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# SEA contributions for Marine Spatial Planning in Brazil

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Marine Spatial Planning (MSP) is an instrument for managing the marine environment, considering the multiple uses, economic activities and marine ecosystems. Strategic Environmental Assessment (SEA) is often used as a support instrument for MSP and literature points their shared goal of mainstreaming environmental considerations in decision making. In 2017 Brazil voluntarily committed to implement MSP by 2030 phased for four regions: South, Southeast, Northeast and North. The South MSP commenced in 2023, with the Southeast and Northeast MSP following in 2024. On the other hand, SEA is not mandatory in Brazil and have not been required for MSP. In this context, this research reports on MSP process in Brazil and discuss the potential contributions of SEA to MSP, based on document analysis and literature review. The national guideline for MSP preparation establishes the necessity to assess the overlapping of present and future foreseeable activities with ecologically relevant areas. However, the assessment of environmental impacts is not clearly guided. Notably, emerging offshore projects, such as wind farms and seabed mining, introduce uncertainties regarding environmental impacts and licensing processes. Thus, SEA seems to be critical for assessing cumulative impacts and guiding projects environmental assessments. Moreover, SEA may enhance marinecoastal integration, as offshore and coastal land-based activities may be licensed at different administrative levels. These findings underscore SEA's potential to support MSP development in Brazil, helping to avoid and mitigate future conflicts and significant impacts.

Keywords: maritime planning; environmental assessment; offshore.

# Introduction

Balancing competing marine uses, including nature conservation, and pursuing a "Blue economy" is a global challenge (Patil et al., 2016; Unesco-IOC, 2020; Zaucha et al., 2025). While developing marine resources is often urgent – e.g. renewable energy projects (GWEC, 2024), allocating activities without proper environmental and social impact assessment hinders a just energy transition (Rios-Ocampo et al., 2025). To manage all

these activities and challenges, instruments such as Integrated Coastal Zone Management (ICZM), Marine Protected Areas (MPAs) and Marine Spatial Planning (MSP) have been used globally (Stori et al., 2019; UNESCO-IOC, 2024).

According to Ehler & Douvere (2009, p. 18), MSP is defined as "a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives". It should be ecosystem-based and foster collaboration across sectors and government levels to develop an integrative plan (Ehler & Douvere, 2009; Unesco-IOC, 2021). In some countries, Strategic Environmental Assessment (SEA) is required for MSP. While SEA's roles and contributions vary depending on the context (Hilding-Rydevik & Bjarnadóttir, 2007; Kusters et al., 2024) and challenges remain in operationalizing SEA for MSP (Calado et al., 2021), literature also indicates SEA's benefits and importance (Kusters et al., 2024).

In Brazil, maritime management faces many challenges (Stori et al., 2019), particularly due to the vast size of Brazilian jurisdictional waters (approximately 5.7 million km<sup>2</sup>) and their strategic importance for national economy, security, and biodiversity conservation (CIRM, 2025a; Soares et al., 2016). Although Coastal Management has been in place for decades MSP was recently initiated and is expected to become an instrument that enables sustainable marine use (CIRM, 2025a). SEA, however, is not nationally regulated and is scarcely applied in marine space (Vilardo et al., 2020). Acknowledging the context-specific nature of SEA, this paper analyzes Brazil's MSP process to identify opportunities for SEA application and potential contributions.

## Methods

To characterize the MSP process in Brazil, a document analysis was conducted, based on the website of the Interministerial Commission for Marine Resources (CIRM)<sup>1</sup>, which was analyzed from March 3rd to 12th, 2025 and provided a comprehensive overview of the MSP process, including its history, key legislation, and guiding documents. Additionally, the Google search engine and ChatGPT were used on March 12th, 2025, to seek updates on the MSP process. No additional MSP documents were identified.

Tender notice for selecting consultancy teams to prepare each regional MSP (North, Northeast, Southeast, and South) were the only documents identified in this research that specified requirements for MSP preparation. We undertook content analysis of these documents using criteria that reflect characteristics identified in literature as essential for effective MSP (Table 1). We assessed whether each criterion was clearly and specifically addressed, addressed generically, or merely mentioned (without any associated guidelines), revealing strengths and weaknesses in the planning process proposed. Based on these findings, opportunities for SEA to contribute to the MSP process were identified and discussed. We posit that in the absence of previous experience with MSP in Brazil, their terms of reference should be carefully drafted to reflect best practice expectations.

<sup>&</sup>lt;sup>1</sup> ICMR website: https://www.marinha.mil.br/secirm/pt-br/psrm/pem/projetos-brasil

#### Brazilian MSP: a brief context

Marine ecosystems and resources have been on the national agenda for decades. In 1974 the CIRM was created, and since 1981, the National Sectorial Plan for Marine Resources has been in place, reviewed every four years (CIRM, 2025b; 2025c). However, the MSP process gained momentum only after the creation of the Working Group of Shared Use of the Marine Environment (in 2013) and Brazil's voluntary commitment to implement its Marine Spatial Plan by 2030, as part of the 2017 United Nations Ocean Conference (CIRM, 2025a). Since 2019, MSP has been one of the actions within the Sectorial Plan for Marine Resources. In 2022 the "pilot project" initiated and in 2023 the CIRM approved a vision and principles for Brazilian MSP (CIRM, 2025a).

The planning process is structured in four regional phases: South, Southeast, Northeast and North (CIRM, 2025a). The South-MSP was designated as the "pilot project"; a consultancy team was selected in May 2023 to present a Draft Plan until January 2027. Consultancy teams for the Southeast-MSP and Northeast-MSP were hired in 2024, and the selection of a team for the North-MSP is expected by late 2025 (CIRM, 2025a).

For each regional MSP, a tender notice was published detailing the theoretical bases, planning phases and activities, minimum content, methodological requirements, and expected products – forming the typical content of a Term of Reference (ToR). Hereafter, the tender notices are referred to as ToR.

#### ToR analysis and SEA potential contributions

Based on the four ToR analyzed (one for each regional MSP), the theoretical framework draws on Ehler & Douvere (2009). Overall, the MSP requirements outlined in the ToR address all criteria to some extent (Table 1). However, only three key MSP characteristics were addressed clearly and specifically, while four were addressed generically, leaving specifics to the consultancy teams, and four were only mentioned, without elaboration or orientation to consultancy teams. Thus, results highlight "areas of concern".

The four ToR analyzed are similar, requiring studies to be discussed with the MSP Executive Committee and the public, ultimately supporting a plan proposal. However, differences between the "pilot project" (ToR 1) and the subsequent regional phases (ToR 2, 3 and 4) suggest a learning process.

Criteria*	ToR 1	ToR 2	ToR 3	ToR 4	ToR analysis	Potential SEA contributions
1. Ecosystem- based approach					ToR 2, 3 and 4 require the "identification of ecosystem baseline" and a matrix detailing marine ecosystems, ecosystem services, beneficiaries, pressure vectors, and monitoring measures; they lack clear requirements for assessing impacts from predicted activities and for evaluating social and community costs and benefits; it is not clear how and for what the information will be used, likely depending on consultancy proposals.	Assessing environmental and social impacts of development scenarios to support ecosystem-based decision-making.
2. Availability of relevant data					Data must be collected and integrated into a public Database. ToR 2, 3 and 4 included the possibility to conduct primary surveys, using participatory mapping.	Supporting data collection and integration within the planning process.
3. Multisectorial approach					MSP must incorporate sectoral information and perspectives. Multiple ministries are part of the MSP Executive Committee. ToR 4 included "Research and Teaching".	Assessing cumulative environmental and social impacts (although multisectoral approach is ensured, cumulative impact assessment is not).
4. Integration among levels of government					State and municipal authorities are not part of the Executive Committee, highlighting a potential governance weakness.	Promoting space for states and municipalities to engage.
5. Integration of terrestrial, costal and marine planning					It remains unclear how the MSP and Coastal Zone Management Plan will be integrated.	Promoting space for states and municipalities to engage; assessing cumulative impacts.
6. Cross-border and transboundary cooperation					The topic is mentioned but not elaborated upon, leaving consultants to define their approach.	Promoting space for stakeholders to engage; assessing cumulative impacts.
7. Area-based approach					Each regional phase focuses on specific, well- defined areas.	

Table 1 – Analysis of the ToR for MSP Brazil and potential SEA contributions.

<ol> <li>8. Adaptivi</li> </ol>	ity			All ToR briefly mention the need for follow-up	Indicating potential measures and
				but lack concrete requirements, limiting	arrangements for impact mitigation
				assessments of process adaptability.	and follow-up.
9. Strategi	c and			All ToR require the development of three	Although MSP process has started,
anticipator	v,			scenarios for 10, 15 and 20 years to support	SEA can still support their
focused or	n the			future discussions, reflecting a long-term	preparation, next phases and
long-term				vision. MSP must help Brazil meeting	revisions, as well as guide projects'
Ũ				international commitments. MSP seems to	impact assessment.
				have a strategic role within the national	
				planning framework, with potential to influence	
				sectorial planning, but ToR do not clarify MSP	
				enforcement (binding or guiding) or define	
				implementation mechanisms, leaving these	
				aspects to consultancies and subsequent	
				debates.	
10. Partici	patory			Participation is integrated throughout the	Promoting space for institutional
approach	' '			process, including workshops for data	and public engagement.
				validation, intersectoral negotiations, and	1 0 0
				public access to documents to enhance	
				transparency. However, information on	
				Working Plans that should be publicly	
				available was not found, indicating non-	
				compliance with ToR requirements.	
11.				All ToR require: assessment of sea-level rise	Assessing the impacts of marine
Incorporat	ion of			and storm impacts on human activities and	activities on climate change and
climate ch	ange			ecosystems (without detailed guidance) and	vice versa.
	-			analysis of the impacts of renewable energy	
				expansion on Brazil's commitments. They do	
				not explicitly consider the impacts of marine	
				activities on climate change, except for	
				renewable energy.	

\* Based on Ehler & Douvere (2009); Kusters et al. (2024); UNESCO-IOC (2021); Zaucha et al. (2025).
 Addressed clearly/specifically
 Addressed generically
 Only mentioned

Considering MSP's aim to allocate marine activities while addressing environmental consequences (Kusters et al., 2024) and being ecosystem-based (Ehler & Douvere, 2009; Unesco-IOC, 2021), the absence of clear methodological guidance in the ToR suggests SEA could be beneficial. SEA applied to MSP can strengthen the ecosystem-based approach and facilitate cumulative impact assessments (Kusters et al., 2024), as well as reduce uncertainties and guide mitigation and follow-up measures (González & Therivel, 2022).

Considering the Brazilian context, a "building block" approach (Fischer & González, 2021) can be used to propose a tailor-made SEA, aiming to fill-in the MSP process gaps. This approach may support technical and political debates on the importance of SEA for MSP. Moreover, considering that the same institutional and political challenges that hinder MSP could also impact SEA (Kusters et al., 2024), determining how SEA should be applied and by whom is crucial and should be further discussed.

# Conclusion

Based on the ToR analysis, four main SEA contributions to Brazil's MSP process were identified: assessing environmental and social impacts, especially cumulative ones; supporting mitigation guidelines and marine space zoning; supporting the definition of follow-up strategies; and enhancing institutional and public participation. Although SEA is not required for Brazilian MSP, this theoretical exercise highlights potential "SEA elements" that could be applied to support future decision-making.

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