

Regulating salmon farming: Findings from the Faroe Islands



Contents

1. Introduction	3
2. Background	4
3. Regulatory environment	5
3.1 History.....	5
3.2 Current.....	5
3.2.1 Biosecurity.....	5
3.2.2 Licences and approvals.....	8
3.2.3 Welfare standards	9
3.2.4 Production regulation.....	10
3.2.5 Company ownership requirements.....	10
3.2.6 Regulatory resourcing	10
3.3 Future of regulation.....	10
3.4 Recommendations for the Falklands	10
4. Socio-economic and environmental impacts.....	12
4.1 Employment	12
4.2 Demand on infrastructure	12
4.3 Government revenue.....	12
4.4 Interactions with other industries	12
4.5 Interactions with wildlife	12
4.6 Wider views	13
5. Further reading	14

1. Introduction

The report on salmon farming legislation produced for the Falkland Islands Government (FIG) in 2021 by MacAlister Elliott & Partners (MEP) identified the Faroe Islands' regulatory environment as being an example of good practice and recommended that FIG officers visit the Faroes to learn more. In May 2025 an opportunity arose for two FIG officers to visit and meet their Faroese counterparts.

During this visit FIG officers met the Permanent Secretary and Senior Advisor responsible for salmon farming at the [Ministry of Foreign Affairs, Industry and Trade](#), two heads of department at the [Environment Agency](#), the Managing Director, Chief Veterinary Officer and Head of the Veterinary Department at the [Food and Veterinary Authority](#), and the CEO and a Head of Department at the government-owned research institute, [Firum](#). This report sets out the findings from the visit.

The Falkland Islands and Faroe Islands share a similar climate and are both relatively isolated island groups operating as overseas territories with internal self-government. Although the Faroes are around one-tenth of the size of the Falklands, their population (around 55,000) is more than ten times higher. However, their government is still a small one in international terms. With a similar environment and similar challenges, the Faroes are considered to be a good comparator country for the Falklands.

2. Background

Aquaculture began in the Faroes in the 1960s at the encouragement of the government and the government established the aquaculture research institute now known as Firum in 1970. The first aquaculture enterprises focussed on rainbow trout, but this was not found to be economic. Salmon farming began developing during the early 1970s, becoming a major industry in the 1980s. There were also experiments of farming halibut and cod, neither of which were successful. However, there is now a small seaweed aquaculture industry.

By the 1990s there were more than 60 salmon farming operations. A series of ISA outbreaks began in 2000 (see figure 1 below), resulting in a major consolidation of the industry; due to bankruptcies and licence withdrawals there were only 26 companies by 2002 and there are now only three; Bakkafrøst (which produces around 70% of local salmon), Hiddenfjord (~20%) and MOWI (~10%). Bakkafrøst are a publicly listed company, Hiddenfjord is locally family-owned and MOWI is Norwegian.

In 2024 total salmon production in the Faroes was 88,000 tonnes, slightly lower than the record high of 95,000 tonnes in 2021 (see figure 1). Salmon now accounts for 46% of exports (2024) and accounts for 26.9bn DKK (£3.0bn) of GDP (2023). Salmon farming companies paid around 655m DKK in taxes, resource rents and other charges to the government in 2023 (around £74m).

Almost all fjords have active salmon farming taking place. Only one has been abandoned as the currents were not sufficiently strong for it to work. In some areas currents were too strong, but operators have experimented by installing breakwaters to protect areas of pens.

The industry has changed practices over the years. One of the most significant changes is the increased time that salmon spent in the smelting factories and the reduction in the sea, which has reduced from around two years to 15 months.

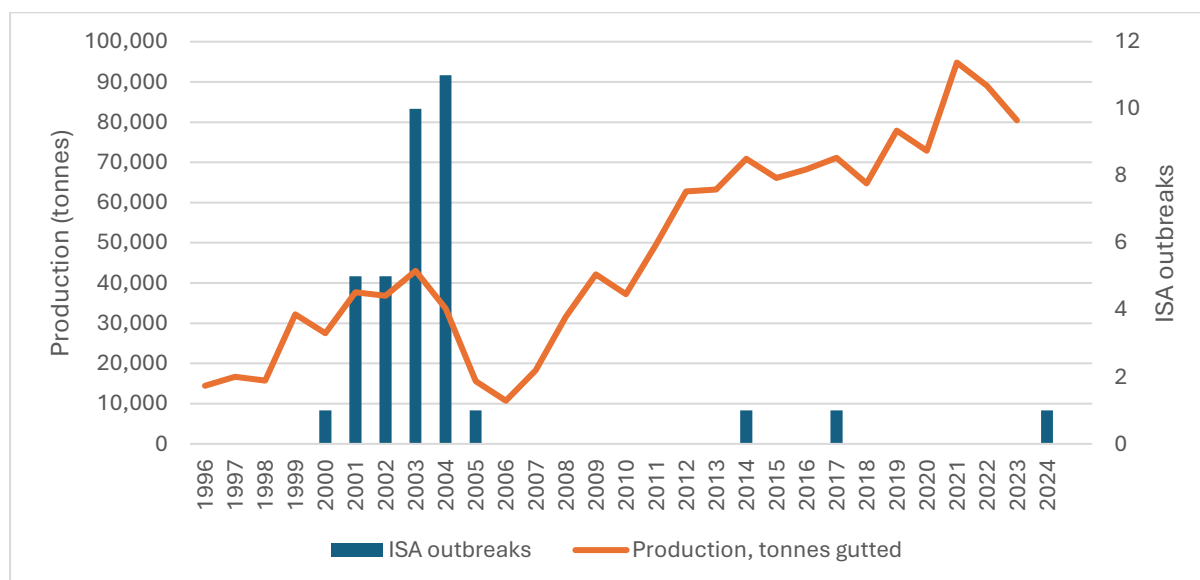


Figure 1: Annual production and ISA outbreaks since 1996 (produced by Food & Veterinary Authority)

3. Regulatory environment

3.1 History

Prior to the ISA outbreak in 2000, the regulatory environment was weak. The industry was regulated via the *General Law on Animal Health* and *General Law on Aquatic Animal Health* (which was mainly designed for imports). There was no detailed biosecurity legislation. On the environmental side, seabed surveys were introduced in 1998.

The ISA outbreak led to development of a much stronger regulatory environment, which included regulations covering:

- General biosecurity
- Disinfection of outlet water from factories
- Movement of aquatic animals and equipment
- Surveillance and control of ISA
- ISA vaccination (now mandatory)
- Sea lice (most challenging aspect from vets' field)

The Faroe Islands also signed a veterinary agreement with the EU in early 2001 and had to demonstrate that the industry produced salmon in a healthy way.

3.2 Current

Although there is a Ministry of Fisheries, the salmon industry falls under the remit of the Ministry of Foreign Affairs, Industry and Trade. The ministry is responsible for overall coordination of legislation and policy. Two agencies are responsible for day-to-day regulation: the Food and Veterinary Authority and the Environment Agency.

The government also owns Firum, a research institute that works on salmon farming and carries out some work related to the regulation of the industry (sea lice counting). Around one-third of Firum's funding comes from the ministry; some comes from operators (who must pay Firum for sea lice counting) and the rest from grant funding. The institute is completely independent of industry, which allows it to carry out research that industry may not welcome. They also have validated ocean models (FarCoast) that can be used to model new pen sites and sea lice spread with currents.

The view of officers was that the system works well and is sufficiently distant from politicians to be an independent regulator.

There are numerous pieces of legislation regulating the industry, many of which are available in English on the [Food & Veterinary Authority's website](#). The most important elements are the veterinary legislation, which overrides all others. The [Executive order no 80 of 14 June 2019 on the establishment of - and disease prevention in aquaculture facilities](#) was identified as a key piece of legislation, as was the Environmental Protection Act, which requires salmon farming facilities not to be commenced until an environmental permit has been granted.

Failure to comply with legislation is a criminal offence and any issues would be passed to the police to deal with.

3.2.1 Biosecurity

Much of the regulatory requirements is focussed on minimising the risk of disease transfer and monitoring sea lice.

3.2.1.1 Regulatory limits

Certain limits are put in place for biosecurity, welfare and environmental reasons:

- Only one operator may use a fjord zone; zones are designated by the government (see figure 2, right).
- Salmon pens in the same zone must be at least 2.5km apart; if they are less, they are treated as a single operation.
- Salmon pens in different zones must be at least 5km apart.
- Salmon cannot be moved between zones.
- Stocking rates cannot be higher than 25kg/m³.
- Effluent outlets from smolt stations (where the salmon are hatched and raised before being transferred to sea pens) need to be at least 1km from the smolt factory.
- Sea lice limits are one adult female lice per salmon, although between 1 May and 31 July the limit is reduced to 0.5 adult female lice per salmon.

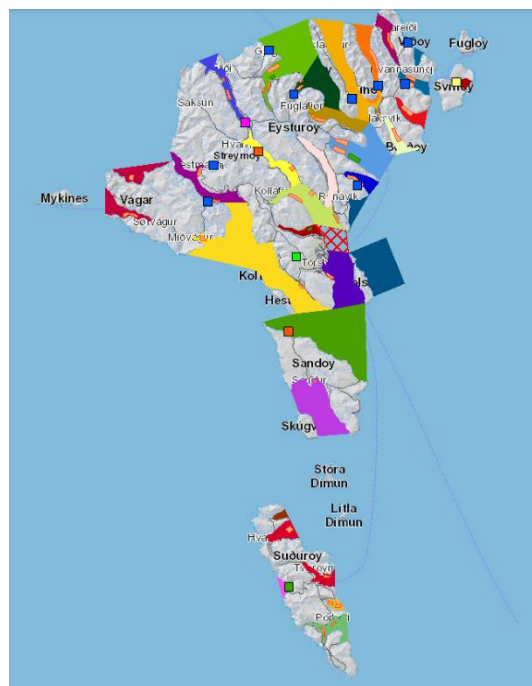


Figure 2: Fjord zones (produced by Environment Agency)

3.2.1.2 Requirements for operators

ISA vaccinations are mandatory at smolt farms. Despite this, there are still small outbreaks – these could be caused by the vaccine only lasting a year (meaning its efficacy wears off before the salmon are harvested) and/or because some salmon are missed during the vaccination programme.

An ‘all in, all out’ system is operated for the entire fjord zone. When pens are emptied, nets must be removed and cleaned in a factory (this is verified by the Food & Veterinary Authority). After salmon are removed from the water, there is a fallowing period of two months, although if the sea-based cycle is less than 12 months, the environment is in good condition and there was no increase in the mortality rate in the previous cycle, this can be reduced to 30 days. However, the entire fjord zone must be fallowed for a period of at least 30 days between production cycles. Smolt farms do not have any fallowing period requirements, nor do they practice the ‘all in / all out’ principle due to operational/logistical limitations.

Nets are also cleaned by companies during the production cycle using ROVs or divers. Divers require certification from the Food & Veterinary Authority for their disinfection procedures. Any machines used for cleaning must be disinfected when moved between sites.

In terms of infrastructure, each farm must have a land base in which there is a room for disinfection of personnel and equipment for storing and ensiling dead salmon. Companies are required to have significant slaughtering capacity, as may have to dispose of large numbers of fish in short periods if there is a disease or lice outbreak.

Other biosecurity requirements include:

- Valves being closed during movement of well-boats (which transport the live salmon)
- Dead fish must be taken from sea pens five days a week (on land every day), kept for 24 hrs at pH of <3.7 and can then be turned into silage, animal feed, biogas, fertiliser.
- There are several regulations regarding disinfection before and after transport of animals, products and equipment.

- Operators must apply for transport permits before leaving site. This is requested through an online system for the salmon farming industry (Aliskipan) that all operators have access to. If there are no issues, approval is granted automatically by the system.
- Transportation is limited to two types of journey: Smolt farm to pens and pens to slaughter.

3.2.1.3 *Monitoring*

Sea lice counts must be carried out every 14 days and are done by Firum, who have seven dedicated members of staff for this work. 20 salmon are taken from each pen and examined; results are published on the Food & Veterinary Authority website.

The Food & Veterinary Authority visits each pen site four times a year and smolt factories twice a year. Inspections are carried out by 1-2 people. A checklist is used for the site visit, which includes:

- Inspection of the land station
 - Is the perimeter fenced in?
 - Is the disinfection gate used by everyone?
 - General tidiness
- Is the silage pH ok?
- Are there temperature and/or oxygen issues?
- Looking at reports from private vets used by the companies, including whether there were any remarks regarding fish welfare
- Any treatments administered since the last visit
- Equipment
 - Conditions on the vessel
 - All pens are numbered correctly
 - Holes in bird nets
 - Growth on nets
 - Equipment in sea in order (not broken)
- Salmon
 - Swimming along net or on surface
 - Are they jumping?
 - Are there any wounds?
 - Is there changed behaviour?
 - Seals in the area

During the visit the inspectors will take a sample of 25 salmon for pathological inspection in the authority's laboratory, as well as taking environmental samples for indication of diseases. Salmon may also be taken where something of interest is spotted, as well as for visual inspection and lab samples.

The Food & Veterinary Authority may also carry out random site visits without giving a reason, though they typically give 24 hours' notice due to the logistics of arranging to visit sites. The Environment Agency must have a reason for a site visit.

Operators are required by the Environment Agency to carry out environmental surveys during production cycles, which are done by independent companies in accordance with [guidelines issued by the Agency](#). These must be carried out at the period(s) of peak biomass and pollution and are done in the proximal zone. The surveys use grab samples for benthic sediments (the material on the sea floor), and consider:

- An assessment of pH / redox, a sensory assessment (colour, smell, feed), benthic fauna
- A chemical assessment – zinc, copper, LOI (organic matter)

Both are scored from 1 to 4 and the Agency consider the worst score. The outcome determines the frequency of surveys the following cycle:

- 1 – only at peak effluent
- 2 – before release and at peak
- 3 – before release then determined based on status
- 4 – area is stressed – Environment Agency to determine which surveys carried out

Surveys must be carried out in the transitional and distal zones at least every third cycle, depending on the environmental status in the transitional zone. A poorer status from last survey would mean a higher frequency of survey. These surveys consider the seabed status in transitional zone and look at benthic fauna and relevant complementary analyses and assessments to see how far out the effect of the salmon pens goes.

There is no real-time or remote monitoring by the agencies, but operators must have daily logs, which are submitted weekly. They must also report any medical treatments administered.

3.2.1.4 *Actions in cases of excess sea lice and disease outbreaks*

If the sea lice limit is reached in three consecutive counts or four times within a production cycle, all salmon in the site must be slaughtered within 11 weeks (although they can be sold as normal). If limits are exceeded regularly or there are too many treatments, it is likely that the authorities will reduce numbers in the next production cycle. The main methods for keeping sea lice levels low are flushing with fresh water (although this can be a welfare issue for the salmon) or use of cleaner fish (although they are not well adapted for use in salmon farms).

In case of a positive ISA case, all salmon in that farm are required to be slaughtered. Sick salmon must be slaughtered within two weeks and healthy ones within five. The healthy ones are allowed to be sold.

If there is a listed disease at a site, the operator needs to have an authorised person inspecting before any salmon can be transported out of the site. Eradication is carried out in line with EU law – restriction zones are put in place and the zone in question must be followed for six months.

3.2.2 Licences and approvals

There are four licence/approvals processes for the industry, as set out in the table below:

Type	Valid for	Approving body
Salmon farming licence	12 years	Food & Veterinary Authority
Facilities approvals	5 years	Food & Veterinary Authority
Production cycle	1-2 years	Food & Veterinary Authority Environment Agency
Environmental Permit	Usually no end date	Environment Agency

3.2.2.1 Licensing

Licences are issued for a period of 12 years, which is deemed to be a sufficient period of security for businesses to make investment decisions. Licences may be revoked, but this has not happened since the 2000s. Licence renewals are in effect guaranteed if companies meet their licence conditions and applications fulfil the requirements. There are currently around 40 licences.

3.2.2.2 Facility approvals

The facilities (smolt farms and sea-based pens) have to be approved every five years. There are around 40 sites that require these approvals.

3.2.2.3 Production cycle approvals

Production cycles are between one and two years in length and separate applications must be made to both the Food and Veterinary Authority and the Environment Agency. This determines how many salmon can be kept in the sea. There are no limits on the number of salmon in a zone in law; applicants can apply for any number, and if previous production cycles have gone well, may seek an increase. The Environment Agency approves the total number of salmon in pens, while the Food & Veterinary Authority determine the density. Both are largely done based on past performance including environmental impacts, salmon health, sea lice levels and mortality rates. Operators would start with a relatively low number and increase as they prove it can be managed appropriately.

Production plans must cover the previous production cycle (including details of the number of salmon, biomass and feed consumption), results of seabed surveys and a production plan for the next cycle (including number of salmon).

Surveys must also be carried out in the proximal (closest to shoreline), transitional and distal (deep water) zones before a salmon farm can be placed, expanded or moved. This is to look at how organic matter spreads or collects. Information about speed and direction of currents are used to identify the best location – dispersion current (halfway between bottom of cage and seabed) is particularly important. The surveys include measurements of the sea bottom (bathymetry/topography).

Smolt factories have an annual plan for approval.

There is a dialogue between regulators and operators during the application process and most issues are resolved this way. It is relatively rare that a decision is appealed.

Provisional plans for future cycles are provided well in advance as the companies plan well ahead and provisional approval by the authorities (around a year in advance) provides comfort.

3.2.2.4 Environmental permits

Each fjord zone requires an environmental permit for operations to take place within it. The permit includes a map of the specified farming areas within the fjord and descriptions of currents, sediments etc. in the area. The permits do not usually have an end date, but will need to be renewed if the farming areas are moved within the fjord (although pens can be moved within farming areas without needing a renewal).

3.2.2.5 Fees and charges

The approvals process is charged to the companies based on the time spent. However, there is no cost recovery for research required to regulate the industry or the creation of new guidance.

3.2.3 Welfare standards

Welfare standards include the previously mentioned stocking density limits and sea lice limits. Operators are tending to keep salmon in the smolt factories for longer, which reduces their exposure to sea lice. In addition, salmon are required to be stunned and remained stunned during the slaughtering process.

Firum has been carrying out work on how salmon wellbeing can be measured, including heart, mucus, skin and gill health, as well as water quality.

Factories producing feed for salmon must be approved by the Food & Veterinary Authority. If feed is imported, it must come from an authorised company. There is also a surveillance programme for residues from salmon and their feed.

3.2.4 Production regulation

The Chief Veterinary Officer is responsible for ensuring that exports comply with the regulations of the countries the exports are destined for. Companies are also required by law to monitor the quality of their produce.

3.2.5 Company ownership requirements

There is now a requirement for companies to be 50% locally owned, although this requirement cannot be backdated. The managing director of companies must be Faroese and company headquarters must be located in the Faroes.

3.2.6 Regulatory resourcing

It was estimated that the Faroese government has around 25 officers working on salmon farming. The Ministry of Foreign Affairs, Industry and Trade employs three people (until recently only one) dedicated to salmon farming. The Environment Agency has two people, both of whom also cover other areas. The Food & Veterinary Authority has a total of 55 staff but not all work on salmon farming. Their staff includes:

- Chief Veterinary Officer – two vets, one academic and one legal advisor
- Laboratories (accredited to Danish standards)
 - Chemical (7 staff)
 - Microbiology (10)
 - Molecular biology (7)
 - Lab QA (1)
- Inspection departments
 - Food (14)
 - Veterinary (8)
 - Licensing officer (1)

Firum has around 30 employees, of which one-third are researchers, one-third academics and one-third technicians. Seven people work on sea lice counting.

3.3 Future of regulation

The relevant government agencies keep up-to-date with advances in the industry by regular contact with other countries that are major salmon producers. On occasion, the salmon farming companies contact the ministry to request changes to regulations to allow for new practices. These are considered and may be implemented if reasonable.

The Environment Agency is considering using environmental DNA (eDNA) for environmental monitoring. This would mean looking at live and dead animals, bacteria (the presence or greater activity of certain types indicate more pollution) and chemicals. It is believed this would be cheaper and would deliver faster results. However, it is still to be determined how exactly this new form of monitoring would work.

3.4 Recommendations for the Falklands

FIG officers asked what advice their Faroese counterparts involved in overseeing the Faroese salmon farming industry would give to a country starting salmon farming from scratch. The suggestions included:

- Ensure baseline surveys are carried out in areas where salmon farms are planned, so that the natural state of the environment is known and the impacts can be clearly seen.
- Environmental Impact Assessments should be carried out (the Marine Protection Act requires it in the Faroes, but there is an exception for salmon farming).
- Ensure end-of-life decommissioning is part of any approval process.
- Keep diseases out via strict import requirements and restrictions on movement between sites.
- Ensure there is good legislation and enough resource:
 - Having a strong veterinary system is key, as are the biosecurity controls such as the all in, all out, zoning systems and regular inspections.
 - Regulators must have appropriate people capacity to deal with the volume of work (e.g. sea lice counting), as well as appropriate equipment and lab facilities.
 - Regulators also need good knowledge of the environment, biology, genetic improvement, fish welfare and nutrition.
 - Companies must have appropriate capacity to deal with disease outbreaks and mass slaughter.
- Charges to operators should be set at a level that covers all work carried out by the regulators, not just the approval process. The Faroese Government work on a 'Licensee Pays' principle meaning that all costs, where possible, are passed on to the licensee.

4. Socio-economic and environmental impacts

4.1 Employment

Around 4.5% of the Faroese workforce is directly employed by the salmon farming industry. It is estimated that 7-8% of the wider workforce is in related employment, although this may be an underestimate. This is helped by all salmon food being produced locally. However, due to nearly full employment, companies have had to recruit significant numbers of staff from overseas, which in turn has put pressure on the local housing market.

The industry has created jobs all around the country as each salmon farming location needs people on site on a near-daily basis.

4.2 Demand on infrastructure

The industry requires significant amounts of power and water; one company has built a subsea water pipeline to meet their needs and is considering self-supply of electricity through wind turbines, although there are issues with regulations around electricity supply.

Smolt farms use filtration systems to recycle water, with up to 90% of water used being recycled.

4.3 Government revenue

Government earns revenue from the industry via taxation, dividends, licence fees and resource rents, approximately £74m in total in 2023. The resource rents are based on the tonnage sold and a determined market price of salmon (based on [Sitagri data](#)). The rent per site is around 50,000 DKK per annum (around £6k).

Municipalities have been seeking to keep ownership of land used by salmon farming companies for their onshore sites in order to provide a long-term revenue stream.

There has not been any economic support for the industry (such as tax breaks) in recent years.

4.4 Interactions with other industries

There has been no significant opposition to salmon farming from the sea fishing industry, which is focussed on offshore waters. There have been some complaints about a reduction in coalfish stocks, as some in the fishing industry have claimed juvenile coalfish swim into salmon pens and cannot escape once they have grown. Firum may carry out some research on this topic to determine whether it is an issue or not.

There is a small amount of inshore lobster fishing, and the operators of these farms raised concerns when salmon farms were built nearby as they believed the salmon would have a negative impact on the lobster. However, lobster fishing is still being practiced and there has been no serious impact.

4.5 Interactions with wildlife

Seals are an issue for the industry as they worry the salmon and can cause increased mortality. The material used for pens has been strengthened over the years to protect against seals. Previously operators were allowed to shoot seals, but this was banned recently.

4.6 Wider views

According to government officers, there is little public opposition to the salmon farming industry. Issues tend to be around the visual aspects or light/noise pollution from nearby farms. There is no significant local activism, but there are some overseas activists.

5. Further reading

- [Faroes ecoregion – Aquaculture Overview](#), International Council for the Exploration of the Sea, 6 March 2022