Asia-Pacific Marine Spatial Planning Snapshot 2009-2019

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Abstract

The purpose of this paper is to outline various approaches to area-based management of coastal and marine areas and to measure progress of their implementation in Asia and the Pacific as a proxy for progress on SDG14.2.1. To measure progress on SDG14.2.1 in Asia and the Pacific, online literature was used to determine stages of implementation of Marine Spatial Planning (MSP) between 2009 and 2019. During this period 29 countries out of 46 coastal member States were found to have made substantial progress in MSP implementation.

Introduction and interpretation of SDG14.2.1

The indicator 14.2.1 *"Proportion of national exclusive economic zones managed using ecosystem-based approaches"* is used to measure progress towards achieving healthy and productive oceans under SDG 14.2[1], yet it is listed as Tier III due to data availability (United Nations ESCAP, 2019). The indicator calls for area-based ocean management paradigms that incorporate uses an ecosystem-based approach. It was emphasized at the 2017 UN General Assembly that:

> "*(T)he use of effective and appropriate area-based management tools, including marine protected areas and other integrated, cross-sectoral approaches, including marine spatial planning and integrated coastal zone management"* (United Nations General Assembly, 2017).

The purpose of this paper is to outline various approaches to area-based management of coastal and marine areas and to measure progress of their implementation in Asia and the Pacific as a proxy for progress on SDG14.2.1.

Ecosystem-based management (EBM) and MSP and its variants

Previously, conventional ocean management of Marine Protected Area (MPA) highlighted specific species conservation (Agardy, et al., 2011); thus, it could be viewed as single sector management. Such a precisely defined approach sometimes fails to take into account overlapping human activities occurring in designated areas and could contribute to user-user/user-environment conflicts (Ehler & Douvere, 2009).

Being introduced in the 2000s (Pomeroy, et al., 2014), EBM offers a more holistic dimension of natural resource management as the entire ecosystem, including humans, is taken into consideration (United Nations Environment Programme, 2011). Further, MSP is regarded as "one of the most pragmatic tools to advance EBM" (Secretariat of CBD & the Scientific and Technical Advisory Panel—GEF, 2012, p. 11) because it is an area-based planning that incorporates human-human and human-environment interactions, particularly of those from different sectors. UN Environment recognizes MSP and Integrated Coastal Zone Management (ICZM) as approaches that support delivery of SDG 14.2 (United Nations Environment, 2018a).

The definition of MSP outlined by Ehler and Douvere (2009) highlights understanding, analyzing and managing, through participatory means, human activities that occur in marine areas, both in terms of space and time, to achieve ecological, economic and social goals. The framework was mainstreamed around 2007-2009 (Ehler, et al., 2019). Since then, the MSP concept has become more common in marine and coastal resources management dialogues in many places around the world. It should be noted that in some countries the approach is referred to using other terms, such as bioregional planning (Australia), marine functional zoning (China), and ocean management (USA) (Ehler, 2013).

As countries adopt the planning approach, diverse ways of MSP implementation could be identified, due to different contexts in which it is carried out. This could include, but not limited to, biological characteristics of marine areas in focus, human activities taking place in those areas, and/or governance mechanisms facilitating planning, development and implementation (Jay, 2017). In an attempt to review case studies of MSP, Jones et al (2016) concluded that deconstructing "MSP" from a methodological point of view was "neither feasible nor appropriate" (p.257). Therefore, it is not surprising that "MSP" is, in practice, associated with other ocean management terminology, and can sometimes be perceived as complementary to Integrated Coastal Zone Management (ICZM).[2]

To grasp the fundamental concepts of these MSP variants, particularly those emerging in the context of Asia and the Pacific, it is worth understanding the features of these variants (See Figure 1 for UN Environment's illustration of area-based management approaches within exclusive economic zone (EEZ)).

- **Integrated Coastal Zone Management (ICZM)** – ICZM, as stated in the 2009 ICZM Protocol in the Mediterranean, refers to a process that factors the vulnerability of coastal ecosystems and landscapes, as well as human activities and uses and their impacts, into the sustainable management and use of coastal zones (United Nations Environment, 2018b). E. Ramieri et al. ((2019) liken ICZM to MSP for the fact that spatial planning of coastal zone is particularly mentioned in the ICZM protocol. Related to ICZM in the Asia-Pacific context is **Integrated Coastal Management (ICM).** ICM was firstly introduced in Asia in the late 1980s and further expanded to "Integrated Coastal and Marine Resource Management" (ICMRM) in the 2000s (Pomeroy, et al., 2014). The ICM concept does not explicitly include zoning as a management tool, however.
- **Marine Functional Zoning (MFZ)** – MFZ is a term appearing mostly in China's context, and refers to an ocean zoning tool which designates marine space for human activities based on ecological, geographical and socioeconomic attributes (Kang, et al., 2017).
- **Marine Protected Area (MPA) Designation** – According to IUCN, a protected area is "a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values" (Dudley, 2008, p. 8).
- **Marine Protected Area Network (MPA Network)** – an MPA network represents a number of MPAs being collectively managed and operated, wherein each individual MPA could be different in terms of spatial scale and protection levels (International Union for Conservation of Nature, 2008).
- **Locally-Managed Marine Area (LMMA) Designation** – as indicated by its title, LMMA is a marine area locally operated by communities adjacent to the areas; and could sometimes be managed together with authorities (United Nations Environment, 2018b).
- **Ecosystem Approach to Fisheries Management (EAFM)** – Despite its focus on fisheries sector, EAFM takes into consideration ecological aspects and human interactions, by addressing multiple needs, and aims to create balance between nature and marine resource users (Ehler, 2013).
- **Ridge to Reef** – Highlighting the linkages between estuaries and coastal areas, ridge to reef is an integrated framework that addresses management of coastal wetlands and marine ecosystems to improve livelihoods and biodiversity protection (International Union for Conservation of Nature, 2019).

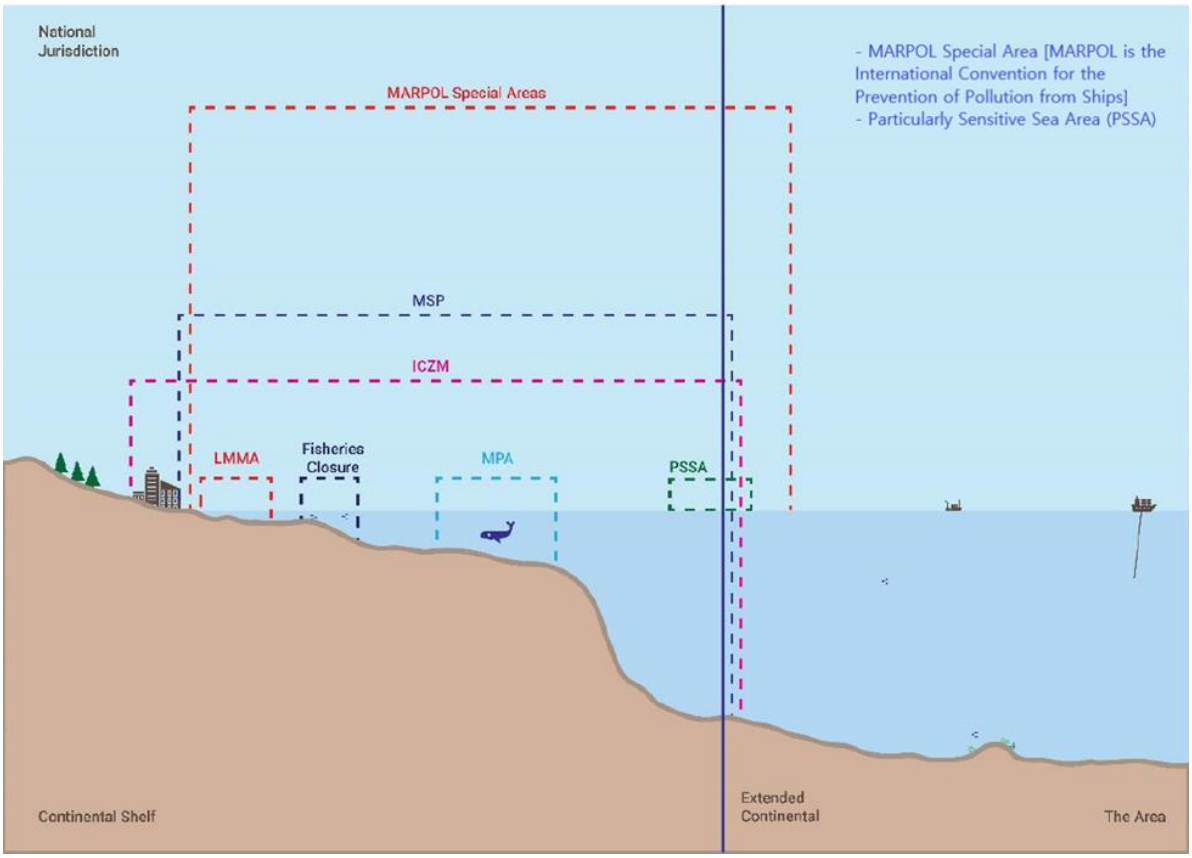

FIGURE 1: AREA-BASED MANAGEMENT APPROACHES WITHIN AN EEZ
SOURCE: (UNITED NATIONS ENVIRONMENT, 2018B)

Methodology

This preliminary review is based on online literature, primarily using the keywords of "marine spatial planning" and/or "MSP", together with the names of each country in Asia and the Pacific. The study covers only 46 ESCAP members and associated members. It does not include 4 countries outside of the ESCAP region (France, Netherlands, UK and USA), and the 12 landlock members (Afghanistan, Armenia, Azerbaijan, Bhutan, Kazakhstan, Kyrgyzstan, Lao People's Democratic Republic, Mongolia, Nepal, Tajikistan, Turkmenistan and Uzbekistan). When results of these keywords revealed other MSP related terms, e.g., variant names as listed in the above section, names of the managed areas (such as MPAs), or titles of planning documents; further examination was made by referring to these emerging keywords to expand the search results.

To be able to observe changes over time, the state of the development of MSP in each country is divided into 2 periods: from the earliest available information to 2009, and from 2010 to 2019. Regardless of the years these data were published, any MSP-related information/activities which had occurred up until 2009 are captured in the former period, whereas any events that happened from 2010 onwards are included in the latter period.

From the keyword search results, official MSP/ICZM documents published by national and/or local governments, when available, are the main sources of literature in this review. These national documents also include studies commissioned by/prepared for national governments. In addition, existing global and regional MSP status reviews/assessments provide useful information on in-country efforts and are used for cross-referencing (sub)national MSP initiatives, particularly those referred to using MSP variant terms, such as MPA network. Examples of these MSP status reviews are IOC-UNESCO's world-wide MSP inventory

(2017a), UN Environment's review of MSP and ICZM cases studies (2018a), European Commission DG Mare's study on MSP best practices (2017), GEF LME:LEARN's Marine Spatial Planning Toolkit (2018), and Santos et al's review of global MSP status (2019). Besides these publications, other types of MSP-related documents being reviewed in this study are online journals, conference papers, project websites, as well as news articles. The online research was conducted between May-September 2019, thus publications included in this preliminary study are those available at that time and in the English language.

Within each period (i.e. up until 2009 and 2010-2019), the available information on MSP efforts are reviewed against the characteristics benchmarked as effective marine spatial planning by Ehler and Douvere (2009) to identify whether countries have existing MSP initiatives or not. However, the initial identification step reveals that the MSP framework is not exclusive, and there are several cases that MSP overlaps with countries' existing marine resource management schemes, especially those schemes described in the previous section. One of the terms most frequently associated with MSP is ICZM. As a result, the criteria in determining in-country MSP initiatives in this study are expanded to include the features ascribed by UN Environment (2018a) as the elements of MSP and ICZM as follow:

- Integrated management of sea and land
- Ecosystem-based approach
- Use of a combination of instruments for implementation
- Adaptive management (based on best available evidence)
- Long term perspective
- Participatory engagement
- Cross-sectoral integration
- Planning/management for multiple uses
- Cross-border collaboration
- Use of existing management arrangement

To further review MSP progress, steps made by countries in developing and implementing MSP could assessed against the implementation steps guided by Ehler and Douvere (2009) and by UN Environment (2018a). However, the available information from the desk review of this study is not sufficiently comprehensive to conduct such assessment. Therefore "environment statistics diagnostic tool" is used as a supporting analytical framework.

The environment statistics diagnostic tool (United Nations ESCAP, n.d.), originally designed to facilitate strategic planning dialogues among stakeholders, is adapted for this preliminary study. By modifying the diagnostic tool from the environment statistics discussions to MSP/ICZM application context, it is used to structure existing in-country MSP/ICZM-related discourses and to identify related national strategies and/or, institutional arrangement, and application of existing knowledge and mechanisms which could be affiliated with MSP.

Considering the above MSP/ICZM elements and the adapted diagnostic tool, attribution of the 0-3 stages are made based on the relevance of available MSP-related information by scoping the advances made by countries in Asia and the Pacific into 4 stages of implementation:

- ***0 – None*** describes countries whose MSP effort is yet to be commenced *or* countries with no MSP information available in English.
- ***1 – Initiated*** describes countries whose any MSP-related activities have been initiated and have been paving pathways to MSP implementation.
- ***2 – In-progress*** associates with two levels of in-country MSP advancements: 1) MSP implementation are identified but not yet completed in some areas of countries or in full EEZ/territorial waters of countries, *or* 2) MSP has been completed comprehensively in some areas of countries' EEZ.
- ***3 – Full*** depicts countries that have completed comprehensive MSP implementation in their EEZ or territorial waters.

Findings

In total, 37% of Asia-Pacific (AP) countries (17 out of 46 countries) have made substantial progress in MSP implementation between 2009 and 2019. Given the limitations of the study, actual figures may be different.

From the preliminary analysis of the 46 Asia-Pacific countries between 2009 and 2019, upward trends towards MSP integration have been detected as follows (Figure 2):

- a decrease in countries with no MSP (Stage 0) from 59% of AP countries in 2009 to 22% of AP countries in 2019 (n=17)
- an increase in countries with MSP initiated or in progress (Stage 1-2) from 41% of AP countries in 2009 to 72% of AP countries in 2019 (n=14); and
- an increase in countries with MSP completed in EEZ or territorial waters (Stage 3) from 0% of AP countries in 2009 to 7% of AP countries in 2019 (n=3).

In both periods of up-to 2009 and 2019, diverse efforts in ocean management could be identified in the keyword search results for most of the countries, except for the 3 countries with no information (Brunei Darussalam; Hong Kong, China; and Macao, China). Numbers of these literature link countries' ocean management to MSP, whereas some refer to general marine resource management. For the latter, these countries do not have any programme explicitly relevant to the aforementioned MSP attributes, but they have some forms of coastal strategies/policies, conventional marine protected areas, or have conducted academic studies on coastal resource management. Thus, they are considered as Stage 0 or no MSP.

For some countries, the research reveals that MSP are in an inception stage where countries are preparing to incorporate the framework into their management plans/strategies. These can be reflected through their existing marine policies and institutional arrangements that are, in some ways, endorsing the above MSP elements. It could also be that their current application of ocean management instruments, such as MPA seasonal closures and fish quota management systems, are/have been paving ways to incorporate the more holistic concept of MSP. Therefore, these countries are regarded as Stage 1 or MSP initiated.

In some other countries, evidences show that marine and coastal spatial zoning, ecosystem-based approach, land-sea interface, and multiple-use focus are emphasized, along with other MSP features, in their ocean management plans. Hence, these members' efforts are considered as either Stage 2 (In-progress) or Stage 3 (Full). The difference of countries in Stages 2 and 3 lies in the area coverage of the integrated management. MSP application of Stage 2 countries may be in progress in an entire EEZ or fully implemented in some areas, but Stage 3 countries have fully implemented MSP in their entire EEZs or territorial waters. As of 2009, 27 countries (59%) of the 46 focused Asia-Pacific countries had either some forms of ocean management but not related to MSP or no available MSP-related information (Stage 0); 13 countries (28%) had initiated to integrate MSP/ICZM conceptual frameworks into their marine resource management (Stage 1); 6 countries (13%) had progressed towards MSP implementation (Stage 2); and no countries (0%) had completely implemented MSP in their EEZs or territorial waters (Stage 3).

By 2019, a 37% decrease in countries with no MSP resulted in only 10 countries remaining at Stage 0 (22%) out of all the selected countries; 15 countries (33%) with MSP relevant initiatives identified (Stage 1); 18 countries (39%) have their MSP in progress or fully implemented in some areas; and 3 countries (7%) of Stage 3 with MSP fully implemented in their entire EEZs of territorial waters.

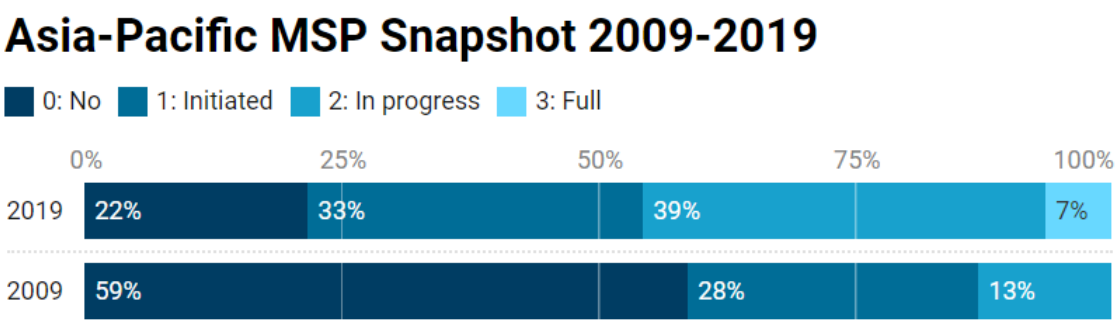

FIGURE 2: CHANGES OF MSP IMPLEMENTATION IN ASIA-PACIFIC BETWEEN 2009-2019

Year 2009

Of the 27 countries with no MSP, 19 had some forms of coastal management mechanisms, which were not explicitly relevant to MSP, while 8 countries had no MSP-related information on implementation by 2009 (Malaysia (MYS); Nauru (NRU); Thailand (THA); Tonga (TON); Tuvalu (TUV); Hong Kong, China (HKG); Macao, China (MAC); and New Caledonia (NCL)). Integrated coastal management (ICM) were prevalent in some policy contexts, for instance, Bangladesh (BGD), Democratic Republic of Korea (PRK), Georgia (GEO) and Turkey (TUR), where strategic guidelines and/or ICM related projects or pilot sites were established. Some examples included BGD's Coastal Zone Policy 2005[3] and Coastal Development Strategy 2006[4], and PRK's Coastal Strategy of Nampho City[5]. These ICM mechanisms, however, did not address spatial management, except for that of GEO[6]. In other countries, such as Russia (RUS), Timor-Leste (TLS), Vanuatu (VUT), Cook Islands (COK) and Niue (NIU), area-based marine resource management was reported in terms of conventional protected areas with conservation focus. Further, studies on marine and coastal resource management or ecosystem-based management were found in Fiji (FIJ), India (IND), Maldives (MDV), Myanmar (MMR) and Samoa (WSM).

MSP efforts had been initiated in 13 countries (Stage 1). It was found that coastal policies/strategies had endorsed MSP and/or ICZM concepts in Indonesia (IDN), Marshall Island (MHL[7]), Republic of Korea (ROK), Japan (JPN), American Samoa (ASM), Guam (GUM), and Northern Marina Islands (MNP[8]). MSP authorities had been identified in IDN and Viet Nam (VNM). Instruments supporting MSP integration had been applied, for example through cross-sectoral management schemes or the use of spatial prioritization software, in Kiribati (KIR), MHL[9], Palau (PLW[10]), Papua New Guinea (PNG), Solomon Islands (SLB), MNP, JPN, and Federated States of Micronesia (FSM). Additionally, preparation of MSP framework integration had been echoed through MSP regulation in place (IDN), MSP inception workshop and launch of MSP-related programmes (IDN, SLB), and formulation of MSP planning development (IDN and MHL).

By 2009, 6 countries had progressed towards MSP implementation (Stage 2), namely Australia (AUS), Cambodia (KHM), China (CHN), New Zealand (NZL), Philippines (PHL), and French Polynesia (PYF), where MSP elements had been identifiable in their planning documents. Incorporation of land-sea interface had been unfolded in the following management plans/documents: AUS's Great Barrier Reef Marine Park (GBRMP)[11] and Bioregional Profiles[12] prepared for Regional Marine Plans, KHM's Sihanoukville Coastal Strategy[13] and its implementation plan (CSIP)[14], CHN's Marine Functional Zoning Scheme (MFZ)[15], and PHL's Batangas Bay Zonation[16] Bohol Integrated Coastal Zone Management Plan[17] and Integrated land- and sea-use zoning plan for Bataan[18]. Ecosystem-based approaches had been advocated in AUS's 1998 Ocean Policy[19], CHN's Law on the Management of Sea Use[20], NZL's bio-geographic region coastal and deepwater classification systems[21]. Various instruments had been applied in MSP implementation, including spatial zoning (AUS[22], KHM[23], CHN[24], PHL[25], PYF[26]), legal mechanisms (NZL[27], PYF[28]), GIS tools (AUS[29], KHM[30], PHL[31], PYF[32]), and MPA networks as a tool (PYF[33]). Planning for multiple uses had been illustrated

in AUS's GBRMP[34] and in CHN's MFZ[35], while adaptative management, long term vision, and stakeholder engagement could also be found in many of these Stage 2 planning efforts.

Asia-Pacific MSP		2019				Total
		0	1	2	3	
2009	0	BRN, PRK, GEO, NRU, PAK, LKA, TUR, TUV, HKG, MAC	BGD, IND, IRN, MDV, MMR, RUS, WSM, SGP, THA, TLS, COK, NIU	FIJ, MYS, TON, VUT, NCL		27
	1		JPN, MHL, FSM	IDN, KIR, PLW, PNG, KOR, SLB, VNM, GUM, MNP	ASM	13
	2			KHM, NZL, PHL, PYF	AUS, CHN	6
	3					0
Total		10	15	18	3	

FIGURE 3: ASIA-PACIFIC MSP CHANGE MATRIX BETWEEN 2009 AND 2019 (BY COUNTRIES)

Year 2019

With a 37% decline in the Stage 0 in 2019, there are 10 countries (BRN, PRK, GEO, NRU, Pakistan (PAK), Sri Lanka (LKA), Turkey (TUR), TUV, HKG, MAC) that "marine spatial planning" searches results show the integrated spatial management tool received limited attention, or in some cases no MSP-related information could be found. Such decrease in the Stage-0 countries is mainly accounted for the rise in Stages 1 and 2 countries, where 15 and 18 countries are initiating or progressing their MSP efforts respectively (see Figure 3).

Integration of MSP concepts have commenced (Stage 1) in 15 countries (BGD[36], IND[37], Iran (IRN)[38], JPN[39], MDV[40], MHL[41], FSM[42, 43], MMR[44], RUS[36], Samoa (WSM)[45], Singapore (SGP)[46], THA[36, 47], TLS[48], COK[49], NIU[50]), whether in the forms of policies and strategies, institutional arrangements, application of instruments and preparation for planning processes. MSP and ICZM, blue economy and ecosystem-based management are incorporated in countries strategic guidelines for ocean management (BGD[51], IND[52], IRN[53], JPN[39], MHL[41], RUS[35], SGP[54], TLS[55]), while in some other countries MSP-related implementation was committed at international conferences or through regional cooperation (COK[56], FSM[57], MMR[58], RUS[59], THA[60]). Tools that facilitate MSP integration have also been used by countries, for examples, GIS mapping or area-based management software (BGD[61], IND[62], IRN[53], JPN[63], MHL[41], FSM[43], TLS[64]). These strategies, institutions and instrument applications prepare and/or plan for MSP development (BGD[65], IRN[53], MDV[40], MHL[66]) through MSP-related project inception or workshops or by conducting baseline studies (BGD[67], MDV[68], MMR[69], WSM[70], THA[71], TLS[64], NIU[72]).

For the 18 countries with MSP in progress (Stage 2) (KHM[36], FIJ[73], IDN[17, 74], KIR[75], MYS[76], NZL[77], PLW[78], PNG[79], PHL[80, 17], ROK[81, 82], SLB[83], TON[84], VUT[85], VNM[86], PYF[87], GUM[88], NCL[89], MNP[90]), the in-country advancements could be identified in many ways, some of which have been supported technically by

international cooperation, NGOs, and universities. Processes in several countries take the importance of land-sea interface into consideration by including impacts of marine environment from land their management planning, marine resource dependent livelihoods. Examples are PHL' Integrated Land- and Water-Use Plan of the City of Balanga, Bataan (2012-2020)[91], PNG's Ridges to Reefs Assessment for New Britain[92] and Land-Sea Conservation Assessment[93], and VNM's Danang Master Plan Towards 2030[86]. Attention is also given to ecosystem-based approaches when designing and preparing plans, such as NZL's Hauraki Gulf MSP[94], and MACBIO's Pacific Marine Atlases for FIJ[95], KIR[96], SLB[97], TON[98] and VUT[99]. Ecological and socio-economic conditions assessments were conducted in order to support planning processes in almost all of the countries (KHM[100], IDN[74], KIR[101, 102], MYS[103], NZL[77], PLW[104], PHL[105, 106], ROK[35], SLB[107, 108, 109], TON[110, 111, 112], VUT[113, 114, 115], VNM[116], GUM[117], NCL[118]).

Application of instruments could also be pointed out in the literature review of MSP development in these countries. Use satellite mapping and GIS software (such as MARXAN, SeaSketch, etc.) are featured many of the ocean spatial planning, for examples, IDN's Raja Ampat MPA Network[119] and Lesser Sunda[74], the MACBIO's Pacific Marine Atlases, MYS's Tun Mustapha Park[131], PNG's Seascapes Planning in the Bismarck Sea[79], MNP's Saipan Lagoon[120, 121, 122] or ROK's National Ocean Information Utilization Center[123], GUM's Interactive Map[124], NCL's Coral Sea's Park Map[125]. In some cases, MSP processes stemmed from conservation efforts; thus, spatial zoning is a part of management planning for some MPA networks and Large Marine Protected Areas, such as. KIR's Phoenix Islands Protected Area (PIPA)[126], MYS's Tun Mustapha Park[103], or PLW's Protected Area Network (PAN)[127]. Further, some planning processes consider impacts of climate change; hence, adaptive management is integrated into a number of MSP developments (IDN[74], KIR[96], MYS[128], NZL[77], PNG[129], PHL[106], ROK[82], SLB[97], TON[98], VUT[99], NCL[118]). Management of multiple uses is expressed in more than half of the countries (IDN[130], KIR[96], MYS[131], NZL[77], PLW[78], PNG[79], PHL[105], ROK[132], SLB[97], TON[98], VUT[99], VNM[133], NCL[118], MNP[121]). Out of the in-progress countries, area coverage of MSP can be identified as partial of EEZ in 7 countries (KHM[134], FIJ[73], KIR[75], MYS[76, 103], NZL[77], PHL[80, 106], PYF), and full EEZ/territorial water coverage in 6 countries (IDN[134], PLW[78], SLB[83], TON[84], VNM[86], NCL[118]). More information of MSP coverage is required for the remaining countries.

As of 2019, there are 3 countries that have completed their MSP in full EEZ or territorial waters (Stage 3) (AUS[135], CHN[86], ASM[136]). Marine spatial plans in AUS (Australia, n.d.) and CHN (Mu, et al., 2013) are comprised of several regional plans, whereas in ASM the document is designed for the entire EEZ (American Samoa, Department of Commerce, 2018). From the available online plans, AUS and ASM have integrated the MSP elements in the documents, ranging from land-sea integrated management, ecosystem-based approach, application of variety of instruments in implementation, adaptive management, long term perspective, participatory engagement to planning for multiple uses. Efforts in CHN which also incorporate these features are documented as well. Examples of the 3 countries include consideration of land-based activities in Great Barrier Reef Marine Park's Reef 2050 Plan and Marine Bioregional Plans, ASM's Ridge to Reef utility mapping, CHN's Marine Ecological Red Line policy (United Nations Environment, 2018a). Furthermore, availability of geospatial data, public consultation processes during the plans development, designs for different type of ocean uses, and emphases of monitoring and revision of plans for sustainability are evident in these planning documents. These plans could be used as case studies for other nations aiming to fully integrate MSP in their EEZs' ocean management.

Limitations

During this study, there are some limitations emerging from literature review; namely, English-only sources of information, the cross-cutting natures of MSP elements listed by UN Environment, and the limited documentation of MSP application steps by countries.

As the data search was performed in English, literatures accessed for this review limits to this language. Therefore, the findings in this review do not necessarily reflect the actual development made by countries, and further data validation by relevant/in-country stakeholders should be sought for.

More importantly, it must be emphasized that the 0-3 stages assigned above to the focused countries in this preliminary analysis do not always reflect the true comprehensiveness of MSP development. This is due to the crosscutting nature of these MSP features, and the fact that existing online literatures related to MSP integration in the Asia-Pacific countries do not accommodate such extensive assessment, particularly through a desk review. Besides a comprehensive MSP manual by Ehler and Douvere (2009), UN Environment (2018a) also provides the below conceptual guidelines for MSP application for more in-depth analysis in the future.

MSP Application Conceptual Guidelines

1. Issue identification and prioritization
2. Stakeholder identification and engagement
3. Roles and responsibilities
4. Review existing frameworks
5. Participatory planning
6. Management plan
7. Implementation of plan
8. Monitoring and evaluation
9. Adaptive review

Due to the abovementioned limitations, this preliminary study may not fully reflect MSP implementation by Asia-Pacific countries. More data collection and in-depth analysis are required in the future in order to fully reflect in-country MSP related development to support implementation of SDG 14.2.1. Furthermore, validation by countries or voluntary national progress reports on MSP implementation at international conferences, such as Ocean Conference, are likely contribute to SDG 14.2.1 achievement, particularly for the integrated ocean management tool which relates to other terminology and diverse methods of implementation like MSP.

Summary

This review captures countries' progress in the crosscutting elements of MSP as elaborated by UN Environment (2018a) as a proxy for measures of the indicator SDG14.2.1 "*Proportion of national exclusive economic zones managed using ecosystem-based approaches"*. It identifies existing efforts in relation to marine spatial planning in the 46 Asia-Pacific coastal countries, to reveal changes from 2009 to 2019. The review showed that 17 countries (37%) have made substantial progress in MSP. This results from a 37% decrease in countries with no MSP related initiatives, 42% having made substantial progress, and 7% having implemented MSP in their entire EEZ or territorial waters.

Endnotes

[1] SDG Target 14.2 – by 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans

[2] For further analysis and comparison of objectives and elements between MSP and ICZM, please refer to United Nations Environment (2018a)

[3] See (Bangladesh, Ministry of Water Resources, 2005)

[4] See (Bangladesh, Ministry of Water Resources, 2006)

[5] See (Democratic People's Republic of Korea, 2004)

[6] See (Georgia, Ministry of Environment Protection, 2006)

[7] See (Marshall Islands, 2008)

[8] See (United States, 2009)

[9] See (Marshall Islands, Reimaan National Planning Team, 2008)
[10] See (Hinchley, et al., 2007)
[11] See (Australia, 2004)
[12] See, for examples, (Australia, 2007) and (Australia, 2008)
[13] See (Sihanoukville Coastal Strategy, 2005)
[14] See (Visal & Nay, 2018)
[15] See (Fang, et al., 2018)
[16] See (MPP-EAS, 1999)
[17] See (United Nations Environment, 2018a)
[18] See (PEMSEA, 2007)
[19] See (Australia, Marine Group, Environment Australia, 1998)
[20] See (Douvere, 2008)
[21] See (Douvere & Elher, 2009)
[22] See (Australia, 2004)
[23] See (PEMSEA, 2010)
[24] See (Mu, et al., 2013)
[25] See (PEMSEA, 2007)
[26] See (Thorax, 2016)
[27] See (Bess & Rallapudi, 2007)
[28] See (de Bettencourt & Imminga-Berends, 2015)
[29] See (Australia, Department of the Environment, 2005)
[30] See (Nippon Koei Co., Ltd., et al., 2010)
[31] See (PEMSEA, 2006)
[32] See PGEM de Moorea Zones (2002)
[33] See (de Loma, et al., 2008)
[34] See (Vince, 2014)
[35] See (Pido, et al., 2015)
[36] See (Santos, et al., 2019)
[37] See (The Ministry of Defence and Rodrigues of & the Indian Ocean Rim Association, 2017)
[38] See (Iran, Port and Maritime Organization, 2019)
[39] See (Japan, 2018)
[40] See (Secretariat of CBD, n.d.)
[41] See (GEF Pacific Ridge to Reef Programme, 2018)
[42] See (United Nations Development Programme, n.d.)
[43] See (The Nature Conservancy, 2019a) and (The Nature Conservancy, 2019b)
[44] See (Ya, 2018)
[45] See (Samoa, Ministry of Natural Resources, 2017)
[46] See (uw360, 2018)
[47] See (Thailand, Office of Prime Minister, 2018)
[48] See (Convention on Biological Diversity, 2017)
[49] See (Cook Islands, Office of the Prime Minister, 2016)
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