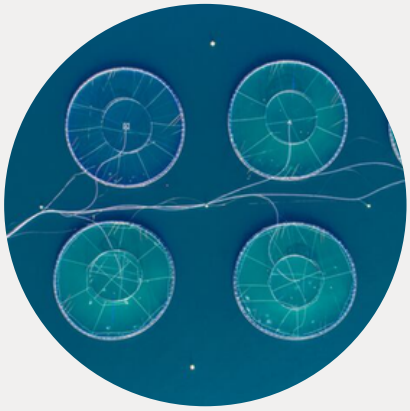
EU POLICY BRIEF

SUSTAINABLE EU AQUACULTURE



Executive Summary

- Aquaculture is the most scalable way of fish production and the pescetarian diet is the most climate-friendly diet including animal protein
- Monoculture is unsustainable, as fishfeed waste brings the ecosystem out of balance raising fish mortality and lowering ecosystem health.
- **Integrated multi-trophic aquaculture** (IMTA) is a multi-species production system yielding more protein per resources invested with less negative environmental externalities.
- To promote the IMTA concept in European aquaculture, we recommend:
  - **simplifying regulations** that currently are hindering its application,
  - providing **economic incentives** to apply it
  - facilitating **knowledge transfer** of IMTA

Growing Food Demand

Compared to producing other animal protein sources, fish has a much smaller environmental foodprint. Aquaculture presents a way of producing food protein efficiently and preventing overfishing.

In 2022, the EU's aquaculture sector produced 1.1 million tonnes of aquatic organisms worth €4.8 billion, mainly finfish and molluscs. In global scale, however, the EU accounted only for 2% of global seafood production, while relying on imports for more than twice its output.

With growing global population, the global food demand is rising, which creates an opportunity for the EU to increase its food exports by focusing more on aquaculture.

Problem of Monoculture

Conventional aquaculture heavily relies on monoculture, where a single species is cultivated in isolation. While efficient for large-scale production, this practice disrupts natural ecosystems and leads to significant Environmental Pollution and Biodiversity. This is due to fish waste (P, N, OM), which leads to eutrophication and algae blooms. The decrease in oxegene in turn implicates high fish mortality and therefore biodiversity loss.

Integrated Multi-Trophic Aquaculture (IMTA) Concept

IMTA is a sustainable aquaculture system that cultivates multiple species together in a balanced ecosystem. As shown in Figure below, fish serve as the primary fed species, producing waste that is absorbed by filter feeders like oysters and scallops, while seaweeds such as kelp extract excess nutrients, improving water quality. Bottom feeders like sea cucumbers, lobsters, and sea urchins recycle organic material, creating a self-sustaining environment.

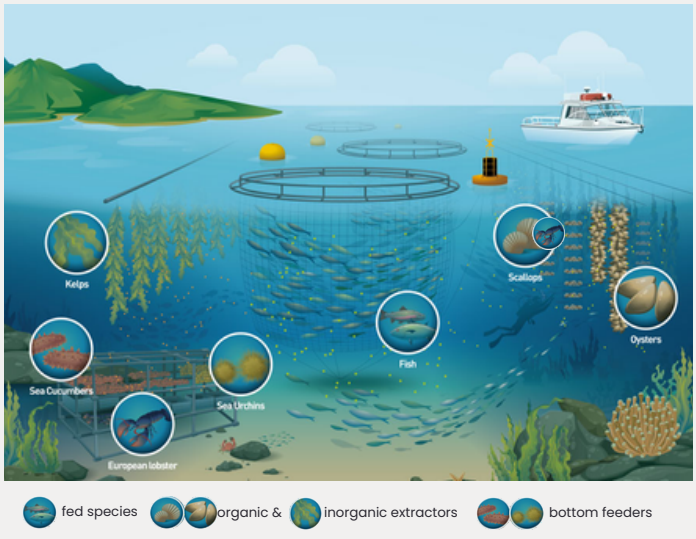


Image credit: Marine Institute *Foras na Mara*

The majority of recent Life Cycle Assessments (LCA) showed that IMTA lowered environmental impact across most chosen impact categories: eutrophication, land use, net primary production, climate change, acidification, and cumulative energy demand. It also harbors fewer pathogens in the focus species due to the co-cultured species competing with pathogenic organisms. However, the species diversity also leads to a higher pathogen diversity to be managed.

Global Status of IMTA

IMTA is expanding globally as a sustainable aquaculture method. While countries like Canada and China have profitable systems, others, such as Chile and South Africa, are developing. In Europe, IMTA remains mostly limited to research, as regulations and industry barriers prevent large-scale implementation. Despite its potential, the system has yet to be widely adopted, with only a few experimental projects underway.

Pros & Cons

Environmental

- ✓ Less fish waste discharge
- ✓ Ecosystem protection
- ✓ Remediation & Biofules
- ✓ More sustainable feed
- ✓ Lower CO2 footprint and feed per biomass

- ✗ More different and potentially shared pathogen

↑↓ Higher disease resilience

Economic

- ✓ Product diversification (risk reduction)
- ✓ More biomass

- ✗ Less easy to market (new market access, no IMTA label)

↑↓ Potentially even higher focus species production
↑↓ Marine product prices changes inconclusive

Social

- ✓ Potentially higher social acceptance
- ✓ Improved human health

Policy Recommendations

Simplify Regulations. Although the European Commission already takes measures to simplify and harmonize aquaculture regulations, we encourage prioritizing changes that facilitate IMTA. For example, accelerating licensing processes for IMTA farmers could be an important facilitation to move away from monocultural aquaculture.

Focus on price signals to make IMTA more attractive. One option would be to impose taxes for food products based on their environmental footprint, incentivising fish production over meat and specifically sustainable practices like IMTA. To ensure competitiveness in the global market, border adjustment mechanisms could ensure that imported aquaculture products face the same conditions in the EU. Those subsidies already provided to aquaculture, should be channelled more precisely to IMTA farms and farmers.

Raise consumer awareness. It could be considered more how to spread awareness about IMTA to consumers. One option would be to facilitate a label that certifies IMTA-produced aquaculture products.

Facilitate technical knowledge transfer. To ensure that aquaculture producers have the knowledge they need to implement IMTA, we encourage to organize informational events and on-site visits.

Ensure social acceptability. It is important to display IMTA aquaculture in a way that demonstrates its safety and benefits, ensuring the support of the communities to continue with IMTA development. Here, studies emphasize the importance of clear communication.

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