Thesis for the Degree of Master of Fisheries Science

Stakeholder Roles in Marine Spatial Planning

by

Lukambagire Isaac

The World Fisheries Graduate School

Pukyong National University

February 22, 2019

Stakeholder Roles in Marine Spatial Planning

(해양공간계획의 이해관계자 참여 방법에 관한 연구)

Advisor: Prof. Dale Marsden

by

Lukambagire Isaac

A thesis submitted in partial fulfillment of the requirements

for the degree of

Master of Fisheries Science

in the World Fisheries Graduate School,

Pukyong National University

February 2019

Stakeholder Roles in Marine Spatial Planning

A thesis

by

Lukambagire Isaac

Approved by:

_____

(Chairman) Do-Hoon Kim

_____

(Member) Hee-Jung Choi

_____

(Member) Dale Marsden

February 22, 2019

Table of Contents

Stakeholder Roles in Marine Spatial Planning

Lukambagire Isaac

The World Fisheries Graduate School,

Pukyong National University

Abstract

The rapidly growing world population and different users' urge for development of new activities in the oceans is leading to overlaps in uses, conflicts among user groups, and increasing pressure on natural resources in the marine environment. It is vital that this development be sustainable in the long term, and that an ecosystem-based approach be applied to understand the ecological processes at risk and develop ways to effectively mitigate the environmental impacts of expanding and intensifying marine activities. Marine spatial planning (MSP) is a planning and management tool and process to regulate the use of marine resources, especially by separating uses spatially and/or temporally. Through the involvement of many stakeholders, the MSP process can thereby decrease conflicts among users. Proper MSP can also help in improving planning and regulation, decreasing associated

costs and delays, engaging communities and stakeholders, and conserving important ecosystem and services. This study examines how stakeholder engagement and involvement in MSP processes has contributed to the efficacy of those processes. It does so by comparing MSP cases from various countries and regions to see how the extent and nature of stakeholders' involvement can be measured and described. The study examines how stakeholders' involvement in MSP processes can improve outcomes of the process. The results may help countries all over the world to develop their own MSP process and find ways to better integrate stakeholders.

Acknowledgement

I take this opportunity to thank the Ministry of Oceans and Fisheries (MOF) of South Korea, the founder of the World Fisheries University Pilot Programme, for giving me a chance to pursue a life changing degree as well as funding my entire thesis work. This will not only allow me compete locally but also internationally.

I appreciate my Advisor, Professor Dale Marsden who as has been a pillar of my success. He has tirelessly worked closely with me, motivated and guided me not only throughout the entire program and during my thesis but also for my future. I also thank Dr. Hee-Jung Choi of the Korea Maritime Institute (KMI) for her continual support of providing me with all the necessary information on MSP for successful completion of my thesis. Therefore, I believe that through this research work, I will have a platform to present my findings and participate in different conferences around the world, advance my carrier thus making me a better marine spatial planner. The WFU administration led by Dr. Sang-Go Lee, has also done an amazing job of preparing, organizing and coordinating us in the program given the diversity of students' origins and the tight schedule of the program.

I dedicate this work to my loving family and friends who have always supported me morally and encouraged me throughout course.

1 Introduction

Marine Spatial Planning (MSP) is quickly becoming a common approach to organizing the use of space and resolving conflicts among ocean users (Tuda, Stevens and Rodwell, 2014). It is used to assess current status and diagnose ongoing trends of marine systems, while providing information to support sustainable governance (Rochette et al., 2014; Visbeck et al., 2014). The use of MSP continues to grow on an international scale (Aguilar-Manjarrez, José; de Viçose, 2017).

MSP is a public process which aims to achieve ecological, social and economic objectives usually specified through a political process, by analyzing human activities and then distributing them spatially and temporally (Ehler and Douvere, 2009). Spatial planning has been practiced in the terrestrial environment for centuries; as on land, MSP aims to manage marine activities using spatial approaches such as ocean zoning (Flannery et al., 2018). The details of how MSP is pursued and practiced depends entirely on the specific case and its interests (Gissi and de Vivero, 2016) though there exists some general guidelines and principles which can help make MSP processes uniform all over the world (Ehler and Douvere, 2009).

Given that MSP aims to resolve conflicts among users, one important aspect of how MSP should be done is that those users need to be involved in the process (Jones et al., 2016). Stakeholders' involvement is important in the MSP process as they should play a formal role through means such as receiving information, taking part in consultations, collaboration, and possibly decentralized decision-making (Ehler, 2018; Jones et al., 2016). Twomey (2016) describes engagement as a process involving deliberately putting into place a method to work with stakeholders throughout the process especially prior to the consultation phase. Stakeholders include organizations, groups or individuals that are or will be affected, interested or involved either positively or negatively by MSP measures or actions in a number of ways (Ehler and Douvere, 2009; Fairbanks et al., 2018; Twomey, 2016). Nevertheless, Richie and Ellis (2010) found that stakeholders' engagement and participation is still neglected.

Korea's MSP process has to this point been top-down (Choi, 2018; Government of Korea, 2018) due to the urgency to enact the MSP law and because of a lack of awareness of the importance of stakeholder engagement, which might undermine its potential for success. The Government of Korea through the Ministry of Oceans and Fisheries (MOF) is responsible for managing and implementing MSP throughout the country. According to Korea's Ocean Policy (Government of Korea, 2018), the success of the MSP system is based on coordinating the interests relevant to

ocean use and finding agreement among stakeholders. Thus, stakeholders' participation may well be critical if the process is to meet this objective.

This study analyzes how the stakeholders' involvement might improve the implementation of MSP by Korea and other countries. I do so by reviewing literature and a set of cases from various countries and regions to understand their experiences in engaging stakeholders in MSP process, and then examining how such engagement could contribute to the efficiency and effectiveness of MSP.

2 Background and Literature Review

2.1 Marine Spatial Planning (MSP)

Oceans are vital to economies as they contribute to human well-being and livelihood globally. They provide food, minerals, energy and are useful during international trade, recreational activities, cultural activities as well as being influential in regulating climate change (Visbeck et al., 2014). Oceans have strong potential to support growth of economic activities (Jentoft, 2017), which leads to increased competition for space, and to spatial expansion of areas used by these economic users, including into distant water

and the deep sea. The emerging and established economic uses of the ocean include fisheries, aquaculture, ports and shipping, aggregate and mineral resource development, energy development, marine tourism, environment and ecosystem management, military activities, safety management, and research and education, among others (Allen, 2014; Chircop, 2010; Choi, 2018; Ehler and Douvere, 2009; Erbe et al., 2012; Korea Maritime Institute, 2015; Newman et al., 2012; Perveen et al., 2014; Van Dover, 2011; Winiarski et al., 2014; Yamakita et al., 2015).

MSP is closely connected to the concept of blue growth. According to the definition of blue growth by FAO (2016), Pauli and Corbis (2015) and European Commission (2012), blue growth includes as key components the balancing of economic, social, and environmental objectives, while reflecting the complexity of the socio-spatial relationships in the planning area, understanding stakeholders' practices, their importance in decision-making, and their expectations as well as current and future interests. This enables a resilient, healthy environment and inclusivity while strongly focusing on sustainability.

According to the UNESCO (Ehler and Douvere, 2009) step-by-step approach to Ecosystem-Based Approach, MSP "is a practical way to create and establish a more rational organization of use of marine space and the interactions between its uses." It is also meant to "balance demands for development with the need to

protect marine ecosystems and achieve social and economic objectives in an open, transparent and planned way." MSP originated as early as the 1980s, with Australia's system of zoning for the Great Barrier Reef Marine Park mentioned as one of the early examples, and the roots of MSP emanate from marine natural conservation and marine protected areas (Flannery and Vince, 2018). It is now established further because the existing activities on the ocean could no longer be isolated from newly developing activities that occupy marine space (Aguilar-Manjarrez, José; de Viçose, 2017) if user-user conflicts and user-environment issues are to be resolved while ensuring long-term sustainability (Ehler and Douvere, 2009). MSP is practiced differently in various areas, and its processes, techniques, and governance arrangements are tailored depending on the particular management area setting (Ehler and Douvere, 2009; Gissi and de Vivero, 2016).

In a technical sense, MSP is a spatial tool and process that makes use of geographic scientific information combined with spatial information from ocean uses, impacts and opportunities for co-operation among stakeholders' aspirations, interests and expectations (Ehler and Douvere, 2007; Government of Australia, 2006). Therefore, policies that reflect trade-offs between the interests of biodiversity conservation and stakeholders' economic uses can be developed while minimizing socio-economic costs (Agnostini et al., 2008; Ens et al., 2012).

Agnostini *et al* (2008) suggest that when different sectors use common information, datasets and visualizing tools, such as maps, Geographic Information Systems (GIS), and tools such as Marxan in MSP processes, the opportunities for agreement between stakeholders increase. The Government of Australia (2006) mentions that this creates an understanding of the complexity of the ecosystem for the managers, thus making decision-making easier. In addition, collecting different information from various marine areas and integrating it into geographical maps leads to advancement of knowledge in marine areas, which can then support conservation and sustainable use of marine resources (Government of Australia, 2006).

2.2 MSP in Korea

Korea has been transforming its coastal and marine management policies since the 1980s. Until the late 1990s, urban planning of land, including inhabited areas was a major concern (Choi, 2018). This led to the introduction of the concept of Coastal Management (CM) in the mid-1980s, and this was incorporated into national policy in the early 1990s. Pilot projects in semi-closed coastal areas were initiated in the mid-1990s. In 1996 the Korean government established the Ministry of Oceans and Fisheries and conducted a national survey for Integrated Coastal Management (ICM) in the late 1990s (Choi, 2018; Korea Maritime Institute,

2017; Nam and Kim, 2016). In addition, coastal planning led to the enactment of the Coastal Management Act and other laws in 1999. ICM plans at the national and local levels started in 2000 until the mid-2000s. In 2005, a new policy was introduced that included a zoning mechanism, Integrated Estuarine Management (IEM), and efforts to eliminate the loss of habitats and natural coastlines began (Choi, 2018).

MSP as a concept was introduced in 2015 to manage inhabited islands and underwater areas, as well as the broader Economic Exclusive Zone (Choi, 2018; Koh, 2016). Ecosystem zoning was explored because huge reclamation projects had devastated the estuarine areas and bays, tidal power plants and offshore wind farm projects were being planned, water quality was being degraded, and there was a need to balance human uses with ecosystem health through ecosystem-based management (Koh, 2016).

The ICM Act was revised in 2009 to incorporate MSP objectives since it had previously lacked implementation measures and scientific evaluation (Government of Korea, 2018). This led to the completion of planning at the local level and introduction of Marine Ecosystem Services-based (MES) management. In 2015, MOF began to be interested in Ecosystem-Based Marine Spatial Planning (EB-MSP), and from 2016 to 2017 the MSP pilot project was promoted to develop the planning process and to apply these

methods at Gyeonggi Bay (Government of Korea, 2018; Koh, 2016).

In April 2018, the Korean government legislated the MSP Act to systematically manage marine spaces (Government of Korea, 2018) because the Coastal Management Act alone could not encompass all marine areas including the EEZ as it was limited in terms of scientific evaluation and implementation measures. Therefore, the shift from ICM to MSP in South Korea arose from the increasing need to plan use of the EEZ, ICM's lack of criteria for systematic zoning, excessive reserve areas designated for conflicting use demands, and insufficient management tools in ICM (Choi, 2018; Government of Korea, 2018). In 2018, planning for marine areas in South Korea started with the south coast in 2018 with Busan as the focus area, to southwest coast in 2019, west coast in 2020, and finally the east coast in 2021. Therefore, by 2022 all marine areas in Korea will be managed using Integrated Management (IM; Choi, 2018).

MES-based MSP in South Korea focuses on territorial waters and the EEZ. The main pillars of the MES-MSP process in Korea are assessment of ecosystem structure and function, valuation of MES, prediction of impacts of economic activities, and using Decision-Making Support Systems (DSS) to explore options (MOF and KMI, 2018). Having identified the major marine activities, marine spatial assessment is used to identify priority areas for various

activities and potential areas for uses. The operation of marine spatial management will include nine marine designated zones based on the current economic uses of Korea's marine space, namely: priority fishing area, aggregate and mining resource development area, energy development area, marine tourism area, environment and ecology management area, research and education area, harbor and navigation area, military activity area and safety management area (Choi, 2018). The process manages conflicts by comparing service values with demands, and analyzing conflicts and scenarios that might resolve those conflicts. That is to say, it compares threats versus opportunities for existing activities and weigh existing activities versus future demands, and examines the implications of different possible realignments of spatial allocation of activities (Lester et al., 2018; Ministry of Oceans and Fishery, 2016). In addition, MES-MSP uses restrictions on activities to manage marine spaces (Choi, 2018). One example is a case of sand mining, which included marine spatial analysis of current uses and MES valuation (MOF and KMI, 2018). This involved marine use conflict mapping (overlap of conflict index map), mapping of sand stocks and sand abundance to identify sand mining areas, MES value-based scenario planning and automatic trade-off for all grids to identify maximum value areas. Thus, areas that could achieve both minimum conflicts and maximum values were identified.

The Korean MOF recognizes that participation of stakeholders in

Korea's MSP is important (MOF and KMI, 2018). Korea has taken an initiative of developing the necessary technical tools, but there has been a strong push to expedite the process (personal communication, H.J. Choi, Korea Maritime Institute (KMI)). For example, a new division for MSP is being added to KMI to support MSP work. Furthermore, the information system being used in implementing MSP has been designed to integrate data and views from stakeholders. However, until this point it has been challenging for stakeholders to learn the MSP system and understand the MSP objectives, which might make it difficult for stakeholders to gain trust in the system so that they will participate in the process and provide the required data and input.

2.3 Stakeholders' engagement in resource management

One way of understanding the different roles of governments and stakeholders in resource management is through the concept of modes of governance. Three modes are typically recognized: co-governance or co-management, self-governance, and hierarchical governance (Chuenpagdee and Jentoft, 2018). These authors suggest that hierarchical governance usually implies a lack of collaborative decision-making between stakeholders and the state agencies. Co-management involves a wide range of situations, from where stakeholders are merely consulted by the government prior to introduction of regulations to those where the stakeholders

are involved in designing, implementing and enforcing laws and regulations while taking advice from the government (Pomeroy and Berkes, 1997). Self-governance is the situation where stakeholders themselves have sole decision-making rights.

Pomeroy and Berkes (1997) suggested a framework to establish how stakeholders should be involved and engaged in resource management processes. They argued that government must not only establish stakeholders' participation platform but also sustain it, and they suggest that the role of government in establishing conditions for co-management is the creation of legitimacy and accountability for the local organization and institutional arrangements. The delegation of authority and power sharing to manage various activities may be one of the most difficult tasks in establishing co-management. Their framework includes,

- Establishment of conditions, for co-management to originate and prosper. Here, government must not challenge stakeholders' rights to hold meetings to discuss problems and solutions, and to develop organizations and institutional arrangements (rights and rules) for management.

- Stakeholders must be given access to government and government officials to express their concerns and thoughts in order for them to develop a feeling that they will be listened to.

- Stakeholders should be given the right to develop their own organizations and to form networks and coalitions for cooperation and coordination in order to meet their needs.

Pomeroy and Berkes (1997) also described a spectrum (they called it a “hierarchy”) of potential relationships between governments and stakeholders in resource management processes, and roles that stakeholders might have in these processes. These roles are:

1. That stakeholders would be informed by governments about decisions taken;

2. That stakeholders would be consulted by the government and asked for their views;

3. That stakeholders would serve an advisory role, which implies more openness by the government to incorporating the advice of stakeholders into the management decisions;

4. Partnership and joint action, where both the parties have significant standing and take decisions together. This role can be considered the first that implies co-governance or co-management; and

5. Community control, where stakeholders explicitly take the decisions without relying on approval from the government. This corresponds to the mode of self-governance.

The benefits associated with co-management include being more appropriate, more equitable, and allowing for more efficient management (Pomeroy and Berkes, 1997).

2.4 Stakeholder roles in MSP

Marine spatial planning aims to resolve conflicts among ocean users (Olsen et al., 2014). It follows that stakeholders' involvement is crucial and significant in the MSP process if the above-mentioned conflicts and challenges arising from rapidly increasing utilization and industrialization on the marine waters are to be tackled (Schubert, 2018). Their participation is imperative if MSP is to be adopted and accepted (Frazão et al., 2018), to support MSP legitimacy, credibility, inclusivity and social equity (Arkema et al., 2015).

Having stakeholders involved is important even during the pre-implementation stage sometimes known as step zero (Chuenpagdee et al., 2013; Ritchie and Ellis, 2010). For example, in their study Ehler and Douvere (2009) argued that stakeholders are vital in defining goals and objectives during the pre-planning process, mapping existing human activities, evaluating the existing user conflicts, defining future scenarios and evaluating future conflicts, developing proposed optimal plans, monitoring and evaluation as well as in reviewing management. In other words, they suggest that stakeholders must be involved throughout the

process.

If stakeholders are not thoroughly engaged, a number of risks arise. If all relevant stakeholders are not engaged, and if they do not have a role in the pre-implementation phase of setting objectives, then stakeholders may fail to reach a consensus on decision-making matters, thus failing to resolve the very conflicts that the process aimed to address (Andrade, 2017; Chuenpagdee et al., 2013). Furthermore, because MSP is typically implemented in spaces already busy with existing conflicts, its performance explicitly depends on what people think and believe about the problems, conflicts, and potential solutions, and on the related enacted regulations (Jentoft, 2017; Tuda et al., 2014b).

2.4.1 Economic users' roles in MSP

There are many specific aspects of stakeholders' involvement in MSP processes that might determine success of the process. The first question is *which* stakeholders to involve in the process. The consensus in the literature is that all stakeholders who have interest in the ocean should be involved and most cases suggest inclusion of all key stakeholders as much as possible. However, in reality, there are some cases where many stakeholders are excluded. For example, fisheries is mentioned in most cases as one of the key stakeholders that should be included in almost all MSP processes, (Andrade, 2017; Barbesgaard, 2018; Fairbanks et al., 2018; Jentoft,

2017; Wilen et al., 2012). On the contrary, there are some cases where some stakeholders are excluded, such as the case of Belgium where fisheries were initially excluded from MSP processes (Olsen et al., 2014). Some cases show a more government-driven process of stakeholder involvement, for example, engaging the commercial marine industry to find solutions to ships that were colliding with whales in the Colombian Pacific Ocean (Abramson, 2012). However, there also other cases where stakeholders have initiated the process of getting engaged, such as the petroleum industry in Norway that actually came up with the idea of initiating MSP in the country (Olsen et al., 2014).

A second aspect of stakeholders' involvement relates to the *timing* of their involvement: at what stage or stages should they be involved. This aspect includes other more detailed questions such as: how early should they be involved (e.g., at pre-implementation stage or other proceeding stages); how frequently should they be involved; and whether they should be involved throughout the whole process or at certain phases. According to Pomeroy and Douvere (2009), stakeholders traditionally are involved in all phases of MSP, including decision making, and Hadjimistsis *et al* (2015) listed cases from Europe along those lines. In the same way, in the case of a Kenai river fishery (Krupa, 2016), a streamlined method was used to identify the frequency of stakeholders' involvement in the decision-making process. In

addition, a case from Portugal (Ferreira, 2017) indicates full stakeholder engagement as early as the planning stage and then throughout the evaluation. However, a number of other cases show stakeholders' engagement at only selected phases (Ehler, 2014; Krupa, 2016).

A third aspect of stakeholders' involvement is *how* they are engaged in the MSP processes, and what their roles are in the process. One typical way of analyzing stakeholders' involvement is to grade their roles in management arrangements based on how influential and powerful they are (Jones et al., 2016; Tatim et al., 2018). This might include roles from simply being informed about issues and decisions, to being consulted for views and preferences, to taking an active role in decision-making (Pomeroy and Berkes, 1997). For example, in the case of the Northeast Regional planning process in the US stakeholders roles were confined and limited to achieve already designed MSP objectives (Flannery et al., 2018); there was no freedom of expression of ideas and some stakeholders were deliberately excluded due political reasons. Bias developed among others and they refused to participate. Flannery *et al* (2018) therefore recommended practicing MSP that allows participants freedom to generate ideas and make decisions rather than one that influences and controls them to legitimize the top-down processes. In addition, they suggested that participatory MSP must be designed to avoid elimination of weak stakeholders, and to earn trust from all stakeholders to avoid non-participation and

prevent dominance of elite stakeholders.

3 Thesis Statement

This thesis examines how stakeholders' engagement and involvement in MSP processes has contributed to the success and effectiveness of those processes. It then assesses how stakeholders' involvement might improve outcomes of MSP in various countries.

4 Methodology

This study reviews MSP cases from various countries and regions to see how best one can describe and measure the extent of stakeholders' involvement. Based on a preliminary reading of the literature (see section 0) three main questions arise about stakeholder involvement:

- Which stakeholders should be involved in MSP processes?
- When should stakeholders be involved in MSP processes?
- How should stakeholders be involved in MSP processes?

I examine specific aspects that include the timing questions like

how early and how frequently stakeholders are involved, and whether they were engaged in all phases or at certain phases. I also examine the degree of the stakeholders' strength to assess the influence of stakeholders on the process and outcomes.

I grade the types of stakeholders' involvement (roles) by using a framework of Pomeroy and Berkes (1997) who proposed a spectrum/hierarchy of co-management arrangements (see section 0).

Furthermore, I consider comparative cases to determine what has hindered the involvement of different stakeholders from being involved in different MSP stages. I present them as a description, that is to say, what approaches tended to work well or not work well in various cases and whether there is some minimum type, level or frequency of above-mentioned approaches to derive a set of common information. This helps to trace any relationship across any of the variables about how stakeholders' involvement was done and how successful it has been. Lastly, I use an 'analytical framework system' (Flannery, 2018; Jones et al., 2016; Zaucha, 2014) to analyze these cases, categorize them, present them as a description and then draw lessons for Korea and other countries.

In this study, I have used some words to mean the same, namely, engagement (engaged) and involvement (involved), stages and phases, interactions and integration, and EB-MSP and MES-MSP.

5 Results and Discussion

The research reviewed highlights a number of cases where stakeholders have been part of MSP processes. The following sections display herewith various stakeholder engagement cases following aspects of who, when and how while analyzing depicted results and suggested recommendations, and their relative prevalence in the literature.

5.1 Which stakeholders should be and are involved?

Stakeholder identification in MSP process is the initial stage of stakeholders' analysis and this enhances selection of key institutions and groups to participate in governance of the marine areas. Most of the guide papers such as Ehler and Douvere (2009) suggest a very inclusive type of stakeholders' involvement, where as great a number and wide a range of stakeholders as possible should be involved. However, some guides to MSP mention a narrower range of stakeholder involvement than others as they critically emphasize the point of ensuring that only the right people (fitting stakeholders) are involved (Ehler and Douvere, 2014). In addition, other reviews suggest inclusion of only key stakeholder groups, but with a large number of people from each of those groups in order to get more views in key specific areas, under the understanding that 'two heads are better than one' (Dudley, 2008). Very few reviewed papers are definite on the exact number and

range of stakeholders to be involved (Krupa, 2016)

The above considerations – how many groups to involve, and how many representatives/participants from each group – give rise to four basic categories of process, each with its own advantages and disadvantages (

Table 1). If there are many stakeholder groups involved then there is likely to be a better representation of the issues, and it should be possible to address all of them in the process. However, having more groups raises practical issues, such as difficultly scheduling meetings, higher costs (e.g., for more facilitation, travel costs for participants, food for participants, larger meeting space, organizing material, etc.), more variability in ideas, and potentially a less orderly and organized process.

Similarly, if there are many participants per group, this should lead to better representation of issues and generation of ideas, but will raise similar practical issues around coordination and cost as for having many stakeholder groups present. Having many participants per group has the added advantage that it may lead to generation of more creative ideas to finding possible solutions to issues assuming that it increases the likelihood that some participants will be engaged and productive in terms of identifying issues and proposing solutions.

Table 1. Four categories of stakeholder involvement, defined by whether there are few or many stakeholder groups involved. Source: author's analysis.

	Few stakeholder groups	Many stakeholder groups
Few participants per group	• The cost is low. • The time required is low to execute the process of stakeholder involvement. • Low generation of ideas based on local experiences. • Low representation of the institutions due to a narrower scope. • Low variability in ideas. • More orderly and more organized	• The cost is medium. • The time required is medium. • High generation of ideas. • High representation of institutions. • High variability in ideas. • Intermediate orderliness and organizational difficulty.

Many participants per group	• Medium cost. • Less time is required to organize meetings. • Higher generation of ideas from each group. • Low representation of institutions. • Medium variability in ideas. • Intermediate orderliness and organizational difficulty.	• Highest cost. • Time required is high to find meeting dates. • High generation of ideas from their ground experiences. • High representation of various institutions. • More variability in ideas. • Less orderly and organized.

The category involving *few stakeholder groups and few participants per group* is the inverse of what is described for many stakeholder groups with many participants per group. This is more likely to be used by countries that need to expedite the process to meet MSP objectives. I recommend using this approach in small-scale areas, as this approach is easier to manage, which could

make it more cost-effective in small-scale situations with few resources.

The two remaining categories of *many stakeholders groups, few participants per group,* and *few stakeholder groups, many participants per group* are intermediate between the more extreme categories described above, and their advantages and disadvantages are likewise intermediate. For example, financial costs are relatively moderate and we might expect their ease of organization to be moderate. However, the latter may be more easily organized since the many participants from each group may have similar ideas according to the industry or group they represent. The former experiences a low generation of ideas from each group, with a relatively smaller angle or perspective of what happens on the ground, whereas there is a higher generation of ideas in the latter in each group, but with fewer overall presentation of experiences in management area due to there being few stakeholder groups involved.

However, there are likely to be many variations on the broad summaries outlined in this analysis. As one example, there is no guarantee that if there are lots of people engaged in a process then there will be many ideas generated. Generation of ideas to find possible solutions to challenges will be based on the degree of productiveness and engagement of the individuals taking part. A larger group could potentially have the counter-intuitive outcome

that people might disengage because they feel like someone else will come up with ideas and solutions.

The scenarios presented above are general in perspective and all MSP cases reviewed can be represented by one of them. However, on a very specific note, there are some scenarios whereby in the same meeting, some groups can have more participants than others. In addition, some cases reviewed could fit in more than one scenario. For example, in his analysis of Polish maritime spatial plans for the Gulf of Gdansk and South middle bank, Zaucha (2014) addressed the low quality of data as fewer stakeholders were engaged in data extraction, which could fit in three scenarios (*many groups, few participants*; *few groups, many participants*; and *few groups, few participants*) depending on the interpretation of the literature. This should signal the authors to articulately mention the specific details concerning stakeholders in the cases studied.

Note that the above analysis is not attached to any quantitative reference (limit) of "how wide is wide, how narrow is narrow and how much is much or how high is costly" since this is something that can only be quantified locally basing on individual countries and their specified management areas. However, in the cases reviewed, some literature denotes participation quantitatively; for example, in the case of the Kenai River Fishery (Alaska, United States), seven key stakeholders, 12 secondary stakeholders and 19

tertiary stakeholders were mentioned (Krupa, 2016).

While the literature tends to suggest inclusion of a wide range of stakeholders, practice has been quite different as in real cases many stakeholders have been left out of MSP processes (Flannery et al., 2018). For example a US case shows exclusion of some marine stakeholders after a non-supportive process of engagement was designed purposely to eliminate them; that is to say, meetings were set in inappropriate places, and at wrong time and dates (Flannery et al., 2018). The northern region planning body in US was made very top-down in favor of the development of offshore renewable energy, thus eliminating some key stakeholders from other sectors from engaging in the process for fear that they would object to outcomes.

The omission of some stakeholders from MSP processes comes about for a variety of reasons. One of these is pressure on governments to expedite the process of MSP implementation. For example, Korea has a well-developed system for stakeholder engagement, but this is not currently working well to get meaningful stakeholder engagement in MSP implementation (H.J. Choi, Korea Maritime Institute, personal communication). During the planning process, public hearing are officially required, but it may be difficult to integrate the views that are shared in these hearings because they are done at the final stage of the plan (H.J. Choi, Korea Maritime Institute, personal communication). Another

challenge is the financial budget allocated to MSP processes (Rojas-Nazar et al., 2012), as MSP as a process is very costly and needs a lot of money during the initial stages. For example, under European Union law, all members are required to develop marine spatial plans within a limited time (Commission of the European Communities, 2007). This type of time constraint may pose particular challenges in the case of developing countries. If these countries do not have enough money to meet the required budget (Rojas-Nazar et al., 2012), some MSP steps like 'involving stakeholders' might be omitted. In addition, given that MSP is a public process, it is much affected by the politics of individual countries (Flannery et al., 2018).

Some countries agree in principle with the direct incorporation of stakeholders in MSP processes but end up eliminating some because of political reasons (Flannery et al., 2018). In their study, Flannery *et al* (2018) argued that MSP is meant to be democratic involving free expression of ideas, that is to say, arguing, debate, disagreements. However, they describe MSP in reality as a post-political planning that is undemocratic as it enforces state agendas, thus dictating MSP processes to aim at superficial consensus and agreement even when issues remain unresolved. Here, stakeholders remain disempowered or excluded or even fail to participate because of fear that the system is organized to suit only elite stakeholders (the powerful or most influential stakeholders), which causes imbalances in the MSP system. Such a controlled

environment can be harmful to the current and future prospects of MSP as stakeholders may not abide by the decisions taken, and governments may attempt to counteract this effect by passing stringent laws and policies that may undermine the economic and social life of stakeholders (Flannery et al., 2018). Korea had initially excluded fisheries from MSP but it is now working to include fisheries stakeholders in early MSP phases (personal communication, H.J. Choi, Korea Maritime Institute (KMI)). Concomitantly, another scenario is that participants may be included in the MSP meetings, but not given a chance to participate in decision making, thus not following Pomeroy and Douvere's (2008) recommendation of inclusion of all involved stakeholders in decision making. This is where government authorities tend to override the MSP system as a way of enforcing their state agendas (Flannery et al., 2018). Here, participants attend meetings but remain dormant during discussions or may discuss things that will never be incorporated.

5.2 When should the stakeholders be involved?

The timing of stakeholder involvement is another important consideration in designing MSP processes (see discussion in section 2.3). However, most literature does not mention exactly when to engage stakeholder as it concentrates on the "which" and "how" questions and do not specify the "when." One example is

Bergstrom *et al* (2014), who emphasized stakeholder inclusion but did not specify exactly when. However, there have been some cases where very early engagement of stakeholders is emphasized, such as in the Scotland case (Twomey, 2016). Another case is the Kenai River Fishery in Alaska, United States, which mentioned engagement of stakeholders at certain phases rather than throughout all the stages. Concomitantly, most MSP guides recommend that not all stakeholders need to be included throughout the entire process (Ehler and Douvere, 2009; Pomeroy and Douvere, 2008).

Below, I examine in detail, the timing questions of (1) how early to engage stakeholders, (2) how frequently to engage stakeholders, and (3) whether to engage stakeholders throughout the process or at certain phases.

5.2.1 How early should the stakeholders be involved?

This question should be considered with respect to all stakeholders who will be affected by the MSP process, or those with any attachment to the system to be planned or managed using the process. A common recommendation in the literature is for early engagement of all stakeholders from the beginning, that is to say, during pre-planning (Andrade, 2017; Chuenpagdee et al., 2013). This will give them a proper insight of how the MSP process will work, thus helping the process to be more successful. For example,

the prospect of successful implementation of MSP in Cyprus is linked to learning from international best practices, including early stakeholder engagement (Hadjimitsis et al., 2015). In contrast, in another case in the US some group participants argued that active stakeholders were not required to participate in early stages of the process but rather participate in debates on specific projects (Flannery et al., 2018).

One study proposed that stakeholders should be categorized as primary (key stakeholders), secondary or tertiary, based on their level of investment (Krupa, 2016). This author categorized the fishery stakeholders based on their investments in the fishery, such as advocacy, education, revenue source, research, regulatory, resource management, land ownership, user social interest and resource interest, with those who had made heavy investments being categorized as primary. Whereas Krupa (2016) emphasized stakeholder involvement at certain phases, he suggested that primary stakeholders play a major role in decision-making, and thus it is imperative to include them in all stages. Secondary stakeholders are less influential compared to the primary stakeholders and should be included in certain phases, only when they are needed. Lastly are the tertiary stakeholders, who usually have a very weak attachment to the MSP process. They may not be directly included in any of these stages but have to know about the MSP proceedings either through media or other communication systems (Krupa, 2016).

Studying the level of influence of stakeholders in management is key. This follows Chuenpagdee *et al*'s (2013) suggestion that all matters including stakeholders' knowledge and power should be well examined in order to make the MSP process effective. Considerations of interest might include knowing who these stakeholders are, which group they represent, their purpose in getting involved in the process and whether they are accordant with the law or with established legal forms and requirements. This will save money, time and energy, and help in having definite and legitimate MSP process with reduced misunderstanding among different stakeholders, thereby producing better outputs.

5.2.2 How frequently are stakeholders involved?

Frequently also means repeatedly, regularly, or often according to the Cambridge English dictionary. Evidently, MSP is a long-term process and the meeting are normally held after long periods, whereas initial stage meetings are held frequently after short periods. Some literature suggests frequent stakeholders meetings (Joseph, 2017). In tandem, most recommendations suggest holding a higher number of stakeholder meetings at the initial stages than later stages (Ehler, 2014; Ehler and Douvere, 2009; Government of Korea, 2018). I also argue that constant involvement of key stakeholders is necessary in both initial and further meetings as this expands their knowledge and understanding of the concepts as well as decisions made in the

meetings. Further meetings should not be too far separated in time. If they must be, there should be a "refresher" time at the beginning of subsequent meetings to remind participants of what was discussed in previous meetings.

5.2.3 Whether to engage stakeholders throughout the process or at certain phases/stages?

This question relates somewhat to the earlier analysis concerning "how early" (section 5.2.1). While Ehler and Douvere (2007) suggest a continuing involvement of stakeholders, I argue that only if stakeholders are primary (key), they should mandatorily be engaged throughout process. Secondary stakeholders should be engaged in certain phases where they are required, whereas tertiary stakeholders may not be involved but should be informed of the process. For example, as Fiona (2001) recommended, fishery expert stakeholders with in-depth understanding of the fishery should be included throughout the process of developing MPAs. Ehler and Douvere (2014) identify three main phases where stakeholder engagement is key, namely: planning, implementation, and monitoring and evaluation. In addition, Ehler (2014) argues that including key stakeholders at the right stages is cost effective because resources like finance can perform designated tasks to achieve the anticipated MSP objectives, and saves time since too many stakeholders engaged at the wrong time and in the wrong way can be distracting and thus waste time.

Young (2015) noted in his case of offshore renewable and sustainable energy production that the sector is still new and emerging in many places around the world, but is predicted to have a great potential in the future if key stakeholders in the sector are involved and fully engaged from the beginning of MSP processes in management areas that may see development of new uses (De Decker and Woyte, 2013; Winiarski *et al.*, 2014; Perveen, Kishor and Mohanty, 2014). Therefore, in his recommendation, barriers such as resource and user conflicts, regulatory complexity and limited understanding of the environmental impacts associated with offshore renewable energy plus general challenges that surround ocean governance must be addressed by the stakeholders to enable the sector grow to its full potential (Young, 2015). This is only achievable when stakeholders are included throughout the MSP process as it creates a clear understanding of issues that may create conflicts, creates more room for improvement to adapt to new changes, and may generate more ideas based on experiences from the management area.

5.3 How should the stakeholders be involved?

Having examined which stakeholder to involve and when, the last question that arose in sections 2.2 and 2.3 concerned the roles of stakeholders. This is analyzed in two concepts, namely: mode of governance, with emphasis on co-management; and degree or level

of intensity or influence.

5.3.1 Modes of governance

Most of the MSP cases reviewed show Pomeroy and Berkes's (1997) stakeholders' roles in management arrangements as discussed above (section 0). In the reviewed cases, stakeholders are included in MSP processes following one of three general models: (1) a very inclusive stakeholder-driven process; (2) a more government-driven process; or (3) an in-between process that is both stakeholder- and government- driven. All of these scenarios can work well depending on the country's priority in the management area, but there may be a question of which would work best depending on the specific circumstances.

Inclusive stakeholder-driven process

These types of processes typically depend on the actions of some stakeholders who influence the initialization of the MSP process. Cases reviewed include those with many different stakeholders affected by the process, and they are enabled to participate in the process (Rojas-Nazar et al., 2012), which leads to successful implementation and operation of MSP. This usually creates pressure from the stakeholders to management authorities to use cross-sectoral integrated management systems like MSP in a management area in order to find possible solutions to the issues.

In some aspects, stakeholders may like to invest in the new potential uses in the management area such as the renewable energy sector, or may need to resolve spatial conflicts, such as a case in Norway where the petroleum industry wanted to extend its activities into areas where other economic uses were already active (Olsen et al., 2014). This resulted in a call for an integrated management system that can cut across sectors while considering spatial and temporal elements. I recommend this approach for resolving user-user conflicts as it avoids having decision dictated by a government, but rather development of a mutual understanding among all parties involved. It also creates a sense of ownership and protection of the decisions and policies made during the process (Curtin and Prellezo, 2010; Twomey, 2016).

Government-driven process

This is good for cases where there is limited time and the processes need to be expedited, where there is less effect or impact on people, possibly in offshore areas with fewer economic uses, when coordinating economic uses impacts on the environment (resolving user-environment impacts), when new uses need to be developed in the management areas, and when a new economic activity may generate much revenue for the country.

A number of cases reviewed more government-driven process. In a case in Belgium described by Olsen et al (2014), where the federal

minister advocated for the development of the MSP process, which included stakeholders from the aggregate extraction and renewable energy sectors and initially excluded fisheries due to its regional competence in the region. Later, the activities of fisheries were limited in certain respects, for example, prohibiting fishing in offshore energy concession zones and limiting some fishing techniques like bottom trawling to particular areas. This MSP process was also attributed to conservation and protection of habitats.

Another case on the west coast of Colombia incorporated commercial maritime stakeholders as key and the process was more government-driven. The process required protection of living marine mammals (i.e., reducing whale strikes by vessels) because whales are endangered and sanctuaries were considered as a way to give them protection (Avila et al., 2017). Also whales were struck by large ships heading to and from San Francisco Bay and other major ports in the Pacific Ocean. This process involved many participant stakeholders, including those from the fishing industry, shipping industry, recreational boaters, trade associations and marine exchanges, ship agents and pilots (Abramson, 2012). More government-driven processes include the Australian case of the Great Barrier Reef Marine Park where the government-controlled MSP process aimed to manage water resources sustainably, to protect the ecosystem, to conserve biodiversity, and to achieve a balance between economic and environmental

interests (Hassan and Alam, 2019).

Generally, most cases where the environment is a concern show a more government-driven process with less stakeholders. This is mainly in collaboration with environmental agencies and conservationists.

Mix of government- and stakeholder-driven process

While the above examples involve processes that are strongly driven by stakeholders or governments, a third set of cases involve more balanced roles between the two. One example is a case from the US, where President Obama's administration promulgated an executive order to develop marine spatial plans in the larger regions of the US waters following influence from some stakeholders (Olsen et al., 2014). Many commercial economic users were not happy and blocked additional funding to the MSP process. However, stakeholder involvement and transparency was more effective at the state and regional level in the US (Olsen et al., 2014). US marine resource managers have so far implemented MSP at smaller scales and new councils have been implemented, that is to say, fishermen advisory boards and habitat advisory boards (Smythe and McCann, 2018). Stakeholders and government practitioners include local, county, state, federal and tribal government, marine managers, universities, environmental organizations, NOAA sanctuaries, integrated marine scientists,

conservation advocates, and commercial anglers, among others. Concomitantly, in US, stakeholder inclusion is more common than purely government-run processes.

Another example of this approach is the Cyprus case described by Hadjimitsis *et al* (2015), where less investment came from the economic users due to lack of confidence as the country had no framework for the process. The government had to be more engaged in the MSP process by funding and developing most of the new uses such as renewable energy sector (Horbaty, Huber and Ellis, 2012; De Decker and Woyte, 2013; Perveen, Kishor and Mohanty, 2014;).

5.3.2 Individual stakeholder groups

Effective governance is critical in managing marine areas, and vertical and horizontal integration are the main ingredients (Charles and Wilson, 2008). Vertical integration (cross-scale) is management of resources under the same body but in different levels, for example at government levels such as local, state/province, federal, regional, and international. Horizontal integration (cross-sectoral) is management of resources across sectors, that is to say, different sectors (Jones et al., 2016; Olsen et al., 2014). For example, fisheries typically should not be managed in a completely separate system and process from other ocean management systems. There is always some connection among

various sectors and there is an overall framework that governs and manages all the resources.

Some cases reviewed show a more vertical integration and others show horizontal integration, however, multi-level integration is very difficult to achieve (Olsen et al., 2014). Most papers suggest proper integration of fisheries sector in MSP is required and very few of them really show cases where fisheries were excluded. Most literature mentions that fisheries have historical rights to the ocean and if not well integrated then MSP is very unlikely to be successful (Andrade, 2017). I recommend this way of thinking and supplement that some fisheries are not well organized in their management, but successful integration requires them to be organized. Andrade (2017) also argues that fisheries cannot be treated in the same way as other ocean users. Fisheries integration in MSP processes is crucial, but is still a challenge (St. Martin and Hall-Arber, 2008), and putting more emphasis on new uses compared to fisheries may not be appropriate as many of these new uses are not yet in place. Therefore, it is argued that fisheries must not be disadvantaged for the sake of developing the marine economy. In contrast to this literature, I argue that there are a number of new potential uses that are likely to be more sustainable and renewable than what we possess on terrestrial environment. For example, the renewable energy sector is predicted to drive MSP in various countries in the coming years (Ehler, 2018), which is predicted to boost the economies of various countries in the near

future. Therefore, I recommend putting emphasis on all potential ocean uses, including fisheries as it is a great source of proteins and respected for its social benefit of greater employment (FAO, 2018). This can be managed by using MSP to find common spatial areas where all of these activities can co-exist or using other areas offshore and off fisheries grounds to generate the renewable energy. This is indeed one of the main intents of MSP: to manage such conflicts and find appropriate balances. For example, synergies were realized between competing needs in a case by Gimpel *et al* (2015) and Bergstrom *et al* (2014) in Sweden, which allowed Integrated Multi Trophic Aquaculture (IMTA) farms to co-exist with offshore wind energy.

Integration of stakeholders has been key to MSP processes. In the US case that involved stakeholders being invited by the federal government to comment on management tools, MSP was finally chosen as a favorite tool, which led to the passing of an executive order by president Obama's administration to introduce MSP in the US. The horizontal integration in this case was successful, and it included full transparency, open meetings, active solicitation of stakeholders' opinions and public documents, which led many stakeholders to develop trust in it and sense of ownership. This is in contrast to the cases of Belgium and Norway that are more controlled and limited in transparency (Olsen et al., 2014). This outcome is consistent with what would be expected based on the framework of Pomeroy and Berkes (1997).

A combination of vertical and horizontal integration could be beneficial to the MSP processes, with Norway and Belgium being good examples (Olsen et al., 2014). The two countries were successful in both stakeholders' integrations and have a strong vertical integration system. For example, Norway's horizontal cross-sectoral integration that was achieved at government levels and sectors by making joint groups, forums, hearings, sectoral meetings and open public meetings in its MSP process (Olsen et al., 2014).

Some cases show higher grades in the continual (hierarchical) stakeholders' roles in management arrangements than others do. In the Colombian Pacific coast case where mortality of whales was high, Abramson (2012) mentioned that sanctuaries were set up and communications were made to the public and the stakeholders by informing them about the risk and possible solutions in order to reduce the impact on the whales by the ships. Commercial industry were key influencers, and therefore were considered first during MSP process. Informing is the weakest in terms of co-management as emphasized by Pomeroy and Berkes (1997), but is still essential when decisions are taken by governments to build confidence and trust.

A case by Bergstrom (2014) that assessed the impact of offshore wind farms on marine wildlife mentioned that there was a partnership and joint action between the government of Sweden

and the researchers in search for these effects. However, the range of partnership arrangements and degrees of power sharing and integration was not specified in this case. This stakeholders' role in management arrangements can help create a mutual understanding of issues and help facilitate joint decisions on challenging matters (Pomeroy and Berkes, 1997). Offshore wind farms were the main source of impact on wildlife, so the wind farms were relocated to reduce negative impacts like acoustic disturbances, sediment dispersal and electromagnetic fields. The wind energy sector is recommended to be among the key stakeholders in this MSP process. Other key stakeholders included wildlife protectionists, fisheries, aquaculture, oil and gas.

Some countries or regions have single government systems while others have multi-level government system. For example, Belgium uses a multi-level government system, with the Flemish region and the federal state having very strong vertical integration in the top levels (Olsen et al., 2014). It is hard to achieve much integration in multi-level governments due to the different levels having competency over different issues. Governments in the US do not show much integration between the federal and state government and only sectoral integration appeared most meaningful in the three cases that were reviewed (Smythe and McCann, 2018). This is also evident in the Olsen et al (2014) case that mentioned that the federal minister in Belgium's multi-level government system raised the concern for development of MSP in Belgium; the

Minister was given a mandate to proceed with designing a master plan, except for fisheries in the Flemish region because that is a regional competence. Therefore, multi-level governments with strong top-down vertical integration are hard to amalgamate.

6 Conclusion

Stakeholder involvement is one of the most crucial elements that determines the success of MSP. However, this study has shown that there are various aspects to consider while analyzing stakeholders' involvement to achieve an effective and efficient MSP process – it is not simply a question of involving all possible stakeholders.

This study has examined three main questions around stakeholder roles in MSP: who should be involved, when, and in what role(s). Several different models were reviewed, in particular with respect to whether many or a few stakeholder groups should be involved, and whether many or a few people should participate to represent each group. Each of these models comes with advantages and disadvantages with respect to full representation of ideas and options, as well as practical matters such as difficulty in organizing and financial cost.

Knowing when to involve stakeholders is also important, but many

researchers do not address this aspect. However, the timing questions about (1) how early (2) how frequently and (3) whether to engage stakeholders throughout the process or at certain phases are very important. The findings of this study suggest that early engagement of all stakeholders is good for MSP processes, that key stakeholders should be engaged more frequently, while others should be involved only when necessary. Also, in general, stakeholders should be engaged throughout the process.

The last aspect reviewed is the “how” and it is found out that it is strongly linked to the degree and intensity of influence of different groups, as well as the mode of government. I examined processes including very inclusive stakeholder-driven processes, more government-driven processes, and those in between. The appropriateness of these will depend on the locality, geographical scope, political influence, government systems, and user-environment effects and user-user issues. Here, we have seen that vertical and horizontal integration, and a combination of vertical and horizontal integration in multi-level governments is essential, and that some users in the case studies have different powers than others, though I argued oppositely here. We have seen that integration is difficult in many cases that have multi-level government systems.

As part of efforts to improve stakeholder engagement, governments should widely publicize the process of stakeholder

engagement, and plan sensitization seminars and consultation meetings to create awareness in the stakeholders and other interested parties. Given that different countries have different systems of governance for MSP, I hope that there are lessons in this research that may be helpful for all countries that aim to move forward with their own MSP processes.

7 Bibliography

Abramson, L., 2012. Vessel strikes and acoustic impacts. wiredscience. Rep. a Jt. Work. Gr. Gulf Farallones Cordell Bank Natl. Mar. Sanctuaries Advis. Counc. San Fr. CA. 43.

Agnostini, V., Arico, S., Briones, E.E., Cresswell, I., Gjerde, K., Niewijk, Deborah J.A. Polacheck, A., Raymond, B., Rice, J., Roff, J., Scanlon, K.M., Spalding, M., Vierros, M., 2008. Global Open Oceans and Deep Sea-habitats (GOODS) bioregional classification 82.

Aguilar-Manjarrez, José; de Viçose, G.C., 2017. International Conference on Marine Spatial Planning, Ecosystem Approach and Supporting Information Systems. FAO Aquac. News Lett. 22.

Allen, A.S., 2014. The development of ships' routeing measures in the Bering Strait: Lessons learned from the North Atlantic right whale to protect local whale populations. Mar. Policy 50, 215–226. https://doi.org/10.1016/j.marpol.2014.05.019

Andrade, F.A.L., 2017. Marine spatial planning in Portugal : an ocean policy analysis Doutoramento em Ciências do Mar Catarina Frazão da Fonseca Ribeiro dos Santos Tese orientada por : https://www.researchgate.net/publication/318746796 255. https://doi.org/10.13140/RG.2.2.27421.20963

Arkema, K.K., Verutes, G.M., Wood, S.A., Clarke-Samuels, C., Rosado, S., Canto, M., Rosenthal, A., Ruckelshaus, M., Guannel, G., Toft, J., Faries, J., Silver, J.M., Griffin, R., Guerry, A.D., 2015. Embedding ecosystem services in coastal planning leads to better outcomes for people and nature. Proc. Natl. Acad. Sci. U. S. A. 112, 6. https://doi.org/10.1073/pnas.1406483112

Avila, I.C., Correa, L.M., Waerebeek, K. Van, 2017. Where humpback whales and vessel traffic coincide, a Colombian Pacific case study. Boletín del Mus. Nac. Hist. Nat. Chile 66, 85–99. https://doi.org/issuu.com/mnhn_cl/docs/tr7_avila_et_al

Barbesgaard, M., 2018. Blue growth: savior or ocean grabbing? J. Peasant Stud. 45, 130–149. https://doi.org/10.1080/03066150.2017.1377186

Bergström, L., Kautsky, L., Malm, T., Rosenberg, R., Wahlberg, M., Å strand Capetillo, N., Wilhelmsson, D., 2014. Effects of offshore wind farms on marine wildlife - A generalized impact assessment. Environ. Res. Lett. 9, 22pp. https://doi.org/10.1088/1748-9326/9/3/034012

Charles, A., Wilson, L., 2008. Human dimensions of marine protected areas. ICES J. Mar. Sci. J. du Cons. 66, 6–15.

Chircop, A., 2010. Regional cooperation in marine environmental

protection in the south china sea: A reflection on new directions for marine conservation. Ocean Dev. Int. Law 41, 334–356. https://doi.org/10.1080/00908320.2010.499300

Choi, H.-J., 2018. Introduction of Marine Spatial Planning in Korea. Pingtang, Fuzhou , China.

Chuenpagdee, R., Jentoft, S., 2018. Transforming the governance of small-scale fisheries. Marit. Stud. https://doi.org/https://doi.org/10.1007/s40152-018-0087-7

Chuenpagdee, R., Pascual-Fernández, J.J., Szeliánszky, E., Luis Alegret, J., Fraga, J., Jentoft, S., 2013. Marine protected areas: Re-thinking their inception. Mar. Policy 39, 234–240. https://doi.org/10.1016/j.marpol.2012.10.016

Commission of the European Communities, 2007. Report to the European Parliament and the Council: An evaluation of Integrated Coastal Zone Management (ICZM) in Europe EN.

Curtin, R., Prellezo, R., 2010. Understanding marine ecosystem based management: A literature review. Mar. Policy 34, 821–830. https://doi.org/10.1016/j.marpol.2010.01.003

De Decker, J., Woyte, A., 2013. Review of the various proposals for the European offshore grid. Renew. Energy 49, 58–62. https://doi.org/10.1016/j.renene.2012.01.066

Derous, S., Verfaillie, E.L.S., Lancker, V.V.A.N., Mees, J.A.N.,

Deneudt, K., Deckers, P., Vincx, M., Degraer, S., 2007. A biological valuation map for the Belgian part of the North Sea. Management 1–100.

Douvere, F., Ehler, C.N., 2009. New perspectives on sea use management: Initial findings from European experience with marine spatial planning. J. Environ. Manage. 90, 77–88. https://doi.org/10.1016/j.jenvman.2008.07.004

Dudley, N., 2008. Guidelines for applying protected area management categories. IUCN (International Union Conserv. Nature) 86pp. https://doi.org/10.2305/IUCN.CH.2008.PAPS.2.en

Ehler, C., Douvere, F., 2007. International Guidelines for Ecosystem-based, Marine Spatial Management Charles Ehler and Fanny Douvere, Consultants Intergovernmental Oceanographic Commission and Man and the Biosphere Programme UNESCO Paris, France Conference on Marine Spatial Planning.

Ehler, C.N., 2018. Marine Spatial Planning : an idea whose time has come Marine spatial planning An idea whose time has come. Res. gate, United Nations 7–16.

Ehler, C.N., 2014. An Introduction to Marine Spatial Planning. Res. gate, United Nations 4–47.

Ehler, C.N., Douvere, F., 2014. An International Perspective on Marine Spatial Planning Initiatives An International Perspective on Marine Spatial Planning Initiatives Résumé. Res. gate, United Nations, Environ. 2, 10–20.

Ehler, C.N., Douvere, F., 2009. Marine Spatial Planning: A Step-by-step Approach toward Ecosystem-based Management. IOC Manuals Guid. 53, 99. https://doi.org/10.5670/oceanog.2010.100

Ens, E.J., Finlayson, M., Preuss, K., Jackson, S., Holcombe, S., 2012. Australian approaches for managing "country" using Indigenous and non-Indigenous knowledge. Ecol. Manag. Restor. 13, 100–107. https://doi.org/10.1111/j.1442-8903.2011.00634.x

Erbe, C., MacGillivray, A., Williams, R., 2012. Mapping cumulative noise from shipping to inform marine spatial planning. J. Acoust. Soc. Am. 132, EL423-EL428. https://doi.org/10.1121/1.4758779

European Commission, 2012. Blue Growth - Scenarios and drivers for Sustainable Growth from the Oceans, Seas and Coasts. Third Interim Rep. 122. https://doi.org/10.2771/43949

Fairbanks, L., Campbell, L., Fairbanks, L., Campbell, L.M., Boucquey, N., Martin, K.S., Fairbanks, L., Campbell, L.M., Boucquey, N., Martin, K.S., 2018. Assembling Enclosure :

Reading Marine Spatial Planning for Alternatives. https://doi.org/10.1080/24694452.2017.1345611

FAO, 2018. The state of world fisheries and aquaculture. FAO Fish. Rep. 183.

FAO, 2016. Achieving Blue Growth. FAO 23.

Ferreira, M.A., 2017. Evaluating Performance of Portuguese Marine Spatial Planning Evaluating performance of Portuguese Maria Adelaide de Oliveira Ferreira Marine Spatial Planning Tese de Doutoramento em Geografia e Planeamento Territorial Maria Adelaide de Oliveira Ferreira. Res. gate, United Nations 163. https://doi.org/10.13140/RG.2.2.18448.20487

Fiona J. Manson, D.J.D., 2001. Incorporating commercial fishery information into the design of marine protected areas. Ocean Coast. Manag. 44, 517–530. https://doi.org/10.1016/S0964-5691(01)00063-1

Flannery, W., 2018. Review of Marine Spatial Planning Best Practice of Relevance to Best Practice of Relevance to Ireland. Queen's Univ. Belfast - Res. Portal 44.

Flannery, W., Healy, N., Flannery, W., Healy, N., Luna, M., 2018. Exclusion and non-participation in Marine Spatial Planning Exclusion and non-participation in Marine Spatial Planning.

Mar. Policy 88, 32–40. https://doi.org/10.1016/j.marpol.2017.11.001

Flannery, W., Vince, J.Z., 2018. International Progress in Marine Spatial Planning. Res. gate, United Nations 172–212. https://doi.org/10.1163/22116001-90000159

Fock, H.O., 2008. Fisheries in the context of marine spatial planning: Defining principal areas for fisheries in the German EEZ. Mar. Policy 32, 728–739. https://doi.org/10.1016/j.marpol.2007.12.010

Frazão, C., Agardy, T., Andrade, F., Crowder, L.B., Ehler, C.N., Orbach, M.K., 2018. Major challenges in developing marine spatial planning. Mar. Policy. https://doi.org/10.1016/J.MARPOL.2018.08.032

Gimpel, A., Stelzenmüller, V., Grote, B., Buck, B.H., Floeter, J., Núñez-Riboni, I., Pogoda, B., Temming, A., 2015. A GIS modelling framework to evaluate marine spatial planning scenarios: Co-location of offshore wind farms and aquaculture in the German EEZ. Mar. Policy 55, 102–115. https://doi.org/10.1016/J.MARPOL.2015.01.012

Gissi, E., de Vivero, J.L.S., 2016. Exploring marine spatial planning education: Challenges in structuring transdisciplinarity. Mar. Policy 74, 43–57. https://doi.org/10.1016/j.marpol.2016.09.016

Government of Australia, 2006. A guide to the integrated marine and coastal regionalisation of Australia: IMCRA version 4.0. 16.

Government of Korea, 2018. Ocean Policy_MSP.

Hadjimitsis, D.G., Agapiou, A., Mettas, C., Themistocleous, K., 2015. Marine Spatial Planning in Cyprus. https://doi.org/10.1117/12.2195655

Hassan, D., Alam, A., 2019. Marine spatial planing and the Great Barrier Reef Marine Park Act 1975: An evaluation. Ocean Coast. Manag. 167, 188–196. https://doi.org/10.1016/J.OCECOAMAN.2018.10.015

Holanda, 2005. Integrated Management Plan for the North Sea 2015 1–166.

Horbaty, R., Huber, S., Ellis, G., 2012. Large-scale wind deployment, social acceptance. Wiley Interdiscip. Rev. Energy Environ. 1, 194–205. https://doi.org/10.1002/wene.9

Jentoft, S., 2017. Small-scale fisheries within maritime spatial planning: knowledge integration and power. J. Environ. Policy Plan. 19, 266–278. https://doi.org/10.1080/1523908X.2017.1304210

Jones, P.J.S., Lieberknecht, L.M., Qiu, W., 2016. Marine spatial planning in reality: Introduction to case studies and

discussion of findings. Mar. Policy 71, 256–264. https://doi.org/10.1016/j.marpol.2016.04.026

Joseph, A., 2017. Stakeholder involvement in Marine Spatial Planning 2–3. https://doi.org/10.13140/RG.2.2.13060.83843

Koh, C.H., 2016. Challenges in Marine Spatial Planning for Protection; West Coast of RO Korea in East Asian Seas Context PEMSEA mechanism of ICM and current situation in MSP (1).

Korea Maritime Institute, 2017. The 5th International Symposium on Marine Ecosystem Services and Marine Spatial Planning and Management August 30, 2018.

Korea Maritime Institute, 2015. 해양공간계획체제 정립 방안 연구(Measures on Enhancing Marine Spatial Planning System). 수시연구 제2장 국외 해양공간관리 정책 및 동향 11 계획의 해양공간계획체제 정립 방안 연구 는 140.

Krupa, M.B., 2016. Who ’ s who in the Kenai River Fishery SES : A streamlined method for stakeholder identi fi cation and investment analysis 71, 194–200. https://doi.org/10.1016/j.marpol.2016.06.001

Lester, S.E., Stevens, J.M., Gentry, R.R., Kappel, C. V, Bell, T.W., Costello, C.J., Gaines, S.D., Kiefer, D.A., Maue, C.C., Rensel, J.E., Simons, R.D., Washburn, L., White, C., 2018. Marine spatial planning makes room for offshore aquaculture in crowded coastal waters. Nat. Commun. 1–13. https://doi.org/10.1038/s41467-018-03249-1

Lindeboom, H.J., Kouwenhoven, H.J., Bergman, M.J.N., Bouma, S., Brasseur, S., Daan, R., Fijn, R.C., De Haan, D., Dirksen, S., Van Hal, R., Hille Ris Lambers, R., Ter Hofstede, R., Krijgsveld, K.L., Leopold, M., Scheidat, M., 2011. Short-term ecological effects of an offshore wind farm in the Dutch coastal zone; Acompilation. Environ. Res. Lett. 6. https://doi.org/10.1088/1748-9326/6/3/035101

Ministry of Oceans and Fishery, 2016. The 5th International Symposium on Marine Ecosystem Services and Marine Spatial Planning and Management August 30, 2018.

MOF, KMI, 2018. The 5th International Symposium on Marine Ecosystem Services and Marine Spatial Planning and Management.

Nam, J., Kim, M., 2016. The 5th International Symposium on Marine Ecosystem Services and Marine Spatial Planning and Management August 30, 2018.

Newman, G., Wiggins, A., Crall, A., Graham, E., Newman, S.,

Crowston, K., 2012. The future of Citizen science: Emerging technologies and shifting paradigms. Front. Ecol. Environ. 10, 298–304. https://doi.org/10.1890/110294

Olsen, E., Fluharty, D., Hoel, A.H., Hostens, K., Maes, F., 2014. Integration at the Round Table: Marine Spatial Planning in Multi-Stakeholder Settings. PLOS.org 9. https://doi.org/https://doi.org/10.1371/journal.pone.0109964

Pauli, G., Corbis, G.S., 2015. The Blue economy. Econ. Intell. Unit 25, 24–26.

Perveen, R., Kishor, N., Mohanty, S.R., 2014. Off-shore wind farm development: Present status and challenges. Renew. Sustain. Energy Rev. 29, 780–792. https://doi.org/10.1016/j.rser.2013.08.108

Pomeroy, R., Douvere, F., 2008. The engagement of stakeholders in the marine spatial planning process. Mar. Policy 32, 816–822. https://doi.org/10.1016/j.marpol.2008.03.017

Pomeroy, R.S., Berkes, F., 1997. Two to tango : the role of government in fisheries 21, 465–480.

Ritchie, H., Ellis, G., 2010. Asystem that works for the sea? Exploring stakeholder Engagement in Maring Spatial Planning. J. Environ. Plan. Manag. 53, 701–723.

Rochette, J., Unger, S., Herr, D., Johnson, D., Nakamura, T.,

Packeiser, T., Proelss, A., Visbeck, M., Wright, A., Cebrian, D., 2014. The regional approach to the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction. Mar. Policy 49, 109–117. https://doi.org/10.1016/j.marpol.2014.02.005

Rojas-Nazar, Ú ., Gaymer, C.F., Squeo, F.A., Garay-Flühmann, R., López, D., 2012. Combining information from benthic community analysis and social studies to establish no-take zones within a multiple uses marine protected area. Aquat. Conserv. Mar. Freshw. Ecosyst. 22, 74–86. https://doi.org/10.1002/aqc.1239

Schubert, M., 2018. Marine Spatial Planning, in: Handbook on Marine Environment Protection. Springer International Publishing, Cham, pp. 1013–1024. https://doi.org/10.1007/978-3-319-60156-4_54

Smythe, T.C., McCann, J., 2018. Achieving integration in marine governance through marine spatial planning: Findings from practice in the United States. Ocean Coast. Manag. 167, 197–207. https://doi.org/10.1016/J.OCECOAMAN.2018.10.006

St. Martin, K., Hall-Arber, M., 2008. The missing layer: Geo-technologies, communities, and implications for marine spatial planning. Mar. Policy 32, 779–786. https://doi.org/10.1016/J.MARPOL.2008.03.015

Tatim, M.H.M., Omar, A.H., Abudallah, N.M., Sarip, A., 2018. Extending the concept of institutional analysis to the marine spatial planning practice Extending the concept of institutional analysis to the marine spatial planning practice.

Tierney, S., 2004. Waves of change: The Massachusetts Ocean Management Task Force Report and Recommendations. Ocean Manag. 70.

Tuda, A.O., Stevens, T.F., Rodwell, L.D., 2014a. Resolving coastal con fl icts using marine spatial planning. J. Environ. Manage. 133, 59–68. https://doi.org/10.1016/j.jenvman.2013.10.029

Tuda, A.O., Stevens, T.F., Rodwell, L.D., 2014b. Resolving coastal conflicts using marine spatial planning. J. Environ. Manage. 133, 59–68. https://doi.org/10.1016/j.jenvman.2013.10.029

Twomey, S., 2016. Engaging Stakeholders in Marine Spatial Planning Sarah Twomey Ocean Governance & Stakeholder Engagement Expert. https://doi.org/10.13140/RG.2.1.1732.8880

Van Dover, C.L., 2011. Mining seafloor massive sulphides and biodiversity: What is at risk? ICES J. Mar. Sci. 68, 341–348. https://doi.org/10.1093/icesjms/fsq086

Visbeck, M., Kronfeld-Goharani, U., Neumann, B., Rickels, W., Schmidt, J., van Doorn, E., Matz-Lück, N., Ott, K., Quaas,

M.F., 2014. Securing blue wealth: The need for a special sustainable development goal for the ocean and coasts. Mar. Policy 48, 184–191. https://doi.org/10.1016/J.MARPOL.2014.03.005

Wilen, J.E., Cancino, J., Uchida, H., 2012. The economics of territorial use rights fisheries, or turfs. Rev. Environ. Econ. Policy 6, 237–257. https://doi.org/10.1093/reep/res012

Winiarski, K.J., Miller, D.L., Paton, P.W.C., McWilliams, S.R., 2014. A spatial conservation prioritization approach for protecting marine birds given proposed offshore wind energy development. Biol. Conserv. 169, 79–88. https://doi.org/10.1016/j.biocon.2013.11.004

Yamakita, T., Yamamoto, H., Nakaoka, M., Yamano, H., Fujikura, K., Hidaka, K., Hirota, Y., Ichikawa, T., Kakehi, S., Kameda, T., Kitajima, S., Kogure, K., Komatsu, T., Kumagai, N.H., Miyamoto, H., Miyashita, K., Morimoto, H., Nakajima, R., Nishida, S., Nishiuchi, K., Sakamoto, S., Sano, M., Sudo, K., Sugisaki, H., Tadokoro, K., Tanaka, K., Jintsu-Uchifune, Y., Watanabe, K., Watanabe, H., Yara, Y., Yotsukura, N., Shirayama, Y., 2015. Identification of important marine areas around the Japanese Archipelago: Establishment of a protocol for evaluating a broad area using ecologically and biologically significant areas selection criteria. Mar. Policy 51, 136–147. https://doi.org/10.1016/j.marpol.2014.07.009

Young, M., 2015. Building the Blue Economy: The Role of Marine Spatial Planning in Facilitating Offshore Renewable Energy Development. Int. J. Mar. Coast. Law 148–174.

Zaucha, J., 2014. Sea basin maritime spatial planning: A case study of the Baltic Sea region and Poland. Mar. Policy 50, 34–45. https://doi.org/10.1016/j.marpol.2014.05.003