Norwegian School of Economics
Bergen, Spring, 2023

Mowi ASA

Strategic Analysis

Carl Magnus Heiberg & Erika Samset

Supervisor: Thore Johnsen

Master thesis, Financial Economics and Strategy & Management

NORWEGIAN SCHOOL OF ECONOMICS

Abstract

This master's thesis has conducted a strategic review of the salmon farming company Mowi ASA. The main objectives of the thesis are to explore Mowi's origin and history from a financial and strategic perspective, the challenges and opportunities that the company faces today, and a presentation of how the company can make good strategic decisions going forward to address these. The thesis consists of six chapters, where Chapter 1 describes how Mowi started with three pioneers in their backyard to become the largest Atlantic salmon farming company in the world.

Chapter 2 examines Mowi's fully integrated value chain and introduces industry characteristics. The chapter aims to provide useful insights into the technicalities of how salmon is produced, key factors that salmon farmers must consider, and Mowi's position. In Chapter 3, we dive into Mowi's financial situation with a particular focus on the company's profitability, setting the basis for our subsequent analysis and discussions around Mowi's strategic positioning going forward.

In Chapter 4, we compare Mowi's position and profitability to competitors at Mowi's various farming locations globally, with a particular focus on regions in Norway. Throughout the competitor analysis, the goal is to discover the causes behind the differences in profitability and how Mowi can improve in each area. The recently announced resource rent tax on Norwegian salmon farming operations has gained serious attention in the media. Norwegian salmon farmers are highly concerned about the impact of the resource rent tax on their operations. In Chapter, 5 we introduce the proposed resource rent tax and analyse its impact on Mowi's Norwegian farming operations.

Finally, Mowi's alternative strategic measures are discussed in Chapter 6. Our first recommendation for Mowi is to prioritize further investments and growth in Scotland. In addition, Mowi should strive to improve its operations in Norway, as Norway will constitute a significant portion of Mowi's business in the future despite the resource rent tax. Our last recommendation for Mowi is to improve its presence and performance within the feed segment, which will be less affected by the resource rent tax than the farming segment.

Preface

This master's thesis is a significant part of the master's program in Economics and Business Administration with specialization in Financial Economics (FIE) and Strategy and Management (STR) at the Norwegian School of Economics (NHH). The thesis represents 30 credit points and is designed as a strategic analysis of Mowi. The analysis initially focuses on Mowi´s historical development and positioning in the fairly complex salmon farming value chain, before discussing its profitability, challenges and opportunities across geographies. Finally, the analysis concludes with alternative solutions to meet the company's challenges.

The choice of a strategic analysis of an industrial company for the thesis is based on our interest in the commercial understanding of companies, where strategic choices along with industry-specific drivers affect profitability and operations. This understanding of companies is important in both finance and strategy. The choice of Mowi is backed by a sincere interest in learning more about one of the few Norwegian industry giants with an extensive global footprint, as well as a rich and interesting history. The salmon farming industry is facing both regulatory and biological challenges. In addition, the recently announced resource rent tax came as a shock to the Norwegian salmon farming industry. Our thesis addresses these challenges through in-depth analyses, and how Mowi should strategize to ensure continued competitiveness in the future.

After completing our studies at NHH, we will both start working in consulting, where the preparation of the master's thesis, including the use of methodology, will be a valuable experience to bring into our new work environment. Even though the process of preparing the thesis has been challenging, we are grateful for the insights it has given us.

The thesis is based solely on public information in the form of annual and quarterly reports, market analyses, and other publicly available information sources. We have also supplemented with analyst reports from DNB Markets, ABG Sundal Collier and EY for further inspiration. In addition, we have been in contact with analysts at Mowi, ABG Sundal Collier and Carnegie, whom we would like to thank for their valuable input. Finally, we would like to extend a big thank you to our highly competent supervisor, Thore Johnsen, for his flexibility and constructive support throughout the process of producing this thesis.

Bergen, May 2023

Contents

1. Introduction to Mowi ASA

Mowi is one of the world's largest companies in the aquaculture industry and the largest producer of farmed Atlantic salmon. The company, with its 11,800 employees, has since November 2019 been led by its CEO Ivan Vindheim. Mowi's turnover in 2022 was EUR 4.9 billion, up 17.5% from 2021. Although more than half of its total production is concentrated along the Norwegian coastline, the company operates farms in six different countries. Mowi's main farming species is salmon, but the company also farms trout, cod, halibut and other species (Mowi, n.d.a). Mowi has become a global leader in the salmon farming industry, supplying almost 20% of the world's demand for farmed Atlantic salmon. For 2023, the expected harvesting volume for the company is 484,000 tons (Mowi, 2023a). In September 2022, the Norwegian Government presented its proposal of a resource rent tax for salmon farming companies (Regjeringen, 2023). This was met with a lot of resistance from the applicable companies.

Introductory, we look into Mowi's history and how the industry and Mowi has developed with time. In Chapter 2, we outline the typical value chain for salmon farming and comment on Mowi's position, before presenting key industry characteristics. The aim of the first two chapters is to give the reader valuable insight into Mowi's history and economic drivers for the salmon farming industry. Chapter 3 focuses on Mowi's profitability, followed by Chapter 4 and an extensive competitor analysis of the farming segment across Mowi's various farming locations. As Mowi's Norwegian farming operations constitute a significant part of the company's total farming, Chapter 4 includes a deep dive on Norway. Chapter 5 discusses the recently proposed resource rent tax in Norway and how it affects Mowi. Based on discussions in the previous chapters, Chapter 6 will elaborate on alternative strategies that Mowi may implement to sustain competitiveness.

Our primary focus is on sea-based farming, and we have chosen not to delve into certain trends, specifically fully integrated land-based farming and offshore technologies. Sustainability remains a significant consideration for salmon farmers, however, the scope of our analysis is primarily directed towards evaluating the profitability of Mowi across its varied farming locations, in addition to understanding the implications of the resource rent tax. Consequently, our thesis will not emphasize sustainability factors. Moreover, since its first announcement in September 2022, the Norwegian Government has conducted several modifications on its proposal of a resource rent tax on Norwegian salmon farming operations, including changes

in the specific tax rate. The proposal is not yet approved by the Norwegian Parliament. However, we have used the latest proposal of 25% resource rent tax rate as basis for our analysis in Chapter 5 of its impact on Mowi and the salmon farming industry.

1.1 Mowi's history

Johan Lærum, Haakon Baardsen and Johan Ernst Mowinckel, respectively a jam producer, an accountant, and a market strategist, founded a jam producing company called Johan Lærum & Co AS in 1945. Mr. Lærum also had a large interest in fish, and after some testing he and his fellow founders decided to start salmon farming outside Bergen. Their fish farming became part of Johan Lærum & Co AS, and the research and testing officially started in 1964. After some research and testing, the company looked for partners for further realization of its business. In 1968, they contacted representatives from Norwegian Hydro who expressed interest in Mr. Mowinckel's strategy document on industrial salmon farming. This resulted in Norwegian Hydro acquiring 50% of Johan Lærum & Co's salmon farming unit in 1969 for NOK 2 million and changed the name to Mowi. During the same year, Mowi put out its first stocking of salmon smolt in seawater. Thor Mowinckel, son of Johan Ernst Mowinckel became the first manager of Mowi (Jensen, 2018).

Over the following years, Mowi established itself as a reputable brand and knowledge hub within the salmon farming industry. In 1980, Norwegian Hydro acquired the last 50% of Mowi and hence became sole owner of the company. In 1990, Mowi changed its name to Hydro Seafood. The company expanded its business to Ireland and Scotland, becoming the largest farmed Atlantic salmon company in the world (Jensen, 2018). The salmon industry faced a crisis in 2000 due to low salmon prices. Consequently, Hydro decided to exit the salmon farming industry to concentrate solely on its core business areas within energy and metal. As a result, Hydro Seafood was sold to Nutreco, and merged with Nutreco's subsidaiary Marine Harvest (Global Newswire, 2000).

Around the same time, PanFish, another major salmon farming company, was struggling financially and underwent restructuring, resulting in DNB and Nordea taking over the company. Subsequently, John Fredriksen acquired the company for nearly NOK 800 million (Mowi, 2022a). PanFish, with John Fredriksen as the largest owner, acquired Marine Harvest in 2006. Fredriksen listed the company as Marine Harvest ASA on Oslo Stock Exchage. In 2012, Marine Harvest established its own feed division, strengthening its already fairly

integrated value chain. A year later, Marine Harvest acquired the farmed salmon processor Morpol (Mowi, n.d.a).

In 2019, Marine Harvest chose to officially go back to its roots by changing the corporate name back to Mowi. This was done as part of the company's new branding strategy, as the company released its own product, Mowi-Salmon. Ivan Vindheim was assigned new CEO the same year. Today, Mowi has several owners with John Fredriksen as its largest owner with a share of 12.12% (Mowi, n.d.b).

Over the past decade, Mowi has made significant strides in developing and acquiring companies to fully integrating its value chain and strengthening its position as the global leader in the salmon farming industry. In parallel, the salmon farming industry has grown rapidly to meet the salmon demand of an increasing population.

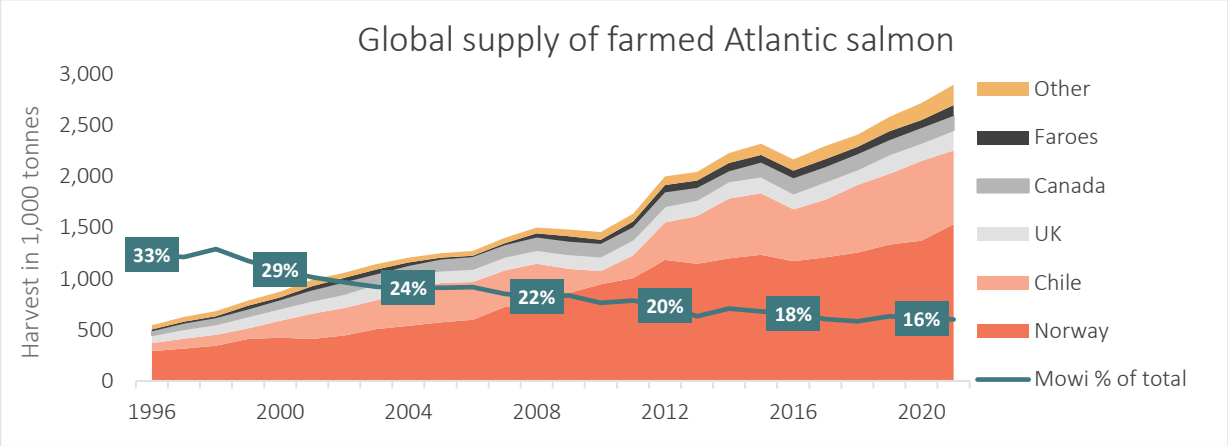


Figure 1: Historical global supply of farmed Atlantic salmon by country, and Mowi's share of total supply (Source: Mowi, 2022a).

In parallel with an increase in global production volume of farmed Atlantic salmon of almost 600% since 1996, Mowi's global market share has been reduced from 33% to 16% (Figure 1). However, the company is still the world's largest producer of farmed Atlantic salmon.

In September 2022, the Norwegian Government announced a resource rent tax for the Norwegian salmon farming industry. The latest proposed tax rate is 25%, and combined with the corporate tax salmon farmers must pay an effective marginal tax of 47% for operations that are subject to a resource rent tax (Regjeringen, 2023). In Chapter 5, we introduce the proposed resource rent tax and analyse its impact on Mowi's Norwegian farming operations.

2. The Salmon Farming Value Chain and Industry Characteristics

2.1 Value chain and Mowi's position

The salmon farming industry is known for its fairly complex value chain. Large salmon farming companies usually operate with an integrated value chain, and Mowi is no exemption.

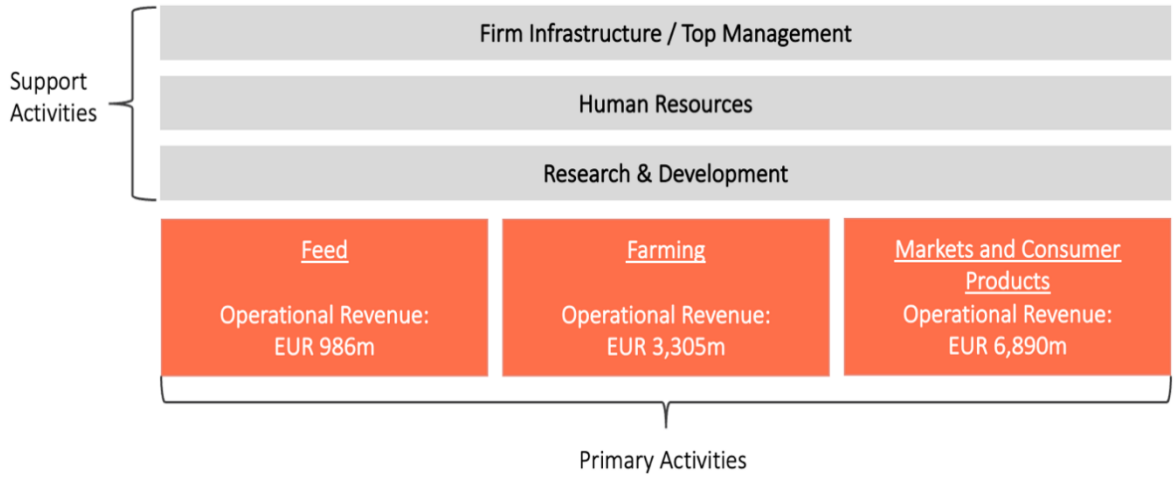


Figure 2: Mowi's primary and support activities. The support activities are not directly money generating activities (Source: Mowi, 2022b).

Mowi's value chain includes both primary and support activities (Figure 2). The primary activities directly contribute to produce the salmon available in stores and restaurants, while the support activities are necessary activities that indirectly contribute to adding value.

In addition to the activities presented in Figure 2, salmon farming companies rely on certain services often being supplied by external providers. One such service is the transportation of live fish from smolt facilities to the sea cages, primarily facilitated by well boats (EY, 2021). However, these external activities will not be emphasised any further throughout this thesis.

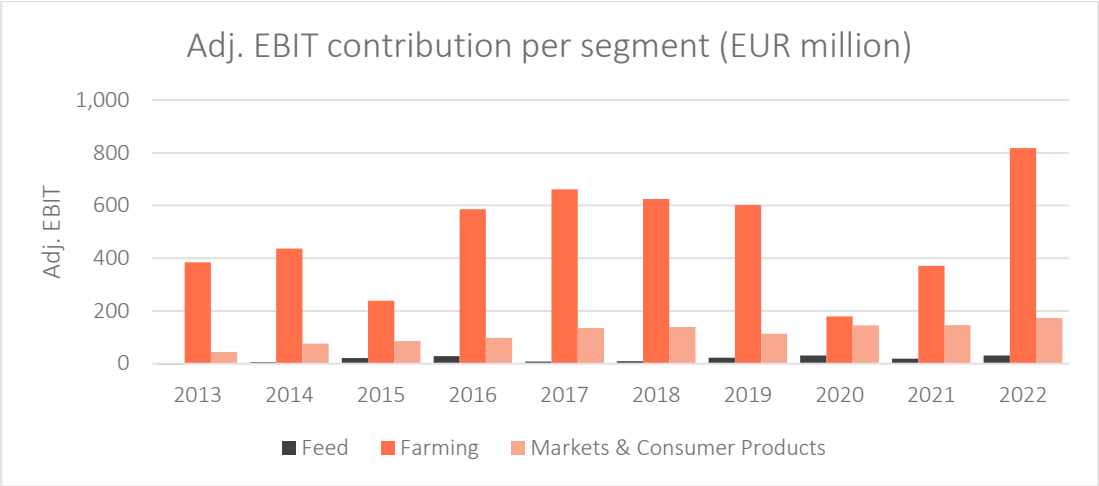


Figure 3: Mowi's Adj. EBIT per segment in EUR million (Source: Mowi annual reports).

Figure 3 illustrates the development of Mowi's Adj. EBIT in its core segments. Adj. EBIT excludes specific items from EBIT that Mowi believes impact the comparability of its operational performance from year to year. Our adjustments are explained in section 3.2. farming has significantly higher Adj. EBIT compared to feed and markets & consumer products. We elaborate on Mowi's historical financial development in Chapters 3 and 4.

In the following, we present the primary activities for a typical salmon farmer and comment on Mowi's position. First, we present the feed segment, before explaining the farming segment. Lastly, we present the markets and consumer products segments (Mowi, 2022b).

2.1.1 Feed

Salmon farming companies seek feed that increases the salmon growth and survival rate and improves its health at the lowest cost possible. Feed producers usually offer standard feed and premium diets, where standard feed is designed as a low-cost feed, and the premium diets are designed to increase growth and survival rate. Today, most salmon farming companies does not produce their own feed. The feed industry is highly consolidated and consists of four major producers, with Mowi being one of these (EY, 2021).

Mowi started to produce its own feed in 2014 to enhance control over the entire value chain and decrease feed expenses. Recently, the company became fully self-sufficient for feed in its European farms. Today, Mowi operates two feed fabrics, one in Norway and one in Scotland. Mowi's feed locations are strategically chosen in close proximity to its largest farming areas.

The factory in Norway has the largest capacity, but the one in Scotland can produce more advanced feed (Mowi, 2022b).

2.1.2 Farming

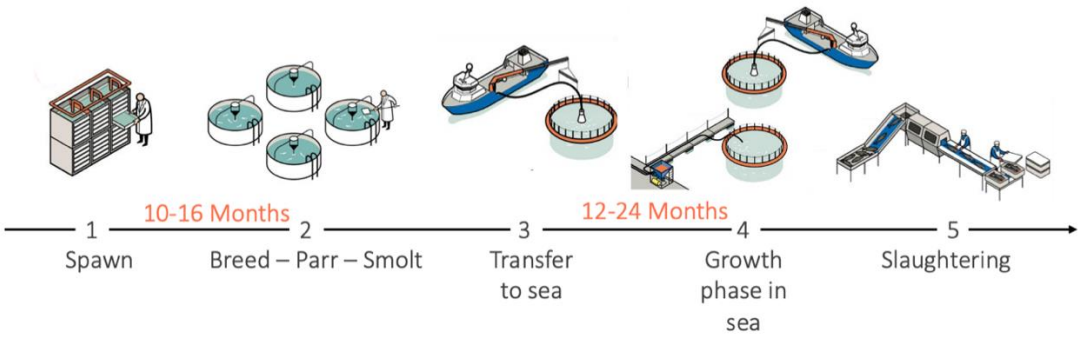


Figure 4: The production cycle for salmon farming (Mowi, 2022a).

The farming segment involves the whole life cycle of the salmon, from breeding and egg fertilization until the salmon is slaughtered (Figure 4). The salmon farming production cycle is approximately three years. The process starts by fertilizing eggs before growing the fish in controlled freshwater environments to smolt weighting about 100-250 grams. This process usually takes 10-16 months. However, new technology in freshwater facilities has enabled the smolt to grow to 1 kg post-smolt. The main concept behind post-smolt is to decrease the growth phase in sea. This reduces the salmons' exposure to risks such as sea lice, disease, and other threats to its welfare (Mowi, 2022a).

After the smolt phase, the salmon is moved into farms at sea where they spend the next 1-2 years growing to a weight of about 4-5 kg. The water temperature, which varies geographically and with time, has a significant impact on the salmon's ability to grow. Farmed Atlantic salmon has an optimal temperature range between 8-14 °C. When the salmon has reached a harvestable size, it is sent to primary processing facilities and slaughtered (Mowi, 2022a).

While most other salmon farmers rely on external egg suppliers, Mowi produces its own eggs. Mowi conducts farming operations in Norway, Chile, Scotland, Canada, the Faroe Islands, Ireland, and recently entered Iceland. This diversification of farming locations underlines Mowi's strong global presence which will be further analysed in Chapter 4 (Mowi, 2022b).

2.1.3 Markets and consumer products

After the salmon is slaughtered, it is traded, secondary processed and packed. Most of the large salmon farming firms have created subsidiaries to organize the trading export and logistics. Secondary processing includes fileting, portioning, smoking etc. Most salmon farming companies outsource the secondary processing. The products are subsequently packed and distributed to retailers (i.e., grocery stores, hotels, restaurants, and catering) (EY, 2021).

Mowi has integrated trading, secondary processing and packaging in its value chain. The markets segment conducts logistics and deliveries of products to customers who further process the salmon and to Mowi's own secondary processing facilities. Mowi's secondary processing and packaging takes place in the consumer products segment (Mowi, 2022b).

2.2 Key industry characteristics

As highlighted in the previous section, the salmon farming value chain is fairly complex, and in the following we will delve into industry characteristics and dynamics that are critical for the success of salmon farmers.

2.2.1 Salmon farming is primarily a supply-driven industry

Salmon is commoditized by nature and there is little to stop customers from switching between salmon farmers. In other words, price is the main differentiator from a customers' perspective. Moreover, salmon farmers need to clear its inventory frequently due to the perishability of the salmon. As a result, they typically operate as price-takers. We recall that the production cycle of farmed Atlantic salmon is 2-3 years, implying that the supply is quite inelastic in the short term. At the same time, negative supply shocks occur frequently due to biological challenges such as sea lice, other diseases, and algae outbreaks. These negative supply shocks have an immediate impact on the salmon price (Mowi, 2022a).

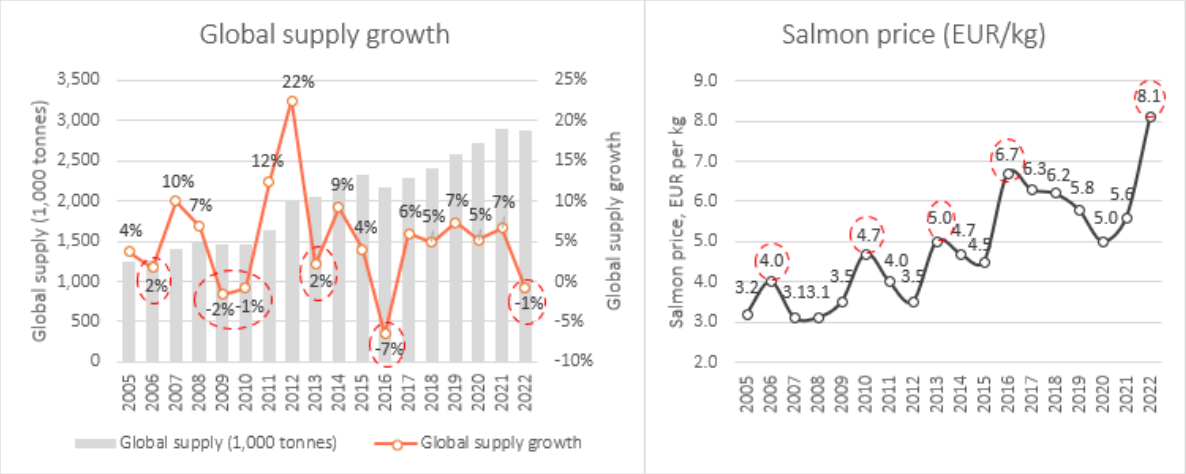


Figure 5: Left side: Global supply volumes and growth. Right side: Annual salmon prices (average based on weekly prices) (Source: Kontali).

The red circles in the two graphs in Figure 5 illustrate that historically, salmon price jumps have occurred either in the same year or the year following a low single-digit supply growth. Conversely, price reductions have occurred the same year or the year following increased supply growth. This is an important and well-known relationship in the salmon industry.

Except from 2022, the supply growth of farmed Atlantic salmon has been negative three times since 2005. In all three years, this resulted in significant price increases. In 2009 and 2010, global salmon production fell by respectively 2% and 1%. The combination of negative supply growth and positive demand growth lifted the salmon price by 52% over the two-year period. The substantial increase in the salmon price in 2016 can be traced back to a 7% negative supply shock in global salmon production, which caused prices to jump from 4.6 euros per kg to approximately 6 euros per kg. This supply shock resulted from two primary causes: a devastating algae outbreak in Chile, and poor biology in Norway characterized by disease and high levels of sea lice in 2016 (Mowi, 2016).

Although changes in salmon supply growth have proven to be the main determinant of changes in salmon price historically, macroeconomic shocks unsurprisingly seem to affect the demand for Atlantic Salmon as well. The drop in the salmon price in 2020 can be attributed to a rare negative demand-side shock due to the Covid-19 pandemic. Restaurants and businesses are crucial customer segments for salmon farmers, and the closure of these during the pandemic had a negative impact on salmon prices. Because global salmon supply increased by 5% in 2020 and 7% in 2021, record amounts of salmon had to be channelled into the grocery market. Consequently, salmon prices experienced a steep decline during the pandemic. In fact, by

January 2021, salmon prices had plummeted by 35% compared to the same period in the previous year. The ongoing pandemic in 2021 continued to suppress salmon prices, bringing them close to production costs (Egeness & Dahl, 2022).

In 2022, salmon prices reached record high levels due to strong demand and negative supply growth. The combination of low prices and record-high volumes during the pandemic made salmon accessible to a broader range of consumers across various segments compared to previous years. This development has stimulated demand for salmon. Salmon exports to the United States experienced the most significant growth, with a 77% increase in value and a 41% increase in volume. China emerged as the second-largest growth market after the US, showing a positive impact following its reopening. In addition to the post-pandemic strong demand, negative supply growth was a crucial factor behind the surge in salmon prices. The conflict in Ukraine, which has led to closed airspace over Russia, has also resulted in higher transportation costs and increased prices in some regions. The European Central Bank aims for eurozone inflation close to two percent, but inflation has risen to over five percent. This increase affects the pricing of all products, including salmon (Egeness & Dahl, 2022).

Although Mowi is exposed to various currencies, its main currency is EUR, which currently accounts for more than 50% of its net cash flow. However, this thesis does not focus on how currency fluctuations affect Mowi's performance.

2.2.2 Limited suitable farming locations

Figure 6: Coastlines with the environment and biology needed to farm Atlantic salmon (Source: Mowi, 2022a).

Figure 6 highlights the limited number of coastlines globally that are suitable for Atlantic salmon farming, falling within specific latitudes in both the Northern and Southern Hemispheres. The water temperature is a critical factor for Atlantic salmon farming, as it affects both salmon mortality and growth rate. Low sea temperatures make the salmon more resistant, reducing the risk of biological challenges, while higher temperatures increase the salmon growth rate. The optimal temperature range lies between 8 and 14 °C. In addition, Atlantic salmon farming requires a specific level of water current to ensure that fish can swim freely, and that water can flow through the farming structures efficiently (Mowi, 2022a).

2.2.3 Biological risk to salmon

Despite operating within the optimal temperature range, salmon farmers frequently face various biological challenges, such as sea lice, diseases, and algae outbreaks. These biological challenges come with large treatment costs, increased mortality rates, and government issued fines (Jensen, 2020). Therefore, efficient handling of these challenges is a high priority for salmon farmers.

Sea lice have been a large problem for salmon farmers since inception of the industry, and it is estimated that the lice entail annual losses of at least EUR 500 million for the Norwegian salmon farming industry (Jensen, 2020). The lice live naturally in salt water and eggs may spread with the water current and streams. When a salmon has a large number of lice, it usually dies (Havforskningsinstituttet, 2021). Farmed Atlantic salmon producers continuously monitor sea lice in their production facilities to prevent unacceptable lice levels. Sea lice regulations differ from country to country, and Norway has one of the strictest regulations (Grieg Seafood, 2021).

Aside from sea lice the most common health risks to salmon are Cardiomyopathy Syndrome (CMS), Pancreas Disease (PD), Salmonid Rickettsial Septicaemia (SRS), Heart and Skeletal Muscle Inflammation (HSMI), Infectious Salmon Anaemia (ISA), and Gill Disease (GD) (Mowi, 2022b). CMS, PD, and ISA are caused by viruses and SRS is caused by a bacteria. GD may come from both viruses and bacteria, but also environmental factors like algae and jellyfish. Historically, there has been a large use of antibiotics for bacterial diseases, which, along with other treatments, have led to high mortality rates. Nevertheless, development of vaccines has reduced the use of antibiotics and together with good management practices mortality rates have decreased (Mowi, 2022a).

Algae blooms have created challenges for salmon farmers both in Norway and other salmon farming geographies. The algae often produce a toxin that leads to the fish receiving insufficient oxygen to their gills, resulting in Gill Disease. During an algae bloom, mortality rates in the affected salmon farms can be very high, reaching up to 100%. Historically, algae blooms have occurred periodically, yet the cause remains unknown (Mowi, 2022a).

2.2.4 Salmon farming regulations

To mitigate biological risk, authorities in each farming country have issued a license regime. The licenses limit the number of live fish a salmon farmer can hold in a sea cage. However, there are no limitations for freshwater production (Mowi, 2022a). When a salmon farmer is in possession of a license, it must also apply for a farming site.

In Norway, finding suitable farming sites may be challenging due to the scarcity of farming locations fulfilling the regulatory requirements. In addition, the Norwegian application process for establishing these sites involves multiple entities, including nearby residents, county municipalities, food authorities, coastal authorities, county governors, and the directorate of fisheries. Obtaining approval from all these entities is a time-consuming process that typically takes more than a year (Laksefakta, 2022).

The corporate tax varies between salmon farming countries. In addition, most of these countries have salmon farming specific taxes, such as production fee, export tax and resource rent tax. In 2022, the production fee in Norway was set at NOK 0.4 per kg salmon produced. In addition to the proposed resource rent tax on Norwegian salmon farming operations discussed in Chapter 5, the proposal includes an increase of the production fee to NOK 0.9 per kg (Mowi, 2022a).

2.2.5 Technological development and investment areas

In the past decade, the salmon farming industry has seen significant advancements in technology. These developments include among other things, smart farming systems, post-smolt facilities, offshore farming, and land-based farming. The innovations have the potential to minimize biological challenges and improve salmon production (Mowi, 2022a). Overall, these technological advancements may pave the way for a more efficient salmon farming industry. Even though offshore and fully integrated land-based farming are important areas of development, they are beyond the scope of this analysis, and we will not discuss them further.

In recent years, the salmon farming industry has increasingly turned to smart farming systems, which include technologies like remote operation centres, automatic feeding systems, real-time biomass monitoring, fish welfare tracking, machine learning etc. These systems enable precise management and increased efficiency. For instance, automated monitoring of water quality, temperature, and oxygen levels allows farmers to quickly identify and respond to issues. Furthermore, sensors and AI can optimize feeding and energy use, which reduce costs and increase efficiency. However, the main drawback to these systems is the high investment costs, which can include not only upfront investment but also specific infrastructure requirements that limit flexibility. Additionally, system failures or malfunctions can have significant consequences for salmon health and welfare. As such, salmon farmers need to carefully consider the costs and benefits of implementing smart farming systems before making any investments (Mowi, 2022b).

Over the last decade the salmon farming industry has increasingly turned to investing in post-smolt facilities to achieve larger smolt size. By maintaining smolt in contained systems for longer periods, they become more robust upon transitioning into seawater, leading to improved survival rates and enhanced fish health. In addition, this practice reduces the duration of the sea phase, which reduces the risk of complications such as sea lice, harmful plankton and diseases. However, investing in post-smolt facilities presents drawbacks. Post-smolt facilities are more expensive than regular smolt facilities, as they require advanced tanks and equipment. Additionally, post-smolt demands more feed and maintenance, leading to higher operational costs for the farmers (Berge, 2014).

3. Profitability

During Mowi's Capital Markets Day in 2020, CEO Ivan Vindheim outlined the company's strategic priorities, which include geographic diversification and financial performance. Despite the inherent volatility of the salmon industry, Mowi has a strong track record of financial success, characterized by consistent earnings growth and strong cash flow generation (Mowi, 2021). This chapter seeks to provide deeper insights into Mowi's financial success, with a particular focus on profitability.

Vindheim acknowledges the challenges associated with the salmon industry, such as fluctuating prices, diseases, and regulatory risks, particularly with regards to the Norwegian resource rent tax (Mowi, 2023a). Chapters 4 through 6 delve into various ways in which these challenges impact Mowi at group level and across geographies, and how Mowi should strategize going forward.

3.1 Cost of Capital

In the subsequent discussion, we will determine the historical return requirements essential for conducting a profitability analysis of Mowi later in this section. We will use the Capital Asset Pricing Model (CAPM) to calculate the required rate of return on equity, and subsequently calculate the Weighted Average Cost of Capital (WACC) before tax. This involves discussions around the market premium for the stock market, the risk-free rate, Mowi's beta, and credit spread.

$$CAPM = Rf + \beta_{\mathrm{e}} \cdot MRP$$

$$WACC = Equity\ ratio \cdot (Rf + \beta_e \cdot MRP) + Debt\ ratio \cdot (Rf + CS) \cdot (1 - t)$$

Rf is risk-free rate, CS is credit spread, t is tax rate, MRP is the market risk premium, and β_e is the company's equity beta (Kaldestad & Møller, 2016).

Determining the market risk premium for the stock market can be achieved through various methods, such as i) historical market premium, ii) implicit market premium, and iii) qualitative survey of finance industry professionals. Historically, the stock market's market risk premium has been variable and with large variance between different time periods. For instance, in the United States, the average market premium was 8.4% from 1926-2002, and 1.5% from 2003-

2022 (Dimson, Marsh & Staunton, 2023). To determine the market risk premium utilized in their analysis, PWC conducts an annual survey involving Norwegian investment professionals. In 2022, the survey's average outcome was 4.9%, with a median value of 5%. These findings align with previous PWC surveys conducted since 2012 (PWC, 2022). In our WACC calculations, we opt to use a market risk premium of 5%.

The PWC report examined the risk-free interest rate used by respondents to determine the required return on equity. The results showed that around 50% of the participants utilized a 10-year government bond, while approximately 25% used a normalized risk-free interest rate where 3.5% is most used. The normalized rate of 3.5% is inferred from a real interest rate of 1.5% and an anticipated annual inflation rate of 2% in the long run (PWC, 2022). One benefit of using a longer interest rate, such as a 10-year governmental bond, is its reduced volatility compared to shorter interest rates, resulting in a more stable return. Shorter interest rates are more susceptible to central banks' decisions on the policy rate and market interventions via quantitative easing. Additionally, companies are typically assumed to have an indefinite lifespan. Consequently, a longer interest rate better aligns with the duration of a company's cash flows (Kaldestad & Møller, 2016).

As Mowi has a considerable portion of its debt listed on the Oslo Stock Exchange, we opt to use the Norwegian 10-year government bond as the risk-free rate benchmark. The decision of choosing a Norwegian 10-year government bond is also backed by the fact that Mowi's industry primarily relies on the Norwegian krone as its functional currency. In addition, Norway possesses a commodity-driven economy, a robust credit rating, and the ability to issue its own currency. As of 26 May 2023, the Norwegian 10-year government bond is 3.5% (World Government Bonds, 2023). However, Norway is a special case, as the issuance of government bonds is largely based on market demand rather than the nation's need to finance deficits. As is well known, Norway possesses considerable wealth in the form of its Oil Fund, and the fund's returns can be used to finance the national budget according to its operational rules. Thus, Norway does not have the same need as countries like the United States to issue government bonds. Consequently, relying on Norwegian Government bonds as a basis for the risk-free interest rate may lead to an underestimation, given the artificially low supply. With this in mind, we will use a risk-free rate of 4.0 % in our WACC calculation.

Mowi does not have an official credit rating. However, its closest competitors, SalMar and Lerøy, both received a BBB+ credit rating from the Nordic Credit Rating agency in 2022,

placing them firmly within the investment-grade category (Kristiansen & Nilsson, 2022a and 2022b). In May 2023, a US BBB rating corresponded to a credit spread of 1.8%, which we will adopt as a baseline for Mowi's credit spread (Fred, 2023).

Mowi conducts its operations across several continents and countries, each with distinct tax rates. In our WACC calculation for the Mowi group, we utilize a tax rate of 22%. Mowi is relatively well capitalized and as of the first quarter of 2023, 20% of the capital is debt and 80% is equity based on market values (Mowi, 2023b). Based on data from the last five years, Mowi's equity beta is currently calculated at 0.93 when compared to Oslo Børs. However, relying exclusively on Oslo Børs to gauge Mowi's beta against the market may not provide an accurate assessment due to the exchange's heavy reliance on oil and lack of diversification. Thus, we opt to use a global index instead. When comparing to the MSCI world index, Mowi's equity beta is 0.60 based on the last five years, which we will use in our WACC calculation.

The overall post-tax WACC for Mowi with a risk-free interest rate of 4.0%, market risk premium of 5%, credit spread of 1.7%, debt ratio of one fifth and equity beta of 0.6 is 6.5%. The WACC is nominal and based on an inflation rate of 2%. As we will focus on pre-tax profitability measures in the following sections, we must convert the calculated after-tax WACC to a pre-tax WACC. Using a 22% tax rate gives a pre-tax WACC of 8.7%. This intuitively appears somewhat low, particularly in light of the proposed resource rent tax on Norwegian farming operations and the prevailing geopolitical uncertainty, given the ongoing conflict in Ukraine and frequent interest rate hikes.

		Market risk premium				
		4,0%	4,5%	5,0%	5,5%	6,0%
Risk free rate	3,0%	6,8%	7,1%	7,4%	7,7%	8,0%
	3,5%	7,4%	7,7%	8,0%	8,4%	8,7%
	4,0%	8,0%	8,4%	8,7%	9,0%	9,3%
	4,5%	8,7%	9,0%	9,3%	9,6%	10,0%
	5,0%	9,3%	9,6%	9,9%	10,3%	10,6%

Table 1: Sensitivity analysis of nominal pre-tax WACC with various market risk premiums and risk-free rates.

Table 1 illustrates a sensitivity analysis of nominal WACC, taking into account varying market premium and risk-free rate values based on the previously mentioned variables. As we can see, an increase in either the risk-free interest rate or the market risk premium would increase Mowi's WACC.

The Norwegian Government's proposal of resource rent tax on Norwegian salmon farming operations has increased the risk of investments within the Norwegian aquaculture industry. Investors have clearly communicated their concerns related to the proposed tax model. As analysed in Chapter 5, the resource rent tax will negatively impact Norwegian salmon farmer's cash generation and investment ability. Thus, a WACC-premium on Norwegian farming operations should be considered. In 2022, Mowi reported an increase in its pre-corporate tax WACC for Norway from 8.9% to 11.7%, but did not communicate whether the increase included a resource rent tax premium. On the back of the Norwegian resource rent tax, other salmon farming countries may consider implementing a resource rent tax, and a WACC-premium should therefore be considered for these countries as well.

Until now, we have not considered country risk premiums in our WACC analysis. Finance professor Damodaran (2023) calculated Chile's country risk premium to be 1.46% as of January 2023. Although Mowi's investments in Chile may warrant a country risk premium, we have chosen not to include it in our WACC calculations for Mowi on a group basis, given that Mowi Chile represents only 14% of the company's total capital.

Mowi does not disclose its WACC on group level, but for its farming countries. In its 2022 annual report, Mowi's nominal pre-tax WACC ranges from 8.0% in Ireland to 11.7% in Norway. Our calculations agree relatively well with Mowi's. However, Mowi does not state which parameters they have used in their WACC calculations. Since Mowi has deeper insights into its operations and associated risks, we opt to use its reported WACC per country where applicable. Although Mowi does not disclose its WACC at the group level, it has a communicated target of 12% pre-tax return on capital employed, which makes sense when comparing to our estimated pre-tax WACC of 8.6%. For our profitability analysis of the Mowi group in section 3.3, we will therefore use Mowi's communicated target of 12% return on capital employed as a benchmark.

3.2 Return measures

3.2.1 Adj. ROCE

To illustrate Mowi's historical profitability and efficiency in utilizing its capital on group basis, we will use Adjusted Return on Capital Employed (Adj. ROCE). This measure of profitability is based on Mowi's operating profit, which is adjusted for various components (Adj. EBIT). The Adj. EBIT excludes certain items from EBIT that Mowi believes affect the comparability of its operational performance from year to year. Adj. ROCE is calculated as

$$\frac{Adj.EBIT}{Average\ capital\ employed}$$

The capital employed is calculated as the average capital employed at the beginning and end of the year, except for cases where significant transactions occur during the year, which may require adjustments to the calculation. Mowi calculates its capital employed as the sum of net interest-bearing debt plus equity as of the end of the period. In addition, the capital employed includes a fair value adjustment on Mowi's biological assets, which represents the change in the fair value of the biomass minus the change in the accumulated cost of production for the biomass. In this context, biological assets comprise eggs, juveniles, smolt and fish in the sea, and the adjustment is made to represent the present market value of the biological assets and the costs related to producing them (Mowi, 2023a).

The main adjustment from Mowi's reported EBIT to adjusted EBIT is the net fair value adjustment for biomass, which is included in the reported EBIT. The biomass adjustment covers adjustments on biological assets, harvested fish and incident-based mortality. For harvested fish, the fair value adjustment refers to the removal of the fair value adjustment of biological assets associated with the fish that was harvested throughout the year. The fair value adjustment on incident-based mortality represents the removal of the fair value adjustment of biological assets associated with fish that are considered incident-based mortality throughout the year (Mowi, 2022b). As mentioned in Mowi's 2022 annual report, the estimated fair value of the biomass will always be based on uncertain assumptions, even though the group has built substantial expertise in assessing these factors. In 2022, the net fair value adjustment of biomass was EUR 114 million (Mowi, 2023a).

As the reported EBIT includes the abovementioned fair value adjustments, it reflects the current market value of the biomass and the cost of producing it. However, the Adj. ROCE metric also incorporates the capital employed component, which represents the capital invested in Mowi's assets. A significant portion of Mowi's assets, including most licenses and buildings, were assigned in 2006. Since then, its value has increased substantially, but as they are not subject to fair value adjustments, the recognized values have remained relatively unchanged. As a result, we prefer to use the underlying EBIT without the net fair value adjustment of biomass in the Adj. ROCE calculation. In the following, we will refer to the underlying EBIT as Adj. EBIT (Mowi, 2023a).

Other relevant adjustments that are made in the bridge from reported EBIT to Adj. EBIT are impairment losses and write downs and income from associated companies and joint ventures. During 2022, the impairment losses of EUR 60 million were primarily attributed to the impairment of inventory and fixed assets in Canada, in relation to the turnaround efforts and revised plans (Mowi, 2023a).

3.2.2 Adj. EBIT per kg

Later in the analysis, we will delve into Mowi's performance across its various farming locations. To calculate the Adj. ROCE for each farming country we need both Mowi's Adj. EBIT and capital employed for the specific countries. Mowi discloses Adj. ROCE solely at the group level and does not disclose how the capital employed is distributed across its different harvest locations. Thus, the Adj. ROCE metric cannot be used on a country-by-country basis without using potentially misleading assumptions.

As depicted in Figure 7 in section 3.3, we observe that there is a strong correlation between the development in Adj. ROCE and the Adj. EBIT per kg harvested salmon, implying that Adj. EBIT per kg is a proper metric in reflecting Mowi's profitability across geographies. We recall that Adj. EBIT excludes certain items from EBIT that Mowi believes affect the comparability of its operational performance from year to year. Adj. EBIT per kg harvested is widely used in the salmon farming industry and highlights the operational efficiency of a salmon farming company by measuring the earnings generated per unit of production (Mowi, 2023a). In addition, Adj. EBIT per kg takes into account the earnings generated from core operations before considering interest and tax expenses, enabling meaningful comparisons of salmon farming operations across countries. Consequently, we will employ Adj. EBIT per kg

for analysing Mowi's performance across its operating countries in section 3.3, and for comparing Mowi's performance against its peers at different locations in Chapter 4.

3.3 Historical return

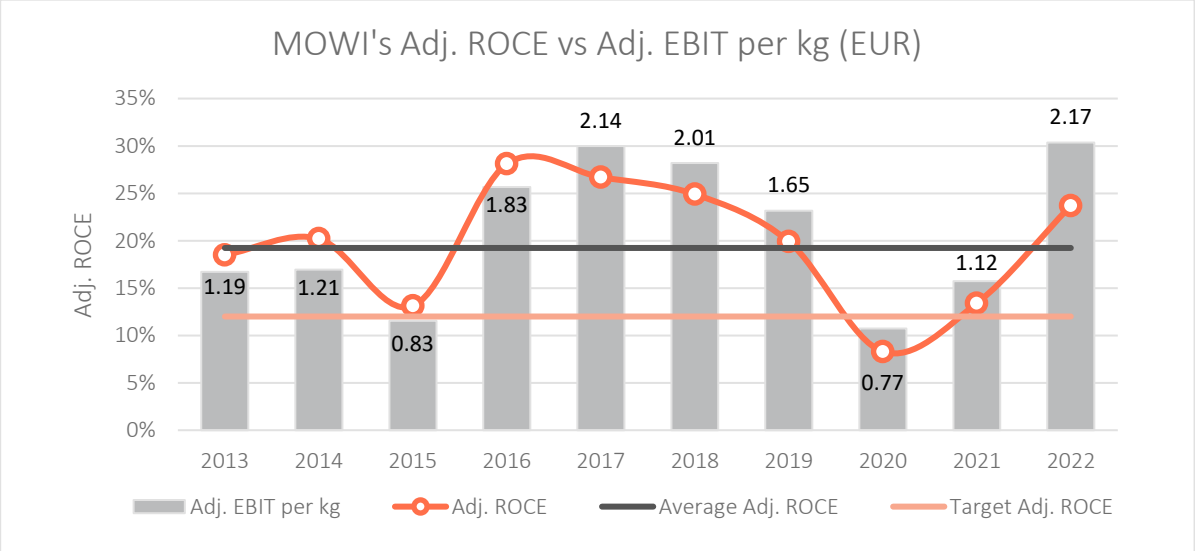


Figure 7: Mowi's historical Adj. ROCE and Adj. EBIT per kg in EUR (Source: Mowi annual reports).

Figure 7 compares Mowi's Adj. EBIT per kg salmon harvested with Adj. ROCE in the period from 2013-2022. The figure reveals a clear connection between achieved Adj. EBIT per kg and Adj. ROCE, where Adj. ROCE follows the fluctuations in the operating profit Mowi manages to achieve per kg of salmon harvested. Recalling Mowi's communicated Adj. ROCE target of 12%, 2020 is the only year since 2013 where Mowi has not been able to meet this target. The solid performance is also reflected through Mowi's last 10-year average Adj. ROCE of 19%, which is significantly higher than the company's long-term goal of 12%.

Despite Mowi's great historical performance in terms of the last 10-year average Adj. ROCE, there have been annual fluctuations during this period. The dip in 2015 was primarily a result of increased feed- and lice mitigation costs, increased mortality, and a challenging American market with prices below breakeven level for salmon of Chilean origin. The all time high Adj. ROCE of 28% in 2016 was a result of a substantial increase in the salmon price (Mowi annual reports). We recall that price changes are predominantly influenced by events on the supply side of the industry. The price increase can be traced back to a 7% negative supply shock in global salmon production, which caused prices to jump from 4.6 euros per kg to 6 euros per

kg. The negative supply shock had two primary causes; a devastating algae outbreak in Chile which decimated a significant portion of the supply there, and poor biology in Norway characterized by disease and high levels of lice in 2016 (Mowi, 2023a).

From 2016 through 2019, Mowi continued to deliver strong performance with Adj. ROCE well above the long-term goal of 12%. As with the whole industry, Mowi took a solid hit during the pandemic in 2020. The drop in Adj. ROCE in 2020 can be attributed to an unusual negative demand-side shock due to the Covid-19 pandemic. Restaurants and businesses are crucial customer segments for Mowi, and the closure of these during the pandemic had a significant negative impact on salmon prices and Mowi's profitability. The Adj. ROCE increase in 2022 is due to record high salmon prices on the back of negative supply growth and strong demand post-Covid as explained in more detail in section 2.2 (Mowi annual reports).

As Mowi is the world's largest producer of farmed Atlantic salmon with farming operations in six countries and three continents, studying the company on a country-by-country basis is essential to obtain a true understanding of its performance and strategic alternatives going forward.

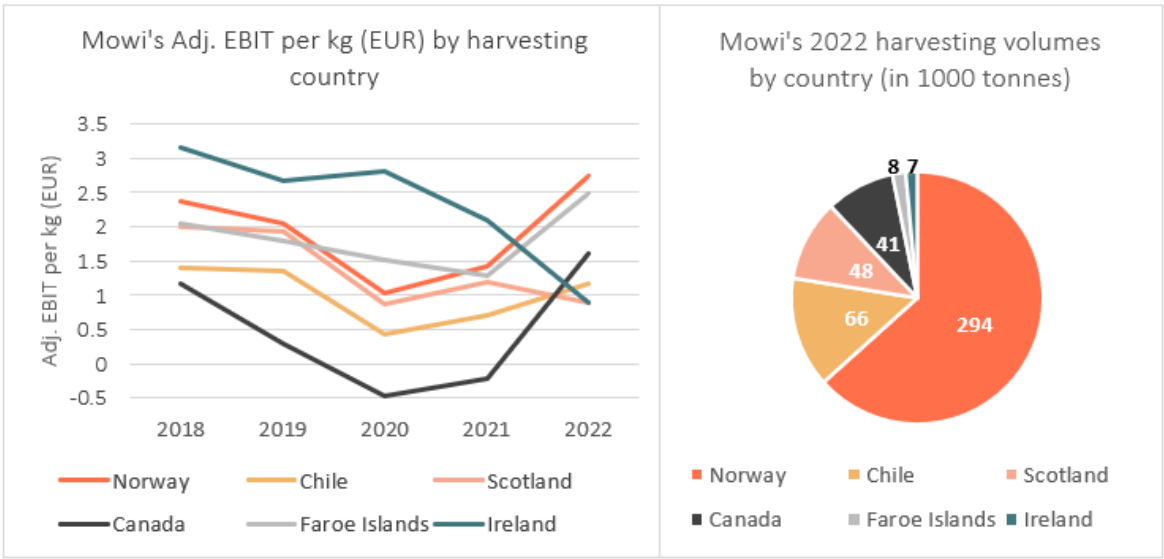


Figure 8: Mowi's Adj. EBIT per kg (EUR) and harvesting volume (1000 tonnes) at its different farming locations (Source: Mowi annual reports).

As illustrated in Figure 8, there are significant differences in Adj. EBIT per kg between the countries where Mowi operates. The figure features the countries where Mowi conducts its farming operations, namely Norway, Chile, Scotland, Canada, Faroe Islands, and Ireland.

Historically, Norway, Faroe Islands, Ireland, and Scotland have been more profitable than Chile and Canada. This is mainly due to biological and regulatory challenges in Chile and Canada, which is further explained in section 4.2. From 2020 until 2022, Mowi's Adj. EBIT per kg has improved in all countries except from Ireland and Scotland. The positive development is primarily due to increased salmon prices post pandemic, as discussed more in detail in section 2.2. The negative development in Ireland and Scotland is a consequence of unusual warm sea water temperatures, causing a significant increase in biological issues. Especially Mowi Ireland has suffered during the last two years from this, which we will delve more into in section 4.2. In 2022, Mowi acquired the Icelandic company Arctic fish. Iceland is not represented in the figure as the first harvesting volume is expected to be in 2023 (Mowi, 2023a).

Mowi's diverse geographical presence is unique within the industry and reduces geographical risk through broad exposure to various biological conditions and regulations. The observed variations in country-specific profitability over time raise the question of whether Mowi should enhance its exposure, or even focus exclusively, on the countries with the highest profitability. However, we recall that suitable locations for salmon production along the coast are limited, and producers must obtain licenses to gain access for production. Consequently, high barriers make it challenging to increase production in some of the most profitable areas. For a more comprehensive understanding of Mowi's performance and growth opportunities in each specific country, we will undertake competitor comparisons in the subsequent chapter, focusing on the countries where Mowi conducts its farming operations.

4. Competitor Analysis Across Mowi's Farming Locations

Despite having a fully integrated value chain, Mowi's farming segment is the main value contributor for the group's performance, boasting significantly higher Adj. EBIT than the other segments. In the following, we will conduct a comparative analysis of Mowi's farming segment against competitors across various farming geographies. While we will examine several countries, we will pay particular attention to Norway, which is Mowi's primary production location. The purpose of this section is to identify the profitability drivers and risks across Mowi's farming locations, and subsequently understand the differences in performance between Mowi and competitors.

Farming locations (2022)	MOWI	SALMAR	LERØY	Grieg Seafood	Salmones Camanchaca	BAKKAFROST
Group Revenue (in million EUR)	4,941	1,995	2,637	709	355	958
Group Adj. EBIT (in million EUR)	1,005	442	316	172	57	229
Norway	✓	✓	✓	✓		
Norway – North region	✓	✓	✓	✓		
Norway – Mid region	✓	✓	✓			
Norway – South region	✓		✓	✓		
Chile	✓				✓	
Scotland	✓	✓	✓			✓
Canada	✓			✓		
The Faroe Islands	✓					✓
Ireland	✓					
Iceland	✓	✓				

Figure 9: An overview of Mowi's competitors and their geographical farming exposure. Numbers are in EUR million (Source: annual reports).

The countries and companies chosen for comparison to Mowi are presented in Figure 9. The selected peers are all publicly listed on Oslo Stock Exchange and among Mowi's closest competitors in its operating areas.

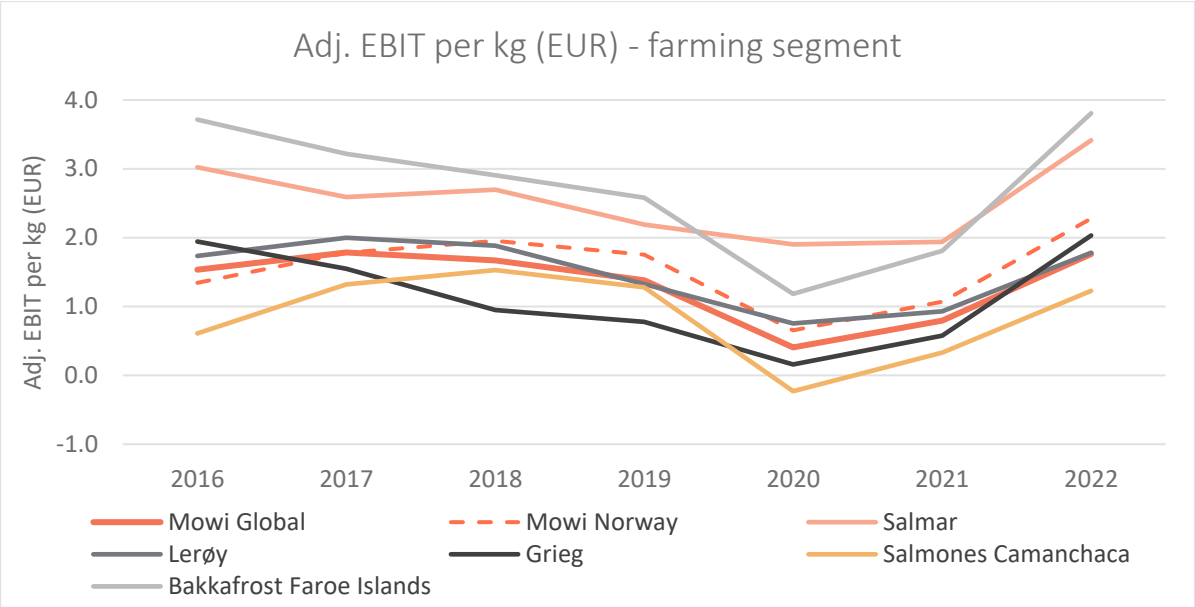


Figure 10: Adj. EBIT per kg for the farming segment MOWI vs peers (Source: annual reports).

From Figure 10, we observe a strong correlation in the development of Adj. EBIT per kg among the companies during the specified period. This can be attributed to the salmon farmers' similar exposure to the fluctuations in the salmon price that serves as the primary driver of common fluctuations in Adj. EBIT per kg. Despite these common trends, the figure also reveals individual differences, where SalMar and Bakkafrost consistently outperform its competitors.

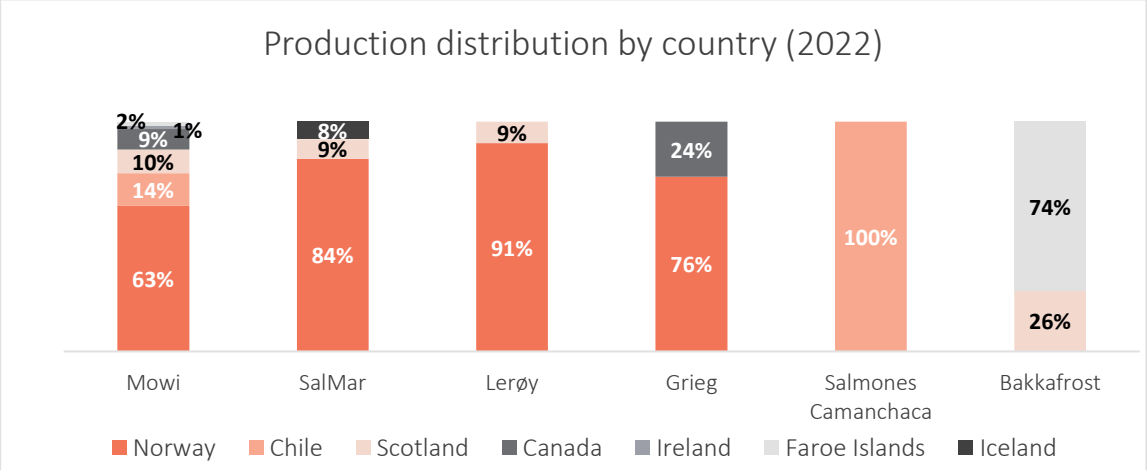


Figure 11: The peers' geographical distribution for farming operations (Source: annual reports).

Although Mowi operates farms in seven countries, 63% of its total harvesting volume takes place along the Norwegian coastline (Figure 11). This indicates that Mowi's overall

performance within the farming segment is highly dependent on its Norwegian operations. Thus, we have decided to conduct an in-depth analysis of Norway, focusing on variations in performance across its regions.

4.1 Farming Norway

As highlighted in section 3.3, Mowi's profitability in Norway is notably superior to that of other countries. This is due to several factors, including optimal natural conditions, the high level of determination and expertise within the Norwegian the salmon farming industry, and well-established regulations. Norway has an extensive coastline of over 100,000 kilometres, second only to Canada. The cold and nutritionally rich fjords and coastal waters provide ideal conditions for year-round salmon and trout production. Additionally, the coastal communities have efficient infrastructure, which guarantees reliable logistics and preserves the quality of the salmon throughout the year (Norwegian Seafood Council, n.d.).

The exceptional conditions in Norway have turned it into a highly desirable location for salmon farming operations, with around 150 different salmon farming companies operating in the country (Misund, 2023).

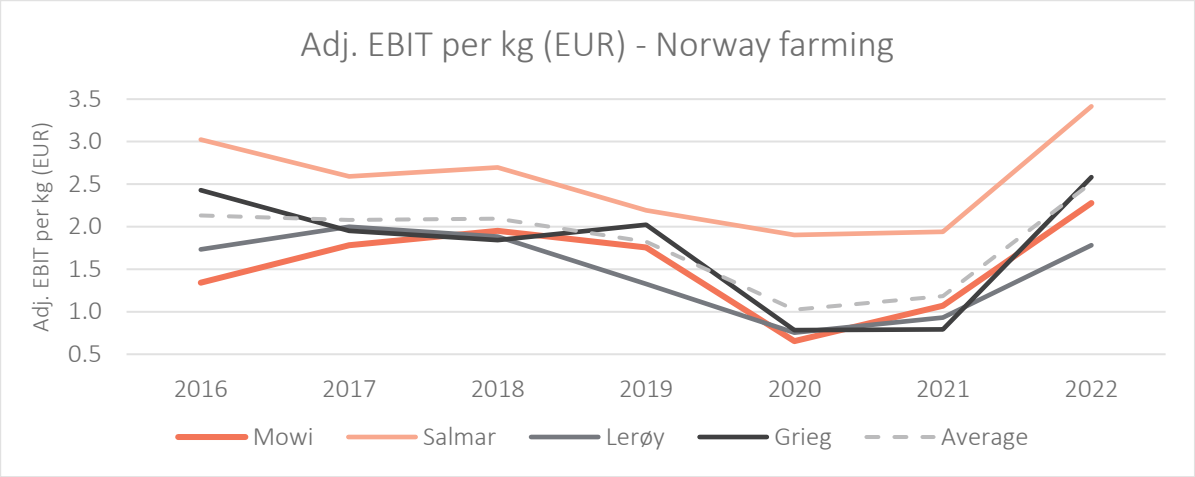
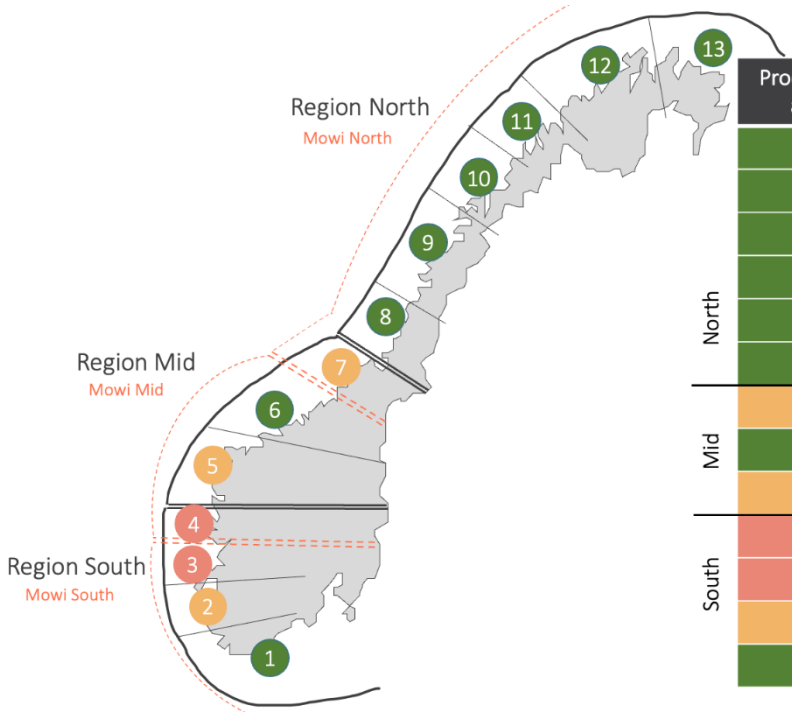


Figure 12: Adj. EBIT per kg (EUR) for the farming segment in Norway, Mowi vs peers (Source: annual reports).

Figure 12 portrays the profitability of the selected peers in Norway. It exclusively examines their farming activities within Norway, thereby removing the variations in global exposure. The figure reveals that SalMar is the most profitable company in Norway, while Mowi, Lerøy and Grieg have delivered a somewhat similar Adj. EBIT per kg. To comprehend the reasons

behind SalMar's notable outperformance compared to its competitors, it is essential to identify the distinguishing factors within Norway that contribute to its success.

ABG Sundal Collier analysts conducted an examination of the Norwegian salmon farming industry and identified three key biological factors, aside from company-specific elements, that contribute to a firm's profitability (Kaland, 2021). These factors are the quality of the site, sea temperature, and the occurrence of diseases among the salmon. High-quality sites with favourable current conditions and oxygen-rich water may reduce biological challenges. The sea temperature is another crucial factor as high temperatures result in faster growth but may also increase salmon diseases and sea lice (Kaland, 2021).



	Production area	Mortality	Temp.
North	13	7%	6.3
	12	11%	6.6
	11	16%	6.9
	10	10%	7.2
	9	10%	8.2
	8	10%	8.2
Mid	7	11%	8.8
	6	14%	9.2
	5	15%	9.8
South	4	28%	10.2
	3	20%	10.5
	2	14%	10.4
	1	11%	10.4

Figure 13: The 13 production areas in Norway and their average salmon mortality rates and seawater temperatures for 2021 (Source: Barents Watch, 2023; Fagerbakke 2020).

The Norwegian Ministry of Trade, Industry and Fisheries have divided the Norwegian coastline into 13 production areas for salmon farming (Figure 13). The salmon farmers have consolidated these 13 production areas into three regions in their financial reporting: region North, region Mid and region South. Figure 13 shows that Mowi employs a slightly different definition of the three regions. As Mowi and peers do not report financial numbers for the 13 production areas separately, we are not able to compare the performance like-for-like in each region. For instance, production area 4 is not included in Mowi's region South reporting but

included in its region Mid reporting instead. Thus, Mowi's financial numbers in regions South and Mid will not be fully comparable but serve as a proxy (Mowi, 2021).

Figure 13 displays the traffic light system assigned to each production area for a two-year period based on the quantity of lice present in the area. If the traffic light is green, seawater farms in the area are permitted to increase production by 6%. A yellow traffic light indicates that salmon farmers must maintain the same production rate as in the previous period. Salmon farmers operating in an area with red traffic light must decrease their production by 6%. Nevertheless, salmon farmers may request exemptions for growth limitations in specific sites if they can demonstrate low lice numbers (Fagerbakke, 2020).

Furthermore, Figure 13 displays the variations in sea temperatures and mortality rates across the production areas. The data implies that higher temperatures in the south region correspond to a higher level of mortality. A low sea temperature seems preferable, as indicated by low mortality rates and green traffic lights.

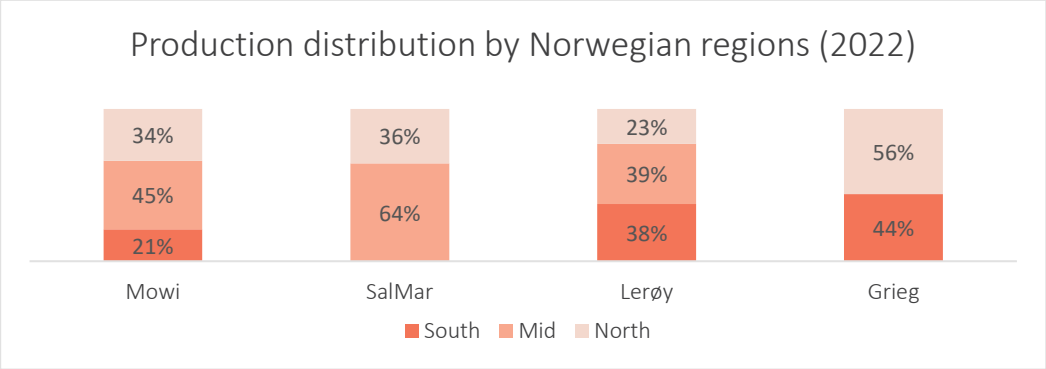


Figure 14: Regional farming exposure in Norway, Mowi vs peers (Source: annual reports).

Given the significant variation in conditions along the Norwegian coastline, it is important to investigate whether SalMar's exceptional profitability is due to its operations being concentrated in the most profitable regions. To this end, Figure 14 presents an overview of each Norwegian peer's regional farming exposure.

In the following section, we will compare Mowi's performance with the best performing peer in each region to determine the optimal positioning for Mowi in the future.

4.1.1 Region South

Region South is known for facing more biological challenges than regions Mid and North (Mowi, 2023a). Mowi, Lerøy and Grieg all conduct operations in region South. All companies have encountered a range of fish health challenges including Pancreas Disease (PD), Gill Disease (GD), Cardiomyopathy Syndrome (CMS), Infectious Salmon Anaemia (ISA), and sea lice. These challenges have resulted in substantial costs, particularly during disease outbreaks (Annual reports). As some of the abovementioned diseases have turned out to be long-lasting and difficult to get rid of, farmers may include extra costs in the annual budgeting for sites in region South.

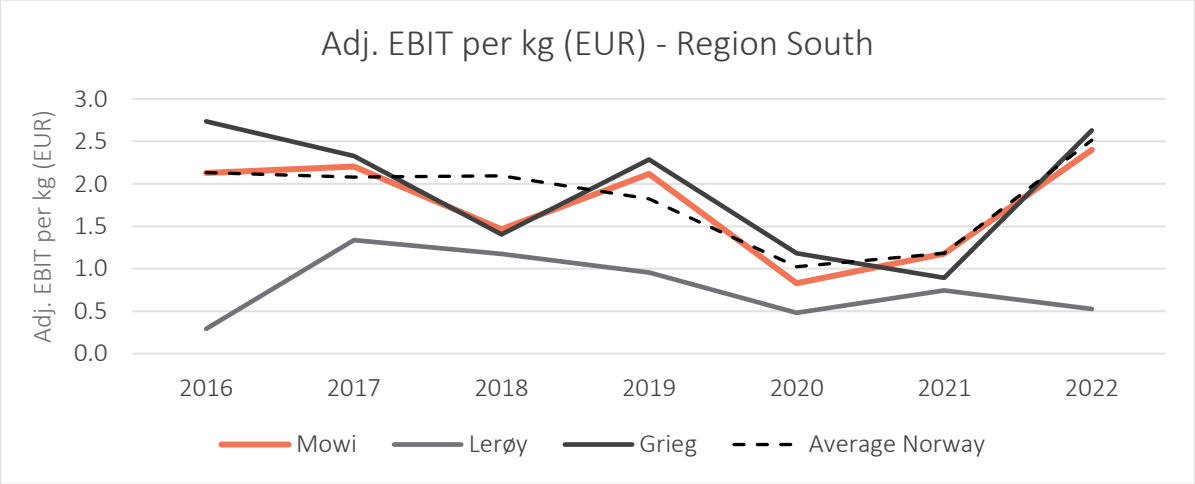
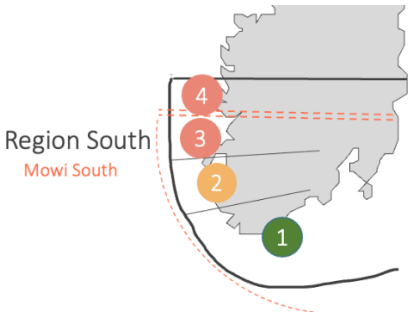


Figure 15: Adj. EBIT in Region South MOWI vs peers (Source: annual reports).

Based on Figure 15, we observe that Mowi and Grieg exhibit similar Adj. EBIT per kg over the years, with values closely matching the national average. Upon reviewing the annual reports of both companies, we can infer that the years when profits declined were mainly due to expenses related to biological challenges for both companies. Lerøy's performance in region South has been significantly inferior to its peers and the national average, with Adj. EBIT per kg varying from 0.3 to 1.3.



	Production area	Mortality	Temp.
South	4	28%	10.2
	3	20%	10.5
	2	14%	10.4
	1	11%	10.4
	National Average	14%	8.7

Figure 16: Geographic overview of Region South (production area 1-4). Mowi's definition of region South does not include production area 4.

The sea temperatures in all production areas in region South are between 10.2 and 10.5 °C, which is almost 2 degrees above the national average (Figure 16). However, we observe that mortality levels vary significantly between production areas, with areas 3 and 4 suffering the most with 20% and 28% mortality, respectively.

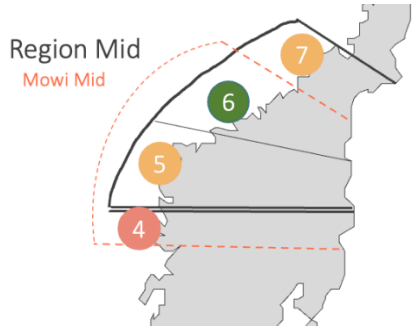
To investigate the reason behind Mowi and Grieg's superior performance to Lerøy, we analysed the location of the companies' sites in the region. We discovered that Grieg operates all its sites in production area 2, whereas Mowi has a significant number of salmon farms in both production areas 2 and 3. Lerøy's majority of sites are situated in production areas 3 and 4 (Annual reports and presentations). The high mortality rate in these production areas may be the reason for Lerøy's low profitability in region South. Both areas 3 and 4 are assigned with red traffic lights, meaning that Lerøy, and partly Mowi, must reduce their harvesting volumes by 6% within the next two years. Also, we recall that Mowi is not including production area 4 in its financial reporting of region South, which seems to be the most challenging production area. As, Mowi operates 21 sites in production area 4, its Adj. EBIT per kg in region South would likely be lower if this area was included.

These findings indicate that fish health-related costs significantly impact the profitability of firms operating in region South. One way to reduce the risk of lice and other diseases is by reducing the time the salmon spend in seawater farms. Grieg has invested heavily in land-based post-smolt facilities in Rogaland, reducing the grow-out period at sea, and hence also reducing the risk of suffering from sea lice and other sea-related diseases (Grieg Seafood, 2023).

As Mowi has been assigned with growth restrictions in production areas 2 and 3 from the traffic light system, we recommend Mowi improve the biological conditions at its current sites in these areas. To achieve this, Mowi may consider following Grieg's strategy in region South

by investing in land-based post-smolt facilities to reduce farming time at sea. Furthermore, implementing smart farming technologies can enhance the efficiency of farming operations, reduce costs, and improve fish health (Mowi, 2022a). Therefore, if Mowi's smart farming systems which are currently being implemented in the mid-region prove successful, they may consider expanding the use of these systems to its farms in region South as well. However, the Norwegian resource rent tax reduces Mowi's investment capacity and ability in investing in post-smolt and smart farming systems, which is discussed further in Chapter 5.

4.1.2 Region Mid



	Production area	Mortality	Temp.
Mid	7	11%	8.8
	6	14%	9.2
	5	15%	9.8
	4	28%	10.2
	National Average	14%	8.7

Figure 17: Geographic overview of Region Mid (production area 5-7). Mowi's definition of region Mid is production area 4-6.

Mowi, Lerøy and SalMar conduct operations in region Mid. The region comprises production areas 5, 6, and 7, which have been designated traffic lights yellow, green, and yellow, respectively. As previously mentioned, Mowi's financial reporting of region Mid includes production area 4 instead of 7. SalMar exclusively operates in production area 6, which has received a green light due to its limited biological challenges. In contrast, Mowi has over half of its regional sites located in production areas 4 and 5 where water temperatures are warmer and biological challenges are more prevalent than further north (Annual reports and presentations).

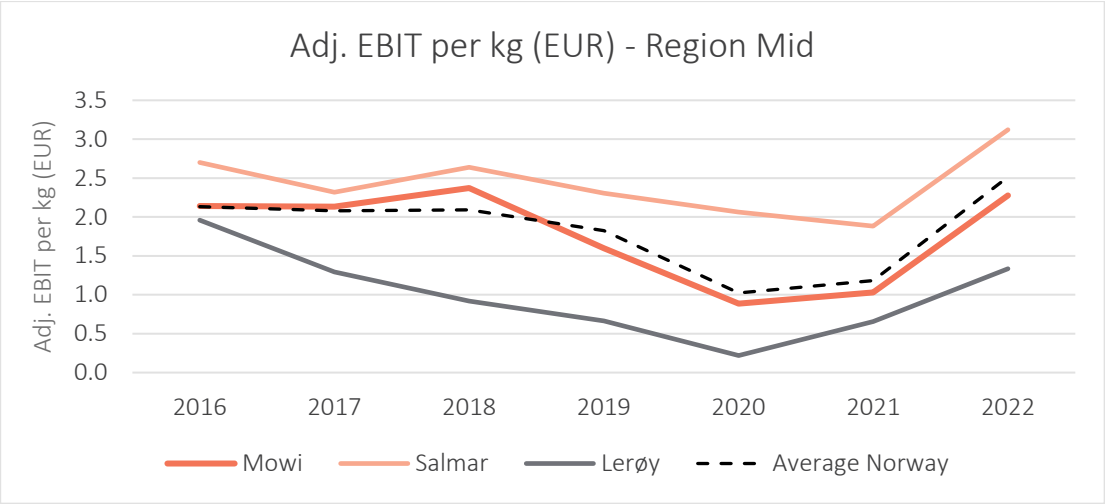


Figure 18: Adj. EBIT in region Mid, Mowi vs peers (Source: annual reports).

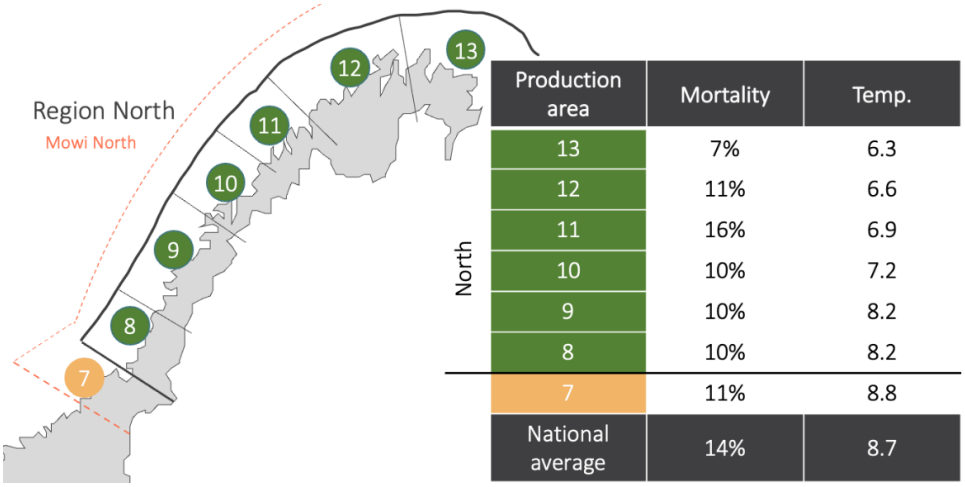
According to Figure 18, SalMar demonstrates considerably higher profitability than its peers in region Mid. As in region South, Lerøy is the worst-performing peer. Mowi has faced significant fish health challenges in the region, including Pancreas Disease and Cardiomyopathy Syndrome, which have resulted in higher costs, especially between 2018 and 2020 (Mowi annual reports). As a consequence of these disease outbreaks, Mowi was forced to harvest its salmon earlier than normal, reducing its weight and quality ultimately resulting in a lower achieved price. SalMar has experienced biological challenges as well, such as high lice levels, but they have maintained better control than Mowi, resulting in a smaller impact on their operations (SalMar annual reports).

The main reason for SalMar's superior Adj. EBIT per kg in region Mid is the company's low costs compared to peers. This can primarily be explained by SalMar's strategically well-positioned site locations. Firstly, SalMar's sites in production area 6 are located near its smolt and slaughtering facilities, reducing its transportation costs. Secondly, SalMar's sites are located next to each other with no neighbours (SalMar, 2022). Being a sole salmon farmer with farms in a fjord or part of a coastline is highly valuable due to the negative externalities other small salmon farmers may bring. On the other hand, Mowi's neighbouring sites in production area 4 consist mostly of small salmon farmers with outdated and low-quality equipment and farms. These farmers lack technological advancements, leading to high disease and lice levels (Barents Watch, 2023). This is a problem for Mowi as its farming operations are frequently affected by disease outbreaks from nearby salmon sites.

To improve its position in region Mid, Mowi needs to better handle disease outbreaks and become more cost-efficient. Mowi has already invested in smart-farming projects in the region to identify and manage diseases and sea lice at an early stage. These smart farming projects are expected to be realized by 2025 (Mowi, 2023a). Another way of reducing the risk of sea lice and other diseases is to reduce the growth time at sea per production cycle. Mowi has conducted investments in post-smolt facilities in region Mid to reduce the grow-out time for its salmon at sea, leading to a lower risk of sea lice and disease outbreaks. However, these investments have been put on hold due to the negative financial implications of the Norwegian resource rent tax, which is discussed more in detail in Chapter 5.

Going forward, we recommend Mowi continue developing smart-farming solutions in region Mid, prioritizing those sites that are most negatively affected by biological challenges. In addition, it may be strategically beneficial for Mowi to acquire some of its smaller neighbouring farmers to prevent infections from these and to better control the fish health in its own farms. Therefore, we recommend investigate acquisition opportunities in the area.

4.1.3 Region North



	Production area	Mortality	Temp.
North	13	7%	6.3
	12	11%	6.6
	11	16%	6.9
	10	10%	7.2
	9	10%	8.2
	8	10%	8.2
	7	11%	8.8
	National average	14%	8.7

Figure 19: Geographical overview of region North (production area 8-13). Mowi's definition of region North includes production area 7.

All production areas in region North are assigned with a green traffic light. Region North is characterized by higher latitudes and colder seawater resulting in less prevalent sea lice and

disease outbreaks. This is reflected in lower mortality levels than the national average in almost all the northern production areas.

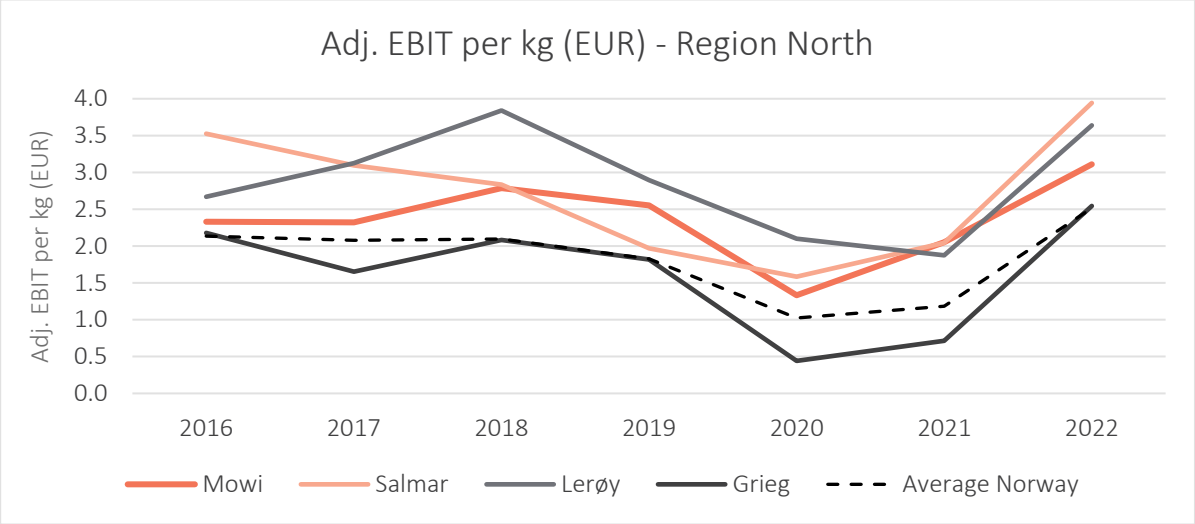


Figure 20: Adj. EBIT per kg in region North Mowi vs peers (Source: annual reports).

Except from Grieg, all peers in region North consistently outperform the national average Adj. EBIT per kg (Figure 20). This superior performance is primarily attributed to the region's more favourable biological conditions. Between 2017 and 2021, Lerøy boasted the highest Adj. EBIT per kg in region North, primarily because it avoided biological issues and maintained the lowest costs among peers during this period. Mowi, on the other hand, faced biological issues and increased costs in the same period. Upon reviewing the firms' sites in the northern region, it is evident that Lerøy predominantly operates in production area 10-12, while most of Mowi's operations are concentrated in area 7 and 8 which lies further south (Annual reports). As a result, Lerøy's northern sites experience cooler water temperatures resulting in less prevalent sea lice and disease outbreaks compared to Mowi's sites.

Figure 20 reveals a considerable decrease in the difference in Adj. EBIT per kg between Lerøy and Mowi from 2018 to 2019, where Lerøy's profit took a larger hit. This was primarily due to a fire at one of Lerøy's smolt facilities and a toxic algae outbreak in 2019. These unexpected events disrupted a portion of Lerøy's sea production and caused high costs for the company that year. After benefitting from improved biological conditions, Mowi managed to boost its Adj. EBIT per kg in 2021. The positive trend in Adj. EBIT per kg continued in 2022 with higher salmon prices (Annual reports).

Sea temperature has proven to be correlated with salmon farmer's profitability in all regions in Norway. However, seafood analysts at ABG Sundal Collier have determined that profitability in the northern region is closely linked to the quality of the seabed as well, which is reflected in ABG's site quality ratings. Notably, 81-86% of Lerøy, SalMar, and Mowi's sites in region North is rated with the highest score for site quality. In contrast, Grieg has only slightly above half of its sites rated with the highest quality in the north, which may contribute to its lower profitability relative to its peers (Kaland, 2021).

Despite the superior profitability in the northern region, Mowi has recently undertaken various initiatives to further enhance its position in the area. Among these initiatives are smolt expansion projects which are expected to reduce production time at sea. As a result, more salmon can be produced within a given time frame, leading to better license utilization (Mowi, 2021). Our recommendation for Mowi in region North is to investigate opportunities to acquire more sites, preferably further north than most of their current farming locations. This will give them not only a lower cost due to lower biological challenges, but also a better salmon quality.

4.2 Mowi's performance and position in farming locations outside Norway

In the following, we will continue analysing Mowi's farming segment against peers but in countries outside Norway. The purpose of the analysis is to figure out how Mowi can improve its operational efficiency and profits in each country, and which farming locations the company should prioritize and invest more into. The analysis will be conducted on a country-by-country basis.

4.2.1 Chile

The Chilean salmon farming industry is renowned as the world's second-largest producer of Atlantic salmon[1]. Mowi established its farming unit in Chile in 1985 and has since become one of the largest salmon producers in the country. Currently, the company has 14% of its

[1] The reason why salmon farmers use the term "Chilean Atlantic Salmon" is because of the type of salmon being farmed in Chile, not because of the geographic location.

salmon farming production located in Chilean waters. Today, Mowi owns several unused licenses in the country, indicating a considerable expansion potential (Mowi, 2023a).

Compared to Norway, seawater temperatures in Chile are generally higher and more stable. Despite faster growth and shorter production time, the higher sea temperature in Chile has led to significant disease outbreaks and sea lice levels historically. For instance, in 2007 the Chilean salmon farming industry was hit hard by an outbreak of Infectious Salmon Anaemia, which took the industry at least three years to rebuild the biomass. Similarly, in 2016, a massive algae bloom caused high mortality levels and salmon farmers spent several years rebuilding their biomass. Both events resulted in negative supply shocks in the global salmon market (Mowi, 2022a).

In recent years, Chile's salmon farming industry has experienced significant infection rates from the highly contagious and deadly bacterial disease Salmonid Rickettsial Septicemia (SRS). While SRS has affected Chilean salmon farms since the 1980s, a dramatic increase in outbreaks has been observed lately. In 2020, this disease was responsible for more than 10% of mortalities in Chilean salmon farming facilities (Rozas-Serri, 2022). Unfortunately, SRS has resulted in the extensive use of antibiotics in the Chilean salmon farming industry, which may contribute to antibiotic resistance, posing risks to both salmonids and humans (Arellano, 2020). The disease has imposed substantial financial burdens on the Chilean salmon farming industry, estimated at USD 700 million per year (Caruffo et al., 2021).

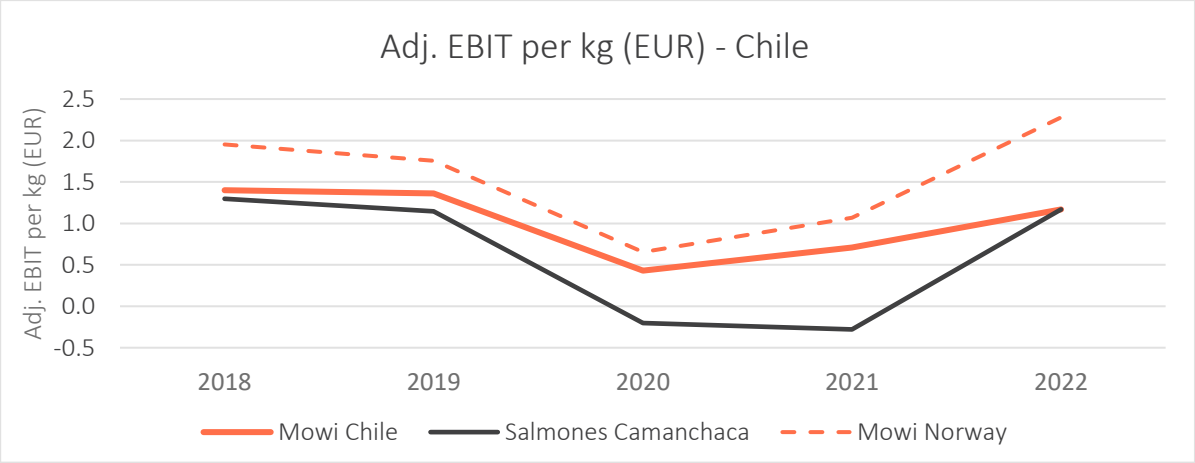


Figure 21: Adj. EBIT per kg Mowi Chile vs Salmones Camanchaca (Source: annual reports).

Mowi has outperformed Salmones Camanchaca in terms of Adj. EBIT per kg since 2018 (Figure 21). In fact, Mowi was the most profitable company in Chile in 2021 (Mowi, 2022b).

Despite outperforming competitors, Mowi's Adj. EBIT per kg in Chile has been significantly lower than in Norway (Figure 21). This can be attributed to the unique biological challenges along the Chilean coast.

Chile was one of the countries in the world that was hit hardest by Covid-19, and both Mowi Chile and Salmones Camanchaca were severely affected (Fuentes & Sanders, 2020). Both companies reported high rates of sick leave and severe transportation issues, which significantly increased their costs. In addition, Salmones Camanchaca suffered from bad weather conditions in 2020 which ultimately led to high mortality rates. This may explain why Salmones Camanchaca was affected more than Mowi during the pandemic. Salmones Camanchaca continued to suffer from high costs in 2021 due to an algae bloom near some of their farms. Mowi's profitability in Chile has improved after the pandemic, as activity is back to normal levels and partly due to improved biology at its sites (Annual reports).

Research shows that the current vaccines for SRS are not efficient enough and not reducing mortality rates (Caruffo et al., 2021). However, as the world-leading salmon farmer, Mowi possesses a large competitive advantage in its Research & Development department. Mowi's knowledge bank may constitute an opportunity to develop a more effective vaccine than its competitors.

Mowi has a significant amount of unused license capacity in Chile, indicating a substantial growth potential for the company (Mowi, 2023a). Before utilizing these licenses, we recommend Mowi Chile improve its handling of SRS and other diseases that have been a major problem for the company. A slow growth rate in the country may be preferable as rapid growth increases the risk of disease outbreaks.

4.2.2 Scotland

Scotland is the world's third largest supplier of farmed Atlantic salmon, only behind Norway and Chile. The Scottish salmon farmers are primarily operating along Scotland's western coast, where numerous sheltered sea lochs provide ideal conditions for fish farming. However, salmon farming in Scotland has come under scrutiny in recent years due to concerns over its environmental impact on wild fish populations. Some of the main issues include sea lice infestations, disease outbreaks, and the potential for farmed fish to escape and breed with wild fish. Nonetheless, the industry has taken significant strides to address these challenges and improve its sustainability practices (Salmon Scotland, 2022).

Mowi has 12% of its total production in Scotland and plans to broaden its presence further by obtaining additional sites and fully utilizing its licenses. Mowi Scotland expects to boost its production volume from 48,000 in 2022 to 64,000 in 2023 (Mowi, 2023a).

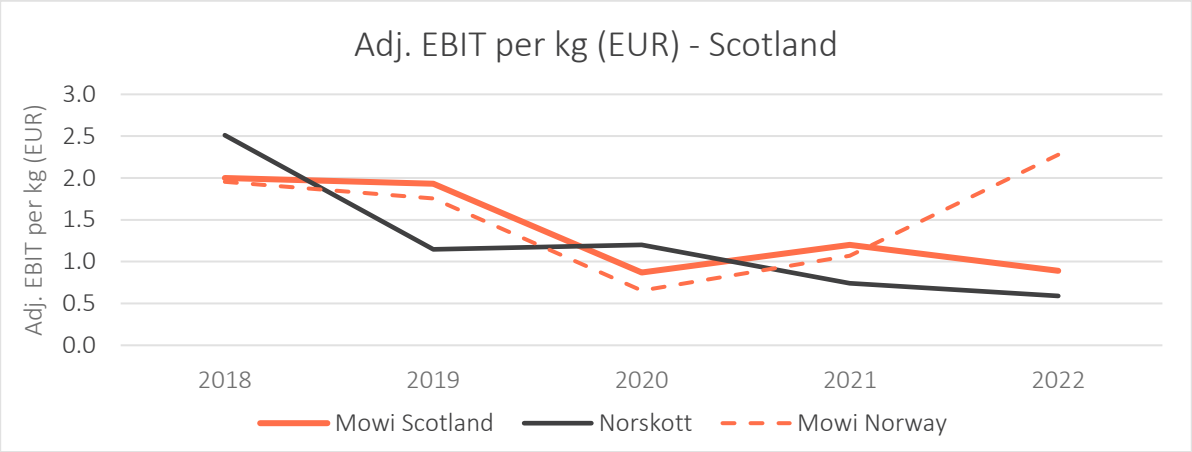


Figure 22: Adj. EBIT per kg Mowi Scotland vs Norskott (jointly owned by Lerøy and SalMar) (Source: annual reports).

From Figure 22, it is evident that the profitability of Mowi Scotland has been very similar to that of Mowi Norway since 2018, except for 2022. Despite high salmon prices, Scottish salmon farming operations faced a challenging year in 2022 due to a high mortality rate resulting from micro-jellyfish bloom and Salmonid Rickettsial Septicemia disease after the warmest summer on record in Scotland (Mowi, 2023a).

Moreover, we can observe that both Mowi Scotland and Norskott have faced declining but fluctuating profits in Scotland since 2018. This can be attributed to various biological issues, such as viruses, bacteria, algae blooms, and sea lice. Mowi Scotland had a difficult time controlling disease outbreaks in 2020 and 2022, which resulted in substantial losses and negatively impacted the Adj. EBIT per kg (Mowi, 2023a). Similarly, Norskott experienced challenges in 2019, 2021, and 2022 resulting in declining profits in those years (SalMar, 2022). Hence, the differences in the firms' profitability seem to be highly correlated with the appearance of biological challenges in their specific farms.

Despite the biological challenges that have affected Mowi's profitability in Scotland, the country has historically been among the most profitable countries for Mowi. In fact, Mowi plans to increase its presence in Scotland by acquiring more sites and expanding its production volumes (Mowi, 2023a). However, the sudden drop in profitability in 2022 due to biological challenges raises concerns about the long-term viability of salmon farming in Scotland. At the

current stage, it is difficult to determine whether the biological challenges are temporary, or long-lasting, like in Chile.

Nevertheless, if Mowi can find a way to improve the biological challenges and get back to the 2018 and 2019 profitability levels, Scotland remains a promising location for further growth. To that end, Mowi has invested in technology to increase smolt size in Scotland, which could help reduce time at sea and mitigate some of the biological issues. Additionally, Mowi has developed new sites to utilize the unused license they have been awarded in recent years, indicating their confidence in a turnaround of the biological challenges in the country. Given the relatively high profitability in Scotland combined with promising growth opportunities, we recommend Mowi Scotland continue investing in further growth.

4.2.3 Canada

Mowi established its salmon farming operations in the late 1980s. Today, they operate in Canada West and Canada East. The Canadian salmon farming industry faces both biological and political challenges. The challenges in Canada East are mostly biological, including disease outbreaks, lice infestations, and low oxygen levels in the waters (Sapin, 2021). These challenges have had a significant impact on Mowi's operations in the region, forcing the company to halt its growth ambitions (Mowi, 2023a).

In Canada West, the challenges are mostly political, particularly in the Discovery Island area. In 2020, the government issued a directive mandating the closure of all open net farms in the region by 2022. The government’s motive is to protect the threatened wild Pacific salmon and return the species to abundance. This move was met with resistance from the three major salmon farmers in the area, Cermaq, Grieg, and Mowi, who contested the ruling in court. The judge ruled in favour of the companies, citing the government's failure to provide them with proper procedural processes (Hitchins, 2023). In 2023, however, the Canadian government announced that it would not be renewing the licenses of farms operating in the area. Diane Morrison, the Managing Director of Mowi Canada West, expressed her disappointment with the government's decision, stating that elimination of almost a quarter of Mowi’s farms within a single announcement was a significant blow to the industry (Hitchins, 2023).

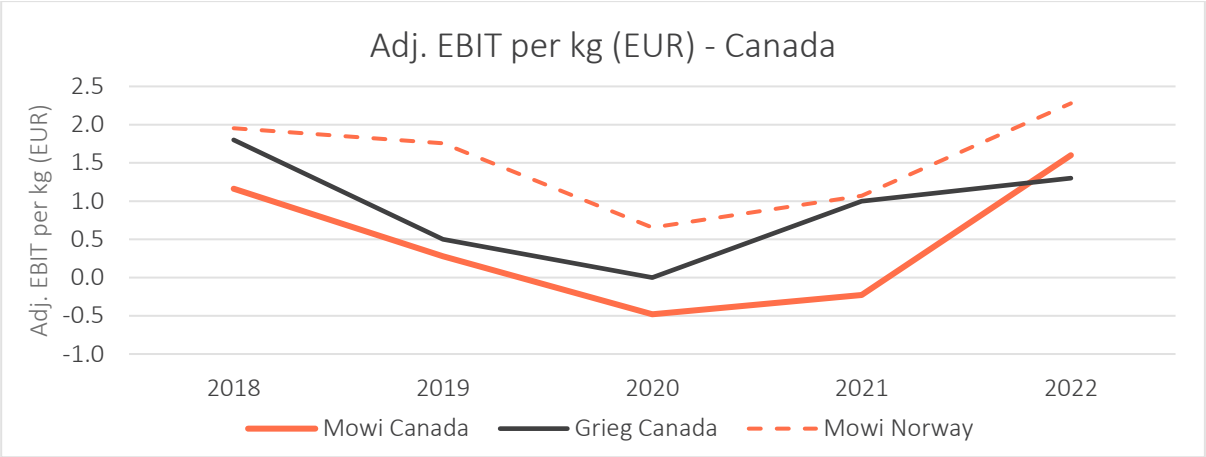


Figure 23: Adj. EBIT per kg, Mowi Canada vs Grieg Canada (Source: annual reports).

Figure 23 provides a comparison between Mowi Canada and Grieg Canada. Both companies have a considerably lower Adj. EBIT per kg compared to Mowi Norway. This discrepancy in operational efficiency can be attributed to the more challenging biological conditions in Canada. Furthermore, there are noticeable variations in Adj. EBIT per kg between Mowi and Grieg's salmon farming operations in Canada. We observe that Grieg outperformed Mowi every year since 2018, except for 2022. This may be explained by the fact that Mowi has faced significant biological challenges and costs in its farms in Canada East, while Grieg did not operate in Canada East during this period. Both companies have encountered biological issues in Canada West, but these have not been as severe as those faced by Mowi in Canada East. Grieg recently established operations in Canada East and its first harvest is expected in 2023.

Historically, Canada has been Mowi's worst performing country, understandably after reviewing the challenges in both areas where the company operates. It appears impossible for Mowi to continue with farming operations in parts of Canada West due to the political resistance. Moreover, the existing biological problems in Canada East have led to a temporary halt in the growth rate. However, Mowi is currently undergoing a turnaround in East to restore profitability and transform the company into a streamlined business unit that can effectively address the region's challenges. As a result, Mowi significantly reduced the gap in profitability between its operations in Canada and Norway. If Mowi can continue to control the biological challenges in Canada East, there are significant opportunities to increase profitability, as there is unused licence capacity in the region.

The improvement in profitability observed in 2022 may indicate that Canada has the potential to be a promising farming location for Mowi. However, if the performance in Canada reverts

to levels like those in 2020 and 2021, it may be prudent for Mowi to consider scaling down or even exiting the Canadian market. Careful evaluation and ongoing assessment of the viability and profitability of operations in Canada might be crucial for Mowi to make informed decisions about its future presence in the country.

4.2.4 The Faroe Islands

The Faroe Islands are globally recognized for their production of exceptional high-quality salmon, due to the cold and oxygen-rich waters. As a result, the country experiences minimal biological problems. Mowi established in the Faroes in 2002, and currently there are only three salmon farming companies operating in the country: Bakkafrost, Hiddenfjord, and Mowi (Faroe Islands, n.d.). Mowi holds three seawater licenses and one smolt license, which accounts for approximately 2% of the company's total production volume.

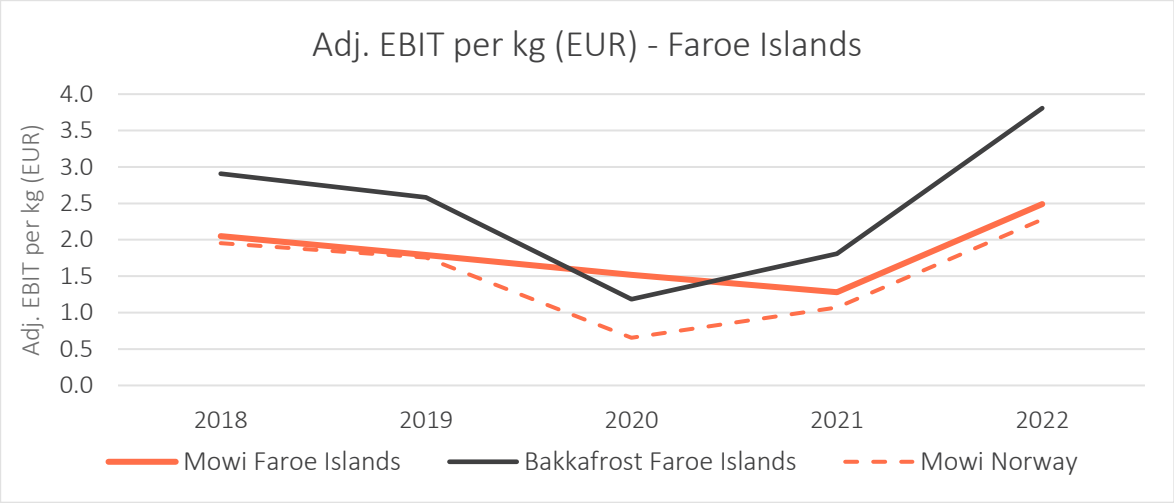


Figure 24: Adj. EBIT per kg Mowi Faroe Islands vs Bakkafrost (Source: annual reports).

The superior Faroese salmon farming conditions is reflected through both Mowi Faroe Islands and Bakkafrost performances during the period shown in Figure 24, which are either in line with or better than Mowi Norway. However, it is worth noting that Mowi Faroe Islands consistently falls below Bakkafrost in terms of Adj. EBIT per kg during most years since 2018. Interestingly, none of the companies has reported any significant biological issues during this period. One key factor that sets Mowi and Bakkafrost apart is the number of sites they operate in the country, as Mowi operates with significantly fewer sites compared to Bakkafrost (annual reports). With a significantly larger number of facilities, Bakkafrost can optimize resources, achieve operational efficiencies, and ultimately improve profitability.

Given the sustainable conditions and profitability in the Faroe Islands, one might wonder why Mowi has such a limited presence in the country. The answer lies in strict ownership limitations imposed on foreign companies. According to the Aquaculture Act in the Faroes, there is a cap of 20% for both direct and indirect ownership in fish farming companies on the island. As a result, Mowi, as a Norwegian company, cannot buy commercial licenses to expand its operations in the Faroes. Meanwhile, the Faroese companies Bakkafrost and Hiddenfjord are not similarly affected by these ownership restrictions (Mowi, 2022a).

In conclusion, while the Faroe Islands offer highly attractive prospects in terms of profitability and natural resources for salmon farming, the presence of restrictive ownership laws presents a significant obstacle to foreign investments and the growth of the industry in the country. This limitation makes it impossible for Mowi to pursue an expansive growth strategy in the Faroe Islands. As a result, it is advisable for Mowi to maintain its current position and focus on optimizing its existing operations in the country.

4.2.5 Ireland

Unlike Norway, which has limited growth opportunities, Ireland has a significant potential. In the 1990s, Norway and Ireland produced approximately the same volume of salmon, about 20,000 tonnes each. While Norway's production has increased substantially, Ireland's production has stagnated. The stagnation can be attributed to the Irish Government's reluctance to issue salmon farming licenses (Moore, 2021).

Another regulatory hurdle faced by salmon farmers in the country is the lengthy approval process for establishing new farms. The average waiting time is currently eight years, compared to an international average of two years. The extended waiting time makes it difficult for salmon farmers to plan their operations and significantly increases the risk of their investment (Mowi, 2022a).

The stringent regulatory framework in Ireland has resulted in a limited number of salmon farming companies operating in the country. Apart from Mowi, none of these companies have publicly available financial reports. Therefore, we will compare Mowi's performance in Ireland with Mowi Norway.

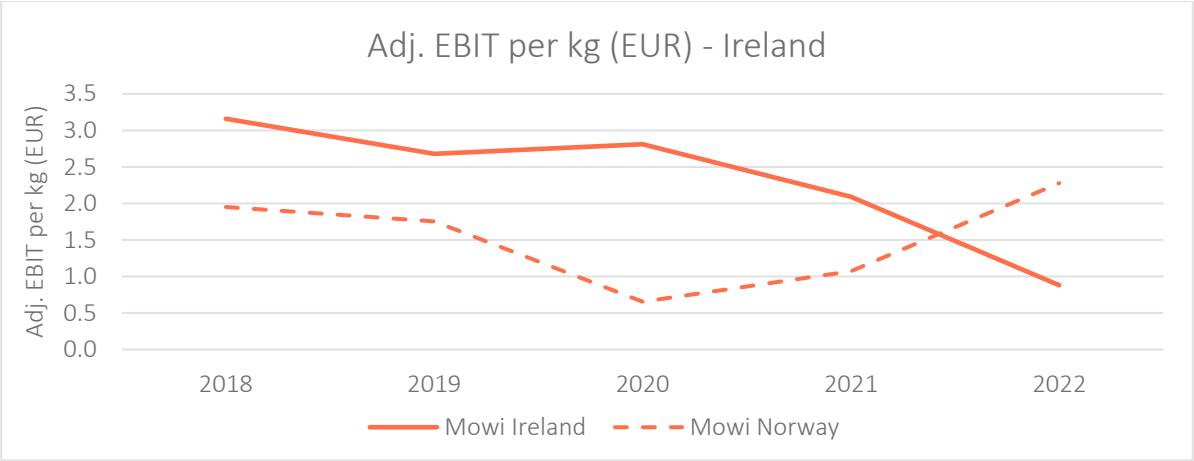


Figure 25: Adj. EBIT per kg for Mowi Ireland and Mowi Norway (Source: annual reports).

From Figure 25, we observe that Mowi Ireland has significantly outperformed Mowi Norway for most years since 2018. This can be attributed to Mowi Ireland's ability to achieve higher salmon prices from its exclusive production of organic salmon. Mowi Ireland's organic salmon adheres to the strict EU organic regulations and is audited by DEBIO. Since the quality of organic salmon is recognized as excellent and there are relatively few producers of organic salmon, this type of fish typically achieves a higher price in the market. What distinguishes organic salmon from regular salmon is that organic salmon is certified and meets certain requirements regarding feed, medication and chemicals used through the production cycle. For instance, the use of antibiotics, hormones, and other chemicals is heavily restricted in organic farming (Mowi, 2023a).

As opposed to Mowi Norway, Mowi Ireland experienced a decrease in Adj. EBIT per kg in 2021 and 2022. The decline in 2021 can be explained by a plankton bloom which increased their costs, and an increase in the global supply of organic salmon which led to a lower price achievement. Similar to Scotland, the Irish salmon farming industry suffered from record high sea temperatures in 2022 around its west coast. The high temperatures caused a significant number of gill diseases and Salmonid Rickettsial Septicemia in Mowi's farms, which mostly explains the profit loss that year (Annual reports). In addition, the increased global supply of organic salmon continued in 2022 and contributed to reduced price of this type of salmon.

While biological challenges may improve in the long run, the sudden increase in organic salmon supply might have a long-lasting effect on the price of organic salmon and Mowi Ireland's profitability. As acquisition of licenses and growth seems risky due to the

challenging regulatory framework, our recommendation for Mowi Ireland is to maintain its current position and focus on optimizing its existing operations in the country. Salmon farming in Ireland has proven to be highly profitable, and if the government eases on the current regulatory issues, Mowi should seek to expand its operations in the country.

4.2.6 Iceland

In 2022 Mowi acquired a 51% stake in the Icelandic company Arctic Fish, expanding its geographical reach. By entering Iceland, Mowi further diversifies its global presence. Mowi's first harvest in the country is anticipated to be 15,000 tonnes by the end of 2023, which equals Mowi's harvesting volume in the Faroe Islands and Ireland combined. Based on its current licenses, Mowi's total maximum allowed biomass for Iceland is nearly 32,000 tonnes, indicating ample growth opportunities. To prevent genetic deterioration of wild species, the government has set a limit of 71,000 tonnes salmon of annual production in the coast surrounding the country. In 2022, the total harvested salmon volume in Iceland was slightly above 50,000 tonnes, meaning that there is potential for some increased production in the country (Government of Iceland, n.d.).

It is well-established that warmer water temperatures increase the risk of biological problems. Although Mowi claims that the cold waters surrounding Iceland provide excellent conditions for salmon farming, cold waters have some drawbacks as well (Mowi, 2023a). The Icelandic Government has expressed concerns about the industry's progress in the country, stating that the cold temperatures can be challenging. Ice in the waters has historically caused equipment damage and the cold temperatures potentially lead to low survival rates (Government of Iceland, n.d.). However, as we have seen in Norway's region North, lower water temperatures seem to facilitate for production of a higher quality salmon.

Arctic Fish's Adj. EBIT per kg in 2021 was EUR 0.86 per kg, and it has historically remained lower than 1 EUR per kg (Arctic Fish, 2022). This figure is slightly higher than Mowi's profit in Canada and Chile, but lower than the rest of their farming countries. However, Mowi is a large company with extensive knowledge and expertise, also in colder waters, making it likely that the company will improve its long-term performance after the acquisition.

5. Recource Rent Tax on Norwegian Salmon Farming Operations

On September 28, 2022, the Norwegian Government proposed a substantial increase in the tax rate for salmon and trout farming in Norway, from 22% to 62%. This came with the introduction of a cash flow-based resource rent tax, which has recently been adjusted downwards to 25% from the initial proposal of 40%. When considering the wealth tax, many farmers in the Norwegian salmon and trout industry now face a 65% effective tax rate, with some even higher. The resource rent tax took effect on January 1, 2023, while the final voting will take place in June, 2023 (Mowi, 2022c).

This abrupt change in tax conditions, implemented without impact assessments and with retroactive effect, is unprecedented in modern Norwegian tax history. It has drawn attention from both Norwegian and international academic circles, and international investors have reported increased political risk for investments in Norway. The largest Norwegian farmers have clearly communicated their concerns and put several investments on hold (Solgård, 2022).

In this chapter, we examine how the introduction of the resource rent tax impacts the industry and Mowi in particular. Firstly, we introduce the proposed resource rent tax model and challenge the government’s goal of maintaining investment neutrality after the tax-implementation. Secondly, we analyse how the resource rent tax will affect Mowi’s profitability in Norway, and subsequently how its strategic incentives may have changed. Lastly, we present the Faroese resource rent tax model on salmon farming and discuss its advantages and disadvantages compared to the current proposal.

5.1 Resource rent

Resource rent is defined as the abnormal profitability gained from the use of a common (public) resource, such as the Norwegian fjords and sea areas. The Norwegian Government argues that it is only reasonable that society receives a share of the extraordinary return generated through the exploitation of these resources. Since the 1980s, the term "resource rent" in Norway has increasingly been used to refer to the income generated by the state's ownership of natural resources. Although concessions are granted to companies for resource extraction,

the government also receives a substantial share of the income through taxation, levies, and ownership in certain concession companies (NOU 2019: 18).

In Norway, the resource rent tax is a special tax aimed at ensuring that the community benefits from the sale of natural resources. This tax is in addition to other charges and fees that companies in the industry must pay for their use of these resources (NOU 2019: 18).

5.2 The proposed recource rent tax on Norwegian salmon farming operations

The ministry proposes a profit-based tax model similar to those employed in the hydropower and petroleum industries, specifically a cashflow-oriented model with immediate deduction for new investments. The proposed resource rent tax targets the portion of the industry that is expected to generate extraordinary income due to the utilization of a limited and valuable resource, namely the sea part of the total production process (The Ministry of Finance, 2022). Consequently, it aims to capture the value creation taking place within the sea cages, while operations conducted on land or outside sea farms will be exempt from the tax. Today, the largest salmon farmers' farming segment includes spawn, breeding, parr, smolt, gutting, and slaughtering, which are land-based operations occurring before and after the sea phase and thus are not subject to the resource rent tax. However, all operational costs related to the sea phase are subject to tax deduction, including treatment, feed and smolt costs. To measure their resource rent tax basis, companies may separate the farming segment into land-based and sea-based operations (Mowi, 2023b). As a result, the industry expects several changes in reporting of the farming segment going forward.

From 2024 and onwards, a group will be established by the government to set the market value for each farmer's salmon. However, in 2023, the companies themselves will be responsible for setting the market value of their fish. Furthermore, the proposal suggests that fixed assets acquired prior to the implementation of the tax should be made deductible through the depreciation of the remaining tax values. The latest proposal includes a tax-free allowance of NOK 70m, which protects the majority of Norwegian salmon farmers from the resource rent tax. However, the largest Norwegian salmon farmers, who stands for the majority of Norwegian salmon production, will be fully hit by the resource rent tax. Each year, the tax-free allowance will be reviewed and adjusted accordingly (Regjeringen, 2023).

5.2.1 The interaction between the Norwegian corporate tax and resource rent tax

The Ministry proposes a model where the corporate tax is calculated first, and then the resource rent-related corporate tax is deducted from the basis for the resource rent tax. This is similar to the model used in the resource rent tax for Hydropower and petroleum. By sequentially calculating the taxes, the resource rent tax base will be lower than if the taxes were computed simultaneously. As a result, the resource rent tax rate used in the calculation must be increased to maintain the targeted 25% effective tax rate (The Ministry of Finance, 2022). The marginal effective tax rate, with an effective resource rent tax rate of 25%, is

$$0.22 + 0.25 = 0.47$$

The resource rent tax rate needs to be adjusted to 32.1%:

$$\frac{0.25}{1 - 0.22} = 0.321$$

Then, the effective marginal tax rate remains unchanged:

$$0.22 + (1 - 0.22) \cdot 0.321 = 0.47$$

As a sequential calculation of the taxes requires a higher resource rent tax rate to achieve the same effective tax rate, companies receive a higher deduction for the investment cost in the year of investment (32.1% instead of 25%). Consequently, a sequential solution allows for a more significant tax deferral, where less resource rent tax is due in the investment phase, but more tax has to be paid in the production phase (The Ministry of Finance, 2022).

Table 2 demonstrates the determination of the tax base in both the corporate tax and the resource rent tax, using a hypothetical example where the corporate tax is deducted from the resource rent tax base. For simplicity, depreciation in corporate tax is set at 50% on a straight-line basis, spread over two years. In this example, the resource rent-related corporate tax is calculated to be 44 for both years 1 and 2. This amount is deducted from the resource rent tax base before the resource rent tax calculation takes place (The Ministry of Finance, 2022).

Year	0	1	2
Investment	-1000		
Operating income		800	800
Operating cost		-100	-100
Depreciation		-500	-500
Corporate tax			
Operating income		800	800
Operating cost		-100	-100
Depreciation		-500	-500
Tax basis		200	200
Corporate tax (22%)		44	44
Resource rent tax			
Operating income		800	800
Operating cost		-100	-100
Immediate deduction of investment cost	-1000		
Corporate tax deduction		-44	-44
Tax basis	-1000	656	656
Resource rent tax (32.1%)	-321	210	210

Table 2: Sequential calculation of corporate tax followed by resource rent tax on an investment with two years of depreciation.

5.3 How resource rent tax impacts Mowi's profitability

In 2022, 79% of Mowi's total Adj. EBIT stemmed from its Norwegian operations (Mowi, 2023a). Consequently, Mowi's dependence on Norway is significant. In the following, our primary focus is to conduct an analysis of the impact of the resource rent tax on Mowi's profitability in Norway. We will subsequently delve into the evolving profitability incentives across Mowi's segments and geographical farming locations, examining how they have been influenced by the resource rent tax.

5.3.1 Resource rent tax implications on Mowi's earnings

To illustrate the effects of the resource rent tax on Mowi's free cash flow (FCF) and earnings, we firstly present a simplified example featuring a hypothetical salmon farmer producing 300,000 tonnes annually to a salmon price of 80 NOK per kg. The only difference between this hypothetical farmer and Mowi is that the hypothetical farmer's operations fall entirely within the scope of the resource rent tax, meaning it is a 100% sea-based operator with no upstream or downstream operations.

Input data based on Mowi Norway's 2022 financials	
Salmon price (NOK/kg)	*80.0*
EBIT-cost (NOK/kg)	*54.0*
D&A (NOK/kg)	*2.0*
Volume (ktonnes)	*300.0*
CAPEX (NOK/kg)	*2.0*
Debt (NOK/kg)	*30.0*
Interest cost (%)	*4.0%*
Corporate tax (%)	*22.0%*
Resource rent tax (%)	*25.0%*
Implied rate post-corp tax (%)	*32.1%*
Tax-free allowance	*70.0*

Financials before resource rent tax impact	
P&L	**NOKm**
Revenues	24,000
EBITDA	8,400
D&A	-600
EBIT	7,800
Interest cost	-360
PTP	7,440
Corporate tax	-1,637
Net income	**5,803**
Cash flow	**NOKm**
EBITDA	8,400
CAPEX	-600
Corporate tax	-1,637
FCF	**6,163**

1 Impact from resource rent tax on running business	
Resource rent tax calculation	**NOKm**
EBITDA	8,400
Less: Corporate tax	-1,637
Less: CAPEX	-600
Resource rent tax basis	6,163
Resource rent tax (32.1%)	**-1,975**
FCF (incl. resource rent tax)	**4,188**
Reduction in FCF	***-32.1%***
Net income after resource rent tax	**3,828**
Reduction in Net income	***-34%***

2 Incl. historic investments and tax-free allowance	
Resource rent tax basis (running business)	6,163
Less: Deductible D&A (historical inv.)	-600
New resource rent tax basis	5,563
Resource rent tax incl. D&A ded. (32.1%)	**-1,783**
Add: tax-free allowance	70
Resource rent tax incl. tax-free allowance	**-1,713**
FCF incl. all deductions	**4,450**
Reduction in FCF	***-28%***
Net income after resource rent tax	**4,090**
Reduction in Net income	***-30%***

Figure 26: Simplified example of resource rent tax for a pure play sea-based salmon farmer (100% subject to tax).

In the input data table in Figure 26, we have chosen assumptions based on Mowi's 2022 financial statement, including net interest-bearing debt at NOK 30 per kg, EBIT-cost at NOK 54 per kg and depreciation & amortisation (D&A) at NOK 2 per kg. Moreover, the farmer in our simplified example is currently in operation with no capital expenditures other than maintenance, which we assume is similar to D&A at NOK 2 per kg. In the FCF calculation, we assume no changes in net working capital. The result is that the cash flow from its running business is diminished by 32.1%, which corresponds to a 25% resource tax rate applied after corporate tax (25% / (1-0.22) = 32.1%).

By incorporating deductions for the farmer's historical investments (depreciation of remaining tax value) and the tax-free allowance of NOK 70 million, the impact on our hypothetical farmer's FCF changes to -28%. This highlights the sensitivity of the resource rent tax regime to the capital expenditures considered deductible, such as investments in other segments of the value chain. The net income is slightly more impacted than the FCF because interest payments are not deductible under the provisions of the resource rent tax.

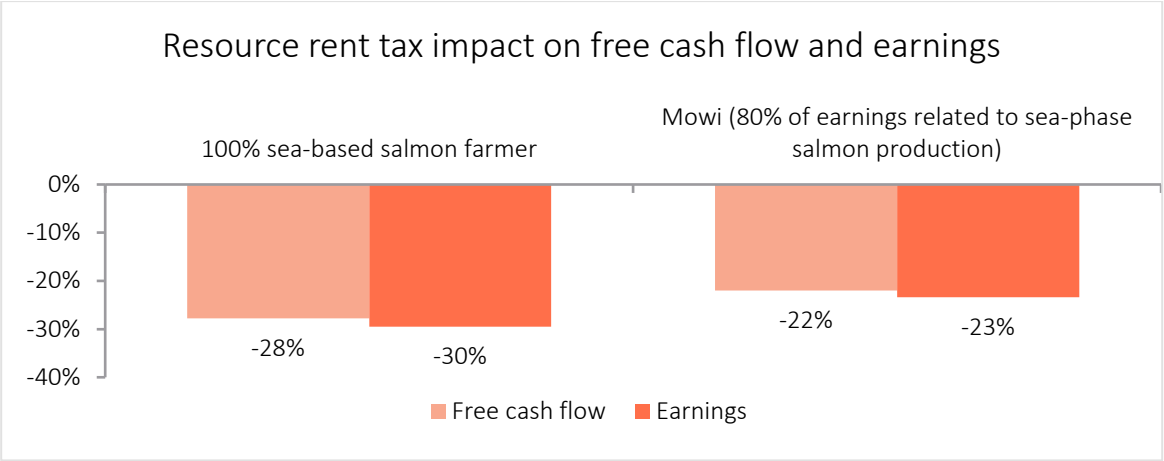


Figure 27: Resource rent tax impact on cash flow and earnings. Mowi vs 100% sea-based salmon farmer (Source: Mowi, 2023b).

In its Q1 financial report from 2023, Mowi assumes that approximately 80% of its earnings from Norwegian farming operations is related to the seawater phase and will accordingly be affected by the resource rent tax. As we can see from Figure 27, Mowi is therefore slightly less affected than the fully resource rent tax-exposed salmon farmer, with 23% reduction in net income. However, the reduction in net income depends on input variables that may vary with time, such as the salmon price and Mowi's earnings share related to the seawater production phase. We recall that the salmon price, which is salmon farmer's main profitability driver, fluctuates from year to year. In addition, Mowi is still figuring out how much of their current operations that is exposed towards the resource rent tax (Mowi, 2023b).

		Earnings related to seawater phase					
		50%	60%	70%	80%	90%	100%
Salmon price	60	-6%	-9%	-11%	-14%	-16%	-19%
	70	-13%	-16%	-19%	-22%	-25%	-28%
	80	-14%	-17%	-20%	-23%	-26%	-30%
	90	-15%	-18%	-21%	-24%	-27%	-30%
	100	-15%	-18%	-21%	-24%	-28%	-31%

Table 3: Sensitivity analysis of the resource rent tax impact on Mowi's net income with different salmon prices and earnings share related to the seawater production phase.

From the sensitivity analysis, we observe that higher salmon prices and a higher share of earnings related to the seawater production phase increase the impact of the resource rent tax on Mowi's net income. Despite uncertainty in price development and with regards to the portion of Mowi's earnings that will be affected by the resource rent tax, we will use 23% reduction in net income as basis in our further analysis in this chapter.

5.3.2 Case study on Mowi's profitability

In this section, we will conduct a case study on how Mowi's historical profitability in Norway would have been impacted by the resource rent tax, and compare it with historical profitability in other farming countries. These findings will be helpful for our discussion on how Mowi should strategize, particularly concerning its geographical exposure. In our case study, we will use Mowi's adjusted after-tax return on capital employed (Adj. ATROCE) as profitability measure. Adj. ATROCE is calculated as

$$\frac{Adj.NOPAT}{Average\ capital\ employed}$$

Adj. NOPAT is Adjusted Net Operating Profit After Tax. The only difference between Adj. NOPAT and Adj. EBIT from our Adj. ROCE calculation in Chapter 3 is that Adj. NOPAT includes corporate tax.

Mowi does not disclose its distribution of capital employed at each farming location. To estimate Mowi's distribution of capital employed, we have used its non-current assets and biomass at cost price in each country. Furthermore, Norwegian seafood analysts assume that approximately 50% of Mowi's biomass is funded through short-term financing, which is therefore not included in our calculated capital employed (ABG Sundal Collier, personal communication, April 24, 2023).

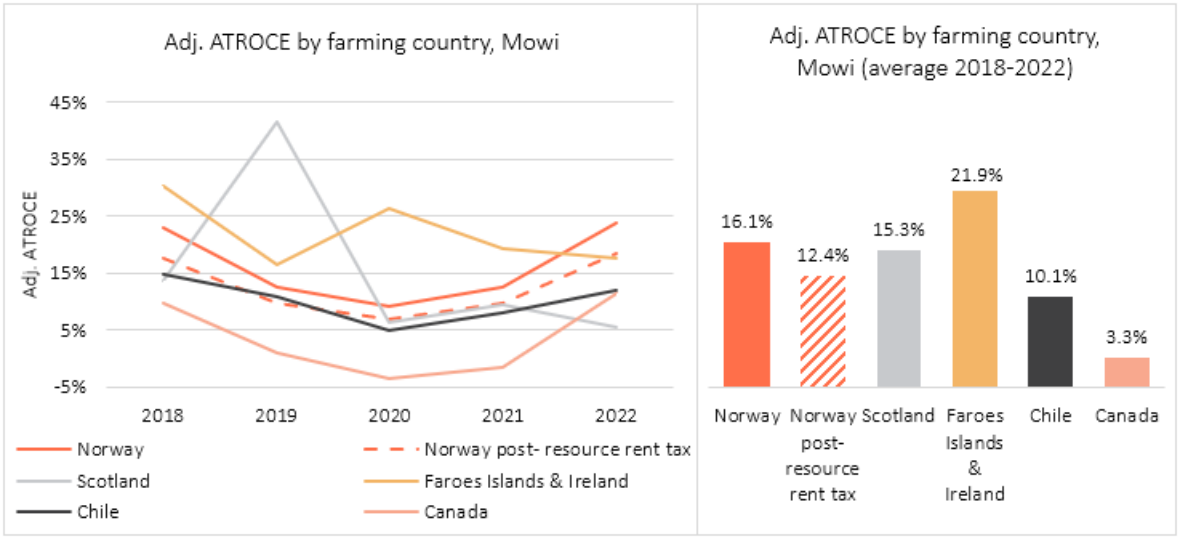


Figure 28: Mowi's farming regions' Adj. ATROCE from 2018-2022 and the average Adj. ATROCE in the same period (Source: Data is obtained from annual reports).

In Figure 28, we have included both pre- and post-resource rent tax Adj. ATROCE for Mowi Norway. Based on Figure 27 and its corresponding analysis, we assume a 23% reduction in Adj. NOPAT in the post-resource rent tax calculation. Moreover, the Faroe Islands and Ireland are merged as these countries constitute a small amount of Mowi's total production, and Mowi has limited growth possibilities in both countries, as discussed in Chapter 4.

Our analysis suggests that the potential influence of the resource rent tax on Mowi Norway's historical performance would have led to a decrease in the average Adj. ATROCE from 16.1% to 12.4% between 2018 and 2022. Mowi's last 5-year average WACC post-corporate tax is 7.6%, indicating that Norway continues to be profitable even with resource rent tax. As discussed in section 3.1, Mowi's historical WACC for Norway, except from 2022, may not include a premium for resource rent tax. This should be considered and may further contribute to tighten the gap between Mowi Norway's Adj. ROCE and WACC.

The negative impact of the resource rent tax on Norwegian farming activities may prompt investors to consider reallocating capital and investments towards other countries. We observe that Mowi's farming operations in Scotland would have offered higher average Adj. ATROCE than Mowi Norway with resource rent tax since 2018. Moreover, the Norwegian resource rent tax has reduced the Adj. ATROCE gap between Mowi Norway and Mowi Chile. However, Mowi has historically assigned Chile with a higher WACC than Norway, which makes Chile less attractive than Figure 28 anticipates. On the other hand, the abovementioned WACC premium that should be considered for Mowi Norway may contribute to the opposite. In 2022, Mowi reported an increase in its post- corporate tax WACC for Norway from 6.9% to 9.1%, but did not communicate whether the increase included a resource rent tax premium. The last 5-year average WACC in Norway, Scotland and Canada are fairly similar, ranging from 9.1% to 9.7%. Chile and the Faroe Islands & Ireland are assigned with 11.1% and 8.2% respectively (Mowi annual reports). In Chapter 6, we further discuss which countries Mowi should prioritize on the back of the Norwegian resource rent tax and other previously identified challenges.

5.4 Can the resource rent tax possibly be investment neutral?

A key argument used by the government is that the resource rent tax is designed to be investment neutral. In this context, "investment neutral" refers to a situation where an investment's profitability remains unchanged regardless of the imposition of a resource rent tax (The Ministry of Finance, 2022). In this section, we will examine the extent to which this neutrality holds and further scrutinize the government's definition of investment neutrality.

Under a neutral resource rent tax system, the government essentially becomes a passive partner in a company's investments. The government contributes a portion of the investment costs, equal to the tax rate, while also receiving a corresponding share of the future net income generated by the investment. This concept is most clearly illustrated when the resource rent tax is structured as a cash flow tax, with immediate deductions for all expenses, including investment costs. In this system, the project is divided into a portion for the state (based on the tax rate) and a portion for the company (owned by its investors). The state takes a symmetrical share of costs and income regardless of the investment's profitability (EY, 2022).

To investigate the neutrality of the resource rent tax to new investments, we will look at a simplified example where we invest 100 at the start of year 1 and receive 30 in the next five years. The investor's required after-tax rate of return in this example is 10%.

Scenario	IRR	NPV	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
CF (22% tax)	15.2%	12.5	-100	30	30	30	30	30
CF (22% tax + 32.1%) pay out	15.2%	8.5	-67.9	20.4	20.4	20.4	20.4	20.4

Table 4: Simplified example of how the resource rent tax has neutrality with respect to the internal rate of return but negatively affects the net present value (Source: EY, 2022).

If we assume straight-line depreciation over the project period of five years and 22% corporate tax on profits, the IRR is 15.2%. Let us then assume that we introduce a 32.1% resource rent tax. We immediately get a deduction for the investment of 100 when calculating the resource rent tax. The deductions and the future cash flows from the investments are exposed to the same tax rate. As the deductions are offset by the state's claim to the future cash flows, the after-tax IRR of the investment remains the same as the before-tax IRR at 15.2%.

Although the IRR remains unchanged in the previous example, we observe that the net present value (NPV) is reduced by the portion of earnings now "owned" by the state (32.1%) from 12.5 to 8.5. With a resource rent tax, both the government and the investor participate in the project. The investor cannot invest as much in the project as before because the government participates with a stake corresponding to the tax rate, which is reflected through the significant reduction of net present value in the previous example. The reduction in net present value raises the question of whether the resource rent tax actually is neutral to investments or not. The answer seems to be dependent on what we define as investment neutral. What is certain is that Mowi's reduced NPV provides less cash to invest in new technology and other projects. Consequently, Mowi has put all new post-smolt investments in Norway on hold, including its NOK 4 billion investment programme announced in 2021 (Mowi, 2023a). In addition, none of the listed salmon farmers participated in the Norwegian Government's semi-annual auction of new farming licenses in early October.

5.5 Economic incentive shifts in Mowi's value chain

According to Norwegian seafood analysts, investors in the salmon farming industry have historically looked at how firms perform in the farming segment when deciding their investments (Carnegie, personal communication, April 27, 2023). This have created incentives for Mowi to prioritise farming more than feed, markets and consumer products. In Chapter 2, we observed that Mowi's Adj. EBIT in the farming segment has been significantly higher than in its other segments. Mowi mostly sells feed internally, and as there have been incentives to allocate profits towards the farming segment, the company might have sold feed at nearly cost price (Carnegie, personal communication, April 27, 2023). This may have resulted in artificially high margins in the farming segment. Similarly, Mowi's markets and consumer products segment buy most of its salmon internally from the farming segment. It might be reasonable to assume that Mowi has historically set artificially high salmon prices in the farming segment to enhance its returns, given that this segment has been the primary focus of Mowi's investors.

With the implementation of the resource rent tax, sea operations in the farming segment will suddenly include an additional effective tax of 25%. This means that Mowi has new economic incentives to lowering the resource rent taxable earnings within the farming segment. This may be done by increasing the price of the feed they sell to its farming segment to a more

reasonable level. Similarly, Mowi may reduce profits in the farming segment by selling the slaughtered salmon to its markets and consumer products segment at a lower price than the company would do without the resource rent tax. How Mowi and competitors react to these incentive shifts will be investigated by the Norwegian Economic Crime Unit. Specifically, they will shut down on companies that suddenly and illegally move profit from one part of the value chain to another in order to reduce their exposure towards the resource rent tax. Therefore, Mowi should be careful with how it approaches these shifts in economic incentives.

Mowi and Bakkafrost are the only salmon farmers that have integrated feed into their value chains. Mowi sells most of its feed internally in the company. After the implementation of the resource rent tax, Mowi's incentives may have turned from focusing on the farming segment to focusing more on the feed segment, as this segment is not similarly affected. The fish feed industry is characterized by few but large players (Mowi, 2022a). Mowi is one of them but is currently not competing at the same level as its competitors due to internal feed sales. We therefore recommend Mowi consider expanding its feed segment and become a larger player in the fish feed industry.

5.6 Should the Norwegian Government replicate the Faroese tax model?

As highlighted in section 2.2, Norwegian Salmon farmers have historically been subject to a production fee. The Norwegian salmon farmers have clearly communicated their concerns about the resource rent tax proposal and expressed alternative solutions. Specifically, the industry prefers either a modified production fee or a tax model similar to the Faroese one. In this section, we will present the Faroese tax model and how this could be used as an alternative to the current resource rent tax proposal.

So far, we have found that the resource rent tax model proposed by the Norwegian government could create misguided incentives that may lead to a decrease in both industry efficiency and investments. It is essential that being efficient and performing well is incentivized and not the opposite. Recognizing that a resource rent tax is likely inevitable, the Norwegian salmon farming industry has suggested an alternative resource rent tax model based on the Faroese tax system. They claim that this model captures resource rent while still providing salmon farmers with the correct incentives for efficiency and development of the salmon farming industry (Haram, 2023).

The Faroese model for resource rent tax was implemented in 2014 and differs from the Norwegian government's proposed model, as it is based on revenue instead of profit. The Faroese tax is determined by the value of the harvested salmon, calculated by using the salmon spot prices. The tax rate ranges from 0.5% to 10% of the revenue, depending on the level of the salmon price, as higher salmon prices result in a higher tax rate. The tax is calculated by multiplying the tax rate with the reference salmon price, and subsequently multiplying the volume of fish harvested on a quarterly basis (Sjømat Norge, 2023). In October 2022, the Faroese resource rent tax became linked to a production cost threshold, which refers to the minimum production cost level required for a salmon farmer to sell the salmon at a profit (Furuset, 2023).

Salmon price interval (Price related to production cost/kg)	< NOK 55/kg (Production cost)	NOK 55-62/kg (Cost + DKK 0-5/kg)	NOK 62-76/kg (Cost + DKK 5-15/kg)	NOK 76-97/kg (Cost + DKK 15-30/kg)	> NOK 97/kg (Cost + DKK 30/kg)
Revenue tax rate	0.5%	2.5%	5 %	7.5%	10 %

Table 5: Salmon price ranges (and the connecting production cost/kg) and the corresponding revenue tax rate (Source: Sjømat Norge, 2023).

Table 5 illustrates how the various tax rates corresponds with how much the salmon price exceeds the production cost threshold. The production cost threshold will be re-evaluated on an annual basis, and in 2023 the threshold was set to DKK 39.15/kg (NOK 55/kg) (Furuset, 2023).

An advantage of the Faroese tax model is its simplicity and ease of implementation. In response to the hearing, the Norwegian Seafood Federation suggested adopting the Faroese model, which would result in a revenue tax of approximately 3.5% based on the assumed salmon price of NOK 78/kg for the entire Norwegian industry in 2023. This proposed tax rate would generate the same amount of resource rent tax as initially targeted by the Norwegian government, which is between NOK 3.6-3.8 billion (Sjømat Norge, 2023).

6. Alternative Strategic Positions

Mowi's profitability and expansion possibilities across its various farming sites are found to be significantly influenced by biological conditions and the existing regulatory environment. In particular, the resource rent tax imposed on Norwegian farming operations is expected to bear substantial financial and strategic implications for the company. Consequently, there are compelling reasons for Mowi to consider increasing its investments and growth outside Norway. Nevertheless, despite these challenges, Norway is likely to retain its position as one of Mowi's most profitable farming locations due to its favourable farming conditions and established infrastructure.

6.1 Increased international presence in the farming segment

In Chapter 4, we discovered that countries with a history of high profitability may not necessarily be suitable for Mowi to grow in, primarily due to regulatory restrictions. The Faroe Islands and Ireland are both known for their superior profits. However, the Faroe Islands have ownership regulations that prevents Mowi from expanding its operations, while Ireland imposes strict and time-consuming license application processes that effectively limits Mowi’s ability to increase its presence in the country.

Based on our findings in Chapters 4 and 5, Scotland emerge as the most appealing country for Mowi's future investments and growth outside Norway. Following the implementation of the Norwegian resource rent tax, the profitability in Scotland has surpassed that of Norway. While Mowi Scotland’s long-term profitability has remained impressive, it is important to acknowledge its greater volatility compared to Norway.

Unlike Norway, where the coastline is crowded and opportunities for expansion are limited, Scotland offers a larger potential for growth. Scotland's supportive regulatory environment has played a crucial role in fostering the growth of the Scottish salmon farming industry. With a generous supply of available licenses and suitable sites, Scottish waters offer plenty of room for Mowi to expand its operations. Additionally, Mowi possesses available licenses for operations in Scotland, allowing for a swift expansion in the country. Another notable advantage for Mowi in Scotland is the presence of one of its two feed factories, resulting in lower feed transportation costs.

Despite various biological challenges, Scotland has historically been one of Mowi's most profitable farming locations. Mowi has communicated its plans to expand its operations in Scotland by acquiring more sites and increasing production volumes. However, a significant decrease in profitability in 2022 due to biological challenges along the Scottish coastline raises concerns about the long-term viability of salmon farming in the country. Nevertheless, Mowi is investing in technology to address the biological issues and is developing new sites to utilize unused licenses, demonstrating confidence in overcoming the challenges. Considering the potential for growth and the relatively high profitability in Scotland, we recommend Mowi continue investing in further expansion in the country.

Chile serves as Mowi's second-largest farming location. In our case study of resource rent tax implications on Mowi's historical profitability, we discovered that Mowi Norway's Adj. ATROCE with resource rent tax still outperforms Mowi Chile. However, the gap has been reduced, making Chile more appealing than it was pre resource rent tax in Norway. Mowi has a significant amount of unused licenses in Chile. However, the higher sea temperatures in Chile have led to significant disease outbreaks. We recommend Mowi Chile to gradually increase its use of its licenses and prioritise handling of SRS and other diseases that have been a major problem in the Chilean salmon farming industry. A slow growth rate in the country may be preferable as rapid growth increase the risk of new outbreaks.

Mowi Canada has struggled to perform on a competitive level compared to Mowi's farming operations in other countries. New regulations in the Discovery Islands area have forced Mowi to shut down some of its farming sites in Canada West. Mowi's operations in Canada East experienced record high profits in 2022. However, the severity of the biological challenges on the east side of the country has previously forced Mowi to decrease its production level dramatically. Therefore, we do not recommend Mowi increase its presence in Canada at this point. If the performance in Canada reverts to levels similar to those in 2020 and 2021, it may be prudent for Mowi to consider scaling down or even exiting the Canadian market. Careful evaluation and ongoing assessment of the viability and profitability of operations in Canada might be crucial for Mowi to make informed decisions about its future presence in the country.

Mowi's newest farming location, Iceland, presents an intriguing opportunity due to its cold waters, growth potential, and a favourable regulatory framework.

6.2 How can Mowi improve its profitability in Norway?

Despite limited availability of sites and seawater licenses in Norway, and the resource rent tax, our analysis suggests that Norway will continue to be a vital farming location for Mowi. Our analysis in Chapter 4 revealed that region North yields the highest profitability for Mowi Norway, followed by region South and Mid. However, the scarcity of available farming sites and licences to operate along the Norwegian coast makes it impossible for Mowi to reallocate all its sites to region North. Although being less profitable than region North, the post-resource rent tax profitability in both region South and Mid is competitive compared to some of Mowi's farming locations outside Norway.

Region North consistently demonstrates superior profitability. The profitability in the North is found to be closely linked to the quality of the seabed. Although Mowi possesses sites with great seabed quality, its profitability has historically been slightly lower than Lerøy and SalMar's profitability. Both Lerøy and SalMar possess sites further North than Mowi, which may explain the slight difference in performance. To improve in North, Mowi should focus on maintaining its solid performance on existing sites and closely monitor the availability of acquiring new sites in the region.

Mowi's profitability in region Mid is significantly affected by biological challenges. It appears that Mowi's higher costs in the region can be attributed to its presence in the red and yellow areas where sea lice outbreaks and other diseases occurs frequently. It is advisable for Mowi to consider reducing its operations in production area 4, as this area has consistently been designated a red traffic light and growth restrictions. Alternatively, Mowi may explore the possibility of acquiring sites from smaller salmon farmers in the area. This approach would enable Mowi to become its own neighbour, thereby decreasing the risk of infections from neighbouring sites. Furthermore, Mowi can implement advanced technology, which would not only reduce costs but also potentially qualify Mowi for an exemption from the growth restrictions imposed by the Government by demonstrating low lice numbers. However, Mowi's reduced investment capacity from the Norwegian resource rent tax should be considered in its investment strategy in region Mid.

In region South we observed a high correlation between the peers' profitability and biological situation. Production areas 2 and 3 are assigned with growth restrictions from the traffic light system due to high sea lice levels. We therefore recommend Mowi improve the biological

conditions at its current sites in these production areas. For instance, sea lice exposure can be reduced by investing in post-smolt facilities which ultimately reduces the time the salmon spends at sea. Smart farming may also help to early detect disease outbreaks. Similar to region Mid, Mowi must take the effects from the resource rent tax into consideration before investing in new projects.

6.3 Value chain positioning

The Norwegian resource rent tax only applies to the farming segment and is estimated to significantly impact Mowi's cash flow and earnings generated from this segment. Due to these negative implications on the farming segment, less affected segments, such as feed, may become more attractive to invest in. Mowi already has a solid position within the feed segment, and we recommend look into the opportunity of becoming a larger player within the fish feed industry by starting to sell more feed externally.

With the implementation of the resource rent tax, Mowi has new economic incentives to lowering the resource rent taxable earnings within the farming segment. Thus, selling feed internally to a higher price than cost, and selling slaughtered fish to markets and consumer products to a lower price than retail price may be tempting as this will leave less profit in the farming segment. However, we advise Mowi to be careful with moving away profit from its farming segment, as this may lead to expensive lawsuits and penalties ordered by the Norwegian Economic Crime Unit.

7. Summary

This master thesis has conducted a strategic review and analysis of the Norwegian salmon farming company Mowi. We have explored the financial and strategic challenges and opportunities that Mowi faces and addressed these. Mowi is delivering a strong financial performance but compared to some competitors we believe that the company can improve its performance. In addition, the sudden announced resource rent tax is making Norway, as a salmon farming country, less attractive than before. With this in mind, we believe that Mowi has several potential actions to take, including: 1) Increase investments and growth in Scotland, 2) acquire more sites in Norway's region North, 3) acquire neighbouring sites in Norway's region Mid, and 4) look into the opportunity of becoming a larger player in the fish feed industry.

Our recommendations for Mowi are based on our own judgement and assumptions, which have been rationalized based on limited access to data and information. Better access to such information would enable us to make more concrete recommendations. A natural next step in Norway would be to investigate the possibility of acquiring sites in region North and Mid. Our analyses of Mowi's farming operations of countries outside Norway are more generic and do not include regional differences in the competitive landscape, farming conditions and license availability. An intuitive progression from here would be to investigate the various farming locations within Scotland. This approach would equip us with valuable insights to solidify our suggestions pertaining to Mowi's growth strategy in the country. In addition, more information on Mowi's unused licenses in Scotland would help to better understand its expansion opportunities. Moreover, a deeper analysis of the feed, markets and consumer products segments would also be interesting to understand if Mowi has potential to realize hidden values for other segments than farming. Lastly, on the back of the Norwegian resource rent tax, other countries may consider introducing a similar tax. Mowi should seek to stay up to date on the latest available information with regards to this before making investment decisions.

Finally, we would like to draw attention to what we have gained from working on this project, and experiences and lessons we will carry with us into future jobs. First and foremost, it has been a valuable experience to delve into the history and current position of the world's largest producer of farmed Atlantic salmon. It has also been interesting to examine underlying value drivers and how geographical location has such a significant impact on the results achieved

by the players in the industry. At the same time, we have gained experience with how a company like Mowi appears to be transparent in its reporting practices and frequent use of press releases, but still keeps its cards close to its chest when company representatives have been contacted. Finally, we would like to mention that our interest in a future career in the Norwegian salmon farming industry has increased in line with the development of this assignment. This has come as a surprise to us and is possibly a very important experience that we have gained by working on the thesis. We both have a long working career ahead of us and believe that it is useful to early discover that there are several good alternatives to traditional consulting and finance jobs.

8. References

Arctic Fish (2022). *Annual report 2021*. https://www.arcticfish.is/wp-content/uploads/bsk-pdf-manager/2022/05/Arctic-Fish-Annual-Report-2021.pdf

Arellano, N. (2020, May 6.). Antibiotic use in fish farms poses threat to humans, study says. *Aquaculture North America*. https://www.aquaculturenorthamerica.com/antibiotic-use-in-fish-farms-poses-threat-to-humans-study-says/

Barents Watch. (2023, April). Fiskehelse. https://www.barentswatch.no/fiskehelse/point/11.315884302087937_73.2077377940088

Berge, A. (2014). Redusert svinn med postsmolt. *iLaks*. https://ilaks.no/redusert-svinn-med-postsmolt/

Caruffo, M., Vidal, S., Santis, L., Siel, D., Perez, O., Huenchullan, P. R. & Saenz, L. (2021). Effectiveness of a proteoliposome-based vaccine against salmonid rickettsial septicaemia in Oncorhynchus mykiss. *Veterinary Research, 52*(111), https://doi.org/10.1186/s13567-021-00982-2

Dimson, E., Marsh, P. & Staunton, M. (2023). *Credit Suisse Global Investment Returns Yearbook 2023 Summary Edition.* Credit Suisse.

Damodaran, A. (2023, January 5). *Country default spreads and risk premiums*. NYU Stern School of Business. https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html?fbclid=IwAR3mmWdtXgbjSSM6SQZaluJeeyIwYE89mMM9t6_o7LkcUp3hmSwpVyvoMw8

Egeness, F-A. & Dahl, H. A. (2022, May 14). Hvorfor er lakseprisen rekordhøy? *Helgelands Blad*. https://www.hblad.no/2022/meninger/leserbrev/hvorfor-er-lakseprisen-rekordhoy/

EY. (2022). *The Norwegian Aquaculture Analysis 2022*. https://www.ey.com/en_no/strategy-transactions/ey-report-reveals-the-latest-aquaculture-and-fishing-industry-trends

EY. (2021). *The Norwegian Aquaculture Analysis 2021*. https://www.ey.com/en_no/strategy-transactions/ey-report-reveals-the-latest-aquaculture-and-fishing-industry-trends

Fagerbakke, C. (2020). *Trafikklyssystemet bygger på miljøpåvirkning av lakselus og*

resultatene av kontinuerlig overvåking av lakselus. Havforskningsinstituttet. https://www.hi.no/hi/nyheter/2020/februar/trafikklys

Faroe Islands (n.d.). Faroese salmon renowned around the world. https://www.faroeislands.fo/economy-business/aquaculture/

Fred. (2023, April). *ICE BofA BBB US Corporate Index Option-Adjusted Spread*. Economic Research. https://fred.stlouisfed.org/series/BAMLC0A4CBBB

Fuentes, V. & Sanders, P. (2020). *Once a covid role model, Chile among the worst in the world's worst*. Bloomberg. https://www.bloomberg.com/news/articles/2020-06-16/once-a-covid-role-model-chile-now-among-the-world-s-worst-hit?leadSource=uverify%20wall

Furuset, A. (2023). Færøyene vil øke lakseskatten betydelig. *IntraFish* https://www.intrafish.no/okonomi/faroyene-vil-oke-lakseskatten-betydelig/2-1-1417143

Global Newswire. (2000, March 13). *Hydro Seafood overtas av Nutreco*. https://www.globenewswire.com/news-release/2000/03/13/1728145/0/no/HYDRO-SEAFOOD-OVERTAS-AV-NUTRECO.html

Government of Iceland. (n.d.). *Aquaculture*. https://www.government.is/topics/business-and-industry/fisheries-in-iceland/aquaculture/

Grieg Seafood. (2023). Integrated Annual Report 2022. https://cdn.sanity.io/files/1gakia31/production/2699fb944e6f7253449c370f0e2bb1ef91fff4d0.pdf

Grieg Seafood. (2021). *Q4 Report 2021*. https://cdn.sanity.io/files/1gakia31/production/cc245a0fed9e775143a39d029433ea8d65195cd6.pdf

Haram, Ø. A. (2023). *Se til Færøyene*. Sjømat Norge https://sjomatnorge.no/se-til-faeroyene/

Havforskningsinstituttet. (2021, July 5). *Tema: Lakselus*. https://www.hi.no/hi/temasider/arter/lakselus

Hitchins, E. (2023). Discovery Islands salmon farm closure confirmation sends waves across B.C. coast. Hope Standard. https://www.hopestandard.com/business/discovery-islands-salmon-farm-closure-confirmation-sends-waves-across-b-c-coast/

Jensen, B-A. (2020, November 10). Lakselus og annen sjukdom medfører kanskje 10 milliarder i økonomisk tap – men ingen vet eksakt hvor mye. *IntraFish*. https://www.intrafish.no/nyheter/lakselus-og-annen-sjukdom-medforer-kanskje-10-milliarder-i-okonomisk-tap-men-ingen-vet-eksakt-hvor-mye/2-1-909461

Jensen, P. M. (2018). Ringen er sluttet for Marine Harvest. Les historien bak Mowi-navnet. *Kyst*. https://www.kyst.no/marine-harvest-mowi/ringen-er-sluttet-for-marine-harvest-les-historien-bak-mowi-navnet/588947

Kaland, M. (2021). Derfor er SalMar mest lønnsom. *Finansavisen*. https://www.finansavisen.no/nyheter/kommentar/2021/11/07/7767913/derfor-er-salmar-mest-lonnsom

Kaldestad, Y. & Møller, B. (2016). *Verdivurdering: Teoretiske modeller og praktiske teknikker for å verdsette selskaper* (2nd ed.). Fagbokforlaget

Laksefakta. (2022, October 22). *Hvem bestemmer hvor et oppdrettsanlegg skal ligge?* https://laksefakta.no/lakseoppdrett-i-norge/hvem-bestemmer-hvor-et-oppdrettsanlegg-skal-ligge/

Misund, B. (2023, January 21). Fiskeoppdrett. In *Store Norske Leksikon*. https://snl.no/fiskeoppdrett

Moore, G. (2021). *Mowi wins Ireland's first new salmon license in 17 years*. Fish Farming Expert. https://www.fishfarmingexpert.com/bantry-bay-mowi-ireland-salmon-farm/mowi-wins-irelands-first-new-salmon-licence-in-17-years/1283341

Mowi. (2023a). *Integrated Annual Report 2022*. https://mowi.com/wp-content/uploads/2023/03/Mowi-Integrated-Annual-Report-2022.pdf

Mowi. (2023b). *Q1 2023 Presentation*. https://mowi.com/investors/reports/

Mowi. (2022a). *Salmon Farming Industry Handbook*. https://mowi.com/wp-content/uploads/2022/07/2022-Salmon-Industry-Handbook-1.pdf

Mowi. (2022b). Integrated Annual Report 2021. https://mowi.com/wp-content/uploads/2022/03/Mowi_Annual_Report_2021.pdf

Mowi. (2022c, December 5). *Mowi - Høringssvar Grunnrenteskatt på Havbruk.*

Mowi. (2021). *Capital Markets Day*. https://mowi.com/wp-content/uploads/2021/03/MOWI-CMD-2021-final.pdf

Mowi. (2017). *Integrated Annual Report 2016*. http://hugin.info/209/R/2094101/791700.pdf

Mowi. (n.d.a). *Mowi ASA*. https://mowi.com/no/om-oss/

Mowi. (n.d.b). *Shareholders*. https://mowi.com/investors/share-and-bond/shareholders/

Kristiansen, G. & Nilsson, G. (2022a). *Lerøy Seafood Group ASA.* Nordic Credit Rating. https://nordiccreditrating.com/issuer/leroy-seafood-group-asa?language_content_entity=en

Kristiansen, G. & Nilsson, G. (2022b). *Salmar ASA.* Nordic Credit Rating. https://nordiccreditrating.com/issuer/salmar-asa?language_content_entity=en

Norwegian Seafood Council. (n.d.). *Seven reasons to buy Norwegian salmon*. https://norwegianseafoodcouncil.com/aquaculture/seven-reasons-to-buy-norwegian-salmon/

NOU 2019: 18. (2019). *Skattlegging av havbruksvirksomhet*. The Ministry of Finance.

Olsen, S. (2019, July 19). Mowi kjøpper K. Strømmen Lakseoppdrett for 790 millioner kroner. *iLaks*. https://ilaks.no/mowi-kjoper-k-strommen-lakseoppdrett-for-790-millioner-kroner/

PWC. (2022). *Risikopremien i det norske markedet.* Forening for finansfag. https://www.pwc.no/no/publikasjoner/pwc-risikopremie-2022.pdf

Regjeringen. (2023). Regjeringens forslag om grunnrenteskatt på havbruk. https://www.regjeringen.no/no/aktuelt/regjeringens-forslag-om-grunnrenteskatt-pa-havbruk/id2968430/

Rozas-Serri, M. (2022). Why does piscirickettsia salmonis break the immunological paradigm in farmed salmon? Biological context to understand the relative control of piscirickettsiosis. *Frontiers in Immunology*. DOI: 10.3389/fimmu.2022.856896

SalMar. (2022). *Integrated Annual Report 2021*. https://ml-eu.globenewswire.com/Resource/Download/3781f230-d728-4a34-9ba3-53d59a8db537

Salmon Scotland. (2022). *Sustainability Charter*. https://www.salmonscotland.co.uk/sites/default/files/2022-09/SSPO_PDF_BetterFutureForUsAll_0.pdf

Sapin, R. (2021). Grieg Seafood detects deadly ISA virus in Newfoundland salmon smolt facility. *IntraFish*. https://www.intrafish.com/salmon/grieg-seafood-detects-deadly-isa-virus-in-newfoundland-salmon-smolt-facility/2-1-1040246

Sjømat Norge. (2023). *Høringssvar - Høringsnotat grunnrenteskatt på havbruk*. https://sjomatnorge.no/wp-content/uploads/2023/01/230102-Horingssvar-fra-Sjomat-Norge-Grunnrenteskatt-pa-havbruk.pdf

Solgård, J. (2022). Mowi følger etter – hever kjøp etter forslaget om grunnrenteskatt. *Dagens Næringsliv*. https://www.dn.no/havbruk/mowi/oppdrett/oslo-bors/mowi-folger-etter-hever-kjop-etter-forslaget-om-grunnrenteskatt/2-1-1325901

The Ministry of Finance. (2022, September 28). *Høringsnotat - Grunnrenteskatt på havbruk.* Finansdepartementet. https://www.regjeringen.no/contentassets/dfe403fd8a8b4d40af2165583e25c747/horingsnotat-grunnrenteskatt-pa-havbruk.pdf

World Government Bonds. (2023, May 26). *Norway 10 years bond – historical data*. http://www.worldgovernmentbonds.com/bond-historical-data/norway/10-years/?fbclid=IwAR0n8qb1fRO9lF5oR8EW4X-vQnCeV67VDbHfzD3LqPgXcQ2sj27Wt93dXbk