

THE ROLE OF THE BARCELONA CONVENTION PARTIES IN THE CONSERVATION OF SEAGRASS BLUE CARBON ECOSYSTEMS

Aligning international and regional commitments and initiatives

This policy brief addresses the ongoing regression of Mediterranean seagrass meadows, particularly *Posidonia oceanica*, increasingly threatened by climate change and human pressures. Despite international and regional commitments, effective action of the Barcelona Convention Contracting Parties (BARCON Parties) aligning national strategies with these frameworks is essential to ensure protection, restoration, and long-term resilience of seagrass meadows.

1. Five priority recommendations for Barcelona Convention Contracting Parties

The following key gaps and priority needs for seagrass protection and conservation were identified by members of the Mediterranean Posidonia Network during their regional meeting held in Hammamet, Tunisia, in May 2025. Protecting seagrass meadows is essential to safeguard biodiversity, strengthen climate resilience, and support coastal communities. These recommendations aim to accelerate science-based action and regional cooperation, ensuring that commitments translate into tangible outcomes.

Key Priorities:

1. Coordinated comprehensive mapping and monitoring of seagrass habitats
2. Strengthen legal protection and management measures
3. Scale-up restoration efforts
4. Develop sustainable financial mechanisms
5. Foster regional collaboration and knowledge exchange.

	Priority	Challenges	Recommendation(s)
1	Coordinated comprehensive mapping and monitoring of seagrass habitats	<p>Lack of standardized protocols: Inconsistent application of methods across time. Differences and lack of methodological standards, assessment methodologies and threshold values at the national level.</p> <p>Unclear monitoring efforts: Persistent uncertainty remains over what is being monitored, when, and where. The complexity of species and ecosystems requires diverse methods and specialized expertise, each with inherent limitations and field uncertainties. This underscores the urgent need for stronger coordination, investment in technological innovation, and the reinforcement of taxonomic expertise to ensure reliable and comprehensive monitoring.</p>	<p>Establish a harmonized, region-wide mapping of seagrass habitats to identify their extent, status, and main threats. High-resolution seagrass spatial data should be integrated into national MSP and ICZM plans (under the ICZM Protocol of the Barcelona Convention) and be accessible to relevant stakeholders.</p> <p>In parallel, develop standardized monitoring protocols to ensure consistent, long-term tracking of seagrass condition and trends, with results feeding into adaptive management and policy decisions.</p>

	Priority	Challenges	Recommendation(s)
2	Strengthen legal protection and management measures	<p>Implementation gap: Although <i>Posidonia oceanica</i> is broadly mentioned in policy frameworks at different scales (see Table 1.), effective policy implementation remains a significant challenge on the ground.</p> <p>Misunderstood policy needs: General lack of clarity regarding policy requirements (e.g., policy coherence and indicators and threshold values defining GES of species populations). Marine biodiversity programmes remain fragmented, with overlapping reporting deadlines and periods, highlighting the need for greater optimisation and alignment.</p>	<p>Implement and enforce existing Mediterranean, EU and national policy frameworks to ensure the effective protection of <i>Posidonia oceanica</i> meadows. This includes enforcing no-anchoring zones, regulating coastal infrastructure and controlling nutrient runoffs.</p> <p>In parallel, clarify and harmonize policy requirements by ensuring policy coherence and developing standardized indicators, threshold values and reporting frameworks.</p>
3	Scale-up restoration efforts	<p>Pollution management gaps: Pollution sources, both inland and at sea, remain insufficiently identified and regulated. Ongoing anthropogenic pressures hinder restoration of degraded <i>Posidonia</i> seagrass beds, delaying progress towards conservation objectives.</p> <p>Restoration must be scaled up when the ecological conditions are met.</p>	<p>Efforts to reduce sources of pollution must continue as long as seagrass degradation and loss persist in the Mediterranean, and must be aligned with the EU Nature Restoration Regulation framework.</p> <p>Support science-based seagrass restoration initiatives and ensure that specific restoration measures are embedded in national biodiversity and climate adaptation strategies and plans.</p> <p>Passive restoration should be prioritized as the standard approach, while active restoration may complement efforts in well-justified cases, following the Active Restoration Guidelines developed by the MPN.</p>

	Priority	Challenges	Recommendation(s)
4	Develop sustainable financing mechanisms	Funding gap: The financial needs for <i>Posidonia oceanica</i> conservation are estimated to be around €336 million per year, while only €17 million is currently available. This leaves a €319 million funding gap, and actions are usually financed through short-term projects, which is unsustainable. ¹	Create and/or integrate financial mechanisms to support long-term seagrass conservation and restoration efforts – e.g., blue carbon/nature credits, innovative finance models – and facilitate access to funding for local communities.
5	Foster regional collaboration and knowledge exchange	Fragmented efforts and lack of coordination: Conservation of <i>Posidonia oceanica</i> varies greatly across the Mediterranean, with uneven levels of protection and management. There is a clear need for coordinated action, including exchanges of management experiences, governance models, and good practices, as well as harmonized approaches and methodologies to ensure consistency and effectiveness at the regional scale.	Strengthen regional networks such as the MPN and MedPAN to enhance collaboration and capacity building across borders, through joint conservation and restoration initiatives, regional platforms or joint monitoring programmes. Renew a dedicated regional Action Plan under the Barcelona convention framework and the SAPBIO Strategy.

¹ Blue Seeds, Mediterranean Posidonia Network, WWF Mediterranean and OFB (2024). Consultancy study to identify financial flows and existing financing mechanisms towards the protection and restoration of seagrass Blue Carbon ecosystems in the Mediterranean Sea (not available online).



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Anchoring damage to *Posidonia oceanica*. Photograph courtesy of OFB - Office Français de la Biodiversité.

2. Seagrass meadows: importance, status and needs in the Mediterranean region

Seagrass meadows are essential marine ecosystems with global ecological importance. They provide habitat for diverse species, protect coastlines, and contribute to climate change mitigation. Serving as **biodiversity hotspots and nursery grounds**, they support threatened species and sustain fisheries, reinforcing food security and local livelihoods. Their dense canopies help prevent erosion, promote sediment deposition, and act as significant blue carbon sinks, storing nearly one fifth of the world's oceanic carbon. This **remarkable capacity for carbon capture and long-term storage** makes seagrass habitats essential for meeting global climate objectives. In addition, seagrasses enhance water quality by filtering nutrients and sediments, reducing the risk of eutrophication. Safeguarding and restoring these ecosystems is critical for marine health and the resilience of coastal communities.

Across the Mediterranean, seagrass meadows are facing a **mixed conservation status**. While some species, such as *Cymodocea nodosa* and non-native species like *Halophila stipulacea* are expanding, others like *Posidonia oceanica* have experienced a significant regression, with **regional losses estimated at 34% over the past 50 years**. This decline is driven by a combination of factors: climate change, including rising sea temperatures, weakens sensitive species such as *Posidonia oceanica* while facilitating the spread of invasive species. At the same time, increasing human pressures – **particularly anchoring** from recreational boating, coastal development, bottom trawling, and marine pollution – continue to degrade these habitats in the Mediterranean's heavily touristic and activity-intensive coastal areas. The loss of *Posidonia oceanica* meadows is especially concerning. As an endemic species and the most ecologically important seagrass in the region, it **covers approximately 20,000 km² of the Mediterranean seabed** and provides numerous ecosystem services. Protecting these meadows from current and emerging threats is therefore an urgent priority, requiring coordinated regional action and robust conservation measures to safeguard their ecological integrity and the benefits they provide.

3. International and Mediterranean commitments towards the protection of seagrass blue carbon ecosystems

Because of their ecological importance and role in ecosystem functioning, seagrass meadows benefit from a conservation framework for their protection at international and mediterranean scales. This framework is composed of a series of international commitments and regional instruments, including the following:

- The inclusion of seagrass ecosystems in the Convention on Biological Diversity (1993)
- Inclusion of upper parts of *Posidonia oceanica* under the RAMSAR Convention (1975)
- Inclusion of various seagrass species (*Posidonia oceanica*, *Zostera marina*, *Cymodocea nodosa*) under the Bern convention (1979/1996)
- The EU Nature Restoration Law (2024/1991) mentioning specific ecosystems such as seagrass meadows
- Reference to seagrass protection and restoration in the UN's Decade's ecosystem restoration goals (2021-2030)
- The inclusion of seagrass meadows through the Good Environmental Status (GES) under the Marine Strategy Framework Directive (2008/56/EC) and the Water Framework Directive (2008/98/EC)
- The designation of seagrass meadows as a priority habitat under the EU Habitats Directive (92/43/EEC)
- The protection of *Posidonia oceanica* meadows under the Common Fisheries Policy (Regulation (EU) No 1380/2013)
- A dedicated Mediterranean Action Plan including seagrass ecosystems under the Barcelona Convention (BARCON - 1976/1995)
- Post-2020 SAPBIO and related protocols, with explicit goals and targets for ecosystem restoration
- Specially Protected Areas/ Biological Diversity (SPA/BC) Protocol (1995) explicit mention of seagrass in preamble; implied in species recovery and invasive species control
- Integrated Coastal Zone Management (ICZM) Protocol (2008), through clear references to restoration of coastal ecosystems and habitats
- Union for the Mediterranean (UfM) Ministerial Declaration on Environment and Climate Action (2021) through the explicit support of ecosystem restoration

Table 1. Main international and regional commitments and instruments towards seagrass protection.

At national and local levels, seagrass meadows in the Mediterranean benefit from targeted protection and regulatory measures addressing specific threats and activities. For instance, the Posidonia Decree in the Balearic Islands, Spain, prohibits anchoring on *Posidonia oceanica* meadows throughout the archipelago, while in the French Riviera, designated zones explicitly ban anchoring on *Posidonia oceanica* meadows to safeguard these habitats.

4. The role of Member States

BARCON Parties play a key role in advancing the conservation of seagrass blue carbon ecosystems across the Mediterranean region. By aligning national strategies with regional and international frameworks, **BARCON Parties are central to increasing the protection of seagrass meadows** across the region. Under the Paris Agreement, for example, the integration of seagrass meadows into **Nationally Determined Contributions** (NDCs) as nature-based solutions – recognizing their exceptional carbon storage capacity – can contribute to stronger national-level protection. Additionally, the **Kunming-Montreal Global Biodiversity Framework** (GBF), adopted in 2022, sets out ambitious objectives to halt biodiversity loss and restore ecosystems by 2030. Seagrass meadows fall directly under several GBF targets, such as protecting 30% of marine areas, safeguarding ecosystem services, and restoring degraded habitats; **restoration** is also embedded within the Barcelona Convention System, with multiple references in the **Post-2020 SAPBIO and related protocols and reaffirmed in the Ministerial Declaration of COP 23**. At a broader scale, restoration efforts should also be aligned with the EU Nature Restoration Regulation framework. BARCON Parties are expected to embed these global targets within their national biodiversity strategies, creating opportunities to increase seagrass conservation within broader environmental priorities. By aligning NDCs and GBF commitments with regional instruments like the Barcelona Convention, BARCON Parties can ensure coherent, impactful action to safeguard these habitats. BARCON Parties can additionally contribute to seagrass conservation through/by developing **National Adaptation Plans** (NAPs) and **National Biodiversity Strategies and Action Plans** (NBSAPs) and integrating *Posidonia oceanica*, recognizing its role as a nature-based solution for climate adaptation. Seagrass meadows mitigate coastal erosion, stabilize sediments, and enhance shoreline resilience, making them a strategic asset for ecosystem-based adaptation in coastal zones.

5. The Barcelona Convention framework for action

BARCON Parties play a central role in advancing the conservation of seagrass blue carbon. The Barcelona Convention provides a framework for the conservation of seagrass blue carbon ecosystems across the Mediterranean, enabling Parties to align their national efforts with global biodiversity and climate goals. This alignment is supported by various key instruments: the **Post-2020 SAPBIO**, which offers actionable, target-driven guidance to strengthen national and regional strategies. Seagrass ecosystems are referenced in its vision and restoration-related targets, emphasizing their ecological importance. The **ICZM Protocol**, as a legally binding instrument, promotes integrated coastal zone management and the protection of marine habitats. While seagrass meadows are not explicitly named, they fall under the broader scope of sensitive coastal and marine ecosystems. The **MSSD** (2026-2035) and specifically Objective 2 – **Flagship initiative for Posidonia** led by SPA/RAC (to be validated at COP 24), aim to scale-up conservation and restoration measures, mobilize sustainable financing and mainstreaming seagrass protection into national strategies. The MSSD provides an integrative policy framework for translating international commitments, such as the Sustainable Development Goals (SDGs) into regional and national legislations and a platform for transboundary cooperation. Its implementation is followed using the [**Mediterranean Sustainability Dashboard**](#) made of 28 indicators and updated every two years. By leveraging these tools, Barcelona Convention Parties can coordinate efforts to better protect and restore seagrass meadows, recognizing the vital role they play in climate adaptation, carbon sequestration, and biodiversity enhancement. To consolidate these efforts, BARCON Parties could be invited to renew and adopt a dedicated regional Action Plan on seagrasses under the Barcelona Convention and the Post-2020 SAPBIO Strategy, ensuring harmonized approaches, shared governance models and consistent restoration targets across the Mediterranean. Seagrass-related indicators could be included in the MSSD dashboard (under [Sea and Coast](#)) in line with a dedicated Action Plan and the Post-2020 SAPBIO to monitor effectively the evolution (surface area, ecological condition) of conservation and restoration measures of key species such as *Posidonia Oceanica*.

6. The role of the MPN in aligning international and Mediterranean initiatives

Aligning international commitments with Mediterranean initiatives is essential to ensure that conservation objectives are effectively translated into national legislation and implemented in a coherent and harmonized manner. The **Mediterranean Posidonia Network** (MPN) plays a central role in this process by acting as a regional hub for seagrass conservation, bringing together a diverse community of experts – including NGOs, national authorities, research institutions, and MPA managers with MedPAN – from across the Mediterranean. Through its collaborative structure and its **flagship status under the MSSD** (“Protection and restoration of seagrass meadows as crucial ecosystems”), it underscores the strategic importance of harmonizing national policies, regulatory frameworks, and monitoring systems across BARCON Contracting Parties to advance shared commitments under international and Mediterranean environmental agreements. **MPN supports the implementation of key frameworks** such as the ICZM Protocol and the Post-2020 SAPBIO, while contributing to global initiatives like the 2030 Seagrass Breakthrough. It also complements European legislation such as the **EU Nature Restoration Regulation**, which sets binding targets to restore degraded ecosystems, including marine habitats, by 2030.

By promoting its guiding principles – long-term financing, expanding effective protection, and accelerating restoration – the MPN supports BARCON Parties in aligning their national strategies with international objectives. Its roadmap and active participation in policy-oriented projects like **Community for Nature** and **ARTEMIS** (Interreg Euro-MED programme) further strengthen its contribution to regional initiatives, funding mobilization and concrete actions. Through this integrative role, MPN supports BARCON Parties to **translate global commitments into context-specific actions**, by promoting sustainable anchoring practices, harmonizing marine policies and advancing sustainable restoration techniques.

MEDITERRANEAN POSIDONIA NETWORK

The MPN brings together 200 members to develop concrete solutions to increase each country's capacity-building to better protect *Posidonia oceanica* and prevent its future degradation. It gathers authorities, scientists, environmental organizations, professionals including yachting agencies and marinas from 11 Mediterranean countries. The MPN action Roadmap contributes to the implementation of the Posidonia Flagship Initiative under the Barcelona Convention



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