

Sustainable Aquaculture

Addressing and Assessing the Environmental Performance of Marine Offshore Aquaculture in Cyprus (on-going)

Legislative framework: A well-built foundation provides for a solid long-term sustainable development

Environmental performance: The well-being of an organism greatly depends on the condition of the environment it lives in

Summary

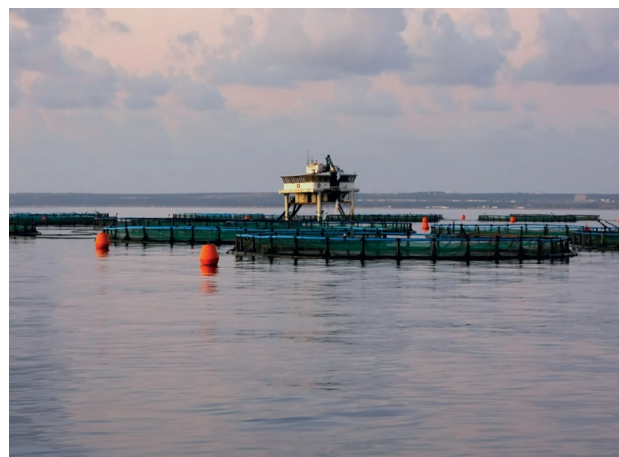
Aquaculture started in Cyprus at the end of 1960s with the establishment of a freshwater aquaculture research station and the subsequent development of private freshwater fish farms. In the 1970s, a Marine Aquaculture Research Station was set up, which led to the development of land-based marine aquaculture farms at the end of 1980s and the first marine offshore aquaculture farm at the beginning of the 1990s.

Initial aquaculture developments were partially covered by fisheries legislation, but by the 1990s increasing private sector interest in marine aquaculture required the development of specific aquaculture policy as well as the development and establishment of a relevant legislative framework.

This led to the establishment of specific aquaculture legislation and relevant regulations in 2000 and 2002 that set the framework for the establishment, development and operation of aquaculture units in Cyprus.

This legislative framework has provided a foundation to promote and support the development of financially viable, environmentally compatible and socially acceptable aquaculture in Cyprus.

The environmental footprint and impacts of marine offshore aquaculture operations have been a critical factor in establishing a strategic roadmap for the development of the marine aquaculture sector, and this is reflected in the national aquaculture legislation.



Marine offshore aquaculture unit in Cyprus with a feeding platform system (Credit: DFMR)

Today in Cyprus, there are nine licensed marine offshore aquaculture units. Current annual production is estimated at approximately 8,000 tons of fish (mainly European seabass and gilthead sea bream) at a value of approximately €40 million.

Marine aquaculture produce is the third most important export product of the primary agricultural production sector, with an annual value of around €27 million.

Marine offshore aquaculture has been the fastest-growing food-producing sector in Cyprus for the past 15 years, with an annual growth rate of 5-7 per cent.

The contribution of aquaculture to the national fisheries production represents around 80 per cent in terms of both value and volume.

The issue

In the mid-1990s, there was increasing interest from potential investors in marine offshore aquaculture in Cyprus. However, there was limited knowledge and expertise on the environmental footprint and impacts of marine offshore aquaculture operations, as this farming system was new to the country. This created a need to establish a regulatory framework for its development and operation.

During implementation of the aquaculture development policy, many questions were raised and objections were encountered from organisations including the Department of Environment and environmental non-governmental organisations (NGO) as well as the general public.

This slowed its development, making it very important that aquaculture legislation address environmental performance and the sustainability of offshore marine aquaculture systems.

The response

The Department of Fisheries and Marine Research (DFMR) of the Republic of Cyprus proposed the establishment of aquaculture-specific legislation in 1999, which the National Parliament adopted in 2000.

The legislation requires initial environmental approval by the competent authority (Department of Environment) of all marine aquaculture offshore farms and the submission of a twice-yearly (winter and summer) environmental monitoring report based on a protocol issued by the DFMR. These reports have to be conducted and compiled by independent expert scientists approved by the DFMR, with the expenses covered by the marine offshore aquaculture companies.

The objective was and still is to have an appropriate legislative framework that provides for a secure

investment environment while at the same time ensuring that the development and operation of marine offshore aquaculture activities is implemented in a sustainable way.

Another main objective was to address the issue of the environmental footprint and impacts of offshore marine aquaculture to ensure an environmentally compatible approach and at the same time to constantly monitor and assess the situation in the marine environment in a way that allowed for corrective measures where needed.

All environmental monitoring reports are submitted to both the DFMR and the Department of Environment and are public documents, accessible by any interested person on request.

The fact that the reports are compiled by independent scientists and are accessible to all has provided, and still does provide, transparency as regards the environmental performance of the marine offshore aquaculture sector, which was another objective set by the DFMR. The environmental monitoring reports provide the necessary data to be able to monitor and assess the real-time and long-term effects of marine offshore aquaculture operations on the environment, at the lowest possible cost.

Partnerships and support

While the development process for aquaculture legislation was conducted primarily by the DFMR there were public consultations and discussions with other relevant authorities and key stakeholders during its formulation. The DFMR drafted the legislation with the guidance of the legal service. Once the draft was ready, the proposed legislation was presented to all stakeholders and a consultation process took place, during which all involved were able to submit their comments.

Key stakeholders include other relevant government services and departments such as the Department of Environment, the Veterinary Services, Port Authorities, the Department of Merchant Shipping, Town Planning Authorities and various organisations, including the Association of Fish Farmers, different capture fisheries associations, NGOs, agricultural organisations and other representatives of society.

Once the consultation concluded, the final proposal was presented for approval to the Council of Ministers; once approved, it was forwarded to Parliament for examination. During the examination in Parliament, the relevant committee invited



Marine offshore aquaculture unit in Cyprus - harvesting procedures (Credit: DFMR)

representatives of all stakeholders to participate and express their opinions.

During examination, Parliament is able to make any amendments it deems necessary and then, if content, move on to adoption.

The DRMR compiled and revised the protocol for environmental monitoring reports as the competent authority with the relevant expertise and knowledge of the marine environment.

Challenges

One of the major challenges was to establish an appropriate legislative framework that would foster the sustainable development of aquaculture in a financially viable, environmentally compatible and socially acceptable way. In order to achieve this, case studies of legislation from other countries were examined. The United Nations Food and Agricultural Organization provided assistance, to complement the in-house expertise of the DFMR.

Another challenge was to convince the aquaculture companies that the costs of environmental monitoring reports would be an investment for the future. This was accomplished through several rounds of discussions and by explaining the benefits in terms of improving the image of responsible aquaculture as well the prospects for further future expansion.

It was also a challenge to develop an environmental monitoring protocol that would provide the necessary data to be able to monitor and assess the real-time and long-term effects of marine offshore aquaculture operation on the environment at the lowest possible cost. The DFMR developed the protocol based on its expertise and knowledge of the marine environment. It should be noted that the DFMR can modify the protocol if needed in order to make it more efficient and cost-effective.

It was also a major challenge to properly inform the public as well as other government departments and environmental NGOs of the scientifically based results in terms of the real impacts of marine offshore aquaculture. This was achieved through several meetings, publications and radio and television programmes as well as the DFMR website and the publication of relevant informative leaflets. This is a constant effort and many actions are still being carried out today.



Harvesting operations from a marine offshore aquaculture facility in Cyprus (Credit: DFMR)

Results, accomplishments and outcomes

The establishment of an aquaculture-specific legislative framework helped provide a secure investment environment for the development of aquaculture in a financially viable, environmentally compatible and socially acceptable way.

The establishment of a mandatory environmental monitoring programme provides for real-time and long-term monitoring and assessment of the environmental footprint and impacts of aquaculture operations. It is a useful management tool for revising development policy as well as for taking immediate corrective measures where needed.

It has provided the opportunity to implement a "precautionary approach" where the regulatory authority allows phased increases in production, giving them time to evaluate the environmental impacts as production progresses. This allows for early response and the implementation of specific measures if required.

It has also led to the following changes in policy and practices:

- Over the past 10 years, most open sea aquaculture units have been moved further offshore.
- Any new units established will be at depth of more than 40 m.
- Any expansion of production will be on the deeper side of the unit, or, in some cases, the whole unit will have to move to deeper waters (this is a case-by-case examination)

That these reports are public documents, and are conducted by independent scientists and not the aquaculture companies, has had significant positive

impacts as regards the image of aquaculture as well as the public's perception of aquaculture's environmental performance.

There is now a long time series of results that allows the DFMR, as the competent authority, to understand the real impacts of marine offshore aquaculture operations. These impacts do not appear to extend beyond a distance of 200 m of the immediate vicinity of the cage units and it seems that those impacts can be reversed.

An additional outcome is the considerable amount of capacity and scientific knowledge built up in the DFMR throughout the many years of environmental monitoring of marine offshore aquaculture.

Besides the above, the DFMR has managed to influence the perceptions of the public, environmental NGOs and other government departments as regards the environmental performance of marine offshore aquaculture.

Informative campaigns can also be a useful tool in properly informing all stakeholders and consumers as well as the general public about the environmental performance of the sector.

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Key lessons learnt

The most important lesson is that, in order to develop aquaculture, it is very important to establish a relevant legislative framework.

Within this framework, provisions must relate to sustainability – that is, the financial viability, the environmental compatibility and the social acceptability of aquaculture development.

Inclusive processes as well as transparency can have a vital role as regards the environmental and social aspects of aquaculture development and operations, improving the image of the sector.

A proper real-time and long-term environmental monitoring and assessment programme is an important tool for the authorities to define policy, draw strategies and take measures when needed. At the same time, this provides science-based data and information about the real footprint and impacts of aquaculture activities.



**The Commonwealth
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