marine goods, services and benefits are valued, by whom they are particularly valued, where these values are located in space, and whether conflicts exist between different values. Whilst the sea is commonly regarded as a setting for generating multiple economic values, it is less often regarded as a place defined by cultural meanings and area of convergence of different constructs of place. Because cultural ecosystem services are difficult to identify, and even more difficult to include in planning processes in a meaningful way, they tend to be ignored altogether, in particular where intangible values are concerned. Despite this, they are often the key to conflicts over prospective changes in sea use. As a result, there is a need to make intangible sea values amenable to practical MSP processes, allowing their inclusion in tasks such as sustainability appraisals and risk assessments. During the meeting WGMPCZM developed a framework to identify and map cultural components of ecosystem services in the context of MSP and aims to further elaborate on this in a specific workshop proposed for 2013.

ToR d) was introduced with two presentations, which paved the way to discuss several other cases as well. Following a brief review of these case studies, the working group noted that a wide variety of methods have been used to analyse and present spatial information on fishing activity. It was also noted that many studies only focused on nationally registered vessels or vessels with home ports based within the relevant country or study area. This approach misses the contribution of foreign fishing vessels to the total fishing pressure on a particular plan area. This omission may be significant in some areas and could have undesirable consequences. For example displacement of unknown foreign fishing effort from an area as a result of planning decisions could have impact through increased fishing pressure on other areas both nationally and internationally. Having reviewed the use of fishing activity data for marine planning, the working group started to discuss how these data were then used in decision making processes, both for determining the most suitable locations for development of other sectors and for management of the fishing sector through marine planning.

1 Housekeeping, opening of the meeting

The Chair, Andreas Kannen, opened the meeting at 11:00 hrs on Tuesday, 20 March 2012, welcomed the participants and gave a brief introduction to the working group. Maria Lifentseva from the ICES secretariat provided information on housekeeping and technical facilities. A round of introduction of the participants followed.

Eight ICES countries, Germany, Spain, Norway, Scotland, the Netherlands, Sweden, Denmark and Canada were represented at the 2012 meeting. A list of participants is included in Annex 1.

The list of experts being interested in the WG has been strongly increasing in the last two years. The list of members listed on the SharePoint currently includes more than 30 names from more than 10 ICES member countries. However a number of regular participants in the last years for different reasons were not able to join this year's meeting. But a core of WG members participates regularly, which provides continuous development of activities and ToRs while new members provide new ideas and additional expertise. At the moment WGMPCZM seems to have achieved a good balance with respect to active membership.

2 Adoption of the agenda

A draft agenda was circulated in advance of the meeting which was adopted without changes. The adopted agenda is presented in Annex 2.

3 Terms of Reference

Terms of reference (ToRs) are based on the multi-year plan of ToRs developed by WGICZM /WGMPCZM in its 2010 meeting, which have been revised in 2011. Following a request of SCICOM when approving the ToRs, potential outputs for each ToR have been added by WGMPCZM chair.

- a) ToR a) Update on ICZM and MSP in different ICES countries with a focus on the need for knowledge for the development of management strategies including scientific advice required in each stage of the process
- b) ToR b) Re-examine ICES Member States' progress in quality assurance in MSP and ICZM towards producing guidance and advice in implementation based on the results of the recommended workshop (WKQAMSP) on this matter; Expected outcomes are a proposal for a CRR and/or other follow up activities
- c) ToR c) Review how the social-cultural dimensions of ecosystem services are (or can be) incorporated in MSP and ICZM and preparation of a specific workshop (WK) and/or a scientific paper
- d) ToR d) Review methods for capturing fisheries information for inclusion in MSP and based on the review planning of follow up activities (either a publication or a specific workshop/WK)
- e) ToR e) Receive a report on the collaboration with the Strategic Initiative on Coastal and Marine Spatial Planning and plan for further cooperation, e.g. develop a proposal for a CRR, a publication or a special issue in a scientific journal
- f) Discussion of requests from other EGs to WGMPCZM and evaluation of potential for collaboration with other EGs and other ICES initiatives in re-

lation to the ICES Science Plan. Outcomes can be proposals for joint activities (e.g. joint WK, and/or joint CRRs or contributions to joint scientific papers)

WGMPCZM will report by 25 April 2012 (via SSGHIE) for the attention of ACOM and SCICOM.

4 Activities of WGMPCZM during 2011/2012

In the period between the meeting 2011 and the meeting 2012 there were three main activities within WGMPCZM which followed from resolutions of WGMPCZM 2011:

- Cooperative Research Report (CRR) on Risk Analysis (RA) Framework – the document has been submitted to the secretariat by 23/03/2012. The report is based on work done in Canada on implementing risk management principles and approaches. This work has over several years been supported by multiple workshops in Canada and by intense and regular discussions within WGMPCZM and its predecessor WGICZM. The report was written as a cooperative research report with procedures for risk management in mind and adopting ISO language of risk management. It highlights key tools and a sequence of steps involved in RA.
- Cooperative Research Report (CRR) from Theme Session B, ASC 2010: During 2011, all contributors to Theme Session B, ASC 2010 had been contacted and asked whether they wished their paper/poster to be included in an ICES CRR covering the Theme Session. From the replies, authors of 14 papers and 8 posters had indicated willingness to contribute, although some had expressed concern over their ability to find the necessary time to improve or update their documents. There has been little further progress with the report in the last few months, although it was noted that an introductory paper had been written, and that contributions from Canada and Scotland were broadly ready for collation. It was agreed to extend the editorial group to include Marc Ouellette (Canada) with a view to preparing a full collated draft by the end of June 2012.
- WKQAMSP in Dartmouth, Canada from 28 February–2 March 2012: This workshop had been attended by 15 participants, about half each from Europe and from Canada. QA in the context of MSP and environmental planning was investigated around the three themes of 1) scientific advice and data, 2) planning processes and 3) auditing. The desired output is to develop this into a QA system to help guide work in ICES countries. Requests for such an output also came from the administrative sector as the potential users of such a structure. This will be a multi-annual effort and is discussed in more detail in ToR b. A draft of the WKQAMSP report was available for WGMPCZM members from the SharePoint site during the meeting. A final draft has been submitted to the ICES secretariat for final formatting and distribution during the meeting.

5 WGMPCZM Session at ASC 2012 in Bergen

WGMPCZM in 2011 applied successfully for a session at the next ASC 2012 in Bergen, Norway with the title “Multidisciplinary perspective in the use (and misuse) of science and scientific advice in Marine Spatial Planning”. Conveners are Andreas

Kannen (Germany) and Roland Cormier (Canada) together with Mel Austen (UK) from the VECTORS project.

Papers are welcomed along the following topics:

- Multidisciplinary research approaches, which refer to the use of information within decision-making processes and address policies and regulations across multiple sectors;
- Natural or social science-based approaches, which assess cumulative environmental impacts and aim to establish knowledge-based management thresholds and targets;
- Research on interactions between human activities, related socio-economic drivers, and ecosystem changes, which refer to the resulting impacts on marine ecosystem services;
- The use of ecological risk assessment as a means of setting management objectives and providing guidance in setting cross-sectoral marine spatial planning priorities, including the application of “Good Environmental Status” to identify risks;
- Examples which show best practises in the use of scientific data, information, and advice, including quality assurance of the decision-making process.

This session seeks to stimulate contributors to discuss successful links, but also disconnections between what science provides. As well different perspectives to look at the same problem might be highlighted, for example approaching MSP from the perspective of conflicting uses or from the pressure-impact angle, approaches to tackle the problem of cumulative uses and effects and quantification of impacts across multiple disciplines.

The invitation is to everyone to submit abstracts until 20 April 2012 through the formal submission system on the conference website. Further announcement of the session by members of WGMPCZM will be done independent of this report. WGMPCZM aims to publish the session presentations and discussions in a Cooperative Research Report (see Annex 13).

6 Developments within ICES during 2011/2012

6.1 Multi-annual Terms of Reference for Expert Groups

WGMPCZM briefly reviewed the ICES proposal for multi-annual Terms of Reference for EGs, and for modifications to the format and content of EG reports. This part of the report has been communicated to the ICES secretariat separately after the meeting in order to be available for the SCICOM meeting end of March 2012.

WGMPCZM considered that proposed multi-annual system for EGs has some useful, and some less useful elements.

WGMPCZM strongly supported the intention to review the ToRs, and need, for all EGs every three years. In the current system, WGs are virtually perpetual and often very firm action is required to make them change direction or terminate. The new process will help to ensure that the work of EGs remains relevant, and also make it easier to modify the direction or terminate EGs.

The introduction of a 3 yearly review of ToRs coincides with the change of chair. The WG recommended that there should be some way in which the new chair can have

strong personal input to the ToRs, and to get clear parent group buy in to the new ToRs. This should ensure commitment from both the WG and the parent committee.

The WG went on to discuss the implications of the three yearly review of ToRs. One of the big problems of ICES is the rate at which advice can be developed and delivered. The Review and Drafting Group systems introduced in recent years have been useful in speeding this process up. The WG fears that EGs will interpret the new system as meaning that EGs do need to conclude on anything until after year three, and that they may be unwilling to accept new work between the three yearly reviews. This would dramatically slow the advice process, and make ICES much more inflexible.

The WG recommended that the 3 yearly review of ToRs should be combined with clear definitions of tasks and deliverables to be completed during the three year cycle, and a timetable for the delivery of the tasks.

It is not clear to the WG how aspects of the traditional outputs from WGs will now be made available. Reviews of activity on particular subjects, authoritative assessments of particular issues, advisory documents for OSPAR/HELCOM, work in progress, etc. have traditionally been included as Annexes to WG reports. They are useful documents for members of EGs, and for their organisations.

These are now not encouraged for inclusion in the interim reports, and are only listed in the final report. Where will we be able to find them now? It may be that some system can be devised whereby the SharePoint site becomes the library for these documents, although they are then generally unavailable to a wider user community.

6.2 WGMARS review of WGMPCZM reporting

WGMPCZM reporting from the year 2011 has been reviewed by WGMARS in its 2011 report. Unfortunately neither the chair nor other members of WGMPCZM had been invited to the WGMARS meeting.

WGMPCZM took note of the critical remarks of WGMARS, in particular those regarding making the messages clearer and the report more reader-friendly. However, the structure of WGMPCZM reporting follows the general structure of reporting for all SCICOM EGs and time for finishing the annual report is very limited. Furthermore, the annual WG report is not necessarily the main output of activities in the WG. More fundamental outputs are probably different types of publication including Cooperative Research Reports and WGMPCZM strives to improve its outputs in that respect.

The suggestion by WGMARS to review the theory of MSP (based on the IOC-UNESCO guidelines) is not up to date from the perspective of WGMPCZM. MSP is becoming already an administrative practice as any other spatial planning initiative. WGMPCZM views its current work on Quality Assurance (ToR b) as well as on other ToRs (in particular ToR c) and d)) as a contribution to develop the IOC-UNESCO guidelines and similar approaches further in order to provide conceptual support for implementation of MSP based on scientific theories as well as administrative needs. Generally, WGMPCZM has addressed and is addressing a range of aspects around MSP from conceptual and theoretical as well as practitioner's perspectives, in particular when for example looking at cultural dimensions of ecosystem services and how to make them applicable within MSP. However, WGMPCZM bases its work on a continuous dialogue between scientists and practitioners from administrations and develops ToRs and activities accordingly in stepwise approaches.

7 Guest presentation on the Seanergies 2020 project

The Seanergies 2020 project, coordinated by the European Wind Energy Association (EWEA) and funded by the EU had asked to present its results to ICES and forwarded by the ICES secretariat to WGMPCZM. WGMPCZM then invited EWEA to present the project in the afternoon of the first day of its 2012 meeting.

Following the presentation on Seanergies 2020 project by Angeliki Koulouri (see Annex 3), EWEA, a discussion ensued regarding the accuracy of the data and information presented and the validity of providing recommendations on data that was incorrect or not updated. For both the Baltic Sea and the North Sea inaccuracies in the information shown was observed by the WGMPCZM participants.

A recommendation was made to EWEA to update the information and to ensure quality of information in that project before submitting its final recommendations. It was noted that changes occurring in this sector in recent times were rapid, which may thus necessitate frequent updating.

8 Update on ICZM and MSP in different ICES countries with a focus on the need for knowledge for the development of management strategies including scientific advice required in each stage of the process (ToR a)

The ToR evolved from last year's discussions in WGMPCZM about quality assurance (see ToR b) and information/knowledge needs for MSP. The country updates are listed in Annex 4. However, in some countries no new developments have occurred in the last 12 months. For 2013 the group suggests retaining ToR a) as it is to retain the opportunity to gather background information on the progress and developments of MSP in ICES countries, and to annex future updates on MSP and ICZM activities to the report.

The group discussed questions concerning knowledge gaps in MSP, particularly those which were identified in the joint ICES/OSPAR/HELCOM/VASAB workshop on MSP (WKMCMSP) in Lisbon (2–4 November 2011). Further, the group referred to the requirements of the Strategic Environmental Assessment (SEA) Directive to identify knowledge gaps which showed up in the process. It was also stressed that a sufficient level of certainty should be achieved before decisions are taken. Results of these discussions and in particular those arising out of WKMCMSP results will enter debates in 2013 concerning potential new ToRs for WGMPCZM.

Another important issue in the discussions was how transboundary cumulative environmental assessments should be carried out in the context of national planning processes. It has to be clarified what is meant with cumulative effects, in-combination effects and cumulative pressures. The term cumulative pressures accounts for the fact that a number of activities can exert the same generic pressure on a certain ecosystem component which is susceptible to this pressure. In contrast, cumulative effects refer to impacts of the same activity, while in-combination effects refer to combined effects of different activities. The normal Environmental Impact Assessment process initially describes the impacts of a single project, a development or a (strategic) plan. In a subsequent step, this impact is placed in the context of similar impacts arising from other developments and activities, for example, the potential for more than one wind farm to present a collision risk to a particular bird species. The scope of this cumulative assessment is potentially large. While assessment of impacts on central point foragers (e.g. seabirds in the breeding season) has been a regular feature of EIAs, assessment

of impacts on bird populations outside the breeding season presented much greater difficulties. In some cases, the geographical scope of such an assessment would cross national boundaries, (or bioregions), introducing further challenges of access to data and of coordinating any management action transnationally. Thus, it was concluded that a population based assessment is necessary to account for transboundary cumulative pressures accounting for existing and/or planned future (Strategic) plans, activities and licenses. Adoption of an assessment process based on biologically meaningful population units could present a way forward, both for regulation and for conservation. Adopting this approach would require a sound knowledge base on the structure of populations of vulnerable species (if necessary population models) relevant to the development areas. It would require criteria for risk assessment and agreement on common scientific assessment methods including the definition of critical thresholds depending on the susceptibility of a species to a certain pressure. This suggested assessment framework has some parallels with the population-based assessment methods used in fisheries management, which has strong trans-boundary elements. The above should be aligned across national MSP processes and implementations.

Based on these discussions a new ToR has been suggested for 2013, named:

“Examine the opportunities for population based assessments at an ecosystem level regarding cumulative pressures on the environment related to development plans from a cross-boundary perspective.” WGEKO will be invited for half a day mini-workshop as part of the next meeting (8–12 April 2013 in Copenhagen).

9 Re-examine ICES Member States’ progress in quality assurance in MSP and ICZM towards producing guidance and advice in implementation based on the results of the recommended workshop (WKQAMSP) on this matter (ToR b)

This ToR is based on last year’s discussions and results of WKQAMSP, which followed a recommendation and resolution from last year’s WGMPCZM meeting. WKQAMSP invited WGMPCZM to discuss its findings in this meeting and get engaged in a review of QA in MSP. A synopsis of the introductory presentation held by Roland Cormier including WKQAMSP recommendations can be found in Annex 5. In this context Vanessa Stelzenmüller presented the MESMA project, which developed an additional path of an MSP related evaluation framework. This presentation is given in Annex 6. The report of WKQAMSP is provided as a separate document, but also forms an output of the WGMPCZM 2012 meeting.

As it was recommended in the Workshop on Quality Assurance in Marine Spatial Planning-MSP (WKQAMSP) hosted in Dartmouth-Canada from 28 February to 1 March, quality assurance mechanisms should be provided in MSP processes to build quality into the process to ensure that the resulting plan meets the requirements at the onset of these initiatives. During the workshop it was recognized that little guidance is available to assess the quality of MSP, although something can be found for integrated management and environmental assessment initiatives. An advice coming from the workshop was obvious in the delivery of such type of guidance documents. The main issue being raised at the workshop was that quality assurance is being implemented on an ad hoc basis today and that a quality assurance system would greatly benefit MSP processes in terms of the quality of the resulting plan. A report of WKQAMSP will be made available before the end of April 2012.

Three main topics were reviewed during the WKQAMSP workshop, (1) quality assurance of scientific advice, for example through application of peer review advisory processes, (2) quality assurance of mechanisms or processes involved in planning aspects of MSP, and (3) auditing of implemented management plans and their performance.

- In Topic 1 the importance of unbiased scientific peer review processes in the formulation of management advice was highlighted. The idea of the development of decision-making risk criteria, similar to the context of Maximum Sustainable Yield used in fisheries management, was supported as means of applying this to planning and setting decision rules.
- In Topic 2 quality assurance aspects in terms of governance, objective setting, regulatory processes and adaptive management systems from an ecosystem-based management approach were reviewed. From the perspective of a quality assurance system, tools such as the Ecosystem-Based Management System (EBMS) (KnowSeas Deliverable 6.1, www.knowseas.com) would also ensure that the ecosystem approach and adaptive management concepts are fully imbedded in the planning and decision-making processes.
- In Topic 3 quality assurance aspects and perspectives related to environmental effects monitoring, regulatory decision-making as well as regulatory verification and auditing of environmental management plans, were reviewed. In addition, the use of environmental management policy gap analysis was discussed as a form of quality assurance to ensure that spatial management strategies are being developed in accordance with existing policies and practices.

As potential next steps to further develop the ideas obtained during the workshop, a review paper of quality assurance elements of actual MSP processes including integrated management and environmental assessment processes was proposed as a case study to identify best practices. The review would then provide the basis for the development of a quality assurance system that would be embedded in existing planning processes providing guidance and best practices to people involved in such process. WGMPCZM has taken up these proposals for additional activities and recommends to do the review and to publish the results in a Cooperative Research Report before April 2013 from which in a second step a scientific publication should evolve later in 2013. The resolution for a Cooperative Research Report for the review can be found in Annex 10.

10 Review how the social-cultural dimensions of ecosystem services are (or can be) incorporated in MSP and ICZM and preparation of a specific workshop (WK) and/or a scientific paper (ToR c)

The challenge of MSP is to allocate sea space in line with the ecosystem approach and in a way that achieves an acceptable distribution of risks and opportunities to the communities and economies affected. This leads to three requirements: a) to get to know the resource (ecology, different sea values, goods and services), b) to establish risks that new uses or cumulative impacts might bring to the resource and to goods and services, and based on these, c) to set priorities for MSP and/or management.

Despite much knowledge about the sea, there is still insufficient knowledge of actual sea values, in other words, what marine goods, services and benefits are valued, by whom these goods, services and benefits are (particularly) valued, where these val-

ues are located in space, and whether conflicts exist between different values. Whilst the sea is commonly regarded as a setting for generating multiple economic values, it is less often regarded as a place defined by cultural meanings and area of convergence of different constructs of place. One attempt at capturing the many cultural values associated with the sea is the concept of Cultural Ecosystem Services developed by the Millennium Assessment (MA 2005), which contains categories such as aesthetics, beauty of landscape, sense of place, cultural heritage, habitat and species value, inspiration, informal education, knowledge systems and recreation. In the literature, a wide range of studies can be found that deal with aspects of these, and a number of challenges are identified in eliciting, weighing and comparing intangible values as has been shown in an introductory presentation by Kira Gee (see Annex 7). However, few studies cover the marine environment in particular and even fewer deal with operationalizing cultural ecosystem services (or other cultural value definitions) for the purpose of MSP.

Not all cultural values are codified or covered by statutory designations. Because they are difficult to identify, and even more difficult to include in planning processes in a meaningful way, they tend to be ignored altogether, in particular where intangible values are concerned. Despite this, the latter are often key to conflicts over prospective changes in sea use. As a result, there is a need to make intangible sea values amenable to practical MSP processes, allowing their inclusion in tasks such as sustainability appraisals and risk assessment.

Two examples (see Annex 8) were presented at the meeting for dealing with cultural values in practical MSP processes. The first is the Socio Economic Cultural Overview Assessment Values project (SECOA), which aimed to map the place-based personal attachments of coastal residents to places having socio-economic and cultural value. Using a landscape value-based typology of sea values, it tested a focus group-based method for identifying and mapping highly valued places so that the social and cultural values of coastal communities can be taken into account when developing integrated coastal and oceans management plans. This was very successful in describing a wide range of cultural values and identifying those intangible values most commonly relevant to coastal residents (aesthetics and recreation/spiritual); it also produced a cumulative map of places that are valuable to local residents. From these, it was possible to derive information on significant aesthetic and significant cultural areas, which can be taken into account in planning decisions. The second example was from Scotland, which uses a marine spatial planning tool to identify areas with best potential for offshore wind farms. The tool operates within Arc-GIS, and undertakes spatial modelling, overlaying and integrating layers of information including socio-cultural information. Layers of data concerning socio-cultural matters are scored, weighted and combined into an overall socio-cultural model. In turn, this can be combined with overall models of environmental and industry factors to gain national scale impressions of the relative level of constraint on developments in Scottish waters.

For MSP, a key concern is to develop methods for identifying cultural values and for mapping those areas that are of particular importance for cultural reasons. Apart from making these values visible, mapping is also a way of making different values visible in the same format, using spatial representation as a common currency. The spatial distribution of cultural values, plus an understanding the nature of these values (the reasons why they are important) is a prerequisite for understanding any conflicts that might arise and for identifying social vulnerabilities. Places with high aesthetic value, for example, will be more vulnerable to visually intrusive impacts;

places with high spiritual value may be more vulnerable to noise etc. Added understanding of the constituency associated with particular values, in turn, is important for understanding the repercussions that might arise from not properly taking these values into account in the planning process (expressed as different forms of risk for example, including political risks).

Based on the above, the process of mapping culturally important areas can be broken down into three stages:

a) Preliminary stage: What concerns (values) are to be covered in the mapping exercise, and how can they be translated into geospatially relevant data? Place-based values could conceivably be simplified and codified along the following lines:

- Places that are important because people do certain things there (includes traditional uses/identity)
- Because people want to experience something there (aesthetics, recreation)
- Because people want to know it's there/pass it on to future generations (existence value)

This stage would also cover methodological issues: asking the right questions, survey methods, inclusion of all relevant population groups etc.

b) Identifying culturally important areas

There are different approaches to identifying culturally important areas:

- i. Asking the public: Identifying anthropological values through engagement with the public (see Annex 9, example from Canada);
- ii. Identifying existing relevant designations/important areas as indicators of areas of particular importance (stakeholder centred, covering aspects such as tourism, archaeology, landscape etc.); (see Annex 9, example from Scotland).

This leads to different information layers which could be collated into different types of map, such as a cumulative significance map, or a map based on the uniqueness value of the places identified, or vulnerability maps. Places can then be ranked in terms of their relative importance, or with respect to their vulnerability to different kinds of impacts, or other criteria to be debated. In any case, the debate on the criteria and the criteria chosen should be made transparent. The results of the mapping exercise then feed the assessment stage, where the information provided is taken forward in the MSP process. This includes aspects such as risk assessment (e.g. political risk if the issue is not considered properly in the planning process). Figure 1 summarizes the approach:

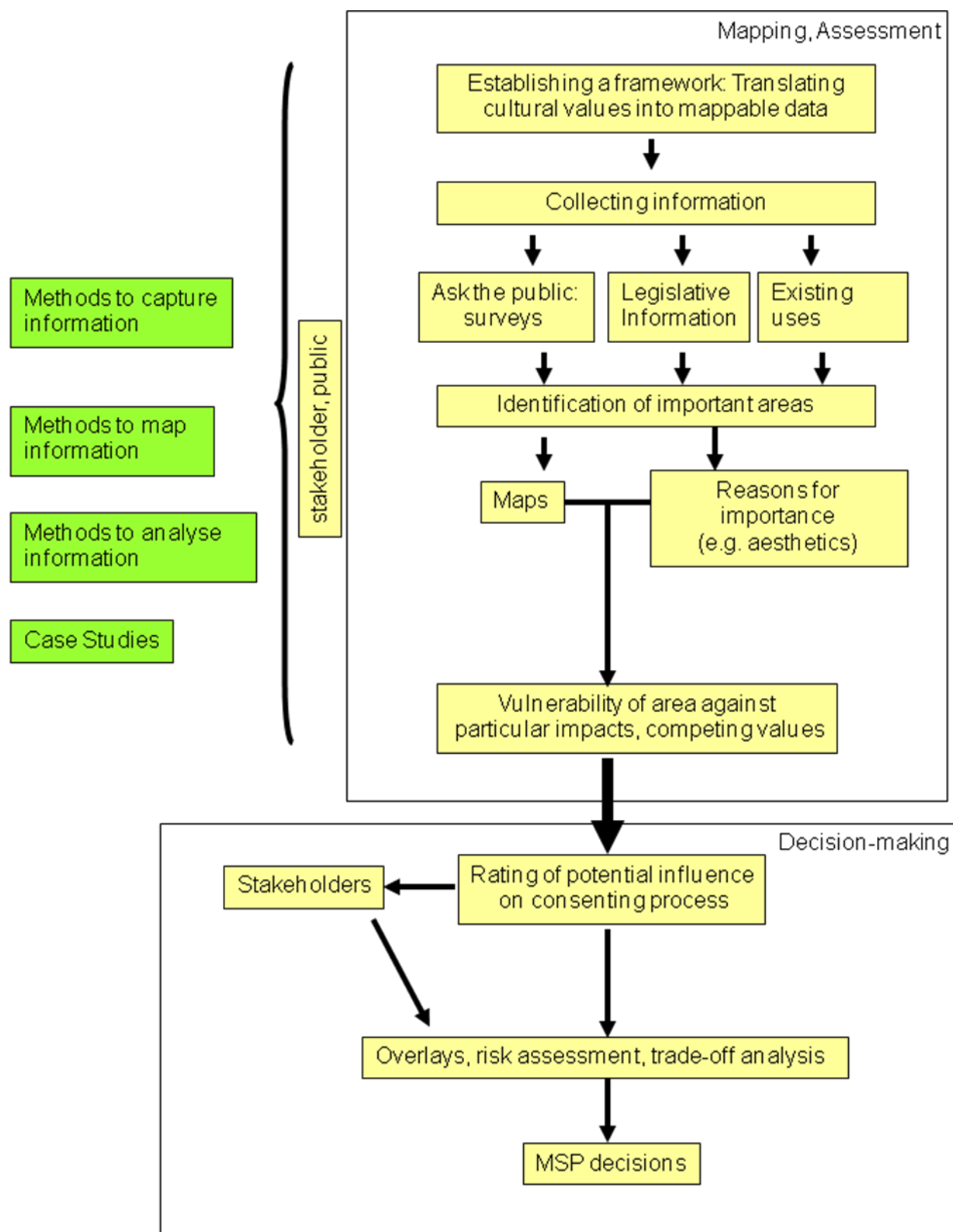


Figure 1. Framework to identify and map cultural components of ecosystem services in the context of MSP (Design: A. Kannen based on discussion in ICES WGMPCZM 2012).

Next steps

The ToR is concerned primarily with the mapping/assessment stage of cultural values, seeking to make them tangible for their inclusion into the MSP process (Figure 1). As a next step WGMPCZM proposes a workshop WKCES, see Annex 11) bringing together selected experts, with the aim of collating the methods used in various contexts (e.g. anthropology, tourism management, visual assessments of landscape impacts) to identify places of socio-cultural importance and ways of rating the relative importance of these places. The workshop will also look at methods available for rating different influences/impacts on the values identified. The key question will be to ask whether these techniques are capable of delivering information on cultural values and assessments of this information (e.g. in the form of vulnerability maps) in the spatial format required by planners. The output of the workshop is a technical report/practical handbook for planners and decision-makers (as a Cooperative Research Report, see Annex 12), in order to help them demonstrate due diligence in including cultural information in the MSP process.

11 Review methods for capturing fisheries information for inclusion in MSP and based on the review planning of follow up activities (ToR d)

This agenda item was introduced with presentations from Scotland on the handling and processing of Vessel Monitoring System (VMS) data into GIS shapefiles on fishery value for use in planning processes (sectoral plans for renewable energy) (Ian Davies). A presentation on a pilot project to define the process for collecting and presenting spatial data on inshore fisheries for vessels <15m length in the Orkney and Pentland Firth area, was also presented (Matt Gubbins).

Canadian datasets used to calculate density of fishing activity by type and target species were also presented in the context of vulnerability assessments in the Southern Gulf of St Lawrence (Roland Cormier). The example presented was based on aggregated VMS data. These contrasted with the Scottish data since the Canadian dataset comprises of larger number of vessel types and species given reporting requirements of all fisheries activities either VMS or logbook information. The dataset covers several years of fishing activities. A sub-group then reviewed and attempted to critically evaluate a wide range of case studies using fishing activity datasets that have been analysed for use in either marine planning or spatial management of fisheries (closed areas) contexts. The examples reviewed were:

- Analysis of national VMS data in Scotland for use in renewable energy planning processes using different scaled grids;
- Development of a questionnaire-based survey of local inshore fishermen in Orkney / Pentland Firth and spatial analysis of the results ('ScotMap' project);
- Use of VMS data in Canada to represent density (kernel density analysis) of fishing vessel tracks and fishing effort by target species for vulnerability assessment in the Southern Gulf of St Lawrence;
- Use of international VMS data on the Dogger Bank (North Sea) to assess use of the area by fisheries (socio-economic interests) for marine conservation planning (Natura 2000) (Netherlands, Denmark);
- Use of national VMS data on fisheries in MSP for the Plan Bothnia project (Sweden);

- Use of bi-national VMS and fisheries monitoring data to inform closed areas for management of cod stocks in the Kattegat (Denmark, Sweden);
- Use of VMS data to show the response of the fisheries sector to temporary fisheries closures in the Georges Bank area (Murawski *et al.*, 2005);
- USA case study mapping use of fishery resources in the context of potential impacts from closed areas (St Martin, 2008);
- A regional project in Norway to map the recreational and commercial in-shore fishing by questionnaire-based survey methods;
- Data collection processes for Danish recreational fisheries (key fishermen);
- Use of fisheries data for the determination of 'National Interest Areas' in Sweden.

A summary of these case studies, including how fisheries activity data was collated and processed / presented is included at Annex 9 of this report.

Following review of these case studies, the working group noted that a wide variety of methods have been used to analyse and present spatial information on fishing activity based on VMS data. Various approaches have been used to assess fishing activity from vessel tracks, some of which have been demonstrated to overestimate fishing activity by as much as 182% (Joo *et al.*, 2011). Some studies used these data to present gridded outputs of effort, CPUE, value (absolute or relative). Others used kernelled outputs calculated at different spatial scales to represent metrics of effort or catch value.

It was also noted that many studies only focused on nationally registered vessels or vessels with home ports based within the relevant country or study area. This approach misses the contribution of foreign fishing vessels to the total fishing pressure on a particular plan area. This omission may be significant in some areas and could have undesirable consequences. For example displacement of unknown foreign fishing effort from an area as a result of planning decisions could have impact through increased fishing pressure on other areas both nationally and internationally, and perhaps negative impacts on other national revenue streams from landings by foreign vessels (e.g. downstream processing, transportation etc.).

There are also some examples where national differences exist in the enforcement of closed areas to fisheries. Thus, 'non-native' fishermen could continue their fisheries in e.g. an 'area closed to fishery', and native fishermen may change country of registration to avoid local restrictions. Also, an international endorsement of an 'area closure' in one country could result in economic and cultural losses for other countries.

Given that commercial fishing is a largely international activity chasing an international fish resource, fishing activity mapping at a national level should account for the activity of foreign vessels.

In light of this need for international consideration of fishing activity data, the previously identified variability of VMS data products and presentation of different metrics of fishing activity across case studies may prove problematic. A common format for aggregated data outputs as GIS shapefiles is needed to ensure consistency of approach both within plan areas (native and foreign vessels, inshore and offshore fishing) and across national boundaries.

The WG briefly reviewed the activity and recommendations of the Study Group on VMS data (SGVMS 2010/2011) and noted that this group has considered many issues in relation to harmonisation of methods for assessing VMS data. Most of the issues

considered were on the analysis and interpretation of raw data into primary data products, rather than the metrics of effort /value that should be expressed or the harmonisation of scale, format etc. at which the data should be presented.

It was also noted that SGVMS had recommended the creation of a working group to address the use of VMS data at an international level. It was considered that such a group, if formed, would be the best forum for the development of standardised formats for the spatial presentation of VMS data, for example harmonisation of formats on the ICES Spatial Data Facility. WGMPCZM would therefore support the recommendation of SGVMS that a new WG on the use of VMS data be formed and would recommend that this issue be added as a ToR for the new group.

With the exception of Eastern Canada (where all fishing vessels are monitored and there are no marine recreational fisheries), all other case studies reviewed lacked real time monitoring of small (<15m or <12m) fishing vessels, most of which are concerned with inshore fisheries (<6 nm). In the case of Sweden, information on the precise location of fishing activity is recorded as a matter of course by reports from individual vessels to a 'coastal journal'. In Denmark, a group of recreational fishers (key fishers) report monthly catches of all fish to a national database, that also captures national information. The WG also reviewed a presentation from Norway on a regional approach to collecting inshore fishing information to inform the decision making process for consideration of creating a Marine Protected Area. The process presented involved interviewing both commercial and recreation inshore fisherman and collating spatial data (polygons) on spatial use by individual fishers. The data were used to assess impact of excluding fishing from the potential MPA.

Although there are several examples internationally of efforts to collect inshore and recreational fishing data for use in marine planning, it is clear that for many coastal areas where marine plans are being developed (or will be developed) these data are lacking. The working group considers that given the greatest interaction between sectors and conflict for resource is likely to take place in the inshore region, it is vital to collate data on these fisheries to inform the planning process. Some countries, such as Scotland, are actively engaged in processes to help fill this data gap with projects such as ScotMap. It would also be beneficial to process data from these fisheries in such a way that it can be directly compared at an international level with offshore / larger vessel activity by using the same data outputs as for VMS data. That way, single contiguous shapefiles of fishing data can be simply applied to planning tools and for further spatial analysis to identify cross-sector conflicts and areas of least constraint for other development types.

Having reviewed the use of fishing activity data for marine planning, the working group discussed how these data were then used in decision making processes, both for determining the most suitable locations for development of other sectors (for example the use of MaRS modelling for renewable energy developments in Scotland) and for management of the fishing sector through marine planning. It was clear that there were a diverse range of national views about the incorporation of fisheries into marine planning. Therefore the group considers this issue worthy of further review and proposes to consider it as a Term of Reference for 2013. Spatial plans should consider the activity of small inshore commercial vessels and recreational fishing activity in the planning process. Where vessel monitoring data for these fisheries are not already available, other efforts to collate spatial data on both activity and catch value should be made either from existing information sources (logbooks, landing records, etc.) or through direct consultation with fishers.

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- Murawski, Wigley, Fogarty, Rago, Mountain. 2005. Effort distribution and catch patterns adjacent to temperate MPAs. *ICES Journal of Marine Science*, 62: 1150-1167.
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12 Receive a report on the collaboration with the Strategic Initiative on Coastal and Marine Spatial Planning and plan for further cooperation (ToR e)

WGMPCZM discussed activities of STIG-MSP in Lisbon in November 2010 and November 2011, in which several members of WGMPCZM actively participated. The workshop in 2011 (WKMCMS) had presentations plus a one-day role play on MSP developed by TU Delft (funded by Dutch Ministry), which involved about 60 people with the aim of training them on transnational MSP. Hypothetical countries had a planning group and stakeholders each, and were given instructions and targets (and different information). Each country had to come up with a spatial plan by the end of the day. Different approaches in the different "countries". The report of the 2011 STIGMSP workshop in Lisbon is not yet released, but is in preparation as are publications.

From those WGMPCZM members who had participated, the role play is recognised as an excellent training package. There is also some interest in taking up this game in the Baltic Sea context as part of HELCOM/VASAB activities and in Canada. One of the experiences from the role play according to WGMPCZM members is that science information was more and more ignored as the game came to an end and the country groups had to come up with their final plan. This implies from WGMPCZM perspective the need for a structured decision-making process to ensure the science is considered appropriately.

STIGMSP will come to an end by 2013. Interaction by phone and email during the WGMPCZM meeting with the co-chairs of STIGMSP lead to the suggestion by STIGMSP co-chairs that WGMPCZM should take up some of the follow-up work that derived from STIG-MSP. During the 2011 workshop in Lisbon STIGMSP identified science needs as follows:

- 1) Vulnerability and ecological risk assessment. Focus on pressures and risks (e.g. further develop Scottish sensitivity matrix);
- 2) Total and cumulative effects of multiple human activities occurring in the same area;
- 3) Ecosystem goods and services, especially methods for setting value to these;
- 4) Merging socioeconomic information with ecological spatial data into an integrated analysis;

- 5) Identify spatial claims by different sectors to map the effects of that sector.
Especially important for the transient activities fisheries and shipping.

The co-chairs of STIGMSP suggested that number 1–4 should be recognised as ToRs for WGMPCZM in the coming years.

WGMPCZM discussed this wish and is generally positive about this suggestion. However, all of these are multi-year tasks. WGMPCZM came to the following conclusions:

- WGMPCZM has already contributed to number 1 with the cooperative research reports on Risk Analysis and the one resulting out of the ASC 2010 theme session in Nantes. The responses from WGMPCZM to requests of WGMHM and WGMASC are related to this as well. Both groups might be in a position to deal with parts of number 4. In 2013, when WGMPCZM has to revise its ToRs anyway, further activities in line with number 1 will be discussed.
- Number 2 is taken up by WGMPCZM in its revision of ToR a (see text on ToR a) and in a new ToR proposed for WGMPCZM for 2013 (see annex 16, new ToR e).
- Number 3 is taken up with activities under ToR c. However, this is currently restricted to cultural ecosystem services, which from WGMPCZM perspective seem to be the most pressing from a planning point of view. WGMPCZM will discuss potential for further activities on ecosystem services in 2013.
- Number 4 is to a large degree a mapping and data analysis activity. WGMPCZM does not do mapping. However, ToR b on quality assurance is relevant for mapping and data analysis and inclusion of (spatial) data into decision making processes. WGMPCZM will proceed with work on quality assurance and has identified its next steps under ToR b.

13 Discussion of requests from other EGs to WGMPCZM and evaluation of potential for collaboration with other EGs and other ICES initiatives in relation to the ICES Science Plan (ToR f)

Requests for cooperation have been received from the working groups on marine habitat mapping (WGMHM) and from WGMASC. Both were positively received. Furthermore WGMPCZM seeks cooperation with WGECO.

The **request** from WGMHM was formulated as follows: “There is a growing need to make habitat maps available for spatial planning. An effort should be made by WGMHM to come up with informed examples on how habitat maps are being used (e.g. probability maps). It is suggested to liaise with three expert groups on this topic: the WGMPCZM, WGEXT (contacts have been taken with the Chairs) and STIGMSP. The use of maps within both MSP and MSFD perspectives will be addressed as a ToR at 2012 meeting.”

Response from WGMPCZM: From a management perspective, habitat mapping plays a key role in spatial planning and subsequent implementation of spatial management measures. At a recent workshop (WKQAMSP) on quality assurance elements in marine spatial planning, data validity, usability and traceability was discussed in the context of scientific advice processes. Scientific advisory processes are common activities in fisheries stock assessments. These advisory processes ensure that the physical, chemical and biological data used in the formulation of advice is

valid not only in terms of the underlying science; but, in terms of its usability for the advice at hand. Models, methods and uncertainties are also taken into account in the advice. The same level of quality assurance and peer review are also required for habitat mapping used in management decision-making processes such as MSP. A system of quality assurance for maps is needed. WGMPCZM would be happy to make the report from WKQAMSP available to WGMHM before their 2012 meeting with a view to WGMHM undertaking an assessment of the applicability of the quality assurance principles to habitat mapping. This may lead to the drafting of a documented quality assurance system for WGMHM habitat maps.

The **request** from WGMASC was formulated as follows: “WGMASC see an opportunity to interact with STIGMSP. The group has expertise on spatial planning of aquaculture: e.g. how to define the best locations to grow shellfish and ensure that planning applications are processed efficient and effectively (GIS based tools as an aid in the development of management areas). Furthermore, case studies can be provided dealing with the relation between aquaculture and coastal and marine spatial planning.”

Response from WGMPCZM: From a management perspective the information offered by WGMASC is relevant as another layer of information when discussing the wider range of uses in MSP. At a recent workshop (WKQAMSP) on quality assurance elements in marine spatial planning, data validity, usability and traceability was discussed in the context of scientific advice processes. Scientific advisory processes are common activities in fisheries stock assessments. These advisory processes ensure that the physical, chemical and biological data used in the formulation of advice is valid not only in terms of the underlying science; but, in terms of its usability for the advice at hand. Models, methods and uncertainties are also taken into account in the advice. The same level of quality assurance and peer review are also required for mapping aquaculture potential locations for use in management decision-making processes such as MSP. A system of quality assurance for maps and information behind the maps is needed. In addition, discussing location of any activities including aquaculture requires socio-economic aspects to be dealt with. WGMPCZM recommends that WGMASC maps ecological aspects as well as socio-cultural vulnerabilities (through goods and services). Of relevance for MSP would be if WGMASC could do a comparison of site selection criteria developed by WGMASC with those used by commercial farm operators (who probably give greater weight to economic factors).

Potential Cooperation with WGEKO

Based on discussions around ToR a) a new ToR has been suggested for 2013, named “Examine the opportunities for population based assessments at an ecosystem level regarding cumulative pressures on the environment related to development plans from a cross-boundary perspective.” While WGMPCZM recognizes the relevance of this new ToR, other Expert Groups, in particular WGEKO are more suited to deal with the biological specifics of it. WGMPCZM therefore aims to have a half-day mini-workshop with WGEKO on this, at best during its 2013 meeting at ICES headquarter in Copenhagen from 8 to 12 April 2013. The chair of WGMPCZM will invite the chair of WGEKO to consider this request in the WGEKO 2012 meeting.

Annex 1: List of participants

Torjan Bodvin, Norway
Roland Cormier, Canada
Ian Davies, UK
Grete Dinesen, Denmark
Kira Gee, Germany
Rob Gerits, Netherlands
Matthew Gubbins, UK
Joacim Johannesson, Sweden
Andreas Kannen, Germany (Chair)
Thomas Kirk Sorensen, Denmark
Nico Nolte, Germany
Rafael Sarda, Spain
Vanessa Stelzenmüller, Germany
Josianne Støttrup, Denmark

Annex 2: Agenda

2011/2/SSGHIE07 The **Working Group for Marine Planning and Coastal Zone Management** (WGMPCZM), chaired by Andreas Kannen, Germany, will meet at ICES Headquarters, Copenhagen, Denmark, 20–23 March 2012. WGMPCZM will report by 25 April 2012 (via SSGHIE) for the attention of ACOM and SCICOM.

Draft Agenda WGMPCZM 2012

Lunch and coffee breaks are kept flexible

20 March

11:00-17:00 Convene at ICES

- Welcome (Chair), House-keeping announcements (Host and Chair),
- Introduction of participants;
- Agenda approval, Review of ToRs, organisation of the report;
- Activities of WGMPCZM during 2011/2012 (Chair);
- Developments within ICES (Chair);
 - o Change to multi-annual WGs,
 - o WGMARS report on WGMPCZM reporting
- WGMPCZM session at ASC 2012
- Requests from other EGs (Chair);
- 14:00 Guest presentation of the Seanergies Project (Angeliki Koulouri, EWEA) with discussion, comments to EWEA and identification of elements to be used for ToRs of WGMPCZM;

21 March

9:00-17:30 Convene at ICES

- ToR c) Review how the social–cultural dimensions of ecosystem services are (or can be) incorporated in MSP and ICZM, introductory presentation by Kira Gee and discussion
- Discuss future activities on ToR c, for example a specific workshop (WK), a scientific paper, a research report or requests to and cooperation with other EGs
- ToR d) Review methods for capturing fisheries information for inclusion in MSP (Lead: Ian Davies, Matthew Gubbins)
- Discuss future activities on ToR d, for example a specific workshop (WK), a scientific paper, a research report or requests to and cooperation with other EGs

- ToR a) Update on ICZM and MSP in different ICES countries with a focus on the need for knowledge for the development of management strategies including scientific advice required in each stage of the process
- Discuss future activities on ToR a
- Collect inputs for the report, report writing

22 March

9:00-17:30 Convene at ICES

- ToR b) Re-examine ICES Member States' progress in quality assurance in MSP and ICZM towards producing guidance and advice in implementation based on the results of the recommended workshop (WKQAMSP) on this matter; Expected outcomes are a proposal for a CRR and/or other follow up activities (Lead: Roland Cormier), introductory presentation of results from the workshop in Canada (Roland Cormier);
- Presentation of preliminary results of MESMA (Vanessa Stelzenmüller)
- ToR e) Receive a report on the collaboration with the Strategic Initiative on Coastal and Marine Spatial Planning and plan for further cooperation, e.g. develop a proposal for a CRR, a publication or a special issue in a scientific journal (participants in STIG-MSP and WKMCMSPP);
- ToR f) Discussion of requests from other EGs to WGMPCZM and evaluation of potential for collaboration with other EGs and other ICES initiatives in relation to the ICES Science Plan. Outcomes can be proposals for joint activities (e.g. joint WK, and/or joint CRRs or contributions to joint scientific papers);
- Collect inputs for the report, report writing

23 March

9:00-13:00 Convene at ICES

- Discuss draft report, open issues
- Formulate new ToRs for 2013,
- Formulate recommendations and resolutions
- Identify location and date for WGMPCZM meeting in 2013
- Report writing

Annex 3: Presentation of Angeliki Koulouri on Seanergies 2020

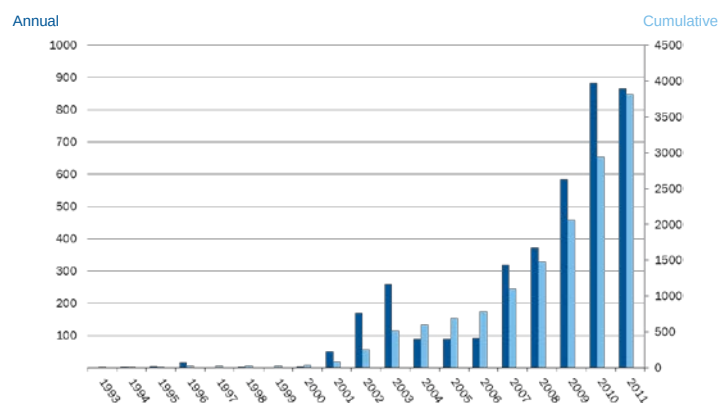


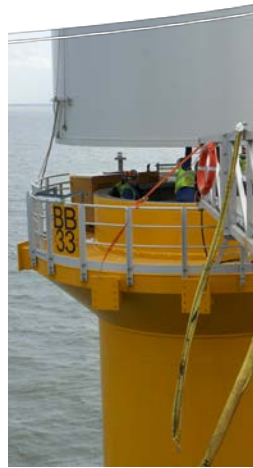
MEETING OUTLINE



- EWEA statistics and 2020/2030 offshore wind targets
- Project structure, partners, objectives
- The Baltic Sea/ the North Sea
- Main findings per sea basin
- Recommendations per sea basin
- Fostering transnational MSP – way forward
- Discussion

Cumulative and annual offshore wind installations





Offshore wind energy market in the EU in 2030

- Total installed capacity of 150,000 MW
- Annual installations of 13,700 MW
- Total electricity production of 562 TWh
- Meeting 13.9% of total EU electricity demand
- Avoiding 315 Mt of CO₂ in 2030
- Annual investments in offshore wind turbines of €17 billion in 2030
- Cumulative investments of €145.2 billion from 2021 to 2030



Offshore wind energy market in the EU in 2020

- Total installed capacity of 40,000 MW
- Meeting 4.2% of total EU electricity demand
- Annual installations of 6,900 MW
- Avoiding 102 Mt of CO₂ annually
- Total electricity production of 148 TWh
- Annual investments in offshore wind turbines of **€10.4 billion**
- Cumulative investments in offshore wind turbines of **€65.9 billion** in the period 2011 – 2020
- Employing 170,000 people in Europe

1. Project objectives



- **Highlight** good national practices for offshore MSP,
- Ensure coordination of MSP between EU MS,
- Provide **recommendations** to improve the national MSP regulatory framework,
- Provide **recommendations** to improve international MSP instruments,
- Provide **recommendations** to combine national and transnational MSP approaches in European sea basins,
- **Disseminate results and convince** different target groups (regional/national/European decision makers) of the need for an MSP.

1. Project partners



Time line: May 2010 – April 2012

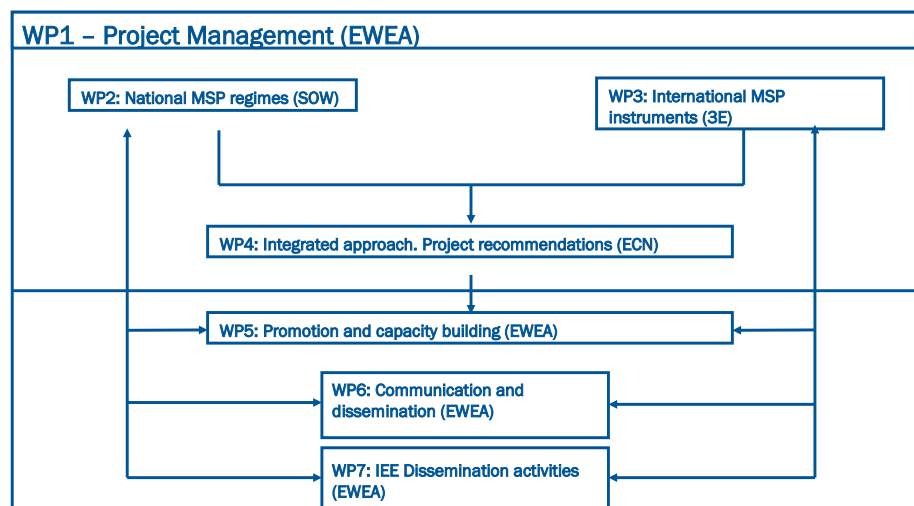
Partners: 8



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1. Project structure



2. (a) The Baltic Sea



- Potential: high winds and shallow waters
- Absence of policy stimulating ORE development – Minimalist NREAP targets
- MSP : eco-system based approach driven ‘sustainable ‘development approach’ (BaltSeaPlan)

	MSP for ORE	Installed offshore wind (MW)	NREAP 2020 Offshore target (MW)	EEZ	Overall MSP process
Denmark	ORE zoning in progress	467 MW	1,399 wind	Yes	No
Estonia	BaltSeaPlan	0	250 wind	Yes	No (MSP Pilot tests via the Baltic Sea project)
Finland	BaltSeaPlan	26	n/a 400 (consented offshore wind, 10 wave and tidal)	Yes	No
Germany	MSP (2009) for EEZ	2.5	10,000 wind	Yes	Yes, in EEZ
Latvia	BaltSeaPlan	0	180 wind	Yes	No
Lithuania	BaltSeaPlan	0	0		No
Poland	BaltSeaPlan	0	500 wind	Yes	No
Sweden		163	182 wind	Yes	No

2. (b) The North Sea



- Potential: high winds and shallow waters
- Most advanced practises in MSP
- Highest installed offshore energy capacity
- Most ambitious NREAP targets

North Sea States	MSP process for ORE	Installed offshore wind (MW)	NREAP 2020 offshore target (MW)	EEZ	Overall MSP process
Belgium	1 ORE area	195	2,000 wind	Yes	No
Denmark	ORE zoning	386	1,339 wind	Yes	No
Germany	MSP in EEZ (2009)	90	10,000 wind	Yes	Yes, in EEZ
Netherlands	2 OWE areas	228	5,178 wind	Yes	No
UK	Criteria based MSP	1,341	12,990 wind and 1,300 wave and tidal	Yes	No

3. (a) Baltic Sea: Main findings



Policy:

- No comprehensive/integrated MSP (except for DE in the Baltic EEZ and the TS),
- No sectoral zoning for ORE (partially DK),
- Poland: legal possibility since 2003 to put MSP in place, a strategic MSP policy to start in 2012,
(MSP test/pilot in the Gulf of Gdansk),
- Sweden: plans for a new eco-system based approach policy,
- Absence of policy stimulating ORE development, minimalist NREAP targets.

Permitting and licensing:

- No specific ORE licensing processes since no ORE development (for most countries),
- Germany - differences for TS (regional authorities) and EEZ (Federal Authority and Landers for cable and grid connection documentation),
- Denmark: one - stop-shop approach.

3. (a) Baltic Sea: Main findings



Stakeholder consultations:

- In most countries, stakeholder consultation is available via the SEA and the EIA,
- **Most advanced:** Germany with stakeholder involvement in MSP draft process for the EEZ in the Baltic Sea and project permitting,
- Poland: private and public stakeholders in the test MSP exercise in the Gulf of Gdansk,
- Sweden and Denmark : stakeholder involvement in project permitting, within EIA.

Sector conflict management via:

- Sweden: fishing, shipping, and defence have a dominant position in sector conflicts,
- Germany: maritime stakeholders (were) actively involved in the drafting of the MSP and the designation of ORE zones,
- Denmark : for example compensation measures for fishermen in place ,
- In Poland, 'ad-hoc consultation' is required by law
(ad -hoc consultation for ministries between ministries or sectors).

3. (a) Baltic Sea: Main findings



Data and information management:

- In most Baltic countries, information is available (not in GIS format at national level),
- Germany: as part of the MSP in the Baltic EEZ, GIS maps were created and regularly updated,
- Lithuania: efforts to integrate data into GIS through EU BaltSeaPlan project,
- However, the information is rather patchy and not available at all levels in the same format,
- At regional level, HELCOM data base free of charge (seems to be the most advanced amongst sea basins) – a good basis, but this requires update and extension so that it incorporates all layers ,
- The quality and update of the data still very much differ,
- BaltSeaPlan: will come in February 2012 with a model of data infrastructure.

3. (a) Baltic Sea: Main findings



Cross-border and regional cooperation:

- Countries analysed in the project are part of a wide range of regional fora and initiatives;
- Regional cooperation initiatives related to MSP recently developed:
 - o HELCOM/VASAB group on MSP,
 - o BASREC,
 - o EU funded project BaltSeaPlan ,
 - o Plan Bothnia (Finland, Sweden).
- Regional cooperation on grids: BEMIP,
- Regional cooperation on environment: HELCOM,
- EU Strategy for the Baltic Sea requests MSP,
- All Baltic countries are members of the Committee on Spatial Planning and Development of VASAB.

3. (b) North Sea: Main findings



Policy:

- BE, DK: Offshore wind development policies and preferential zones in place based on energy law;
- NL, DE: Offshore wind development policies and preferential zones in place based on MSP;
- UK: Offshore wind criteria evaluated per project;
- BE: Designation of preferential zones outside territorial sea.

Permitting and licensing:

- Lack of grid capacity reason for permit suspension;
- Opposition from other sectors when no zoning policy is in place;
- Environmental permits cause much work;
- MS made efforts to reduce the amount of authorities involved.

3. (b) North Sea: Main findings



Sector conflict management:

- BE: some maritime sectors are subject to regional legislation and others to federal laws → zonal delimitation for offshore wind + public coordination service for conflict management between involved authorities;
- DK: compensation measures for commercial fishing are expected;
- UK: some sectors (aviation, defence) have a veto right in the permitting process → site specific discussions;

Stakeholder consultations:

- Stakeholder consultations take place in all countries;
- DE: stakeholder involvement in MSP for EEZ drafting process as well as in project permitting.

3. (b) North Sea: Main findings



Data and information management:

- Most North Sea countries are advanced: centralised GIS standard used (BE, DE, UK) and information is publicly available (BE, DE, NL)

Cross-border and regional cooperation:

- All North Sea countries are active in regional cooperation initiatives on MSP and offshore grid development (OPSPAR, Bonn agreement, NSCOGI, ENTSO-E);
- Complying with the EU-WFD and MSFD;
- ESP00 Convention regulates the need to include cross-border cooperation in maritime planning.

4. (a) Baltic Sea: recommendations



Policy and legislation:

- Set-up national MSP policy frameworks with tangible targets and timelines,
- Provide policy incentives for ORE,
- Build on the BaltSeaPlan and PlanBothnia findings to prepare national MSP processes,
- Cooperate with organisation such as HELCOM/VASAB2010 group on MSP to implement spatial planning in the sea,

Permitting and licensing:

- Provide a real infrastructure plan with a strategic approach for grid planning
- Upgrade the grids so that ORE can be connected (once policy frameworks in place),
- 'A land to sea' approach to ensure good planning (onshore-offshore approach)

4. (a) Baltic Sea: recommendations



Stakeholder consultation:

- Ensure that stakeholder consultations happen as part of the SEA and EIA for all countries,
- Enhance public interest for ORE through an active stakeholder consultation in the consultation process,
- In order to prevent delays, appeal systems with defined rules and time limits should be put in place.

Sector conflict management:

- Ensure that every sector has equal rights,
- Set-up clear preventive and conflict management mechanisms (i.e. most sector conflicts are addressed case by case during the EIA process) to deal with conflicts e.g. compensation measures - DK, early involvement in MSP - DE
- Involve all sectors in the MSP process.

4. (a) Baltic Sea: recommendations



Data and information management:

- Create/Update a comprehensive marine database in GIS format for the whole Baltic Sea, based on:
 - HELCOM database,
 - The BaltSeaPlan model for data infrastructure,
- Set-up a technological committee so that there is a common understanding of the type and quality of data needed,
- Encourage data providers to update data and layers,
- Amend the INSPIRE Directive for the sea part too and integrate these guidelines once amended.

Cross-border and regional cooperation:

- Integrate cross-border and regional cooperation in the national MSPs, given the geographical situation of a semi-closed area to avoid conflicts;
- Build-up on existing initiatives to manage and prevent conflicts related to cross-border impacts of maritime activities.

4. (b) North Sea: recommendations



Policy:

- Ensure legal continuity and certainty (MSP legislation, coupled with ORE preferential zoning);
- Ensure local and public sectorial support (f.e. delegating decisions to local authorities, as in DE).

Permitting and licensing:

- Involve fewer authorities and reduce the number of procedures required;
- Anchor permitting to renewables legislation;
- Obligation for the TSO to connect ORE (already in DE);
- Permits valid indefinitely (already in UK).

Stakeholder consultation:

- Invite stakeholders to take part in MSP policy preparation;
- Take into account stakeholder's comments on individual projects → prevent recurrent opposition.

2. (b) North Sea: recommendations



Sector conflict management:

- Invite sectors to take part in MSP policy preparation;
- Sectoral guidelines with f.e. buffer zones and noise reduction methods;
- Develop reasonable mitigation and compensation measures.

Data and information management:

- Use GIS standard in all North Sea countries to facilitate exchange of information;
- Data should be up to date, publicly available, and centrally published.

Cross-border and regional cooperation:

- Continue current efforts;
- Use the SEA Directive to ensure cross-border consultation on environmental impacts, and build on the EU MSFD;
- Review whether or not the EU should have more competences on MSP.

5. Fostering transnational MSP – way forward



Key project findings:

1. Currently, no formalised EU framework or legislation for MSP
2. More effective ways of promoting MSP cooperation are needed
3. Regional approach appears to be most effective
4. National MSP is a prerequisite
5. EU can play a key role - require MS to implement MSP but form and substance should be left to MS to decide
6. Clear and concise guidance needed – today there are multiple sources of requirements, advice and principles

6. Discussion



Further discussion on recommendations for Baltic and North Sea

MSP and offshore RE state of play/development

AOB: Survey



More information available at SEANERGY 2020

<http://www.seanergy2020.eu>

Annex 4: Update on ICZM and MSP in different ICES countries (ToR a)

Update on MSP in the UK

Brief update – ongoing work to implement Marine Planning and enable an integrated and holistic approach to the management of coastal areas (ICZM)

UK Marine Policy Statement (MPS)

The UK MPS was adopted by all UK Administrations in March 2011 and will contribute to the achievement of sustainable development in the UK marine area. It is a key step towards achieving the vision shared by the UK Administrations of having 'clean, healthy, safe, productive and biologically diverse oceans and seas'.

The MPS will facilitate and support the preparation of Marine Plans, ensuring that marine resources are used in a sustainable way in line with the high level marine objectives. Across the UK new systems of marine planning are being introduced through primary legislation. The MPS is the framework for these systems. It provides the high level policy context within which national and sub-national Marine Plans will be developed, implemented, monitored, amended and will ensure appropriate consistency in marine planning across the UK marine area. It sets out the general environmental, social and economic considerations that need to be taken into account in marine planning. It also provides guidance on the pressures and impacts which decision makers need to consider when planning for, and permitting development in, the UK marine area.

The MPS provides a far reaching strategic contribution to ICZM and its implementation by seeking to embed consideration of the key principles of ICZM within all planning and decision making functions in coastal and marine areas. For example it sets out the participative process of marine planning, as well as data requirements and the need to consider the cumulative effects of activities.

The MPS also contains consideration of specific issues which coastal areas face that are generally the focus of ICZM: consideration of economic regeneration of coastal areas; the halting and if possible reversal of ecology and biodiversity loss; enhancing the protection for the historical environment; strengthening consideration of climate change adaptation, coastal change and flooding; and, the consideration of the effect of development on coastal landscapes and seascapes.

All public authorities making decisions which will or are likely to affect the marine environment either have to make those decisions in accordance with, or with regard to, the MPS.

UK Marine Policy Statement is available at:

<http://archive.defra.gov.uk/environment/marine/documents/interim2/marine-policy-statement.pdf>

A Description of the Marine Planning System for England

In March 2011 the Department for Environment, Food and Rural Affairs (Defra) published 'A Description of the Marine Planning System for England' and related Impact Assessment on the Defra website:

<http://www.defra.gov.uk/environment/marine/protect/planning/>

The document explains how marine planning is expected to be taken forward in England, establishing a baseline of understanding for the Marine Management Organisation (MMO) and stakeholders. The Impact Assessment outlines the potential costs and benefits of implementing the system. These documents will be used and built on by the MMO as it develops Marine Plans on behalf of the Secretary of State (Such Plans must be approved by the Secretary of State before consultation and at formal adoption).

First Marine Plans for England

In April 2011 the MMO began preparing the first two Marine Plans for England for the East of England Inshore and Offshore marine plan areas. To inform the development of the Marine Plans and the evidence base required, the MMO has so far:

- carried out a Strategic Scoping exercise to examine the spatial distribution of natural resources and activities within England's marine area, and to provide a national context for Marine Plans as they are developed. The Strategic Scoping Report is at:
<http://www.marinemanagement.org.uk/marineplanning/ssr.htm>
- commissioned and published the study 'Maximising the social-economic benefits of marine planning for English coastal communities' which will help marine planners, developers, local authorities and others with an interest in sustainable development in the marine area to understand various issues affecting coastal communities. The study takes a national snapshot of the socio-economic factors currently driving coastal communities around England and then looks in more detail at the East of England;
<http://www.marinemanagement.org.uk/marineplanning/se.htm>
- developed and published a web-based Planning Portal to enable stakeholder involvement and contribution to the marine planning process
<http://www.marinemanagement.org.uk/marineplanning/portal.htm>

Evidence and Emerging Issues Report

The MMO published an 'Evidence and Emerging Issues Report', which is a collation and assessment of the evidence and emerging issues for the East Inshore and East Offshore Marine Plan areas, encompassing the Strategic Environmental Assessment process <http://www.marinemanagement.org.uk/marineplanning/issues.htm>.

The Marine Plans for the East of England will be completed in 2013, with the ten Marine Plans for the whole of the English marine area being completed by 2021.

Coastal Communities fund

In July 2011 the UK Government announced the launch of the Coastal Communities Fund. This new fund (some £23.7m in 2012/2013) is designed to support the economic development of coastal communities, promoting sustainable economic growth and jobs so that people are better able to respond to the changing economic needs and opportunities of their area. The fund will support a wide range of projects, including those that support charities, the environment, education and health. Examples could include support for developing renewable energy, improving skills or environmental safeguarding or improvement.

See:

<http://www.communities.gov.uk/publications/regeneration/coastalfundprospectus>

Localism Act 2011

The Localism Act 2011 makes provision to devolve greater powers to councils and neighbourhoods and give local communities more control over housing and planning decisions. It gives local councils a General Power of Competence, to enable them to act as they see fit in the best interests of their communities, and create joint local authority-business bodies to promote local economic development

See: <http://www.communities.gov.uk/localgovernment/decentralisation/localismbill/>

Marine (Northern Ireland) Bill

The Northern Ireland Marine Bill (as currently drafted) sets out a new framework for Northern Ireland's seas based on: a system of marine planning that will balance conservation, energy and resource needs; improved management for marine nature conservation and the streamlining of marine licensing for some electricity projects.

The Bill will apply to the territorial sea and the seabed adjacent to Northern Ireland (out to 12 nautical miles).

See:

http://www.doeni.gov.uk/index/protect_the_environment/natural_environment/marine_and_coast/marine_policy/northern_ireland_marine_bill.htm

Progress with marine planning in Scotland

Scotland's National Marine Plan

The introduction of Marine (Scotland) Act 2010 means the Scottish Government now has the authority to introduce statutory marine planning for Scotland's seas. Scotland's National Marine Plan is a strategic framework that will help manage the increasing, and often conflicting, demands on our seas.

The National Marine Plan will manage increasing demands for the use of our marine environment, encourage economic development of marine industries and incorporate environmental protection into marine decision making. It will also have a role to play in managing adaptation to climate change.

Strong stakeholder engagement is key. Stakeholders will participate in local Marine Planning Partnerships, increasing transparency and accountability.

A pre-consultation of the Draft National Marine Plan - was held between March and June 2011 and revisions made during the rest of 2011. The final consultation on the draft plan is planned for Spring 2012 with the adoption and publication of the National Marine Plan in Winter 2012:

<http://www.scotland.gov.uk/Publications/2011/03/21114728/0>

At a local level, Marine Planning Partnerships within Scottish Marine Regions are being created to act as marine planning authorities in coastal waters. They will develop local marine plans taking into account local factors within the strategy provided by the National Marine Plan.

Integrated Coastal Zone Management Marine plans will be required to be compatible with terrestrial plans. Marine Planning Partnerships will provide a formal mechanism for the management of marine issues in the near shore area along with conflict resolution.

Supporting Documents

Scotland's Marine Atlas

The evidence base for the national marine plan is Scotland's Marine Atlas, which is an assessment of the condition of Scotland's seas, based on scientific evidence from data and analysis, supported by expert judgement. The Atlas contains information on the physical characteristics of the sea, pollution, biological diversity and the productivity of the seas around Scotland.

<http://www.scotland.gov.uk/Topics/marine/science/atlas>

Below are links to the various chapters of the Marine Atlas:

- [Physical Characteristics](#)
- [Hazardous Substances](#)
- [Biological Effects of Contaminants: Imposex and Environmental Genomes](#)
- [Oil and Chemical Spills; Radioactive Substances; Microbiological Contamination; Biotxin Monitoring in Scotland](#)
- [Eutrophication; Dissolved oxygen in the Clyde and Forth Estuaries](#)
- [Marine Litter and Case Studies: Silver in Intertidal Mussels and Underwater Noise](#)
- [Introduction; Protected Areas](#)
- [Intertidal Rock; Intertidal Sediments; Subtidal Rock](#)
- [Inshore and Shelf Sea Subtidal Sediments](#)
- [Deep Sea Habitats; Plankton](#)
- [Commercial Fish and Shellfish Stocks; Demersal Fish Community](#)
- [Sharks and Rays; Seals; Cetaceans; Seabirds; Waterbirds; Occasional Visitors; Non-native species in Scottish Waters](#)
- [Oil and Gas](#)
- [Carbon Capture and Storage](#)
- [Renewables](#)
- [Water Abstraction](#)

Interactive mapping system

This interactive tool has been designed to assist in the development of the National Marine Plan. The tool allows users to view different types of information and where appropriate, links have been provided to the related parts of Scotland's Marine Atlas where the information is discussed in more detail. There will also be links to the National Marine Plan. Relevant datasets are also being made available, where possible, and over time will be added to.

<http://www.scotland.gov.uk/Topics/marine/seamanagement/nmpihome/nmpi>

Scottish Marine Regions Project

Whereas national marine planning will set the wider context for planning within Scotland, regional marine planning will allow more local ownership and decision making about the specific issues within a smaller area. Following the introduction of the Marine (Scotland) Act 2010, a system of regional marine plans are going to be developed for Scottish waters. However, before these plans can be developed, the

coastal Scottish Marine Regions need to be established. Local planning within the Scottish Marine Regions will be delivered by Marine Planning Partnerships.

Under the Marine Act, Scottish Ministers were given the power to decide on the boundaries of Scottish marine regions and to delegate any regional planning to a nominated individual and either a public authority or a person nominated by a public authority. A consultation, seeking views on how the Government should create these regions took place in November 2010. An analysis of responses was carried out and the report is now available online at:

<http://scotland.gov.uk/Publications/2011/10/24105640/0>

To accompany the consultation, a layered 'pdf' document was created to show a number of different factors, including Local Authority Aquaculture Marine Planning Zones, Local Coastal Partnerships, Ferry Routes and Trunk Roads.

Sectoral planning

In parallel with the creation of a national marine planning system and planning authorities, the Scottish Government has developed a sectoral planning approach to the management of the emerging marine renewable energy industries (wind, wave and tidal stream). The process can be summarised in four stages:

Stage 1

- Scoping Studies of the opportunities for, and constraints on, development
- Regional Locational Guidance giving more detailed local information about potential plan areas

Output - Plan Options – areas to take forward with potential to be included as areas within the final development plan

Stage 2

- Strategic Environmental Assessment of the Plan Option area
- Habitats Regulations Assessment of the Plan Option areas, i.e. assessment of the implications of development for protected habitats and species, at strategic scale.
- Socio-economic analysis of the Plan Options

Output - Draft Plan – areas on maps

Stage 3

- Statutory Consultation with stakeholder groups and the public, with opportunity to amend the Plan, add or remove areas, etc.

Outputs – Plan and Post Adoption Statement, including analysis of the consultation responses

Stage 4

- Licensing, including improvement, streamlining and clarification of procedures and processes, and the identification of issues that require solutions in the science, licensing or policy fields.

Activities within the last 2 years have included:

Stage 1: Publication of new Scoping Study for offshore wind

	Imminent publication of new Scoping Studies for offshore wave and tidal stream energy
	Initiation of consultation on Scoping Studies for wind, wave and tide.
Stage 2:	Publication of SEA and HRA for offshore wind, and Sustainability Appraisal (i.e. including socio-economic studies).
	Updated SEA and HRA for wave and tidal energy in progress
Stage 3:	Completion of Statutory Consultation of offshore wind Plan
Stage 4:	Licensing is now operating through a single point of entry (one stop shop). Licences for the first commercial tidal stream energy farm have been issued. Applications for 5–6 large wind farm developments are expected during the next 3–6 months. Applications for up to 10 wave and tidal energy farms are in preparation.

It is anticipated that the sectoral planning approach and the policy-based draft National Marine Plan process will be brought together over the next 12 months to create a National Marine Plan that integrates policy statements with map-based information and sectoral plans.

Sweden

The Swedish government is currently preparing new legislation for marine spatial planning. After approval in the parliament before the summer, the legislation is expected to enter into force on 1 September this year. The Swedish Agency for Marine and Water Management, which is expected to be responsible for the delivery of the marine spatial plans, has set up a reference group as part of the preparations of the first phase of the planning process (collection and mapping). The planning will cover the area beyond 1 nm from the baseline (seawards) including the EEZ. There will be three plans; Bothnian Bay, Baltic Sea, and the Western waters (North Sea, Skagerrak and Kattegat). Discussions are ongoing on inviting researchers from the scientific community to follow the planning process from the very beginning to the adoption of the plans.

As a preparation for the introduction of MSP, a government commission submitted a report (June 2011) mapping and analyzing the existing knowledgebase for marine spatial planning in the Sweden. The commission concludes that, in particular, assessments of the biological and ecological values is lacking for large parts of the seas. Also the commission underlines the need to improve the socio-economic knowledge base. The report includes proposals on measures and guidelines for an improved system to provide a knowledge base (data and information) to support the introduction of MSP in Sweden.

Denmark

Denmark has no formal integrated coastal zone management or spatial planning framework for marine areas. A report “The Integrated Maritime Strategy”, published by the Danish government in July 2010, nonetheless recognizes a need for a more formalized coordination between Danish authorities with responsibilities for sectoral management at sea.

Permission for area usage in Danish seas is usually managed in an ad hoc, permit by permit fashion, and most often coordinated bilaterally between involved Ministries and/or Agencies. A clear division of national competences, which builds on laws and

delegations, is established (but this is not always sufficiently transparent). In addition, coordination exists between authorities which is based on consultation and on-going collaboration, e.g. committees and coordination groups.

Involvement of stakeholders (including the wider public) is customary in both the planning procedure and specific decisions. All authorities make use of public hearings, consultations and dialogue with the general public and stakeholders in relation to both planning and to specific regulatory functions.

Audit processes in relation to national plans are usually reviewed and revised on an ad hoc basis. However, for plans based on EU directives (Natura 2000 management plans, water plans, marine strategies) the cycle is typically every 6 years.

In 2010/2011 a “Sea Planning Group” was established, with the Ministry of Environment acting as secretariat, in order to map the Danish judicial and administrative landscape relevant to planning in/of Danish marine territory and to identify viable options for future marine spatial planning in Denmark. The overall conclusion coming from the group regarding future MSP development was to await the outcome of the EC’s impact assessment of MSP policy options and any subsequent proposals regarding maritime spatial planning procedure from the EU before proceeding with taking a consolidated position.

In the absence of a formal ICZM and/or MSP framework in Denmark, concerning ToR b) related quality assurance guidance and advices (best practices, protocols, etc.) have not yet been put forward.

Canada: Integrated Oceans Management

Marine Spatial Planning is pursued through existing Integrated Oceans Management processes. Generally, MSP is considered as the spatial management measure within an ecosystem-based integrated management plan. Oceans management was initiated with the intent of bringing ecosystem-based management approaches into planning of oceans uses in addition to reducing the level of fragmentation in policy and bureaucratic processes. The federal authority for oceans planning and management is provided by the Oceans Act under the leadership of Fisheries and Oceans Canada (DFO).

Each oceans management area has formalized governance and public engagement structures and processes. These structures include terms of references, reporting requirements and consultative and feedback processes. In oceans management, governance structures have senior management oversight committees, secretariats and stakeholder advisory bodies. In terms of scientific support to decision-making, the Canadian Scientific Advisory Secretariat of DFO manages peer review processes that are conducted to address scientific questions related to the management of Canadian oceans and the conservation of marine and freshwater resources.

In the coming year, integrated management plans for the Large Oceans Management Areas pilots planning initiatives are being moved to implementation. Integrated Management plans for three of the five LOMA’s have been completed while the remaining two will have completed drafts by the end of the year. Although these plans have spatial management aspects, the Oceans Act does not provide the legislative authority for zoning of activities in the marine environment. The management accountability of all management measures, including the spatial aspects, in an integrated management plan lie within the jurisdictional mandate of federal and provincial authorities that were implicated in the development of the plan. This past

year, “State of the Oceans” reports were completed for all five LOMA’s including summary reports. These provide an overview of the status and trends of various aspects of ecosystem health from commercially exploited species as well as oceanographic, physical, chemical and biological attributes of these ecosystems. This work is being coupled with enhance ecosystem research and the development of management responses to key environmental effects based on vulnerability assessment and policy analysis.

Based on the “National Framework for Canada’s Network of Marine Protected Areas”, the program will also be focusing on bioregional network planning for marine protected areas. This work is also being supported by scientific advice related to network representativity, objectives setting and monitoring. This work is in conjunction with the review of 6 areas of interests in the determination of marine protected areas.

Germany

An evaluation of the existing EEZ maritime spatial plan will be made by the summer of 2012 concerning offshore wind energy and whether the expectations have been met as outlined in the national Energy Strategy of 2010 (roadmap for 25 000 MW offshore wind energy by 2030).

In addition a plan for an offshore grid within the EEZ will be elaborated by BSH, identifying the electricity connections needed for the offshore wind farms, and the possibilities of having joint converter platforms for several wind farms (clusters), and the cables to be bundled in corridors towards land, including also a strategic forward looking approach.

Annex 5: Presentation on WKQAMSP by Roland Cormier (ToR b)

Given the number of ongoing MSP initiatives that are at different stages of development and implementation in Europe and North America, marine policies related to environmental planning activities and regulations are increasingly being considered farther offshore. One of the most visible policies of this kind is the EU Marine Strategy Framework Directive (MSFD). However, other policy approaches are also being considered and implemented to establish ecosystem-based management approaches in the US and Canada. Given that MSP is largely a novel and untested process, there is little guidance available on how to assess the quality of the resulting plans and management activities, the quality of the advice (e.g. scientific data, modelling of environmental processes, proposals for management actions) and the intermediate stages of data processing, consultations and decision-making points. It is against this backdrop, that the WGMPCZM, discussed the issue of quality assurance in their 2011 meeting. At the meeting, the members of the WGMPCZM recognized that quality assurance will become a significant issue in the coming years as MSP progresses towards implementation. Based on these discussions, WGMPCZM recommended to ICES in 2011 that a workshop be held in collaboration with the EU funded project KnowSeas (www.knowseas.com) and Fisheries and Oceans Canada (DFO) bringing together a small group of experts from planning practices and science (including natural and social scientists) to discuss links between quality assurance elements to planning practices based on their knowledge and experience in specific projects.

The workshop was organized along three themes being (1) quality assurance of scientific advice, for example through application of peer review advisory processes, (2) quality assurance of mechanisms or processes involved in planning aspects of MSP, and (3) auditing of implemented management plans and their performance. A total of 12 papers were presented covering institutional body approaches, regulatory frameworks and tools. In the first session, presentations focused on the importance of unbiased scientific peer review processes in the formulation of management advice. The presentation also covered approaches to validate the usability of data in decision-making as well as systems approach to facilitate the integration of multidisciplinary information including consultation and appraisal in support of science and policy development. Of particular interest was the discussion regarding the development of decision-making risk criteria similar to the context of Maximum Sustainable Yield used in fisheries management as means of applying this to planning and setting decision rules. In the second session, the presentation examined quality assurance aspects in terms of governance, objective setting, regulatory processes and adaptive management systems from an ecosystem-based management approach. Members emphasized the need for a quality assurance system to ensure that decision-making and planning processes of MSP initiatives are holistic in their approach. Such a system would provide assurance that the resulting plan meets objectives set at the onset of the initiative. It would also ensure the effectiveness and efficiency of human and financial resources involved in the planning initiative. From the perspective of a quality assurance system, tools such as the Ecosystem-Based Management System (EBMS) would also ensure that the ecosystem approach and adaptive management concepts are fully imbedded in the planning and decision-making processes. Session three brought together quality assurance aspects and perspectives related to environmental effects monitoring, regulatory decision-making as well as regulatory verification and auditing of environmental management plans. In addition to discussions regarding risk management criteria of regulatory decision-making, presentations also included

a review of land planning theories within the con-text of MSP. In addition, the use of environmental management policy gap analysis was discussed as a form of quality assurance to ensure that spatial management strategies are being developed in accordance with existing policies and practices.

Workshop participants found that elements of quality assurance are embedded in a variety of environmental planning activities as they relate to integrated management, environmental assessments and marine spatial planning. Members recognized that management quality assurance needs to be set apart from quality assurance of scientific advice and then quality assurance for developing plans is not the same as for implementation such as licensing, environmental assessments and integrated management. In addition to bringing clarity and a new way of thinking about the links between MSP processes and quality assurance, the workshop demonstrated that quality assurance elements can be found in advisory processes, data and evidence gathering and decision-making along each step of the MSP process. The issue is that quality assurance is being implemented on an ad hoc basis and that a quality assurance system would greatly benefit MSP processes in terms of the quality of the resulting plan. Three recommendations were provided to WGMPCZN as per Table 1 while the report is being published separately.

Table 1. WKQAMSP recommendations.

Recommendation	For follow up by:
1. WGMPCZM to discuss the results of this workshop and potential follow-on activities during their meeting in Copenhagen on 20-23 March 2012	WGMPCZM
2. WGMPCZM to get engaged in the review paper of quality assurance elements of actual MSP processes as a case study to identify best practices	WGMPCZM
3. SIASM / STIGMSP to support the review paper of quality assurance elements of actual MSP processes as a case study to identify best practices	SIASM / STIG-MSP

The recommendations of the workshop were discussed by member of the WGMPCZM. Generally, the members agreed with the recommendations of the workshop as to conduct a review of quality assurance practices. The review would initially be an evaluation of the quality assurance elements presented during workshop. The review would include the development of a generic quality assurance system (based on ISO) which would then used to assess a collection MSP, IOM, EA initiatives as case studies. The review would also review the issue of differences in nomenclature between quality assurance and environmental terminologies. The report would then be tabled at the next meeting of the WGMPCZM meeting in 2013. It is expected that the report could be published as a cooperative research report (see annex 10).

Annex 6: Presentation on MESMA by Vanessa Stelzenmüller (ToR b)



MESMA: Monitoring and evaluation of spatially managed areas

EU FP7 project 2009-2013
www.mesma.org



MESMA



Call FP7 : Cooperation Work Programme



Monitoring and Evaluation of Spatially Managed Areas

AT A GLANCE

TITLE: Monitoring and Evaluation of Spatially Managed Areas (MESMA)

INSTRUMENT: Large Collaborative Project FP7

TOTAL COST: € 8 517 749

EC CONTRIBUTION: € 6 568 842

DURATION: 48 months

START DATE: 1 November 2009

CONSORTIUM: 21 partners from 13 countries

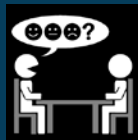
PROJECT COORDINATOR: IMARES (NL)

PROJECT WEB SITE: <http://www.mesma.org>

KEY WORDS: Marine Spatial Management, Spatially Managed Areas, SMA, ecosystem based approach, planning strategies, sustainable development

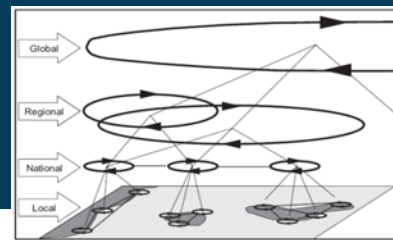
Aim of MESMA

to produce a transparent and integrated tool box
(concepts, models and guidelines)



for monitoring and evaluation

of spatially managed areas at
different scales
(local, national, regional)



MESMA Challenge



Local

approach

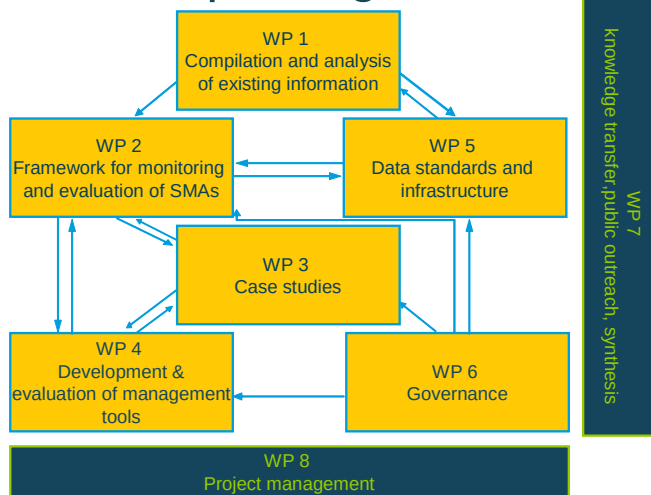


Coherence

in instruments

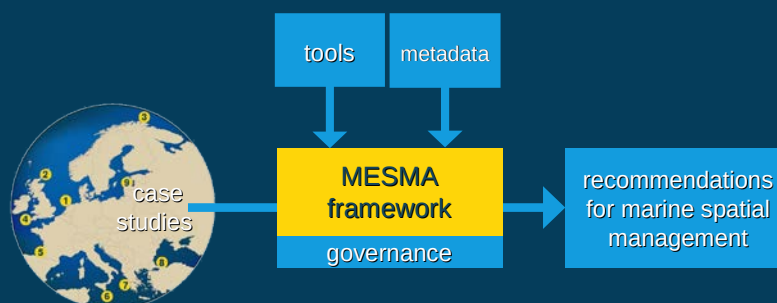


MESMA work packages



 Monitoring and Evaluation of Spatially Managed Areas

MESMA



 Monitoring and Evaluation of Spatially Managed Areas

Existing knowledge (WP1)

Objectives:

- Review on spatial management practices of marine areas: concepts, objectives, frameworks and tools
- Review on methods and tools used in monitoring and evaluation of the state of SMAs
- Catalogue of European seabed biotopes, Goods & Services, sensitivity, and conservation status

Current status/ Results:

- Completed
- Katsanevakis et al. 2011. Ecosystem-based marine spatial management: Review of concepts, policies, tools, and critical issues. *Ocean & Coastal Management* 54: 807-820

Framework to assess SMAs (WP2)

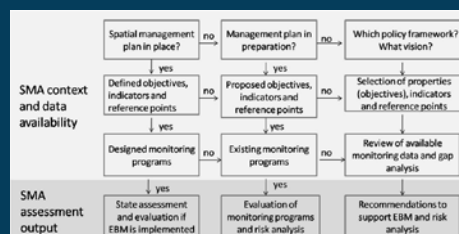
The MESMA framework needs to be generic and flexible to be applicable to all SMAs

Objectives:

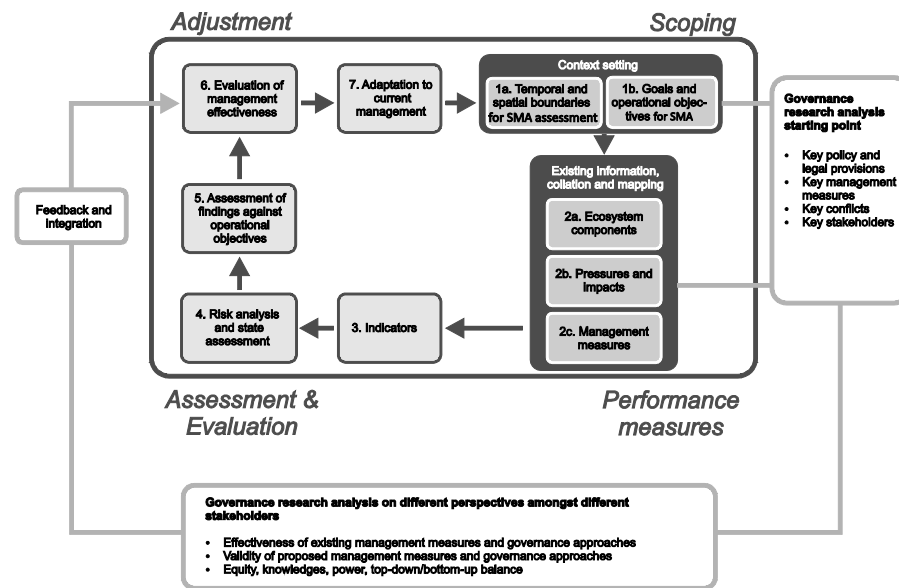
- to provide practical guidance for the monitoring and evaluation of SMAs
- Manual for its application

Current status/Results:

- Case studies tested 1. version of the framework
- Feedback process for revision
- Stelzenmüller et al. (submitted). Monitoring and evaluation of spatially managed areas: A generic framework for implementation of ecosystem based marine management and its application. *Marine Policy*



Framework to assess SMAs (WP2)



 Monitoring and Evaluation of Spatially Managed Areas

Case studies (WP3)



1. Southern North Sea
2. Pentland Firth & Orkney Waters
3. Barents Sea & Lofoten area
4. Celtic Sea
5. Basque country continental shelf (SE Bay of Biscay)
6. Strait of Sicily
7. Inner Ionian Archipelago & adjacent gulfs
8. Black Sea
9. Baltic Sea

Objective:

- to test the MESMA tools in a coherent way and assess how balanced governance can be achieved

Current status/Results:

- 2nd run framework application for all case studies
- Comparison of assessment results

 Monitoring and Evaluation of Spatially Managed Areas

Illustration of framework application

Examples of step 3 applications

Indicators are required to measure the status of attributes of the ecosystem components and criteria related to the operational objectives

Example 1 - Barents Sea CS:

The puffin population size as “state” indicator for several of the objectives in the Barents Sea Management Plan such as:

- preservation of ecosystem state and productivity, viable levels of threatened and vulnerable species
- existence of viable populations of naturally occurring species where genetic diversity is maintained

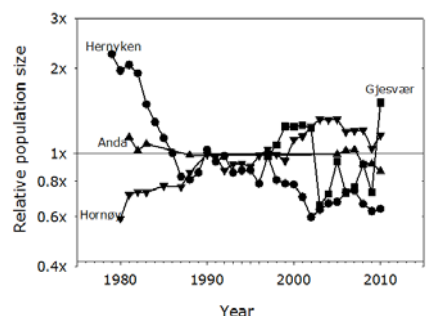


Illustration of framework application

Example 2 - Inner Ionian Archipelago CS:

Hake (*Merluccius merluccius*) landings as a “pressure” indicator to evaluate the achievement of the operational objective of a sustainable exploitation of the resource in the Inner Ionian Archipelago

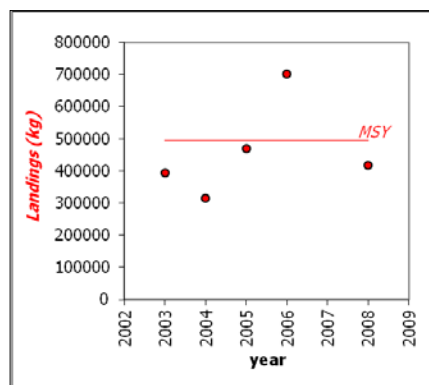


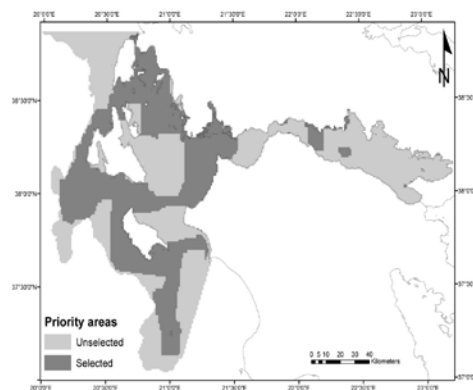
Illustration of framework application

Example of step 7 application:

Recommendations should comprise alternative sets of operational objectives, management measures or even an evaluation of the appropriateness of the geographical delimitation of the SMA

Inner Ionian Archipelago CS:

- Quantitative scenario identifying candidate areas for a network of coastal and off-shore MPAs using Marxan
- Selection of priority areas was based on minimizing the conflicts with economic activities such as fishing and tourism.



 Monitoring and Evaluation of Spatially Managed Areas

Management tools (WP4)

Objectives:

- to evaluate and provide tools supporting the framework application and contributing to a sustainable development of European Seas and coastal areas

Current status/Results:

- Inventory of tools is available <http://publicwiki.deltares.nl/display/MESMA/Home>
- Tools are tested and evaluated
- Methodology for tool evaluation is under development
- e-manual for framework/online application under development

 Monitoring and Evaluation of Spatially Managed Areas

Data management (WP5)



Objectives:

- to build an online application that allows the storage and the discovery of data and metadata in order to support the monitoring and evaluation of SMA's

Current status / Results:

- A standards compliant metadata profile has been designed and implemented on GeoNetwork
- 130 records for the 9 case studies (<http://mesma.ucc.ie/>)
- Draft theme list for dataset classification proposed and an inventory of vocabularies created
- Inventory of datasets that will be available in MESMA is being prepared



Monitoring and Evaluation of Spatially Managed Areas

Data management (WP5)

The screenshot displays the GeoNetwork web application interface. The main content area shows a metadata record for 'MESMA_Headline'. The record includes fields for Title, Date, Date type, Abstract, Language, Coverage, Coverage set, Type of coverage, Spatial representation type, and Equivalent scale. The record is identified as 'MESMA_Headline_Headline' and is associated with the 'Hullam Center for Marine Research/Institute for Marine Biological Resources'. The record is also associated with the 'MESMA_Headline' dataset.

Find interactive maps, GIS datasets, satellite imagery and related applications

MESMA_Headline

Data Identification

Title: MESMA_Headline_Headline
 Date: 2011-04-21T00:00:00
 Date type: Creation: Date identifies when the resource was brought into existence
 Abstract: Vector grid for Headline coverage.
 Language: English
 Coverage: 8-bit variable size VCS Transfer Format, based on ISO/IEC 15946
 Coverage set: Topological view
 Type of coverage: Spatial representation type
 Spatial representation type: Vector
 Equivalent scale: Vector data is used to represent geographic data
 Denominator: 10000

Point of contact

Organization name: Hullam Center for Marine Research/Institute for Marine Biological Resources
 Role: Resource provider: Party that supplies the resource
 Name: AGOS-00000000000000000000
 Surname: AGOS-00000000000000000000
 Given name: AGOS-00000000000000000000
 Administrative area: Hullam
 Postal code: 10000
 Country: Greece
 Electronic mail address: agos@hullam.com
 Graphic message: AGOS-00000000000000000000



Monitoring and Evaluation of Spatially Managed Areas

Governance (WP6)

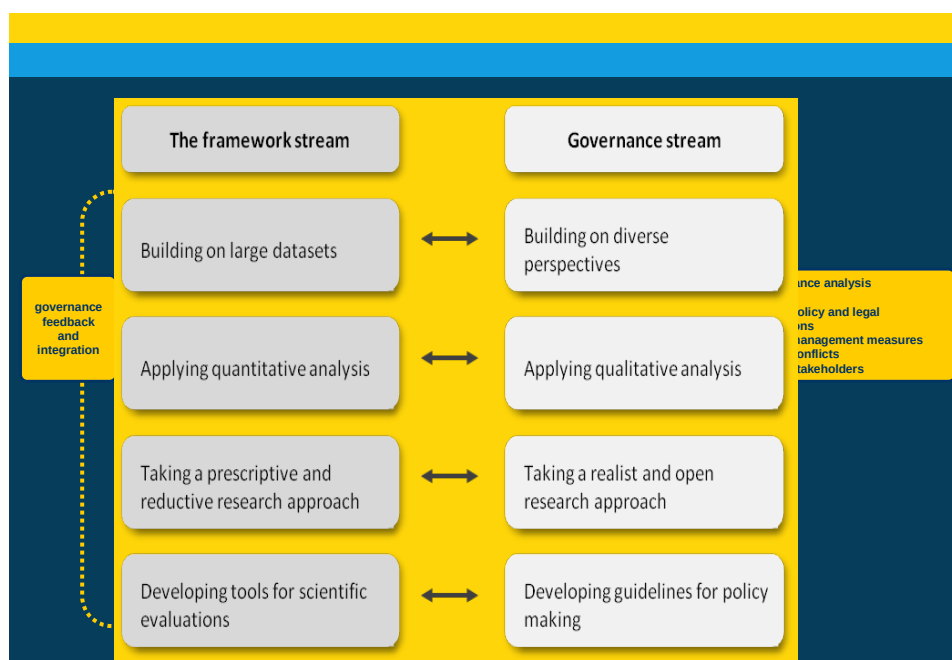


Objectives:

- to assess how to effectively combine top-down, bottom-up and market approaches to marine spatial planning

Current status /Results:

- Analytical structure developed through case study workshops:
 - Assessment of the context, objectives, policy framework and governance approach for each case study
 - Analyses how economic, interpretative, knowledge, legal and participative incentives have been combined to address conflicts and effectively achieve a particular objective
 - Paper on comparison of MSP landscape



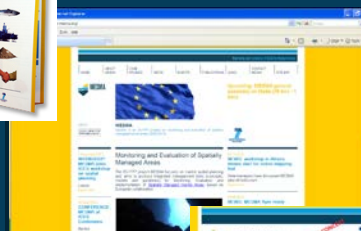
Dissemination (WP7)

Objectives:

- Internal and external communication

Current status:

- Sharepoint, Bi-monthly progress mail, 2 GA's, 4 ExB's, CS-meetings, WP-meetings
- www.mesma.org
- Newsletters, Flyers, presentations at conferences
- Follow up approach (e.g joint MSP Symposium) under development



www.mesma.org



Annex 7: Presentation on socio-cultural dimensions of ecosystem services by Kira Gee (ToR c)

WGMPCZM workshop

How can the social–cultural dimensions of ecosystem services be incorporated in MSP?

Kira Gee

21 March 2012, ICES Headquarters, Copenhagen

 **Helmholtz-Zentrum
Geesthacht**
Centre for Materials and Coastal Research

Problem context for MSP

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Geesthacht**
Centre for Materials and Coastal Research

- A dynamic context: A growing range of ecosystem, social, cultural and economic demands placed on the sea by a growing range of stakeholders
- Challenge of allocating sea space in line with ecosystem approach and fairly, ensuring that costs and benefits are equally shared

Requirements for MSP:

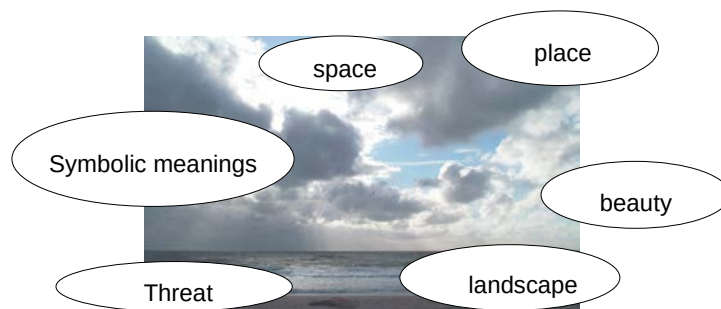
- **Get to know the resource:** What are we dealing with? (ecology, different sea values, goods and services)
- **establish risks** that new uses or cumulative impacts might bring to the resource and to goods and services
- **Set priorities** for MSP/management

MSP: A question of values

Problem:

Limited knowledge of sea values

- The sea as a place of multiple meanings...
- The sea as a personal and social construct...
- ... a setting for generating economic and intangible value...



3

ES as a way of capturing values

Intangible (immaterial) benefits and values:

Commonly underrepresented but more important than commonly thought

- ➔ A question of making intangibles visible and putting them on a par with tangibles (e.g. in sustainability appraisals and risk assessment)

4

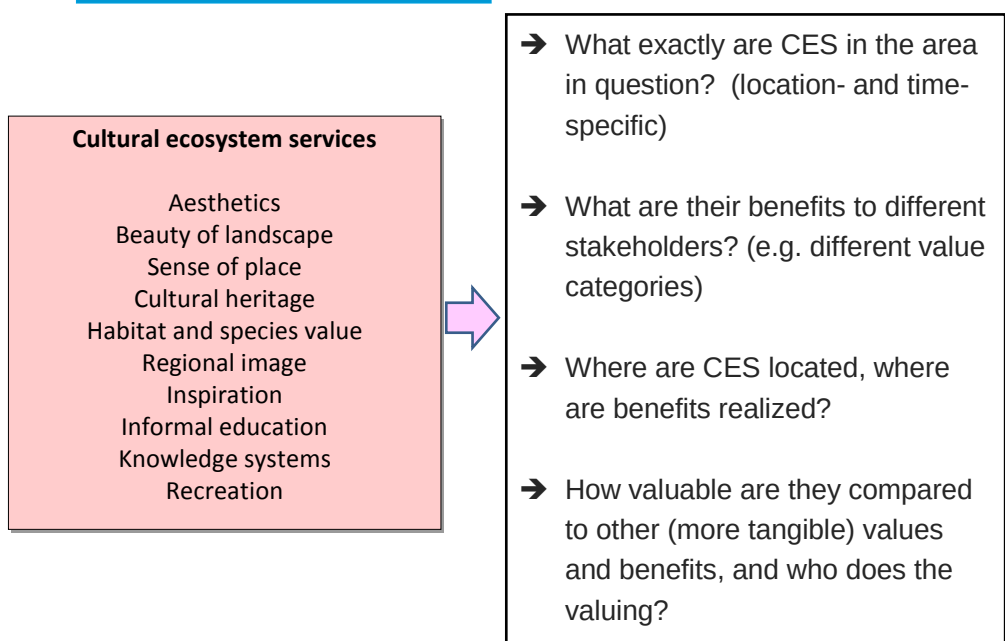
Literature on CES

Examples of recent research:

- A wide range of literature about aspects of CES but few studies on the marine environment specifically
- A mix of research on methods (eliciting intangible values) and values themselves
- Place attachment as one focal point, also aesthetics, wilderness, recreation (mix of benefits, services, values)
- Currencies for assigning value: Emotional response to threat, monetary (willingness to pay), awe

5

CES in MSP: Some open questions



6

How CES have been studied

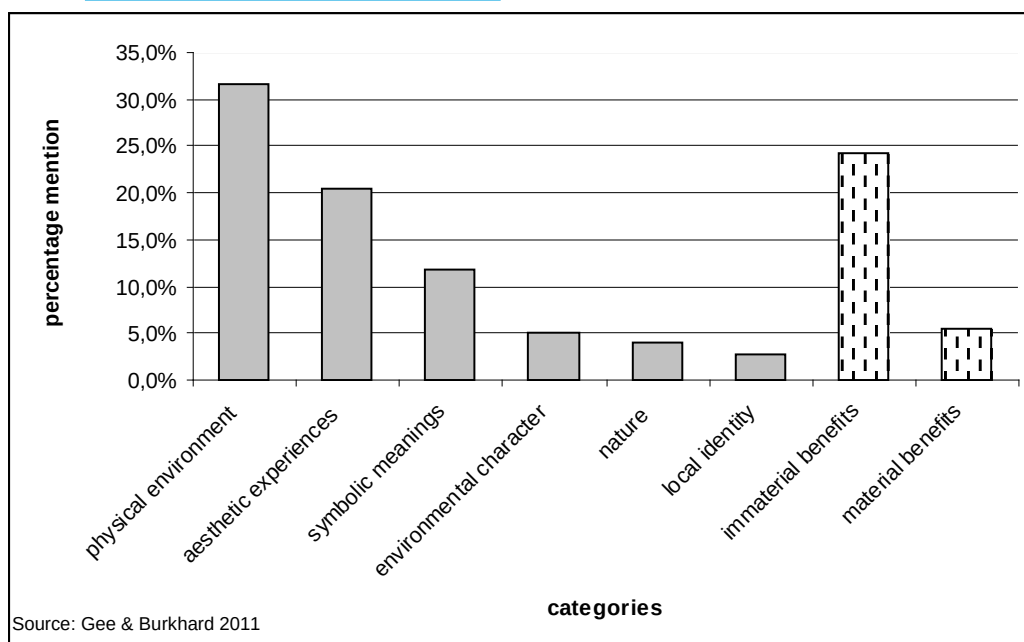
1. The importance of intangibles: What the sea means to residents on the German North Sea coast:

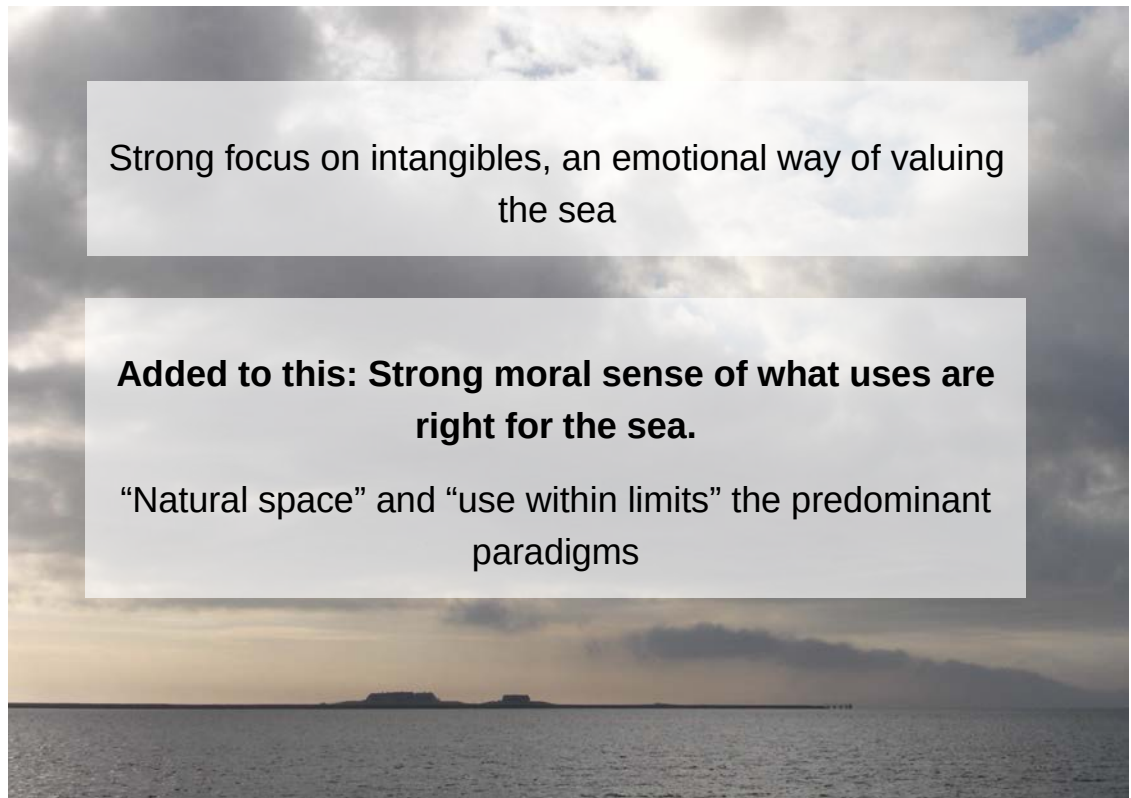
- “Salty air, recuperation, nature, fish, tourism, untamed force of nature.”
- “The wide horizon influences the soul and physical health. Makes me feel good, away from hectic life.”
- “The sea is life. It is shipping, boats and infinity. It is creation, and unpredictable, but also a calming sense of comfort.”
- “The murmur of the water, the sun glittering on the water, storms and waves crashing on the shore.”

Source: Coastal Futures survey in Dithmarschen und Nordfriesland (2005)

7

Categorization of responses and category strength in terms of percentage mentions. (Total coding units = 1363)





Challenge 1:

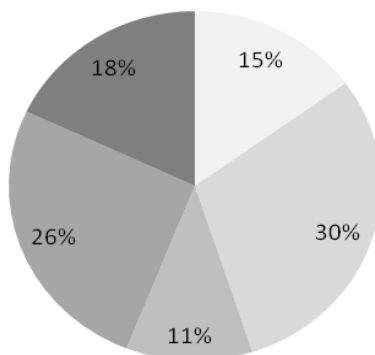
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What are the CES in question? Assessment can be trickier than we think (and subject to our own value assumptions)

- Are we talking about:
 - „The thing itself“
 - Space, place, the physical characteristics of the sea/coa
 - **Appreciation of the thing**
 - Aesthetic , spiritual, moral, monetary appreciation?
 - **Knowledge of the thing?**
 - Existence value?
- Need to appreciate difference between services, (the thing) benefits (how the thing is valued) and different types of value (what kind of value is given to something)

How CES have been studied

Offshore wind farming: conflict between old and new CES



Questionnaire survey: What is your position on offshore wind farming?

strongly in favour (light grey)

strongly against (dark grey)

Source: Coastal Futures survey in Dithmarschen und Nordfriesland (2005)

11

How CES have been studied

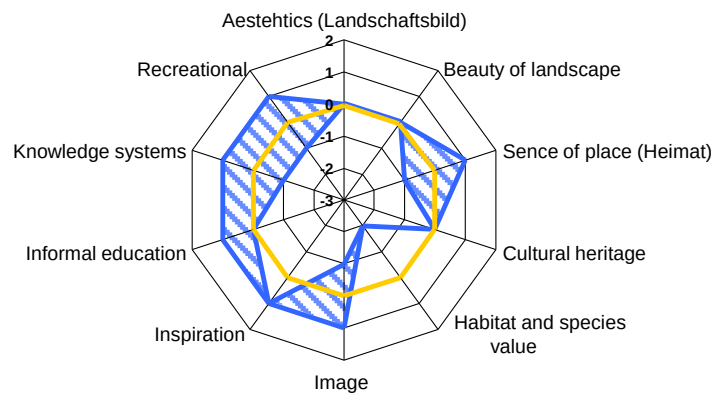
Category	Frequency (% of all arguments)
Main arguments against offshore wind	
<i>Aesthetics of landscape and seascape</i>	21.8
<i>Nature conservation</i>	15.1
<i>Emotional arguments</i>	7.6
<i>Shipping safety</i>	3.6
Main arguments in favour of offshore wind	
<i>regenerative/clean form of energy generation</i>	23.3
<i>Employment in the region</i>	5.2
<i>Climate change</i>	0.2
Main uncertainties with respect to offshore wind (undecided respondents)	
<i>Technological feasibility</i>	4.6
<i>Economic feasibility</i>	4.4

12

How CES have been studied

CES as a way of framing the impacts of offshore wind farming

Local / islands and municipalities scale:



Source: Lange et al. 2011

13

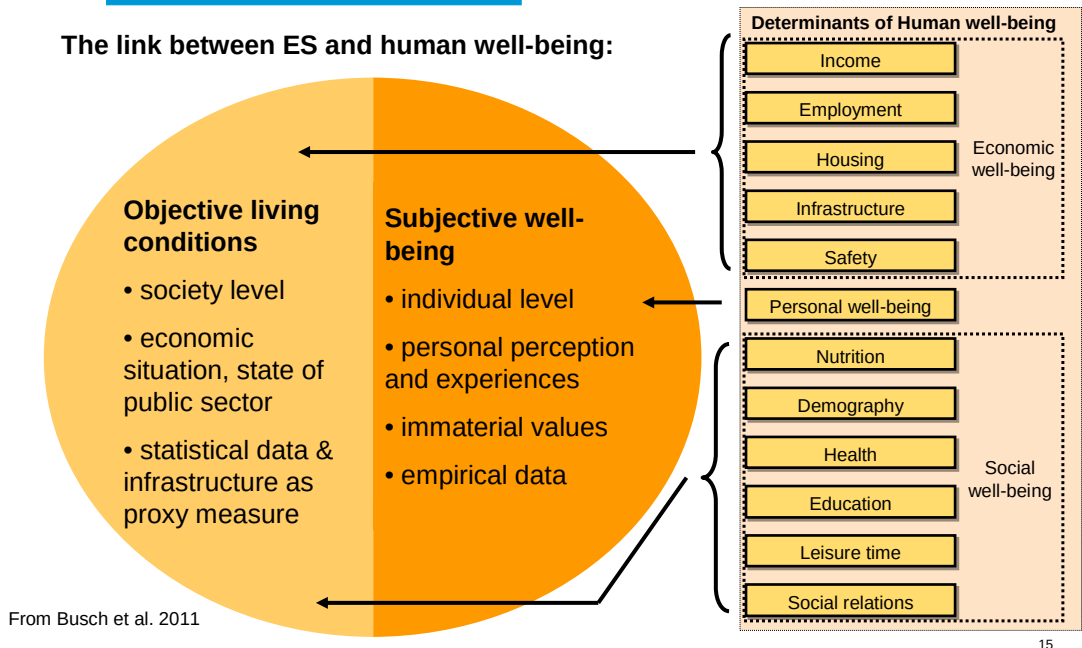
Challenges 2:

- **Assessment of CES at different scales can lead to different outcomes – which scale counts?**
- **Outcomes depend on who does the assessing, and when the assessment takes place (values change over time)**

14

How CES have been studied

The link between ES and human well-being:

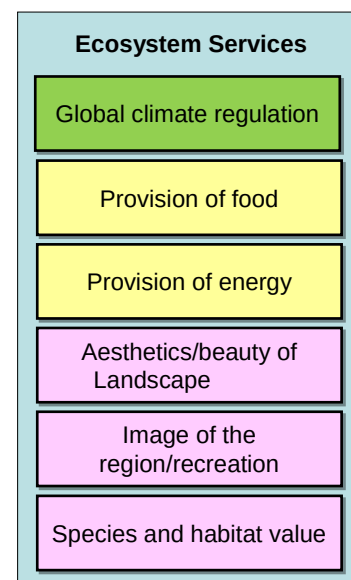


How CES have been studied

Step1: Identify ES impacted by OWF development

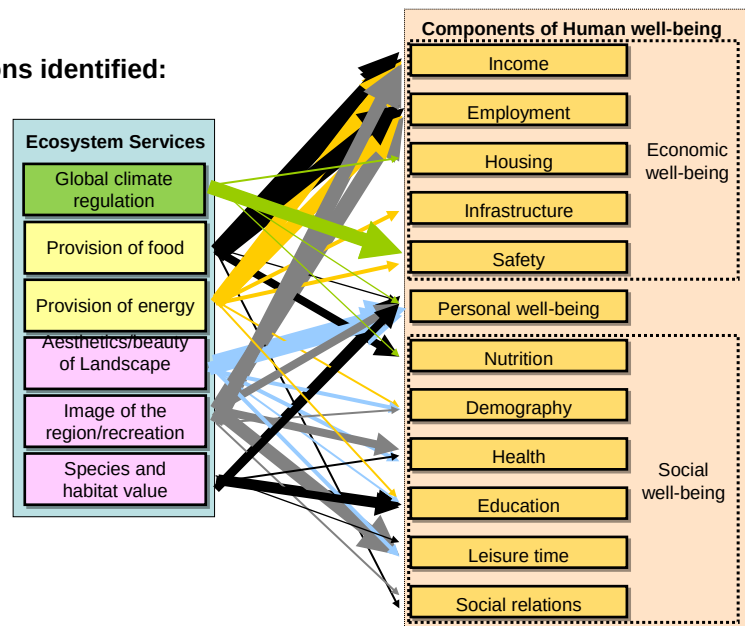
Step 2: Construct direct connections between ES and objective or subjective aspects of human well-being and define indicators

Step 3: Discuss and rate those connections



How CES have been studied

Interrelations identified:



From Busch et al. 2011

17

Challenges 3:

- How to validate these links?
- How to compare different weights of arrows?
→ the problem of incommensurability/ the question of a common currency or value scale
- How to weigh personal well-being against societal well-being?

18

An example of cultural values mapping

Socio Economic Cultural Overview Assessment Values project (SECOA) (Canada)

Aim: to map the place-based personal attachments of coastal residents to places having socio-economic and cultural value.

Key questions:

- What social and cultural features in the coastal zone defy monetary valuation and are considered invaluable or irreplaceable in our society?
- What methods are available for identifying and mapping these highly valued places so that the social and cultural values of coastal communities can be taken into account when developing integrated coastal and oceans management plans through coordinated planning processes?

19

An example of cultural values mapping

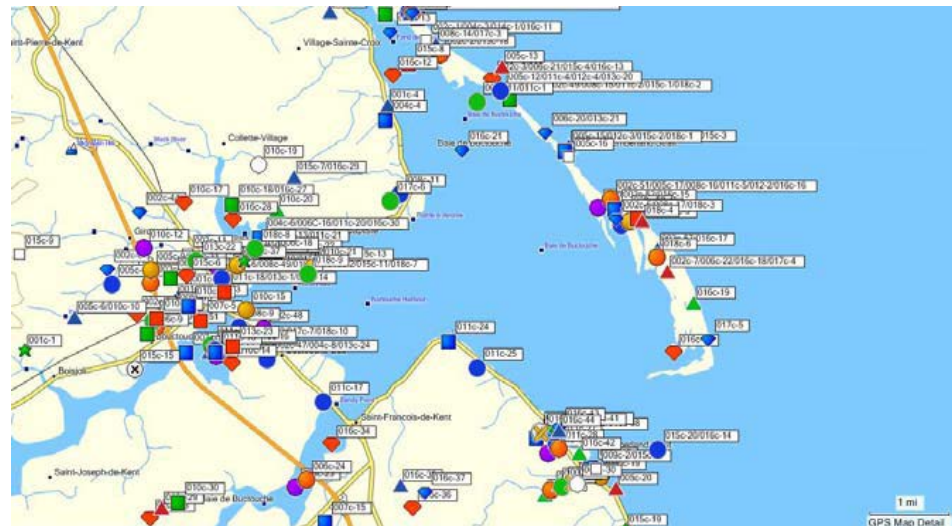
Used **Landscape Value Typologies** for work in focus groups, where participants mapped their personal values in the coastal zone:

Aesthetics: "I value these areas for their attractive scenery, sights, sounds, smells, silence."

Other categories: Economic, recreation, future, life sustaining, learning/scientific, biodiversity, spiritual, intrinsic, heritage, health, wilderness, special places, creative, socio-cultural.

20

An example of cultural values mapping



21

Challenges 4:

- Needs „map literacy“
- Needs willingness to pinpoint places in space
- Needs clear identification of constituency (who attaches value to a site?)
- Needs scale on which to measure the importance of the values in question (what's to lose)

22

How CES have been studied

The link between inner convictions and attitudes

Understanding deeper value sets upon which opinions and attitudes are based as a prerequisite for good dialogue and conflict resolution

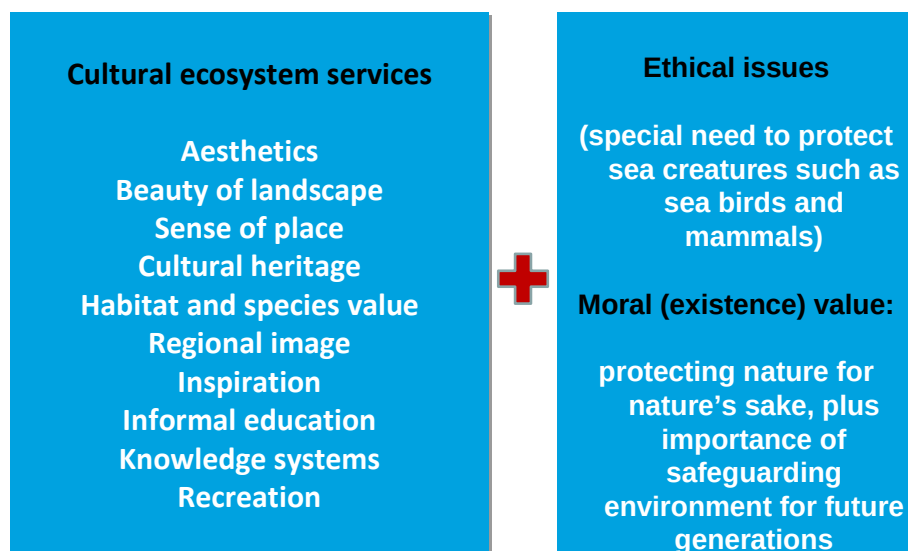
- „No“ to OWF for example can have many reasons – moral / ethical values, or simply NIMBY, or belief that better alternatives exist etc.

The same applies to understanding paradigms / world views

- A combined value assessment to include both types of value in the MSP process, to ensure a solid foundation for decision-making about marine space

23

A combined value assessment



Towards a research agenda?

1. Identifying CES/methods

- Multiplicity of services, benefits and values
- Range will vary depending on location, timing, groups involved
 → is it possible to develop a general methodological framework?

2. Trade-offs / “valuing” values /methods

2. What metrics and scale s do we use to measure how valuable intangibles really are? (e.g. loss to society/community , choice experiments etc? Valuation methods must match diversity of values in question)
- Are there CES/values not amenable to trade at all? (“no go areas”, cultural threshold /limits?)
- How to rate intangibles against other intangibles and tangibles/comparability?
- How to value multiple CES/value sets?

25

Towards a research agenda?

3. The constituency

- Who gets to assign value, and whose value is more important than others? (e.g. issue of scale)
- How to ensure all stakeholders are included? Methodological and time constraints

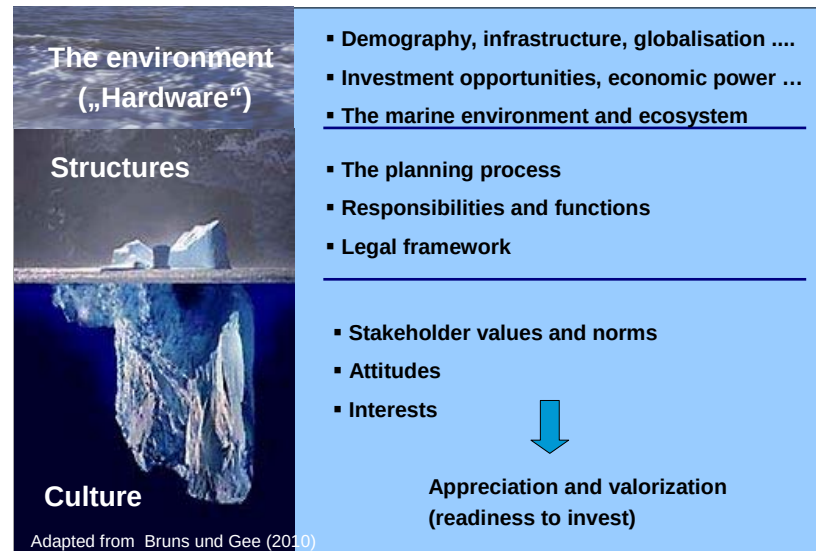
4. Mapping

- how to locate CES in space?
- Where are the benefits of CES/values realized? (local – regional – national – international?)
- Are there values that cannot be mapped? (e.g. “everything is connected”), unwillingness to “give up a location”
- The danger of “maps as the truth” ; the need to for continuous monitoring

Valuation is local/place-specific and can be “messy” – beware of pre-packaged formats?

26

Aim must be to support MSP at different stages



Annex 8: Case studies on cultural dimensions (ToR c)

Cultural values in the Southern Gulf of St Lawrence

Roland Cormier, Fisheries and Oceans Canada

In 2009, Fisheries and Oceans Canada contracted the Southern Gulf of St. Lawrence Coalition on Sustainability (Coalition-SGSL) to geo-reference and document the place-based personal attachments of coastal residents to places having socio-economic and cultural values (DFO 2009).

A methodology to gather cultural data was developed by a team of eight social, history and cultural specialists from universities and institutions throughout the Maritime Region. They selected and adapted the research instrument and method; guided the data gathering process; critiqued the process; and conducted an initial analysis and interpretation of the data to determine how people responded to the chosen method. The geographic area for the pilot study was the Northumberland Strait, involving the three Maritime Provinces (Prince Edward Island, New Brunswick and Nova Scotia). Six focus groups, two in each province, were consulted where they mapped their personal values in the coastal zone using a methodology that has been pioneered by G. Brown (Brown and Reed, 2000). The methodology classified the location along specific cultural criteria (Table 1).

Table 1. Landscape Value Typologies Used by Brown & Reed (2007).

Aesthetic	I value these areas for their scenic qualities.
Economic	I value these areas because they provide income and employment opportunities through industries like tourism, forest products, mining or other commercial activity.
Recreation	I value these areas because they provide outdoor recreation activities such as hiking, camping, fishing, skiing, or wildlife viewing.
Future	I value these areas because they provide opportunities for future generations to know and experience them.
Life Sustaining	I value these areas because they help produce, preserve, and renew air, soil, and water.
Learning/Scientific	I value these areas because they provide opportunities to learn about the natural environment through activities like nature interpretation and scientific study.
Biological diversity	I value these areas because they provide places that support a variety of plants, wildlife, or other living organisms.
Spiritual	I value these areas because they are sacred, religious, or spiritually special places.
Intrinsic/Existence	These areas are valuable for their own sake, even if I or others don't use or benefit from them.
Historic or Cultural	I value these areas because they have features that represent history, or provide places where people can continue to pass down wisdom, traditions, and a way of life.
Therapeutic/Health	I value these areas because they make me or others feel better physically and/or mentally.
Wilderness	I value these areas because they are wild, uninhabited, or relatively untouched by Human activity.
Special Places	I value these places because they are special to me.

Participants were very accepting and eager to participate in the exercise where more than a 1000 sites were identified during the 6 sessions (Figure 1). Most of the sites

identified were for aesthetic reasons with recreational and spiritual reasons coming second and economic reasons third. Although further refinement of the method may be needed, the initial analysis of the data shows that the visible horizon from the coastal line could be considered as significant cultural areas for aesthetic reason while the following area from the coast to the approximately 25 nm could be considered as significant for recreational purposes (Figure 2).

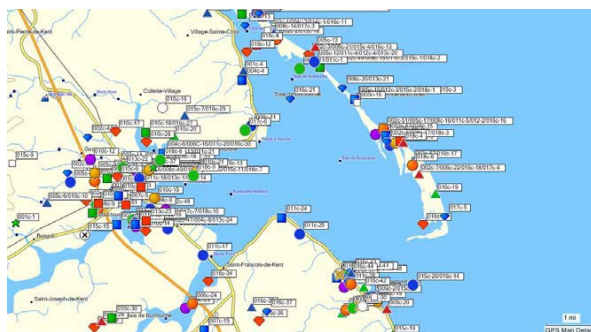


Figure 1. Cultural value locations.

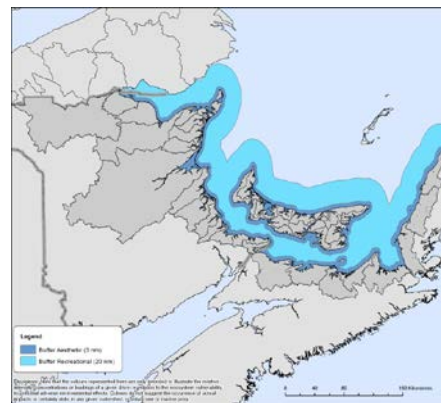


Figure 2. Significant cultural areas.

References

- DFO. 2009. Socio Economic Cultural Overview Assessment Values project (SECOA). The Southern Gulf of St. Lawrence Coalition on Sustainability. 64p.
- Brown, G., & Reed, P. (2000). Validation of a forest values typology for use in national forest planning. *Forest Science*, 46(2), 240-247.
- Brown, G., & Reed, P. (2007). An evaluation of landscape value and special place mapping for national forest planning and a protocol for NFS implementation. Unpublished manuscript. Retrieved from: <http://www.landscapevalues.org/Reportv40.pdf>

Socio-cultural considerations in marine spatial planning in Scotland

Ian Davies, Marine Scotland Science

Scotland has used a marine spatial planning tool to identify areas with best potential for offshore wind farms. The tool operates within Arc-GIS, and undertakes spatial modelling, overlaying and integrating layers of information. In addition to assessments of the quality of the available resource, assessments are made of the constraints acting on potential developments. These are considered to arise from environmental, industry and socio-cultural factors.

Layers of data concerning socio-cultural matters are scored, weighted and combined into an overall socio-cultural model. In turn, this can be combined with overall models of environmental and industry factors to gain national scale impressions of the relative level of constraint on developments in Scottish waters. This enables areas to be identified within which wind farm proposals are expected to encounter lower levels of difficulty during the licensing/consenting process. It does not remove the requirements to go through the full licensing process.

The layers that have been used in the socio-cultural model for wind farms in Scottish waters, and their relative potential influence on the combined socio-cultural model are:

Table 1. Data layers and relative weight in the socio-cultural model for offshore wind.

Data layer	Potential relative influence
National scenic areas	81
Royal Yachting Association cruising routes	9
Royal Yachting Association racing areas	9
Royal Yachting Association sailing areas	9
Scheduled Ancient Monuments	64
Bathing beaches	25
World Heritage sites	100
Wrecks	49
Protected wrecks	49
Potential for marine archaeological remains	49

Notes

- 1) National scenic areas are weighted highly, and are also buffered by zones of decreasing weight out to 30 km, to reflect the importance of the visual impact of offshore wind farms.
- 2) Yachting routes and area are weighted lightly, as it should be possible for small vessels to navigate through wind farms.
- 3) Scheduled Ancient Monuments and World Heritage sites are weighted quite heavily reflecting experience in previous wind farm planning and consenting exercises.
- 4) The potential for archaeological remains is derived from consideration of sea level changes in the last 10 000–15 000 years, and the nature of the sea bed (such that preservation is possible).

This socio-cultural model has been used in conjunction with industry and environment models to identify areas of search for new offshore wind farm developments in Scotland.

Annex 9: Case studies on the use of fisheries activity data in marine planning (ToR d)

1. Use of Fisheries data in MSP in Scotland

Ian Davies, Marine Scotland Science, UK

Fisheries is clearly one of the most important uses of the sea. The potential for interactions between fisheries and marine renewable energy developments (such as wind farms) is high, and therefore it is important to include consideration of the relative importance of sea areas to fisheries when developing plans for marine energy developments.

In Scotland, distinction is made between vessels >15m in length which are monitored through the VMS system, and vessels smaller than 15m which require other approaches.

VMS data provide automatic position fixes of fishing vessels every 10 minutes. These data can be analysed to gain expressions of the location and duration of fishing events for each vessel. This can be combined with information about the vessel – size, gear used, etc.

A further source of information is the database on the composition, weight and value of landings by species for each vessel. This can be linked to the VMS data to give detailed information on the source and value of landings, by vessel, by species, by gear type. Data are available from about 2006 to date.

In the presentation shown, the data were gridded into 50 squares per ICES statistical rectangle. There is a general issue of the need to preserve commercial confidentiality in the data, and gridding is one way in which this can be satisfied. A typical output (below) shows the distribution of relative value of landings from mobile demersal fishing gears. The use of gridded data inevitably reduces the detailed positional information, and alternative presentations are being explored.

The combination of VMS data and data on landings gives a very flexible tool to explore the use that detailed sections of the fishing fleet of sea areas, and their relative importance to the industry.

Fishing by small vessels (<15m length) is largely confined to inshore waters. Until recently, the locations of capture of landings was only recorded to the relevant stat square. This is a rather large unit for planning purposes. Recently, advantage has been taken of the allocation of landings by Fishery Officers to locations of capture expressed as 0–6 mile, 6–12 miles, and beyond 12 miles within stat squares. The additional discrimination is shown in Figure 3 below. Clearly there has been an improvement, but additional detail would be beneficial.

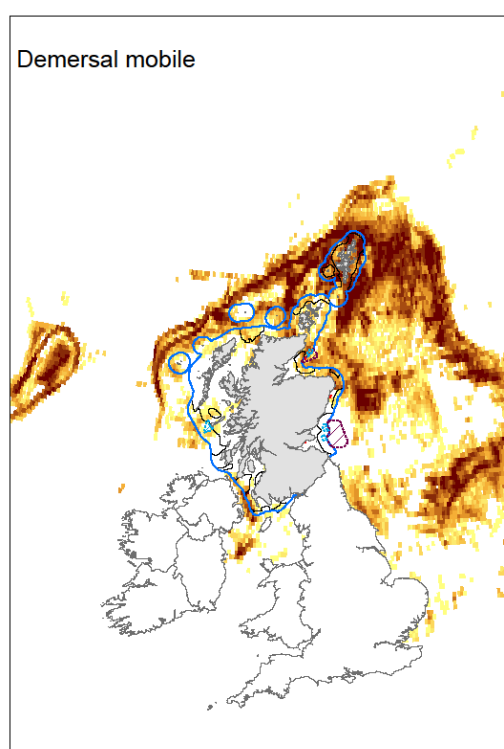


Figure 1. Distribution of relative value of landings from mobile demersal fishing gears from vessels >15m length.

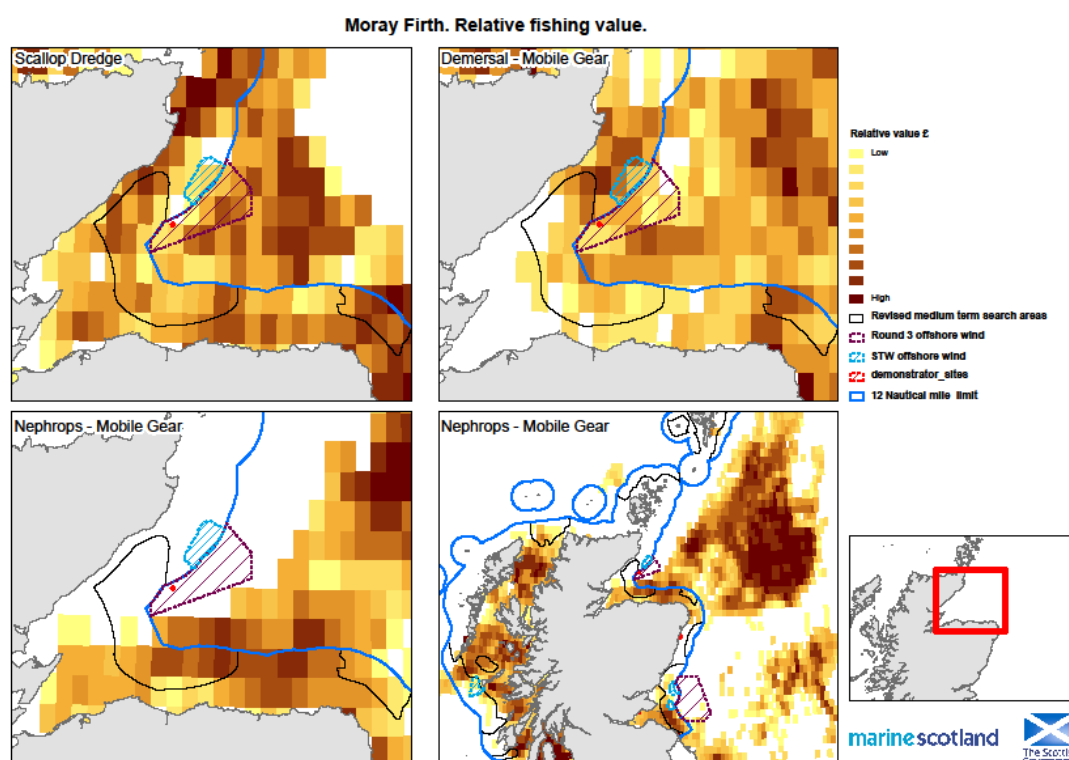


Figure 2. Distributions of fisheries landings, by vessels >15m.

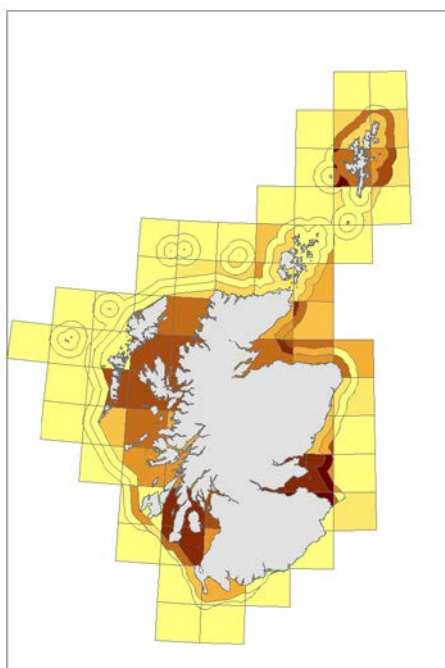


Figure 3. Landings by small vessels in inshore waters, expressed as value per Km² of sea area.

The national scale distribution maps of marine fisheries are then combined with a range of other activities (aquaculture, shipping etc.) in an combined spatial model of industrial activity in the sea. Different forms of fishing can be allocated different weights in this model. In the case of modelling in support of a scoping study for off-shore wind farm development opportunities, fishing using mobile gear was more heavily weighted than static gear fisheries as it is likely that static gear fisheries will be less affected than mobile gear fisheries by the development of a wind farm.

2. Collection and Analysis of Inshore Fisheries Data in the Pentland Firth and Orkney Waters 'ScotMap' Project

Matt Gubbins, Marine Scotland Science, UK

In order to develop a methodology for the collation of appropriate spatial data on use of marine space by non-VMS small (<15m) inshore vessels, Scotland has piloted a project 'ScotMap' in the Pentland Firth and Orkney waters to the North of Scotland, where there are likely potential conflicts with renewable developments and regional MSP is likely to be trialled first in Scottish waters.

The aim of the study was to provide accurate and detailed information on all inshore fishing activities. The objective is to provide the following information:

- Spatial definition of the areas fished;
- the months of the year that these areas are fished;
- the species fished for;
- the gear types used;
- the number of people employed;
- the contribution to the vessel's earnings, (where this is the annual gross vessel's earnings averaged over the past 5 years and the proportion derived from fishing.

Data collection is based on a software questionnaire linked to ArcMap; Scotmap. This software was developed from the FisherMap software used for the England MCZ setting process. The target respondents were all fishermen registered in either Kirkwall or Scrabster. Note that this does not include recreational fishing. There are 130 vessels registered in Scrabster, and 149 registered in Kirkwall.

Fisheries (Compliance) officers based in Scrabster and Kirkwall undertook the data collection. Fishermen were asked by the officers to complete the questionnaire, and indicate on a map where they fish via a purpose designed graphical user interface, GUI, linked to ARCMAP.

Each fisherman taking part in this study signed a data consent form, to protect commercial confidentiality of the data. In addition a variety of organisations wish to have access to the final anonymised database.

The response to the request for data was very positive, with almost 100% of fishermen agreeing to take part. The only fishermen who declined to take part did so on the grounds that they were not currently fishing. The spatial outputs of the data collection are a set of polygons drawn on a chart, with associated variables stored in a database. The purpose of the data analysis was to calculate a visual representation of the values associated with the polygons. This was done by creating a grid of fixed spatial length and assigning values to this grid depending on the associated values of the contributing polygons. The output is a 'heatmap' which can be created for each value (such as the contribution made by each area to the vessel's earnings) as required. The advantage of this analysis is that the output is easy to read and understand.

Heatmaps have been produced to show the following as a function of grid area:

- a) absolute [economic] value – i.e. the amount of money each unit area contributes to the combined gross vessel earnings (Figure 4 – example)
- b) relative usage – the number of boats fishing in each gridded area;
- c) relative value – indicating the proportion in percentage of the economic value of each area;

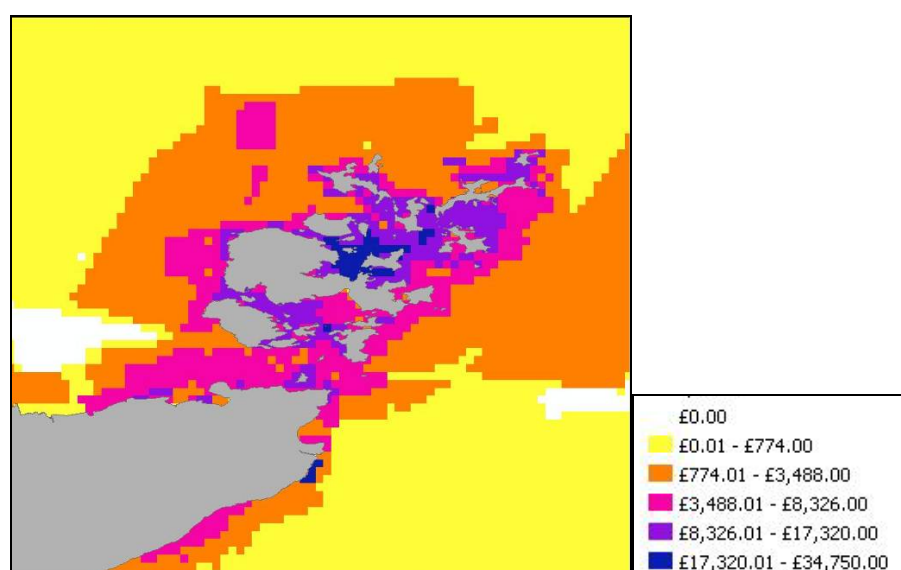


Figure 4. Example output showing absolute value of all fishing types by area.

Because the data collected in this study provide far more spatial detail than any other comparable data, it is difficult to evaluate its accuracy. However there are a few checks that can be made with reliable data sources such as the Scottish Sea Fisheries Statistics. Comparison of Scotmap outputs with these data sources suggest that the value of landings from interviewed vessels represent some 80–90% of the total value of landings made to these ports in the last year.

When using the results of this study in the future for activities such as marine spatial planning, it will be important to not just rely on the data relating to economic value. Areas of relatively low economic value cannot indicate the relative importance of fishing in those areas in supporting small rural communities. The information collected on numbers of people fishing in each area could usefully support an analysis of the importance of fishing in supporting communities, if this information is used in conjunction with other information on employment in these areas.

A spatial mapping of fishing activities to some extent assumes that any spatial variation in these activities is predictable. We have tried to capture any variation with e.g. season, by asking the respondents how the areas fished varied over the course of the year. This is likely a reasonable representation of variation in species caught by static gear, but is probably less accurate for more mobile species. The bulk of the landings in this region (by volume and value) is from static gear, indicating that there may not be too much unpredictable variation in areas fished in this pilot study. This may be more important as the study is rolled out to other areas.

Other /future work

- The data need to be updated and refreshed on a regular basis to ensure that the resulting maps are not out of date.
- The process has also been applied to Luce Bay (SW Scotland) to assess the potential impacts on fishing industry from restrictions resulting from a Special Area of Conservation.
- Comparison of the approach against analysis of VMS data from the same vessels is being trialled (Tiree, Inner Hebrides).
- The study is planned to be rolled out around the rest of Scottish waters during 2012.

3. Vulnerability Assessment in the Southern Gulf of St Lawrence

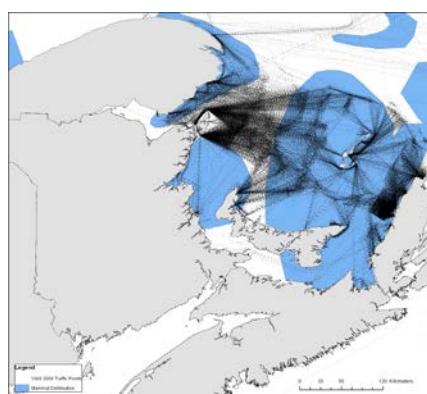
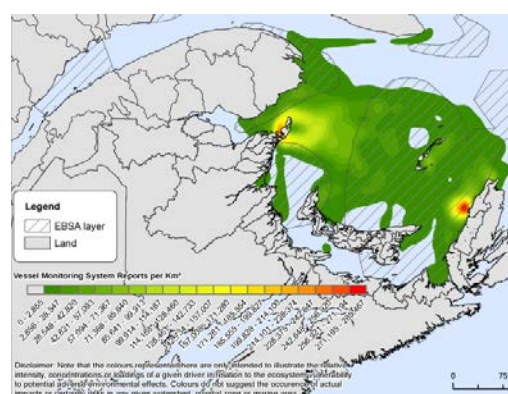
Roland Cormier, Fisheries and Ocean Canada

Fisheries log book data and VMS data was used to create pressure intensity maps as part of an ecosystem vulnerability assessment in relation to environmental effects. The approach used was based on the Regional Vulnerability Assessment of the USEPA (2003, 2008). Maps were drawn for a series of drivers including fisheries in relation to significant ecological and biological areas (DFO, 2004, 2007) in terms of vulnerabilities to environmental effects. The environmental effects were classified along the risk of fish and fish habitat alteration, disruption or destruction.

Table 1. Environmental effects categories.

Environmental Effect	Example
Nutrient Regime Alteration/Disruption	Eutrophication, Anoxia...
Sediment Regime Alteration/Disruption	Turbidity, Snuffing of reefs...
Hydrological Regime Alteration/Disruption	Water flow, quantity, current patterns...
Habitat Alteration/Disruption	Fragmentation, changes in structures...
Biota Alteration/Disruption	Biota removal, changes in biodiversity...

The intent of the maps were to illustrate zones of pressure intensity (hot spots) to determine priority areas for risk assessment in the determination of the need for new or enhanced management measures. Instead of grouping the point source data into grids, kernelling was used to calculate pressure intensities (Figures 5 and 6). Percentiles were then used to represent and colour the intensities of the pressures spatially in terms of relative intensity for the ecological area of study. The legend shows the actual pressure intensity for each percentile. This approach minimizes the loss of detail for map interpretation while protecting the confidentiality of the information used to generate the map. This approach also allows scalability when the geo-spatial information is required at lower regional or community scales. Areas represented as orange or red should only be interpreted as being “above average” while those in dark green should be interpreted as being “below average”. The nature of the information implies that colour schemes are represented on a relative basis as opposed to absolute values (i.e. the absolute intensity of one fishery vs. another may be orders of magnitude different).

**Figure 5. VMS data of fishing vessel traffic****Figure 6. Vulnerability**

4. German EEZ of the North and Baltic Sea

Nico Nolte, Vanessa Stelzenmüller, Germany

The German spatial plans of the EEZ of the North and Baltic Sea are limited by the 12 nm and contribute to the implementation of the Federal Government's national marine strategy for sustainable use and protection of the seas (national strategy for the seas) of 1 October 2008. Thus MSP is seen as an important tool to solve an increasing

number of conflicts in coastal and offshore waters. The German spatial plan of the North Sea defines targets and principles of spatial planning in the EEZ:

- Securing and strengthening maritime traffic;
- Strengthening economic capacity through orderly spatial development and optimisation of spatial use;
- Promotion of offshore wind energy use in accordance with the Federal Government's sustainability strategy;
- Long-term sustainable use of the properties and potential of the EEZ through reversible uses, economic use of space, and priority of marine uses.

The MSP development was based on a Strategic Environmental Assessment Directive (SEA), which is a legally enforced assessment procedure (2001/42/EC). Thus in 2002/2008 an environmental assessment has been carried out by the Federal Maritime and Hydrographic Agency (BSH) following the criteria listed in Annex I of the SEA Directive. This environmental report comprises an assessment of the marine environmental status, an evaluation of substantial impacts on the marine environment that are likely to be caused by the implementation of the spatial plan, and measures to prevent or compensate any substantial impacts. The plan is the outcome of this comprehensive environmental assessment, thus the designation of areas for certain uses will not have any substantial impacts on the marine environment and especially on the protection and conservation goals of the FFH and bird sanctuary areas, meeting the requirements of § the Federal Nature Conservation Act. After the process of public participation and international consultation the legal ordinance including the spatial plan of the EEZ of the North Sea was set into force in September 2009 (BSH 2009).

As outlined above the MSP process in Germany was especially driven by the need for a spatial allocation of offshore renewable development and safeguarding shipping, but not for fisheries despite its high economic importance and long cultural tradition (Fock *et al.* 2008). The deficient coverage of fisheries issues in the German MSP designation and implementation process was due to the exclusive competence of EU regarding common fisheries policy and the lack of data on fisheries' spatial requirements, availability of methods to access and process VMS data, and fishermen's fears that co-operation in the MSP process may be counterproductive to fishing industry interests.

Since the publication of the spatial plan methods to map principle fishing ground in the German EEZs have been developed further. For instance a study from Fock *et al.* (2008) describes the use of VMS data to describe the five most abundant fisheries in the German EEZs in terms of vessel-based effort, i.e. gill netting, pelagic trawling, demersal otter board trawling and beam trawling >300 and <300 HP. A historical comparison for demersal otter board trawling shows relative stability of spatial utilization patterns in the North Sea section of the EEZ. Another study by Stelzenmüller *et al.* (2011) combined German, Dutch and Danish VMS and logbook data from 2008 to describe the international fishing effort targeting plaice (*Pleuronectes platessa*) in the German EEZ of the North Sea including the mapping of revenues (€). In turn, this information formed then a crucial component in the spatially explicit risk assessment framework that aimed to assess the risk of spatial planning scenarios such as the expansion of offshore renewables and the displacement of fishing effort on the vulnerability plaice to fishing.

Thus for a future review process of the German spatial plans the required data on spatial needs of the fishing sector would be available and should be considered. In contrast, how to overcome fishermen's hesitation to participate in a MSP review process remains a pressing issue.

4. Plan Bothnia - the use of fisheries data in MSP

Joacim Johannesson, Sweden

The Plan Bothnia project, co-ordinated by the HELCOM Secretariat, is testing Marine Spatial Planning (MSP) in the Bothnian Sea area as a transboundary case between Sweden and Finland. The project started in 2010 and will end in June 2012.

One of the first project steps was to map and collect information on the existing conditions in the Bothnian Sea, including conditions related to human activities. One of the aims was to identify the special interest areas to the concerned sectors. For fisheries it was decided to analyse fishing activity as well as biological conditions related to the most important species, which are herring and sprat. In order to get spatial and temporal distribution of fishing activity in terms of fishing effort and catches, records from VMS were merged with catch and gear type data in logbooks from both countries. Fishing activity was analysed per gear type (midwater and bottom trawls only gears used) and species (herring and sprat) by calculating average yearly catch per square kilometre for 2007–2009. The combined VMS and logbook dataset from was converted from a point dataset to a raster layer. To identify potentially important areas for fisheries, also fish density was analysed by interpolation of data from acoustic surveys from the same period. To get a fuller picture of the existing biological conditions also information on spawning grounds was considered.

The data processing and information collection resulted in maps clearly showing the spatial distribution of fishing activity on a yearly and seasonal basis, vessels by country origin, fish density and spawning grounds. The maps were later used in identifying an analyzing potential existing and future conflicts with other sectors and nature conservation.

See www.planbothnia.org for more information.

5. National interest areas for commercial fisheries in Sweden

Joacim Johannesson, Sweden

In Sweden, areas of national importance are protected through regulations in the Environmental Code. Within areas of national interest it is forbidden to undertake activities than can seriously harm the designated values or undertake activities that significantly complicate the intended use of the area. The system with national interest areas is part of the Swedish planning system and has to be considered in all planning and when authorities are granting permissions for activities within different sectors. Areas of national interest exist in different fields, such as cultural heritage management, nature protection, outdoor recreation, shipping, energy production, mineral extraction, commercial fisheries etc.

In 2006 the national interest areas for commercial fisheries decided in 1991 were reviewed and updated. In order to up-date the areas fisheries data from all parts of the fleet (log books and coastal journals in the small scale fisheries) as well as price information were spatially analysed. VMS-data were not included as the methodology, because procedures for using such data were not very well developed at the time.

However, later the spatial analysis methodology used in the review was further developed including VMS-data, but for other purposes within fisheries management.

From the analysis, criteria for designating an area as a national interest were developed. The main criterion was areas with high commercial value expressed as SEK per km². In addition spawning areas for commercially important species and areas linked to certain regionally important ports were designated. Areas in the territorial sea and the EEZ as well as in the inland waters were designated. In marine areas 73 areas were designated as national interest areas for commercial fisheries. Compared to 1991, the analysis in 2006 was much more robust due to the spatial analysis using GIS. It is anticipated that the next review of the national interest areas will be even more robust due to the availability of VMS-data for the main parts of the fishing fleet.

A full report on national interest areas for commercial fisheries (in Swedish, but summary in English) is available at:

http://www.havochvatten.se/download/18.64f5b3211343cfffdb2800018433/finfo2006_1.pdf

6. Use of fisheries data incl. VMS to evaluate fishery's spatial response to closed areas off NE USA

Thomas Kirk Sorensen, Denmark (summarized by)

Murawski *et al.* (2005) evaluated the spatial distribution of otter trawl fishing effort and catches resulting from the imposition in 1994 of year-round and seasonal groundfish closed areas off the NE USA. Vessel locations were available from logbooks, vessel monitoring system (VMS) data from many of the largest vessels, and from observer records. There was high spatial coherence between VMS- and observer-derived trawling locations. Spatial resolution of traditional data sources (e.g., logbooks) was too crude to discern detailed MPA-related effects, as revealed by high-resolution vessel positions from VMS and catch data obtained by observers.

Murawski *et al.* (2005) analysed fishing effort, catch, and revenue data available from port sampler interviews (1991–1993) vessel trip reports (VTR=logbooks, 2003), vessel monitoring systems (VMS=satellite tracking, 2003), and results of fishery observer sampling (2001 & 2003). In particular, they evaluate the catch per unit of effort (cpue) for various species and combinations and revenue per unit effort (\$ pue) as potential explanatory variables describing targeting of fishing effort, particularly in relation to distance from the edges of MPAs.

7. Norway - Use of VMS-data for monitoring fishery activities

Torjan Bodvin, Norway

Norwegian fishing vessels with a length of 15 meters or more have been required to comply with position reporting since 2011. Foreign vessels of 24 meters or more (15 meters or more in the case of EU vessels) are subject to position reporting when they operate in Norwegian waters. In Norway, the Fisheries Monitoring Centre who are responsible for collecting and processing the data is located at the Directorate of Fisheries in Bergen. At present, around 450 Norwegian vessels are subject to the tracking requirement.

Fishery-data from coastal areas

Directorate of Fisheries collects interview data from the professional fishermen about spawning areas for different fish species and fishing areas for prawns and Norwegian

lobster. Spawning areas for coastal cod are being verified by Institute of Marine Research in connection with “National program for mapping of marine habitats”. So far about 50% of the coast is covered.

As part of the project “Management of marine nature resources in the coastal zone”, interviews are performed with inhabitants in a municipality getting information about use of sea-areas for recreational and professional fishing, importance of the different species and their attitude to stock levels of marine species they would like to increase. So far the method has been used in 2 municipalities on the south coast, but during the next 2 years another 6–8 municipalities from the rest of the coast will be included in the project. The data are used as input in conflict analyses using a GIS-tool (Marxan). The goal is to develop a method for MSP in the coastal region that includes local inhabitants and municipalities in the process of managing marine resource. Use of MPA’s as a tool for restocking of chosen species are a central part of the concept.

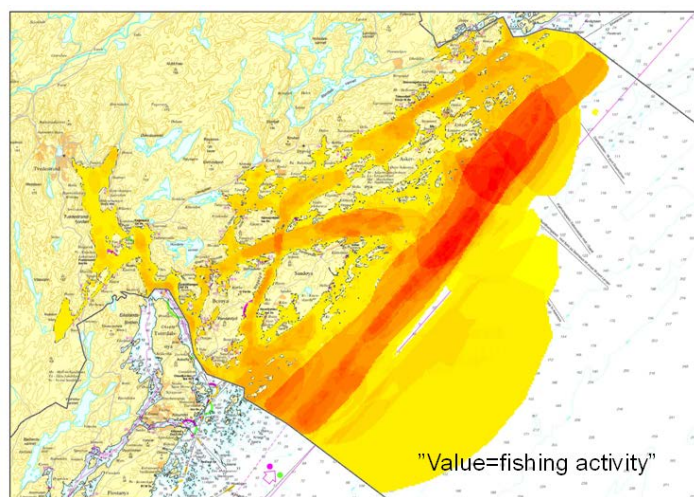


Figure 7. Fishing activity in the municipality of Tvedestrand.

Recreational fishing/tourist fishing

Institute of Marine Research (IMR) has developed and tested methods for estimating catches in the lobster (*Homarus gammarus*) fishery. A yearly survey is conducted in the lobster season, covering different areas each year. Methods used are strip transects to estimate effort and a combination of catch diary and random interviews to estimate catch-per-unit-effort. Results indicate that more than 2/3 of the catch are done by recreational fishermen.

IMR conducted a study on tourist fishing in 2009 (Vølstad *et al.* 2011). A pilot study on recreational fishery on Norway lobster (crayfish – *Nephros norvegicus*) is started up in 2012. The pilot will test the use of “memory jogger” in Norwegian recreational fisheries. Estimation of catch-per-unit-effort + +. A roving-creel survey in Skagerrak in 2012 will seek to map catch composition, size distribution and catch-and-release in recreational fisheries.

8. Use of VMS in relation to cod closure in the Kattegat

Josianne Støttrup, Denmark

A Marine Protected Area was proposed in 2008 jointly by Sweden and Denmark as a management measure to complement TAC to boost the recovery plan for cod in the

Kattegat. The plan included a year-round no-take area located in the main spawning grounds and a seasonally closed area in the vicinity of the no-take zone. VMS data was used to analyse the distribution of fishery in the proposed area before and after implementation. The VMS data further showed a significant decrease in fishing effort in the closed area as intended with the cod closure, and enabled analyses of fishery displacement to adjacent fishing grounds. The VMS data covers however only about 60% of the fishing effort, as about 40% is from small vessels without VMS. Since implementation of the ban, an analysis of the fishing impact on cod was conducted by DTU Aqua.

9. The Dutch FIMPAS process

Thomas Kirk Sorensen, Denmark (summarized by)

The ICES-led FIMPAS (FIsheries Measures in Protected AreaS) project is on the development of a proposal for fisheries measures in three designated areas in the Dutch EEZ in the North Sea. This proposal shall be consistent with conservation objectives and the end product is ICES advice on the appropriateness of this proposal. The FIMPAS project brings stakeholders and scientists together to develop this regulatory proposal.

Fishermen from several different countries carry out their activities within or adjacent to these Dutch Natura 2000 sites and spatial fisheries data was therefore needed for foreign vessels in order to gain an overview over intensity and distribution of all fishing effort, gears used, landings etc. This data was requested to all Member States with vessels fishing in Dutch waters. Most of the data delivered by foreign Member States was VMS data and in some cases a combination of VMS data and logbook data with information on landings, value of catches etc. VMS data was used in FIMPAS primarily to determine if there was overlap and/or conflict between conservation objectives and the fisheries (various fishing gears, target species, etc.) carried out within Natura 2000 sites.

Information on the details of the FIMPAS project can be accessed by contacting ICES or e.g. <http://noordzee.wordpress.com/2009/11/01/project-fimpas-official-summary/>

10. Danish Key-fishers project

Josianne Støttrup, Denmark

The “key-fishermen” project (2005–2007; 2008–2010; 2011–2013) is a collaborative project between the Danish Organization for Amateur Fishermen, the Danish Union of Recreational Fishermen and DTU Aqua (previously Danish Institute for Fisheries Research). This project is an extension of an earlier project; the “Catch registration project”, which was a three year project initiated in 2002 on the initiative of the Danish Organization for Amateur Fishermen and the Danish Union of Recreational Fishermen, in order to document and register fish catches in Danish coastal waters over a consecutive number of years. The results from the first project are published in Pedersen *et al.* (2005; in Danish). In total, these projects represent the largest and longest serial effort to document and register catches in gillnets and fyke-nets along the Danish coast. That this effort relies on voluntary work is a great feat in itself and reflects the general interest of recreational fishermen to monitor and preserve fish populations in fjords, bays and coastal areas. All reports related to the project are so far in Danish.

In contrast to the catch registration project, where many different fishing gear were used, the catches within the key-fishermen project were harmonized and key-fishermen fished in fixed positions with similar gear (3 gillnets and/or 3 fyke-nets) provided by DTU Aqua. This change was made to facilitate the comparative analyses of the results.

The results show a high fish biodiversity in Danish coastal waters. A total of 39 fish species were registered in gillnets and 53 in fyke-nets. Among these, three species; eel, eelpout and flounder were caught in all localities, reflecting their common occurrence in Danish coastal waters. An interactive website (Danish) with data on catches from 2002–2010 is available at:

<http://www.fiskepleje.dk/kyst/fangstregistrering/Kort%20over%20fangstregistreringer.aspx>.

Recall surveys

The EU Council has since 2008, as part of the Common Fisheries Policy, obliged member states to estimate the harvest (those fish caught and retained) taken by recreational fishing (EU Council regulation No. 199/2008). Due to this obligation, Denmark has since 2009 initiated a recall survey to estimate quarterly harvest of cod *Gadus morhua*, eel *Anguilla anguilla* and since 2010 sea run brown trout *Salmo trutta* (sea trout). Statistic Denmark and DTU Aqua developed a concept for combined telephone and internet recall survey to obtain this information annually (Sparrevohn & Storr-Paulsen, 2010; Sparrevohn *et al.* 2012; Sparrevohn & Storr-Paulsen, 2012). The results for 2010 indicated that around 6% and 22% of the total Danish cod yield and eel yield respectively were taken by recreational fishers.

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Annex 10: Resolution for an ICES Internal Publication (Category 1)

The report covering the output from the review of quality assurance elements to be done by members of WGMPCZM and WKQAMSP during the second half of 2012 as a follow-up of discussions within 2011 and 2012 meetings of WGMPCZM and the workshop (WKQAMSP) in Dartmouth, Canada in 2012, edited by Roland Cormier (Canada) and Andreas Kannen (Germany), as reviewed and approved by the respective ICES committees, will be published as an ICES Cooperative Research Report. The estimated number of pages is 100–150.

The Working Group on Marine Planning and Coastal Zone Management agrees to submit the final draft of the proposed publication by end of April 2013.

Supporting information

Priority:	Marine spatial planning has a rapidly increasing profile and importance in marine science and marine management in Europe, and more widely. However, quality assurance of MSP related processes and of scientific and stakeholder based advice and information is not yet systematically included in MSP activities. The proposed document is coherent with earlier activities of STIG-MSP, WKQAMSP, WKMCMS, WKCMSP and work of WGMPCZM.
Scientific justification:	The forthcoming ICES Cooperative Research Report represents the results of a review of quality assurance elements in current MSP and environmental management activities to be undertaken by members of WGMPCZM and WKQAMSP and be based on earlier work in WGMPCZM and WKQAMSP during 2011 and 2012. This CRR will present up to date information on quality assurance and auditing of planning procedures to marine systems. The content of the CRR will be presented in relation to the international frameworks and recent as well as upcoming EU activities in MSP.
Resource requirements:	The material in the report will be provided and developed by participating scientists and practitioners based on their regular work and therefore no specific additional costs are necessary.
Participants:	Members of WGMPCZM and WKQAMSP.
Secretariat facilities:	About one month of the services of Secretariat Professional and General Staff will be required.
Financial:	Cost of production and publication of a 100-150-page CRR.
Linkages to advisory committees:	This product has been endorsed by SciCom.
Linkages to other committees or groups:	Links to the ICES Strategic Initiative on Coastal and Marine Spatial Planning.
Linkages to other organizations:	National and international bodies dealing with marine planning will welcome the publication, in particular the EU, OSPAR, HELCOM.

Annex 11: Draft resolution for an ICES Workshop (Category 2)

The **Joint HZG/LOICZ/ICES Workshop: Mapping Cultural Dimensions of Ecosystem Services (WKCES)**, chaired by Andreas Kannen*, Germany; and Kira Gee*, Germany, will meet in Geesthacht, **Venue**, Germany, **May** 2013 [TBA] to:

- a) Discuss approaches that can codify existing cultural values concepts (such as Cultural Ecosystem Services, CES) in order to make them amenable to mapping (e.g. examples of cultural values classifications),
- b) Collate methods used in various contexts (e.g. anthropology, tourism management, visual assessments of landscape impacts) to identify places of particular socio- cultural importance,
- c) Collate methods available for rating different influences and impacts on these places of importance.

The key question throughout will be to ask whether these techniques are capable of delivering cultural values information, and assessments of this information (e.g. in the form of vulnerability maps), in the spatial format required by planners. Based on this, the workshop seeks to:

- d) Establish links to the Quality Assurance process in MSP and also to processes of risk assessment in MSP;
- e) Work towards a manual for planners setting out 'good practice' methods for mapping important cultural areas and including cultural information in the MSP process to be published in an ICES Cooperative Research Report (see separate resolution in Annex 12 of WGMPCZM 2012).

WKCES will report by 15 July 2013 (via SSGHIE) for the attention SCICOM.

Supporting information

Priority	The WKCES is a direct outcome of the work in the joint SCICOM/ACOM Strategic Initiative on Areabased Science and Management (SIASM), in particular WKMCMS in 2011, of work in WGMPCZM in 2011 and 2012 and the workshop on Quality Assurance in MSP (WKQAMSP) in 2012. The WK will further the scientific knowledge base for MSP and complement other activities in WGMPCZM.
Scientific justification	Despite much knowledge about the sea, there is still insufficient knowledge of actual sea values, in other words, what marine goods, services and benefits are valued, by whom these goods, services and benefits are (particularly) valued, where these values are located in space, and whether conflicts exist between different values. Whilst the sea is commonly regarded as a setting for generating multiple economic values, it is less often regarded as a place defined by cultural meanings and area of convergence of different constructs of place. For MSP, a key concern is to develop methods for identifying cultural values and for mapping those areas that are of particular importance for cultural reasons. Apart from making these values visible, mapping is also a way of making different values visible in the same format, using spatial representation as a common currency. WKCES aims to bring together selected experts, with the aim of collating the methods used in various contexts (e.g. anthropology, tourism management, visual assessments of landscape impacts) to identify places of socio-cultural importance and ways of rating the relative importance of these places. The workshop will also look at methods available for rating different influences/impacts on the values

	identified and thereby develop a guidelines and manual to include socio-cultural aspects into decision-making in MSP and marine environmental management.
Resource requirements	None
Participants	We expect between 10 – 15 participants to be invited on base of their specific expertise in the socio-cultural analysis of cultural ecosystem services in marine and coastal areas.
Secretariat facilities	Help with setting up and managing the sharepoint site and registration page.
Financial	None
Linkages to advisory committees	Development of the science base for MSP in ICES is directly relevant to ACOM and several ACOM EGs and initiatives, as it is for SCICOM EGs and initiatives and for SIASM/STIGMSP.
Linkages to other committees or groups	A direct link to the SIASM initiative and directly relevant to WGMPCZM
Linkages to other organizations	OSPAR, HELCOM, VASAB, LOICZ . In addition the outcomes are relevant to other national organizations and international organizations working with the development of MSP (e.g. EU).

Annex 12: Resolution for an ICES Internal Publication (Category 1)

The report covering the output from WKCES (see Annex 11 of WGMPCZM 2012) and in particular a manual for planners setting out 'good practice' methods for mapping important cultural areas and including cultural information in the MSP process, edited by Kira Gee and Andreas Kannen (Germany), as reviewed and approved by the respective ICES committees, will be published in the ICES Cooperative Research Report. The estimated number of pages is 150.

The Working Group on Marine Planning and Coastal Zone Management agrees to submit the final draft of the proposed publication by December 2013.

Supporting information

Priority:	The WKCES is a direct outcome of the work in the joint SCICOM/ACOM Strategic Initiative on Areabased Science and Management (SIASM), in particular WKMCMS in 2011, of work in WGMPCZM in 2011 and 2012 and the workshop on Quality Assurance in MSP (WKQAMSP) in 2012. The WK will further the scientific knowledge base for MSP and complement other activities in WGMPCZM. The Collaborative Research Report will provide a full documentation in the form of a technical handbook/manual on how to identify, assess and map socio-cultural components for use in MSP.
Scientific justification:	The CRR will represent up to date information and techniques used in mapping cultural ecosystem services in form of a manual to be used by scientists, planners and managers. It will provide the basis to include socio-cultural aspects in future initiatives in MSP and marine and coastal environmental planning and management.
Resource requirements:	The material in the report will be developed from WKCES and therefore no specific additional costs are necessary.
Participants:	Approximately one month's work is required by the editors to finalise this draft.
Secretariat facilities:	About one month of the services of Secretariat Professional and General Staff will be required.
Financial:	Cost of production and publication of a 150-page CRR.
Linkages to advisory committees:	This product has been endorsed by SciCOM.
Linkages to other committees or groups:	Links to the ICES Strategic Initiative on Coastal and Marine Spatial Planning and WGMPCZM.
Linkages to other organizations:	National and international bodies dealing with marine planning will welcome the publication.

Annex 13: Resolution for an ICES Internal Publication (Category 1)

The report covering the output from Joint ICES/PICES Theme Session I (Multidisciplinary Perspectives in the use (and misuse) of science and scientific advice in Marine Spatial Planning) of the ASC 2012, edited by the session conveners Roland Cormier (Canada), Andreas Kannen (Germany) and Melanie Austen (UK), as reviewed and approved by the respective ICES committees, will be published as an ICES Cooperative Research Report. The estimated number of pages is 150.

The Working Group on Marine Planning and Coastal Zone Management agrees to submit the final draft of the proposed publication by end of April 2013.

Supporting information

Priority:	Marine spatial planning has a rapidly increasing profile and importance in marine science and marine management in Europe, and more widely. In particular the knowledge and evidence base for MSP is coming into the focus in current MSP activities including the availability and suitability of scientific data. This is tackled in the ASC session and will be further elaborated on in the contributions to this report. The proposed document is coherent with other ICES initiative on MSP.
Scientific justification:	The forthcoming ICES Cooperative Research Report represents a collation and synthesis of the papers presented at the Joint ICES/PICES Session I of ASC 2012. This CRR will present up to date information on the most recent scientific studies carried out, and on the application of the planning procedures to marine systems and the use of data and knowledge within planning.
Resource requirements:	The material in the report will be based on presentations and (extended) abstracts) from ASC 2012. Therefore no specific additional costs are necessary.
Participants:	Approximately one month's work is required by the editors based on contributions by session participants.
Secretariat facilities:	About one month of the services of Secretariat Professional and General Staff will be required.
Financial:	Cost of production and publication of a 150-page CRR.
Linkages to advisory committees:	This product has been endorsed by SciCOM.
Linkages to other committees or groups:	Links to the ICES Strategic Initiative on Coastal and Marine Spatial Planning. Adds to reports from WKCMSP, WKQAMSP, WKMCMS.
Linkages to other organizations:	National and international bodies dealing with marine planning will welcome the publication, for example OSPAR, HELCOM and VASAB.

Annex 14: Recommendations

RECOMMENDATION	FOR FOLLOW UP BY
1. WGECO to accept the invitation for a half day mini-workshop in Copenhagen in connection with WGMPCZM meeting 2013 to examine the opportunities for population based assessments at an ecosystem level regarding cumulative pressures on the environment related to development plans from a cross-boundary perspective.	WGECO
2. SIASM / STIG-MSP to support the review of quality assurance elements of actual MSP processes as a case study to identify best practices as recommended by WKQAMSP.	SIASM / STIG-MSP
3. SCICOM to adopt a cooperative research report (CRR) on the review of Quality Assurance elements in existing MSP and environmental management activities based on case studies analysis.	SCICOM
4. SCICOM to adopt the proposal for a workshop planned by WGMPCZM on cultural dimensions of ecosystem services (WKCES).	SCICOM
5. SCICOM to adopt the proposal for a cooperative research report (CRR) on cultural dimensions of marine ecosystem services based on WKCES.	SCICOM
7. SCICOM to adopt the proposal for a cooperative research report (CRR) based on Theme Session I of ASC2012 as follow-up of the CRR from Theme Session B from the ASC 2010 and WKQAMSP.	SCICOM
8. As suggested by SGVMS a new working group on VMS data should be formed and address a term of reference on the issue of harmonisation of outputs of fisheries data by recommending standard metrics (of effort and value) and formats for spatial representation of aggregated fishing activity data for use by wider MSP practitioners and non-fisheries-scientists.	SCICOM
9. The ICES Data Centre to note the recommendation that common data formats should be used for the representation of fishing data on the ICES Spatial Data Facility to allow ease of application between member states.	ICES Data Centre
10. The Co-chairs of STIG-MSP to join the next meeting of WGMPCZM to discuss new activities and ToRs in the field of MSP.	Co-Chairs STIGMSP (Eugene Nixon and Erik Olsen)

Annex 15: Recommendations as response to requests from WGMHM and WGMASC

Recommendation	For follow up by
1. From a management perspective, habitat mapping plays a key role in spatial planning and subsequent implementation of spatial management measures. At a recent workshop (WKQAMSP) on quality assurance elements in marine spatial planning, data validity, usability and traceability was discussed in the context of scientific advice processes. Scientific advisory processes are common activities in fisheries stock assessments. These advisory processes ensure that the physical, chemical and biological data used in the formulation of advice is valid not only in terms of the underlying science; but, in terms of its usability for the advice at hand. Models, methods and uncertainties are also taken into account in the advice. The same level of quality assurance and peer review are also required for habitat mapping used in management decision-making processes such as MSP. A system of quality assurance for maps is needed. WGMPCZM would be happy to make the report from WKQAMSP available to WGMHM before their 2012 meeting with a view to WGMHM undertaking an assessment of the applicability of the quality assurance principles to habitat mapping. This may lead to the drafting of a documented quality assurance system for WGMHM habitat maps. WGMPCZM is willing to provide its WKQAMSP report from 2012 and additional material on quality assurance as soon as this becomes available.	WGMHM
2. From a management perspective the information offered by WGMASC is relevant as another layer of information when discussing the wider range of uses in MSP. At a recent workshop (WKQAMSP) on quality assurance elements in marine spatial planning, data validity, usability and traceability was discussed in the context of scientific advice processes. Scientific advisory processes are common activities in fisheries stock assessments. These advisory processes ensure that the physical, chemical and biological data used in the formulation of advice is valid not only in terms of the underlying science; but, in terms of its usability for the advice at hand. Models, methods and uncertainties are also taken into account in the advice. The same level of quality assurance and peer review are also required for mapping aquaculture potential locations for use in management decision-making processes such as MSP. A system of quality assurance for maps and information behind the maps is needed. In addition, discussing location of any activities including aquaculture requires socio-economic aspects to be dealt with. WGMPCZM recommends that WGMASC maps ecological aspects as well as socio-cultural vulnerabilities (through goods and services). Of relevance for MSP would be if WGMASC could do a comparison of site selection criteria developed by WGMASC with those used by commercial farm operators (who probably give greater weight to economic factors).	WGMASC

Annex 16: WGMPCZM draft resolution for the next meeting

The **Working Group for Marine Planning and Coastal Zone Management** (WGMPCZM), chaired by Andreas Kannen, Germany, will meet at ICES Headquarters, Copenhagen, Denmark, 8–12 April 2013 to:

- a) Update on ICZM and MSP in different ICES countries with a focus on the need for knowledge for the development of management strategies including scientific advice required in each stage of the process. This ToR is generic to allow WGMPCZM to recognise new trends in MSP and marine environmental management;
- b) Review of Quality Assurance elements in existing MSP and environmental management activities based on case studies analysis. Expected output is a Cooperative Research Report in spring 2013 as proposed by WGMPCZM 2012 and the subsequent development of a QA system for MSP;
- c) Review how the social-cultural dimensions of ecosystem services are (or can be) incorporated in MSP and ICZM and prepare a specific workshop. Expected outputs are a workshop (WKCES) in spring 2013 and a Cooperative Research Report by end of 2013 as proposed by WGMPCZM 2012;
- d) Address the use of fisheries data in plan decision making processes and review the extent to which marine plans are being used (or will be used) as the primary tool to manage fishing activity in plan areas. Expected output will be the elaboration of further analytical steps and/or preparation of publication activities;
- e) Examine the opportunities for population based assessments at an ecosystem level regarding cumulative pressures on the environment related to development plans from a cross-boundary perspective jointly with WGECO. Expected output is a potential multi-annual work plan to be jointly elaborated with WGECO;
- f) Review status and achievements of current set of ToRs and discuss future multi-annual activities and ToRs for 2014–2016 in the light of the new ICES system for EGs;
- g) Evaluate potential for collaboration with other EGs and other ICES initiatives in relation to the ICES Science Plan, the review of ToRs a) to f) and requests from other EGs.

WGMPCZM will report by 27 May 2013 (via SSGHIE) for the attention of ACOM and SCICOM.

Supporting Information

Priority	In order to maintain and improve the quality of ICES advice, the specific requirements for scientific advice in support of client initiatives on Marine/Maritime Spatial Planning and CZM need to be evaluated. In response to demands for ecosystem-based advice, ICES has adopted an ecosystem-based approach, including the coastal zone that would allow ICES to provide better holistic advice. Consequently these activities have high priority.
Scientific justification	Many ICES Study and Working groups address specific coastal zone issues and issues of relevance for maritime spatial planning. Others do not include coastal zone issues and planning aspects in their work, but have the expertise to, or could, with added expertise, address these issues. All the information being generated needs to be compiled and analysed to ensure consistent and integrated advice.

	The ecosystem based approach to the management of human activities as the leading principle for integrated planning and management implies that knowledge on the key ecosystem processes and properties in the coastal zone will be the core of the information ICES will be able to add into processes of ICZM and MSP. High Priority Research Topics in the ICES Science Plan that are relevant to the WG are: • Marine spatial planning, including the effectiveness of management practices (e.g. Marine Protected Areas (MPAs); • Contributions to socio-economic understanding of ecosystem goods and services, and assessment of the impact of human activities. • Influence of development of renewable ocean energy resources (e.g. wind, hydropower, tidal and waves) on marine habitat and biota; Important components include spatial planning tools to assist IM practitioners; the socio-economic and cultural understanding of marine resources in the application of IM and the application of IM to address the interactions between commercially exploited species and natural systems. This work will contribute directly to the applications of emerging and present coastal directives (e.g. EU-WFD; MSFD, MSP) and other local or trans-boundary management issues within ICES Member Countries.
Resource requirements	New experts have been recruited during the past four years and there is an increasing interest in this EG. Currently the group involves experts from administrations as well as from different fields of science.
Participants	ICES Member Countries working with marine planning and coastal zone issues. The Group is normally attended by 14–16 members and guests, but has more than 30 members in total.
Secretariat facilities	A meeting room at ICES Headquarters
Financial	No financial implications.
Linkages to advisory committees	There are obvious direct linkages to ACOM.
Linkages to other committees or groups	SCICOM and several Working Groups within this committee, SIASM/STIGMSP.
Linkages to other organizations	EU, OSPAR, HELCOM, VASAB, LOICZ, several EU funded projects and MSP networks.