

# AQUACULTURE

## SECTORAL SHEET



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This sectoral sheet is part of a series covering five key sectors of the MSP4BIO Project: **Aquaculture, Fisheries, Marine Non-Living Resources, Renewable Energy, and Tourism.**



It guides MPA managers in addressing activities through an integrated approach and helps blue economy stakeholders understand sector impacts on ecosystem services.

**The sheets outline Good Management Practices to mitigate impacts and promote sustainable sector development.**

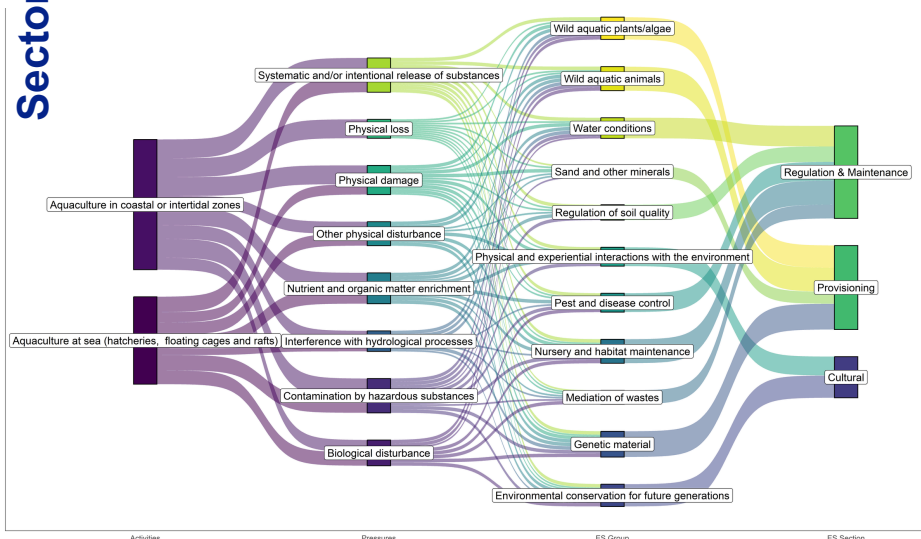


Designed as a resource for policymakers, they support trade-off analysis and address user conflicts.

## Area-based marine conservation

Aquaculture plays a vital role in many EU coastal regions and must align with the Habitats Directive and Natura 2000 conservation goals. Sustainable aquaculture can enhance biodiversity, coexist with sensitive habitats, and provide environmental benefits. In many MPAs, aquaculture operates responsibly, preserving natural values. This document reviews the ecosystem services the sector relies on and impacts, associated pressures, and examples of successful management practices, offering key insights for informed decision-making.

### Sector characteristics



## Ecosystem Services main dependencies:

- Cultivated aquatic plants and reared aquatic animals: For nutrition, materials, or energy.
- Wild aquatic plants and animals: For feeding or post-fattening purposes.
- Pest and disease control.

*The Sankey Chart highlights how activities exert pressures on marine ecosystems, impacting key services like habitat maintenance and aquatic species. Sustainable practices in aquaculture are crucial to protect these services and ensure the resilience of Blue Economy sectors.*

## Activities



Shellfish hatcheries and mussel seed fisheries



Shellfish farming



Fishing



Multitrophic

The graphs below highlight key Good Management Practices (GMP) that should be considered during the planning stages of various activities associated with aquaculture. Whenever feasible, the examples provided pertain to areas either under some form of protection or in close proximity to marine protected areas. Brief descriptions are included, with more details on the deliverable.



## MPA Buffer Zone Regulations:

- Aquaculture allowed if compliant with organic fish farming regulations. (Madeira - Portugal).



## Habitats Regulation Appraisal (HRA):

- Local knowledge in the development of good practices. Example: Experienced aquaculture farmers in Provence-Alpes-Côte d'Azur (PACA) region collaborate for quality fish production.



## Regional collaboration:

- Local Knowledge in the development of good practices. Example: Experienced aquaculture farmers in Provence-Alpes-Côte d'Azur (PACA) region collaborate for quality fish production.



## General Planning Rules based on:

- Habitat Feature Sensitivity Matrices: Risk assessment based on feature-specific matrices and environmental monitoring data. Risk matrices and environmental monitoring data from existing sites quantifying aquaculture x MPA feature interactions.
- Adaptive Risk Management: Informed aquaculture developments in MPAs based on ongoing monitoring and comparison with reference sites inside or outside an MPA.
- Ecosystem Service Tools: Tools to quantify benefits like habitat provisioning, coastal protection, nutrient regulation, and carbon sequestration.



## Community-Based Contracts:

- Collaborative farming initiatives for marine species that produce little environmental impact, with positive effects on local ecosystems (through reduction of fishing pressure) and on livelihoods resilience through income diversification. Example: Sea cucumbers and seaweed with positive environmental impact
- Sea Garden Community in Ebeltoft harbor (Denmark). - Collaborative shellfish and seaweed small scale farming for the local community with the aim to restore life to fishing ports and contribute to a cleaner environment. The association includes different types of stakeholders and an active cooperation with other associations, institutions and business



## LEGEND



GOOD PRACTICES FOR MPAS



ORIENTED TO THE SOCIO ECOSYSTEM



ORIENTED TO THE ACTIVITY DEVELOPMENT



GOOD PRACTICES FOR MSP



ORIENTED TOWARDS LIMITING THE ACTIVITY



ORIENTED TO PROCESS MANAGEMENT

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## Artisanal Fishing Farm Commitments:

- Code of Good Practice: Voluntary guidelines addressing cage design, prophylaxis, and operational practices.
- Development and agreement among artisanal fish farming to follow best practices and the development of the activity. **Example:** Open sea farming commitment to natural growth, healthy diet, and extreme freshness (no more than 48h from capture to deliver).



## Organic "BIO" Label and Farming Methods:

- Use of a label to certify the environmentally friendly production in terms of the fish comfort and methods utilized. It should lower rearing costs, top-quality water, and organic methods emphasizing low densities and optimal growth.



## Natura 2000 Area Considerations:

- Comprehensive investigations for new fish farms in designated areas, safety zones during nesting times.
- Use specific guidance to prevent impacts on ecosystems within Natura 2000 sites. Reference: "Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC"



## Integrated Multi-Trophic Aquaculture

- Educational awareness and the promotion of the importance of aquaculture in society.
- Integrated multi-trophic aquaculture to improve efficiency, reduce waste and provide ecosystem services, such as bioremediation.



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