

CALAMAR

Expert Paper

Integrated Marine Policies and Tools Working Group

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Authors

Barry D. Gold (co-chair), Martin Pastoors (co-chair), Deerin Babb-Brott, Charles Ehler, Marcus King, Frank Maes, Kathryn Mengerink, Miriam Müller, Tiago Pitta E Cunha, Mary Ruckelshaus, Paul Sandifer, Karina Veum

The presented recommendations were not arrived at by consensus and do not necessarily reflect the opinions of all authors or their organizations.

CALAMAR Project Team Support

Franziska Stuke, Kirsten Howard

About CALAMAR

The Cooperation Across the Atlantic for Marine Governance Integration (CALAMAR) project aimed to strengthen networks among key maritime stakeholders in the EU and US, and contribute policy recommendations to improve integration of maritime policies and promote transatlantic cooperation. The project convened a dialogue of more than 40 experts from both sides of the Atlantic. The CALAMAR project began in January 2010 and culminated in a final conference in Lisbon, Portugal on April 11-12, 2011 where the Working Groups' conclusions were presented. Two reports were developed to complement the dialogue by providing background information and assessments that: 1) compare EU and US maritime policy, and 2) identify opportunities and challenges for integrated maritime governance. A third report lays out policy recommendations for improved transatlantic cooperation in maritime governance based on the recommendations selected by the working groups throughout their discussions over the course of the CALAMAR project. The following report presents the conclusions of the CALAMAR Integrated Marine Policies and Tools Working Group. All project reports are available on the project website at the following link: <http://www.calamar-dialogue.org/>.

Acronyms

CMSP	Coastal marine spatial planning
EEZ	Exclusive Economic Zone
EU	European Union
IEA	Integrated ecosystem assessment
IPBES	Intergovernmental Platform on Biodiversity and Ecosystem Services
MSP	Marine spatial planning
SEA	Strategic environmental assessment
US	United States
EPA	Environmental Protection Agency
USCOP	United States Commission on Ocean Policy
UNCLOS	United National Convention on the Law of the Sea

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I Introduction

Existing fragmented management schemes offer no way to address the interactions of the myriad activities that occur simultaneously on and in the oceans, and their cumulative impacts on the health and productivity of marine ecosystems. But the times and tides are changing. Several countries are developing integrated planning and management approaches to sustain the benefits that healthy seas provide humanity. As in many new endeavors, learning by doing, distilling those experiences into best practices, and sharing them with a broader audience of policy makers, stakeholders, researchers, and the general public will benefit all.

These integrated, common sense approaches to management can help promote oceans' health and sustainable use. The approaches' strength comes from focusing on and addressing the impacts of the entire suite of activities occurring in a specific place, so that marine ecosystems can be resilient and productive into the future. In order to sustain wealth from a variety of uses from fisheries to tourism – as well as preserve the fundamental ecological structure and function that supports them – managers are looking to these new approaches to manage the oceans in an integrative and proactive manner.

Throughout this paper, the terms “marine spatial planning (MSP),” “coastal and marine spatial planning (CMSP),” and “maritime spatial planning (MSP)” will be used interchangeably to describe these new integrated planning and management approaches. The first two are common terms used in the US and the latter is used primarily in the EU. See Box 1 for the definitions used in the EU and the US. MSP is gaining considerable interest and momentum around the world as numerous countries have started to use it to balance sustainable use and biodiversity conservation in the oceans.

This paper was developed by a working group in the CALAMAR project composed of EU and US ocean and coastal policy and planning experts from government, industry, academia, nongovernmental organizations, and foundations with the intention of identifying, sharing, and analyzing best practices for and experiences with integrated ocean management in both the EU and the US. The paper makes recommendations for successfully achieving and improving implementation of MSP. The audiences for these recommendations include, but are not limited to, relevant policy makers at the EU, national, state and provincial, and local levels, agencies and ministries responsible for ocean and coastal issues and regulations, MSP practitioners and planners, ocean stakeholders, and other interested parties. Finally, for each recommendation the working group includes a suggested timeline for implementation.

Box 1: Marine Spatial Planning in the EU and the US

Marine spatial planning (MSP) is defined as the public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that are typically specified through the political process (Ehler and Douvère 2006). As a tool, its essential characteristics include that it is authoritative, participatory, ecosystem-based, integrated, future-oriented, and adaptive in nature (Ehler and Douvère 2009).

EU definition: Consistent with the UNESCO definition (Ehler and Douvère 2006), the European Union now defines maritime spatial planning (MSP) as "...a process of public authorities of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives." (European Commission 2010).

US definition: In the US, the Interagency Ocean Policy Task Force, established following a directive from President Obama, defines coastal and marine spatial planning (CMSP) as "...a comprehensive, adaptive, integrated, ecosystem-based, and transparent spatial planning process, based on sound science, for analyzing current and anticipated uses of ocean, coastal, and Great Lakes areas. CMSP identifies areas most suitable for various types or classes of activities in order to reduce conflicts among uses, reduce environmental impacts, facilitate compatible uses, and preserve critical ecosystem services to meet economic, environmental, security, and social objectives." (Council on Environmental Quality 2010).

The similarities among these definitions far outweigh the differences. Both Europe and the US are currently facing the challenge of developing integrated ocean governance, including MSP as a fundamental tool for creating wealth through sustainable use and conservation of marine ecosystems. However, while the MSP experience is limited in the US, primarily to specific areas (e.g., Florida Keys National Marine Sanctuary) or at the state scale (e.g., Massachusetts), western European countries such as Belgium, The Netherlands, and Germany, have been practicing some form of MSP for a decade at the national scale.

2 Opportunities for Cooperation

The Integrated Marine Policies and Tools Working Group, having agreed that MSP holds the greatest promise for a pragmatic implementation of integrated marine governance, especially if similar approaches to MSP are used in both the EU and US, has identified and organized its recommendations around the following major elements of a MSP process:

- Initial conditions
- Planning
- Implementation
- Monitoring and Evaluation

Specifically, the Working Group's recommendations highlight areas where there are opportunities for the EU and US to learn from each other, exchange best practices, and to cooperate in their efforts to develop and improve MSP. Other working groups within the CALAMAR project have also highlighted opportunities for cooperation on MSP.

3 Initial conditions

Increasing human demand for resources from the ocean will continue to drive both public and private interests in the direction of MSP. The relative strength of biological, social and political drivers, nature of existing authorities, incentives or efficiencies in place, and financial resources together will affect the pace at which MSP proceeds in different regions.

3.1 Drivers for change

The drivers for MSP are fairly well recognized. First, there is an increasing pressure on the marine environment and competing interests for the use and enjoyment of finite (spatial) resources in the ocean. Allocation of consumptive and non-consumptive activities in the ocean is increasingly challenging as more uses are being introduced and current uses are expanding. Second, current management of the marine environment is fragmented and complex. There is a need for a more holistic and integrated planning approach, rather than a narrow, sector-based decision-making approach, that can provide a strategic context for achieving multiple objectives, including sustainable development in a particular marine area.

Balancing multiple objectives for the ocean requires accounting for the cumulative impacts of myriad activities—thus driving the need for MSP. The marine environment provides some benefits to specific sectors that can be easily valued (e.g., shipping, oil & gas, cables, fisheries, recreation, etc.). In contrast, other benefits from oceans reach a broader group of people, often through indirect pathways not as easily valued (e.g., provision of life support systems such as water purification and climate regulation, protection of coastal communities from storms and sea level rise, biodiversity, and cultural and aesthetic significance). In addition, the marine environment can play a critical role in national defense activities. Understanding the cumulative pressures resulting from the various uses and how these will evolve in the future is critical, as these pressures will have specific spatial demands, create conflicts among uses, and affect the suite of benefits humans can expect from the ocean. This section presents recommendations for the process of MSP with regard to a selection of some of the key drivers of change toward MSP, including offshore renewable energy, climate change adaptation and national security, and tensions between national security and offshore energy technologies. These recommendations should be considered at the beginning and ongoing throughout any planning process, as the drivers of a marine spatial plan should shape the objectives of the plan as well as the strategy by which the MSP planning team operates.

3.1.1 Offshore Renewable Energy

A key driver behind the growth of offshore wind energy in Europe is the EU target to use renewable energy sources for 20% of total EU energy consumption by 2020. The European Commission has expressed that 30-40 GW from offshore wind is feasible by 2020, and up to 150 GW by 2030. In 2010, the US Department of the Interior announced the “Smart from the Start” Atlantic OCS Offshore Wind Initiative, an effort in line with national priorities that speeds offshore wind energy development off the Atlantic Coast by decreasing regulatory redundancy. Finding adequate locations for offshore renewable technologies is a key to large scale

deployment. MSP and its analytical tools, including geographical information technologies, are necessary to address and better understand competing uses, spatial opportunities and limitations, and also to understand potential trade-offs among offshore renewable energy and other uses, including conservation of critical biological resources.

3.1.2 National Security

MSP has the potential to enhance national security on both sides of the Atlantic while addressing related issues. One example involves military training sites. Some sea uses, such as energy production, could conflict with areas for military training. Concern has been generated in the US regarding access to military training versus offshore oil and gas exploration and the siting of offshore wind farms. Given the array of information that would become available through MSP, better solutions could be developed that may involve relocation of national security activities or identification of other acceptable sites for offshore oil and gas and wind farms.

3.1.3 Climate Change Adaptation

Climate change impacts will likely present national security challenges in the coming decades. For example, anticipated sea level rise threatens both quality of life and property. Damage to infrastructure through flooding will be significant in low-lying US coastal areas as well as in European countries situated at low elevation such as Belgium and the Netherlands. Sea level rise also may increase saltwater intrusion into freshwater ecosystems. Another impact is ocean acidification, which is leading to a suite of changes in the carbonate system in seawater that affects shell-building in marine organisms. Acidification is expected to cause biodiversity loss, such as a decrease in coralline algae and other calcifying organisms that are important prey for commercially and recreationally important species. Moreover, ocean acidification is an environmental stressor for the survival and reproduction of other marine life. Rising sea temperatures and changes in precipitation may exacerbate ongoing problems with harmful algal blooms and distribution and exposures of humans to infectious diseases.

The issue of climate change as it relates to mitigation and adaptation is addressed in detail in the report of the “oceans and climate change” CALAMAR working group. MSP will be an important tool for adaptive management, informing policymaking, and measuring the effectiveness of climate adaptation policies on a host of ecosystem service values.

Recommendation

Implement MSP to address and understand collectively the spatial opportunities and constraints for various drivers of human activities including siting offshore renewable energy technologies, national security activities, and biodiversity conservation efforts, as well as to better plan for future impacts of climate change.

3.2 Establishing authority

Effective MSP requires both top down leadership from government as well as bottom up support from communities and stakeholders. Government leadership can come from legislative bodies

passing laws or high level executive authority issuing directives such as executive orders or other expressed policies. Drivers for such government actions come from increased exploitation and recognition of increasingly impacted marine ecosystems, leading to user conflict (or threats of user conflict), and fragmented and sector-based legal frameworks.

Once a policy to take action is established with clear objectives (ecological, economic, and social), the constructive engagement of affected interests in an ongoing, information-based discussion about how to implement the policy is a necessary first step. Public participation actions such as community or stakeholder advisory bodies, stakeholder and public meetings, notice and comment periods, overall transparency, and, increasingly, the use of communication tools that enable user participation in the planning process improve the results of MSP.

MSP can be started without a legally binding mandate. MSP and the desired outcomes of a MSP process undertaken in the absence of enabling legislation should be calibrated to the level of authority on which the initiative is based. In designing the planning process and establishing desired outcomes, planners should account for the dynamic that the further from legislation that the authority is, the more the results will be driven toward a lowest common denominator outcome. While the planning process can begin without a strong legal mandate, marine spatial plans developed in the absence of a strong legal mandate may require additional authority in order to be implemented effectively.

Recommendation - Short Term Action

The problems MSP seeks to address are urgent, therefore MSP should be initiated with whatever authority currently exists or is politically feasible.

Responsible agencies should be charged to undertake an evaluation of legal and regulatory authority, cooperative processes, and existing stakeholder interactions to determine if changes are needed and how best to update the regulatory system to achieve objectives using MSP. The goal is a cross-sectoral and ultimately integrated governance approach to MSP, including the designation of a responsible authority, the development of compliance and enforcement procedures to achieve the main objectives.

Recommendation - Medium Term Action

If initiated through executive action, evaluation of the existing legal authority, participation of key stakeholders, cooperation among competent authorities and relevant institutions, and adjustment of existing regulations to conform to MSP all are important for a successful MSP effort.

In the absence of a legislative approach, MSP could be operationalized with support from key stakeholders, cross-governmental commitments from relevant authorities and institutions, and binding legal commitment through the use of the regulatory process.

Recommendation - Long Term Action

A legislative mandate for MSP is ideal in order to integrate authorities, establish and achieve common objectives, and improve overall efficiency.

Demonstrated success with MSP through an executive-led approach (see recommendations on short term and medium term action) could serve as a catalyst for legislative change. A legal mandate will make MSP more effective and lead to the different agencies with competing authorities working more efficiently together.

Recommendation - Transboundary Leadership

Transboundary cooperation in MSP should be practiced when human activities have transboundary effects on marine ecosystems.

A transboundary approach depends on geographical locations of activities and their connectivity across maritime political boundaries. This approach entails information sharing, developing a common policy toward the management of certain activities, indentifying common resource use or protection objectives, improving the understanding of actions taken by various states, and avoiding interstate conflicts. The process can be initiated by developing transboundary environmental impact assessments for certain projects and ultimately lead to strategic environmental assessments (SEA)¹ for transboundary programs and plans or by expanding objectives of existing transboundary agreements. These assessments should be accompanied with an analysis of transboundary socioeconomic effects. These effects should be managed at interstate or regional levels (e.g., regional seas) where governing activities can create win-win situations for two or more states.

3.3 Efficiency

While MSP requires initial investment, it should ultimately reduce ocean management costs, if done properly, in comparison to the existing fragmented management system. These expected savings accrue because MSP should create a more efficient permitting process and, due to the collaborative nature of the approach, result in fewer lawsuits. MSP can generate added economic values with a cost-reduction effect. These include:

- More efficient governmental coordination that results in improved decision making;
- Reduced transaction costs (for search, legal, administrative, and opportunity costs) for maritime activities; and
- Enhanced certainty on exploitation potentials resulting in an improved investment climate.

The permitting process could be streamlined by, for example, a tiered system of environmental review based on the marine spatial plan. Examples of this type of approach include the terrestrial example in the US of the state of Washington's Growth Management Act and the State Environmental Policy Act. Under Washington State's laws, if a county develops a plan in

¹ Noble. B.F. 2000 developed the following definition: "SEA is the proactive assessment of alternatives to proposed or existing policy, plan, and programme decision makings, in the context of a broader vision, set of goals, or objectives to assess the likely outcomes of various means to select the best alternative(s) to reach desired ends."

accordance with the Growth Management Act and at the same time creates an environmental review document, subsequent proposals for development that are consistent with the plan do not require additional environmental review. Another example is Rhode Island's MSP approach. While not yet implemented, one rationale for MSP in Rhode Island was to reduce the need for project-by-project environmental review. At the federal level in the US, a tiered National Environmental Policy Act strategy could be used whereby programmatic assessments would accompany regional marine spatial plans.

In Germany and Belgium the maritime zones for offshore wind farms are designated. Although there is not a single permit administration, licensing procedures are quicker than before since there is no discussion among responsible authorities about which zones are suitable for wind farming and which are not. This can result in time savings of one or more years in a permitting procedure.

Furthermore, with a robust participatory process that results in widespread and meaningful stakeholder engagement, there is potential for fewer lawsuits. Lawsuits can be a considerable expense for regulators and stakeholders. While MSP is not necessarily a win-win for all involved, it should enable up front compromise and reduce future conflict.

It is important for the regulated community and decision-makers to understand that, while MSP requires up-front investment, it is designed as an approach to create regulatory and analytical efficiency—resulting in an ultimate reduction in development and decision-making costs. Executive agencies could implement a streamlined approach at the beginning of the MSP process through regulation, guidance, and potentially a memorandum of understanding or similar collaborative agreements.

Recommendation

Develop MSP with an explicit commitment to create efficiencies in the regulatory process, while ensuring critical environmental reviews.

3.4 Financing mechanisms

While ultimate cost-savings are expected, initial costs for MSP derive from the need to compile existing data in a useful format to conduct the planning process, which includes a significant public participation component, through to the development of an approach for evaluation and periodic updating. In Europe, costs might increase due to expenses associated with additional stakeholder and public participation, in particular for Member States that have no legal tradition of public participation at the planning level. Once essential data sets have been compiled for initial use in MSP processes, relative costs of maintaining the data and adding new data are low, and data access and products can be oriented for multiple purposes.

Therefore, establishing appropriate financial mechanisms to fund MSP is essential for success. Potential approaches to finance MSP include expanded resource rents and developing a portfolio of financial support, including public-private partnerships.

One approach is to expand resource rents, so that ocean users pay the cost of management and enforcement. In the US, for example, new catch share fisheries are required to provide a

percentage of the total landing values to support catch share management and enforcement. Also, existing rents could be directed to an ocean trust fund that is dedicated to MSP management and data collection.

Based on recent recommendations at national (e.g. US Commission on Ocean Policy) and state (e.g., Massachusetts) levels in the US, one general approach might be to develop an ocean management investment fund. In addition to other revenues, such a fund might receive all or portions of any financial mitigation paid under existing regulations by new or ongoing business development to offset impacts in the marine environment. Instead of being solely targeted toward a particular and usually local impact, mitigation funds deposited in the ocean trust fund would support ongoing data collection, management, and related activities in the planning region as a whole.

Through the MSP process, data gaps will be identified and can be an indication for future research priorities. Public-private partnerships offer an opportunity to fund research to fill the knowledge gaps: data can be generated using conditional permitting that creates private monitoring requirements for certain users of the sea. For example, in Belgium, those with permission to exploit nonliving resources are required to pay a fee, based on cubic meters of sand and gravel extracted. The revenue collected is used for permanent monitoring of the effects of this resource exploitation. Furthermore operators of offshore wind farms in Belgium have a duty to monitor the effects of their installations continuously. Operators contract governmental scientific institutes or universities for that purpose. In a sense, there exists a possible shift from publicly financed research toward privately financed research, which may also result in increased contributions to scientific and policy publications.

Creating new resource rents or redirecting existing rent money would likely require regulatory action and therefore would be a long-term activity. Creating new conditions for renewed or new permits likely could be done in the short-term under direction from agency leaders.

Recommendation

Explore public-private partnerships as mechanisms to support initial costs and consider resource rents as mechanisms to fund costs of planning, implementing, monitoring and evaluating, and adapting marine spatial plans.

4 Planning

Over the past several years significant developments in MSP have been achieved in many countries and different marine areas in Europe the EU and the US that have led to different approaches to MSP. Despite the European Commission efforts, including the adoption in 2008 of the Roadmap for Maritime Spatial Planning, different administrative structures and legal systems have resulted in a variety of policies and large variations in the governance system for MSP. Developments among European countries are proceeding at different speeds and the resulting MSP processes are quite different from one another. In the US, President Obama's National Ocean Policy calls for a nationally consistent framework for development and

implementation of CMSP while providing substantial flexibility to allow for regional differences and preferences. While flexibility is important, there are essential planning activities that should be part of any MSP process, including, identifying needs and establishing authority, obtaining financial support, pre-planning, identifying and organizing stakeholder participation, defining and analyzing existing conditions and future conditions, preparing and approving a spatial management plan, implementing and enforcing the spatial management plan, monitoring and evaluating performance, and adapting the marine spatial management plan (Ehler and Douvere 2009).

4.1 Stakeholder Participation in MSP

Both the EU and the US agree that stakeholder participation is critical to the sustainability of MSP efforts. Substantial differences exist between the US and Europe in the practice of stakeholder participation. Ultimately, stakeholder participation depends on legislative requirements that often outline minimum requirements for public notification and participation, national and local customs and traditions, and many other factors that make the specification of a single model or approach impossible. However, for MSP to be widely accepted and effective, proponents should go as far as possible in their respective political systems to inform and engage society at large as well as potentially affected sectors. Stakeholders should be engaged at the initiation of, and throughout, the MSP process.

Recommendation

Stakeholder participation should be encouraged throughout the MSP process—from goal and objective setting through planning and implementation, monitoring and evaluation, and adaptation.

4.2 Pre-planning

Assuming that authority and financing for MSP have been established, several key pre-planning decisions should be made before real planning begins.

Pre-planning should include:

- Organization of a MSP team,
- Identification of necessary resources to support the planning effort,
- Development of a work plan (including schedule),
- Specification of the boundaries and time-frame for planning,
- Identification of a set of principles,
- Agreement on a set of general goals,
- Specification of a set of clear and measurable objectives, and
- A strategy for periodic evaluation and updating.

Regardless of the context, pre-planning is a necessary and critical part of any MSP process. Pre-planning should occur immediately at the beginning of a MSP process and should continue throughout the MSP process.

Recommendation

Establish a detailed pre-planning approach to guide the MSP process.

4.3 Data Management

Compiling and mapping geo-spatial data are expensive activities and can take large amounts of time and resources. Not all of the spatial data collected will turn out to be useful for MSP so careful selection is needed. A general rule is that information should be up-to-date, geospatially specific, objective, reliable, relevant, and comparable. As new scientific, technical, economic, and social information on existing and emerging uses becomes available there should be an opportunity to regularly revise the MSP plans.

Data management should be immediate and ongoing throughout the process. This recommendation requires establishment of processes and/or structures that ensure the acquisition and assimilation of new information on a regular basis. This recommendation may require establishment of science advisory entities.

MSP requires substantial data on (1) biological and ecological distributions; (2) spatial information about human activities; and (3) oceanographic and other physical environmental features. Insufficient data at the beginning of a MSP process is not a reason to delay the process. Data collection over the course of the MSP process will yield new insights and enable adaptive management.

Recommendation

Rather than delaying the initiation of the process until all necessary data are compiled, marine spatial plans, and the processes that underlie them, should be constructed on the basis of the best available science at the time of plan development and be designed to be adaptive.

4.4 Future-orientation

Planning is a future-oriented activity. According to the US CMSP Framework, MSP “embodies flexible, adaptive management, where new knowledge continually improves and informs management and policy decisions” (Lubchenco and Sutley 2010). However, most MSP processes in the US and EU have not yet demonstrated an ability to consider the future adequately. The real test for MSP will come when it has to accommodate as yet unimagined ocean uses. One purpose of MSP is to help envision and create a desirable future and enable proactive decision-making in the short run to move toward what is desired (Ehler and Douvere 2009).

It is important that the alternatives considered in formulating spatial management measures be broad enough to reflect reasonable uncertainty. Defining and analyzing future conditions involves the following tasks:

- Identifying current spatial uses and needs, including ecological as well as economic and social uses;

- Projecting trends in the spatial and temporal needs of existing human uses;
- Estimating types of uses and spatial and temporal requirements for new demands for ocean space, including those not yet identified or perhaps even imagined;
- Identifying possible alternative future scenarios for the MSP area, including possible changes to the ecosystem in response to climate change; and
- Selecting the preferred spatial sea use scenario.

For any marine area, various alternative futures are possible. Depending on the importance of certain goals and objectives, each alternative will have human uses, including conservation, distributed differently in space and time. Developing alternative spatial sea use scenarios is a crucial step in the MSP process because it sets the stage for choosing the desired direction in which the marine area will develop during the second and subsequent cycles of MSP (Ehler and Douvere 2009). The process should include a wide range of alternatives and possible future conditions, as well as indicators of progress or problems. Finally, MSP should be understood as a continuous, adaptive process that includes ongoing monitoring, assessment, compliance, information collection, evaluation, and updating activities (Ehler and Douvere 2009). It is crucial that future scenarios be integral in the MSP process from the outset.

Recommendation

MSP should not be limited to defining and analyzing only existing conditions and maintaining the status quo, but should reveal possible and preferred alternative futures for how the area might look in 10, 15, and 20 years.

4.5 The Marine Spatial Management Plan

Once a preferred future is determined, the marine spatial management plan identifies specific management measures that will produce the preferred future through explicit decisions about the location and timing of human activities. The marine spatial management plan is not an end in itself but a beginning toward the implementation of desired goals and objectives. It should present an integrated vision of the spatial aspects of sectoral policies in the areas of economic development, marine transport, environmental protection, energy, fisheries, and tourism, among others. The marine spatial management plan should be closely integrated with public investment programs, should highlight the spatial dimension of integrated management, and should show where existing marine policies fit together and where they do not (Ehler and Douvere 2009).

For a number of reasons, fisheries have been excluded in many marine spatial plans, but as one of the most economically and environmentally relevant sectors, planners should strive to include fisheries in any comprehensive marine spatial management effort.

Although MSP is a complex process, the management plan has to be understood broadly and accepted by users and the general public to achieve a high level of compliance from the outset and throughout implementation. This recommendation is fundamental to the effective implementation of MSP. If these considerations are not included from the outset, MSP is highly unlikely to succeed.

Recommendation

To the extent practicable, all relevant sectors need to be included and taken into account in the marine spatial management plan. Special effort should be devoted to including fisheries in marine spatial plans because of their economic and environmental relevance. The overall MSP process should be as simple, user-friendly, inclusive, and transparent as possible in order to engage and obtain buy-in from the sectors.

5 Implementation

This section illustrates challenges and makes recommendations regarding implementation of MSP focusing on plans developed by Germany and Massachusetts. The German maritime spatial plan presents a model of national planning designed to implement specific EU and German natural resource and use allocation policies. The Massachusetts Ocean Plan presents an example of stakeholder-intensive planning framed by broad, legislatively-established policy goals.

This recommendation must be enunciated at the beginning of the planning process and fully developed during early drafting stages to enable rapid and effective progress in plan development and ensure that when a draft plan is ready for broad public review there are no lingering questions or misunderstandings about roles, responsibilities, and authorities.

Recommendation

Roles and responsibilities of the various parties in a marine spatial plan must be clearly defined, realistic and achievable, and parties must be accountable from the beginning.

Box 2: Case Study of the Massachusetts Ocean Management Plan

The Massachusetts Ocean Management Plan is intended to protect critical marine resources, minimize impacts of new development to existing uses, facilitate the siting of necessary and/or desirable development, and foster sound decision-making based on as comprehensive understanding of the marine ecosystem. The authority of the plan derives from the Massachusetts Oceans Act. The Act stipulates two specific conceptual objectives (identify and protect critical resources and identify areas and management measures for development) and establishes guiding principles. Plan implementation is grounded in the stipulation that all regulatory approvals for projects in the planning area must demonstrate consistency with the management provisions of the plan. In practice, the plan identifies and maps the location of critical marine resources. As the basis for environmental impact review and permitting, the plan identifies and maps subsets of these resources that are particularly vulnerable to impacts from specific types of development (e.g., cables, pipelines, sand mining). Each type of development has an associated map of critical resources for which there is presumption of significant impact.

Three issues, taken together, effectively determine that a collaborative approach is required to implement the plan. First, developing the plan required discussion and negotiation with state government agencies who maintain their discrete regulatory authority to determine that projects subject to their authority are consistent with the plan. Second, key resource definitions that underlie management are based on best professional judgments and will sometimes require further project-specific analysis, as described below. Third, the plan is a new way of managing resources for all the agencies responsible for its implementation, so every project represents an opportunity to build on the plan's strengths and to identify and correct its weaknesses.

Following from this, the plan's central implementation measure establishes an interagency team, consisting of members from six agencies. They are responsible for the regulatory implementation of the plan. This requires using a coordinated approach to determine the type and extent of data and information that would be required for a project to evaluate its conformity with the plan's management standards.

In practice, the first project proposed under the plan was an 8.5 mile (13.7 kilometer) fiber optic cable from mainland Massachusetts to the Island of Martha's Vineyard. The proposed route would have traversed protected areas of seafloor. On review with the agency team, the project was reoriented to minimize the extent of conflict, but the scattered nature and imprecise definition of the protected resource resulted in agency recommendations that the proponent undertake detailed seafloor surveys to assist in determining the extent and boundaries of the proximate protected areas and to better document potential areas of impacts. While some confirmatory survey work would be expected for any cable project, agencies in this instance requested more information than would otherwise be typical in part to help improve their characterization of the resource subject to protection and improve the plan's definition of the protected resource.

The participation of the planning team in the implementation process will result in future improvement in the plan, but imprecise terms of implementation have led to an unbalanced outcome: while an explicit objective of the plan has been achieved (avoid impacts to critical resource areas), a benefit of planning and an implicit objective of the plan (provide regulatory certainty and efficiency) has not. And had regulatory certainty been made an explicit objective, an alternative outcome regarding the definition of the resource would have had to have been developed in the first place.

Box 2: Case Study of Maritime Spatial Planning in Germany

In Germany's territorial sea (12 nautical mile zone) the federal states (Länder) of Mecklenburg-Vorpommern, Niedersachsen and Schleswig-Holstein issued Maritime Spatial Plans in 2005, 2008 and 2010 respectively. In the EEZ, the Federal Ministry of Transport, Building, and Urban Development, and the Federal Maritime and Hydrographic Agency (BSH) are responsible for the MSP. Because of the complex situation of responsibilities in Germany, the Federal Spatial Planning Act provides some legally binding rules on cooperation, consultation and information between the federal and state level in regulating activities in the territorial sea.

Maritime Spatial Planning in the German Exclusive Economic Zone

MSP is needed to coordinate the growing number of maritime uses in the German EEZ, in particular in mediating the conflict between developing offshore wind farms, and marine environmental protection goals, and as well as traditional maritime uses such as shipping and fisheries.

The Spatial Plan contributes 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 2008. The goal of the Maritime Spatial Plan for the EEZ is to determine coordinated regulations for single uses and functions including, shipping, exploitation of raw materials, pipelines and submarine cables, marine scientific research, energy production (especially wind energy), fisheries and mariculture, and protection of the marine environments.

Drafting and implementing the maritime spatial plans for the German EEZ in the North and Baltic Seas and writing the Strategic Environmental Assessment report are responsibilities of an interdisciplinary team from BSH. The compiled plans and environmental reports were put into force after two participation rounds with public hearings at the end of 2009; five years after the initial drafting began.

The maritime spatial plan in Germany, including a map with allowed uses mainly affects applications for new uses such as wind farms and cable in the EEA. The plan contains binding goals which means that other agencies responsible for licensing sectoral activities like sand and gravel extraction or offshore wind energy are bound by the targets of the maritime spatial plan. No license for an activity can be issued in a specific area if the maritime spatial plan stipulates that this area must be kept free from this specific use. For example offshore wind parks are prohibited in priority areas for shipping and in Natura2000-areas dedicated to protection of nature environments. The marine spatial is supplemented by a number of non-binding principles that have to be taken into account by any licensing agency during their decision-making process.

There is no fixed time schedule for revision, but a plan for the EEZ is reviewed and updated roughly every 5 to 7 years.

The firm legal base and the clear administrative procedure helped significantly to carry out the MSP process in Germany. The initial effort took too long, partly due to inter-ministerial discussions and revisions to the draft due to lobbying efforts by influential associations. One aspect to be improved is the full integration of fisheries into the MSP. Fisheries are one of the economically and environmentally relevant sectors. Spatial designations for fisheries were not included in the MSP because the Common Fisheries Policy of the EU prevented their inclusion.

Both the Massachusetts Ocean Plan and the German Maritime Spatial Plan represent examples of MSP efforts conducted under legally-binding mandates in multi-agency teams. One key element to achieving success in these plans was to establish the roles and responsibilities clearly across the different agency groups. Both MSP efforts were led by interagency teams from the beginning. However, longer term accountability for plan implementation remains to be seen. One mechanism to create accountability is to establish a governance body, made up in part of members of the initial interagency planning team that is responsible for and accountable to implementation of the plan.

The MSP governance body should take ownership of monitoring and reporting based on a core set of indicators, guided by a logical rationale for the management actions (e.g., IEA, SEA) and in a format that is understandable to the public.

This recommendation should be implemented in the initial implementation steps of a marine spatial plan and should be ongoing throughout the implementation and monitoring and evaluation phases, in careful coordination and partnership with implementing authorities.

Recommendation

Establish an inter-ministerial working group or marine spatial planning team responsible for planning and establish a marine spatial planning governance body responsible for implementation that can be held accountable or hold others accountable.

6 Monitoring and Evaluation

A properly designed monitoring program is essential for determining progress toward a desired future ecosystem state through a MSP process. The influence of a monitoring program depends upon the extent to which an assessment is perceived as relevant, legitimate, and credible (UNEP and Ehler and Douvère 2009). State-of-the-system monitoring encompasses the routine measurement of ecosystem indicators to assess the status and trends of ecosystem structure and function; performance monitoring is also needed to evaluate the effectiveness of management measures intended to improve ecosystem state. Successful monitoring requires determination of what should be monitored and why. State-of-the-system monitoring is fundamentally concerned with documenting spatial and temporal variability in ecosystem components and thus ideally relies on consistent long-term data from a network of sites. Performance monitoring aims to detect changes in ecosystem status that are caused by specific management actions. A carefully crafted plan for performance monitoring requires indicators of:

- Clearly specified and measurable objectives
- Clearly specified indicators and targets
- Clearly specified linkages between objectives and management measures
- Compliance with regulations
- Ecosystem pressures (the object of management action)
- Status of the ecosystem and human contributions and vulnerabilities affected by these pressures

Such a plan for effective performance monitoring allows predictions about the degree of success to which appropriate management strategies are performed, and provides a formal means for learning about the system and how management actions influence the system (US EPA 2008, Ehler and Douvère 2009, IPBES 2010).

6.1 Indicators

The core set of indicators to be monitored should be identified in part based on a finite budget so that trade-offs in information value and expenses are explicitly included in the decision. The coordinating body responsible for MSP governance should identify relevant spatial and temporal scales over which monitoring information is needed. State-of-the-system, performance, and compliance monitoring needs to be carried out by responsible entities, and the funding and reporting for them should be supported by the MSP governance body and/or permitted users. The core set of indicators to be monitored, responsible parties for the monitoring, and reporting frequency should be identified by the MSP governance body and agreed to by responsible parties at the outset of MSP implementation.

A MSP monitoring program should be able to not only track the condition of the natural and social system indicators, but also provide timely assessments or early warnings of pressures to the system.

Another promising way to reduce costs and increase consistency among MSP processes is to link monitoring and evaluation to existing assessments (e.g., fisheries, those noted in Assessment of Assessments, IPBES, etc.)

Recommendation

The MSP governance body should identify a core set of ecosystem indicators, and guided by a logical rationale for the management actions (e.g., IEA, SEA), should take ownership of monitoring and reporting.

6.2 Evaluation and reporting requirements

Evaluation of monitoring information in order to improve the next round of MSP is an often-neglected step. Cumulative impacts of changes in human activities on a suite of natural and social system indicators are especially difficult to assess. Unless a truly iterative MSP process is put in place, there is no demand for assessment of indicator status, performance, or compliance information, and thus no learning is built in to the process.

The MSP governance body should be responsible for taking decisions that are contingent on information from monitoring and evaluation programs. The desired outputs of evaluation analyses, assessment frequency, and specific questions evaluations need to address should be identified by the MSP governance body and agreed to by responsible parties at the outset of MSP implementation.

This recommendation should be implemented at the outset of a MSP process, and should be done in careful coordination with the scientific institutions or individuals responsible for evaluations and assessments for the marine spatial plan.

Recommendation

Dedicated scientific staff, including both natural and social scientists, with regular monitoring and evaluation reporting requirements, need to be involved in the MSP process.

6.3 Transparency

Transparency of the effectiveness of MSP often is opaque, so public accountability of the agencies and entities responsible for MSP implementation is difficult to track.

High profile, clear, and consistent reporting (e.g., such as in a report card or dashboard format) should help to educate the public and keep them apprised of MSP progress. The public can thus help encourage accountability for responsible parties involved in implementing MSP and participate in iterations of MSP as needed.

This recommendation should be implemented at the outset of a MSP process, and should be done in careful coordination with the implementing agencies or individuals responsible for monitoring, assessing data, and reporting indicator status for the MSP.

Recommendation

The MSP governance body should develop and commit to regular reporting on monitoring and evaluation in a way that is understandable to decision making authorities, politicians, and the public.

7 Transatlantic dialogue

As MSP gains popularity within EU Member States and US coastal states, there is an increasing need to share information regarding lessons learned and experiences with policymaking, planning, implementation, and monitoring and evaluation. This recommendation should be adopted as soon as possible in order to inform the current MSP processes and efforts developing in the EU and US.

Recommendation

A regular transatlantic dialogue should be established to advance EU and US mutual interests in ocean governance and marine spatial planning.

8 Conclusion

For centuries, the sheer power and grandeur of the oceans made them seem impervious to human actions. Today we face a stark accounting for our history of ocean use, where human appetites have directly shaped the marine ecosystems of the planet. Governing institutions in the EU and the US are developing integrated management approaches to cope with the many challenges that are posed in sustaining the resilience and productivity of our oceans and coasts.

Learning from the experiences of others is the best way to improve the practice of MSP; therefore this transatlantic dialogue has provided the opportunity to harvest experiences and share knowledge, best practices, and successes. The presented recommendations address the future need and direction for integrated marine policy and the application of MSP. Specifically, the recommendations follow the major steps of the MSP process: the initial conditions, such as the authority mechanisms and financing mechanisms; the MSP planning process; and implementation and monitoring and evaluation. Both the EU and US have the opportunity to continue to learn from each other and cooperate in their efforts to develop and improve MSP. Growing efforts in MSP increase the need to share information and experiences. A continued regular transatlantic dialogue on integrated maritime governance could help advance the mutual interests on both sides of the Atlantic.

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