NOTE - EATiP feedback on the Green Recovery for the Blue Economy

Aquaculture needs to be recognised as an integrated part of the Blue Economy. Being neither an emerging sector, such as blue biotechnology, offshore wind energy or bioprospecting, nor a traditional one, such as fisheries or maritime transport, aquaculture is often being overlooked in marine spatial planning or blue economy development issues. It is nevertheless the sector that is expected to deliver a six-fold of aquatic food and feed products by 2050. When addressing the Blue Economy in any policy context it is therefore of high importance that aquaculture is considered at the same level as other sea-based activities. This includes all types of production systems, both on-land, in the coastal zone and in more exposed areas. Until such commitment is shown, Europe will struggle to match the global trends in aquaculture growth and fulfill EC policy ambitions for aquaculture production.

Problems the initiative aims to tackle:

Climate change Contribution to decarbonization

Evidence is shown that the development of aquaculture, especially at lower trophic levels, is key to obtaining significantly more food and biomass sustainably. The carbon footprint of 1 kg fish produced is about one third of that in cattle and half of what is common in pig production[1]. A move towards fish-based meals may therefore have an important climate mitigation effect globally. An increased focus on lower "Fish-In-Fish-Out" (FIFO) ratios and CO2 footprints is already found in existing fish farms. As the major component of aquaculture carbon dioxide emissions results from feed ingredient production and feed manufacturing, the use of new sources such as (fermented) kelp, other macro- and microalga, and single-cell proteins as raw materials in fish feed, will have a strong impact on the decarbonization of the sector. Specific production systems, such as pond aquaculture, can even be carbon dioxide neutral or resulting in net carbon dioxide sequestration at the farm level. This is very much so the case for shellfish aquaculture and other invertebrates that, responsible for a direct nutrient uptake. Together with aquatic plant cultivation, the production of these extractive species can be recognised as an ecosystem service and bio-remediation tool, having a restorative effect on the aquatic habitats. When developing incentives to promote increased production of algae, shellfish and invertebrates, standardized indicators need to be developed to measure their value as ecosystem service.

Integrated multi-trophic aquaculture (IMTA) systems can act as decarbonisers, and also have the capacity to remove nitrogen and phosphorous from aquatic ecosystems. Hence, these aquaculture systems also contribute to fighting eutrophication, which often is the cause of biodiversity loss in coastal areas. The many steps between the release of fish farm waste and the assimilation of nutrients by low-tropic species, combined with the low probability to find sites that are optimal for both fish, shellfish and seaweed cultivation are major drawbacks when it comes to IMTA at farm scale. It is therefore recommended to take an ecosystem approach when developing the IMTA concept further.

A positive perception among the consumers of low-trophic species may lead to a higher demand and hence make these products competitive in the future. It may also improve the social license of the sector and hence create opportunities to grow. At the same time, challenges such as availability, product quality and stability, food safety issues and nutritional effects need to be resolved.

Compartmentalisation

The value chains in aquaculture are long and complex with a multitude of input factors and services that are adapted to the requirements of the aquaculture species (marine and fresh-water fish, molluscs, crustaceans and, seaweed), system and regional conditions. The components of the value chain are highly interconnected and improvements in one part will have a large impact on the final product, whether it is related to economic value, carbon footprint or product quality. This high complexity requires technologies and competence from a wide

[1] Assessing the carbon footprint of aquaculture, Global Aquaculture Alliance

spectrum of disciplines and across industry branches. Support to adapt and to apply enabling technologies and knowledge into aquaculture value chains is requested to fully exploit this potential. In general, it is observed that national aquaculture regulations do not comply with the ambitions to increase seafood self-sufficiency level at EU level.

Knowledge gaps

In order to resolve the issues that are hindering aquaculture sustainability and growth, it is recommended to adopt a system approach, setting the production processes in a socio-economic and environmental perspective throughout the value chain. Due to its high complexity, this transformation requires an open and inclusive dialogue between industry, scientists and policy makers, as well as between experts across different disciplines. Together with an increased transparency and openness of the industry, a general Blue Economy and specific aquaculture literacy among the civil society can be obtained, if supported by broad literacy initiatives and a balanced Blue Transformation Narrative.

In the EATiP Position Paper[2], aquaculture stakeholders have identified the absence of a harmonized regime for the allocation of aquaculture licenses as a serious obstruction to reach a common strategy for sustainable growth in Europe. This calls for an urgent review of existing regulations and a move towards predictable and evidence-based licensing systems in Europe and beyond.

It is crucial that future Blue Economy policies to a greater extent take into consideration potential impacts of management measures on aquaculture from vertical (local, national, regional and international) and horizontal (between sectors e.g. aquaculture and fisheries) perspectives. Additionally, the social and economic dimensions of aquaculture should be linked to the environmental considerations in a fair, legitimate and transparent manner.

Ensuring communication on research and development between industry, scientists and policy makers can be obtained through the joint development of effective communication strategies. When evidence-based scientific information is made available through formats and channels adapted to the different target audiences, a better understanding of the social and economic benefits associated with the Blue Economy will be reached.

Rapid change

The development of appropriate governance models for aquaculture requires integrated monitoring and transparent data collection systems as well as a standardisation of critical environmental and production indicators. Together, these can provide the basis for evidence-based governance models for Marine Spatial Planning, and a guarantee of access to suitable sites for biological production within the carrying capacity of the ecosystems concerned.

Making better data sharing protocols available to the industry could support the ingestion of farm data into existing open access services and combining them with government sources. Aquaculture companies would certainly be more inclined to share data if this could help them to comply with regulations and to communicate the transparency of their practices. An additional added benefit would be the increase of the precision level of regional forecasting models. EATiP recommends setting up an aquaculture data platform that collects existing, harmonised data from Copernicus, EMODnet, coastal authorities and aquaculture farms across Europe. This tool could increase predictability in aquaculture with the optimisation of production sites, allowing for better planning, reducing risk and providing benchmarking opportunities across the blue sector. It would help the compliance with regulations as well as monitoring and management decisions. In general, industry stakeholders would need to be given clear incentives to share their own data for the community benefit.

In order to allow the industry to react to fast changing circumstances, the possibility for fast track decisions should be provided. This again, will be linked to the reliance on good data.

[2] EATiP Position paper and recommendations, 2019. eatip.eu/wp-content/uploads/2020/05/eatip-position-paper.pdf

Innovation is fostered by entrepreneurship. BlueInvest and similar funding programmes which encourage company-driven innovation and business-to-business/research-to-business interactions have been proven to be successful, and are therefore encouraged to strengthen their efforts. Still, more attention should be given to the facilitation of demonstration and pilot actions to scale up promising technologies and methods. Also, entrepreneurial skills and competences in the fields of business plan development, marketing and commercialisation and IP protection are needed to secure future innovations.

EATiP recognises that low levels of investment currently constrain the development of European aquaculture to its full potential, as high risks and longer-term paybacks often limit investors' appetite. Business clusters are a key source of entrepreneurship, job creation, business dynamism and innovation. Sector based cluster networks, such as the EATiP Mirror Platforms[3], create favourable Europe wide interconnected innovation ecosystems. They support SMEs to accelerate the application of innovative knowledge and technology, resulting in increased competitiveness and resilience in uncertain times.

Enabling technologies have provided the seafood sector with new windows of opportunities, using high-tech solutions as stepping stones towards the envisaged green and digital transition. Attracting high-skilled engineers alongside biologists and socio-economic experts will lead to the necessary knowledge capacity in the Blue Economy to apply these new technologies, whilst taking into account the environmental, social and economic impact. This inter-disciplinary approach is needed to implement smarter, greener and more efficient processes.

The lack of alignment between educational and training programs at Universities or technical schools and the capacity requirements in the industry needs to be tackled. New sector developments demand a larger flexibility of the programs, and the implementation of innovative, open learning methodologies linking theory to practice. Collaborative academy-industry mechanisms on local, national and European levels should be reinforced to promote exchange of best practices. The attractiveness of the Blue Economy can be supported by creating professional platforms dedicated to young people working in the sector, e.g. through linking them to the well-performing structure of the Atlantic Ocean Youth Ambassadors[4].

EATiP Secretariat

on behalf of its membership, consisting of aquaculture businesses, universities, research organisations, producer and research associations, NGO's[5]

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[3] Mirror Platforms – EATIP – European Aquaculture Technology and Innovation Platform
[4] Youth Ambassador Programme | AORA - Atlantic Ocean Research Alliance (atlanticresource.org)
[5] Members – EATIP – European Aquaculture Technology and Innovation Platform