ARTEMIS | Interreg Euro-MED | Co-funded by the European Union

ARTEMIS

Accelerating the Restoration of Seagrass Meadows in the Mediterranean area through Innovative ecosystem-service based Solutions

Euro-MED0200867

D.4.2.1

Annex: Policy Recommendations for ARTEMIS Pilot sites

https://artemis.interreg-euro-med.eu

Deliverable 4.2.1.

Project acronym	ARTEMIS
Project title	Accelerating the Restoration of Seagrass Meadows in the Mediterranean area through Innovative ecosystem-service based Solutions
Project mission	Natural Heritage
Project priority	Greener MED
Specific objective	RSO2.7: Enhancing protection and preservation of nature, biodiversity and green infrastructure, including in urban areas, and reducing all forms of pollution
Type of project	Test project (Thematic Project)
Project duration	01/01/2024 – 30/09/2026 (33 months)
Deliverable title	Policy Recommendations
Deliverable number	D.4.2.1
Deliverable type	Recommendations
Work package number	4
Work package title	Policy, governance and impact
Activity name	Enhancing Seagrass Ecosystem Services Integration through Policy and Advocacy
Activity number	4.2

Partner in charge

Plan Bleu and The Green Tank

Main Author(s):
Dimitra Syrou, Ioli Christopoulou, The Green Tank
Arnaud Terrisse, Alice Wittevrongel, Plan Bleu

Partners involved

Contributors and Reviewers: All partners

Plan Bleu, The Green Tank, Hellenic Centre for Marine Research (HCMR), Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), Mediterranean Coast and Sea Foundation (MEDSEA), Minorcan Institute of Studies – Socio-environmental Observatory of Menorca (IME-OBSAM), Municipality of Monfalcone, ECOACSA, EY Denkstatt, Bax & Company.

Document history

Versions	Date	Document status	Delivered by
Version 1.0	15/05/2026	Draft 1	Plan Bleu & The Green Tank
Version 2.0	19/06/2026	Final Draft	Plan Bleu & The Green Tank

Executive Summary

Posidonia oceanica meadows are among the Mediterranean's most valuable natural assets. They support biodiversity, stabilize coastlines, sustain fisheries and tourism, improve water quality, and store significant amounts of carbon. Yet, despite decades of legal protection, these ecosystems continue to decline across the region due to cumulative pressures from coastal development, anchoring, pollution, maritime activities, and climate change.

This report presents the **site-specific policy recommendations developed through the ARTEMIS pilot sites in Greece (Crete), Italy (Monfalcone and Sardinia), and Spain (Menorca)**. It complements and is an Annex to the overarching ARTEMIS Policy Recommendations report by focusing on the practical realities of implementing restoration at local and regional levels. The pilot sites demonstrate that **restoration is no longer a purely scientific or environmental issue. It is increasingly a governance, financing, and implementation challenge**. Across all case studies, a common pattern emerges: **while scientific knowledge, legal protection frameworks, and stakeholder awareness are relatively advanced, restoration implementation remains fragmented, under-financed, and largely dependent on short-term project funding.**

The ARTEMIS experience confirms that effective restoration requires more than isolated pilot actions. Long-term success depends on **integrating restoration into marine spatial planning, biodiversity policy, climate strategies, and coastal development frameworks**. It also requires **clearer institutional responsibilities, predictable financing, robust monitoring systems, and stronger coordination between public authorities, scientific institutions, local communities, and economic sectors**.

The case studies reveal important differences across contexts:

- In **Crete (Greece)**, the Atzikiari Bay pilot site highlights the consequences of long-term habitat degradation caused by fish farming activities and demonstrates the need for a dedicated national restoration framework capable of translating legal commitments into operational procedures.

- In **Monfalcone (Italy)**, the focus shifts from traditional Posidonia restoration toward the conservation and management of ecologically important seagrass systems dominated by *Cymodocea nodosa*, *Zostera spp.*, and *Ruppia spp*. The case illustrates the need for flexible restoration

policies adapted to local ecological realities and spatial planning conditions.

- In **Sardinia (Italy)**, the Capo Testa – Punta Falcone Marine Protected Area demonstrates the benefits of combining active restoration measures with passive protection tools such as anchoring regulation, surveillance systems, and marine protected area management.

- In **Menorca (Spain)**, strong protection frameworks and high public awareness coexist with slow ecosystem recovery and fragmented restoration implementation. The case illustrates the need to transition from reactive, project-based restoration toward a long-term regional restoration programme integrated with climate and marine governance objectives.

Stakeholder engagement carried out across the pilot sites further demonstrates broad recognition of the ecological and socio-economic value of seagrass ecosystems. However, stakeholders consistently identified major implementation barriers, including fragmented governance, insufficient institutional coordination, bureaucratic complexity, limited long-term financing, and weak operational guidance for restoration delivery. While innovative financing approaches such as Payments for Ecosystem Services (PES), blue carbon mechanisms, and voluntary market instruments are increasingly viewed positively, stakeholders also stressed that such mechanisms require strong governance safeguards, scientific credibility, and public oversight. The ARTEMIS pilot sites, therefore, provide an important practical lesson for Mediterranean restoration policy: protection alone is no longer sufficient. **Restoration must become an operational, long-term, and investment-ready policy priority supported by coherent governance frameworks and stable financing mechanisms.**

Based on the evidence generated across the pilot sites, this report identifies **six overarching priorities** for advancing site-level restoration implementation across the Mediterranean:

1. **Strengthen national and regional restoration governance frameworks** with clear institutional responsibilities and operational procedures.

2. **Integrate restoration into marine spatial planning, protected area management, climate policy, and coastal development strategies**.

3. **Expand long-term monitoring, habitat mapping, and ecological assessment systems to support science-based decision-making**.

4. **Ensure predictable and sustained financing** through stronger integration of restoration into public funding frameworks and strategic investment planning.

5. **Develop carefully governed complementary financing mechanisms,** including PES schemes, blue carbon approaches, and voluntary private contributions.

6. **Embed stakeholder participation and local engagement throughout restoration planning, implementation, and monitoring processes.**

The ARTEMIS experience demonstrates that large-scale restoration of Mediterranean seagrass ecosystems is both feasible and necessary, but only if restoration evolves from isolated interventions into coordinated, long-term public policy. The pilot sites provide practical evidence and transferable lessons that can support Member States, regional authorities, and Mediterranean stakeholders in implementing the EU Nature Restoration Regulation and advancing marine ecosystem recovery across the region.

Table of Contents

Contents

List of tables and figures

List of definitions/acronyms

ARTEMIS	Accelerating the Restoration of Seagrass Meadows in the Mediterranean area through Innovative ecosystem-service based Solutions
BBNJ	Biodiversity Beyond National Jurisdiction Agreement (High Seas Treaty)
CBD	Convention on Biological Diversity
C. nodosa	Cymodocea nodosa
ES	Ecosystem Services
EU	European Union
GBF	Kunming–Montreal Global Biodiversity Framework
HCMR	Hellenic Centre for Marine Research
LIFE Programme	EU funding instrument for environment and climate action
MPA	Marine Protected Area
MSFD	Marine Strategy Framework Directive
Natura 2000	EU-wide network of protected areas established under the Birds and Habitats Directives
NbS	Nature-based Solutions
NRR	Nature Restoration Regulation
P. oceanica	Posidonia oceanica
PAF	Prioritised Action Framework
PES	Payments for Ecosystem Services
PNRR	National Recovery and Resilience Plan (Italy)
SAC	Special Area of Conservation
SCI	Site of Community Importance
SNPA	National System for Environmental Protection (Italy)
SPA	Special Protection Area
SPAMI	Specially Protected Areas of Mediterranean Importance
U1	Unfavourable–Inadequate conservation status under the EU Habitats Directive
UNFCCC	United Nations Framework Convention on Climate Change
WFD	Water Framework Directive

Introduction

This document presents the **policy-relevant findings and recommendations derived from the ARTEMIS pilot sites**, complementing the overarching policy analysis developed in the main Policy Recommendations report. While the main report examines the ecological, legislative, and financial dimensions of P. *oceanica* restoration at the European and Mediterranean scales, this document focuses on the practical application of these insights at the national and site levels.

The **pilot sites in Greece (Crete), Italy (Sardinia and Monfalcone), and Spain (Menorca)** serve as real-world laboratories where restoration actions, stakeholder engagement, and governance approaches are tested and evaluated. These case studies provide valuable evidence on the challenges and enabling conditions for implementing restoration in diverse ecological, institutional, and socio-economic contexts.

By analysing site-specific ecological conditions, regulatory frameworks, stakeholder perceptions, and ongoing restoration efforts, this document bridges the gap between high-level policy recommendations and on-the-ground implementation. It highlights how general policy principles translate into practice, identifies context-specific barriers and opportunities, and formulates targeted recommendations to support effective and scalable restoration of Posidonia oceanica meadows.

Ultimately, this report aims to inform policymakers, practitioners, and stakeholders by grounding policy guidance in empirical experience, thereby contributing to the development of coherent, actionable, and context-sensitive restoration frameworks across the Mediterranean.

ARTEMIS Case Studies

1.1. Greece

P. oceanica status at the national and site level

In Greece, according to the most recent available data, reported under Article 17 of the Habitats Directive, *P. oceanica* is considered to be in an **unfavorable/ inadequate condition (U1)**[1] with unfavorable prospects. According to the Assessment of the Environmental Status of the Marine Sub-Regions of Greece for the Period 2018–2023, under the MSFD reporting, the status of *P. oceanica* beds is assessed as **Good** in **86% of the North Aegean**, **83% of the Ionian Sea**, and **59% of the Central Aegean**.

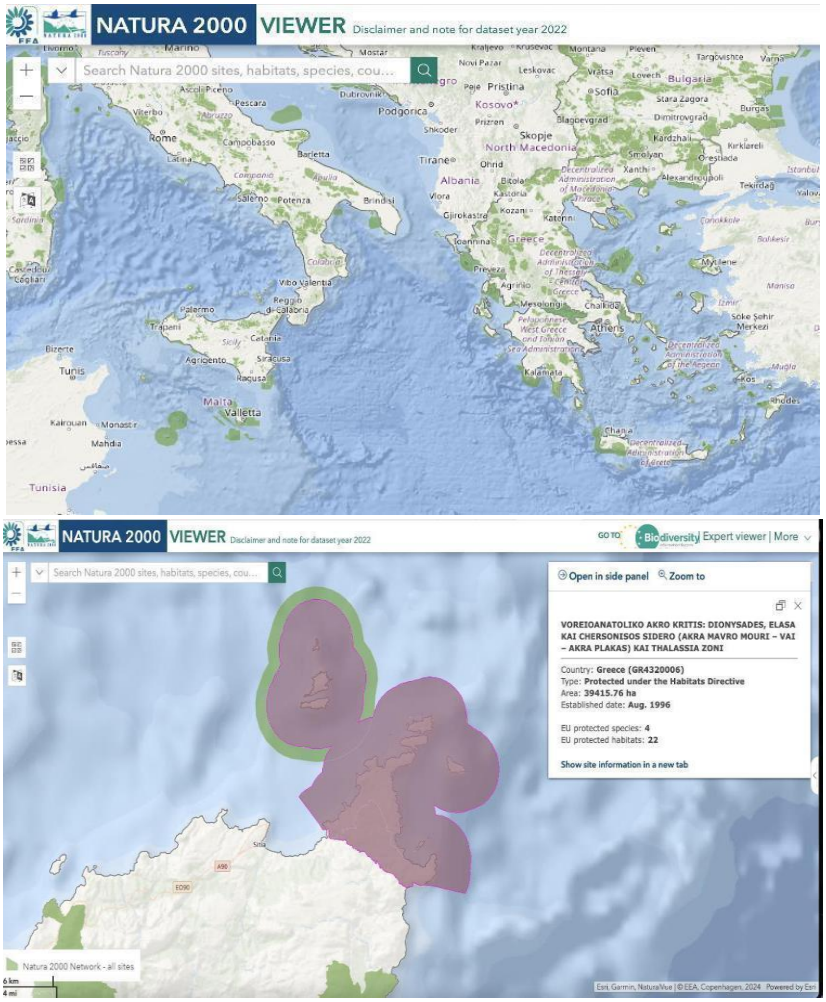
It must be noted that *P. oceanica* meadows extend across large areas of the Aegean and Ionian Seas, and not all of them have been adequately mapped or are systematically monitored. As a result, habitat damage or **loss are not well documented on a national scale**, and current assessments **do not fully reflect the actual extent** and loss of extent.

P. oceanica in Greece faces a complex array of threats that often act synergistically with climate pressures, such as warming and marine heatwaves. The anthropogenic threats are closely linked to coastal development and maritime activities and include unregulated anchoring, fishing practices and illegally used gear (trawl), coastal infrastructure works, pollution from untreated sewage, agricultural runoff, aquaculture, invasive species and climate change.

The **ARTEMIS pilot case study** in Greece, **Atzikiari Bay**, is located on the northeastern tip of Crete within the Natura 2000 site: Voreioanatoliko akro kritis: Dionysades, Elasa kai Chersonisos Sidero (Akra Mavro Mouri – Vai – Akra Plakas) kai thalassia zoni (GR4320006 - SCI)[2].

[1] European Environment Agency / Eionet. (n.d.). *Article 17 habitat report for coastal habitats — Greece, Mediterranean region (period 5)* [Web report]. NatureArt17. Retrieved September 25, 2025, from https://natureart17.eionet.europa.eu/article17/habitat/report/?period=5&group=Coastal+habitats&country=GR&region=MMED

[2] European Environment Agency. (n.d.). *Natura 2000 Standard Data Form for site GR4320006* [Data set]. Natura 2000 SDF. Retrieved September 25, 2025, from https://natura2000.eea.europa.eu/Natura2000/sdf/#/sdf?site=GR4320006&release=55



This northeastern site in Crete encompasses the island's easternmost area, including the Sidero peninsula and the nearby islets of Dyonisades and Elasa. *P. oceanica* meadows are located along the western side of the Sidero peninsula. In 2017, the site's boundaries were extended to include a 2-nautical-mile marine zone around Crete and the adjacent islets, incorporating important and vulnerable marine habitats. The presence of multiple islets, reefs and shoals contributes to the site's geographical and ecological diversity.

P. oceanica meadows at the Natura 2000 site level are classified in a "Good" conservation status. However, as documented by the ARTEMIS project in the pilot site in Atzikiari Bay, a **66% loss of the meadow extent** has been measured due to a fish farm that operated in the area for 21 years (1996 - 2017). As the natural recovery of the meadow is very slow, active restoration activities are considered necessary. The first such restoration activities, with transplantations of *P. oceanica* shoots were undertaken by the Hellenic

Center for Marine Research (HCMR) team under the ARTEMIS project in May 2025.[3]

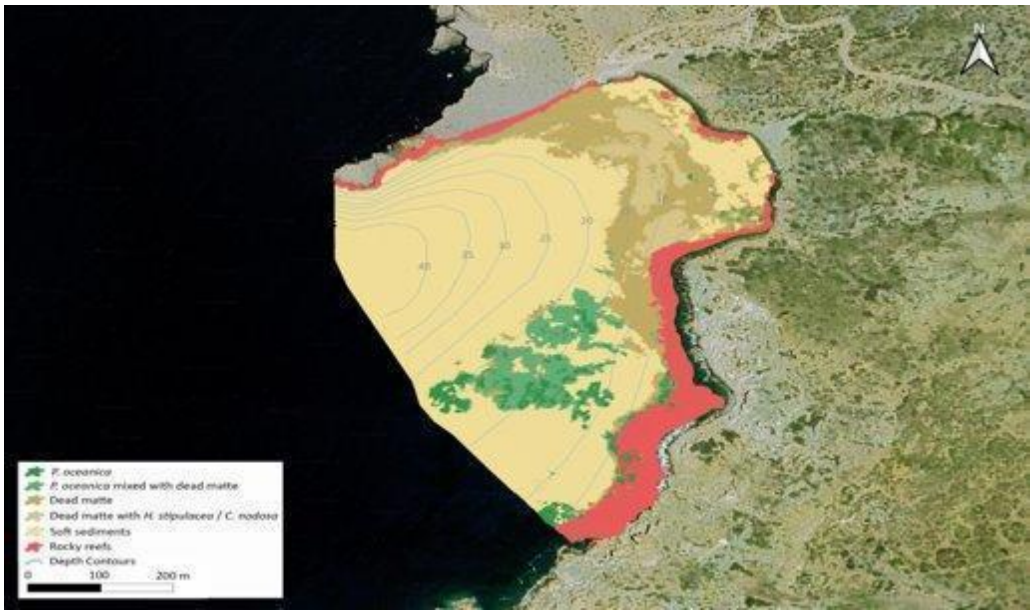


Figure 1: *Atzikiari Bay in Crete, with an estimated 66% loss of the meadow, possibly due to fish farm operations.*

Legislative & Institutional framework

Greece has **ratified all international and regional Conventions and Agreements** mentioned in chapter 2.1[4], which, according to its Constitution (Art.28 par.1)[5], constitute an integral part of the domestic Greek legal order.

Furthermore, **Article 24** of Greece's Constitution (1975, as amended in 2001), establishes the «***protection of the natural and cultural environment as a duty of the State and a right of every person***». According to this article the State is obliged to adopt **special preventive and repressive measures** for nature preservation. The Constitution also requires **spatial and urban planning** to serve the balanced development of the country and to safeguard the environment. In essence, Article 24 makes environmental protection a **constitutional obligation**, tightly linking it with sustainable development and citizens' rights.

[3] See also ARTEMIS Project (2025). *Restoration Roadmap and Pilot Report. Deliverable D.1.3.1.* Project: ARTEMIS – Accelerating the Restoration of Seagrass Meadows in the Mediterranean area through Innovative ecosystem-service based Solutions (Euro-MED0200867).

[4] including the most recent BBJN

[5] Hellenic Parliament. (2019). *The Constitution of Greece*. Official English translation as revised by the IXth Revisionary Parliament. Retrieved from https://www.hellenicparliament.gr/en/Vouli-ton-Ellinon/To-Politevma/Syntagma/

Since joining the European Economic Community (EEC), Greece's legal framework with respect to nature conservation has been enriched through transposing and integrating into its national framework the **provisions of EU nature policy** (See section 2.1). While there are implementation delays and gaps [6], *P. oceanica* benefits from all the EU wide provisions.

Over the years, Greece has adopted national legislation that includes additional and/or more specific regulation on nature conservation and restoration. For example, Law 3937/2011 includes a provision that prohibits the installation of fish farms over Posidonia meadows. With a ministerial decision it has delineated areas with Posidonia in which fishing with selected towed gear is prohibited. Most recently, with Law 5037/2023 Greece became the first, at the time, EU member state to legally adopt ambitious binding nature targets that are analogous to the EU Biodiversity strategy, the Nature Restoration Regulation and the Kunming Montreal Global Biodiversity Framework.

In addition, at the **9th Our Ocean Conference**[7], Greece committed to:

- ban Bottom Trawling in Marine Protected Areas (MPAs) by 2030,
- expand the Marine Protected Areas to cover at least 30% of its territorial waters by 2030,
- designate two new National Marine Parks,
- implement advanced surveillance systems to ensure effective enforcement of conservation measures.
- signal a positive outlook on integrating blue carbon ecosystems into future carbon credit markets[8]

All these commitments explicitly or implicitly add to the protection and restoration of *P. oceanica*. Other **relevant legal provisions** are presented in the Table below.

[6] European Commission. (2022). *Environmental Implementation Review 2022: Greece*. Retrieved from https://environment.ec.europa.eu/law-and-governance/environmental-implementation-review/country-reports_en

[7] Greece's Commitments at the 9th Our Ocean Conference. (2024). *Our Ocean Conference*. Retrieved from https://www.ourocean2024.gov.gr/wp-content/uploads/2024/04/A5_OOC-9_PROPOSED-COMMITMENTS_12.4.pdf

[8] This is based on the *Blue carbon – the potential of coastal vegetated ecosystems* side event held during the 9th Our Ocean Conference and reported by *The Green Tank*, featuring Greece's General Secretary for the Natural Environment and Water others discussing blue carbon's role in climate mitigation and the possibility of including blue carbon ecosystems in emerging carbon market mechanisms. https://thegreentank.gr/en/2024/04/27/blue-carbon-side-event/

Table 1: *National level provisions on restoration and on P. oceanica protection with a special focus on whether they explicitly (✓) or not (×) address P. oceanica*

Greece: National provisions		**Explicitly mentions *P. oceanica***	**Explicitly mentions restoration**	**Implicitly mentions restoration**
Law 1650/1986	As amended (most recently by **Laws 2947/2001, 3028/2002, 3937/2011, 4014/2011, 4685/2020 and 5037/2023, 5299/2026),** frames Greece's **National System of Protected Areas,** establishes the Natural Environment and Climate Change Agency (NECCA) and outlines the content of protected areas management plans, noting that they may include restoration actions.	×		✓
Law 3937/2011	This Law on Biodiversity Conservation safeguards biodiversity across Greece. The Law also includes a provision that prohibits fish farms over Posidonia meadows in Natura 2000 sites (art. 9 par. 1 d).	✓	×	✓
Law 5037/2023	With law 5037, Greece adopted ambitious binding national nature targets: I. to protect 30% of land and sea by 2030, II. to **restore 30% of degraded areas** by 2030, III. to scale up restoration to **100% by 2050** An annex lists the habitats that define the restoration areas, and this includes Posidonia. The law includes more detailed restoration provisions for areas included in Natura 2000 sites. The law also prohibits any degradation of protected habitats.	✓	✓	×
Joint Ministerial Decision 3000.0/4413	Regulates the placement and commercial use of mooring buoys intended for tourist vessels and small recreational boats. It applies specifically to sea areas outside port zones.	✓	×	×

7/2025 on Moorings				
Ministerial Decision 2886/ 142447 (2019)	This provision is pursuant to the **Council Regulation (EC) No 1967/2006** and thus defines and delineates with maps specific areas covered by *P. oceanica* meadows, where **fishing with certain towed gear is prohibited** (trawls, dredges, etc.).	✓	×	×

Stakeholder perceptions

This section presents the findings of a comprehensive stakeholder analysis conducted under the Interreg Euro-MED ARTEMIS project. It examines stakeholders' perceptions of ecological restoration, particularly *P. oceanica* restoration and Payment for Ecosystem Services (PES) schemes. The analysis is based on 17 in-depth interviews with stakeholders that are particularly relevant to the Pilot site in Atzikiari, Siteia, in Crete and are directly or indirectly linked to *P. oceanica* restoration. These stakeholders included:

- experts/ scientists
- representatives of the authorities and key agencies operating at the national or regional level (Ministry of the Environment and Energy, Natural Environment and Climate Change Agency, Underwater Antiquities Division on Ministry of Culture, State Land Service, Hellenic Coast Guard)
- representatives of the Decentralized Administration
- representatives of the regional and local authorities (Region of Crete, Municipality of Siteia)

Results from 17 stakeholder interviews were analyzed using a thematic analysis approach. The thematic categories correspond to the main axes of the interviews.

***Table 2**: Stakeholder analysis results in the Greek Pilot site*

Axis 1	**Axis 2**	**Axis 3**
***P. oceanica* — Status, level of knowledge, awareness of its ecological role**	**Restoration and Conservation Governance Framework**	**Payment for Ecosystem Services (PES) Schemes**
Main Findings:		
○ Level of knowledge is high among all stakeholder groups ○ Broad awareness of ecosystem services ○ Limited awareness of ARTEMIS and related actions	○ Conservation legislation /institutional framework exists but is poorly implemented ○ Restoration framework is practically non-existent ○ Limited awareness of the National Restoration Regulation (NRR) ○ Frequent confusion between restoration and compensation/ offsetting	○ Limited awareness of PES schemes in general and no awareness of PES linked to ecosystem services or species such as *P. oceanica* ○ Funding largely perceived through traditional channels (State/EU) ○ No national PES framework in place (Greece plans to introduce a voluntary carbon credit market)
Thematic Insights:		
○ **Restoration Guide:** Considered a valuable tool for all stakeholders ○ **Evidence of Effectiveness:** Proof of restoration method effectiveness is crucial ○ **Mapping Gaps:** Inadequate mapping remains a major challenge	○ **Overlapping Responsibilities:** Multiple authorities with unclear jurisdictions and competences ○ Monitoring and Surveillance: Need for stronger systems	○ **Polluter/User Pays:** Acceptable if costs are borne by polluters or users (e.g. tourists) ○ **Central Imposition:** Preferred if mandated at the highest political level ○ **Fines for Degradation:** Acceptable if revenues stem from environmental penalties ○ **Local Retention of Revenues:** Support increases if funds remain within the local area

The stakeholder analysis also included **an interactive workshop** held in Heraklion, Crete—the region hosting Greece's case study. Nearly 50 stakeholders participated in this four-hour session. During the workshop, participants were divided into four teams comprising members from different organizations and carried out a group exercise using provided materials. These materials outlined **16 potential steps for developing a national institutional framework for the restoration of *P. oceanica*** in Greece, **grouped into five categories**:

- **Preparatory stage** – Laying the foundation for restoration actions (institutional framework/organizations involved)
- **Institutional Procedures** (issuing permits and studies)
- Implementation & Execution
- Monitoring & Surveillance
- Financing

Participants were asked to discuss the available options and collaboratively **choose a combination of steps that would produce the best – to their knowledge- framework for *P. oceanica* restoration.** The answers from the four groups were analyzed, compared and contrasted indicating that there are points of convergence and of divergence.

The areas of convergence highlight opportunities for broader acceptance and, consequently, easier implementation. In contrast, the areas of significant divergence identify issues that require further attention to develop optimal, yet realistic, solutions. Participants' individual comments were carefully considered and supplemented with **insights from in-depth interviews** with experts, scientists, and representatives of relevant authorities. Together, this input informed the design of a comprehensive framework grounded in national administrative practices, previous experience, and state-of-the-art science. This approach ensures the framework is not only scientifically robust but also practical and widely acceptable.

The stakeholder analysis reveals a structural pattern consistent with the national governance landscape: while ecological awareness and scientific expertise are strong, institutional leadership, procedural clarity and financing pathways for restoration remain diffuse. The absence of a dedicated national restoration framework is reflected in stakeholder uncertainty regarding administrative coordination, long-term funding mechanisms and the allocation of responsibilities among competent authorities. This gap between knowledge and institutional operationalization mirrors the broader implementation challenges identified at national level.

Findings

In Crete (Greece), *P. oceanica* restoration is characterised by the following features:

- **Restoration remains a relatively new and emerging field**, primarily undertaken within research projects and pilot initiatives rather than as part of long-standing institutional programmes. The pilot applications result in a gradual accumulation of practical experience to be integrated into the evolving restoration practices and offer valuable lessons learned that form a solid foundation for developing a dedicated national restoration framework[9].
- Efforts are supported by **strong national scientific capacity**, particularly within marine research institutions, and show increasing alignment with EU biodiversity and climate objectives.
- The legal and governance framework is **fragmented across sectoral policies** as reflected in overlapping mandates, unclear competences, jurisdictional boundaries and limited cross-sectoral coordination identified by stakeholders. The absence of a national framework specifically addressing *P. oceanica* restoration limits the country's ability to plan and implement actions at scale, despite the adoption of binding national restoration targets under Law 5037/2023 and the forthcoming Nature Restoration Plan. Although restoration objectives are recognized normatively, operational procedures remain fragmented.
- Restoration activities rely heavily on **project-based EU and donor funding**, with limited long-term institutional or budgetary commitments at national or regional level.
- Stakeholder perceptions indicate **high awareness of the ecological value of Posidonia meadows**, but limited clarity regarding legal responsibilities, administrative coordination, and sustainable financing mechanisms for restoration.
- Gradual interest in *P. oceanica* from the private sector, supporting pilot active restoration and translation efforts[10].
- Greece is developing a voluntary carbon market for the forestry sector[11]

[9] Green Tank (2022), *Proposed EU Nature Restoration Regulation and its benefits for Greece*, 5 July 2022, available at: https://thegreentank.gr/2022/07/05/proposed-eu-nature-restoration-regulation-benefits-greece-el/

[10] Vodafone Posidonia programme a corporate-led initiative by Vodafone Foundation Greece in collaboration with Oceanus Lab at the University of Patras is mapping and protecting *P. oceanica* meadows, developing a "Citizen Science" platform for public participation and deploying advanced technologies (e.g., underwater observatories and remote sensing) to enhance scientific data collection, awareness and conservation of seagrass ecosystems across Greek waters.

[11] See procurement notices concerning the "Development of a Hellenic Voluntary Carbon Market System (ESAAA) for the utilization of carbon units resulting from domestic tree crops", published in 2025 in relation to initiatives of the Greek Ministry of Environment and Energy. See also reporting on the planned establishment of a national voluntary carbon credit framework for tree crops in Greece, https://www.greecetenders.com/tender/development-hellenic-voluntary-carbon-market-system-esaa-utilization-carbon-units-resulting-domest-78f0764.php

Recommendations

Recommendation 1. Establish a Dedicated *P. oceanica* Restoration Framework at National Level

A national restoration framework is needed to ensure the operationalization of restoration targets and commitments. It should clarify permitting procedures and institutional responsibilities and competences, establish standardized scientific and technical protocols, define criteria distinguishing passive from active restoration, integrate long-term monitoring requirements, and align fully with EU obligations under the Nature Restoration Regulation. A harmonized framework would reduce administrative fragmentation and enable coordinated, large-scale restoration efforts.

The Green Tank (ARTEMIS partner) with the expert scientific support from the Hellenic Centre for Marine Research (HCMR, ARTEMIS partner) have already prepared a proposal outlining an institutional framework for *P. oceanica* restoration in Greece, together with technical standards to guide its implementation The proposal seeks to address existing regulatory gaps, prevent procedural ambiguities and arbitrariness, and provide the legal and operational clarity necessary to scale up restoration efforts in a policy area that remains underdeveloped, particularly in the marine environment.

Recommendation 2. Strengthen Institutional Coordination and Clarify Administrative Responsibilities

Stakeholder analysis revealed overlapping competencies among authorities and limited clarity regarding institutional leadership for marine restoration. Although multiple bodies are involved in environmental governance, no single authority holds clearly defined responsibility for coordinating restoration implementation. Improving the governance chain and allocating responsibilities among the Ministry of Environment and Energy, the Natural Environment and Climate Change Agency, decentralized administrations and regional authorities is necessary to increase the overall effectiveness of marine conservation and restoration policies.

Recommendation 3. Embed Structured Stakeholder Engagement at Site Level

High awareness of the ecological importance of *P. oceanica* exists among stakeholders; however, structured participation mechanisms remain underdeveloped. Restoration initiatives in areas such as Atzikiari Bay should actively involve local authorities, fisheries representatives, tourism operators and environmental organizations throughout planning and implementation stages.

Clear communication of restoration benefits, including enhanced coastal protection, tourism sustainability, biodiversity conservation and climate resilience,

is essential to secure long-term support. Visible local benefits and transparent processes can strengthen stewardship and reduce resistance to restoration measures.

Recommendation 4. Improve Monitoring and Mapping of Posidonia Meadows
The variation between national assessments under Article 17 of the Habitats Directive, which classify *Posidonia oceanica* as Unfavourable–Inadequate (U1), and sub-regional assessments under the Marine Strategy Framework Directive, where large proportions of meadows are reported as being in "Good" status, highlights methodological differences and limitations in current mapping and monitoring systems.

At the same time, documented localized meadow loss, such as in the ARTEMIS pilot site, indicates that existing assessments may not fully capture spatial degradation patterns or cumulative pressures. Not all Posidonia meadows in Greece are adequately mapped or systematically monitored, reducing the accuracy and comparability of national evaluations and planning.

National authorities should therefore prioritize comprehensive habitat mapping, harmonized monitoring protocols and systematic data integration across reporting frameworks under the Habitats Directive and the Marine Strategy Framework Directive. To support this, EU funding instruments such as the new LIFE SIP-GR-Blue project, an integrated approach for the implementation of the Marine Strategy Framework Directive in Greece, should be mobilized to scale up monitoring networks, data systems and assessments at national and regional levels. Strengthened monitoring would improve ecological accuracy, support restoration prioritization and enhance policy credibility

Recommendation 5. Ensure Predictable Public Financing for Restoration
Given the long ecological timelines and high costs associated with marine restoration, reliance solely on short-term EU project funding is insufficient. Restoration priorities — particularly for *P. oceanica* — should be explicitly integrated as a matter of priority into national biodiversity and climate financing strategies, including the new Prioritised Action Framework (PAF) and the NRP.

Dedicated budget lines for marine ecosystem restoration should be considered at national level, including through existing instruments such as environmental funds (e.g. the Green Fund), in order to ensure multi-annual financial commitments aligned with ecological recovery timelines.

Strategic use of EU funds within multi-year planning frameworks, combined with national co-financing commitments, would reduce uncertainty and support

continuity of restoration activities beyond individual project cycles. This priority must be reflected in Greece's planning for the new 2028-2034 Multiannual Financial Framework.

In parallel, sustained funding for scientific research and methodological development should be secured to refine restoration techniques, monitoring systems and ecosystem service valuation, thereby strengthening both ecological effectiveness and financial credibility.

Recommendation 6. Explore Complementary Voluntary Financing Mechanisms in Alignment with EU and Mediterranean Developments

Greece has expressed interest in developing a voluntary carbon credit market. Given the blue-carbon value of *P. oceanica*, exploration of complementary voluntary marine restoration financing mechanisms may be considered. Such initiatives must be aligned with EU-level developments on nature credits, grounded in robust scientific methodologies and measurement, reporting and verification systems, and designed to complement rather than replace public funding.

Given the transboundary nature of Mediterranean marine ecosystems, coordination at regional level may offer greater coherence and credibility than isolated national schemes.

1.2. Italy

P. oceanica status at the national / site level

In Italy, *P. oceanica* meadows are widespread along most coastal regions, particularly in the Tyrrhenian, Ionian, and southern Adriatic Seas. According to the most recent information reported under the Marine Strategy Framework Directive (MSFD) and national monitoring programmes coordinated by ISPRA and the SNPA, the national assessment of conservation status under Article 17 of the Habitats Directive has been updated but it has not yet been officially published for the current reporting cycle. However, in the previous reporting period (2013–2018), Italy assessed habitat 1120* (*P. oceanica*) as being in an **Unfavourable–Inadequate (U1)** condition overall, with favourable range but unfavourable assessments for area, structure and functions, and future prospects (EEA, 2020).

Current data from the SNPA (2025) confirm that monitoring of *P. oceanica* continues within the framework of the MSFD 2021–2026 cycle, which defines standardized methodologies for the assessment of seagrass meadows, including indicators of density, coverage, and depth distribution (*Schede metodologiche Strategia Marina*, SNPA 2025). These guidelines highlight the need for consistent and long-term monitoring across sub-regions of the Italian seas to improve comparability and understanding of trends.

Recent national initiatives, such as the PNRR MER Project (Mission 2, Investment 3.5) coordinated by ISPRA, are strengthening the knowledge base through high-resolution mapping of coastal habitats, including *P. oceanica* and *Cymodocea nodosa*, using satellite imagery, LiDAR, and autonomous underwater vehicles[12]. Early results from pilot areas demonstrate the potential of these technologies to enhance national mapping coverage and support conservation planning.

The ARTEMIS pilot sites in Italy are located in the Friuli Venezia Giulia Region (Municipality of Monfalcone) and in the Capo Testa Punta Falcone Marine Protected Area in Sardinia.

The Friuli Venezia Giulia pilot site in Monfalcone is located within Panzano Bay, in the northeastern part of the Gulf of Trieste, along the Friuli Venezia Giulia coastline (Fig.2). The bay is a shallow, dynamic system bordered to the east by Punta Sdobba and influenced by the Timavo and Isonzo rivers. Bathymetry ranges from about 1 m in the innermost areas, where sandy shoals may emerge at low tide, to 5–6 m in the more offshore sectors.

[12] ISPRA, *PNRR MER (Marine Ecosystem Restoration)*, National Recovery and Resilience Plan (PNRR), Mission 2, Component 4, Investment 3.5, 2024, available at: https://www.isprambiente.gov.it/en/projects/sea/pnrr-mer-marine-ecosystem-restoration

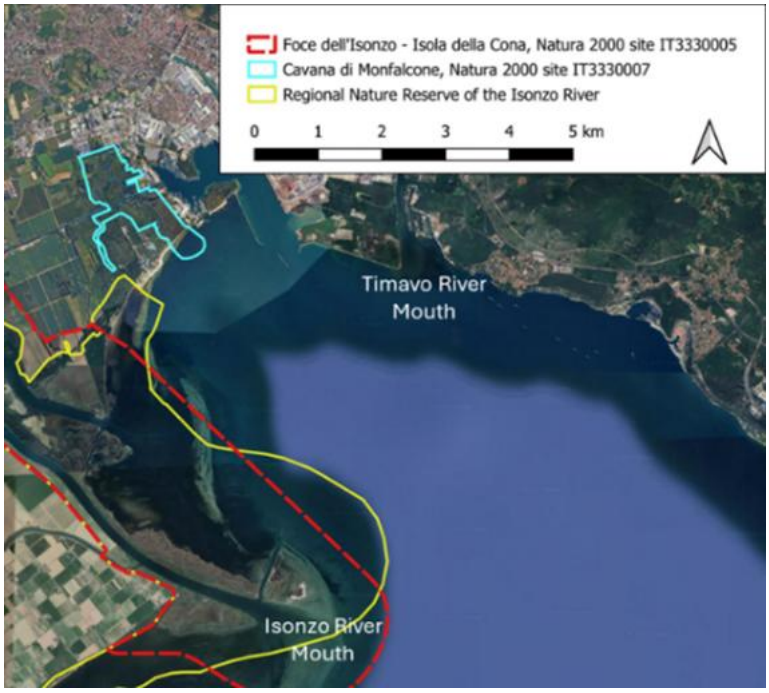


Figure 2: *Geographical setting of Panzano Bay (Monfalcone pilot site) with Natura 2000 sites and regional reserves.*

The site hosts one of the most extensive and ecologically relevant shallow water seagrass systems in the northern Adriatic, dominated by *Cymodocea nodosa*, *Zostera noltei* and *Ruppia* spp. These meadows contribute to sediment stabilisation, biodiversity support and water quality enhancement. The area is also part of the Natura 2000 network through two designated sites: the SAC "Cavana di Monfalcone" (IT3330007) and the SPA/SAC "Foce dell'Isonzo – Isola della Cona" (IT3330005), the latter partly overlapping with the Foce dell'Isonzo Regional Nature Reserve.

A detailed mapping campaign carried out in 2024 under the Interreg BIOPRESSADRIA project documented approximately 770 ha of seagrass meadows in Panzano Bay (Fig.3). *Cymodocea nodosa* dominates the northwestern sector between Panzano Beach and Marina Julia, while *Zostera noltei* and mixed meadows prevail in areas influenced by freshwater inputs. Near the Isonzo River mouth, *Ruppia* spp. forms monospecific stands that transition into mixed beds offshore. Additional *C. nodosa* meadows, covering roughly 20 ha, occur in the northeastern sector near the Timavo River.

Across the bay, seagrass meadows are exposed to different local pressures: in the southern sector they are influenced by stronger currents, sediment resuspension and boating activity; in the central areas near mooring zones they experience localized disturbance from navigation and anchoring; while toward the western

side, close to the Isonzo River mouth, turbidity, river inputs and the presence of fixed fishing nets shape meadow conditions.

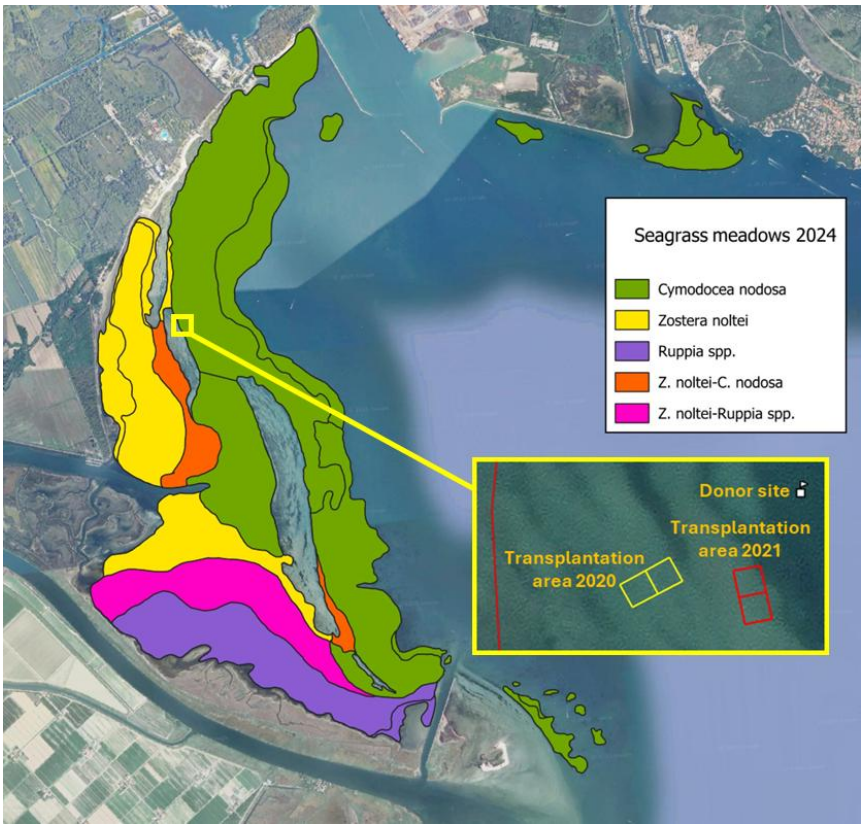


Figure 3: *2024 Map: distribution of marine seagrasses and localization of the transplantation areas (Interreg BIOPRESSADRIA, 2025, modified).*

Restoration actions have also been implemented in the area. Within the SASPAS project, two *Cymodocea nodosa* transplantations were carried out in 2020 and 2021 in selected shallow water sectors of Panzano Bay. The interventions tested two techniques, vegetated sods and bare root sprigs, within 10 × 10 m plots.

The **Sardinia pilot site** is the **Capo Testa Punta Falcone Marine Protected Area**, located in the northern part of the island (Fig.3). Established by a Ministerial Decree in 2018, the MPA is entirely managed by the Municipality of Santa Teresa Gallura (SS) and divided into four zones of different protection levels. The MPA is also part of the Nature 2000 network, as it includes the marine SCI and SPA site “da Capo Testa all’ Isola Rossa” (ITB013052).

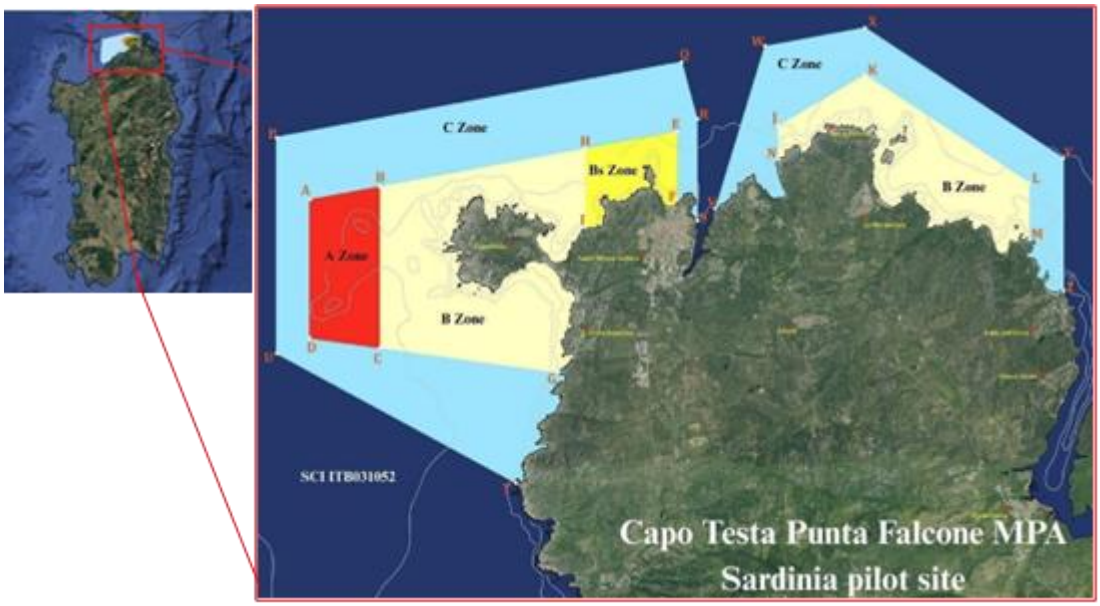


Figure 4: *Map of the Sardinia pilot site: Capo Testa Punta Falcone MPA*

The site is characterized by an extensive *P. oceanica* meadow (1120* habitat) of exceptional natural and conservation value. Covering approximately 294.47 ha, the meadow is generally in **good conservation status**. However, in the eastern part of the MPA, unregulated boat anchoring has caused significant **fragmentation**. In particular, MPA mapping data collected in 2021 and dedicated underwater surveys carried out in 2023, identified impacted areas in La Marmorata bay, where the *P. oceanica* meadow shows the presence of dead matte patches (Fig. 4).

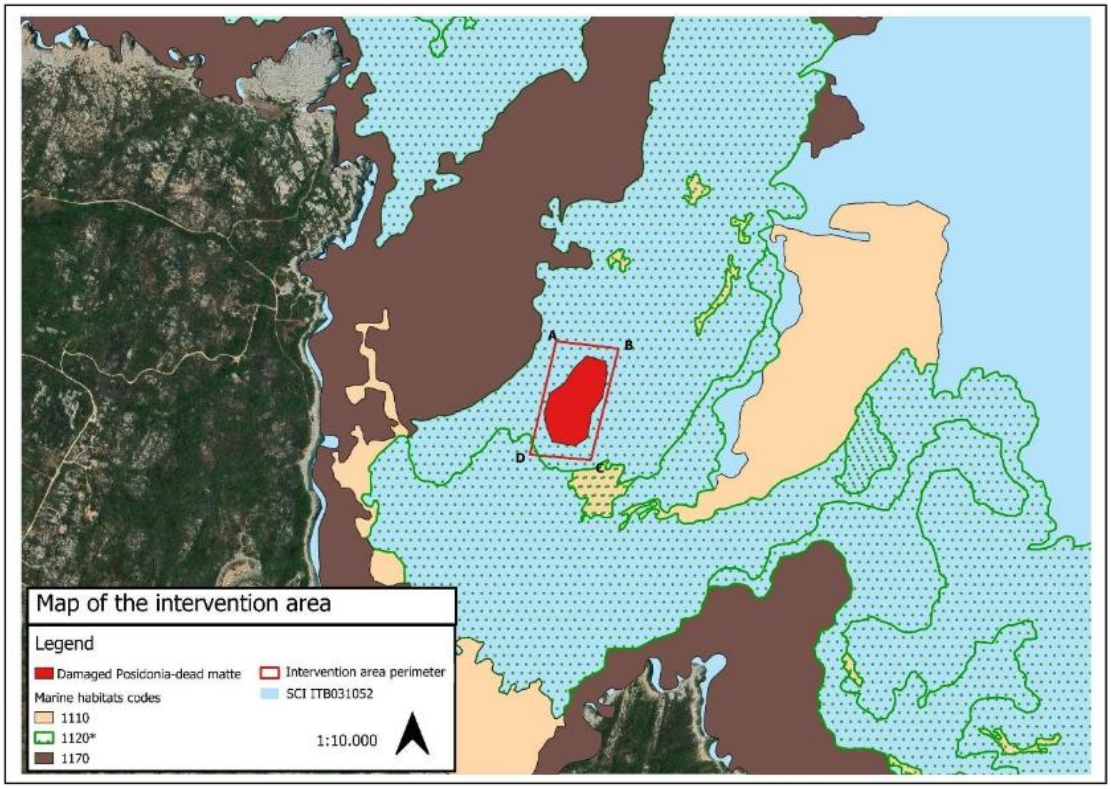


Figure 5: *Biocenotic map of the La Marmorata bay, within the MPA: Localization of impacted areas.*

Here, active restoration activities were carried out in April 2025 by the MEDSEA team under the ARTEMIS project. The intervention was carried out over an area of approximately 200 m^2 at a depth of 20 – 25 m, using naturally detached cuttings, collected in nearby areas, fixed to the dead matte with U-shaped metal pegs, ensuring a low-impact restoration action.

At the same time, the MPA in summer 2025, implemented complementary passive restoration measures, supported by national funds (National Resilience and Recovery Plan - PNRR), through the installation of mooring buoys and the establishment of a surveillance system to prevent anchoring over *P. oceanica* meadows within the bay.

Legislative & institutional framework

In 2023, based on the European Biodiversity Strategy, Italy adopted **National Biodiversity Strategy** 2030, structured around two main objectives:

- **Strengthening of protected areas**, with the aim of achieving 30% of protected area in marine and terrestrial environment, of which 10% will be strictly protected;

- **Restoring marine and terrestrial ecosystems**, aiming to reverse degradation of habitats and species' conservation status, in line with the conservation objectives of the Natura 2000 Network and using NbS.

In 2006, Italy adopted **Legislative Decree No. 152/2006**, known as the "**Environmental Code**", which provides the general framework for environmental protection and management. The Code includes measures for the protection of marine and coastal habitats, as well as provisions for the restoration of water bodies and marine environments, allowing access to national and EU funds for conservation and restoration interventions. The legislation establishes the general protection of coastal and marine habitats, and within Italian environmental practice and policy, *P. oceanica* is widely recognized as a priority and indicator species for the ecological status of marine ecosystems, considered in the context of environmental assessments. The Environmental Code also promotes the rational use of natural resources and integrates principles consistent with the ecosystem approach. Although it does not explicitly mention Ecosystem Services or Payments for Ecosystem Services (PES), it provides an enabling framework for their application, as it encourages environmental protection, sustainable resource use, and the integration of ecological and socio-economic values in environmental management.

The **Presidential Decree No. 357/1997** transposes the **EU Habitats Directive (92/43/EEC)** into Italian legislation, with the aim of conserving natural habitats, wild fauna and flora. It establishes the framework for **conservation measures, biodiversity protection, and the management of protected areas** within the national territory. Within this framework, *P. oceanica* is recognized as a **priority habitat** (1120*), requiring special conservation measures under both EU and national legislation. Although the decree does not explicitly refer to the concept of Ecosystem Services (ES), there is an implicit recognition of their value through the protection and restoration of priority habitats that provide key ecological functions. The Decree also enables access to EU and national funding mechanisms dedicated to the management and restoration of Natura 2000 sites, supporting actions aimed at maintaining or restoring the favorable conservation status of species and habitats.

Other **relevant legislative regional** provisions are listed in the table below:

Table 3: *Regional and local provisions in Friuli Venezia Giulia, Monfalcone on marine seagrasses protection with a special focus on whether they explicitly (✓) or not (✗) address Cymodocea nodosa and/or other species*

Friuli Venezia Giulia, Monfalcone Regional/Local provisions		**Explicitly mentions Seagrass meadows**	**Explicitly mentions restoration**	**Implicitly mentions restoration**
Decree of the President of the Region, No. 92 of May 28, 2021 on Provisions for modernization, growth, and sustainable development.	Article 5, "Financiable actions". Enhancement and creation of ecosystem services related to forests and wood, including associated communication and commercial development activities.		✓	
Regional Official Bulletin - State maritime concession, No. 9 of March 1, 2017 on Use of marine seagrasses for the protection of shorelines	State maritime concession for purposes classified as "other uses", with a duration of 2 years, concerning the occupation and use of a 1,500.00 m^2 stretch of beach located in the area facing the Sacca dei Moreri in the Municipality of Grado (GO), for the experimental project on the use of marine seagrasses for the protection of Grado's shorelines.	✓		

Table 4: *Regional and local provisions in Capo Testa Punta Falcone MPA, Sardinia, on P. oceanica protection with a special focus on whether they explicitly (✓) or not (✗) address P. oceanica*

Capo Testa Punta Falcone MPA, Sardinia: Regional/Local provisions		**Explicitly mentions *P. oceanica***	**Explicitly mentions restoration**	**Implicitly mentions restoration**
Regional Law 01/2020 (only for banquettes)	Provides priority to the on-site maintenance of *P. oceanica* banquettes, allowing relocation only when strictly necessary. Recognizes the ecosystem functions of banquettes, such as coastal defense and their role as a natural resource. Regional grants were allocated to municipalities (approx. €1.8 million for 2020–2022) to support management actions.	✓	✗	✗
Regional Landscape Plan (PPR) of Sardinia	Integrates landscape and habitat protection measures and explicitly refers to *P. oceanica*, in particular through the provisions of Regional Law No. 1/2020. Serves as a regional planning instrument ensuring consistency between land-use planning and coastal ecosystem conservation.	✓	✓	✓

Capo Testa Punta Falcone MPA Management Regulations - Ministerial Decree No 102 of 17 May 2018, published in G.U. No 206 of 5 September 2018	Establishes restrictions on anchoring, fishing, and diving in areas hosting *P. oceanica* meadows, and includes measures for the removal of threats and the recovery of degraded seabeds. Explicitly mentions *P. oceanica* as a habitat to be protected and highlights its ecosystem benefits, including coastal protection and nursery functions. Provides access to regional and national funds for monitoring and restoration actions. *These are site-specific regulations applicable exclusively within the perimeter of the MPA*.	✓	✓	✓

Stakeholder perceptions

Friuli Venezia Giulia pilot site, Monfalcone

This section presents the results of a comprehensive stakeholder analysis conducted within the framework of the Interreg EURO-MED ARTEMIS project for Panzano Bay, in Friuli Venezia Giulia. It explores stakeholders' perceptions regarding the ecological restoration of seagrass meadows and the implementation of Payment for Ecosystem Services (PES) schemes.

The analysis is based on **in-depth interviews with stakeholders** who are particularly relevant to the pilot site and are directly or indirectly involved in, or affected by, seagrass meadow restoration activities. The interviewees included:

- experts and scientists;
- representatives of regional authorities and key agencies;
- representatives of the Decentralized Administration,
- representatives of the civil society.

A total of 12 stakeholder interviews were analyzed using a thematic analysis approach. The resulting thematic categories reflect the main axes addressed in the interview framework.

Table 4: *Stakeholder analysis results in the Friuli Venezia pilot site*

Axis 1:	**Axis 2:**	**Axis 3:**
Seagrass meadows — Status, level of knowledge, awareness of restoration initiative, including ARTEMIS, at pilot site level	**Conservation and Restoration Governance Framework**	**Awareness of seagrass meadows Ecosystem Services (ES) and Payment for Ecosystem Services (PES) schemes**
Main Findings:		
○ Level of **knowledge** is **high** among all stakeholders ○ **High awareness of existing restoration projects**, including ARTEMIS actions thanks to the synergy with other projects carried out by the Municipality of Monfalcone on seagrass meadows	○ Conservation **legislation /institutional framework** exists, but it is **vague** and/or incomplete in defining the **roles** and **responsibilities** ○ Conservation and restoration should be systematically **integrated into sectorial policies and strategic framework** ○ **Public funding** should represent the primary source of financing for conservation and restoration projects	○ **Widespread awareness of key ecosystem services**, including food provision, coastal protection, biodiversity conservation, and blue carbon sequestration ○ The majority of respondents consider it important to **establish payment mechanisms** for the ecosystem services delivered by seagrass ecosystems, even if they are not familiar with PES schemes
Thematic Insights:		
○ Approximately 50% of the seagrass meadows are in stable good ecological condition, whereas the remaining areas show signs of degradation or partial degradation	○ Decision-making and financing should be ensured across European, national, and local governance levels, while **design and implementation should engage competent public bodies, research institutions, and stakeholders**	○ **Polluter/User Pays**: costs should be paid by polluters or users (*e.g.* tourists) ○ The main challenges inherent in the design and implementation of PES schemes lie in the **limited awareness of the importance**

○ The main **pressures** are coastal and port **infrastructure** activities, maritime and **recreational boating activities**, **fisheries** and aquaculture, upstream **agricultural activities**	○ **Key barriers and enabling factors** are: (a) limited financial resources, (b) fragmented responsibilities and coordination challenges; (c) high restoration costs favouring the protection of existing ecosystems; (d) lack of technical capacity and funding availability; (e) conflicting economic interests of actors operating in seagrass areas	**of the ecosystem services** provided by seagrasses and their associated economic benefits. This lack of awareness makes it difficult to build consensus, justify investments, and engage the actors who should contribute to payment mechanisms ○ A second sample of 12 stakeholders was interviewed during the SHs workshop. Nature restoration should be supported through innovative financing mechanisms, including PES schemes. **PES should involve both sectors that generate environmental pressures and those that benefit from ecosystems**, such as tourism and agri-food industries. To ensure credibility, PES schemes should be **supervised and certified by international or European institutions**, and their implementation requires dedicated institutional frameworks

Capo Testa Punta Falcone MPA pilot site, Sardinia

This section presents the findings of a stakeholder analysis conducted under the Interreg Euro-MED ARTEMIS project for the Capo Testa Punta Falcone Marine Protected Area (MPA) in Sardinia. It examines stakeholders' perceptions of ecological restoration, with a focus on *Posidonia oceanica* restoration and Payment for Ecosystem Services (PES) schemes.

Based on the results of the stakeholder mapping and analysis conducted for the pilot site, a **questionnaire** was initially sent to six stakeholders identified as relevant actors directly or indirectly involved in *Posidonia oceanica* restoration. These stakeholders included:

- Representatives of national authorities and key agencies operating at national or regional level, including the Ministry of the Environment and Energy Security (MASE) and the Italian Institute for Environmental Protection and Research (ISPRA)
- Representatives of regional and local authorities, including the Autonomous Region of Sardinia, the Municipality of Santa Teresa Gallura, the Capo Testa Punta Falcone MPA, La Maddalena Coast Guard and the Forestry and Environmental Surveillance Corps of the Sardinia Region (BLON Palau)

In addition, during an on-site awareness-raising event held by the Capo Testa Punta Falcone MPA, the questionnaire was also shared and distributed to a broader group of local stakeholders, including: Fishers, environmental associations (Plastic Free, CRAMA), private actors, local media and citizens

In total, thirty-one stakeholder responses were analyzed using a thematic analysis approach. The thematic categories correspond to the main axes of the questionnaire.

Table 5: *Stakeholder analysis results in the Capo Testa Punta Falcone pilot site*

Axis 1:	**Axis 2:**	**Axis 3:**
***P. oceanica* — Status, level of knowledge, awareness of restoration initiative, including ARTEMIS, at pilot site level**	**Conservation and Restoration Governance Framework**	**Awareness of *P. oceanica* Ecosystem Services (ES) and Payment for Ecosystem Services (PES) Schemes**
Main Findings:		
• Level of **knowledge is high** among all stakeholders • **Awareness** of existing restoration projects varies across stakeholder categories, but ARTEMIS actions are relatively well known	• Conservation **legislation** and institutional frameworks exist and are considered **vague and incomplete**, while clear and complete for others • The only restoration framework mentioned is linked to the Nature Restoration Regulation • Overall, the legislative framework is considered imprecise and weakly implemented	• Broad awareness of ecosystem services • **Limited awareness of PES schemes** in general and of those linked to *P. oceanica* ecosystem services • Funding is expected to come mainly from public sources (State or EU) but private or NGO contributions are also welcomed • Italy currently lacks a national PES framework, but several regional and voluntary initiatives are emerging, including early efforts toward a voluntary carbon credit market
Thematic Insights:		
• **Broad awareness** of human activities and main pressures affecting *P. oceanica* meadows • Understanding the effectiveness of both active and passive restoration actions	The following **challenges for restoration** initiatives were highlighted: • high costs • limited funding for surveillance and long-term monitoring • need to address the original causes of Posidonia decline/need for improved and controlled site protection • need to improve awareness among local operators • slow bureaucratic processes	• **Emerging interest in PES** as an innovative funding mechanism • Given the high costs, stakeholders suggested involving multiple entities and organizations. Therefore, private funds are also considered important conservation and restoration projects, but non-profit sources are seen as more reliable to ensure restoration and conservation objectives for public benefit

Findings

In Italy, *P. oceanica* restoration operates within a context of **well-established scientific capacity and expanding monitoring systems yet remains operationally fragmented and largely dependent on project-based initiatives** rather than consolidated national programming.

In the **Friuli Venezia Giulia pilot site (Monfalcone - Panzano Bay)**, where *Posidonia oceanica* meadows are currently absent and were historically marginal in the northern Adriatic, the case highlights an important regulatory and conceptual issue. Existing conservation frameworks are primarily designed to protect habitats currently present, while areas characterized by different but well-functioning seagrass systems require management approaches focused on pressure reduction and long-term conservation rather than on habitat re-creation. In this context, the site can be interpreted as an example of conservation-based management, illustrating the need to integrate restoration policies with context-specific ecological assessments and spatial planning

In **Sardinia, the Capo Testa Punta Falcone MPA** demonstrates a more integrated approach. Active restoration actions have been combined with passive measures such as anchoring regulation and surveillance systems, supported by EU and national (PNRR) funding. Nevertheless, restoration remains largely project-driven, and legal provisions relevant to restoration are dispersed across environmental, maritime and regional planning instruments, complicating coordination and long-term planning.

Stakeholder perceptions across both pilot sites reveal high awareness of ecosystem services and broad recognition of seagrass ecological value. At the same time, institutional responsibilities remain unclear, financing is perceived as primarily public, and innovative mechanisms such as PES are viewed as potentially useful but requiring strong public oversight and clear governance safeguards.

Across the two Italian pilot sites, the following patterns emerge:

- **Strong scientific and monitoring capacity**, reinforced by national institutions and technological investments.
- **Restoration remains project-based**, with limited integration into long-term national programming.
- **Fragmented governance and dispersed legal provisions**, particularly across environmental and maritime policy fields.
- **Regulatory gap for habitat re-creation**, especially in areas of historical loss.

- **High stakeholder awareness of ecosystem services**, including coastal protection and blue carbon benefits.
- **Public funding is viewed as essential**, with cautious openness toward complementary PES or voluntary mechanisms.

Overall, the Italian case confirms that while scientific readiness and policy recognition are well established, scaling *P. oceanica* restoration requires clearer operational frameworks, improved coordination across governance levels and predictable long-term financing.

Recommendations

Friuli Venezia Giulia (Monfalcone)

Recommendation 1: Use Monfalcone as a pilot case for operationalizing habitat re-creation under the Nature Restoration Regulation

The absence of extant *P. oceanica* meadows in Panzano Bay highlights the importance of aligning restoration policies with site-specific ecological conditions. In this northern Adriatic context, extensive and well-functioning seagrass systems dominated by *Cymodocea nodosa*, *Zostera* spp. and *Ruppia* spp. provide key ecosystem services and represent the current ecological baseline. This challenge is shared by other Mediterranean sites, such as Menorca, where port areas and specific coastal environments host valuable *Cymodocea* meadows. This approach is consistent with recent legislation, such as the Spanish Royal Decree 191/2026[13] (see Section 7.15), which grants equal protection and restoration status to both *Posidonia oceanica* and other seagrass species like *Cymodocea nodosa*. Monfalcone should therefore be used as a pilot case to demonstrate how the Nature Restoration Regulation can be operationalized through spatial planning, baseline ecological assessment and coordinated pressure prevention measures for various seagrass species. This approach would generate transferable lessons for Mediterranean coastal areas (including port zones and lagoons) where considering local seagrass communities and reducing pressures offers a practical pathway to maintaining ecosystem integrity.

Recommendation 2: Improve cross-sectoral coordination in coastal and maritime governance

Stakeholder analysis in Friuli Venezia Giulia, Monfalcone indicates fragmented responsibilities and competences across environmental, maritime, port and regional authorities. Strengthening coordination mechanisms among these actors is essential to ensure that restoration

[13] Ministerio para la Transición Ecológica y el Reto Demográfico (2026). Real Decreto 191/2026, de 11 de marzo, para la conservación de praderas de fanerógamas marinas en aguas marinas del Mediterráneo español. Boletín Oficial del Estado, 64, 13 de marzo de 2026, Sec. I, pp. 38806-38820

planning, navigation management, coastal infrastructure development and water quality measures operate coherently. Clearer allocation of responsibilities and structured inter-institutional dialogue would reduce administrative ambiguity and support integrated coastal restoration strategies.

Recommendation 3: Addressing the regulatory and monitoring gap for seagrass meadows outside dedicated protection frameworks

A significant challenge in coastal management concerns the protection of seagrass meadows, such as *P. oceanica*, *C. nodosa*, and *Zostera spp.*, when located outside the formal boundaries of Marine Protected Areas (MPAs) and Natura 2000 sites. In these "open" coastal stretches, a regulatory and operational gap often exists and regards the mandates for active surveillance and the procedures to prevent accidental damage. This fragmentation can lead to confusion for maritime users, who may face different rules depending on the area, and results in uneven protection where some seagrass meadows are strictly monitored while others are overlooked. To bridge this gap, it is recommended to foster closer coordination between the Coast Guard, Regional Agencies, and Port Authorities to define clear procedures for monitoring and reporting impacts in non-protected waters. Strengthening these inter-institutional links would ensure that environmental protection measures are applied more consistently, providing clearer guidance for maritime activities and reducing the risk of habitat degradation.

Recommendation 4: Develop an operational spatial planning and decision-support framework for restoration readiness

For the Monfalcone pilot site, it is essential to move beyond general planning principles and consolidate an operational framework that integrates spatial planning, ecological data, and site-specific management measures. Rather than focusing on large-scale restoration, the priority is to strengthen conservation-oriented spatial management, building on the existing ecological conditions of the coastal system. This includes refining the functional zoning of the area, with particular attention to conservation zones, regulated use areas, and locations suitable for the optimization or potential extension of eco-mooring systems, in order to reduce anchoring pressure and support habitat stability. Such an approach should be supported by periodical monitoring of seagrass dynamics and environmental quality, as well as by tools that facilitate informed decision-making and adaptive management over time. Particular attention should also be given to the integration of the pilot area within the wider network of protected and ecologically relevant sites in the approaches, ensuring coherence with existing conservation objectives and regulatory frameworks.

In this perspective, **Monfalcone can evolve from a site primarily focused on assessment into a practical reference for conservation-based coastal management, where the combination of spatial planning, pressure mitigation, and long-term monitoring contributes to maintaining and enhancing ecosystem functionality** while supporting sustainable use of the maritime space.

Recommendation 5: Establish a local financing strategy and a pipeline of investment

Alongside planning, there is a clear need to operationalize the financial dimension at the site level, which remains only partially addressed in the existing recommendations. It is therefore recommended to develop a dedicated financing strategy for Monfalcone, based on the creation of a pipeline capable of attracting both public funding and private capital. **In this context, the site could serve as a pilot case for testing innovative financial instruments, thereby contributing to addressing the funding gap identified in the report**. The combination of robust scientific grounding and structured financial planning is essential to ensure that marine restoration becomes scalable and economically viable.

Recommendation 6: Activate ecosystem service valuation and stakeholder engagement to support implementation

Finally, it is recommended to strengthen the economic and social dimensions of the policy process by integrating ecosystem service valuation and structured stakeholder engagement. Quantifying the benefits provided by seagrass ecosystems can help make the value of natural capital more visible and support the development of investment cases aligned with EU sustainable finance frameworks. At the same time, structured participatory processes involving public authorities, economic actors, and local communities are essential to ensure social acceptance, reduce conflicts among marine uses, and foster co-design of management measures. **This integrated approach allows Monfalcone to become a concrete example of how ecological, economic, and social dimensions can be effectively combined in restoration policy implementation.**

Capo Testa Punta Falcone MPA (Sardinia)

Recommendation 7: Consolidate project-based restoration experience into a coherent regional *P. oceanica* restoration programme

Sardinia has accumulated significant technical expertise through LIFE, Interreg and other EU-funded projects, including practical experience in active transplantation and passive protection measures within Marine Protected Areas. However, restoration actions remain fragmented and

largely dependent on individual project cycles. Establishing a structured regional *P. oceanica* restoration programme aligned with the Nature Restoration Regulation would improve coordination, ensure continuity of actions and allow for strategic prioritization of restoration sites. Such a programme should integrate active and passive measures, embed long-term monitoring obligations and ensure coherent use of regional, national and EU funding sources. Moving from project-based interventions to programmatic implementation would enable restoration at ecologically meaningful spatial and temporal scales.

Recommendation 8: Strengthen integration of restoration within MPA governance frameworks

The Capo Testa Punta Falcone Marine Protected Area demonstrates the potential for combining active restoration with anchoring regulation and surveillance systems. Building on this experience, restoration objectives should be systematically embedded within MPA management plans, zoning provisions and enforcement mechanisms. Clear alignment between restoration actions, pressure prevention and monitoring systems would enhance ecological effectiveness and reduce the risk of recurring degradation. Institutionalizing restoration within MPA governance structures would also provide greater legal certainty and administrative continuity.

1.3. Spain

P. oceanica status at the national / site level

According to data from the *Atlas of Seagrass Meadows of Spain* (Ruiz, J.M. et al., 2015)[14], it is estimated that Spain hosts 1,618.69 km² of marine angiosperm meadows, distributed very unevenly across species and geographic areas. It should be noted that part of the area occupied by one species may overlap with that of another, forming mixed meadows. When this overlap is considered, the total area covered by seagrass meadows is actually 1,599.64 km².

Approximately 90% of this area is concentrated in Mediterranean regions, as the hydrological and hydrodynamic conditions of the Mediterranean allow marine angiosperms to thrive on the coastal shelf in open coastal areas down to depths of 37 meters. Marine angiosperm meadows are distributed very unevenly depending on species and geographical zones. Of these, the largest extent corresponds to *P. oceanica* meadows, covering a total of 1,159.04 km² (70.9%). Their distribution ranges from the border between Spain and France, in Girona, to Punta Chullera in Málaga, where the species reaches its westernmost geographical limit. This distribution likely reflects the greater water transparency and oligotrophy of coastal waters in the Levantine–Balearic area, particularly in the Balearic Islands, where the species likely finds more optimal conditions for its development.

The Balearic Islands are the region with the largest area of *P. oceanica* meadows, accounting for 50% of all those surveyed in Spain. Forty percent of these are located within areas designated under the Natura 2000 Network (Vaquer-Sunyer, R. et al., 2021)[15]. The data come from the mapping compiled in the *Posidonia Atlas* of the Regional Ministry of Agriculture, Fisheries and Natural Environment of the Government of the Balearic Islands, which has carried out an inventory, compilation and analysis of existing cartography on *P. oceanica* in the archipelago. The total mapped area of posidonia meadows in the Balearic Islands is 553.7 km².

Regarding their conservation status, the latest report on the implementation of Article 17 of the Habitats Directive (2013–2018) indicates **Unfavourable-Inadequate (U1)**. This assessment reflects the conservation status of the habitat under the Habitats Directive at national

[14] Ruiz, J.M., E. Guillén, A. Ramos Segura & M. Otero. 2015. Atlas de las praderas marinas de España. IEO/IEL/UICN, Murcia-Alicante-Málaga, 681 pp.

[15] Vaquer-Sunyer, R.; Barrientos, N.; Conselleria de Medi Ambient del Govern de les Illes Balears; Marbà, N. (2021) «Posidonia oceanica». In: Vaquer-Sunyer, R.; Barrientos, N. (ed.). Informe Mar Balear 2021 (link)

biogeographical scale. Complementary information is provided by the third-cycle assessment of the Marine Strategy Framework Directive (MSFD) for the Levantino-Balear Marine Subdivision, which assessed the "Biocenosis of *Posidonia oceanica*" under Descriptor 6 —seafloor integrity— for the 2018–2024 period. In this assessment, 99.31% of the habitat surface was evaluated, with 1,012.54 km² —91.23% of the assessed area— classified as achieving **Good Environmental Status**, while 97.31 km² —8.77%— did not achieve Good Environmental Status; the trend in status was reported as unknown [16] These results suggest that, although recent MSFD assessments provide a more favourable picture for the evaluated *Posidonia oceanica* biocenosis in the Levantino-Balear Marine Subdivision, they do not replace the Habitats Directive conservation assessment and should be interpreted within their specific spatial, temporal and methodological context. Although knowledge of the current distribution of *P. oceanica* meadows in Spain has improved substantially in recent years, the lack of reliable historical baselines on their former extent makes it difficult to quantify past losses accurately and, together with the unknown trend reported in the MSFD assessment, adds uncertainty to the future trajectory of these meadows. that the priority habitat 1120, corresponding to *P. oceanica* meadows, has been assessed in Spain as U1 (Unfavourable–Inadequate)[17].

The ARTEMIS pilot project in Spain is located on the west coast of the island of Menorca, within the boundaries of the marine Natura 2000 site ESZZ16002 "Canal de Menorca".

[16] MITECO, 2025. *Evaluación del medio marino. Demarcación marina levantino-balear. Descriptor 6: Fondos marinos/Hábitats bentónicos. Tercer ciclo de estrategias marinas*. Ministerio para la Transición Ecológica y el Reto Demográfico, Madrid. https://www.miteco.gob.es/content/dam/miteco/es/costas/temas/temas-pm/eemm/tercer-ciclo/documentos-feb26/D6%20-%20DMLEBA.pdf

[17] Article 17 web tool. Habitat assessments at Member State level https://nature-art17.eionet.europa.eu/article17/habitat/report/?period=5&group=Coastal+habitats&country=ES&region=

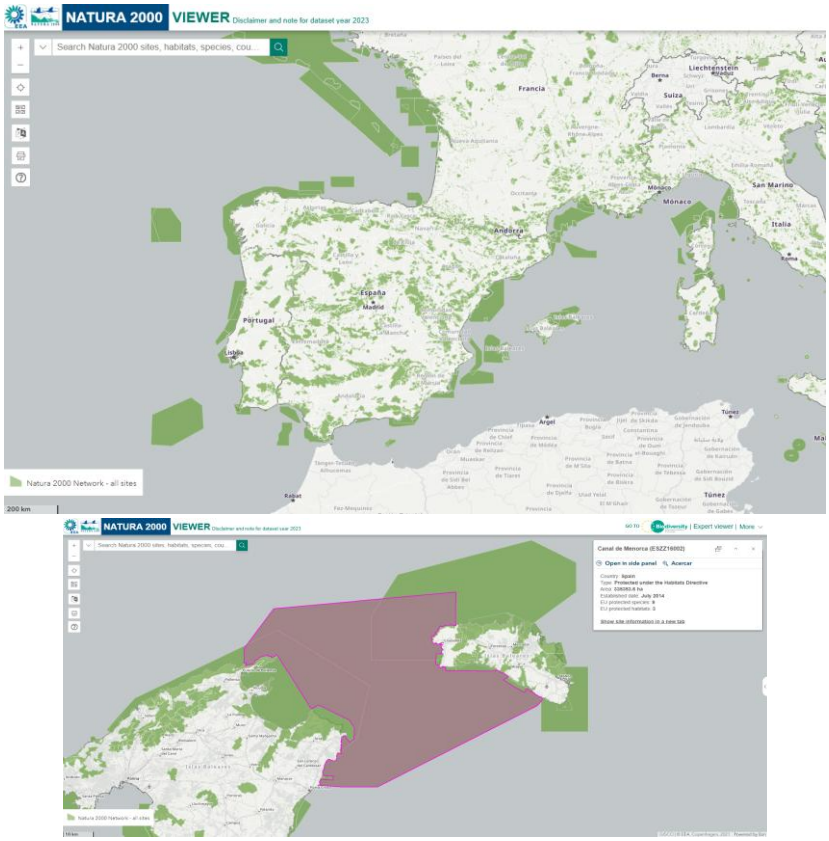


Figure 6: *Natura 2000 Network in Spain (left) and SCI Canal de Menorca (right)*

This marine area between the islands of Mallorca and Menorca features a subhorizontal continental shelf with average depths of around 80 m and a maximum depth of 130 m. Studies carried out under the LIFE INDEMARES project identified a wide distribution of biocenoses typical of coastal detrital bottoms, as well as rocky-bottom communities with high ecological value and notable species diversity. In the areas adjacent to the coast within the infralittoral zone, the environment is characterized by the presence of *P. oceanica* meadows, found both on sandy coastal substrates and on rocky outcrops[18].

Regarding the distribution of *P. oceanica* meadows around the island of **Menorca**, they cover approximately 82 km² and form an almost continuous ring around the entire island. These meadows extend along a wide coastal band that generally ranges from the shallowest waters down to depths of about 30–35 m, depending on the area[19].

[18] LIFE INDEMARES Project. https://indemares.es/

[19] Indicadores básicos OBSAM. Seguimiento biológico de las praderas de Posidonia, 2018. https://www.obsam.cat/documents/medi-natural/

Figure 7: *Current distribution of P. oceanica meadows around the island of Menorca and detailed distribution of P. oceanica meadows in the ARTEMIS project pilot site.*

In 2010, the construction of a **desalination plant** to supply water to Ciutadella resulted in the loss of 1,808 m^2 of *P. oceanica* meadows near Cala Blanca, located at a depth of 20 meters, owing to the direct impact of the construction of the tower to collect water (170 m^2) and the **incidental spill of bentonite** during construction that decimated the surrounding meadows (1,638 m^2). Fifteen years after the impact on the meadow, the surviving clones that remain in the affected area cover less than 5% of its surface. Therefore, the aim of the restoration promoted by the ARTEMIS project at this pilot site is to accelerate the natural recovery of the meadow.

Legislative & institutional framework

At the international level, **Spain** is a Contracting Party to the most relevant marine protection conventions, such as: the Barcelona Convention for the

Protection of the Marine Environment and the Coastal Region of the Mediterranean; the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic; the International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC Convention) and its Protocol on Hazardous and Noxious Substances (HNS Protocol); the London Convention (Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter); and the Bonn Convention on Migratory Species. Spain is also party to other conventions such as MARPOL (on the prevention of pollution from ships) and the Basel Convention (on the control of transboundary movements of hazardous wastes and their disposal)[20]. While a broad range of international and regional instruments address marine pollution and environmental protection more generally, this analysis focuses primarily on those frameworks that include explicit or implicit provisions relevant to biodiversity conservation and ecosystem restoration, particularly in relation to *P. oceanica*.

In Spain, the basic legal framework for the conservation, sustainable use, improvement and restoration of natural heritage and biodiversity is set out in Law 42/2007 of 13 December, on Natural Heritage and Biodiversity. In its Annex I, *P. oceanica* meadows are listed as a habitat of community interest whose conservation requires the designation of Special Areas of Conservation. Therefore, the presence of this species is sufficient grounds for the designation of Natura 2000 sites, contributing to the maintenance or restoration of the favourable conservation status of natural habitats within their natural range.

Furthermore, as noted above, EU fisheries legislation was among the first to recognise Mediterranean marine angiosperm meadows as habitats of ecological and fisheries interest that must be protected from the destructive impacts of certain fishing practices. Thus, the transposition of the EU Mediterranean Fisheries Regulation (Council Regulation (EC) No. 1626/1994, later amended by Regulation (EC) No. 1967/2006 on management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea) regulates bottom trawling, specifying that this activity may only be carried out at depths greater than 50 metres, which coincides with the lower depth limit of *P. oceanica* distribution. Consequently, trawling, dredging, trap gear, purse seines with purse lines, boat-towed gear, beach seines or similar nets are prohibited above seabeds covered by marine vegetation, particularly *P. oceanica* and other marine phanerogams.

[20] Ministry for Ecological Transition and Demographic Challenge. https://www.obsam.cat/documents/medi-natural/

In **March 2026, the Spanish Ministry for Ecological Transition and Demographic Challenge approved the Royal Decree on the conservation of marine phanerogam meadows in Spanish Mediterranean waters**[21]. The purpose of this draft Royal Decree is to ensure, through a harmonised legal framework, the conservation of the *P. oceanica* and *Cymodocea nodosa* phanerogam meadows and the biological communities they form part of along the Mediterranean coast. It aims to improve knowledge of their status and to regulate uses and activities with potential impacts on these species and their habitats. It also seeks to promote actions that contribute to maintaining or achieving their favourable conservation status and, when feasible and appropriate, to restore meadows that have been degraded or destroyed in the past by human activities.

All these commitments and legislative instruments contribute, explicitly or implicitly, to the protection and restoration of *P. oceanica*. The following table summarise **additional relevant legal provisions** currently in force in Spain that complement the country's commitment to its protection, and also the ones specific in the Balearic Islands:

[21] Royal Decree for the conservation de marine phanerogam in the Spanish Mediterranean waters (link web)

Table 6: *National provisions (Spain) on P. oceanica protection with a special focus on whether they explicitly (✓) or not (✗) address P. oceanica*

Spain: National provisions		**Explicitly mentions *P. oceanica***	**Explicitly mentions restoration**	**Implicitly mentions restoration**
Law 42/2007, 13th of December, on Natural Heritage and Biodiversity	Assigns specific responsibilities to public administrations regarding marine biodiversity. It also regulates the Natura 2000 Network, setting out the conservation, management, and planning instruments required to ensure the protection of habitats and species of community interest.	✓	✓	✓
Marine Strategy for the Levantino-Balear Area (2018)	It constitutes the specific marine strategy for the Levantino–Balear sub-region. It outlines the environmental assessment, environmental objectives, and the set of measures needed to guarantee the conservation and sustainable management of marine ecosystems in this area.	✓	✗	✗
Common guidelines for management and conservation of marine phanerogams	Its aim is to serve as a reference tool to support decision-making based on scientific criteria, with the objective of ensuring the conservation of marine phanerogams and their habitats. They provide harmonized criteria to guide management across different administrative authorities.	✓	✓	✗
Law 7/2021, of 20 May, on climate change and energy transition.	This law introduces measures for the protection of biodiversity within the broader framework of climate change mitigation and adaptation. The Law integrates ecosystem conservation into climate policies,	✓	✗	✗

	reinforcing mechanisms to prevent the degradation of the natural environment.			
Royal Decree 191/2026, of 11st March, for the conservation of marine seagrasses in Mediterranean Spanish sea waters	It introduces a harmonized national legal framework in Spain for the protection of Mediterranean seagrass meadows, focusing on species such as *Posidonia oceanica* and *Cymodocea nodosa*. It establishes preventive measures that restrict activities and infrastructure likely to damage these habitats, regulates boat anchoring and pollutant discharges, and promotes restoration, scientific monitoring, and habitat mapping, thereby strengthening conservation and coordination among public authorities.	✓	✓	✓

Table 7: *Balearic Islands Specific Regional Provisions on P. oceanica protection with a special focus on whether they explicitly (✓) or not (×) address P. oceanica*

Balearic Islands: Specific regional provisions		**Explicitly mentions *P. oceanica***	**Explicitly mentions restoration**	**Implicitly mentions restoration**
Decree 25/2018, of 27 July, on the conservation of Posidonia oceanica in the Balearic Islands	The decree aims to ensure the conservation of Posidonia oceanica and its biological communities by regulating uses and activities that may affect the species and its habitat, and by promoting actions that actively contribute to maintaining and achieving its favourable conservation status. It prohibits trawling, sand and gravel	✓	✓	×

	extraction, the dumping of dredged materials and uncontrolled anchoring on Posidonia seagrass beds.			
Law 5/2005, of 26th of May, for the conservation of areas of environmental importance (LECO)	The purpose of this law is to establish the general legal framework for the declaration, protection, conservation, restoration, improvement, and proper management of environmentally significant areas in the Balearic Islands. It also establishes conservation mesures for the Natura 2000 Sites in the Balearic Islands, and the obligation to carry out an assessment of the impact on Natura 2000 sites of any plan or project that may affect them significantly.	×	✓	×
Law 3/2023, of 17th February, Menorca Biosphere Reserve	Article 16 authorizes the Menorca Island Council to adopt several measures related to marine conservation. These include preparing conservation plans for endangered marine species, establishing guidelines for managing recreational boating and other maritime activities, and promoting research on species and human impacts. The Council is also responsible for monitoring the condition and management of species and habitats in marine reserves, implementing a surveillance plan for *Posidonia oceanica* (without affecting national jurisdiction), and developing management tools for marine protected areas in line with Law 42/2007. Additional measures include improving knowledge on invasive species and creating guidelines to limit wastewater discharge into the sea.	✓	×	×

Stakeholder perceptions

During the process of defining the restoration project for the Posidonia meadow in Cala Blanca, a **survey** was conducted to analyse the perceptions of relevant stakeholders regarding the ecosystem services provided by the meadows, ecological restoration, existing regulations, and payment mechanisms for ecosystem services.

The survey was completed by 44 participants, representing 30 different entities across the public administration, research, private sector, and civil society. The results from 44 stakeholder interviews were analyzed using a thematic analysis approach. The thematic categories correspond to the main axes of the interviews.

Table 8: *Stakeholder analysis results in the Spanish Pilot site*

Axis 1:	**Axis 2:**	**Axis 3:**
***P. oceanica* — Status, level of knowledge, awareness of restoration initiative, including ARTEMIS, at pilot site level**	**Conservation and Restoration Governance Framework**	**Awareness of *P. oceanica* Ecosystem Services (ES) and Payment for Ecosystem Services (PES) Schemes**
Main Findings:		
• Level of knowledge is high among all stakeholders • **Good awareness of existing** restoration projects, specially those carried out in the Balearic Islands, including ARTEMIS actions	• Good level of knowledge about conservation legislation and institutional framework exist • The best-known restoration framework is the Nature Restoration Law, but several participants acknowledged not knowing the details of this regulation.	• High awareness of Posidonia ecosystem services. The answers rated regulating and supporting services as the most important (climate regulation and CO_2 capture, coastal protection, biodiversity maintenance, and water quality). Provisioning and cultural services, such as tourism and fisheries, were rated as moderately or variably important. • Moderate awareness but strong conceptual acceptance of PES as an innovative funding tool. • Financing mechanisms, preferred funding sources included public funds (EU, national, regional), public-private partnerships, earmarked taxes on impactful activities (e.g. tourism, anchoring), and shared responsibility mechanisms whereby ecosystem beneficiaries contribute to conservation.

Thematic Insights:		
• Broad awareness of human activities and main pressures affecting *P. oceanica* meadow • The respondents highlight a clear preference for combining regulatory and technical measures with awareness-raising and scientific monitoring to achieve an effective conservation status.	Open responses identified key governance barriers, such as: • lack of inter-administrative coordination • bureaucratic complexity • insufficient stable funding • limited technical capacity • conflicts between economic and conservation interests Other barriers related to restoration projects: • Posidonia growth rate • Identify suitable sites for restoration • Stable and continuous long-term/medium-term monitoring and maintenance	• A large part of the respondents say they have **doubts about how PES work**. • General uncertainty regarding their practical implementation.

Findings

In **Menorca (Spain), P. *oceanica* conservation is comparatively advanced, supported by detailed mapping, anchoring regulation, and a strong regional legal framework, particularly in the Balearic Islands**. Public awareness of the ecological value of Posidonia meadows is high, and institutional capacity for protection and monitoring is relatively well developed. The Cala Blanca case illustrates that, even fifteen years after a documented impact, natural recovery is extremely slow and requires active intervention to restore ecological functionality.

However, the pilot site reveals a structural pattern consistent with the broader Mediterranean context: while protection measures are robust, restoration remains project-based and reactive, rather than embedded within a systematic policy and financing framework.

The analysis highlights the following key features:

- **Protection frameworks are well established**, particularly through Royal Decree 191/2026, and Balearic Decree 25/2018 and Natura 2000 obligations.
- **Restoration actions are implemented mainly through project initiatives** (e.g. ARTEMIS), rather than as part of a structured long-term regional programme.
- **There is no standardized set of restoration metrics or operational protocols** specifically linked to scaling restoration across sites.
- **Financing remains predominantly public and project-based**, with conceptual acceptance of PES mechanisms but limited clarity regarding implementation pathways.
- **Governance barriers** include inter-administrative coordination challenges, bureaucratic complexity and insufficient stable funding.

Overall, Menorca represents a mature protection model that has not yet transitioned into a programmatic restoration and financing model aligned with ecosystem service valuation and long-term climate strategies.

Recommendations

Recommendation 1: Consolidate protection leadership into a structured regional restoration programme

The Balearic Islands, and Menorca in particular, already demonstrate strong regulatory protection and high public awareness of the ecological value of *P. oceanica*. The priority should therefore be to complement the strong protection framework with structured restoration planning.

A regional Posidonia restoration programme, aligned with the national and planning to implement the Nature Restoration Regulation and integrated into marine spatial planning and climate strategies, would allow restoration to evolve from isolated interventions to coordinated, long-term ecological recovery efforts. Such a programme should define standardized site selection criteria, restoration methodologies, monitoring obligations and financing planning tools. This would position the Balearic Islands as a Mediterranean reference region not only for protection but also for structured restoration governance.

Recommendation 2: Operationalise ecosystem service valuation within existing governance frameworks

Given the high awareness of ecosystem services among stakeholders, Menorca provides favourable conditions for integrating ecosystem service valuation into decision-making processes.

Before scaling market-based instruments, priority should be given to establishing the necessary enabling conditions. In particular, this includes:

- embedding ecosystem service metrics (carbon sequestration, coastal protection, biodiversity support) into planning and reporting frameworks;
- aligning restoration objectives with climate mitigation and adaptation strategies;
- piloting carefully designed mechanisms (e.g. PES schemes, voluntary contributions, earmarked levies on anchoring or tourism) within a robust governance framework.

Once these foundational elements are in place, market-based instruments can be scaled in a credible, transparent and ecologically sound manner.

Concluding Remarks

The ARTEMIS pilot sites demonstrate that restoring Mediterranean seagrass ecosystems is not only an environmental necessity, but also a governance and investment challenge that requires long-term coordination across policies, institutions, and stakeholders. While the ecological and socio-economic value of P. *oceanica* and other seagrass habitats is widely recognized, the experience from Greece, Italy, and Spain shows that **restoration efforts remain fragmented, project-based, and insufficiently integrated into broader marine and coastal planning frameworks.**

At the same time, the pilot sites provide practical evidence that **effective restoration is achievable when scientific knowledge, local engagement, protection measures, and financing mechanisms are combined within coherent governance structures**. The lessons emerging from ARTEMIS offer a valuable foundation for translating the ambitions of the EU Nature Restoration Regulation into operational and site-specific action across the Mediterranean, supporting a transition from isolated restoration initiatives toward coordinated, long-term ecosystem recovery strategies.