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Institutional and Legal Challenges of Maritime Spatial Planning in Angola within the Benguela Current System

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Abstract: Marine Spatial Planning (MSP) is a strategic instrument for integrated ocean governance, particularly in contexts of increasing pressure on marine resources and multiple maritime uses. This study evaluates the institutional and legal challenges of MSP in Angola, within the Benguela Current System, focusing on the national legal framework and comparative regional governance. The analysis was based on official documents, legislation, and public policies, and addressed sectors such as the environment, fisheries, oil and gas, defense, and spatial planning. Results indicate that Angola's legal framework remains strongly sector-based, prioritizing resource exploitation and licensing, with limited incorporation of sustainability principles, ecosystem-based approaches, and integrated spatial planning. High institutional fragmentation was observed, reflected in overlapping mandates among ministries and public agencies, undermining intersectoral coordination and MSP implementation. Land-sea integration also showed weaknesses, particularly in coastal areas, limiting the management of ecological and socio-economic systems. Comparison with Namibia and South Africa demonstrates that dedicated legislation, clear institutional structures, and consolidated coordination mechanisms facilitate effective MSP implementation. The study concludes that strengthening MSP in Angola requires a framework law, enhanced interministerial coordination, integration of terrestrial and marine planning instruments, and the systematic adoption of regional best practices within the context of the Benguela Current Commission.

Keywords: Ocean Governance; Institutional Fragmentation; Spatial Integration; Blue Economy; Coastal Management.

1. Introduction

Maritime Spatial Planning (MSP) is a strategic instrument for the integrated governance of the oceans and has become increasingly important in contexts characterized by growing competition among maritime sectors, environmental pressures, and the need to reconcile economic development with ecosystem conservation (Casimiro, 2015; Finke et al., 2020; McAteer et al., 2022; Partelow et al., 2023; Singh et al., 2025). Recent international experiences have demonstrated that MSP supports ecosystem-based management, reduces conflicts among maritime users, enhances policy coherence, and contributes to achieving sustainable ocean governance objectives (Rivers et al., 2022; Carpenter-Kling et al., 2025).

In Angola, the maritime space is of significant economic, environmental, and strategic importance, supporting activities such as oil and gas exploitation, fisheries, maritime transport, tourism, and maritime defense, while simultaneously hosting ecologically sensitive coastal and marine ecosystems (Safeca, 2020; Guerreiro, 2022; Reguero et al., 2023; Gaspar et al., 2024). The increasing relevance of the Blue Economy and the growing demand for marine resources reinforce the need for integrated planning approaches that balance economic development, environmental sustainability, and social inclusion (Issifu et al., 2024).

The Angolan legal framework remains strongly sector-based, regulating the environment, fisheries, energy, defense, and spatial planning through fragmented legal instruments, with a predominant focus on licensing and resource exploitation and limited incorporation of ecosystem-based management principles (Bentral, 2020; Casimiro, 2015). This normative dispersion contributes to a high degree of institutional fragmentation, characterized by overlapping mandates among ministries and public agencies, which hinders intersectoral coordination and the effective implementation of MSP (Finke et al., 2020; GNC-OEM, 2017). Similar governance challenges have been identified in several developing coastal states, where institutional complexity and weak coordination mechanisms continue to constrain marine planning processes (Partelow et al., 2023; Singh et al., 2025).

Integration between terrestrial and MSP constitutes another major challenge, particularly in coastal zones where social, economic, and environmental pressures converge and interact. Effective land-sea integration requires coherent governance arrangements, stakeholder participation, climate adaptation measures, and integrated management mechanisms that address cumulative impacts across ecosystems (Casimiro, 2015; Bentral, 2020; Niu et al., 2023; Reguero et al., 2023). Recent studies have further emphasized the importance of strengthening community participation and social capacity as fundamental elements for equitable and effective MSP implementation (Jacob et al., 2023; Carpenter-Kling et al., 2025).

Within the Benguela Current System (BCS), Namibia and South Africa have emerged as important reference cases for MSP development. Both countries have established dedicated institutional arrangements, formal intersectoral coordination mechanisms, and increasingly sophisticated planning frameworks supported by scientific evidence, stakeholder engagement, and ecosystem-based approaches (Finke et al., 2020; Rivers et al., 2022; Wanda et al., 2023; Vermeulen-Miltz et al., 2023). Their experiences provide valuable lessons for Angola regarding institutional integration, governance coordination, and the operationalization of MSP principles.

This study examines the institutional and legal challenges of MSP in Angola within the Benguela Current System, focusing on the national legal framework, institutional fragmentation, land-sea integration, intersectoral coordination, and comparison with regional practices. The analysis aims to provide evidence-based recommendations for strengthening MSP

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implementation in Angola, emphasizing the adoption of a framework law, the establishment of coordinated institutional mechanisms, and the systematic incorporation of regional and international best practices to promote more effective, participatory, and sustainable maritime governance (Bentral, 2020; Safeca, 2020; Partelow et al., 2023; Issifu et al., 2024).

2. Materials and Methods

The present study was conducted within the context of Angola's maritime space, with a focus on the Benguela Current System (BCS), an oceanic region of high ecological, economic, and strategic relevance, extending from Cunene Province, at the border with Namibia, to Cabinda Province, at the northernmost extremity of Angola. This area encompasses densely occupied coastal zones, port regions, oil and gas exploration areas, fishing grounds, and sensitive marine ecosystems, and is of critical importance to the country's food, energy, and economic security (Casimiro, 2015; Safeca, 2020; Ding et al., 2026). The Benguela Current System is characterized by complex oceanographic processes, including coastal upwelling and high primary productivity, which support one of the most important fishing systems on the African continent (GNC-OEM, 2017; McAteer et al., 2022; Ding et al., 2026).

The selection of this region as the study area is justified by the concentration of multiple maritime uses, the diversity of institutional actors involved, and the challenges associated with implementing integrated MSP policies. Figure 1 illustrates the study area and the main sectors analyzed in this research, including oil and gas exploration zones, industrial and artisanal fishing areas, commercial ports, and ecological reserves.

The concentration of multiple, often competing maritime uses within the Benguela Current System makes it particularly well-suited to assessing the institutional and governance challenges associated with MSP. Similar regional assessments have demonstrated that effective MSP implementation requires integrated governance structures, robust scientific information, and coordinated stakeholder engagement processes (McAteer et al., 2022; Partelow et al., 2023).

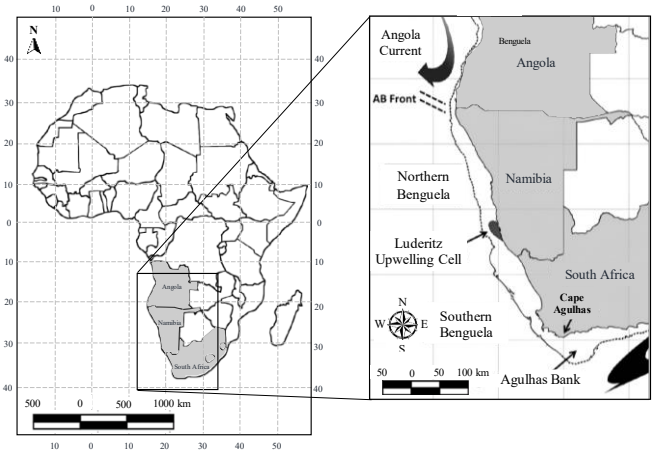


Figure 1. Study area and distribution of the analyzed sectors. Source: Authors (2026).

The analysis of the national legal framework constituted the first methodological stage of the study. Official documents, laws, regulations, and public policies governing the environment, fisheries, oil and gas, defense, and spatial planning sectors were compiled, as identified in the reports of the National Governance of MSP (GNC-OEM, 2017) and in bibliographic reviews of Angolan legislation (Bentral, 2020).

The main legal instruments analyzed are summarized in Table 1, which presents Angola's maritime legal framework by sector and highlights the predominant focus of each instrument. This table provided the documentary basis for assessing normative coherence, intersectoral articulation, and compatibility with international MSP principles.

Table 1. Main legal instruments analyzed. Source: Authors (2026).

Legal Instrument	Sector	Primary Focus	Integration with MSP
Environmental Framework Law	Environment	Environmental protection	Low
Aquatic Biological Resources Law	Fisheries	Exploitation and conservation	Medium
Petroleum Activities Law	Energy	Offshore exploration	Low
National Defense Law	Defence	Maritime security	Low
Spatial Planning Law	Planning	Land-use regulation	Medium

The selected legal documents included, among others, the Environmental Framework Law (Law No. 5/98), the Fisheries Law (Law No. 4/04), the Petroleum Law (Law No. 10/04), regulations governing the exploitation of marine resources, coastal defense regulations, and municipal and provincial spatial planning plans. Each legal instrument was analyzed for its scope, internal coherence, capacity for intersectoral integration, and compatibility with international best practices in MSP (Finke et al., 2020).

Recent studies have emphasized that the effectiveness of MSP depends not only on the existence of legal instruments but also on their coherence, integration, and capacity to support ecosystem-based governance and adaptive management approaches (Partelow et al., 2023; Singh et al., 2025).

In parallel, institutional data were collected from ministries and agencies responsible for governing maritime space. The formal and informal mandates of institutions such as the Ministry of the Environment, the Ministry of Energy and Water, the Ministry of Fisheries, the Ministry of Defense, the Angolan Navy, and territorial planning authorities were mapped (Casimiro, 2015; Bentral, 2020), as presented in Table 2. The methodology included semi-structured interviews with institutional officials, analysis of official organizational charts, and a review of activity reports, enabling the identification of coordination structures, information flows, and operational constraints.

Table 2. Institutional distribution of maritime competences in Angola. Source: Authors (2026).

Institution	Primary Competence
Ministry of Fisheries and Marine Resources	Fisheries and aquaculture
Ministry of Mineral Resources, Petroleum and Gas	Offshore oil and gas
Ministry of the Environment	Environmental licensing
Ministry of National Defense / Navy	Maritime security and sovereignty
Ministry of Public Works and Spatial Planning	Territorial planning

In the present study, MSP was adopted as a methodological tool to support the integrated governance of Angola's maritime space, as defined in the Marine Spatial Planning Plan (POEM) approved by Presidential Decree No. 88/23 of 30 March 2023 (Official Gazette of Angola). The POEM organizes the use of maritime space to guide sectoral decision-making, identify management strategies and priorities, and promote ecosystem health in ways that support sustainable economic and socio-cultural development.

The POEM also establishes that Angola must plan actions to achieve the target of protecting 30% of marine areas by 2030, which corresponds to integrating approximately 155,530 km² of the Exclusive Economic Zone (EEZ) into marine protected areas.

The analysis of the Maritime Economy (ME) was based on the main sectors contributing to the Gross Domestic Product (GDP), including fisheries and derivatives, offshore oil and gas, maritime transport, port activities, and coastal and maritime tourism. These sectors were characterized using official data from the Ministry of Economy and Planning, which were used in this study to assess ME's contribution to the national economy.

According to the POEM, ME's aggregate contribution to GDP was 55.99% in 2021. A temporal analysis of sectoral contributions revealed structural changes over the last decade, with a relative decline in the transport and tourism sectors and a progressive increase in the oil and natural gas sector, as presented in Table 3.

Table 3. Evolution of the contribution of the ME to GDP by sector (2010-2021). Source: Authors (2026).

Sector	2010 (%)	2021 (%)	Absolute Δ (p.p.)	Percentage Δ (%)
Maritime Economy (total)	46.10	55.99	+9.89	+21.45
Fisheries and derivatives	1.75	1.77	+0.02	+1.14
Oil and natural gas	37.47	49.06	+11.59	+30.93
Transport and storage	2.68	1.38	−1.30	−48.51
Tourism	4.20	3.78	−0.42	−10.00

Prospective scenarios up to 2050 were also considered (Table 4), projecting moderate growth in the transport and tourism sectors, alongside a proportional reduction in the oil sector, in line with national economic diversification policies outlined in the POEM.

Table 4. Projected sectoral growth of the ME (2030-2050). Source: Authors (2026).

Maritime Economy Sector	2030 (%)	2040 (%)	2050 (%)	Average (%)	$\Delta_{Percent.}$ 2030-2050 (%)
Fisheries and derivatives	3.60	4.20	4.50	3.70	+25.00
Oil and natural gas	19.40	10.20	4.90	14.80	−74.74
Transport and storage	5.00	5.00	5.00	4.30	0.00
Tourism	4.32	5.02	5.82	4.76	+34.72

The sectoral growth values for 2020 (Table 3) were used as contextual indicators to support the integrated interpretation of the results. In other words, both Tables 3 and 4 highlight a structural evolution of Angola's ME, characterized by strong growth in the oil and gas sector in the recent historical period, alongside projections of a gradual reduction in its share by 2050, while growth in the fisheries, transport, and tourism sectors is projected. This trend underscores the need for MSPs oriented towards economic diversification and sustainability.

Institutional fragmentation was assessed using a qualitative approach based on institutional network analysis (Casimiro, 2015; Finke et al., 2020). This approach enabled the identification of overlapping mandates, governance gaps, and the absence of clear coordination mechanisms among entities responsible for different uses of the maritime space. Fragmentation was analyzed across five main dimensions: (i) allocation of legal responsibilities, (ii) formal interactions between ministries and agencies, (iii) joint decision-making mechanisms, (iv) monitoring and enforcement capacity, and (v) coherence of sectoral policies.

Situations in which multiple ministries hold competencies over the same geographical area or resource were mapped, as observed in the management of coastal zones subject to both offshore oil exploitation and industrial fisheries. This mapping made it possible to identify critical points of institutional conflict and risks to the effective implementation of MSP, highlighting the need for formal coordination instruments and a specific framework law for MSP.

Accordingly, to assess the degree of MSP integration, the Maritime Spatial Planning Integration Index (MSPII) was developed and applied. This index is mathematically expressed in Eq. (1) and integrates legal, institutional, territorial, and intersectoral coordination dimensions.

$$MSPII = \frac{L + I + TM + C}{4} \quad (1)$$

where: L - represents the robustness of the legal framework; I - denotes the degree of institutional integration; TM - refers to land-sea integration; C - indicates the level of intersectoral coordination.

All parameters of the equation were normalized on a scale ranging from 0 (non-existent) to 1 (optimal). This index enabled a structured, integrated assessment of Angola's maritime governance and served as a basis for interpreting the results.

To ensure methodological transparency and reduce subjectivity in applying the MSPII, all variables were evaluated using a standardized scoring system ranging from 0 to 1. The scores were assigned based on documentary analysis, institutional mapping, stakeholder interviews, and comparative assessment against internationally recognized MSP principles (UNESCO-IOC, 2017; Finke et al., 2020).

For each dimension, specific evaluation criteria were adopted. The legal framework component (L) assessed the existence of MSP-related legislation, legal coherence, and compatibility with ecosystem-based management principles. Institutional integration (I) evaluated the degree of coordination among public institutions, the existence of formal governance structures, and the clarity of institutional mandates. Land-sea integration (TM) assessed the degree of coherence among terrestrial and maritime planning instruments, coastal management measures, and spatial planning policies. Intersectoral coordination (C) assessed the existence and effectiveness of coordination mechanisms, frequency of institutional interaction, information-sharing practices, and conflict-resolution procedures.

Scores were assigned according to the qualitative classification presented in Table 5, allowing a consistent interpretation of governance performance across all assessed dimensions.

Table 5. Classification criteria adopted for the MSPII. Source: Authors (2026).

Score Range	Classification	Interpretation
0.00-0.20	Very Low	Absence of MSP governance, legal frameworks, and coordination mechanisms.
0.21-0.40	Low	Limited governance development, weak coordination, and fragmented legal frameworks.
0.41-0.60	Moderate	Partial implementation of MSP principles with some coordination and integration measures.
0.61-0.80	High	Established governance structures, effective coordination, and significant MSP integration.
0.81-1.00	Very High	Comprehensive MSP framework with strong legal support, integrated governance, and advanced implementation.

The development of composite indicators to assess MSP performance is consistent with recent international efforts to evaluate planning effectiveness, institutional integration, and governance maturity across marine jurisdictions. Similar indicator-based approaches have been proposed to assess MSP implementation and support evidence-based decision-making (Reimer et al., 2023).

Institutional fragmentation within the maritime sector was analyzed using the Maritime Institutional Fragmentation Index (MIFI), expressed in Eq. (2). This index was applied as a synthetic metric of institutional dispersion, complementing the qualitative analysis based on institutional network analysis (Casimiro, 2015; Finke et al., 2020). Institutional fragmentation has been identified as one of the principal barriers to effective MSP implementation in developing and transitional governance systems, particularly where multiple agencies share overlapping mandates and coordination mechanisms remain weak (Partelow et al., 2023; Singh et al., 2025).

$$MIFI = \frac{N_m}{N_c} \quad (2)$$

where: N_m - represents the number of ministries with direct competencies over the maritime space; Nc - denotes the number of existing formal coordination mechanisms.

With regard to the five main analytical dimensions considered in this assessment; legal responsibilities, institutional interactions, decision-making mechanisms, monitoring capacities, and coherence of sectoral policies; the analysis highlights the principal structural challenges of MSP in Angola, namely: (i) sector-based legal fragmentation; (ii) the absence of a specific MSP framework law; (iii) overlapping institutional mandates; (iv) weak interministerial coordination; and (v) limitations in land-sea integration.

The lack of integration between terrestrial and MSP policies was examined through analysis of territorial planning instruments and coastal management plans. The study assessed the coherence between municipal and provincial planning instruments and maritime legislation, including their implications for coastal ecosystems and environmental protection zones (Bentral, 2020; GNC-OEM, 2017). Gaps were identified in the definition of buffer zones, limits on port expansion, regulation of coastal urban occupation, and the protection of critical habitats, highlighting the need for the formal integration of terrestrial and maritime instruments into spatial planning processes. Recent literature further highlights that successful land-sea integration requires the incorporation of climate adaptation strategies, coastal resilience measures, and community-based governance approaches to address cumulative environmental pressures (Niu et al., 2023; Reguero et al., 2023).

The analysis also considered socio-economic impacts, such as community use of fisheries resources, coastal settlements, and tourism activities. This approach enabled an assessment of how legal and institutional fragmentation undermines the integrated management of ecological and socio-economic systems, thereby constraining the implementation of ecosystem-based planning approaches recommended by international organizations (UNESCO-IOC, 2017). This component constitutes one of the dimensions of the MSPII, as expressed in Eq. (1). Furthermore, contemporary MSP frameworks increasingly recognize the importance of integrating socio-economic valuation, ocean accounting, and Blue Economy considerations into planning processes to improve resource allocation and long-term sustainability outcomes (Issifu et al., 2024; Gacutan et al., 2022).

Challenges related to intersectoral coordination were analyzed based on two key elements: the existence of formal coordination mechanisms and the effective practice of integrated governance. Structures such as interministerial committees, cooperation protocols, memoranda of understanding, and technical groups for coastal and maritime management were examined (Finke et al., 2020; Guerreiro, 2022; Burman et al., 2023).

International experience demonstrates that effective intersectoral coordination depends on clearly defined institutional mandates, regular communication channels, and participatory governance mechanisms involving both governmental and non-governmental stakeholders (Jacob et al., 2023; Carpenter-Kling et al., 2025).

This dimension corresponds to parameter C of the MSPII (Eq. 1) and was assessed by considering the frequency of institutional interactions, the clarity of mandates, the availability of resources, and the effectiveness in resolving conflicts related to the use of maritime space. Accordingly, the analysis evaluated the capacity for harmonizing sectoral policies and the efficiency of conflict resolution processes, taking into account factors such as meeting frequency, clarity of responsibilities, available resources, and monitoring mechanisms.

In addition, a comparative assessment of institutional information flows and formal decision-making mechanisms was conducted, thereby identifying gaps between the legal design and the practical implementation of MSP policies. This assessment enabled quantification and characterization of challenges related to integration, communication, and cooperation among different governmental bodies and stakeholder sectors, providing input for recommendations to strengthen intersectoral governance.

The third methodological stage consisted of a comparative analysis of MSP practices in neighboring countries of the Benguela Current System, specifically Namibia and South Africa. These countries were selected because they have dedicated maritime legislation, consolidated institutional mechanisms, and well-established experience in intersectoral coordination (Guerreiro, 2022; Finke et al., 2020).

Recent developments in South Africa, including the implementation of the Marine Spatial Planning Act and the use of scenario-based planning tools, have strengthened ecosystem-based governance and stakeholder engagement processes, providing valuable lessons for other countries within the Benguela Current System (Vermeulen-Miltz et al., 2023; Wanda et al., 2023; Carpenter-Kling et al., 2025). The comparison addressed five dimensions: (i) legal clarity and scope, (ii) integration of land-sea planning instruments, (iii) institutional and coordination structures, (iv) MSP implementation processes, and (v) incorporation of sustainability principles and the ecosystem-based approach. Accordingly, the criteria used in this comparison are described in Table 6, which served as the baseline comparative matrix.

Table 6. Comparative assessment of MSP maturity in the Benguela Current System. Source: Authors (2026).

Country	Legal Framework	Institutional Coordination	Land-Sea Integration	Level of Maturity
Angola	Incipient	Fragmented	Low	Low
Namibia	Intermediate	Moderate	Medium	Medium
South Africa	Advanced	Integrated	High	High

To operationalize this comparison, the Comparative MSP Maturity Model, defined by Eq. (3), was applied to the three countries. Regarding the regional best practices identified and used as analytical benchmarks for Angola, including dedicated MSP legislation, zoning plans, and consolidated intersectoral coordination mechanisms, the following stand out: for South Africa, the MSP Act and Operation Phakisa; for Namibia, institutional centralization; and for Angola, pilot MSP initiatives.

$$M_{OEM} = \sum_{i=1}^{n} \omega_i X_i \quad (3)$$

Where: X_i - represents the evaluation criteria; w_i - denotes the weights assigned to each criterion.

To avoid subjective prioritization among the dimensions, equal weights ($w_i = 0.20$) were assigned to all five assessment criteria: legal framework, institutional coordination, land-sea integration, implementation process, and sustainability principles. This approach ensured balanced consideration of all governance dimensions in the comparative assessment of MSP maturity.

As indicated above, for Namibia, the Marine and Coastal Management Act (2000) and the Namibian Ministry of Fisheries and Marine Resources' experience in integrated maritime space management were analyzed. For South Africa, the Marine Spatial Planning Act (2019) and the implementation programs of the Marine Spatial Plan (MSP) were considered, including public consultation processes, use mapping, and the integration of terrestrial and maritime policies (Guerreiro, 2022; Vermeulen-Miltz et al., 2023; Wanda et al., 2023; Carpenter-Kling et al., 2025).

This comparison enabled the identification of interministerial coordination mechanisms, participatory planning processes, and legal instruments that facilitate the effective implementation of MSP, offering lessons applicable to the Angolan context.

The methodological framework adopted combines documentary analysis, institutional mapping, and regional comparative assessment, as illustrated in Figure 2. The methodological process comprised four main stages: (i) review and analysis of the national legal framework, (ii) identification and mapping of the institutions involved, (iii) assessment of institutional fragmentation, land-sea integration, and intersectoral coordination, and (iv) comparison with regional best practices. This integrated approach enabled

the evaluation of the legal and institutional challenges of MSP in Angola, providing a systematic basis for recommendations to strengthen maritime governance.

For each stage, data were analyzed qualitatively using criteria of coherence, integration, and sustainability, considering multiple decision-making levels (national, provincial, and municipal) and sectors of interest (environment, fisheries, oil and gas, defense, and spatial planning). Analyses were triangulated with information from scientific literature, institutional reports, and international experience, ensuring robustness and consistency in interpreting the results.

To complement the documentary and institutional analyses, primary data were collected through fieldwork in the MSP pilot area of Palmeirinhas-Foz do Rio Tapado. Data collection involved direct observation, semi-structured interviews, and questionnaires administered to key stakeholders and local communities. A purposive stratified sampling strategy was adopted to ensure representation of the main actors involved in coastal and maritime governance. The sample comprised 75 respondents distributed across ten stakeholder groups, including representatives of the Angolan Navy and the Maritime Authority (Capitania), communal administrations of Destaque, Zangano, Barra do Cuanza, and Cabo Ledo, fisheries cooperatives, traditional authorities (Sobas), and local communities from Palmeirinhas and Tapado. The interview protocol was designed to gather information on institutional coordination, spatial planning practices, stakeholder participation, governance challenges, coastal resource management, and perceptions regarding the implementation of MSP in Angola. Attention was given to perceptions regarding stakeholder participation, institutional legitimacy, and local governance capacity, reflecting recent recommendations that emphasize social capacity as both a prerequisite and an outcome of equitable MSP processes (Jacob et al., 2023).

Qualitative information obtained from interviews, questionnaires, field observations, legislation, and institutional reports was analyzed using thematic content analysis. Data were coded and organized into four analytical dimensions: (i) institutional governance and coordination, (ii) legal and regulatory framework, (iii) stakeholder participation and conflict management, and (iv) MSP implementation challenges and opportunities. To strengthen analytical rigor, evidence from different sources was triangulated and cross-validated. The coding framework enabled the identification of recurrent governance barriers, overlapping institutional mandates, conflicts among maritime uses, and gaps in stakeholder participation, thereby supporting the interpretation of the MSPII and the MIFI. Next, Table 7 presents the input data used to calculate MSPII.

Table 7. Input values used for the calculation of the MSPII in Angola. Source: Authors (2026).

Dimension	Variable	Score
Legal Framework	L	0.30
Institutional Integration	I	0.40
Land–Sea Integration	TM	0.20
Intersectoral Coordination	C	0.25

The assigned scores reflect the results of the documentary review, institutional mapping, stakeholder consultations, and comparative assessment conducted in this study. Lower values indicate higher governance deficiencies and weaker alignment with internationally recognized MSP principles.

The analytical approach adopted is consistent with recent MSP studies that combine institutional analysis, stakeholder engagement, and governance assessment to evaluate planning effectiveness and implementation readiness (Reimer et al., 2023; Partelow et al., 2023). The interview guide, coding matrix, and inventory of analyzed documents are provided as supplementary materials to enhance transparency and reproducibility.

Furthermore, evaluation criteria adapted from international studies on MSP and coastal governance were applied, including indicators of: (i) clarity and scope of the legal framework, (ii) institutional effectiveness, (iii) land-sea integration, (iv) intersectoral coordination mechanisms, and (v) alignment with regional best practices (UNESCO-IOC, 2017; Finke et al., 2020). These indicators provided a structured basis for analysis and helped identify priorities for enhancing Angola's maritime governance.

This study was based on a combination of qualitative and comparative methods, integrating documentary analysis, institutional mapping, and an international case study. This approach enabled the study to: (i) identify legal and institutional gaps, (ii) assess the fragmentation of responsibilities among ministries and agencies, (iii) analyze deficiencies in land-sea integration, (iv) characterize intersectoral coordination challenges, and (v) propose recommendations based on best practices from the Benguela Current System.

The outcome is a comprehensive diagnosis of maritime governance in Angola, considering legal, institutional, and regional comparative factors, which underpins the discussion of challenges and opportunities for implementing a more effective, sustainable, and integrated MSP framework. Figure 2 presents a detailed flowchart of the methodological process, from data collection to comparative analysis and interpretation of results. The integration of documentary analysis, stakeholder consultations, field observations, and comparative assessment allowed methodological triangulation, enhancing the reliability and validity of the findings.

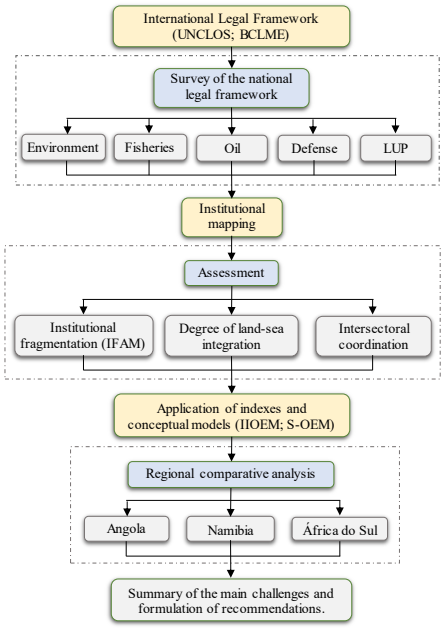


Figure 2. Flowchart of the methodological process. Source: Authors (2026).

3. Results and Discussion

The application of the MSPII enabled a systematic assessment of the legal, institutional, territorial, and intersectoral integration of MSP in Angola (Eq. 1). The results indicate generally low MSPII values, reflecting structural weaknesses in national maritime governance.

The L component (legal framework) shows particularly low values, as Angolan maritime legislation remains highly sectoral, primarily focused on resource exploitation and licensing, with limited incorporation of principles of integrated spatial planning, environmental sustainability, or an ecosystem-based approach. As highlighted in Table 1, the main legal instruments, including the Environmental Framework Law, the Aquatic Biological Resources Law, the Petroleum Activities Law, the National Defense Law, and the Territorial Planning Law, regulate specific sectors independently, without clear mechanisms for interconnection. This legal fragmentation hinders the operationalization of an integrated MSP model, contrary to the guidance of the United Nations Convention on the Law of the Sea (UNCLOS) and best practices promoted by the Benguela Current Commission.

The I component (institutional integration) of the MSPII also scores low, reflecting the dispersion of responsibilities across multiple ministries and public agencies. Table 2 shows that at least five ministries hold direct mandates over the maritime space, covering fisheries, energy and petroleum, environment, defense, and transport. The absence of a central authority with a clear coordinating mandate results in overlapping functions, duplicated procedures, and difficulties in joint decision-making.

The TM component (land-sea integration) is particularly critical. Although the Territorial Planning Law recognizes inland waters, the territorial sea, and the exclusive economic zone as resources subject to use and occupation, in practice, coordination between terrestrial and maritime planning instruments is weak. This gap is especially evident in coastal areas, where urban, port, tourism, fisheries, and petroleum activities coexist, often without integrated spatial criteria. The lack of integration compromises the sustainable management of sensitive coastal ecosystems and increases the risk of user conflicts.

Finally, the C component (intersectoral coordination) shows significant limitations. While technical groups and ad hoc cooperation mechanisms exist, they are not fully institutionalized and lack effective decision-making authority. Consequently, the aggregated MSPII value confirms that MSP in Angola remains at an incipient stage and requires structural reforms to achieve higher levels of integration.

The low MSPII values are consistent with findings reported in recent international assessments of maritime governance, which demonstrate that weak legal integration, fragmented institutional structures, and limited stakeholder engagement are among the principal barriers to effective MSP implementation in developing coastal states. Similar challenges have been documented across several emerging MSP jurisdictions, highlighting the importance of integrated governance frameworks and clearly defined coordination mechanisms.

The analysis of institutional fragmentation, operationalized through the MIFI (Eq. 2), reinforces the findings obtained with the MSPII. Given the high number of ministries with maritime responsibilities (N_m) and the limited number of formal coordination mechanisms (N_c), the MIFI is elevated, indicating significant institutional dispersion.

High levels of institutional fragmentation have also been recognized as a major obstacle to MSP implementation at the international level. According to recent governance studies, overlapping mandates, sectoral decision-making structures, and weak interagency coordination often reduce planning effectiveness and hinder the achievement of sustainability objectives.

This scenario translates into practical difficulties in implementing MSP, particularly in harmonizing sectoral policies, enforcing maritime activities, and managing conflicts between competing uses. For instance, coastal areas simultaneously subject to offshore petroleum exploitation and artisanal fisheries clearly illustrate the risks associated with the absence of effective institutional coordination. The lack of a specific legal framework for MSP exacerbates this situation, as it does not define clear hierarchies between uses or establish prioritization criteria based on environmental sustainability and public interest.

In addition, the absence of formal participatory mechanisms limits the ability of coastal communities, fisheries organizations, and other stakeholders to contribute effectively to decision-making processes. International experience demonstrates that inclusive governance arrangements improve legitimacy, reduce user conflicts, and strengthen long-term implementation outcomes in MSP processes. Institutional fragmentation also limits the State's capacity to respond in an integrated manner to emerging challenges such as climate change, coastal erosion, and degradation of marine habitats.

Recent research highlights that climate adaptation is becoming a central component of MSP frameworks worldwide. Coastal resilience, ecosystem restoration, and adaptive governance mechanisms are increasingly incorporated into planning processes to address sea-level rise, shoreline erosion, biodiversity loss, and climate-related risks affecting coastal populations and economic activities.

These issues require cross-cutting, intersectoral approaches that are difficult to reconcile with the predominantly vertical and sectoral governance models still in place in Angola.

The Sustainability Function of MSP (Eq. 3) facilitates discussion of the balance among three fundamental dimensions: Blue Economy (BE), Environmental Protection (EP), and Integrated Governance (G). Qualitative results indicate that, in the Angolan context, the BE variable carries a significantly higher weight than the others, reflecting the country's strong economic dependence on extractive maritime activities, particularly petroleum and gas. Similar patterns have been observed in several resource-dependent coastal economies, where MSP has been used to balance economic growth objectives with environmental protection and long-term sustainability. Recent studies emphasize the importance of incorporating economic valuation and Blue Economy principles into maritime planning to improve resource allocation and policy effectiveness.

In contrast, the EP variable shows a comparatively low weight, highlighting the limited integration of environmental measures within maritime planning instruments. Despite the existence of marine protected areas and environmental provisions in legislation, these have yet to be fully incorporated into a coherent spatial planning framework. The G variable, associated with governance quality, is also insufficient, owing to institutional fragmentation and the absence of a foundational MSP law.

Governance effectiveness has been identified as one of the most critical determinants of successful MSP implementation. Strong institutional leadership, transparent decision-making processes, and effective stakeholder participation mechanisms contribute significantly to planning performance and implementation success. This imbalance undermines the medium- and long-term sustainability of MSP, as intensifying economic activities without adequate spatial planning and environmental safeguards may degrade marine ecosystems and lead to the loss of essential ecosystem services. The results, therefore, emphasize the need to recalibrate the relative weights of the variables in Eq. 3 to promote a more balanced approach among economic development, environmental protection, and integrated governance. Emerging international approaches increasingly advocate integrating ecosystem accounting, sustainability indicators, and governance assessment tools into MSP frameworks to enable more balanced and evidence-based decision-making.

The application of the Comparative MSP Maturity Model (Eq. 3) highlights significant differences between Angola, Namibia, and South Africa. As shown in Table 3, South Africa exhibits the highest level of maturity, underpinned by a dedicated legal framework for MSP, centralized institutional structures, and strong integration between terrestrial and maritime planning. The implementation of Operation Phakisa and the Marine Spatial Planning Act has enabled the country to make consistent progress in integrated maritime spatial management.

Recent South African experiences further demonstrate the benefits of combining dedicated MSP legislation with geospatial decision-support systems, participatory planning processes, and ecosystem-based management approaches. Scientific mapping tools, scenario-based planning methodologies, and stakeholder engagement mechanisms have contributed significantly to strengthening marine governance and planning effectiveness.

Namibia occupies an intermediate position, adopting an approach based on policy instruments and strategic plans, with strong institutional centralization in the fisheries and marine resources sector. Although it does not yet have a dedicated MSP law, the country has made significant advances in the development of zonal plans and the establishment of clear sustainable development objectives.

The Namibian experience also illustrates the advantages of institutional centralization and long-term strategic planning in facilitating intersectoral coordination and reducing governance fragmentation, particularly within the context of the Benguela Current System. Angola, in turn, exhibits the lowest relative maturity level, reflecting the early stage of MSP implementation. The regional comparison demonstrates that the presence of dedicated legislation, clear interministerial coordination mechanisms, and effective land-sea integration are key determinants of MSP success, providing important reference points for the Angolan context.

The underlying data used for graphical representation reinforce the preceding conclusions. Figure 3, which compares the number of ministries with maritime responsibilities, highlights greater

institutional dispersion in South Africa relative to Namibia and Angola.

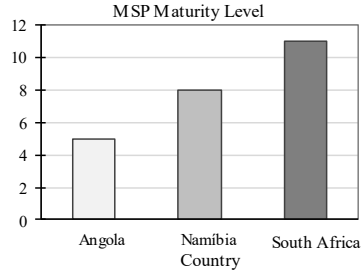


Figure 3. Number of ministries with maritime responsibilities in Angola, Namibia, and South Africa. Source: Authors (2026).

Figure 4, illustrating the MSP maturity level, confirms the relative positioning of the three countries, with Angola exhibiting significantly lower values.

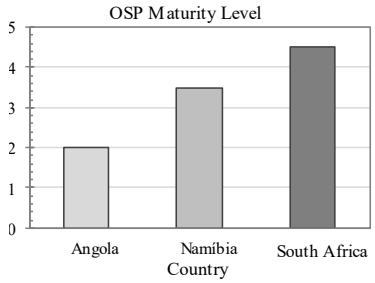


Figure 4. Comparative MSP maturity levels in the Benguela Current System. Source: Authors (2026).

The results confirm that the institutional and legal challenges of MSP in Angola are deeply interconnected. Legal and institutional fragmentation, weak land-sea integration, and limited intersectoral coordination constitute structural obstacles to the effective implementation of MSP. However, the regional comparative analysis demonstrates that these challenges are not insurmountable and that adaptable models and best practices within the BCLME context can inform the Angolan scenario. The comparative analysis further suggests that successful MSP implementation depends not only on legal reforms but also on the development of technical capacity, scientific knowledge, stakeholder participation, and adaptive governance systems that can respond to emerging environmental and socio-economic challenges.

Institutionalizing MSP as a standard operational procedure, as recommended by international experiences, requires political will, investment in technical capacity, and structural legal reforms. The establishment of a foundational MSP law, combined with strengthened interministerial coordination mechanisms and systematic integration of terrestrial and maritime planning instruments, is essential to foster more sustainable, efficient, and resilient maritime governance in Angola.

Building on lessons learned from neighboring countries in the Benguela Current System, the proposed MSP Framework Law for Angola should draw primarily on the South African Marine Spatial Planning Act (2019) while incorporating elements of Namibia's institutional coordination model. The framework should establish a National MSP Authority or Interministerial Council, mandatory marine zoning plans, stakeholder participation procedures, conflict-resolution mechanisms, and periodic review cycles.

A phased approach is recommended for MSP implementation in Angola. In the short term (1-2 years), priorities should include adopting an MSP Framework Law and establishing an interministerial coordination body. In the medium term (3-5 years), efforts should focus on developing regional marine spatial plans and strengthening land-sea integration. In the long term (5-10 years), a national monitoring system and periodic plan reviews should be implemented to support adaptive and sustainable maritime governance.

The proposed MSP Framework Law for Angola should be primarily inspired by the South African Marine Spatial Planning Act and incorporate Namibia's institutional coordination model. The law should establish: (i) a National MSP Authority or Interministerial Council; (ii) mandatory marine zoning plans; (iii) stakeholder participation procedures; (iv) conflict-resolution mechanisms; and (v) periodic review cycles every five years.

4. Conclusions

1. The integrated analysis of the legal and institutional framework for MSP in Angola indicates that the country is at an early stage of MSP maturity. This stage is characterized by a highly sectoral legal framework focused primarily on resource exploitation, with limited incorporation of principles of integrated spatial planning, environmental sustainability, and an ecosystem-based approach. The low values obtained in the MSPII confirm structural weaknesses across legal, institutional, land-sea, and intersectoral coordination dimensions.

2. The application of the MIFI revealed a high degree of dispersion of responsibilities among ministries and public agencies in Angola, compounded by a scarcity of formal coordination mechanisms. This institutional fragmentation undermines the effectiveness of maritime governance, hinders the harmonization of sectoral policies, and limits the capacity for integrated management of competing maritime uses, particularly in coastal areas subject to multiple economic and environmental pressures.

3. Land-sea integration emerged as a major constraint to the effective implementation of MSP in Angola. Weak coordination between terrestrial and maritime planning instruments compromises the sustainable management of coastal socio-ecological systems, increasing the risk of use conflicts and environmental degradation. These findings emphasize the need for formal mechanisms to promote spatial coherence between terrestrial and maritime policies.

Recent international experiences further demonstrate that effective land-sea integration should incorporate climate adaptation measures, coastal resilience strategies, and ecosystem-based management approaches to address cumulative environmental pressures and long-term sustainability challenges.

4. The comparison with Namibia and South Africa, within the Benguela Current System, highlighted that the presence of dedicated MSP legislation, clear institutional structures, and consolidated intersectoral coordination models are key factors in achieving higher levels of MSP maturity. South Africa presents an advanced and integrated model; Namibia shows an intermediate, consolidating model, while Angola remains at an initial stage with substantial potential for development. The experiences of South Africa and Namibia further demonstrate the importance of participatory planning processes, scientific decision-support systems, and coordinated governance structures as enabling conditions for successful MSP implementation.

This study presents several limitations that should be acknowledged. First, the MSPII and the MIFI were developed and applied as exploratory governance assessment tools and have not yet undergone external empirical validation in other geographical contexts. Second, although the study provides a comprehensive assessment of legal and institutional dimensions, it does not quantitatively evaluate the technical, financial, and human-resource capacities required for effective MSP implementation in Angola. Third, the structural dependence of the Angolan maritime economy on the oil and gas sector represents an important contextual factor that may influence future governance reforms and was not examined in detail. Fourth, while stakeholder perspectives were incorporated through field interviews and consultations, the analysis did not explicitly assess gender dimensions, social equity considerations, or the role of non-state actors in maritime governance.

Future research should therefore focus on the empirical validation and refinement of the proposed indices, the assessment of institutional and technical capacities for MSP implementation, the incorporation of climate adaptation and resilience indicators, and the evaluation of participatory governance mechanisms involving coastal communities, private-sector stakeholders, and civil society organizations. Additional studies integrating

GIS-based spatial analyses and ecosystem-service assessments would further strengthen the evidence base for MSP in Angola.

5. Overall, strengthening MSP in Angola requires structural legal and institutional reforms, including the adoption of a foundational MSP law, enhancement of interministerial coordination, systematic integration of terrestrial and maritime planning instruments, and progressive adoption of regional best practices under the Benguela Current Commission.

These measures are essential to promote more integrated, efficient, and sustainable maritime governance, aligned with the objectives of sustainable development and the Blue Economy. Furthermore, strengthening stakeholder participation, enhancing institutional capacity, and establishing permanent mechanisms for intersectoral dialogue should constitute central pillars of future MSP implementation in Angola.

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