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COMMUNITIES AT THE HELM

A CALL TO ELEVATE COASTAL COMMUNITIES AS AGENTS OF NATURE-BASED CLIMATE ADAPTATION ACROSS THE MEDITERRANEAN

ABOUT THIS REPORT

This report explores how the Mediterranean region would benefit from inclusive sustainable ocean governance that actively foregrounds the key role coastal communities already play as both holders of local knowledge and the de facto stewards of the sea.

It provides a blueprint for action to advance community-led adaptation across the Mediterranean and build the resilience of coastal communities, and closes with recommendations to support the agency of coastal communities in the Mediterranean and beyond so that they may scale the implementation of nature-based solutions that contribute to achieving the Paris Agreement.

This report is targeted at governments, regional institutions, donors, financial institutions and other actors attending the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP). It was co-published by WWF's Coastal Communities Initiative, the WWF Mediterranean Marine Initiative, World Resources Institute Ocean and the General Fisheries Commission for the Mediterranean.



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INTRODUCTION

The Mediterranean is warming roughly 20% faster than the global average, placing the region's growing coastal communities at high risk of experiencing severe climate-related impacts.

About a third of the Mediterranean population – or 150 million people – currently live near the sea. These communities depend on healthy coastal ecosystems and intact infrastructure for their livelihoods, food security and overall well-being. With coastal populations expected to grow faster than inland populations under most socioeconomic pathways, the number of people and assets exposed to climate hazards will continue to rise.[1]

The impacts of climate change on the Mediterranean coastline are already measurable. Mean sea-level rise has accelerated from about 1.4 millimetres (mm) per year in 1993 to 2.8 mm per year in 2018.[2] Rising sea levels exacerbate the risks of coastal flooding and erosion, further degrading coastal habitats and the protection they provide to people and key infrastructure.

This poses an economic risk that threatens major Mediterranean coastal sectors, including shipping, tourism, fisheries and aquaculture. In Tunisia alone, coastal erosion costs the country about 2.8% of gross domestic product each year.[3] At sea, marine heatwaves have become 40% more common and 15% longer over the past two decades. These heatwaves have contributed to mass mortality events for various Mediterranean coastal species.[4]



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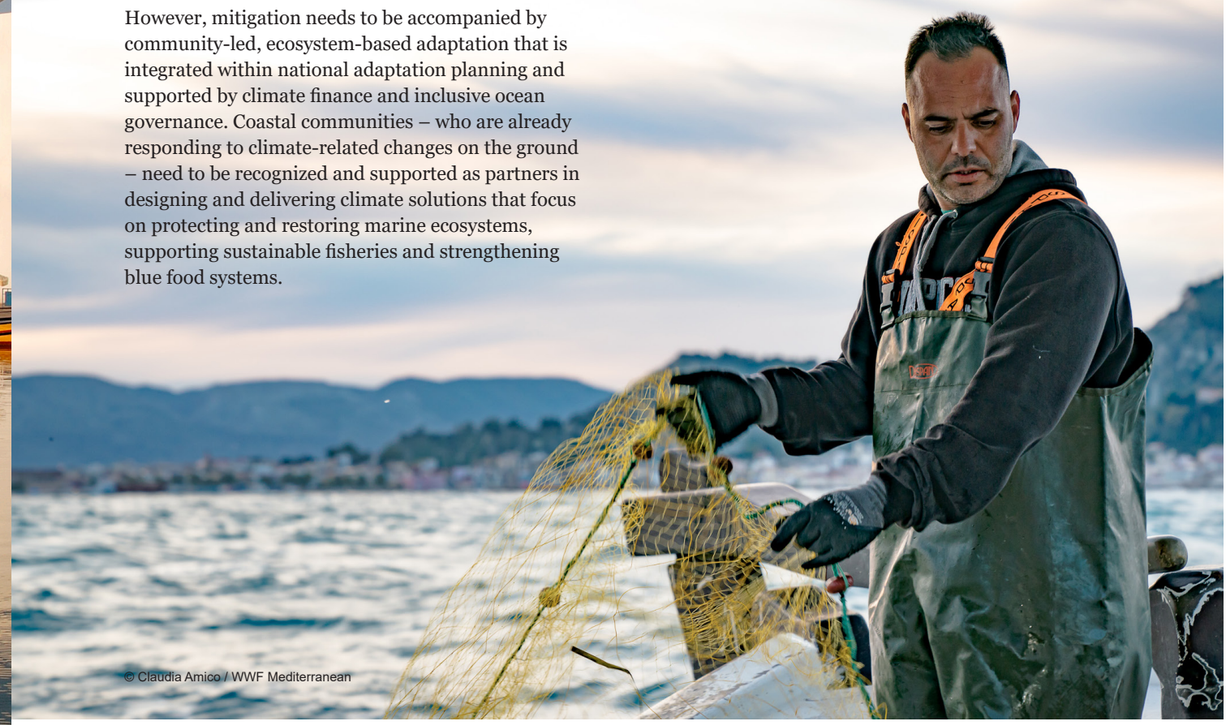
MITIGATE GLOBALLY, SUPPORT LOCAL COMMUNITIES TO LEAD ADAPTATION

Emission cuts remain the primary means of reducing climate and ocean risks. The ocean-based actions described on these pages can only succeed alongside rapid, deep and sustained greenhouse gas emissions reductions within a just, orderly and equitable transition away from fossil fuels, consistent with the outcomes of the first global stocktake.

Within this broader transition, ocean-based mitigation measures include reducing emissions from shipping and other maritime sectors; accelerating the shift towards socio-environmentally responsible offshore renewable energy; and protecting and restoring blue-carbon ecosystems such as seagrasses, salt marshes and mangroves.

However, mitigation needs to be accompanied by community-led, ecosystem-based adaptation that is integrated within national adaptation planning and supported by climate finance and inclusive ocean governance. Coastal communities – who are already responding to climate-related changes on the ground – need to be recognized and supported as partners in designing and delivering climate solutions that focus on protecting and restoring marine ecosystems, supporting sustainable fisheries and strengthening blue food systems.

Achieving this at scale requires governance frameworks capable of connecting local action with national priorities. Sustainable ocean plans and other integrated ocean planning approaches provide a mechanism to align climate adaptation, biodiversity conservation, fisheries management and sustainable development objectives within a single vision for ocean stewardship.



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SMALL-SCALE FISHERS AS PARTNERS IN MITIGATION AND ADAPTATION

Mediterranean coastal communities are more exposed to the impacts of climate change, especially those on local fisheries, but they are also key agents of climate adaptation and mitigation.

Coastal residents, local authorities, marine protected area (MPA) managers and community-based organizations possess knowledge of local ecosystems and have a direct stake in their long-term health. This is particularly true for small-scale fishers, who are deeply embedded in coastal communities and active participants in the blue economy across the Mediterranean and Black Sea. According to the United Nations Food and Agriculture Organization, the small-scale fisheries sector supports more than 114,000 jobs and generates more than 30% of annual fisheries revenue, despite accounting for only about 19% of the regional catch.[5] As warming waters alter the distribution and availability of commercial fish species, small-scale fishers are among the groups most directly affected by the impacts of climate change.

Some communities in the Mediterranean are already responding to the effects of climate change, taking actions to strengthen their ecological, social and economic resilience (see “From fishing sharks to harvesting blue crabs in Tunisia”). With appropriate support, such actors could help translate national and regional climate commitments into practical, community-led adaptation actions.



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CASE STUDY

FROM FISHING SHARKS TO HARVESTING BLUE CRABS IN TUNISIA

Small-scale fishers in the Gulf of Gabès, Tunisia, are demonstrating how coastal communities can become active agents of both climate adaptation and biodiversity conservation by transitioning away from shark fishing and towards the sustainable use of invasive species.

The Gulf of Gabès is one of the Mediterranean’s most productive marine areas, hosting rich biodiversity, important fisheries and extensive seagrass meadows. It is also an important shark and ray area,[6] supporting several keystone species from the world’s most threatened group of marine vertebrates.

The gulf is increasingly affected by rising sea temperatures and other pressures that are altering ecosystem dynamics, the distribution of species and fishing opportunities faster than conventional management systems can respond. To address this, WWF and its partners engaged in a participatory conservation approach that draws on the local ecological knowledge of fishers to develop adaptation and conservation measures.

Through workshops, habitat-mapping, monitoring activities and fisheries-management discussions, more than 150 fishers provided local ecological knowledge of historical fishing grounds, nursery areas, the seasonal movements of sharks and rays and emerging fishing grounds for invasive blue crabs. They also shared stories of long-term environmental changes observed across generations. Combined with scientific assessments, this knowledge helped participants identify critical habitats, design recovery measures and develop locally appropriate adaptation strategies. By involving fishers not only as resource users but also as knowledge holders and decision-making partners, the approach strengthened local ownership, trust and long-term stewardship of marine resources.

The initiative also identified alternative livelihood opportunities. Climate change and warming waters have contributed to the expansion of invasive blue crabs across the Mediterranean Sea. The participatory process saw fishing communities transform this ecological threat into an economic opportunity: starting in October 2025, 14 fishers voluntarily traded their shark-fishing gear for traps to harvest blue crabs instead.

ADAPTING BY CHANGING TARGET SPECIES

This provides a practical example of how small-scale fishers can adapt to climate change by adjusting their fishing activities to match changing ecosystem conditions. By capitalizing on the emergence of a new resource, fishers strengthened their economic resilience while reducing their dependence on declining species. Commercial harvesting of blue crabs – which are used for food, fishing bait and as inputs in industrial and medical production processes – helps reduce abundance of this invasive species, limiting its impact on native fisheries and habitats. Changing target species also supports the recovery of shark and ray populations which, in turn, helps to keep the populations of grazing species under control. This strengthens the ecological processes that support biodiversity and – crucially for nature-based climate mitigation – supports blue carbon ecosystems such as seagrass meadows.[7,8]

The experience from the Gulf of Gabès demonstrates how climate adaptation and biodiversity conservation can reinforce one another. Through a participatory approach that combines scientific knowledge with the local ecological knowledge of fishers, coastal communities have become active stewards of rapidly changing marine ecosystems in which the need for climate adaptation is not a choice but a necessity.

Through a participatory approach that combines scientific knowledge with the local ecological knowledge of fishers, coastal communities have become active stewards of rapidly changing marine ecosystems in which the need for climate adaptation is not a choice but a necessity.

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USING NATURE-BASED SOLUTIONS TO BUILD CLIMATE RESILIENCE

Nature-based solutions provide an important opportunity to connect community action with climate and biodiversity outcomes.

Nature-based solutions that achieve healthy, restored marine and coastal ecosystems can simultaneously store carbon and support biodiversity (see "Harnessing the carbon sequestration potential of the Mediterranean's endemic seagrass"). In supporting such biodiversity, they also sustain fisheries and generate other socioeconomic benefits that ultimately reduce climate vulnerability. The challenge is not simply to identify more nature-based solutions, but to create the enabling conditions that allow coastal communities to lead, co-design and scale them.

Nature-based solutions that achieve healthy, restored marine and coastal ecosystems can simultaneously store carbon and support biodiversity.



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DEEP DIVE

HARNESSING THE CARBON SEQUESTRATION POTENTIAL OF THE MEDITERRANEAN'S ENDEMIC SEAGRASS

Within the Mediterranean lie seagrass meadows: marine treasures that have the potential to capture carbon at a faster rate and with greater permanence than tropical forests – if these meadows are given time and a safe space to recover.

The Mediterranean Sea contains seven types of seagrasses, of which one – *Posidonia oceanica* – is endemic. Research shows that such seagrasses, like other coastal ecosystems including mangroves, have the potential to capture carbon 35 times faster than tropical forests by continuously burying carbon into waterlogged, oxygen-depleted soils.[9] However, achieving this potential is a challenge in areas like the Mediterranean, where untreated sewage outfalls, the high frequency of anchor drops and other high-contact human activities cause relentless chemical and physical damage to seagrass meadows, stunting their growth.

Yet, there is hope. Endemic *Posidonia* has been shown to be remarkably robust, able to regenerate at an average rate of 8.6% per year without needing investment into active restoration. This figure is based on a longitudinal study off the coast of France in which scientists tracked the growth rate of *Posidonia* over a 40-year period, after a wastewater treatment facility installed in the 1980s started reducing sea pollution levels. By 2025, *Posidonia* cover had reached 94% and 81% in two 36-square-metre sample areas of meadow, pointing to near-complete restoration.[10]

The evidence is clear: all that is needed for *Posidonia* to recover is for it to stop being damaged. Expanding the cover of *Posidonia* across the Mediterranean would also benefit the region's fisheries and biodiversity: as much as 25% of Mediterranean marine species spend part of their life in seagrass meadows, which provide protection against larger predators and the rigors of the open sea.[11] Greater *Posidonia* cover would create more opportunities for these species to procreate and thrive, ultimately supporting the recovery of depleted fish stocks and contributing to countries' commitments to global biodiversity goals.

Countries across the Mediterranean are starting to formally integrate *Posidonia* into their official policy frameworks, driven by the European Union (EU) Nature Restoration Regulation (2024), the EU Blue Carbon Roadmap (2025) and the IUCN Mediterranean Blue Carbon Strategy (2025–2030). France and Spain have taken the lead in this by recognizing blue carbon and establishing formal methodologies for the calculation of carbon credits generated from protecting or restoring *Posidonia* meadows.[12,13] What is needed now is for such policies to gain momentum across the Mediterranean even as conservation actions to protect these underwater landscapes intensify.

WWF works with partners from 16 countries across three continents to restore marine biodiversity, protect ecosystems and support coastal communities in the Mediterranean. In 2023, WWF Mediterranean Marine Initiative (WWF-MMI) launched the Mediterranean Blue Forest Project, a regional collaboration spanning France, Greece, Türkiye and Tunisia, which aims to protect 7.5% of the region's endemic *Posidonia* over roughly 150,000 hectares by 2027.[14] To enable this goal, WWF-MMI published a comprehensive technical report assessing the impacts of dropping anchors on important seagrass meadows[15] and supported the development of a toolkit for establishing eco-mooring areas for recreational vessels.[16]

These knowledge products, together with WWF's engagements on the ground, are building communities' capacity to take the lead in actions to protect seagrasses. Examples of successful community-led actions can be found across the region. In Türkiye, for example, authorities and diving schools in Kaş-Kekova have taken the lead in developing eco-moorings, while the community in Datça-Bozburun has formed a Seagrass Working Group to see to the long-term stewardship of these vital habitats.[17] WWF is drawing on this work to inform national policy discussions in Greece and other areas in Türkiye, with an eye to protecting seagrass meadows from damage caused by human activities such as unregulated mooring and leisure boating.

Once successfully connected to local and global voluntary carbon markets, the carbon sequestration benefits of community-led actions to protect and restore *Posidonia* could generate sustainable climate finance to support the long-term protection of seagrass meadows. Beyond enabling mitigation, such funding could also help address the adaptation finance gap by safeguarding the ecosystems that support fisheries, reduce coastal vulnerability, and strengthen community resilience.

WHAT IS NEEDED TO SCALE SOLUTIONS

Finance, governance capacity-building and enabling national and regional policies would strengthen the agency of coastal communities, enabling them to scale and sustain nature-based solutions that could contribute meaningfully to national climate and biodiversity objectives.

Coastal adaptation initiatives encounter recurring barriers to successful and sustained implementation, including weak recognition of community stewardship, short-term or inaccessible finance, fragmented governance, lack of integrated spatial planning and institutional capacity.[18] However, each of these barriers also presents an opportunity for action.

Positioning coastal communities as central, leading partners and deeply acknowledging that nature plays an important role in the climate solution would enable Mediterranean countries to progress from climate adaptation commitments to strategic implementation on the ground. When supported by the enabling conditions listed below, community-led adaptation initiatives can move beyond individual projects to deliver resilience at the seascape scale.

ENHANCED COMMUNITY AGENCY

Communities are often consulted in climate and biodiversity policy discussions, but are not usually given meaningful decision-making power or supported with resources to play an active role in fully co-designing and implementing nature-based solutions over the long term.

Creating conditions for communities to co-design and lead implementation of adaptation measures can strengthen local ownership and draw on the knowledge and experience of those directly managing and depending on marine resources (see "Turning Mediterranean marine protected areas into climate adaptation hubs").



© Brijuni National Park

CASE STUDY

TURNING MEDITERRANEAN MARINE PROTECTED AREAS INTO CLIMATE ADAPTATION HUBS

The 100MPA Med Alliance – a collaboration that aims to integrate climate adaptation into the strategies of at least 100 marine protected areas in the Mediterranean by 2030 – has partnered with coastal communities in Croatia's Brijuni National Park to successfully co-develop a Climate Change Adaptation Action Plan, proving that community participation is a robust approach for developing evidence-based, practical climate strategies to enhance climate resilience.

Marine protected areas (MPAs) are effective tools for building resilience. However, only a small number of MPAs in the Mediterranean currently integrate climate adaptation into their management. Croatia's Brijuni National Park is one of them.

Located on Croatia's Adriatic coast, the 100MPA Med Alliance has supported stakeholders in Brijuni National Park to develop a Climate Change Adaptation Action Plan through a participatory process that involved park managers, scientists, public authorities, fishers, tourism operators, divers and local residents. Together, these stakeholders identified practical actions to address local climate risks and strengthen ecosystem resilience, which will ultimately support local livelihoods, tourism and fisheries. Climate adaptation measures from the action plan have subsequently been integrated into Brijuni National Park's statutory Management Plan.

A key feature of Brijuni's management approach is the active involvement of coastal communities. Local fishing associations contribute to monitoring environmental changes and improving marine stewardship, while citizen-science initiatives engage residents, students and visitors in tracking climate impacts and biodiversity trends. Partnerships with tourism and diving operators further support sustainable and climate-friendly practices. In doing so, communities have helped to identify the most sensitive sites for *Posidonia oceanica*, the Mediterranean's endemic seagrass, and integrate climate risks into zoning and tourism management.[19]

By combining community participation, local knowledge and science-based management, Brijuni has become one of 100MPA Med Alliance's "Lighthouses for Adaptation". This experience demonstrates how MPAs can serve not only as conservation areas, but also as platforms for community-led climate resilience, offering a model that can be replicated across the Mediterranean.

ABOUT THE 100MPA MED ALLIANCE

The 100MPA Med Alliance was established to help bridge the implementation gap between climate adaptation and MPA management. Its ambition is to help at least 100 Mediterranean MPAs become climate adaptation hubs that protect biodiversity while strengthening the resilience of coastal communities by 2030.

The alliance provides MPA managers and local stakeholders with practical adaptation tools, technical support, peer-learning opportunities and a platform to strengthen the role of MPAs in climate policy. By promoting community-driven solutions and collaboration across the Mediterranean, it helps translate climate science into action on the ground. The initiative builds on more than a decade of regional cooperation through MPA Adapt,[20] MPA Engage[21] and MPA4Change,[22] which progressively developed, refined and scaled climate adaptation approaches for Mediterranean MPAs. WWF is a strategic partner of the alliance. For more information, visit ***www.100mpamedalliance.org***.

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ACCESS TO SUSTAINABLE FINANCE

Climate finance, local implementation and ecosystem-based adaptation remain poorly aligned. Coastal stewardship – including seagrass conservation and restoration projects – typically depends on public and philanthropic funding that is time-bound. Meanwhile, community-led blue enterprises, including those that sustainably use seagrasses, struggle to attract private finance due to their small project size, high transaction costs, underdeveloped pipelines of investable projects and real and perceived risks.[23,24] Directing more climate and biodiversity finance to coastal communities would enable them to sustain and scale nature-based solutions.

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ALIGNED, MORE INTEGRATED GOVERNANCE

Biodiversity and climate typically fall under discrete policy frameworks, and the fisheries, coastal planning and maritime sectors are often managed by different state institutions. Aligning these policies and sectors as well as coordinating actions between local, national and regional governance would help connect community-led action with wider climate and ocean commitments.

Regional governance mechanisms and community-led initiatives are complementary components of climate resilience: while local actors lead adaptation on the ground, regional institutions can create the enabling conditions needed to scale successful approaches. These enabling conditions include access to robust scientific evidence, more coordinated policies, opportunities to exchange knowledge and enhanced cooperation at the regional level, for example, through the establishment of active and effective regional fisheries management organizations (RFMOs). The Mediterranean's RFMO is the General Fisheries Commission for the Mediterranean (GFCM), which contributes to climate adaptation and mitigation across the region by integrating climate considerations into scientific advice, management processes and sectoral development (see "Mainstreaming climate action into fisheries and aquaculture in the Mediterranean and Black Sea").



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DEEP DIVE

MAINSTREAMING CLIMATE ACTION INTO FISHERIES AND AQUACULTURE IN THE MEDITERRANEAN AND BLACK SEA

Recognizing the growing impacts of climate change on marine ecosystems, aquatic food systems and coastal livelihoods, the General Fisheries Commission for the Mediterranean has progressively integrated climate adaptation and mitigation across its fisheries and aquaculture agenda.

The General Fisheries Commission for the Mediterranean (GFCM) started building the institutional and scientific conditions needed to incorporate climate considerations into fisheries management in 2017 with the Expert Meeting on Climate Change Implications for Mediterranean and Black Sea Fisheries.[25] This meeting set out a roadmap towards climate-responsive fisheries management.

These efforts were further advanced in 2018, when the Regional Plan of Action for Small-Scale Fisheries in the Mediterranean and the Black Sea (RPOA-SSF) was signed to explicitly recognize the role of small-scale fisheries in climate action. Through the RPOA-SSF, countries committed to involve the knowledge and expertise of small-scale fisheries actors in addressing climate change, including within the framework of Nationally Determined Contributions, and to assist and support small-scale fishing communities affected by climate change.[26]

Adopted in 2021, the GFCM's 2030 Strategy foregrounded climate change as a cross-cutting priority in the GFCM work programme, which aims to strengthen the resilience of Mediterranean and Black Sea aquatic food systems through science-based management, regional cooperation and stakeholder engagement.[27] Work under the strategy included engaging scientists, managers and other stakeholders during the fisheries and climate change session at Fish Forum 2024, the region's flagship scientific gathering, to identify priorities for climate-responsive fisheries governance. This led to the GFCM establishing its Network of Experts on Fisheries and Climate Change in 2025, providing a dedicated mechanism to integrate climate knowledge into the GFCM's scientific advisory framework.

The network piloted an assessment in response to Recommendation GFCM/47/2024/7 on how climate indicators could complement conventional stock assessments, including through climate-informed stock-recruitment relationships and reference points. While further methodological development is required, the pilot established a practical pathway to incorporate climate information into fisheries advice and adaptive management.

Climate-related considerations are now increasingly reflected in the workplans and deliberations of the Scientific Advisory Committee on Fisheries, such as in discussions on small pelagic fisheries in the Western Mediterranean, and the Scientific Advisory Committee for the Black Sea.

In parallel, the GFCM has advanced a regional agenda for lower-emission and more resilient fisheries through a roadmap towards decarbonizing fishing activities (Resolution GFCM/46/2023/5). The roadmap includes technical workshops and pilot initiatives on energy efficiency, gear innovation and harmonized fuel-consumption monitoring, as well as establishing the Regional Platform on Decarbonization, Selectivity and Vulnerable Species in 2026.

In aquaculture, the GFCM has developed a regional framework that combines climate adaptation and mitigation, environmental sustainability and sectoral resilience. The Scientific Advisory Committee on Aquaculture supports the framework's commitments by providing technical guidance, hosting regional exchanges and engaging in capacity-building activities.

The GFCM has further supported the framework's implementation through Aquaculture Demonstration Centres and allocated zones for restoration, which showcase restorative and circular production models while enhancing ecosystem resilience. GFCM contracting parties also endorsed a regional network of institutions for pathogen diagnosis and treatment in aquaculture to improve disease surveillance, technical cooperation and adaptive capacity.

Through these complementary fisheries and aquaculture actions, the GFCM is progressively building the governance mechanisms, knowledge and partnerships required to translate climate commitments into practical and scalable solutions for resilient aquatic food systems, demonstrating how regional fisheries governance can support climate adaptation and mitigation.

INTEGRATED OCEAN GOVERNANCE AND PLANNING

Nature-based solutions can struggle to achieve lasting benefits when decisions affecting the ocean and coast are made through fragmented governance processes. Responsibilities for different activities are often spread between different government departments, resulting in disconnected planning and implementation. Sustainable ocean plans (SOPs) and other integrated ocean planning approaches offer a solution to such fragmentation by bringing together various priorities within a shared framework that helps to align policies, reduces conflicts among uses, strengthens ecosystem resilience and supports coordinated action across sectors and scales (see “How sustainable ocean plans offer a framework for integrated ocean governance”).

By connecting community-led initiatives with national climate, biodiversity and sustainable development objectives, integrated ocean planning can help safeguard the ability of nature-based solutions to deliver long-term benefits for people, nature and the economy.

STRONGER IMPLEMENTATION OF EXISTING POLICIES

Mediterranean countries operate within an extensive framework of marine policies and commitments. At the regional level, these include the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) and relevant protocols, particularly the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD Protocol) and the Protocol on Integrated Coastal Zone Management in the Mediterranean (ICZM Protocol). For European Union (EU) member states, this framework is complemented by the EU Marine Strategy Framework Directive, the EU Nature Restoration Regulation and the EU Biodiversity Strategy for 2030.

Despite the comprehensiveness of this framework, the implementation, enforcement, monitoring and management of these policies are often insufficient. Strengthening local and regional capacity to effectively implement these policies is critical for translating existing commitments into practical, measurable conservation outcomes across the Mediterranean. Partnering with coastal communities can be an important mechanism for such implementation.



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DEEP DIVE

HOW SUSTAINABLE OCEAN PLANS OFFER A FRAMEWORK FOR INTEGRATED OCEAN GOVERNANCE

Climate adaptation in the Mediterranean depends not only on local action but also on governance mechanisms capable of coordinating decisions across fisheries, conservation, coastal development, tourism, maritime transport and climate policy. Sustainable ocean plans bring these priorities together within a single framework for ocean governance.

Developed by the High-Level Panel for a Sustainable Ocean Economy (Ocean Panel) – a multinational initiative hosted by the World Resources Institute – sustainable ocean plans (SOPs) are a concept designed to guide the sustainable management of 100% of ocean areas under a country’s national jurisdiction. SOPs provide an overarching framework that integrates existing tools such as marine spatial planning, marine protected areas and climate adaptation strategies into a coherent whole. In doing so, they help reduce policy fragmentation, maximize synergies across sectors and create a clearer pathway from national commitments to implementation.

SOPs are particularly relevant for climate adaptation because they connect ecosystem protection, sustainable resource use and community resilience. They help ensure that adaptation measures are planned in a coordinated manner, rather than pursued independently. Recent Ocean Panel guidance highlights that SOPs can serve as a mechanism for integrating ocean-based climate mitigation and adaptation actions into broader national development and climate strategies while strengthening coordination across ministries and sectors.[28]

One of the key features of an effective SOP is an emphasis on inclusive, knowledge-based decision-making. Ocean Panel guidance identifies stakeholder participation and integration of local and Indigenous knowledge as core attributes of successful ocean planning. This approach aligns closely with growing recognition across the Mediterranean that coastal communities are not simply beneficiaries of adaptation, but essential partners in designing and implementing solutions.

As Mediterranean countries seek to simultaneously achieve climate commitments, biodiversity targets and sustainable blue economy ambitions, SOPs offer a practical framework for connecting these agendas. Despite these benefits, France is currently the only Mediterranean country with an SOP, which indicates significant scope for wider uptake across the region. By linking community-led action with national policy objectives and long-term ocean stewardship, they can help create the enabling conditions needed to scale adaptation and resilience across entire seascapes.

One of the key features of an effective sustainable ocean plan is an emphasis on inclusive and knowledge-based decision-making.

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RECOMMENDATIONS FOR DECISION-MAKERS IN THE MEDITERRANEAN

The need for action is increasingly urgent. About one-third of the Mediterranean population lives close to the sea, where climate risks from sea-level rise, coastal erosion, flooding and ecosystem degradation are rising.

Without effective adaptation, up to 20 million people in the Mediterranean could face permanent displacement due to sea-level rise by 2100. Furthermore, longer and increasingly frequent marine heatwaves are resulting in mass mortality events that have growing consequences for local communities, marine biodiversity and global climate.[29]

Governments, regional institutions, donors, financial institutions and other actors involved in the region's climate and ocean governance can advance community-led adaptation "blue" initiatives that strengthen resilience across the Mediterranean in the following ways.


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1 GIVE COASTAL COMMUNITIES AN ACTIVE ROLE IN CLIMATE ADAPTATION DECISIONS

Coastal communities should be recognized as active partners in climate adaptation, not simply as beneficiaries of measures designed elsewhere. National and local adaptation policies should make community participation and co-management a standard part of planning, implementation and monitoring of blue nature-based solutions.

In practice, this means:

- Involving small-scale fishers and other coastal users in managing and restoring seagrass meadows, wetlands and other key habitats and species
- Establishing formal co-management arrangements, local advisory committees and participatory monitoring programmes for MPAs and fisheries
- Supporting community-led measures to reduce erosion and restore coastal ecosystems
- Systematically incorporating local and traditional ecological knowledge into climate-risk assessments and management plans
- Strengthening the capacity of local communities and organizations to engage effectively in decision-making and long-term stewardship of coastal resources.


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2 SHIFT CLIMATE FINANCE TOWARDS LOCALLY LED MARINE ADAPTATION

A greater share of climate and biodiversity finance should reach marine ecosystems and the coastal communities that depend on them. Governments, donors and financial institutions should make existing finance more accessible to local actors, and provide long-term funding for initiatives that deliver both ecological and social benefits.

This should include:

- Dedicated funding for community-led restoration of wetlands, dunes and seagrass meadows
- Sustained financing for effective MPA management and co-management
- Support for small-scale fisheries to transition towards more climate-resilient practices.

Governments and financial institutions should also scale blended financing approaches that can combine public, philanthropic and private resources, and provide longer-term funding for ecosystem stewardship.

Access to finance should further be simplified through small-grant mechanisms, technical assistance, capacity-building support and locally accessible funding windows that allow communities and local organizations to develop and implement adaptation actions. Where robust safeguards and accounting frameworks are in place, finance linked to blue-carbon ecosystems can also help protect habitats such as seagrass meadows and coastal wetlands while delivering direct adaptation benefits, including shoreline protection and support to fisheries.

3 PROTECT FIRST, RESTORE WHERE NEEDED, AND REDUCE PRESSURE ON RESILIENCE-BUILDING ECOSYSTEMS

Mediterranean countries should prioritise the protection and recovery of ecosystems and ecological processes that strengthen resilience to climate change. This requires moving beyond nominal protection towards effectively managed, connected and climate-smart networks of MPAs and other area-based conservation measures.

Priority should be given to:

- Identifying and protecting climate refugia
- Preventing anchoring, destructive fishing and coastal development from further damaging *Posidonia oceanica* meadows
- Safeguarding spawning, nursery and feeding grounds that sustain fisheries
- Protecting wetlands, dunes and other coastal habitats that reduce flooding and erosion.

This should be supported by targeted management measures, including improved anchoring regulations, fisheries management measures, coastal-development controls and effective enforcement of existing regulations. Restoration should be targeted where ecological recovery is feasible and where it strengthens ecosystem functions. However, restoration should complement – not substitute – effective protection and reduction of pressures. Furthermore, monitoring and enforcement should be strengthened to ensure that protected ecosystems retain their ecological functions under changing climate conditions. **Priority should be given to protecting ecosystems that provide the greatest adaptation and resilience benefits for coastal communities.**


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4 ADVANCE SUSTAINABLE OCEAN PLANNING TO ALIGN CLIMATE, NATURE AND DEVELOPMENT OBJECTIVES

Climate adaptation and nature-based solutions should be embedded within sustainable ocean plans, marine spatial planning, fisheries management and coastal development decisions rather than addressed through separate sectoral processes. Sustainable ocean plans can provide an overarching framework to align climate resilience, biodiversity conservation, sustainable economic development and community priorities across ocean sectors. Within this framework, marine spatial planning should use climate and ecological information to guide the spatial allocation and management of maritime activities.

This means:

- Using climate-risk scenarios when planning the future development of aquaculture, tourism, ports, offshore energy and other activities
- Steering new pressures away from climate refugia, migration corridors, nursery grounds and other ecologically sensitive areas
- Identifying space for ecosystem restoration and nature-based coastal protection
- Anticipating how fish stocks and fishing grounds may shift as a result of climate change.

Climate-risk assessments, ecosystem-service mapping and scenario planning should be systematically integrated into marine and coastal planning processes. Sustainable ocean plans should also help coordinate implementation across sectors, identify investment priorities, strengthen accountability and monitoring and align ocean action with national climate, biodiversity and sustainable-development commitments.

Moreover, planning processes should assess cumulative impacts and alternative development scenarios, while involving coastal communities, fishers and conservation actors from the outset, before key spatial decisions are made. **Marine spatial planning should be more closely aligned with coastal-development planning and other sectoral policies to ensure coherent and climate-resilient decision-making across land-sea interfaces.**

5 MONITOR AND ASSESS WHETHER ADAPTATION IS ACTUALLY DELIVERING RESILIENCE

Long-term adaptation requires stronger technical and institutional capacity, but also greater accountability for results. Countries should define measurable adaptation outcomes and regularly assess whether policies and management measures are actually reducing climate vulnerability and strengthening ecosystem and community resilience.

This requires:

- Long-term monitoring of sea temperature, seagrass condition, species distribution, coastal erosion and other indicators of ecosystem change
- Stronger capacity among MPA managers, fisheries authorities and local administrations to use climate information in management decisions
- Greater use of citizen science and local ecological knowledge.

Adaptation strategies should include clear indicators (such as changes in habitat condition, ecological connectivity, exposure to coastal hazards, fisheries resilience and community participation) and management measures should be revised where monitoring shows that expected outcomes are not being achieved. **Monitoring frameworks should also track social and economic outcomes, including livelihood resilience, local adaptive capacity, community engagement and the distribution of adaptation benefits among different stakeholder groups. Results should be regularly reviewed and used to adjust management approaches through adaptive management processes.**


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The challenge is not simply to identify more nature-based solutions, but to create the enabling conditions that allow coastal communities to lead, co-design and scale them.

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