

On assuring aquaculture system neutrality by policy makers

Background

Aquaculture has a key mission in contributing to the Sustainable Development Goals of United Nations: in particular, for reaching Goal 1 'No Poverty', Goal 2 'Zero Hunger', and mainly for Goal 14 'Life Below Water'. Aquaculture also has a relevant role to play in ensuring food security and food supply to Europe, as part of the Green Deal. Besides avoiding food waste and improving food redistribution, the world needs food for a still growing population: nutritious, healthy, and affordable sustainable food coming both from the sea and freshwater. To accomplish this mission, ways to increase aquaculture production with the least possible use of natural resources and reduced environmental footprint while making a positive social and financial impact are needed. An important part of the solution is in the adoption of new and emerging technologies. New technologies, and the improvement of existing ones, allow for the optimisation of production and can help to make aquaculture production in new spaces possible. Innovation and technological development can enable Europe to increase the production of farmed fish without compromising nature while positively impacting local communities. When a complete set of technological solutions are brought together an aquaculture system is defined, as for example, a net pen system, a recirculation aquaculture system or a pond fish farming system.

However, the selection of the aquaculture production system by the farmer is not always a clear-cut decision. When a biological challenge is solved in the farming of animals, normally through a technological innovation, it can bring unforeseen new challenges. For example, land-based marine fish farming means moving fish out of their natural environment, the sea, that may sound alluring because it offers the possibility to collect uneaten feed and fish faeces, besides growing the fish away from parasites. But this also carries with it the disruption of the biological and chemical balances of the farming water in a degree much more complex than initially expected. Updated land-based solutions may offer better control of water quality parameters, but the changes can also destabilise other complex interactions between the fish and their surrounding environment, their chemical exchanges with the water and microbes present there, light and day length that affect physiological processes that in turn affect the wellbeing of the fish, water flows and water exchange, etc.

Furthermore, organic aquaculture brings another example of how regulatory authorities do not follow neutrality to aquaculture production systems. Regulation (EC) 710/2009 laying down detailed rules on organic aquaculture specifically stipulates that organic aquaculture cannot take place in recirculation aquaculture systems. The reason being as subjective as that organic production should be as close as possible to nature; but at the same time allowing exceptions for recirculation in organic fish hatcheries and nurseries. This regulation puts this aquaculture system in an unfair regulatory disadvantage.

In summary, new aquaculture systems and technologies open new possibilities, but they also introduce unforeseen challenges.