



Oceans

Advancing sustainable use, conservation, and
climate action in oceans and coastal areas



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G20 Environment and Climate Sustainability Working Group - ECSWG Oceans: Advancing sustainable use, conservation and climate action in oceans and coastal areas

This technical paper is a result of discussions during the Environment and Climate Sustainability Working Group (ECSWG) meetings in 2024, supplemented by written inputs of the G20 member states, engagement with civil society, and technical support from experts. The Brazilian Presidency strived to address all feedback received including from G20 member states, but the paper remains the sole responsibility of the Brazilian government.

EXECUTIVE SUMMARY

Oceans play a vital role in global sustainability. The health of marine and coastal ecosystems is important for the sustainable use of marine resources and thus the resilience of societies. Efficient and participatory management of these ecosystems, which ensure health and provide various other benefits to humans, is critical.

In this context, the G20 countries should develop and implement global policies, respecting the particularities of each state, to promote more sustainable ocean management. To support sustainable ocean management, the Brazilian G20 Presidency proposes three key actions: (1) Promoting marine spatial planning (MSP); (2) integrating ocean-based climate actions in Nationally Determined Contributions (NDCs) and climate action plans, as appropriate and mindful of local and national circumstances; and (3) supporting the ratification of the Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction (BBNJ Agreement).

This technical paper highlights the benefits of implementing the proposed actions while also addressing the current challenges, particularly for developing countries. It underscores the importance of practices that enhance social well-being and reduce social and environmental vulnerabilities, particularly in coastal communities. By leveraging globally recognized



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management and planning strategies, this paper argues for advancing social, economic and ecological goals with ocean health as the foundational principle.

Marine spatial planning

Marine spatial planning (MSP) is a leading tool for managing the use of marine space and resources. It can foster synergies among sectors, reduce conflicts and promote benefits for society and the environment. In practical terms, MSP involves comprehensive mapping and planning of marine activities, with the aim of promoting sustainable and equitable use of marine resources.

Integrated coastal zone management (ICZM) is also a useful planning tool. Along with MSP, both tools provide a framework to ensure that marine coastal activities are managed according to the characteristics of the existing ecosystems. By integrating scientific data, stakeholder input and policy objectives, MSP and ICZM facilitate informed decision-making that supports the sustainability of oceans and coastal zones. In addition, MSP and ICZM are crucial for mitigating the impacts of climate change on marine and coastal ecosystems, identifying areas for conservation, reducing habitat fragmentation and enabling the sustainable use of natural resources.

The implementation of MSP and ICZM in G20 countries can serve as a model for other countries, demonstrating how coordinated planning efforts can lead to a balanced approach to ocean and coastal management. Since these tools have been implemented in many G20 Member States, there is a great opportunity for information and technical exchange.

Ocean-based climate actions in Nationally Determined Contributions and climate action plans

Nationally Determined Contributions (NDCs) are commitments made by countries under the Paris Agreement to reduce greenhouse gas emissions and adapt to the impacts of climate change. Climate action plans are economy-wide, country-owned strategic plans for how countries aim to decarbonize and enhance their resilience to the impacts of climate change.

Ocean-based climate actions within the framework of NDCs can include measures such as the protection and restoration of marine and coastal ecosystems, the development of renewable ocean energy sources and the reduction of maritime greenhouse gas emissions. These actions



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not only contribute to global climate goals, but also increase the resilience of marine ecosystems and coastal communities to climate impacts, having significant influence on the economic and social dimensions.

The inclusion of ocean-based action in NDCs also highlights the interconnection between climate and ocean health. By prioritizing ocean-based climate solutions—noting that defining NDCs is a sovereign prerogative sensitive to local and national circumstances—G20 countries would demonstrate leadership in promoting climate change mitigation and the sustainable use of marine resources.

Supporting the ratification of the BBNJ Agreement

The BBNJ Agreement is considered one of the main achievements of multilateralism in promoting the conservation and sustainable use of marine biodiversity. Its sophisticated architecture—including the establishment of funding mechanisms, benefit-sharing and the operationalization of capacity-building and technology transfer activities—attest to the potential of this legal instrument in relation to ocean governance in promoting global sustainability. Taking this into account, the G20 Brazilian Presidency supports the ratification of the BBNJ Agreement, highlighting the important role that the largest economies of the world may play in identifying and mobilizing funding to assist states in their legislative processes, particularly developing states.

In sum, the G20 Brazilian Presidency identifies the development of these three key actions as robust tools to promote effective ocean governance at global, regional, national and subnational levels.

Introduction

Oceans provide a wealth of resources and ecosystem services that are fundamental to maintaining natural, economic and social prosperity. The continuing decline of ocean health and the increasing impacts of climate change are driving potentially devastating outcomes for the economy, society and the environment. Oceans are warming at an alarming rate and becoming more acidic, sea levels are rising, oxygen levels in the oceans are decreasing and there is an increase in extreme weather events. As a result, the ability of oceans to provide vital ecosystem services such as food security, livelihoods, coastal protection, cultural heritage, wellbeing and continuing climate regulation and natural carbon sequestration is being compromised.

Due to the central role of oceans in regulating the planet's climate, and the cross-cutting contribution of oceans to achieving the United Nations Sustainable Development Goals (SDGs), especially Goal 13: Climate action and Goal 14: Life below water; the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement adopted thereunder; and the Convention on Biological Diversity and Kunming-Montreal Global Biodiversity Framework (GBF), there is growing international ambition to protect and restore marine ecosystems and deliver a sustainable blue/ocean-based economy (SBE).

The G20 Brazilian Presidency has proposed the following as expected outcomes: (1) Advancing marine spatial planning (MSP) and coastal and ocean management; (2) promoting ocean-based climate actions (referring to a set of strategies and initiatives aimed at leveraging the ocean's potential to mitigate climate change and adapt to its impacts [Gattuso *et al.* 2018]) in Nationally Determined Contributions (NDCs) and climate action plans; and (3) supporting the ratification of the Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction (BBNJ Agreement) through resource mobilization and the development of ocean literacy on marine biodiversity. These outcomes represent key actions to be supported by the G20 and potentially adopted by countries according to their vision and specific characteristics. These measures are in line with the work carried out under India's G20 presidency, as well as stimulating efforts to establish ocean-based climate actions.

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Oceans in past G20 discussions

Oceans have been discussed in the G20 in recent years. Marine litter has been an area of focus since the G20 Action Plan on Marine Litter under Germany's presidency in 2017. Japan's presidency in 2019 prioritized marine litter as a focal point, and established the G20 Implementation Framework for Actions on Marine Plastic Litter and the Osaka Blue Ocean Vision, which proposed to reduce pollution by marine plastic litter to zero by 2050, and which was continued by the Brazilian presidency. Ocean-related commitments in Saudi Arabia's presidency in 2020 focused on coral reef protection, conservation and restoration, and established the voluntary G20 Global Coral Research and Development Accelerator Platform. The Saudi Arabia presidency also reaffirmed the commitment to previous marine litter initiatives, including the Osaka Blue Ocean Vision.

Indonesia's presidency in 2022 set a foundation to advance understanding and action of the ocean-climate nexus through the G20 Action for Strong and Inclusive Recovery and G20 Partnership on Ocean-based Actions for Climate Mitigation and Adaptation, which has provided opportunities for cooperation and partnership to advance science, knowledge-sharing and technology transfer.

India's presidency in 2023 focused on the interconnection of ocean health and human wellbeing through an SBE framing, including the technical study *Accelerating the Transition to a Sustainable and Resilient Blue Economy*. The Chennai High-Level Principles for a Sustainable and Resilient Blue/Ocean-Based Economy (2023) were adopted, strengthening international coordination towards a sustainable blue economy.

Brazil welcomes the results of the other presidencies. The G20 Brazilian Presidency has explored how ocean-based activities can be integrated into climate actions, how area-based management tools can support SBE, especially for underrepresented social groups, and how to promote the mobilization of funds to support the ratification of the BBNJ Agreement, particularly for developing countries. During the 2nd Environment and Climate Sustainability Working Group meeting in Brasilia on April 11 and 12, 2024, G20 representatives welcomed Brazil's proposal. Despite different viewpoints on oceans, the importance of ocean-based

climate action was emphasized, as well as the role of the G20 in promoting good practices, the voluntary exchange of knowledge and technology and the importance of the BBNJ Agreement.

1. Marine spatial planning and the advancement of ocean and coastal zone management

Delivering well-designed and well-managed ocean-based climate actions that also complement and promote broader biodiversity and sustainability priorities at global, regional, national and/or subnational scales are critical to delivering an equitable transition to an SBE. The Chennai High-Level Principles seek to achieve “sustainable economic growth, protection, conservation, restoration and sustainable use of the marine environment, social equity, gender equality and human development.” Well-designed and well-managed ocean-based actions have a significant role to play in climate change mitigation and adaptation, as well as providing wider benefits for the environment, the economy and society that contribute to the delivery of an SBE.

As demand for ocean and coastal space and resources intensifies, so does the need for integrated, multi-sectoral, area and ecosystem-based management and decision-making to balance cross-sectoral interests, and to create pathways for sustainable growth that integrate ocean-based actions for climate while remaining adaptive to climate-driven changes in environmental, social or economic priorities. Establishing a coherent approach to ocean and coastal management is critical to promote the integration of climate change and biodiversity considerations across the full spectrum of decision-making taking into account national priorities and strategies.

Common approaches to area-based marine management include:

- Integrated coastal zone management (ICZM)
- Marine Spatial Planning (MSP)

ICZM can be described as “a continuous and dynamic process by which decisions are taken for the sustainable use, development and protection of coastal and marine areas and resources” (Cicin-Sain and Knecht 1998). ICZM gives significant voice and power to the management of coastal systems from a local perspective, allowing for contextually driven and informed decision-making. As a planning process, ICZM also integrates policy objectives from diverse

sectors to formulate a management plan. However, the spatial scale of ICZM is limited to the coastal zone, meaning that resources further afield are not included in management plans. ICZM also requires power to be devolved to a local authority, which can make it difficult to balance often complex and conflicting stakeholder priorities and deliver management (Shipman and Stojanovic 2007).

The United Nations Educational, Scientific and Cultural Organization (UNESCO) Intergovernmental Oceanographic Commission (IOC) has defined MSP as a “public process of analysing and allocating the spatial and temporal distribution of human activities to achieve ecological, economic and social objectives that are usually specified through a political process” (Ehler and Douvere 2009). MSP promotes ecosystem-based management to develop integrated, multi-objective marine plans using participatory approaches to decision-making to ensure equitable outcomes and foster buy-in for implementation. MSP can also be effective at supporting long-term adaptive management which is particularly important in the context of climate change. However, Brazil’s presidency recognizes that not all G20 members have adopted MSP strategies or are pursuing MSP activities.

While MSP and ICZM both involve an integrated approach to ocean and coastal planning in terms of uses and activities, the main difference between the two is the scales to which they are most effectively applied. It is important to recognize that countries have different approaches to development and the utilization of MSP and ICZM. Typically, ICZM is applied to nearshore and coastal areas, while MSP can be applied to much wider marine areas or Exclusive Economic Zones (EEZs). There are also differences between ICZM and MSP applications based on governance scales, approaches to stakeholder engagement and other key areas (Table 1).

Table 1: Key differences in the application of MSP and ICZM (Shipman and Stojanovic 2007; Jones *et al.* 2016; Ansong *et al.* 2017; United Nations Environment Programme 2018; European Spatial Planning Observation Network 2019)

	Marine spatial planning	Integrated coastal zone management
Spatial scale	MSP can be applied to much wider areas such as marine and coastal areas and EEZs.	ICZM is applied to coastal and nearshore areas including associated watersheds and river basins. In most countries this will

	(It is important to note that the United Nations Convention on the Law of the Sea constitutes the comprehensive legal framework for all activities in the oceans and seas.)	include demarcation from less than 1.1nm from the coastline to 3.6 or 12nm.
Governance scale	Mostly developed at the national scale and typically led by national governments with multi-agency or departmental support.	Mostly developed at a local geographic scope and led by local government and involves a multi-scale approach due to the complexity of responsibilities across the land-sea interface and the impacts of coastal activities.
Primary management focus	Sustainable use of all marine resources, addressing use conflicts, ensuring synergies across marine uses and equitable distribution of benefits.	Conflict management among various users in the coastal zone and minimize adverse impacts of users of coastal zones on the environment.
Approach to delivery	Requires comprehensive, multisectoral and long-term funding as well as capacity-building for effective delivery.	Mostly delivered as small-scale and short-term projects to address competing interests, sea-level rise, coastal erosion, flooding and alternative livelihood activities.
Legal basis	The relatively limited complexity of regulations and remits in marine areas and EEZs that can support making MSP legislation binding and having precedence over related policies.	The complexity of regulation and remits across the land-sea interface can limit legal provisions for undertaking an integrated approach to managing the coastal area. This can lead to a crude definition of the ICZM area and legal responsibilities on either side of the mean low/high water mark.
Stakeholder engagement approach	Top-down approach focusing mainly on national stakeholders and key marine and coastal sectors.	Bottom-up approach to engagement through coastal partnerships and coastal community advocacy.



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Given their effectiveness at different scales of governance and delivery, MSP and ICZM can provide complementary approaches to marine management that can help to facilitate the delivery of both ocean-based climate actions while also supporting climate-adaptive management. For example:

MSP can:

- play an important role in linking across sectors and marine areas to effectively allocate marine space for appropriate ocean-based climate actions, while identifying key social groups and promoting social inclusion
- support climate-adaptive approaches to management and planning, adjusting plans and interventions in response to climate-driven changes in environmental, social or economic priorities that affect the blue/ocean-based economy, enhancing climate resilience and justice.

ICZM can:

- support the delivery and implementation of ocean-based climate actions at local levels, such as the protection and restoration of coastal habitats
- enhance participatory decision-making, design and implementation of ocean-based climate actions to ensure relevance to the local context, buy-in and stewardship of local communities, promote climate justice and provide opportunities for capacity-building and sustainable livelihoods
- help to ensure equitable sharing of benefits (e.g. natural resources, land and sea use) and improve representation and inclusivity.

While both approaches offer crucial opportunities to promote ocean-based climate actions within marine planning and decision-making, it is important to understand where in these processes climate considerations can be best integrated.

1.1. Integrating ocean-based climate actions into marine spatial planning

Since ICZM and MSP are area-based tools, they can support the implementation of key ocean-based climate actions such as: (1) Conservation and restoration of marine and coastal ecosystems; (2) development of carbon capture and storage technologies; (3) enhancement of

coastal resilience; and (4) diffusion of sustainable fisheries and aquaculture practices. Table 2 provides a high-level overview of the main phases of an MSP process (adapted from the Marine Spatial Planning Global initiative [Ehler and Douvère 2009]) and some of the processes involved and key aspects linked to SBE and climate actions (Adapted from Frazão Santos *et al.* 2024).

Table 2. Key opportunities to integrate ocean-based actions into MSP (adapted from Frazão Santos *et al.* 2024)

Marine spatial planning phases	Steps	Processes
Plan	Organizing the process through pre-planning	<ul style="list-style-type: none"> ● Define planning area—definition/mapping of key ecosystems for restoration/conservation/natural carbon sequestration ● Foster meaningful inclusion of stakeholders—inclusion of underrepresented groups, social groups dependent on coastal ecosystems, groups in geographical vulnerability and risk
	Defining and analyzing existing conditions	<ul style="list-style-type: none"> ● Collection of relevant baseline data, including environmental and socioeconomic data, cultural and traditional knowledge ● Identification of underrepresented groups, their activity space and spatial interactions ● Assessment of climate change hotspots to implement appropriate mitigation and adaptation measures—infrastructure/coastal communities/ecosystems ● Recognition of possible adaptation strategies within existing sectors
	Defining and analyzing future conditions	<ul style="list-style-type: none"> ● Develop future scenarios to model expected climate-driven changes such as oceans circulation, extreme weather patterns, flooding, erosion and chemistry/shift in geography, as well as changes in fish and shellfish species distribution and populations ● Identify priority mitigation activities—ocean-based renewable energy ● Identify priority adaptation activities
	Preparing and approving the spatial	<ul style="list-style-type: none"> ● Evaluate trade-offs and synergies between existing management instruments and sustainable management strategies ● Identify areas suitable for effective, long-term adaptation and resilience interventions such as marine protected areas or restoration activities

	management plan	<ul style="list-style-type: none"> ● Integrate the plan into national and regional policy frameworks, ensuring coherence with climate plans and targets ● Develop social, environmental and economic indicators and targets for monitoring and evaluation and to inform adaptive management
Implement	Implementing and enforcing the spatial management plan measures	<ul style="list-style-type: none"> ● Coordination between authorities, organizations and sectors to ensure implementation of management strategies ● Promote adaptive management principles, capacity building and knowledge-sharing among stakeholders to enhance implementation, with special attention to coastal communities
Monitor	Monitoring and evaluating performance	<ul style="list-style-type: none"> ● Conduct regular reviews to assess performance in addressing climate-adaptive MSP ● Participatory monitoring—inclusion of different sectors and community representatives
Adapt	Adapting the spatial management process	<ul style="list-style-type: none"> ● Adoption in planning and management of adaptive approaches that include climate-driven changes in environment, social or economic aspects ● Inclusion of new climate-related knowledge in management and planning procedures

The analysis of existing conditions and predicted future scenarios for climate change impacts is important to establish the links between an SBE and future climate resilience, including the potential benefits of the economy for an SBE and for the achievement of the SDGs in the face of increasing climate change impacts. Good modelling and sectoral spatial planning are critical elements of the planning phase to deliver climate-resilient and equitable transitions as part of a coherent management framework.

The implementation phase will be directly associated with the plan's success. The proper development and agreement on the programs, mechanisms and indicators for the implementation will facilitate its acceptance and evaluation. Capacity-building activities here are crucial, allowing marine users to implement new practices and goals.

Monitoring and adaptation phases are key to assessing the plan's effectiveness and the need for new management measures. They also should inform decision-making and stakeholders. More importantly, due to the level of uncertainty of climate change impacts, adaptation will

communicate the detected changes in marine ecosystems and foster learning across policymakers and practitioners.

2. Ocean-based climate actions in Nationally Determined Contributions and climate action plans

Building on SDG 14: Life below water related to the conservation and sustainable use of oceans, seas and marine resources for sustainable development, oceans are widely known to be key to combating climate change and its impacts, aligned with SDG 13: Climate action. There is increasing global recognition of the vital role ocean-based action can play in climate change mitigation and adaptation, as well as the multiple benefits they offer towards biodiversity targets and the delivery of an SBE. Initiatives such as the mandate for an annual Ocean and Climate Change Dialogue under the UNFCCC and ongoing efforts under the United Nations Decade of Ocean Science for Sustainable Development are driving ambition to realize the potential of oceans and coastal ecosystems to help tackle global challenges as part of sustainable pathways.

December 2023 marked the adoption of the first Global Stocktake (GST) under the Paris Agreement, a milestone within the scope of the UNFCCC regime. The GST recognized the vital role of oceans and coastal ecosystems in supporting adaptation and mitigation to climate change and its impacts (Decision 1/CMA.5, paragraphs 35 and 56). The GST also identified that “Parties are not yet collectively on track towards achieving the purpose of the Paris Agreement and its long-term goals” (Decision 1/CMA.5, paragraph 2) and that the window for raising ambition is decreasing rapidly, highlighting the urgent need to increase climate ambition. Numerous climate action plans within the UNFCCC regime and the Paris Agreement, such as the NDCs, National Adaptation Plans, adaptation communications and Biennial Transparency Reports, can channel ambition and implementation. The NDCs are the national climate commitments made by countries under the Paris Agreement to the UNFCCC that detail what they will do to reduce greenhouse gas emissions, adapt to climate impacts and secure sufficient funding, as pathways to meet the global target of 1.5°C. The next round of NDCs, 9 to 12 months ahead of COP30 in Brazil, and the recent approval of the United Arab Emirates framework on Global Climate Resilience provide a vital opportunity for further examination of a range of ocean-based climate actions for mitigation and adaptation. Box 1 presents examples from Portugal and Indonesia on how to integrate the oceans into NDCs.

Box 1: Case study of ocean integration in NDCs and climate action plans

Learning from Portugal's experience

- Aiming to **reduce greenhouse gas emissions and protection and restoration of marine ecosystems**
- **Key implemented strategies:** Improve oceanic renewable energies; protect and conserve 30 per cent of marine ecosystems, including 10 per cent of full protection
- The country has established: **National Energy and Climate Plan (PNEC 2030)** and the **Carbon Neutrality Roadmap (RNC 2050)**
- **Current actions:** Accelerate decarbonization; investment in science and innovation; improve monitoring and oceans data infrastructure to better manage marine resources.

Learning from Indonesia's experience

- Focus on **blue carbon ecosystems** of mangrove and seagrass, with the country having 17 per cent of the world's reservoirs
- **Three major actions:** (1) Map the ecosystems; (2) inventory and mitigation actions; (3) formulate regulation
- **Accelerate the process of marine conservation:** (1) Expand and increase effectiveness of marine protected areas; (2) empower coastal communities; (3) strengthening regulations; (4) maintain blue carbon stock; (5) cooperation and involvement with local stakeholders.

Marine and coastal habitats such as coral reefs, mangroves, seagrass and inter-tidal saltmarsh provide a range of ecosystem services that are critical for climate change adaptation, mitigation and resilience, as well as maintaining vast stores of sequestered carbon. Damage, degradation or loss of these habitats presents serious consequences for climate change adaptation and resilience since they provide coastal protection from erosion, storm surges and flooding; important nursery grounds for fisheries; livelihoods for local communities; fisheries, fuel, food and water supply; and cultural and tourism benefits, as well the potential release of existing carbon stores because of disturbance.



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Climate-driven changes in ocean ecosystems and their functioning are also affecting the health, distribution and productivity of fish and shellfish stocks globally, affecting food security, livelihoods and the well-being of billions of people across the fisheries value chain and beyond. Table 3 includes several high-level examples of ocean-based actions that can be included in NDCs and climate action plans.

Economic tools have significant potential to support decision-making and the evaluation of the available strategies to include ocean-based climate actions in NDCs. These tools can indicate, albeit approximately, the ecosystems' benefits to different human groups. They include payments for environmental services, cost-benefit analysis and the System of Environmental-Economic Accounting that can support countries. By measuring the contribution of the environment to the economy, social well-being, jobs and livelihoods and the interaction between them, these tools can assist in the design of coastal and marine ecosystems' conservation and restoration measures, while indicating social and natural benefits. The use of these tools can also include the pursuit of social development strategies and measuring the benefits to relevant groups such as coastal communities and Indigenous Peoples.

Societal considerations must also be integral to ocean-climate action to ensure balanced and equitable outcomes and sustainable development. Climate impacts, as well as management interventions in the marine and coastal space, have far-reaching effects on often politically and socially under-represented groups and communities, including women, youth, Indigenous Peoples and local communities, particularly when those people are experiencing poverty. At the same time, many Indigenous cultures and local communities have deep-rooted links with nature, and their values, perspectives and practices can inform contextually relevant approaches and solutions for sustainable use and management.

Table 3. High-level examples of ocean-based climate actions that can be included in NDCs and their associated benefits for mitigation, adaptation and resilience and climate action plans

Action	Potential benefits
<p>Marine protected areas (MPAs) and other effective area-based conservation measures (OECM)</p> <p>Area-based management of habitats for conservation and protection through restrictive management measures that may limit harmful human activity</p>	<ul style="list-style-type: none"> ● Improving ecological resilience and ecosystem recovery ● Creating opportunities for sustainable livelihoods and community resilience to climate-related shocks ● Protecting areas important for equitable social development, e.g. cultural identity and traditional practices ● Enhancing coastal resilience by protecting habitats that protect against storm surges, coastal flooding and erosion ● Enhancing fisheries sector resilience by protecting and managing nursery grounds of important species ● Protecting existing coastal ecosystems to prevent the disturbance of existing carbon stores
<p>Habitat protection and restoration (mangrove, seagrass, coral reefs)</p> <p>Assisting the protection, recovery and resilience of coastal ecosystems by restoring optimum conditions, including reforestation or afforestation, invasive species control and soil erosion control</p>	<ul style="list-style-type: none"> ● Strengthening coastal resilience by supporting livelihoods, food and water supply, and disaster risk reduction ● Sustainable livelihoods and equitable outcomes ● Generating sustainable finance and disseminating technology and capacity-building initiatives ● Applying other available instruments and economic tools, such as carbon markets ● Enhancing coastal ecosystems' natural carbon capture/removal capacity
<p>Sustainable management of fisheries and aquaculture</p> <p>Maintaining or improving fish populations and ensuring the</p>	<ul style="list-style-type: none"> ● Promoting food security by reducing pressure on commercially important species populations from over-exploitation, improving their capacity to adapt and

<p>sustainable harvesting of fish and seafood stocks while adapting to climate-driven changes; promoting more sustainable techniques and gear</p>	<p>recover from climate related shocks and changing environmental conditions</p> <ul style="list-style-type: none"> • Enhancing coastal community resilience by increasing representation and equitable outcomes for Indigenous Peoples and Local Communities, women and other marginalized groups • Supporting economy-wide greenhouse gas emissions reductions (mitigation) and just transition pathways to net zero emissions
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3. The BBNJ Agreement

The BBNJ Agreement is centered on four main topics: (1) marine genetic resources and benefit-sharing issues; (2) area-based management tools, including marine protected areas; (3) environmental impact assessments; and (4) capacity-building and transfer of marine technology.

The establishment of area-based management tools, including marine protected areas for areas beyond national jurisdiction, is seen as one of the centerpieces for achieving the objectives of the BBNJ Agreement (as per Article 2).

On the other hand, the benefit-sharing issues arising from the utilization of marine genetic resources of areas beyond national jurisdiction and the capacity-building and transfer of marine technology measures have a double impact: in addition to the conservation and sustainable use of marine biodiversity, these measures promote ocean equity (Österblom *et al.* 2020; Bennett *et al.* 2021; Morgera *et al.* 2023). For example, the sustainable use of biological resources as a source of biotechnological applications has been identified as one of the main components of the blue economy. This market is growing exponentially, with a valuation of up to US\$5.86 billion by 2028, i.e. 4.2 per cent growth (Markwide 2023). The study of marine biodiversity has also promoted a better understanding of marine ecosystems, identifying possible solutions for addressing climate change. In other words, the advancement of marine scientific research and bioprospecting within the limits and parameters established by the BBNJ Agreement has the potential to promote a better balance between states, contributing to filling the scientific and technological gap between them. In this sense, the sophisticated architecture developed by the BBNJ Agreement, particularly the mechanism for access and benefit-sharing related to utilizing

marine genetic resources (Article 14) (De Lucia 2018; Bagley 2022; Long 2022; Zhivkoplías *et al.* 2023) and the CBTMT Committee (Article 46) (Harden-Davies and Snelgrove 2020; Woker, Roland Holst and Harden-Davies 2023; Harden-Davies *et al.* 2024), can be crucial tools in promoting the blue economy and combating the loss of marine biodiversity.

However, a recent study shows a long lag between adopting multilateral environmental agreements and their entry into force—as shown in Table 4 (Blasiak and Jouffrey 2024). This reality, if not combated with coordinated and urgent action, could be detrimental to the oceans and cause negative impacts on the activities carried out in them.

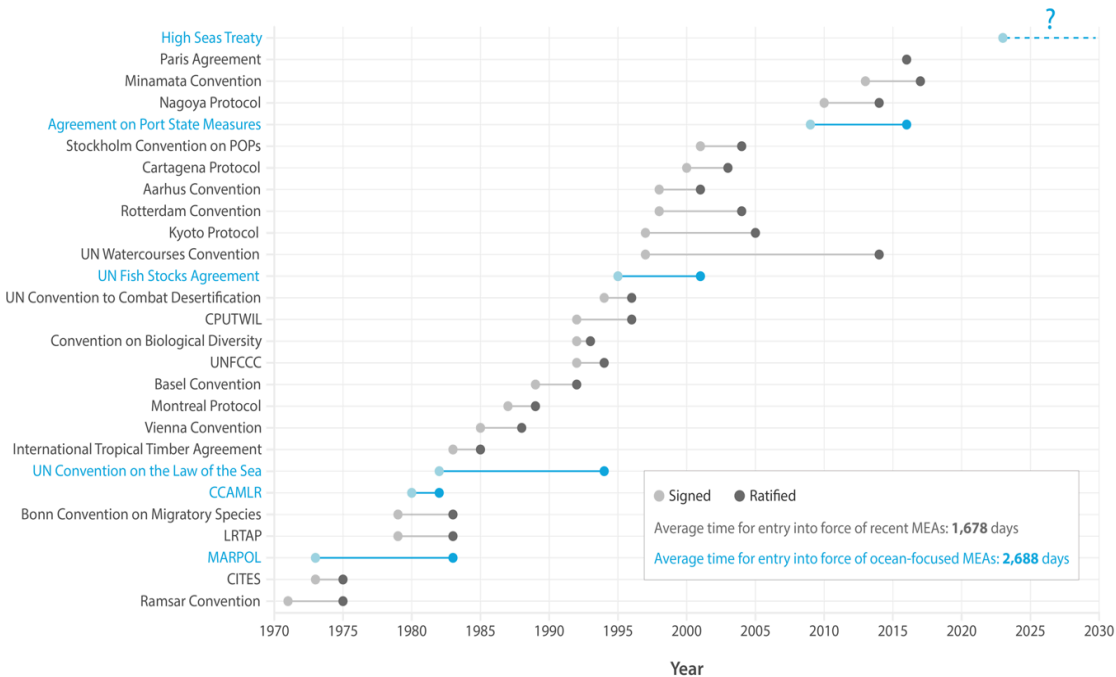


Figure 1: Study by Blasiak and Jouffray (2024) on the time lag between adopting Multilateral Environmental Agreements (MEAs) and their ratification.

The legal framework established by the BBNJ Agreement improves ocean governance and promotes more meaningful equity. The bodies and mechanisms created in the BBNJ Agreement have the potential value of integrating all state parties in the enjoyment of their rights and the fulfilment of their obligations.

The G20 can take measures to promote the swift ratification of the BBNJ Agreement. In this paper, three priority measures to achieve this goal are highlighted: (1) promoting ocean literacy

on the conservation and sustainable use of marine biodiversity of areas beyond national jurisdiction; (2) identifying actions mainly dedicated to information-sharing on potential benefits related to the BBNJ Agreement; and (3) identifying and mobilizing funds to assist developing states in self-identifying their needs for BBNJ Agreement ratification.

For a better understanding of these priority measures, Table 4 lists some (non-exhaustive) guidelines and examples of how substantive elements of ocean literacy can be used to promote the ratification of the BBNJ Agreement.

Table 4. Actions linked to building BBNJ Agreement ocean literacy (prepared by the authors, adapted from McKinley, Durdon and Shellock 2023)

BBNJ Agreement ocean literacy		
Dimension of ocean literacy	Description	Examples
Knowledge	Knowledge about the BBNJ Agreement, including aspects related to funding, capacity-building and marine technology rights holders	<ul style="list-style-type: none"> • MARIPOLDATA base, 2024 • ANCORS – AOSIS Report, 2020 • Marine Bioprospecting PATent (MABPAT) Database
Awareness	Awareness to identify problems and develop solutions and behaviors that may exist to solve these problems, including self-identified needs of states for ratification	<ul style="list-style-type: none"> • UN/DOALOS BBNJ Deep Dive Series
Attitude	Attitude relates to a level of agreement or concern with a particular position and how this can lead to political and social change	<ul style="list-style-type: none"> • G7 Declaration on BBNJ Agreement ratification

<p>Behavior</p>	<p>Behavior is related to decisions, choices, actions and habits with regard to ocean-related issues on various scales. Activities on a regional scale are significant initiatives in changing behavior.</p>	<ul style="list-style-type: none"> ● OPOC – BBNJ ratification, Domestication and Implementation Support Program ● CPLP capacity-building seminar for the implementation of the BBNJ Agreement
<p>Communication</p>	<p>Communication in the context of ocean literacy needs to be considered from various perspectives. Most prominently for the ratification of the BBNJ Agreement, communication needs to consider how institutions and organizations are communicating with different audiences about ocean issues.</p>	<ul style="list-style-type: none"> ● UN/DOALOS BBNJ toolkit
<p>Adaptive capacity</p>	<p>Adaptive capacity relates to a person’s capacity to adapt and respond to changing conditions relating to their oceans (e.g. relating to climate change, change in ocean economies or changing ecosystem structure or function).</p>	<ul style="list-style-type: none"> ● Interdisciplinary research (e.g. One Ocean Hub, Ocean Voices Programme) ● UN/DOALOS BBNJ Regional Workshops

In addition to the conceptual elements of ocean literacy highlighted, lessons learnt from countries that have already ratified the BBNJ Agreement can be incorporated.

Considering the relevance of the BBNJ Agreement for the conservation and sustainable use of marine biodiversity and the financial deficit of developing states to promote swift ratification, the G20 may consider creating a platform for registering initiatives linked to the ocean literacy table proposed for the BBNJ Agreement. Actions like this have the potential to push for the early entry into force of the BBNJ Agreement.

4. Recommendations and considerations

The recommendations and considerations included here are potential actions identified as relevant to advancing conservation and the sustainable use of coastal and marine biodiversity, and the sustainable blue economy and ocean management, for G20 countries and others. They are voluntary and should therefore be adapted to the vision, priorities and legislative processes of each country.

4.1. Marine spatial planning

1. Consider the implementation of area-based management frameworks such as MSP and ICZM, where applicable, as complementary approaches to sustainable marine and coastal management at different scales.
2. Foster integration of nature-based solutions and ecosystem-based approaches into marine and coastal decision-making, planning and adaptive management.
3. Conduct a rapid assessment (a practical strategy is being put into practice by the Marine Spatial Planning Global initiative to analyse the national conditions for implementing MSP) of the stage of MSP and/or ICZM development and implementation, identifying gaps and improvements needed, and defining a work plan to address those.
4. Identify social groups particularly vulnerable to loss of connection to, or dependence on, coastal and marine environments and natural resources through the ICZM and MSP framework processes. Vulnerable social groups can be defined as a “population within a country that has specific characteristics that make it at a higher risk of needing humanitarian assistance than others or being excluded from financial and social services. In a crisis such groups would need extra assistance, which appeals for additional measures, such as extra capacity, as part of the emergency phase of disaster management” (Kuran *et al.* 2020).
5. To make use of and implement other additional means to protect, conserve and restore ecosystems such as marine protected areas, other effective marine area-based conservation measures and Ramsar sites.

6. Stimulate initiatives for participatory mapping of nearshore uses, values and areas of cultural significance as appropriate (for example, areas of perceived biological values or cultural significance), including coastal, traditional and Indigenous communities.
7. Incentivize capacity building for social groups particularly vulnerable to loss and damage with connection to, or dependence on, coastal and marine environments and natural resources to support their decision-making contributions.
8. Encourage integration of MSP approaches in national and regional policy frameworks, as appropriate to national objectives, to facilitate the implementation of ocean-based climate actions, while also driving progress towards the Sustainable Development Goals and the Kunming-Montreal Global Biodiversity Framework, particularly recognizing the multiple benefits that can be achieved through well-designed interventions.
9. Foster meaningful collaboration, engagement and inclusion in decision-making across the full range of relevant stakeholders throughout the MSP process to enhance inclusivity, representation and stewardship.
10. Consider using economic tools, such as the System of Environmental-Economic Accounting, to evaluate conservation measures and trade-offs from different uses of natural resources.
11. Promote the equitable sharing of benefits (for example, natural resources, marine space) from an SBE transition and balance trade-offs in decision-making. Stakeholders should include, inter alia, local communities, Indigenous Peoples, non-governmental organizations, industry, and national and local decision-makers, across policy areas and sectors relevant to MSP and the transition to an SBE.
12. Invest in advancing socio-economic and environmental research, data collection, monitoring and evaluation to advance transformative ocean science and action in the context of the United Nations Decade of Ocean Science for Sustainable Development, including science and the knowledge, and the practices and sciences of Indigenous Peoples, in order to promote open and impartial scientific collaboration and knowledge exchange, underpinning the delivery of marine ecosystems conservation and restoration, climate-adaptive MSP, and the design and implementation of effective ocean-based climate actions in the context of the transition to an SBE.

13. Enable the interchange of information and experience obtained through national and supranational research programs on oceans and their role in the climate change process.
14. Enhance international and regional collaboration and information-sharing on MSP experiences and lessons learned, including through global initiatives such as the IOC-UNESCO, to facilitate voluntary knowledge and technology exchange. Support and promote capacity building and implementation.

4.2 Nationally Determined Contributions and climate action plans

1. Recognize the fundamental role of the oceans in achieving sustainable development, including SDG 13: Climate action.
2. Consider and analyse the range of options for integrating ocean-based initiatives in NDCs and climate action plans, recognising their critical contributions to climate change mitigation and adaptation.
3. Analyse possible benefits from the conservation and management of coastal ecosystems such as mangrove and seagrass.
4. Consider the use of economic tools to design and evaluate conservation and restoration measures.
5. Promote stakeholder engagement by fostering active engagement and collaboration inclusively in relation to ocean-based climate actions to ensure equitable outcomes and social inclusion.
6. Stimulate social participation and engagement of affected groups in marine protected areas evaluation, to better consider its contributions to ocean-based climate actions.
7. Foster collaboration and engagement in the establishment of conservation measures and the sustainable use of ocean resources as well as ocean research, while ensuring the inclusion of social needs identified within the national context.
8. Invest in science and technology to better measure coastal and marine ecosystems to adaptation, mitigation and natural carbon capture/removal.
9. Promote education and research in collaboration with other stakeholders to better understand the impacts of climate change at the local level and inform



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decision-making processes.

4.3 The BBNJ Agreement

1. Promote ocean literacy to accelerate the ratification process of the BBNJ Agreement.
2. Identify actions dedicated to increasing knowledge about the potential benefits related to conservation and the sustainable use of marine biodiversity in areas beyond national jurisdiction, including increased legal know-how and expertise, and targeted communication and information-sharing to promote broad and rapid ratification of the BBNJ Agreement.
3. Cooperate to understand the needs and priorities of states, especially developing states, to achieve ratification of the BBNJ Agreement in a spirit of enhanced multilateralism and international cooperation.
4. Identify and mobilize funds to develop institutional capacity and strengthen regional and international cooperation to support the rapid ratification of the BBNJ Agreement.

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