AQUACULTURE IN THE UK

POLICY BRIEF NO.13 - DECEMBER 2021

OVERVIEW

- Aquaculture is the farming of fish, invertebrates and plants in aquatic systems.
- The sector and associated supply chain are of social and economic importance to a wide range of communities across the UK, who rely on it for employment.
- Growth in the sector would contribute to meeting UK food demands and nutritional targets.
- UK aquaculture has the potential to thrive and diversify, becoming a core part of the country's 'blue economy'.
- Different but overlapping barriers to growth are observed across the UK, including competition for space, complex legislation, poor water quality, and the need to improve consumer perceptions.

THE STATE OF THE SECTOR

According to the FAO, while catches from wild capture fisheries have plateaued since the 1990s, global aquaculture production has continued to increase, accounting for approximately half of global fish production in 2018 (1).

In the UK, aquaculture is worth approximately £1.4 billion/year (2). Given the country's extensive and varied coastline, as well as its strong scientific and technological capabilities, there are hopes for diverse growth in the sector (3). This could not only positively contribute to the economy, but also contribute to domestic food security and increasing global food demands (3; 4).

This briefing summarises the outputs from the APPG on Fisheries open Parliamentary webinar, 26 October 2021. In partnership with Seafood 2040, this meeting brought together a diverse array of stakeholders from across the UK to discuss the aquaculture sector and its future. This document is a synthesis of the discussions that took place at the event.

Aquaculture also offers an efficient and more sustainable means of producing animal protein (5). Compared to land-based agriculture, less carbon is emitted, and research increasingly demonstrates the ecosystem services that some forms of aquaculture (namely shellfish and seaweed farming) can provide - including carbon storage and water treatment (6; 7).

SCOTLAND

Salmon production is worth more to the UK economy than all wild-caught fish combined, and in 2018, it represented the UK's second largest food and drink export (8; 9). 97% of this salmon is farmed in Scotland (8). Finfish production (including rainbow trout) also accounts for around 97% of Scottish aquaculture (10), though a diverse range of other products are also farmed, including shellfish, aquatic plants, and sea cucumbers (8).

Aquaculture is of significant social and economic importance to Scotland, with over 12,000 jobs related to the sector and its extensive supply chain (10). The Scottish Salmon Producers' Organisation estimates that approximately 3,500 Scottish businesses and suppliers rely on the industry, with every Scottish constituency benefiting. This is of particular importance to remote coastal and rural communities, providing them with stable, year-round income (8).

Some of the earliest salmon production technology hails from Scotland, and is now used around the world. The Sustainable Aquaculture Innovation Centre (11) aims to support new technology and solutions in the country, while connecting scientists and the industry. The expertise and technology developed in Scotland present further opportunities for investment in the future, including for the rest of the UK and beyond. Increased aquaculture science funding for UK universities would support this progress (8).

As well as funding for academia, sustained support of the industry from the Scottish and UK governments will help to grow not just the aquaculture industry, but also the supply chain, delivering secure and nutritious food to Scottish consumers, and providing sustainable jobs with minimal environmental impact (8).

This drive for sustainability is supported by world-leading standards of regulation across the UK, and stringent standards of market certification (8). As a low-carbon means of producing food, aquaculture has the potential to contribute to the UK's net-zero ambitions. However, climate change also has the potential to threaten the sector if the North Atlantic continues to warm (8).

ENGLAND

England's aquaculture sector consists predominantly of rainbow trout, mussel, and Pacific oyster production. Cefas data indicates that finfish production has remained relatively stable between 2013 and 2019, while shellfish production has greatly fluctuated over the same period (2). The sector aims to grow and diversify over the next two decades - contributing at least 15% of the seafood consumed in the country by 2040 (2).

The English Aquaculture Strategy (12) was published in 2020, by Seafood 2040, and offers a prioritised 53-point action plan for securing the sector's sustainable growth. According to the document, opportunities for development span a range of species including fish, molluscs, crustaceans, and algae, as well as a variety of production types - requiring advances in innovation and technology.

Government support is also required to achieve growth targets (2), and Defra has committed funding to successful aquaculture applicants as part of its new Fisheries and Seafood Scheme (13) - including a project to develop an English Aquaculture Innovation Hub in Dorset (14). Some strands of the £100 million UK Seafood Fund will also be open to aquaculture proposals (15; 16).

Defra also recognises the need to clarify the complex regulatory landscape surrounding English aquaculture (16). Their regulatory reviews are currently focusing on Pacific oyster farming and the seaweed sector, with other sectors to follow, and Seafish's Aquaculture Regulatory Toolbox (17) is available to provide guidance for those who seek it.

At present, only 25% of designated shellfish waters in England are meeting water quality targets, providing a significant barrier to growth (16). The Environment Agency is working with water companies and the agriculture industry to address these issues, and has committed £144 million to improve water quality, on top of the £3 billion promised by water companies over the next five years (16).

Image: Courtesy of Millbay Oysters

NORTHERN IRELAND

Aquaculture remains a relatively small, developing sector in Northern Ireland, with the majority of production coming from intertidal Pacific oysters and wild-seeded subtidal mussels (18). Shellfish production in the country peaked around 2010, and has fluctuated at a lower level since then (19). A smaller amount of finfish are also cultivated, including trout species and organic salmon (18).

For the Northern Irish sector to grow, challenges must be addressed. Areas meeting shellfish water quality guideline standards have decreased since the early 2010s (19), and climate change is causing increased levels of disease in stocks, as well as a greater abundance of invasive species (19; 20). Conflicts for space with marine conservation areas, dredging operations, and harbours also provide challenges (19).

Solutions are being developed, however. The country's Agri-Food and Biosciences Institute (21) has been utilising new GIS decision support tools to aid spatial planning (19), and has developed ecosystem modelling tools for coastal bays and catchment areas. This has enabled more holistic management which accounts for varying wastewater and agriculture inputs into water bodies at different times of year (19).

Shellfish farming also has potential to contribute to a range of ecosystem services in the country, including carbon storage and wastewater management, owing to the animals' ability to extract nutrients and phytoplankton from the water (19; 22). These services could offer significant economic value - it is estimated that EU bivalve farming removes the equivalent amount of nitrogen from water bodies as treatment systems designed for 1.5 - 4 million people (19).

WALES

Welsh aquaculture remains a relatively small sector, with value generated declining from £15 million to £4 million between 2013 and 2019 (23). Despite this, the industry is diverse and incorporates a range of production types and species (23), but challenges must be overcome to secure its growth.

The complex nature of consents and permissions required by those entering the Welsh industry are compounded by complex Pacific oyster licensing and the threat of shellfish water declassification. In addition, the industry has requested increased funding and clarification regarding Levelling Up money allocation (23).

A new national trade body - Aquaculture Industry Wales (24) - aims to address the needs of the developing sector by representing the interest of its members, promoting sustainable development, building partnerships, and engaging with the Government. It also aims to encourage aquaculture research and innovation.

The Welsh sector is known for its strong knowledge base and technical capabilities. RAS (recirculating aquaculture system) technology (25), in particular, offers considerable potential. There is also ongoing research regarding the use of bivalves in effluent water treatment (23). This could allow for aquaculture ecosystem services to be incorporated in sustainable management schemes and development plans (23).

Given adequate government support, the Welsh sector is in an ideal position to reset and recover following a challenging past decade. This development also requires a collaborative approach between countries and within Wales. Lessons can be learnt from community-supported agriculture (26), and there is also potential for catch fishermen to be included in the industry's development (23).

RETAIL CASE STUDY
Sainsbury's

Retail plays a key role in supporting the development of the UK aquaculture sector and ensuring that consumers are able to enjoy its sustainable and nutritious produce. Sainsbury's is an example of a UK retailer that is aiming to get the public eating more farmed seafood (27). At present, 50% of their fish products are farmed (28), owing to good year-round availability and consistent quality (27).

Since the 1960s, UK seafood consumption per capita has almost doubled (M). However, since 2010, this trend has declined, with individuals in 2016/17 eating approximately half of the two portions of fish per week recommended by the Food Standards Agency (29; 30). Research by Sainsbury's found that cost, smell, and lack of cooking confidence were the main contributors to this lack of consumption (27). They are therefore aiming to increase the convenience of cooking fish, reduce its cost, and promote its health benefits (27).

Sainsbury's are also working to deliver a more cohesive message to consumers who may be concerned about the ethical credibility and sustainability of farmed fish (27). It is therefore transitioning its seafood products from being endorsed by a range of certifying bodies, to all being certified by the Aquaculture Stewardship Council (27; 28). Consumer decision-making may also be aided in the future by the provision of information regarding the carbon footprint of farmed seafood products, compared to other forms of protein (27).

CONCLUSIONS

Growth in UK aquaculture has the potential to further support the economy and coastal communities, while meeting the country's growing food demands, and offering ecosystem services in the form of water treatment and carbon storage.

The UK has a vast and varied coastline, a strong technical and scientific skillbase, and high regulatory and market-certification standards - placing it in an ideal position to seize the opportunities presented by this globally expanding sector.

In order to achieve this, a number of challenges must be addressed, including water quality issues, spatial conflicts, consumer perceptions, and a complex regulatory framework. If solutions can be implemented, and adequate government support provided, the UK aquaculture sector has the potential to grow and diversify, and could play a pivotal role in the country's expanding "blue economy".

Image: Courtesy of Offshore Shellfish Ltd

SEAFOOD 2040

Seafood 2040 (31) is an English industry-government initiative, and the sponsor of the recent APPG event on UK Aquaculture. Acting as an independent consultant in the sector, they aim to support the sustainable growth of the seafood industry and its supply chain. The development of the aquaculture industry is a key objective of their programme. In 2020 they published the English Aquaculture Strategy (12).

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The All Party Parliamentary Group on Fisheries is supported by The Fishmongers' Company. The Secretariat is provided by Mindfully Wired Communications.

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