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The engagement of stakeholders in the marine spatial planning process

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ABSTRACT

Due to the interdependency that exists between the ecosystem resources and its users, successful implementation of ecosystem-based management depends on the identification and understanding of different stakeholders, their practices, expectations and interests. Today, many scientists and resource managers agree that the involvement of stakeholders is a key factor for a successful management regime in the marine environment. The way stakeholders are involved in the process must reflect, or at least address, the existing complexity of the specific context. A comprehensive method that allows doing this is by use of stakeholder analysis and mapping. This article will focus on the various types and stages of stakeholder participation in a marine spatial planning process, and will illustrate how to conduct a stakeholder analysis that allows the involvement of stakeholders in an adequate way that is sustainable over time.

1. Introduction

As defined by Ehler and Douvere [1], "Marine spatial planning (MSP) is a way of improving decision making and delivering an ecosystem-based approach to managing human activities in the marine environment. It is a planning process that enables integrated, forward looking, and consistent decision making on the human uses of the sea." Ecosystem-based, MSP seeks to sustain the benefits of the ecological goods and services that the oceans provide to humans as well as all living organisms on the planet. Spatial management in the marine environment aims to provide a mechanism to achieve consensus among all sectors operating in a particular area. Thus, in MSP there is a recognition that the marine environment is composed of both natural and human elements and that there are linkages between these elements.

Management of the marine environment is a matter of societal choice. It involves decision making in terms of allocating parts of three-dimensional marine spaces to specific uses to achieve stated ecological, economic and social objectives. People are central to this decision-making process and are the agents for change. As such, stakeholder participation and involvement is integral to the success of MSP. Increased stakeholder participation and involvement in the resource management decision-making process has gained acceptance worldwide [2–5]. There are various reasons why it is important to involve stakeholders, including [6]:

1. better understanding of the complexity of the ecosystem;
2. understanding of the human influence on the ecosystem and its management;
3. examining the compatibility and/or (potential) conflicts of multiple use objectives;
4. identifying, predicting and resolving areas of conflict; and
5. discovering existing patterns of interaction.

In addition, stakeholder involvement provides an opportunity to deepen mutual understanding about the issues at hand, explore and integrate ideas together, generate new options and solutions that may not have been considered individually and ensure the long-term availability of resources to achieve mutual goals [7]. Stakeholder involvement can increase stability in a complex environment and expand capacity rather than diminish it under changing circumstances. All of these issues are becoming increasingly important in the context of MSP to avoid incompatible uses, resolve conflicts and move toward ecosystem-based management.

2. Stakeholder participation

There is a range of types of potential stakeholder participation in MSP. Different types of participation range from communication, where there is no actual participation, to negotiation, where decision-making power is shared among the various stakeholders.

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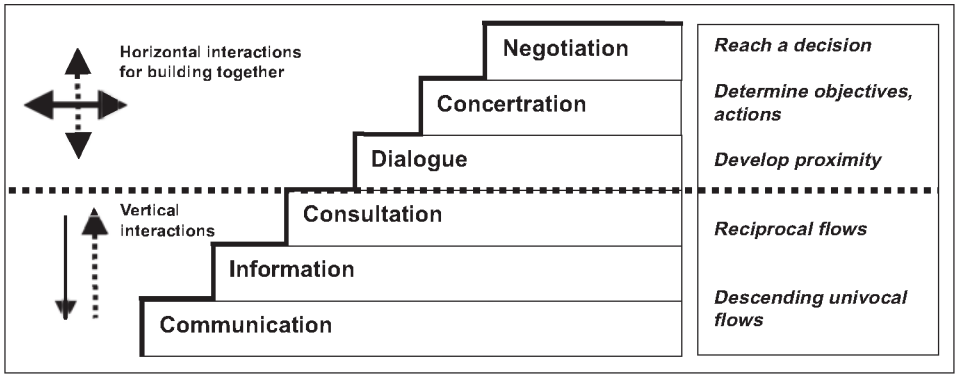

Fig. 1. Possible types of stakeholder participation in an MSP process.

Between these two extremes, different levels of participation are possible (Fig. 1) [8].

There should be wide ranging and innovative approaches to stakeholder participation and proactive empowerment of the MSP process and not just undertake a collation of public comments on a completed plan. Stakeholder participation and involvement in the MSP process should be early, often and sustained throughout the process (see also Gilliland and Laffoley in this issue). Stakeholder participation and involvement encourages 'ownership' of the plan and can engender trust among the various stakeholders. Different types of stakeholder participation should be encouraged at the various key stages of the MSP process. The key stages at which the public and stakeholders should be encouraged to engage and be involved in a MSP process are [9]:

1. *The planning phase*: Stakeholders need to be involved and contribute to the setting of priorities, objectives and purpose of the MSP plan(s). The MSP management team can assist in setting priorities and identifying objectives through stakeholder meetings and group discussions. The idea is to identify, group and rank problems, needs and opportunities in order of priority. This can be done through criteria ranking and pairwise ranking. The output should be made available to the stakeholders, and the output should be reviewed and verified with the stakeholders;
2. *The MSP plan evaluation phase*: Stakeholders need to be engaged in the evaluation and choice of MSP plan options and the consequences of different approaches on areas of their interest. In developing the plan, a number of participatory tools and methods can be used including focus group discussions, problem trees and preference ranking. It is important for all the stakeholders to be clear about the goal and objectives and about what can be achieved in order to focus strategies. The more participatory the process of setting goal and objectives, the greater the stakeholder acceptance and legitimacy of the MSP plan. Often the process of arriving at consensus regarding goal and objectives is an effective means of promoting an exchange of information and understanding among stakeholders. If a trained planner is not available, a plan can still be prepared based on the stakeholders' knowledge and participation;
3. *The implementation phase*: Stakeholder involvement in applications of MSP and management measures. A community-based approach to enforcement may be warranted that involves the fishers in the regulatory and enforcement process. When the fishers understand the problems and benefits of taking action, and agree upon the actions to be taken, they will take part in the enforcement—at least to the extent of encouraging compliance. In a co-managed fishery, there is a greater moral obligation on individuals to comply with rules and regulations, since the fishers themselves are involved in formulating, rationalizing and imposing the rules and regulations for their overall well-being. The government will need to ensure that community-based enforcement units are trained and operational, with adequate equipment; and
4. *The post-implementation phase*: Stakeholder involvement in overall effectiveness evaluation in achieving goals and objectives of MSP plan. A summative or post-evaluation is undertaken after the plan's implementation where the focus is on a deeper analysis of results and outcomes and for determining the level of achievement of objectives and the impact of the plan. The post-evaluation effort should involve all stakeholders in meetings to discuss plan results, hold general evaluation sessions, evaluate results against objectives, and plan for the next phase.

Various scientists and resource managers agree that the involvement of stakeholders is a key aspect of successful implementation of ecosystem-based management. A key question, however, is who are the main stakeholders with regard to a particular area and how to involve them in an effective way. Although a broad range of policy and legal documents hold a strong need for the identification and involvement of stakeholders, neither of them provide a process for doing so in practice [10]. To be effective, the stakeholders that are involved in the process must reflect, or at least address, the existing complexity in reality. A comprehensive method that allows for doing this is by use of stakeholder analysis and mapping. In addition to participating in the MSP process, stakeholders need to be empowered to enable them to be fully engaged in the process. Stakeholder participation and empowerment take both time and resources.

3. Who can be defined as stakeholder: concepts and definitions

Due to the public nature of the marine environment and its many uses, there are numerous potential stakeholders who have an interest or stake in the outcome of the MSP plan. These include commercial fishing, recreational fishing, aquaculture, shipping, military, marine-protected areas (MPAs), energy production, and others. In fact, strictly seen, every individual is a potential stakeholder. There may be different stakeholders depending on their interests, their ways of perceiving problems and opportunities concerning marine and coastal resources, and different perceptions about and needs for management. Not all stakeholders have the same stake or level of interest in the marine

environment, and thus may be less or more active and have different entitlements to a role in the MSP process.

Definitions of, and distinctions among stakeholder and community can be found throughout the public participation literature, although the terms are not applied consistently. The term stakeholder is often associated with corporate management and was first recorded in 1708 as 'a person who holds the stake or stakes in a bet' [6]. Freeman defines a stakeholder as 'any group or individual who can affect, or is affected by, the achievement of corporations' 'purposes' [11]. In the context of natural resource management, however, Röling and Wagemakers define stakeholders as 'natural resource users and managers' [6]. In the more specific context of MPA management, stakeholders are described as 'anyone who has an interest in or who is affected by the establishment of a protected area' [12]. Pomeroy and Rivera-Guieb provides a more holistic definition of stakeholders and describes them as [13]:

> Individuals, groups or organizations who are, in one way or another, interested, involved or affected (positively or negatively) by a particular project or action toward resource us.

Stakeholders may include groups affected by management decisions, groups dependent on the resources to be managed, groups with claims over the area of resources, groups with activities that impact on the area or resources and groups with, for example, special seasonal or geographic interests. Pomeroy continues by stating that stakeholders often hold considerable political and/or economic influence over the resource, based on their historical dependence and association with it, institutional mandate, economic interest, or a variety of other concerns [13].

Another commonly used term is community. The term 'community' can have several meanings. Community can be defined geographically by political or resource boundaries or socially as a community of individuals with common interests. For example, the geographical community is usually a village political unit (the lowest governmental administrative unit); a social community may be a group of fishers using the same fishing gear or a fisher organization. A community is not necessarily a village, and a village is not necessarily a community. Care should also be taken not to assume that a community is a homogeneous unit, as there will often be different interests in a community, based on gender, class, ethnic and economic variations. Recently, the term 'virtual community' or 'community of interest' has been applied to non-geographically based communities of fishers. Similar to the 'social community', this is a group of fishers who, while they do not live in a single geographical community, use similar gear or target the same fish species or have a common interest in a particular fishery.

Other terms are used interchangeably with stakeholder in colloquial language, but with slightly different connotations. For example, systems analysts refer to an actor as 'a person who carries out one or more of the activities in the system' [6], while others refer to institutional actors, describing them as 'a community, a public entity, a group or an individual who organizes itself, takes action to gain social recognition of its own interests and concerns and is willing to assume some task and responsibility for a given natural resource management unit' or social actors, which include 'governmental and non-governmental institutions, groups and private individuals, local communities and outsiders with entitlements to local resources, bearing important complementary capacities for natural resource management' [14].

4. What is stakeholder analysis and why is it important?

Stakeholder analysis refers to a range of tools for the identification and description of stakeholders, their interrelationships, current and (potential) future interests and objectives [6] and examines the question of how and to what extent they represent various segments of society. More concretely, stakeholder analysis can be defined as:

> An approach and procedure for gaining understanding of a system by means of identifying the key actors and stakeholders in the system and assessing their respective interests in that system [15].

The use of stakeholder analysis originated in the management sciences. It has now evolved into a field that incorporates economics, political science, game and decision theory and environmental science [16]. Stakeholder analysis is also a central theme in conflict management [6].

Stakeholder analysis seeks to differentiate and study stakeholders. Stakeholder groups can be divided into smaller and smaller sub-groups depending upon the particular purpose of stakeholder analysis. The identification of key stakeholders should be inclusive and detailed. More groups may mean more problems and discussion, but excluding certain groups could lead to problems in the long run. Ultimately, every individual is a stakeholder, but that level of detail is rarely required. A key question to be answered in the MSP process is: who are the stakeholders that are entitled to take part in discussions and in management? Seven major attributes are important for stakeholder analysis in natural resource management [6]:

1. the various stakeholders related to the natural resource;
2. the group/coalition and to which they belong and can reasonably be associated with;
3. the kind and level of interest (and concerns) they have in the natural resource;
4. the importance and influence that each stakeholder has;
5. the stakeholders' position toward the use or conservation of natural resource;
6. the multiple 'hats' they wear;
7. the networks to which they belong.

Once key stakeholder groups are identified, it is important to find out what their interests and concerns are and how they are positioned toward the area and its resources. The interests, concerns and positions of the various stakeholders will differ as a result of factors including tenure, ownership, history of use, social organization, values and perceptions, and pattern or type of use [17]. For example, the creation of the '*W*' Biosphere Reserve, located at the intersection of three countries—Benin, Burkina Faso and Niger—addressed a biodiversity conservation goal at both the national and regional levels. Earlier attempts to conserve certain natural resources in a unilateral way failed and forced the government to establish compatibility between the conservation of spaces in the reserve and the practices and demands of the community that uses the area. The approach used to identify the stakeholders started with a global analysis of the communities (villages) and focused on physical and socio-economic determinants and the flow of exchanges, both internal and external, among the communities. The analysis made it possible to identify the basic territorial organization structures, which explained the strategies for the spatial occupation in the conservation area, the dynamics with the communities, and the relationships (functional or hierarchical) between them. The eco-functional network (a group of communities whose relationship is conditioned by common natural resources) resulting from this analysis leads to

the identification of 'homogeneous zones,' where use and management rules could become established on a consensus basis [8].

Although stakeholders must be defined broadly in order to capture a wide range of groups and individuals [11], it is important to note they are also often dangerously simplified, suggesting that interests, experiences, needs and expectations are homogenous among a given group of people. The reality is far more complex, and methods used in stakeholder identification and analysis must accept and reveal this complexity, by describing and interpreting the many differences that exist among certain groups of stakeholders [14]. Moreover, due to the complexity of the ecosystem, some stakeholders can also easily be missed, as for example illegal harvesters [17].

After key stakeholders with interests in the proposed ecosystem are identified, they should be weighted as stakeholders with a primary, secondary or tertiary interest or stake in the area or its resources [18]. Different stakeholders may be distinguished using some considerations and criteria, including [13]:

1. existing rights to marine and coastal resources;
2. continuity of relationship to resource (for example: resident fisher versus migratory fisher);
3. unique knowledge and skills for the management of the resources at stake;
4. losses and damage incurred in the management process;
5. historical and cultural relations to the resources;
6. degree of economic and social reliance on the resources;
7. degree of effort and interest in management;
8. equity in the access to the resources and the distribution of benefits from their use;
9. compatibility of the interests and activities of the stakeholders;
10. present or potential impact of the activities of the stakeholders on the resource base.

Those who score high on several of these considerations and criteria may be considered 'primary' stakeholders. Secondary and tertiary stakeholders may score on only one or two and be involved in a less important way [13]. Shepherd describes primary stakeholders as 'those who are most dependent upon the resource, and most likely to take an active part in managing it', while secondary and tertiary stakeholders are over-powerful voices that may include local government officials and those who live near the resource but do not greatly depend on it (secondary); and national level government officials and international conservation organizations (tertiary) [18].

While it is important to have a well-represented MSP process, it is important to determine if all stakeholder sub-groups are entitled to be involved in the process. Too many stakeholders can create administrative and resource allocation problems. It is important that the final stakeholders involved be well-balanced; not too many so as to complicate and slow down the process and not too few so as to leave out some key stakeholders. As such, the issue of entitlement becomes a central question: 'Who is entitled to participate in the MSP process?' It is difficult and is often only accomplished through participation from and negotiation with groups and individuals to ensure equitable representation in the MSP process. All who believe themselves stakeholders should be allowed to argue their case for entitlement. The stakeholders with recognized entitlements may be subdivided between 'primary' and 'secondary', and accorded with different roles, rights and responsibilities. For example, full-time fishers may be recognized as primary stakeholders and seasonal fishers may be recognized as secondary stakeholders.

5. Socio-economic assessment

A reliable stakeholder analysis requires research to provide information about the stakeholders. A socio-economic assessment (SEA) is a way to learn about the social, cultural, economic and political conditions of individuals, households, groups, communities and organizations. There is no fixed list of topics that are examined in a SEA, however, the most commonly identified topics are: resource use patterns, stakeholder characteristics, gender issues, stakeholder perceptions, organization and resource governance, traditional knowledge, community services and facilities, market attributes for extractive use, market attributes for non-extractive use, and non-market and non-use values. SEAs vary in the extent that they cover these topics, and this will depend on the purpose of the assessment. Some SEAs may be a full evaluation of all these topics; others may focus on stakeholder perceptions or resource use patterns [19]. SEAs can be participatory (a broad range of people are involved in data collection, analysis and use) or extractive (outsiders conduct the assessment and take the information with them). They can also be product-oriented (report produced for a specific stakeholder group) or process-oriented (the process of collecting information is as important as the information).

One method to collect data on stakeholders and their attributes in a comprehensive and efficient manner is to conduct interviews with experts knowledgeable about stakeholders or directly with the stakeholders themselves. Such methodology is known as a participatory research approach. This working method is the most commonly used in the field of stakeholder analysis and is considered as the best method for a successful outcome. However, it is important to note that the use of participatory research does not exclude conventional research methods [13]. For example, the Tortugas Ecological Reserve, a fully protected marine reserve that is currently the largest such area in the United States, is part of the Florida Keys National Marine Sanctuary, a multiple-use MPA that uses marine zoning and spatial management to protect resources while allowing compatible activities. The design and implementation of the reserve are a successful example of collaborative decision making among local communities, government official and scientific experts. As a result of the participation of stakeholders (including the integration of their knowledge), socio-political and economic factors weighed heavily in the outcome of the reserve process while scientists played a crucial role in balancing short-term economic concerns with potential long-term economic and ecological benefits. Ingredients of success were, among others, that scientists were seated at the table with other relevant stakeholders, and that scientific data and research results were considered alongside traditional knowledge provided by the users of the area as equally important input to the reserve design process [20].

In coastal and terrestrial areas, stakeholders are often identified through a period of field research, typically using interviews with local individuals. Relevant literature suggests that stakeholder analysis is best conducted starting with a core group of stakeholders and/or key informants (knowledgeable or important individuals in the community). In practice, the participants of the core group would be asked to identify their own interests and representative characteristics associated with the resource or activity. The core group would also be questioned who they perceive to be the other main stakeholders, and what the relations among different stakeholders are [13]. This exercise should be seen as a first, initiating step in the process of stakeholder analysis, providing a basis for further and broader involvement in the next step. Also, a step-by-step participatory method has the advantage of foreseeing an opportunity to verify the information already collected.

The designation of a MPA may have considered fishing intensity along with other layers of information such as biological diversity, species presence or absence, habitat vulnerability, recreational use, and so on. A suitable location for an MPA may be proposed and may appear to minimally affect commercial fishing. Perhaps it will close only 10% of regionally important fisheries. However, the MPA may represent the entire fishing territory of a particular fishing community that might not be able to fish elsewhere due to distance, custom, safety, etc. In addition to simple dispossession, spatial planning that ignores community territoriality also produces conflict as people move to other locations already inhabited by other users, intensifies resource exploitation in remaining areas, and makes fishing more hazardous as fishers must travel further to catch fish. Neglecting the connection between locations offshore and communities onshore can result in uneven impacts and unforeseen hardships. This problematic raises significant questions about spatial planning methodologies. In particular, it suggests that methods to better document the connections between offshore locations and onshore communities need to be developed along with socio-economic layers generally. It also points out the need for greater community-level participation in MSP (see also St. Martin in this issue).

A common way to present the results of a stakeholder analysis is by use of a matrix. For all identified resource uses (for example shipping, fisheries, mining and drilling, oil and gas exploitation), the matrix provides an overview of the various stakeholders, their interests, influence, importance, etc. Such a matrix is the product of a stakeholder analysis and can be referred to as stakeholder mapping as it maps who is doing what and where (Table 1) [10].

Table 1 shows how the information available on the uses of spaces and resources by various types of stakeholders can be organized into a "stakeholder matrix". Such a matrix can facilitate the involvement of stakeholders in a particular area by providing the information necessary for identifying and weighing selected stakeholders for consultation rounds about, or involvement in, the management of ocean spaces and their resources, and MSP in particular.

When all information is compiled and verified in the matrix, it may reveal overlapping interests, conflicts and possibilities for synergies among the various stakeholders. The identification of opportunities for synergies becomes considerably improved by adding a spatial dimension (both vertical throughout the water column, and horizontal from coastal to marine to areas beyond national jurisdiction) to the analysis of stakeholders' interests.

Of course, the actual interest of the various stakeholders can be much more specific than the matrix above shows. On the other hand, it is also important to keep in mind that any stakeholder analysis will have a certain level of uncertainty. Whenever and however the stakeholder analysis is conducted and used for the effective involvement of stakeholders, the participating representatives will always have their own characteristics. Organizations, as well as the individuals who represent them, belong to social networks and have certain personalities that will influence the involvement of stakeholders. This is difficult if not impossible to control.

6. Stakeholder empowerment

Stakeholder participation is critical but not adequate to the MSP process. Stakeholder empowerment, through environmental education, capacity development and social communication, is essential and should be an integral part of the MSP process. The purpose of these activities is to empower people with knowledge and skills in order that, they can actively participate in the MSP process and increase their awareness and understanding of the marine environment and management. While stakeholder empowerment is a continuing activity throughout the MSP process, it should be noted that it is important to start these activities as soon as possible in order to empower people with knowledge and skills so that they can actively participate in the MSP process.

Activities aimed at increasing awareness, knowledge, skills and institutional capacity, such as environmental education, capacity development and social communication, are sometimes taken together under the term 'social preparation'. Social preparation has several functions, including:

- reducing social conflict and resource impacts;
- creating positive change in values and behavior towards the environment;
- gaining support for the MSP plan;
- increasing knowledge and skills of stakeholders;
- fostering participation;
- enabling stakeholders to assert their rights to use and manage the marine environment.

The ultimate goal of social preparation is to achieve behavior and attitude changes so that the MSP process can be sustainable. Social preparation is focused on building a constituency for the MSP plan through a critical mass of people in the area who are environmentally literate, imbued with environmental ethics, shared responsibilities, and shared actions towards the sustainable management of the marine environment. It should be noted that social preparation activities alone will not cause people to change unsustainable practices and behavior. There need to be several actions operating concurrently, such as changed community values, availability of alternative behaviors, and possible sanctions for unsustainable activities.

Two examples of social empowerment illustrate its use at national and community levels. The Coastal Resources Management Program, a US Agency for International Development-funded program for coastal management in the Philippines, in partnership with the National Commission on Marine Sciences with support from Silliman University, National Museum, and the Department of Environment and Natural Resources Protected Areas and Wildlife Bureau and a host of private sector sponsors organized the 'Our Seas, Our Life' traveling exhibit. The exhibit was launched in Cebu City in February 1998 and traveled to key cities in the Philippines until December 1999, drawing approximately 1.4 million viewers. A huge success, the exhibit proved invaluable in calling national media and public attention to coastal issues. It was also a highly effective social marketing tool, providing a forum for discussion of coastal resource management problems and solutions among a wide range of sectors in the cities visited [21].

The Friends of Nature (FON), a non-governmental organization based in Placencia, Belize, co-manages the Laughing Bird Caye National Park and the Gladden Spit and Silk Caye Marine Reserve, with government. As part of its staff, FON has a full-time environmental educator. In its strategic plan, FON has identified education and outreach as one of its primary activities. FON has specifically identified the following interventions as part of this activity:

- student environmental education materials;
- environmental education lectures at local schools;
- resource user environmental education materials; and
- lecture series on marine environmental issues for the general public [22].

Table 1
Example of stakeholder mapping for marine areas beyond national jurisdiction, based on a stakeholder analysis

	Stakeholder considerations and criteria										Geographic interests			
	Existing rights to high seas resources	Continuity of relationship to resource	Unique knowledge or skills for management of resources at stake	Losses and damages incurred in the management process	Historical and cultural relations to the resource	Degree of economic and social reliance on the resources	Degree of effort and interest in management	Equity in access to the resources and distribution of benefits from their use	Compatibility in interests and activities of stakeholders	Present or potential impact of activities of stakeholders on the resource base	Pelagic ecosystem			Benthic ecosystem
											Epipelagic or 'light' zone (surface to 150–200 m)	Mesopelagic or 'twilight' zone (200–100 m)	Bathypelagic or 'dark and cold' zone (from 1000 m downwards)	
Groups of stakeholders														
Fishing industry	?	H	H	H	H	H	H	L	L	H				
Seabed mining industry	M	L	H	M	L	L	H	L	L	H				
Telecommunications industry	L	M	H	L	L	L		L	L	M				
Marine transportation	M	H	H	L	M	H		L	L	L				
Oil & gas exploitation	L	M	H	?	L	L		L	L	M				
Pharmaceutical industry	L	L	H	M	L	L		L	L	M				
Military	?	H	H	M	H	H	H	L	L	M				
Groups concerned about the management decision														
Non-governmental environmental organizations	L	L	M	L	H	L	H	H	H	H				
Business interest organizations														
Donor organizations														
National and international development agencies														
Groups with interests over the area or resources														
National governments														
International organizations, e.g., fisheries management														
Groups dependent upon resources to be managed														
Research organizations	L	M	H	M	M	L	H	M	H	M				
Groups with special seasonal or geographic interests														

H = high interest or stake; M = medium interest or stake; L = low interest or stake Source: Vierros, Douvere & Arico 2006.

7. Conclusion

As outlined in previous articles in this issue, MSP is a key aspect in making ecosystem-based, sea use management a reality. A comprehensive MSP process is directed toward the allocation of parts of three-dimension marine spaces to specific uses with the objective to achieve ecological, economic, and social objectives. People are at the heart of such a process, and both the setting of objectives and the spatial measures that eventually will be chosen to manage the ecosystem are both a matter of societal choice.

Worldwide, scientists, decision makers and resource managers agree that the participation and involvement of stakeholders is a key ingredient for successful ecosystem-based management in general, and MSP in particular. Stakeholder participation and involvement encourages 'ownership' of the plan, can engender trust among all partners, and can reduce conflict. However, stakeholder participation requires an investment of time and resources. It is critical that stakeholders are involved early and continually in all phases of the MSP process, including the planning, plan evaluation, implementation and post-implementation phase, and not just consulted afterwards. There should be wide ranging and innovative approaches to stakeholder participation.

A key question in many stakeholder participation exercises is how to determine which stakeholders are entitled to be involved. The use of stakeholder analysis, usually conducted through a participatory research approach, makes it possible to identify the key stakeholders that need to be involved in the process. In addition, it enables weighing their importance based on a set of criteria that reflects their interest, relationship to, and dependency on the marine space and its resources. A SEA is a way to learn about the social, cultural, economic and political conditions of individuals, households, groups, communities and organizations. A well-conducted stakeholder analysis can eventually lead to the determination of 'homogeneous zones' or spaces in which the resources are managed on a consensus basis, as is the case in the '*W*' Biosphere Reserve in Niger.

But, although critical to a successful MSP process, stakeholder participation alone is not enough. In addition to participating, stakeholders need to be empowered to enable their full engagement. Activities directed to empower stakeholders, including environmental education, capacity development, and social communication, are primarily focused on building constituency for the MSP plans, and will ultimately aim to establish behavior and attitude changes so that the MSP process can be sustainable over time.

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References

[1] Ehler C, Douvere F. Visions for a sea change. Report of the first international workshop on marine spatial planning. Intergovernmental oceanographic commission and man and the biosphere programme. IOC manual and guides no. 48, IOCAM Dossier no. 4. Paris: UNESCO; 2007.
[2] Berkes F, Mahon R, McConney P, Pollnac R, Pomeroy R. Managing small-scale fisheries: alternative directions and methods. Ottawa: International Development Research Centre; 2001.
[3] Wilson DC, Nielson JR, Degnbol P, editors. The fisheries co-management experience: accomplishments, challenges and prospects. Dordrecht, Netherlands: Kluwer Academic Publishers; 2003.
[4] McConney P, Pomeroy R, Mahon R. Guidelines for coastal resource co-management in the Caribbean: communicating the concepts and conditions that favor success. Barbados: Caribbean Conservation Association; 2003.
[5] Hauck M, Sowman M, editors. Waves of change: coastal and fisheries co-management in Southern Africa. Landsdowne, South Africa: University of Cape Town Press; 2003.
[6] Ramirez R. Stakeholder analysis and conflict management. In: Buckles D, editor. Cultivating peace: conflict and collaboration in natural resource management. Ottawa: International Development Research Centre; 1999.
[7] California Marine Life Protection Act Initiative. Strategy for Stakeholder and Interested Public Participation 〈http://www.dfg.ca.gov/mrd/mlpa/strategy.pdf〉; 2005.
[8] Bouamrane M, editor. Biodiversity and stakeholders: concertation itineraries. Biosphere reserves, technical notes 1. Paris: UNESCO; 2006.
[9] Marine Spatial Planning Pilot (MSSP). MSSP Consortium. Final report. 〈www.abpmer.net/mspp/docs/finals/MSPFinal_report.pdf〉; 2006.
[10] Vierros M, Douvere F, Arico S. Implementing the ecosystem approach in open oceans and deep sea environments. An analysis of stakeholders, their interests and existing approaches. Tokyo: United Nations University; 2006.
[11] Freeman RE. Strategic management: a stakeholder approach. Cambridge: Ballinger; 1984.
[12] National Research Council. Using Marine Protected Areas (MPAs) for Fisheries Management in the Gulf of Maine. 〈http://www.seagrant.umaine.edu/documents/pdf/mpa03.pdf〉; 2003.
[13] Pomeroy R, Rivera-Guieb R. Fishery co-management. A practical handbook. Cambridge, MA: CABI Publishing and Ottawa: International Development Research Centre; 2006.
[14] Borrini-Feyerabend G, Farvar T, Nguinguiri JC, Ndangang VA. Co-management of natural resources: organizing, negotiating and learning-by-doing. Heidelberg, Germany: GTZ and IUNC Kasparek; 2000.
[15] Grimble R, Chan MK. Stakeholder analysis for resource management in developing countries. Natural Resource Forum 1995;19(2):113–24.
[16] World Bank. What is stakeholder analysis? 〈http://www1.worldbank.org/publicsector/anticorrupt/PoliticalEconomy/PDFversion.pdf〉; 2006.
[17] Renard Y. Stakeholder approaches to natural resource management in the Caribbean. In: Paper prepared for the Regional conference on community-based coastal resource management, Mérida, Mexico, 2001.
[18] Shepherd G. The ecosystem approach. Five steps to implementation. Ecosystem management series, vol. 3. Gland: IUCN; 2004.
[19] Bunce L, Townsley P, Pomeroy R, Pollnac R. Socioeconomic manual for coral reef management. Townsville: Australian Institute of Marine Science; 2000.
[20] Cowie-Haskell B, Delaney JM. Integrating science into the design of the tortugas ecological reserve. MTS Journal 2003;37(1):68–79.
[21] Department of Environment and Natural Resources, Bureau of Fisheries and Aquatic Resources of the Department of Agriculture, and Department of the Interior and Local Government. Philippine Coastal Management guidebook no. 4: involving communities in coastal management. Cebu City, Philippines: Coastal Resources Management Project of the Department of Environment and Natural Resources, 2001.
[22] Pomeroy R, Goetze T. Belize case study: marine protected areas co-managed by Friends of Nature. Barbados: Caribbean Conservation Association; 2003.