

Literature review on costs and opportunities for salmon products with higher value status (RESAS RI-B5-10)

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This review is part of a research project examining [costs, opportunities and trade-offs for Scottish farmed salmon products with higher value status](#). It was conducted to inform more detailed analysis of the Scottish farmed salmon sector. Online searches identified 158 relevant items of literature. However, many more 'grey' literature items (e.g. from networking associations and companies) were identified than peer reviewed. As this can increase the likelihood of bias in the review, our reading of the 'grey' literature involved a heightened level of scepticism.

Opportunities and risks identified for the Scottish salmon sector

Opportunities	Risks
Attracts premium	Expensive to raise
Increased certification of producers	Lack of trust between stakeholders
Increasing consumer demand	International competition
Increasing consumer demand for high welfare/organic foods	Consumer confusion on labels and certifications
Protected food names	Sector consolidation
	Slow regulatory progresses
	Anti-fish-farming lobby
	Environmental challenges
	Challenges of obtaining supplies and employees

Suggestions from the literature to aid the salmon sector

- Regulatory changes
- Introduction of and more government support for novel technologies
- Targeted and effective communication to consumers
- Develop new sustainable products, such as in the ready-to-eat/cook sector
- Inter-disciplinary research on the marine environment to fill knowledge gaps

Discussion of the literature

The literature confirms Scottish salmon's reputation as a premium product that is valued by consumers and remains one of the UK's main food exports. However, how much of the reported premium for Scottish salmon reaches producers is unclear, as interview data (from our follow-up study) suggest that certification costs are increasingly regarded as a price of market access. Moreover, as a few large companies dominate the sector, other value-adding functions (headquarters, research etc.) tend not to be co-located with salmon farms.

[GlobalG.A.P.](#) was reportedly the most common assurance label used on Scottish farmed salmon. The number of [Aquaculture Stewardship Council](#) certified salmon products in the UK has increased and is forecast to rise further. [Label Rouge](#) and

[Scottish Farmed Salmon PGI](#) were reported to remain valuable quality labels. The proposed change to the Scottish Farmed Salmon PGI, removing organic specifications, could reduce an income stream and protection for organically farmed salmon. This appears contrary to the Scottish Government's [Vision for Sustainable Aquaculture](#), one aim of which is to add value to the aquaculture sector.

Pressures on Scottish salmon farming appear to be mounting. Competition from lower-cost producers is likely to increase, which could reduce prices and the value reaching Scottish producers. It was noted that salmon farming is often located in remote rural areas, for which it is economically important. However, in some areas salmon farming increasingly competes for space with tourism and fisheries.

Changing weather patterns and sea temperatures pose increasing risks to inshore farms. Thus, there is an emphasis in the literature on the need for producers to make risk management a strategic priority. Husbandry changes may have an impact on PGI certification and could affect salmon growth times, colour, texture, and nutrition content. This may, in turn, affect consumer liking for the end product. There are also potential conflicts between the economic development of Scottish aquaculture and environmental policies, such as [Marine Protected Areas](#) and efforts to tackle sea lice.

Policy and regulation changes are claimed to be necessary to allow for more rapid growth in the sector. Technological and husbandry changes to reduce the length of time salmon spend in sea water may benefit producers, by increasing output and reducing mortality and costs, and the marine environment by reducing exposure to disease and waste products. However, the costs of collecting data and implementing new technologies to improve farmed salmon welfare and protect marine environments are likely to be high. Moreover, given the lack of trust among those involved and with an interest in the sector, the use of [good quality data](#) to underpin new regulations, policies and practices will be critical.

Salmon farming has been subject to increased welfare scrutiny, which could harm its reputation. It has been suggested that this can be countered by highlighting the positive effects of fish aquaculture and that consumers' trust in Scottish salmon could be embedded and built on, for example by using organic certification to address welfare and sustainability concerns.

Communication and transparency are considered important for demonstrating social responsibility and building constructive relationships between stakeholders. However, a recent [Scottish review](#) indicated an urgent need for reform as many of those involved, and having an interest, in aquaculture distrust one another, which is affecting the smooth running of the sector. There emerged a sense that there had been many reviews but no action. For instance, many issues raised in a sector [review published in 2022](#) were raised in the [Independent Review of Scottish Aquaculture from 2016](#). This is despite the fact that, in the intervening years, numerous policies and strategies were developed.