

Strengthening marine protection and climate adaptation via cross-sectoral stakeholder engagement

Virtual expert workshop on climate-ready MPAs, 10.12.2024

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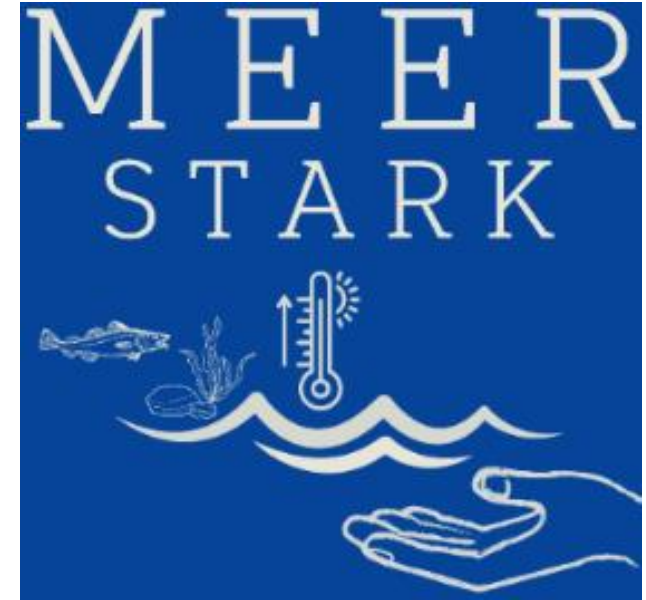


Project ‚MEER:STARK‘

- **Highlight linkages** between marine conservation and climate change adaptation
- **Promote cross-sectoral dialogue** at national and European level
- Develop concrete **cross-sectoral proposals**

Duration: SEPT 2022 – NOV 2025

Funding and Supervision: German Environment Agency (UBA),
Division II 2.3 "Protection of Marine and Polar Regions"



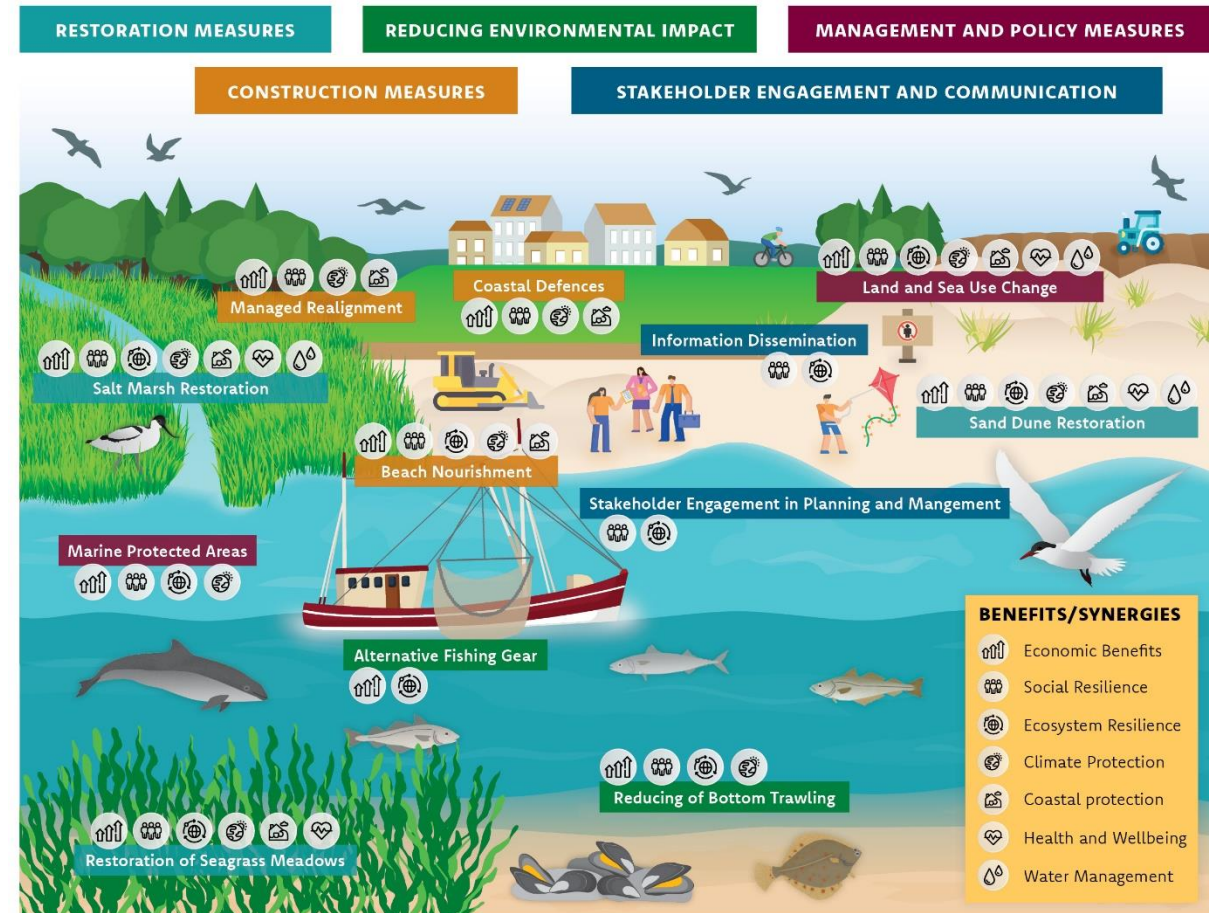
Nexus of marine conservation and climate adaptation

Definition: Holistic approach and integrated actions for the protection of seas, coasts, and adaptation to climate change

Importance of the Nexus Concept

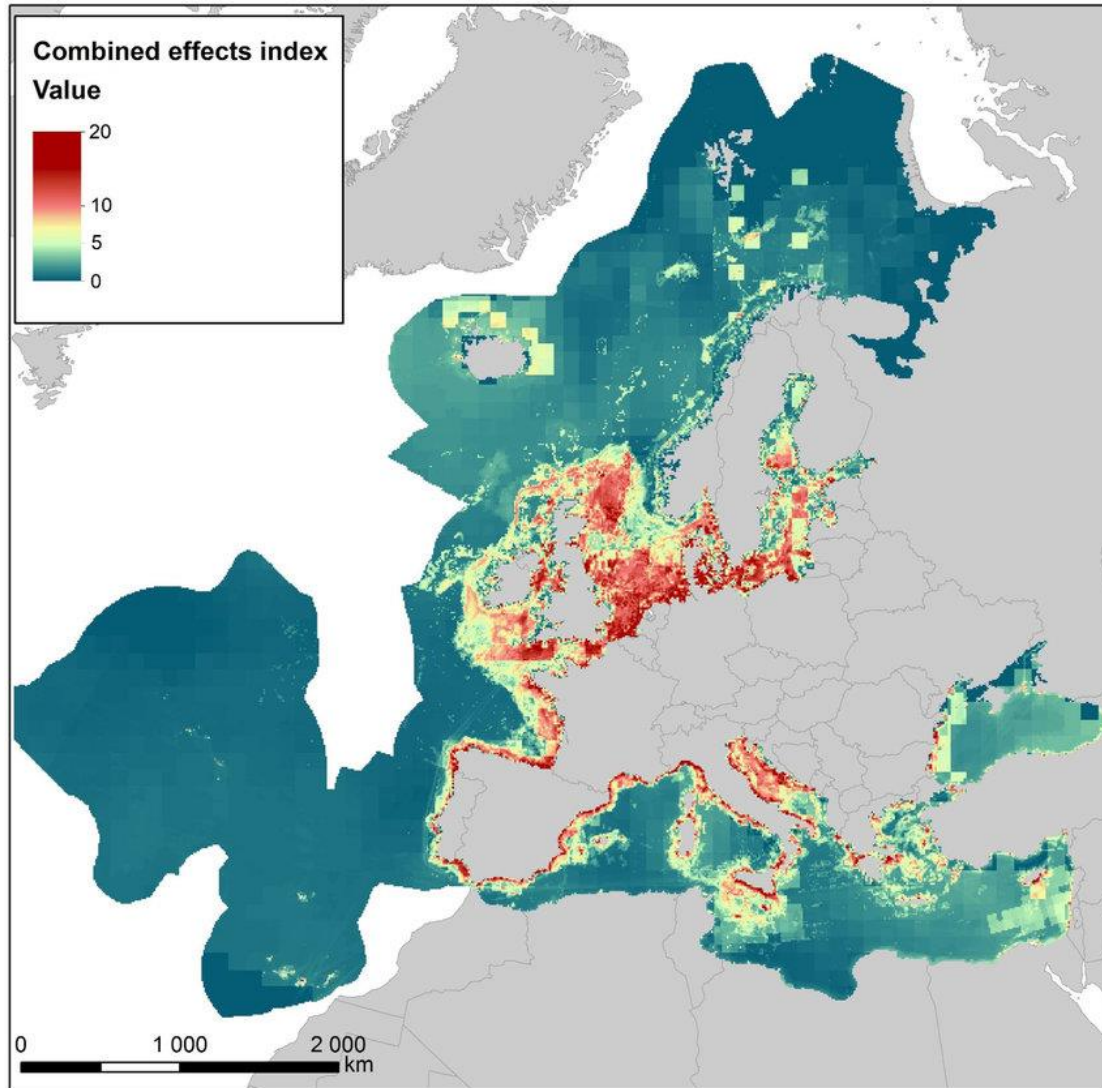
- ▶ **Protecting the oceans/coasts and their biodiversity** crucial part of climate adaptation and vice versa with numerous interactions and synergies between both fields
- ▶ **Promoting social-ecological resilience:** essential to support the adaptability of ecosystems and human communities to climate impacts
- ▶ **Reducing cumulative pressures** (e.g. overfishing, pollution, contaminant inputs)

SYNERGIES AND STRATEGIES FOR MARINE CONSERVATION AND CLIMATE ADAPTATION



MEER:STARK Infographic presented at the German Marine Conservation Symposium 2024

European Seas are under significant threat!



- ▶ Many species and their habitats in the European Seas are under **significant cumulative pressure**, especially in coastal zones.
- ▶ Overfishing, pollution, invasive species, unsustainable marine use, and climate change **interact and overlap**, weakening ecosystems and reducing their capacity to adapt to change (↓ resilience).
- ▶ Ecosystems are **changing rapidly** due to human influences, challenging our ability to conserve biodiversity, ecosystem functions, and human well-being.

Urgent climate risks to marine and coastal ecosystems

Table ES.1 Assessment of major risks

| Climate risks for 'Ecosystems' cluster | Urgency to act | Risk severity | | | Policy characteristics | | |
|--|-----------------------|---------------|-------------|--|------------------------|------------------|----------------|
| | | Current | Mid-century | Late century (low/high warming scenario) | Policy horizon | Policy readiness | Risk ownership |
| Coastal ecosystems | Urgent action needed | +++ | +++ | +++ | Medium | Medium | Co-owned |
| Marine ecosystems | Urgent action needed | +++ | +++ | ++ | Medium | Medium | EU |
| Biodiversity/carbon sinks due to wildfires (hotspot region: southern Europe) | Urgent action needed | +++ | ++ | ++ | Medium | Medium | Co-owned |
| Biodiversity/carbon sinks due to wildfires | More action needed | +++ | ++ | ++ | Medium | Medium | Co-owned |
| Biodiversity/carbon sinks due to droughts and pests | More action needed | +++ | ++ | ++ | Long | Medium | Co-owned |
| Species distribution shifts (*) | More action needed | +++ | ++ | ++ | Medium | Medium | Co-owned |
| Ecosystems/society due to invasive species | More action needed | +++ | ++ | ++ | Medium | Medium | Co-owned |
| Aquatic and wetland ecosystems | More action needed | +++ | ++ | ++ | Medium | Medium | Co-owned |
| Soil health (*) | More action needed | +++ | ++ | ++ | Medium | Medium | Co-owned |
| Cascading impacts from forest disturbances | Further investigation | + | + | + | Long | Medium | Co-owned |

Legends and notes

Urgency to act

- Urgent action needed
- More action needed
- Further investigation
- Sustain current action
- Watching brief

Risk severity

- Catastrophic
- Critical
- Substantial
- Limited

Confidence

- Low: +
- Medium: ++
- High: +++

➤ **Risks to marine and coastal ecosystems have reached critical levels and are the most severe, requiring urgent and decisive action to avoid becoming catastrophic**

**How MPAs support adaptation to
climate-related changes?**

By benefiting ecosystems and people

Ecological adaptation benefits

Safeguarding biodiversity: Protects ecosystems, vulnerable species, and habitats from damage and degradation.

Boosting reproductive capacity: Enhances population recovery and dispersal to new habitats.

Providing climate refugia: Supports buffering of climate species vulnerable to climate stressors and enables ecosystem adaptation, especially in well-connected MPAs.

Promoting stability, recovery and resilience: reducing vulnerability to climatic disturbances.

Enhancing connectivity: Improves structural and functional links between habitats, essential for adaptation, especially through restoration and interconnected MPA networks.

Enabling factors

- **High protection levels** (e.g. strict no-take zones) effectively curb threats and yield greater benefits
- **Older, larger and well-connected MPAs** more effective, allowing ecosystems and biodiversity time and space needed to recover and provide ecological and social outcomes
- **Incorporating biodiversity hotspots and diverse ecosystems** enhances adaptive and mitigative services, ensuring long-term resilience
- **However, over 80% of EU MPAs have low protection levels or incompatibility with conservation**

Social, cultural and economic adaptation benefits

Economic benefits:

- **Spillover effects:** Boosted fish stocks, catch volumes and CPUE, benefiting fisheries, wellbeing and tourism in adjacent areas.
- **Diversified livelihoods:** alternative income sources (e.g. eco-tourism) reducing reliance on overexploited resources.
- **Economic stability:** Strengthened income opportunities while being cost-effective

Social resilience

- **Community empowerment and organisation:** Fostered environmental awareness and cohesion
- **Cultural inclusion:** Incorporation of local/traditional knowledge, values, needs and rights into MPA planning improves acceptance and effectiveness.
- **Wellbeing and co-benefits:** Alleviation of poverty, improved food security, sustainable resource protection, etc.

THE CONTRIBUTION OF MARINE PROTECTED AREAS TO CLIMATE CHANGE ADAPTATION

STATE OF THE EVIDENCE AND POLICY RECOMMENDATIONS



Aleksandar Rankovic, Juliette Jacquemont, Joachim Claudet, Marine Lecerf, Loreley Picourt

With the completion, during UNFCCC COP26, of the last remaining procedural elements that were needed to fully operationalize the Paris Agreement, the attention of climate negotiations can now fully turn towards action. The primary focus of COP27 is thus implementation, but the COP takes place in a context of deep economic turmoil and looming global recession, while the increasing impacts of climate change are creating an ever-stronger sense of urgency. More than ever, there is a risk to overfocus on solutions for climate change mitigation and adaptation that can appear as potential "low-hanging fruits" while their true benefits have not yet been properly assessed.

In this regard, marine protected areas (MPAs) are increasingly being advocated as ocean-based climate solutions, but if and how much MPAs can effectively contribute to mitigation and adaptation has remained controversial so far. ➡

KEY MESSAGES

- **MPAs can contribute to climate adaptation by benefiting ecosystems and people.** Effective MPAs increase biodiversity; reproductive output of marine organisms and coastal protection. They contribute to food security, assets, increases in environmental awareness, and can promote participation and alternative livelihoods.
- **Opportunities exist throughout UNFCCC processes to better recognize the climate benefits that MPAs can provide, including decisions made in Sharm El-Sheikh.** MPAs could be included in the workshops of the Glasgow-Sharm El-Sheikh Work Programme on the Global Goal on Adaptation, in the works of the Nairobi Work Programme and the Adaptation Committee, and addressed during the Global Stocktake. At the national level, MPAs could be included in National Adaptation Plans (NAPs) and Nationally Determined Contributions (NDCs) and their associated climate finance support, with equitable access to resources, and including for MPAs as ecosystem-based approaches for the adaptation of coastal cities.
- **The level of protection matters for MPAs adaptation benefits.** For biodiversity, as well as food security and income, benefits accrue most clearly in fully protected areas, or in highly protected areas with the presence of a fully protected MPA. And the longer the MPA is protected, the larger the benefits. Similar results were found for carbon sequestration as well.
- **Involving local communities in MPA designation and management is key.** Negative effects can arise from MPAs on some aspects of social adaptation, such as user-rights, conflict and costs. Involving local communities in the design, implementation and management of MPAs is necessary to ensure environmental justice and avoid potential negative social impacts.
- **In Sharm El-Sheikh, Parties should urge for an ambitious outcome of Biodiversity COP15.** COP27 takes place only a few weeks before COP15 (7-19 December, Montreal) of the Convention on Biological Diversity (CBD). COP27 should send a call for an ambitious outcome at CBD COP15. There will be no delivery on Paris without a strong deal in Montreal.

SOCIAL ADAPTATION

- ASSETS**
income & costs
- FLEXIBILITY**
occupational diversity
- SOCIAL ORGANIZATION**
conflict & cohesion
- LEARNING**
environmental awareness & education
- AGENCY**
user rights & participation
- FOOD SECURITY**
CPUE & local nutrition

ECOLOGICAL ADAPTATION

- PHENOTYPIC PLASTICITY**
capacity to acclimatate
- CONNECTIVITY**
spatial connectivity
- STABILITY**
temporal stability
- BIODIVERSITY**
species richness & shannon index
- GENETIC DIVERSITY**
allelic richness
- BODY CONDITION**
health
- REPRODUCTION**
reproductive output & recruitment
- COASTAL PROTECTION**
sediment accretion & wave attenuation

How MPAs can be designed to be resilient to future climate impacts?

Multifaceted...

Assessing and managing risks adaptively

- **Assessing vulnerability** (exposure, sensitivity, and adaptive capacity) to climate impacts to inform management decisions.
- **Integrating future climate projections** (e.g., shifts in ocean currents, species migrations, climate velocity)
- Utilise **stepping-stone habitats** and **dynamic spatial protections** to enhance resilience and reduce stressors.

Strategic placement / apply systematic conservation planning to prioritise:

- Areas with high **biodiversity** (genetic, phenotypic, habitat).
- **Climate refugia** to protect safe havens for vulnerable species.
- **Connectivity** between sites and across land- and seascapes

Socio-economic considerations

- Actively **engage local communities** in MPA planning to ensure sustainable and equitable outcomes

Scientific gaps/challenges

- ▶ Limited evidence on **MPAs' role in connectivity**: recolonisation, range shifts, genetic adaptation
- ▶ Empirical evidence on **coastal protection benefits** (e.g. wave attenuation capacity) scarce
- ▶ Limited research on role of genetic diversity and **phenotypic plasticity** in ecosystem adaptation to climate stressors.
- ▶ Need for better **quantification of biodiversity net gains** and **establishing robust baselines**.

Governance and social challenges

- **Governance deficiencies and poorly designed MPAs** can lead to conflicts and reduced compliance, undermining benefits
- **Enforcement issues**, suitable regulatory frameworks and policy instruments
- **Trade-offs and conflict**: Negative social impacts, such as restrictions on local resource use, should be mitigated through compensation, enabling alternative livelihoods, etc.

Opportunities?

To be brainstormed and discussed

Virtual World Café



Table 1

Ecological Responses

(i.e. resilience, connectivity, integrating climate projections into MPA planning, leveraging data and technology, monitoring etc.)

Table 2

Social, Cultural, and Economic Dimensions

(i.e. socio-economic benefits, sustainability, balancing trade-offs, engaging communities, etc.)

Table 3

Policy, governance and scaling solutions

(cross-sectoral coordination, regulatory frameworks, enforcement and compliance mechanisms, scaling solutions, etc.)

- How to?**
- Participants will be randomly assigned to one of 3 fixed Groups, switching from table to table (15 min per Table) and build on existing ideas
 - Each session will be moderated
 - Plenary session for synthesis, prioritisation and actionable outcomes

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Thank you. Any questions?

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