



# The Norwegian Aquaculture Analysis 2016



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# The Norwegian Aquaculture Analysis: Key findings

We are pleased to present the first edition of EY's financial analysis of the Norwegian aquaculture industry. The analysis covers the value chain from technical solutions to production and export of salmon and trout.

As a multidisciplinary provider of professional services to leading companies within the industry, we possess insights in each segment of the value chain with teams located in numerous seafood clusters and market places. Many leading global sea farming companies' headquarters and research centers are located in Bergen and along the west coast of Norway. Hence, we have also located our Global Center of Excellence for the aquaculture industry in Bergen. However, our industry team is located in more than 50 offices in key aquaculture cities worldwide and comprises a global network of experts with a range of professional skills.

When analyzing the developments in the aquaculture industry, global megatrends and the challenge of disruptive innovations are of great importance. Three key underlying forces of disruption are technology, globalization and demographics. Our research has further identified five megatrends that will affect the global food industry: empowered customers, behavioral revolution, resourceful planet, urban world and health reimaged. This perspective puts the Norwegian aquaculture industry into a larger global framework with implications greater than creating local value. By responding quickly and proactively to these trends, new business opportunities and value creation will emerge.

For the sake of completeness, and due to the fact that the majority of the 2016 financial statements are not yet public, the analyses in this report are based on financial reporting as per 2015. However we have taken into account the positive development in the industry and periodic reports during 2016, when we have made our assessments and analyses.

The export value of sea farming more than doubled since 2006. In 2016, Norwegian companies' export of salmon and trout valued NOK65.5b, up from NOK50.1b in 2015. The key driver was the price growth in 2016, following the decline in salmon harvest volumes in Norway and Chile in 2015. Other drivers were the favorable exchange rates due to a strengthened competitiveness for Norwegian goods and services abroad, and low domestic interest rates.

In 2015, the industry experienced record high export value and revenue levels, but in relative terms, profitability (EBITDA margin) was not at the same level as the most profitable year, namely 2010. The main reason for the drop in profitability is the rise in operating costs, which was mainly driven by the increasing challenges with sea lice and diseases.

We have identified the feed and sea farming segments as the strongest contributors to value creation. Within these segments, the industry has managed to develop large industrialized business units.

Furthermore, the fish health segment has shown a relatively stable profitability over time, whereas there has been a negative and volatile development both in the egg and spawn production segment and in the processing segment.

The technical solutions segment is very fragmented. In the future, we expect to see a rise in research and development activity and increased focus on innovation and adaption of insights and technology from among others, the subsea and offshore sector. This segment will become increasingly interesting to follow.

We have also seen new players enter the aquaculture industry, this applies particularly to actors from the marine offshore sector - shipping companies, marine engineers, equipment companies and shipyards. Together with the industry, they introduce innovative solutions and applications in production and other segments of the value chain. Well boat businesses have turned out to be very profitable, with an all-time high revenue and EBITDA margin in 2015. We do however expect consolidations when this segment matures.

I hope you find this analysis both interesting and enlightening. If you have any comments or questions to the analysis, please don't hesitate to contact us to discuss.



Eirik Moe  
Partner

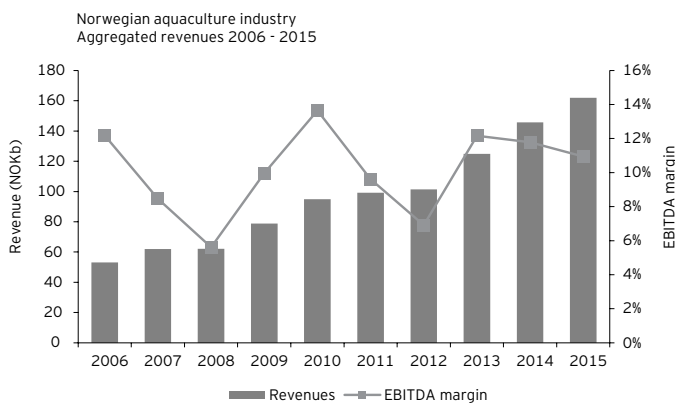
# Introduction

This is the first edition of EY's annual review of the Norwegian aquaculture industry. In this report, we quantify the size and development of this diverse industry and analyze dynamics across the value chain.

The Norwegian aquaculture industry has witnessed a tremendous development through recent years, with a total revenue growth of more than 200% for the last 10 years. Prices have increased, continuously following the growing demand in existing markets and involvement of new markets.

Both the industry as a whole, and different segments of the value chain, attract a lot of attention. With this report, EY sets out to give you the big picture and a better understanding of the financial performance of the aquaculture industry.

In this very first edition, we focus on the key trends of the entire value chain to get a better understanding of the industry. With a database including more than 700 Norwegian companies, we can provide insights based on large amounts of data.



## Inclusion criteria

A company is defined as a Norwegian aquaculture company if:

- ▶ At least 50% of its turnover is generated in the aquaculture industry and
- ▶ It is a Norwegian-registered legal entity

## Value chain segments

- ▶ Technical solutions
- ▶ Biotechnology
- ▶ Production
- ▶ Distribution
- ▶ Processing

## Company size definition

- ▶ Large companies: revenues above NOK1b
- ▶ Medium-size companies: revenues between NOK100m and NOK1b
- ▶ Small companies: revenues below NOK100m

## Methodology

In order to analyze the financial activity by geographic locations and across the value chain, we have gathered information from stand-alone financial statements of individual legal companies. For companies operating with divergent financial periods, adjustments have been made in order to present the data on a calendar year basis.

Many of the identified companies have activities in several geographic regions and offer products and services in more than one segment of the value chain. However, in this analysis, each company is linked to only one geographic region, based on its main business address, and to only one segment of the value chain, based on its main activity. For larger industrial conglomerates with multiple subsidiaries, each entity is allocated to its respective best fit segment.

The methodology does not capture or eliminate intercompany transactions or revenues in holding companies registered abroad. Please note that the analysis is limited to the domestic aquaculture industry. Thus, foreign units owned by Norwegian companies are not reflected in the analysis. This may give a somewhat misrepresentative picture, particularly for the companies noted on the Norwegian Stock Exchange, as many of them have a substantial part of their business outside Norway.





# Key findings

## The largest companies in the industry

The five largest companies in the Norwegian aquaculture industry, identified by revenue, are located in the subsegments sea farming and feed, as illustrated to the right.

These five companies generated about NOK42b in revenues in 2015, which equals almost 25% of the total industry revenue.

## EBITDA

Aggregated EBITDA totaled NOK17.7b in 2015, compared to NOK6.5b in 2006. With an overall increase in EBITDA of 174% in the period, the aquaculture industry has seen a remarkable growth.

After the peak in 2010, the aggregated EBITDA level in 2012 fell to approximately the same level as in 2006, before it more than doubled in 2013. The main reason for the drop and subsequent growth was price volatility. Following 2013, the EBITDA level has continued to grow; however, at a slower pace as the operating costs have been negatively influenced by increasing costs associated with sea lice and diseases.

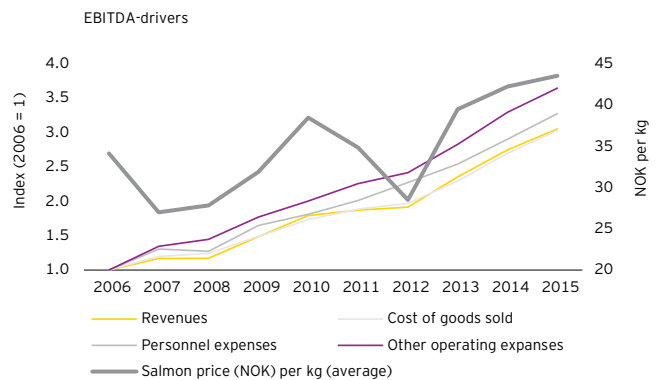
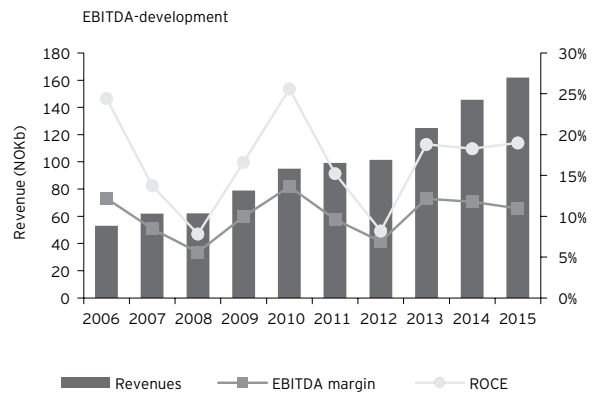
## EBITDA drivers

Revenue, costs of goods sold and labor costs correlated positively from 2006 to 2015, with a growth of approximately 200%. However, other operating expenses have shown a sharper increase over the period growing 264% from NOK3.8b in 2006 to NOK13.8b in 2015.

While volume sold increased steadily, the increase of salmon prices have been significant since 2012, reaching levels of NOK70 per kg in late 2016. By looking at the two graphs on the right, it becomes very clear that the EBITDA margin and the development of the average salmon prices correlate. For the period 2006 to 2015, the correlation coefficient is 0.77. By excluding the years 2014 and 2015 the correlation coefficient increases to 0.87, reflecting the relative cost increase in the aquaculture industry, which was predominantly driven by biological issues (particularly sea lice) and higher prices for raw materials in feed production.

## Top five companies (2015 revenues)

1. Marine Harvest Norway AS (sea farming)
2. Lerøy Seafood AS (sea farming)
3. SalMar AS (sea farming)
4. Skretting AS (feed)
5. EWOS AS (feed)





# Key findings

## Segment distribution

The profits are unevenly distributed among the different parts of the value chain. Even if the production segment is exposed to high price volatility and increasing production costs, this segment is by far the largest contributor to the aggregated EBITDA level.

A closer look at the profit distribution inside the production segment shows that the sea farming subsegment generates the largest profit. We can also conclude that EBITDA is closely linked to the salmon price per kg. However, the overall EBITDA margin for the industry has decreased since 2013. The main explanation for this is the accelerating costs associated with challenges related to sea lice and diseases, as well as higher feed costs driven by increased prices for feed raw materials and currency effects from a weaker NOK.

Another profitable industry segment is distribution, and in particular transportation on sea. This subsegment had an impressive EBITDA margin growth as high demands coupled with limited capacity has driven prices upwards.

The EBITDA margin in technical solutions has grown since 2011. The expected increase in research and development activity in the coming years could potentially result in growth for the segment.

The profitability of the subsegment's smolt production and trading has been relatively stable in the period, whereas subsegments like egg and spawn production and processing have experienced declining margins.

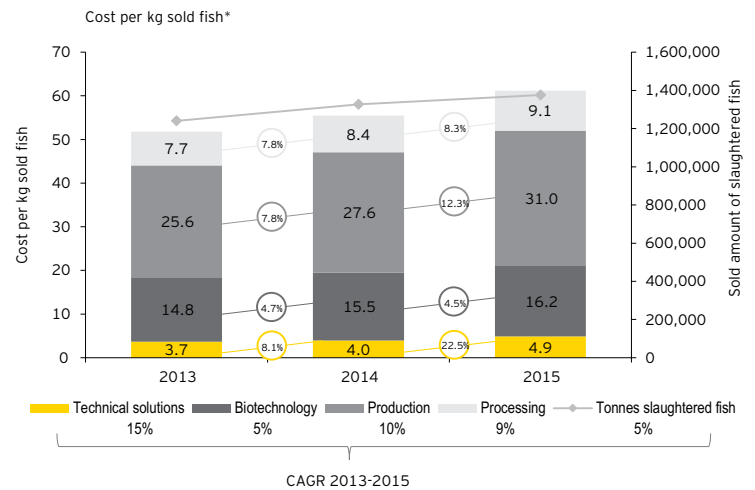
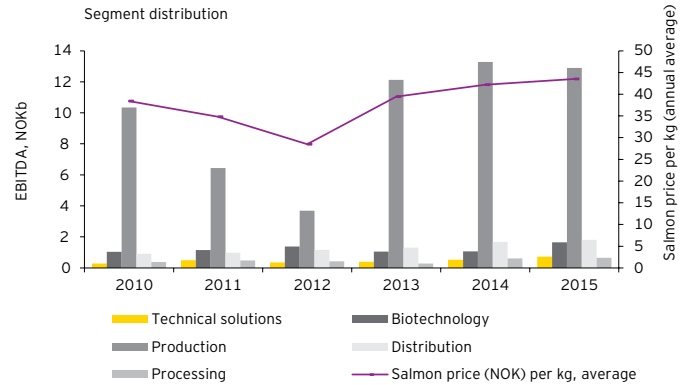
## Cost drivers and growth

The development of different cost drivers can explain the identified profitability trends. The lower right graph illustrates the costs per kg of sold fish and the development in slaughtered fish from 2013 to 2015.

During the period, the growth rate of costs has been higher than the growth rate of volume of slaughtered fish. When looking at relative growth from 2013 to 2015, the processing, production, biotechnology and technical solutions segments grew 18%, 21%, 9% and 32% respectively. The drivers are examined more closely later in this report.

## EBITDA margin per segment

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Technical solutions	8%	8%	7%	6%	8%	11%	8%	8%	9%	10%
Biotechnology	8%	6%	4%	6%	8%	7%	8%	5%	5%	7%
Distribution	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%
Production	33%	19%	15%	23%	32%	21%	11%	28%	27%	23%
Processing	5%	5%	5%	6%	5%	6%	5%	3%	5%	5%



\*Calculated as (COGS + Opex+ Personell expenses)/volume tons slaughtered fish. Please note that as the cost in the production segment includes cost from the biotechnology segment (plus margin) and so on, the cost per kg reflected in the chart does not reflect the actual cost per kg and is only to be used as a relative figure so to better understand the underlying cost development in different segments.

# Key findings

## Financing growth and assets

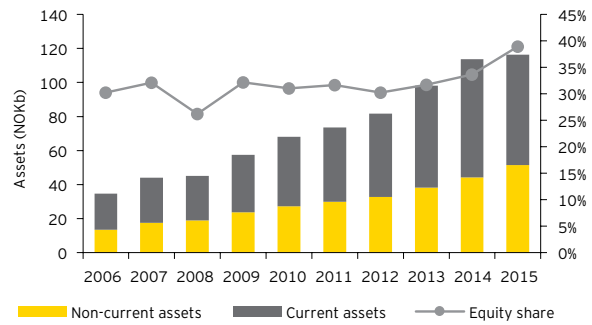
With a helicopter view on the funding and investment behaviors in the aquaculture industry, several interesting findings can be noted for the years 2006 to 2015:

- ▶ The overall equity share in the industry has been in the interval 31% to 39%, peaking in 2015.
- ▶ Since 2010, equity has more than doubled from NOK21b to NOK45b - a NOK24b growth.
- ▶ In 2015, the allocation between long-term liabilities and short-term liabilities was 30% and 70%. In 2010, the allocation was 28% and 72%, and it was 39% and 61% in 2006.
- ▶ The growth in non-current assets has been the same as the growth in equity from 2010 to 2015 - NOK24b. Comparing 2014 to 2015, the growth is almost identical, namely NOK7.2b in non-current assets and NOK7b in equity.
- ▶ Working capital increased from NOK6.3b in 2006 to NOK15.3b in 2015, representing a NOK9b growth.
- ▶ In 2006, the working capital represented 12% of the aggregated revenue, decreasing to 9% in 2015.
- ▶ In 2015, the allocation between non-current assets and current assets was 44% and 56%. In 2010, the allocation was 40% and 60%, and it was 39% and 61% in 2006.

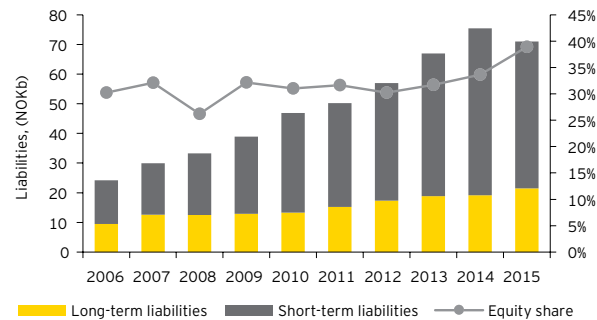
A breakdown of the figures show that the growth has been made possible by combining equity and short-term financing. One way to interpret this is that the industry has a preference for financing growth through equity rather than involving long-term credit. Another interpretation is that the industry, historically, has been dominated by family ownership. Traditionally, family-owned businesses are more cautious of financing growth with debt than businesses with distributed ownership. The increased equity share due to retained earnings may also indicate that investors expect a high return on invested capital going forward.

In our view, the industry has a potential of financing further growth through long term credit, and IPOs in a longer perspective.

Development in non-current and current assets



Development in long-term and short-term liabilities



## Development in the balance sheet

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average
<b>Assets</b>											
Non-current assets	39 %	40 %	42 %	41 %	40 %	41 %	40 %	39 %	39 %	44 %	41 %
Current assets	61 %	60 %	58 %	59 %	60 %	59 %	60 %	61 %	61 %	56 %	59 %
<b>Liabilities</b>											
Long-term liabilities	39 %	42 %	37 %	33 %	28 %	30 %	30 %	28 %	25 %	30 %	32 %
Short-term liabilities	61 %	58 %	63 %	67 %	72 %	70 %	70 %	72 %	75 %	70 %	68 %
Equity share	30 %	32 %	26 %	32 %	31 %	32 %	30 %	32 %	34 %	39 %	32 %

# Will the value of licenses continue to grow?

## Regulation of the aquaculture industry

The production of salmon and trout is regulated through licenses governed by the Norwegian Directorate of Fisheries (NDF). The Norwegian Parliament determines the number of licenses, and NDF provides professional input to the policy-making process.

In addition to this, NDF has the overall responsibility for management of the Fish Farming Act and the Aquaculture Act, as well as having an executive responsibility for following up political objectives related to aquaculture.

There have been several distribution rounds of licenses. In the allocation round in 2014, the licenses were divided into different types, both in regard to the applicants (size, geography and processing) and payments of licenses (fixed fee and open bidding). In 2015, NDF initiated a process of awarding licenses to innovative research and development-projects.

By the end of 2016, NDF has issued a total of 990 sea farming licenses, 220 smolt production licenses, 42 licenses for egg and spawn production and 90 research and development licenses in Norway.

## Licenses - a highly valued asset

An important dimension of the industry is the value of licenses. Currently, ordinary licenses are traded in the market at a price interval of NOK50m-NOK70m. When the NDF, back in 2014, arranged an open bidding round for 15 green licenses (licenses with extra environmental conditions attached), the licenses were traded in the interval of NOK55m-NOK66m.

Historically, the authorities have issued ordinary licenses at a much lower price, and the first licenses issued back in 1986 were in fact free. Thus, a license is a very attractive asset.

## Research and development licenses - a force for new technology and increased capacity

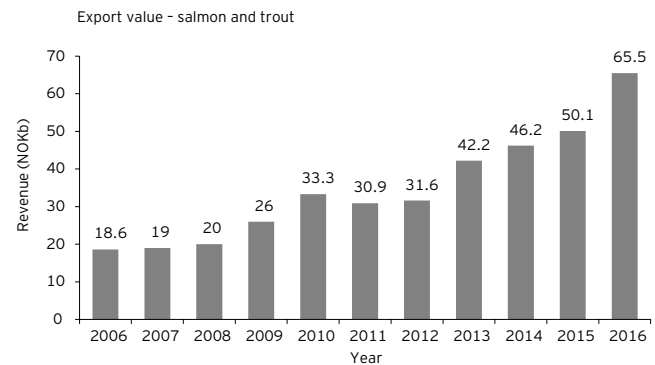
In November 2015, the NDF invited the industry to explore new sea farming concepts. This invitation stands until November 2017.

The authorities' intention with the bid is to eliminate sea lice and disease related issues. Sea farmers who present convincing concepts will be awarded with research and development licenses that can be converted into ordinary licenses after the project period. The price of such a license is set at NOK10m.

Per January 8, 2017 there were 38 applications representing 304 licenses and 230,640 tons of new production capacity.

At the time being, only two applicants have been accepted: Ocean Farming AS (controlled by Salmar ASA) has been granted 8 licenses for their ocean cage concept based on offshore oil technology, and Nordlaks Oppdrett AS has been granted 10 licenses for their ocean farm resembling a ship.

If these become successful, it may influence both production capacity and pricing in the long run. Potential effects of this process is not expected to appear until 2020.



## Green licenses - open bidding in 2014

1.	SalMar Farming AS	NOK66m
2.	SalMar Farming AS	NOK66m
3.	SalMar Farming AS	NOK64m
4.	SalMar Farming AS	NOK64m
5.	Mainstream Norway AS*	NOK63m
6.	Mainstream Norway AS*	NOK63m
7.	Mainstream Norway AS*	NOK63m
8.	SalMar Farming AS	NOK62m
9.	SalMar Farming AS	NOK62m
10.	NRS Feøy AS	NOK56m
11.	Bjørøya Fiskeoppdrett AS	NOK55m
12.	Mainstream Norway AS*	NOK55m
13.	Mainstream Norway AS*	NOK55m
14.	SalMar Farming AS	NOK55m
15.	SalMar Farming AS	NOK55m

\*Cermaq Norway AS was previously named Mainstream Norway AS

Source: Norwegian Directorate of Fisheries



# Can salmon and trout become the future top exports of Norway?

## 10 years of growth - are the best years yet to come?

The Norwegian aquaculture industry has experienced a tremendous growth the last 10 years. The export value of salmon and trout was NOK18.6b in 2006, and the value reached NOK50.1b in 2015. Recently, the Norwegian Seafood Council released the figures for 2016, revealing that the export value of salmon and trout have reached an all-time high of NOK65.5b, despite a 3.5% volume decrease. This represents a 252% increase of the export value from 2006.

The primary explanation for the export value growth from 2015 to 2016 is the increase in prices for salmon due to the reduction in salmon harvest volumes in both Norway and Chile, in 2015. This volume decline caused a historic negative supply shock, and it resulted in an extraordinary price increase for salmon in 2016. We expect that the supply contraction will continue to generate high prices in 2017. Also, with the normalization of the relationship between Norway and China towards the end of 2016, we expect increased export demands in 2017.

## The aquaculture industry grows, but still has a way to go

As reported by the Norwegian Petroleum Directorate, the oil production on the Norwegian continental shelf peaked in 2004 and is expected to decline in the years towards 2030. According to Statistics Norway, oil and gas production generated an export value of NOK433b in 2015. The value decreased in 2016 to NOK346b.

In 2012, the report *Verdiskapning basert på produktive hav i 2050* alleged that the potential of salmon and trout production is expected to represent a total revenue of NOK238b in 2050. In the same analysis it was estimated that the revenue could reach NOK119b in 2030.

If the aquaculture industry is able to replicate the revenue growth from the 10 previous years, the estimate for 2030 are within sight. To achieve this, both expanded production capacity and a solution for fish disease and sea lice issues will be necessary. In that respect, the ongoing research and development license projects may help.

With the decreasing value creation in the oil industry and increasing value creation in the aquaculture industry, supported by underlying global megatrends, revenues from the Norwegian aquaculture industry may well be higher than the revenues from the oil industry in 2050.

Ocean cage by SalMar



Picture: SalMar

Ocean farm by Nordlaks



Picture: Nordlaks/NSK Shipdesign

## Sources:

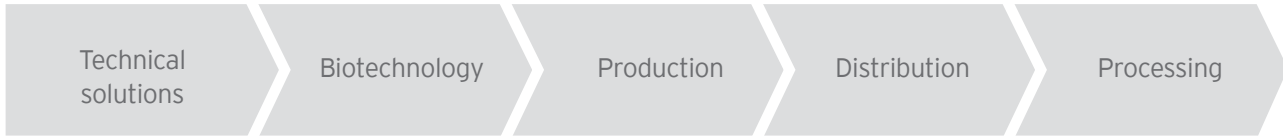
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"Resource Report 2016",  
© 2016 Norwegian Petroleum Directorate,

"Export value Norwegian Petroleum 1971-2016", table 08800,  
© 2016 Statistics Norway



# Segment analysis



## The value chain

When discussing the aquaculture industry we primarily talk about the end product - salmon and trout - but there are many other stages and actors in the industry. The aquaculture value chain includes broodstock (egg and spawn), smolt, edible fish, fish processing (based on farmed fish), export and trade, and suppliers of goods and services.

For analytical purposes, the value chain and the value creation can be presented in different ways.

In particular, there are three groups of suppliers, namely technical solutions suppliers, biotechnology suppliers and distributors, which can be challenging to present in a common value chain. These three can also be perceived as diverted or parallel activities.

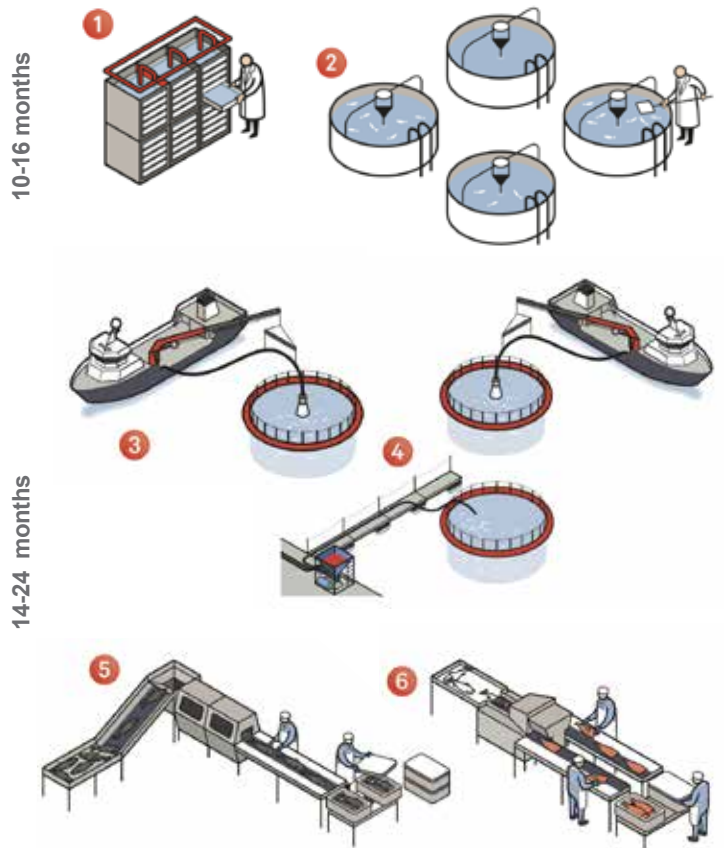
It is apparent that technical solutions suppliers are needed at every stage of the value chain (as we can see in the illustration on the right). Hence, presenting this as just one segment can be misleading.

The abovementioned challenge is almost the same as for the biotechnology suppliers, which deliver a wide range of products including feed, vaccines, medicines and cleaner fish. The common denominator for these products are the biological or pharmaceutical raw materials. The biotechnology manufacturers supply both egg and spawn producers, smolt producers and sea farmers.

The distribution phase is also complex. Sea transportation is both needed when transporting smolt from freshwater into cages in seawater, and when the harvestable fish are transported to the processing plants. In addition, we have traders and exporters who purchase fish from sea farmers and provide it to the end consumers, either slaughtered and/or processed.

The primary value creating activity in the industry is production. The production cycle is about three years. During the first year, the eggs are fertilized and the fish is grown to 100 grams in controlled freshwater environments. Subsequently the fish is transported into seawater cages where it is grown to about four to five kilos. This growing process takes 14 to 24 months, depending on the seawater temperature.

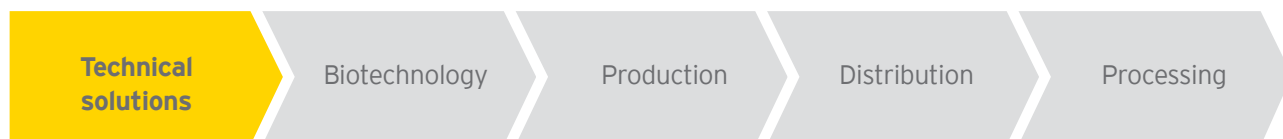
Despite the methodological challenges, we have decided to present technical solutions, biotechnology and distribution together with production and processing in one single value chain. This is to make the analysis easier to follow and interpret.



Source: "6.2 The Atlantic salmon life/production cycle", *Salmon Farming Industry Handbook 2016*, 23 June 2016, © 2016 Marine Harvest ASA



# Capex boom triggered record high revenue growth



## About the segment

The technical solutions segment includes companies with approximately 50% or more of its business linked to the aquaculture industry, but which are not directly linked to any of the other segments. Hence, there is a large variety of products and services provided by the companies in this segment.

As this segment is very fragmented and comprises companies operating in many different markets and sectors, it has been challenging to compile a set of data containing all relevant companies. Thus, the data set may omit some companies that typically belong to this segment.

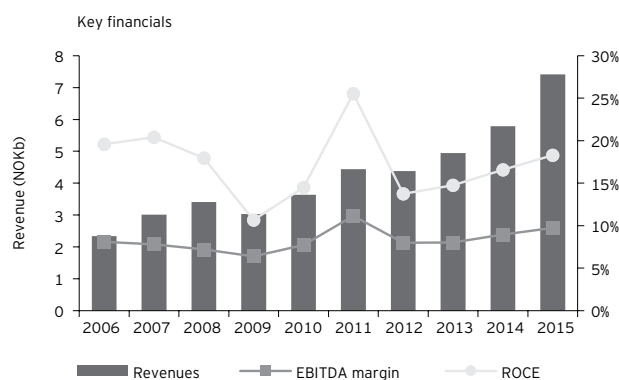
The largest companies within this segment are producers of technical solutions and services specifically developed for the aquaculture industry e.g., barges, well boats, feeding systems, cages, mooring systems and software.

## Segment highlights

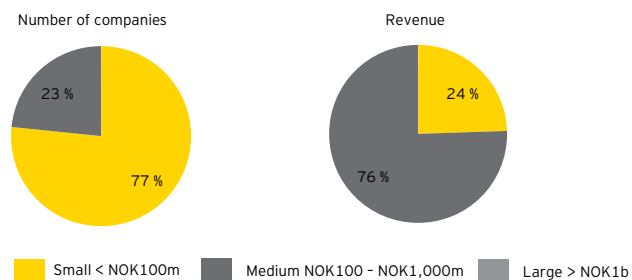
- ▶ The number of companies within this segment has increased with an annual average of five. However, the number of companies delivering above NOK100m in revenue have been stable and the annual revenues generated by them have accounted for approximately 75% of the total segment revenue throughout the period 2006 to 2015. Thus, it is the largest companies that have generated a substantial part of the revenue growth in the period.
- ▶ Since the revenue growth plateaued in 2011/2012, the segment experienced a significant revenue growth from 2012 to 2014 (CAGR of 15%) and a record high 28% growth from 2014 to 2015.
- ▶ The revenue growth has been driven by favorable market conditions and high salmon prices. Record high cash flows combined with limited growth in volume produced have given the companies operating in the aquaculture industry incentives to invest in more modern and efficient equipment making them better prepared for a potential market slowdown.
- ▶ The EBITDA margin has been quite stable since 2012 and only increased by 1.7 percentage points in the period 2012 to 2015. Hence, the favorable market terms have resulted in a volume driven EBITDA growth, while the prices have been stable.
- ▶ While EBITDA increased by a CAGR of 27.3% from 2012 to 2015, capital employed only increased by a CAGR of 16.7%, explaining the steeper year-on-year growth in ROCE compared to the EBITDA margin.

## Top five companies (2015 revenues)

1. Steinsvik AS
2. Akva Group ASA
3. Aas Mek Verksted AS
4. Aqualine AS
5. Optimar Giske AS

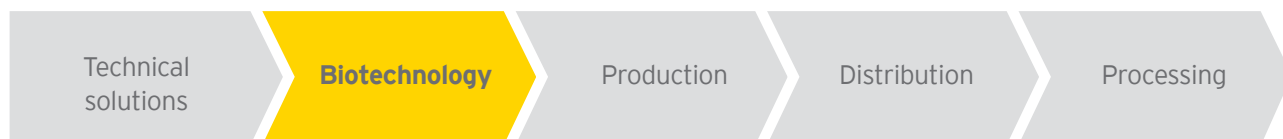


## Segment composition (2015)



The technical solutions segment is very fragmented and still dominated by small and medium sized companies. With the current challenges in the oil service industry, many financial investors have shown an increasing interest for this sector. We therefore expect more acquisitions and consolidation in this segment going forward.

# Revenues and margins driven by a few large feed producers

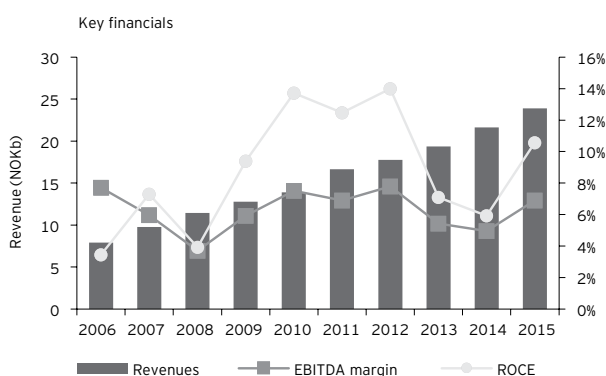


## About the segment

The biotechnology segment includes companies offering services and products related to feeding, medicines, vaccines and cleaner fish (e.g., different wrasse species and lumpsuckers eating lice off the salmon).

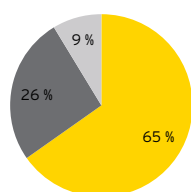
We have divided the segment into two subsegments:

- ▶ Fish health
- ▶ Feed

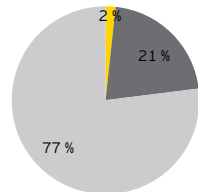


Segment composition (2015)

Number of companies



Revenue



■ Small < NOK100m
 ■ Medium NOK100 - NOK1,000m
 ■ Large > NOK1b

## Segment highlights

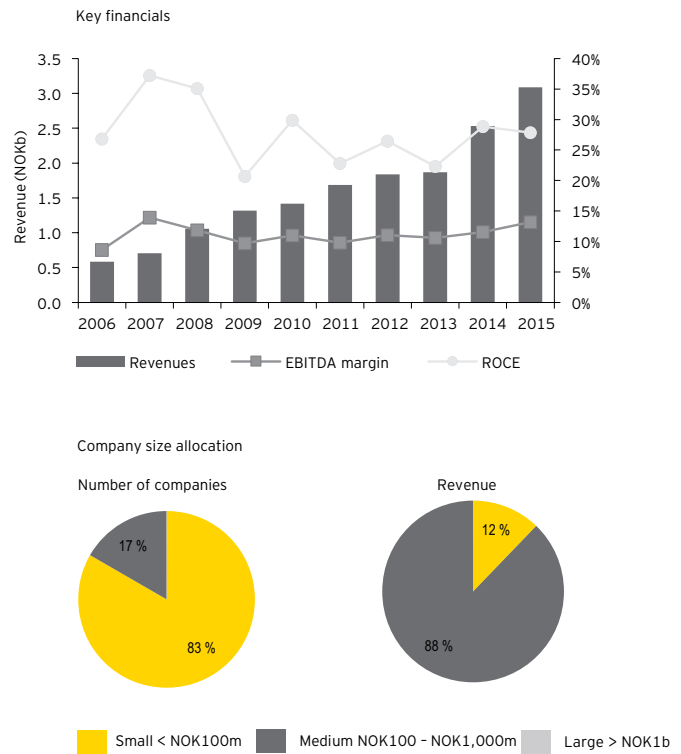
- ▶ The biotechnology segment has experienced sustained growth since 2006, positively influenced by higher volumes and the demand for new high quality and efficient products produced by companies within this segment.
- ▶ At an aggregated level, the biotechnology segment generated NOK23.9b in revenues in 2015. This is a NOK2.3b (+10%) increase compared to 2014 and a NOK10b (+72%) increase compared to 2010.
- ▶ A few large feed producing companies primarily drive the revenue growth. The feed subsegment accounts for approximately 90% of the total segment revenue, and the five largest feed companies constitute 92% of the total subsegment revenue.
- ▶ As a few large companies dominate this segment, the EBITDA margin is also impacted by the development in these companies. The EBITDA margin has been fairly stable in the period, at least from 2009 to 2015 where the margin fluctuated between 5% and 7.8%. The observed trend in the EBITDA margin is largely driven by the gross margin and the development of costs of material in the feed producing companies.
- ▶ The high volume/low margin feed producers generated an average EBITDA margin of 6% during the period 2010 to 2015. Comparably, the average EBITDA margin in the fish health subsegment was 11.2% in the same period.
- ▶ The segment's ROCE has shown the same trend as the EBITDA margin and is also driven by the feed subsegment. Capital employed has steadily increased throughout the period, and the ROCE trend is largely driven by the annual EBIT level.

## Fish health

- ▶ In the 1980s, antibiotics represented the far most applied medical treatment of farmed fish. Since then, the use of antibiotics has declined with 99.95%<sup>1</sup>. The development of new and more efficient vaccines and treatments for fish have been an important contributor to the growth and development of the industry.
- ▶ However, there are still battles to conquer in this area. Currently, sea lice represents the biggest threat to Norwegian salmon farming, but there are risks of other illnesses as well, e.g., pancreas disease (PD) and infectious salmon anaemia (ISA).
- ▶ The sea lice challenge in the sea farming phase and the development of drug resistance, calls for new innovative solutions. The Norwegian Government has addressed this need through the introduction of research and development licenses. These licenses have built-in incentives for different solutions managing sea lice and disease challenges.
- ▶ The fish health subsegment has experienced a continuous revenue growth since 2006 and generated NOK3.1b in revenues in 2015, a NOK0.6b (+22%) increase compared to 2014. From 2010 to 2015 the revenue increased by NOK1.7b (+118%), of which the five largest companies generated approximately NOK1.4billion of the growth.
- ▶ The revenue growth has been driven by a combination of increased demand in the Norwegian market, a higher share of export to overseas markets in Europe, North and South America and Asia, and roll out of new products. The largest Norwegian companies are world leading within fish health, and many are represented with subsidiaries in foreign markets like Chile, Canada and Scotland.
- ▶ The subsegment's EBITDA margin has fluctuated between 8.6% and 13.9% since 2006, but has remained relatively stable in recent years. From 2010 to 2014, the EBITDA margin has been more or less unchanged at around 11%, with a positive shift from 2014 to 2015 where the margin increased by 1.6 percentage points to 13.2%. This increase was primarily a result of a higher gross margin combined with relatively stable personnel and other operating expenses.
- ▶ As for the EBITDA margin, the ROCE was relatively stable in the period 2010 to 2015, varying between 22.3% and 29.9%. In the period 2006 to 2009, ROCE was quite volatile. Capital employed increased steadily in this period, hence, EBIT was the driver of the change in ROCE, with a significant EBIT growth from 2006 to 2007 and a decrease in EBIT from 2008 to 2009.

## Top five companies (2015 revenues)

1. Pharmaq AS
2. Europharma AS
3. Veterinærmedisinsk Oppdragscenter AS
4. MSD Animal Health Norge AS
5. Aqua Pharma AS



The medicalization rate for fish still rank very low compared to other livestock categories. The worldwide spending on fish health is expected to continue to increase as volume grows and production becomes even more efficient.

Source: "Fiskehelse" LMI website, <http://www.lmi.no/lmi/fagomrader/fiskehelse/>, accessed 14 February 2017:



## Feed

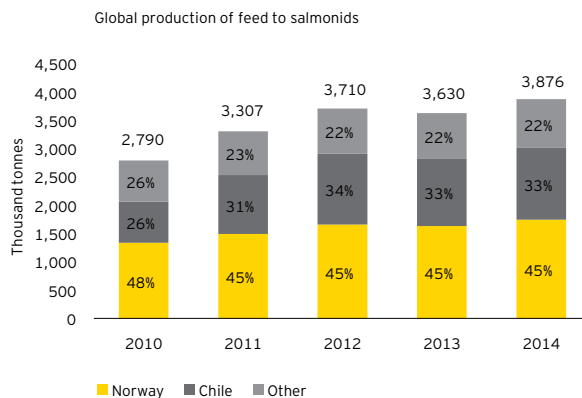
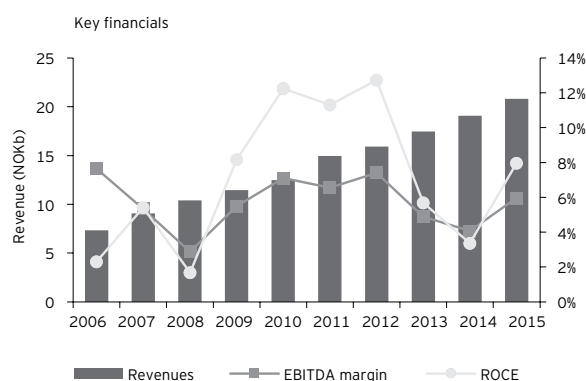
- ▶ The feed subsegment generated 90% of the revenues in the biotechnology segment in 2015.
- ▶ Feed stands for 40% to 50% of the total production cost for salmon and trout and constitutes by far the largest production cost of salmonids.
- ▶ Most of the feed used in farming salmonids is produced close to where the fish is farmed. Norway has produced approximately 45% of the global feed for the salmonid segment in the period 2011 to 2014, as illustrated in the lower right chart.
- ▶ Fishmeal and fish oil produced from wild fish are two of the main ingredients in salmon feed. Despite tremendous growth in Norwegian aquaculture, the industry has not increased the usage of wild fish in feed. Efficient feed utilization is crucial to ensure the sustainability of the aquaculture industry and this has been a key focus area for the industry. According to salmonfacts.com\*, the level of fishmeal in salmon feed has been reduced from approximately 90% during the 1990s to around 30% today, as marine raw materials have been replaced by vegetable ingredients. As a result, the fish in - fish out (FIFO) ratio for fish oil and fishmeal has dropped from 7.2 and 4.4 in 1990 to 1.7 and 1.0 in 2013.
- ▶ During the last decade, the salmonid feed industry has become increasingly consolidated, and today the industry consists of a few large producers controlling the majority of the salmon feed output. In 2015, the five largest companies accounted for approximately 92% of the revenues in the subsegment.
- ▶ In line with the increase in volume of produced salmon, the revenue in the feed subsegment has increased from 2006 to 2015. In 2015, the subsegment generated NOK20.8b in revenues. This is a NOK1.7b (+9%) increase compared to 2014 and a NOK8.3b (+67%) increase compared to 2010.
- ▶ With the exception of 2008, the subsegment's EBITDA margin has been rather stable during the period 2006 to 2015, fluctuating between approximately 4% and 7%.
- ▶ Cost of materials constitute the majority of the cost base in feed production, and on average makes up approximately 86% of the total cost base for the period 2006 to 2015. Thus, the EBITDA margin development is largely driven by the gross margin development. However, since 2008, personnel and other operating expenses have decreased relatively to revenue, also contributing positively to the EBITDA margin in this period.
- ▶ From 2007, ROCE has shown the same trend as the EBITDA margin. Capital employed has increased steadily throughout the period, and the ROCE trend is largely driven by the annual EBIT level.

\* "Is salmon feed sustainable? Do farmed salmon eat wild fish?", Salmon facts website, [www.salmonfacts.com/what-eats-salmon/is-salmon-feed-sustainable](http://www.salmonfacts.com/what-eats-salmon/is-salmon-feed-sustainable), accessed 23 February 2017

## Top five companies (2015 revenues)

1. Skretting AS
2. EWOS AS\*
3. BioMar AS
4. Marine Harvest Fish Feed AS
5. Aker Biomarine Antarctic AS

\*Due to a change in the reporting period, the financial year is 17 months. This has been adjusted for in the dataset, hence the 2015 revenue is estimated for this company.



Source: EWOS, "Outlook for global fish feed supply", NASF Bergen 5 March 2015

To ensure sustainable feed production and levels of feed costs for sea farmers, the level of fishmeal and fish oil used in feed production must remain at current levels or even be reduced. A potential reduction must take place without compromising the welfare and quality of the fish. Thus, the industry is looking into more sustainable sources of marine raw materials to be used in fish feed production, such as krill.

# Biological challenges pressure margins



## About the segment

The salmon farming production cycle is about three years. During the first year, the eggs are fertilized and the fish is grown to approximately 100 grams in controlled freshwater environments.

Subsequently, the fish is transported into seawater where it is grown to approximately four to five kilos during a period of 14 to 24 months. The growth of the fish is heavily dependent on seawater temperatures.

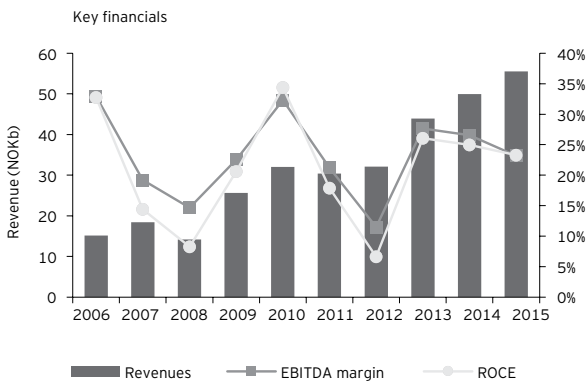
Feed, vaccines and other activities meant to reduce the risk of illness are critical inputs to the different stages of the production cycle. Dealing with sea lice has been a major challenge for the industry for many years now, and combating illnesses has proven to be an expensive exercise.

We have divided the segment into three subsegments:

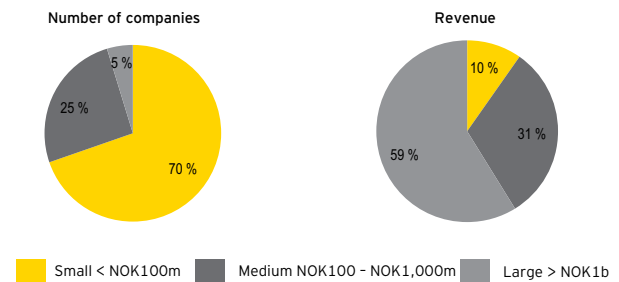
- ▶ Egg and spawn production
- ▶ Smolt production
- ▶ Sea farming

## Segment highlights

- ▶ The segment has experienced a substantial growth from 2006 to 2015, driven by higher volumes and in particular the significant increase in market prices for salmon seen after 2013.
- ▶ Aggregated revenues increased by 11.2% from 2014 to 2015, reaching NOK55.5b. The sea farming subsegment is the main contributor to the segment's overall revenue and profitability, generating 94% and 97% of the revenue and EBIT in 2015.
- ▶ Even though there are several players in the production segment, a few large companies control the majority of the volume.
- ▶ Despite the positive development of revenues from 2013, the segment has struggled to achieve the same positive margin development. The increasing sea lice challenges and higher feed costs have resulted in a drop in the EBITDA margin in 2014 and 2015.



Segment composition (2015)



## Egg and spawn production

Smolt production

Sea farming

### Egg and spawn production

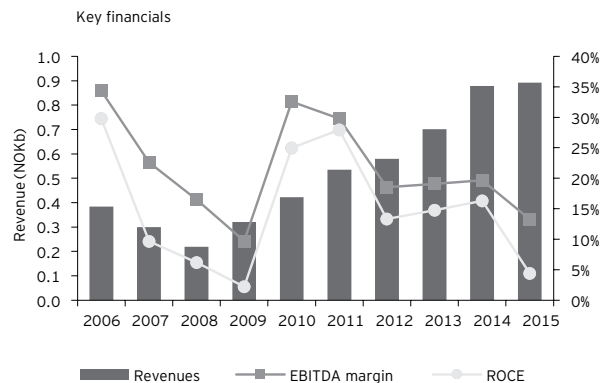
The companies in this subsegment are specialized in spawning and egg production. The production of the fish starts with the egg. The egg is developed to spawn, the spawn is then sold to smolt producers. Production is flexible and egg suppliers can easily scale production according to demand.

- ▶ From 2006 to 2008, revenues and margins were somewhat distorted due to demergers and changes in accounting periods for some of the companies in the subsegment.
- ▶ Since 2009, the subsegment experienced a continued revenue growth, and in 2015 the revenue was NOK0.9b, a NOK0.6b (+178%) increase since 2009.
- ▶ The noteworthy EBITDA margins in 2010 and 2011 can be attributed to increased volumes and margins, amongst others due to the release of a new product by the largest company within this segment in 2009/2010 (IPN resistant salmon eggs). The subsequent reduction in the EBITDA margin was due to a relative increase in the cost base.
- ▶ Despite gross margin decreasing by 5.2 percentage points from 2012 to 2014, the EBITDA margin increased from 18.5% to 19.7% due to a combination of volume driven growth and reduction in personnel and other operating expenses relative to revenue.

- ▶ In 2015, the revenue growth plateaued. Combined with a general cost increase, this resulted in an EBITDA margin drop of 6.4 percentage points.

### Top five companies (2015 revenues)

1. AquaGen AS
2. Nordnorsk Stamfisk AS
3. Salmobreed AS
4. Salten Stamfisk AS
5. Svanøy Havbruk AS



Egg and spawn production

## Smolt production

Sea farming

### Smolt production

Smolt is produced over 6 to 12 months - from when the eggs are fertilized, to mature smolt with a weight of 60 to 100 grams. In recent years it has become more usual to produce larger smolts (100 to 1000 grams) in order to shorten the time in the sea due to the risk of sea lice and other illnesses.

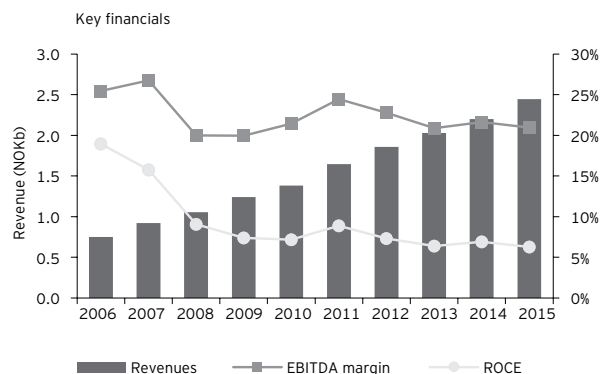
Similar to trading and processing, smolt production is offered by both independent suppliers and by salmon producers as an integrated part of their value chain. This analysis only includes the smolt production businesses that is organized in separate legal entities and will therefore underestimate the total size of the subsegment.

- ▶ The smolt producing companies experienced a continuous revenue growth from NOK0.8b in 2006 to NOK2.4b in 2015 (CAGR 14%). At the same time, the EBITDA margin has been relatively stable. In the period 2008 to 2015, the EBITDA margin fluctuated between 20% (2008/2009) and 24.4% (2011).
- ▶ ROCE has fluctuated more or less in line with profitability. However, we observe a slight decrease in ROCE compared to profitability levels towards the end of the period. This is due to a relative increase in capital employed, which may be an indication of an inventory buildup due to the abovementioned trend of producing larger smolt.

- ▶ The need for producing larger smolt and ensuring clean water increases the necessity for large facilities with systems for recirculation of water ("RAS" technology). This is quite capital-intensive compared to older solutions. Thus, the smallest companies with limited capacity to carry such investments may struggle in the future.

### Top five companies (2015 revenues)

1. SalMar Settefisk AS
2. Smolten AS
3. Sundsfjord Smolt AS
4. AS Sævareid Fiskeanlegg
5. Fjon Bruk AS





## Sea farming

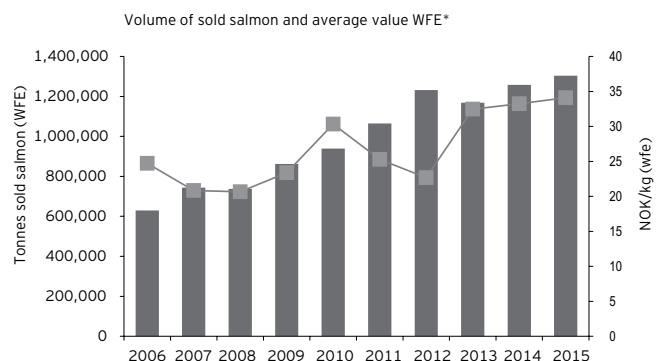
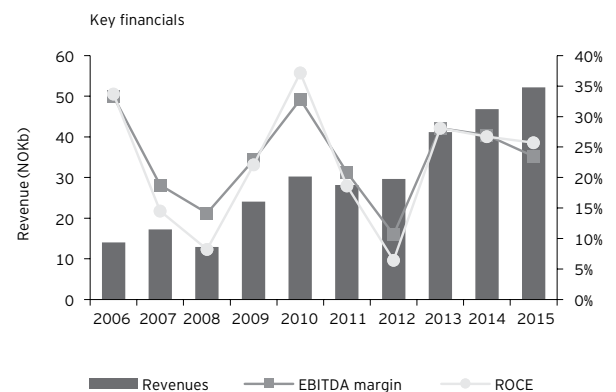
Our analysis of the sea farming subsegment only includes businesses that are organized in separate legal entities and will therefore underestimate the total size of the subsegment.

- ▶ During the last two decades, the salmon farming industry has been through a period of consolidation. Today, a few large players constitute a significant part of the total Norwegian production and sale, as shown in the lower right chart. However, due to the Government's policy of decentralization and local ownership, there are still quite a few companies that together control all the commercial licenses for salmon and trout production in Norway (98 when adjusting for entities controlled by the same owner).
- ▶ The subsegment has experienced a tremendous growth since 2006, with revenues increasing from NOK14b to NOK52.2b in 2015. In the same period, the volume of sold slaughtered salmon doubled.
- ▶ The EBITDA margin has fluctuated quite substantially in the period, from a vertex of 33% in 2006 and 2010 to a low point at 10.6% in 2012. The fluctuations in the EBITDA margin correlate with the development of the salmon price for most of the period.
- ▶ From 2006 to 2012, the subsegment's revenue growth was largely driven by an increase in volume sold. However, from 2012 to 2013, the volume of slaughtered fish fell slightly while at the same time the revenue increased by NOK11.5b. The latter was primarily driven by a significant increase in market prices for salmon, also contributing to a significant margin increase in the subsegment. Note that the consolidation of Morpol into Marine Harvest (not included in the dataset for earlier periods) contributed to the noted revenue growth.
- ▶ From 2013 to 2014, the revenue growth continued, however at a slower pace. The growth was due to higher volumes and slightly higher prices. The revenue growth continued in 2015.
- ▶ Despite high prices and growth in 2014 and 2015, sea farming companies experienced an EBITDA margin decrease, from 28.1% in 2013 to 23.5% in 2015. This trend was largely due to:
  - ▶ An increase in the costs of feed because of higher prices for feed raw materials and currency effect from weaker NOK.
  - ▶ High direct and indirect costs associated with the treatment of sea lice, combined with increased mortality, mainly due to loss during sea lice treatment.
- ▶ In 2016, the salmon prices continued to increase, driven by a strong demand and declining supply. The all-time high salmon prices resulted in record high earnings for several farming companies. However, the production costs continued to increase due to biological challenges and high feed costs.

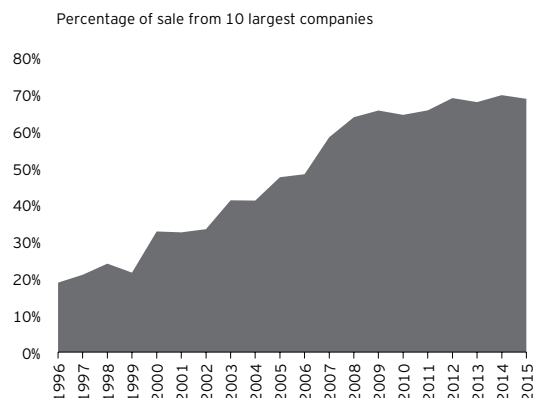
## Top five companies (2015 revenues)

1. Marine Harvest Norway AS
2. SalMar Farming AS
3. Lerøy Midt AS
4. Cermaq Norway AS\*
5. Nordlaks Oppdrett AS

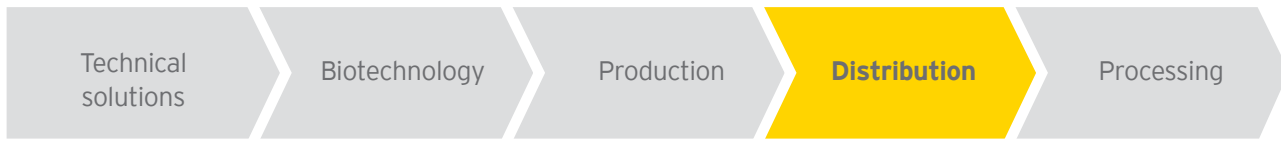
\*Due to a change in the reporting period, the financial year is 15 months. This has been adjusted for in the dataset, hence the 2015 revenue is estimated for this company.



\*Source: Directorate of Fisheries ([www.fiskedir.no](http://www.fiskedir.no)). Volume equals sale of slaughtered fish, weight in metric ton round weight (WFE). NOK/kg calculated as value of slaughtered fish/volume WFE.



# All-time high revenue, but stable margins and lower ROCE

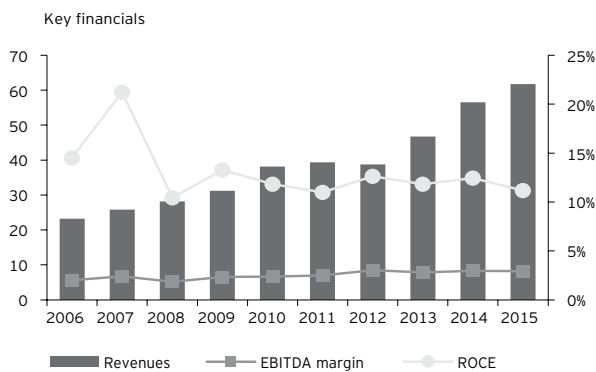


## About the segment

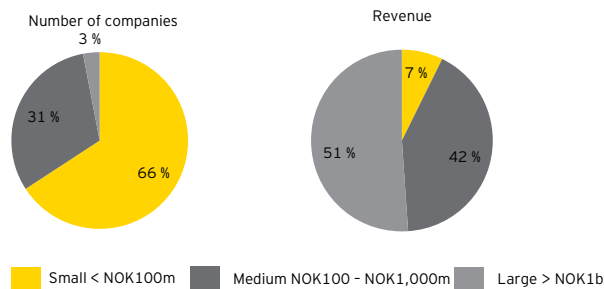
The distribution segment includes companies offering services related to trading, slaughtering and transportation on sea.

We have divided the segment into three subsegments:

- ▶ Trading
- ▶ Slaughtering
- ▶ Transportation on sea



## Segment composition (2015)



## Segment highlights

- ▶ The distribution segment has experienced sustained growth in the period 2006 to 2015, positively influenced by higher volumes and higher salmon prices, particularly after 2013.
- ▶ Aggregated revenues increased by 9.2% in 2015. From 2010 to 2015, revenues grew by 63.6%.
- ▶ The segment's revenue growth was primarily driven by companies in the trading subsegment, which generated a high relative share of total segment revenues, and a close correlation with the development of the market price for salmon. The five largest trading companies included in the analysis generated 44.4% of the revenue in this segment in 2015.
- ▶ The EBITDA margin has not seen the same growth rate as revenues, reflecting that trading, which is the most significant subsegment, is a margin business. In 2015, both the trading and slaughtering subsegments experienced a declining EBITDA margin, in part due to higher personnel expenses relative to revenues. This decline was offset by an all-time high EBITDA margin for well boats (transportation on sea), and the segment's overall margin ended at 2.9%, the same level as in 2014.
- ▶ The segment's EBITDA margin has increased slightly from the average of 2.2% from 2006 to 2010, to an average of 2.8% from 2011 to 2015. This increase can, to a significant extent, be attributed to the higher EBITDA margin in the well boat industry.
- ▶ Influenced by both higher capital employed and higher EBIT, ROCE has remained stable between 11.0% and 12.6% in the years from 2010 to 2015. In 2015, ROCE was down in all three subsegments and the segment's overall ROCE ended at 11.2%, down from 12.5% in 2014. Higher capital employed and lower margins explain this development.

### Trading companies

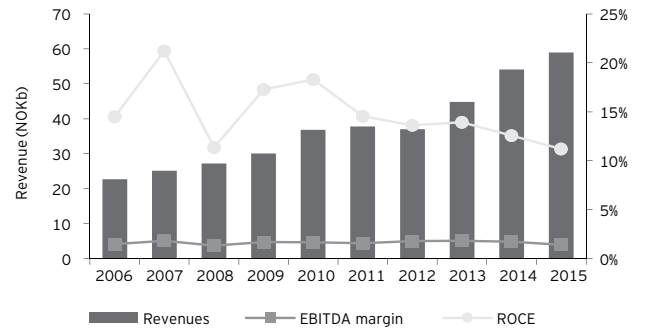
The subsegment includes Norwegian registered trading companies for farmed salmon and trout. It includes both independent trading companies and trading companies owned by salmon producers that have organized this activity in separate companies. Some salmon producers perform trading as an integrated part of their production companies, but these are not included in this analysis.

- ▶ Trading companies have experienced a continuous revenue growth since 2006. Traded volumes have increased in the period, but the revenue growth from 2013 to 2015 has primarily been driven by higher salmon prices. The revenue growth was 9.1% in 2015, down from 20.7% in 2014.
- ▶ The subsegment's EBITDA margin has fluctuated between 1.3% and 1.8% since 2006. In 2015, the EBITDA margin declined to 1.4%, from 1.7% in 2014, primarily because of a lower gross margin combined with higher personnel expenses.
- ▶ Since 2010, the trading companies have seen a declining ROCE, further dropping from 12.5% in 2014 to 11.2% in 2015. The decline in ROCE was mainly a consequence of increased capital employed, whereas the drop in 2015 was also a result of a decrease in EBIT.
- ▶ Production limitations have resulted in higher salmon prices. This has created a challenging sales and market situation for trading companies, as more efforts have been required to get acceptance for increased prices in different markets. This may explain the higher personnel expenses and lower EBITDA margins in 2015 compared to 2014.
- ▶ The trading companies mainly sell to international markets. Norway exported salmon and trout for NOK50.1b in 2015, an increase of 9% from 2014. The increase came despite not being granted access to the Russian market, and was positively influenced by a lower NOK exchange rate as well as high demand from the EU market. Poland and France were the two most important export markets for Norwegian salmon in 2015 measured in value. In 2016, the export value continued to increase and reached an all-time high of NOK65.5b, despite a volume decrease of 3.5%.

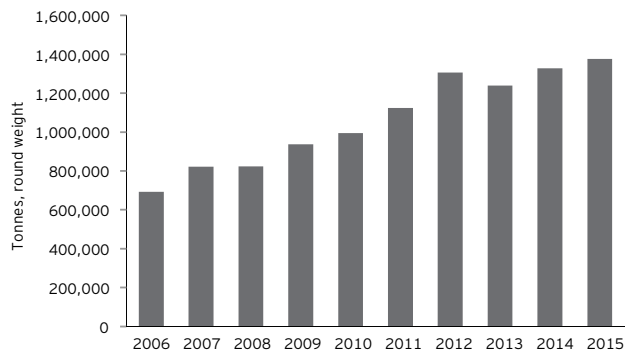
### Top five companies (2015 revenues)

1. Lerøy Seafood AS
2. SalMar AS
3. Norway Royal Salmon ASA
4. Seaborn AS
5. Coast Seafood AS

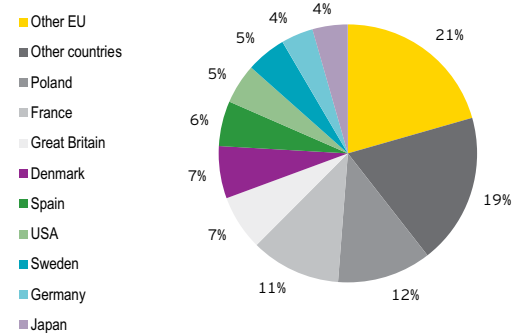
Key financials



Sold volumes of slaughtered fish (round weight)



Export markets for salmon and trout (2015 values)



Source: Directorate of Fisheries

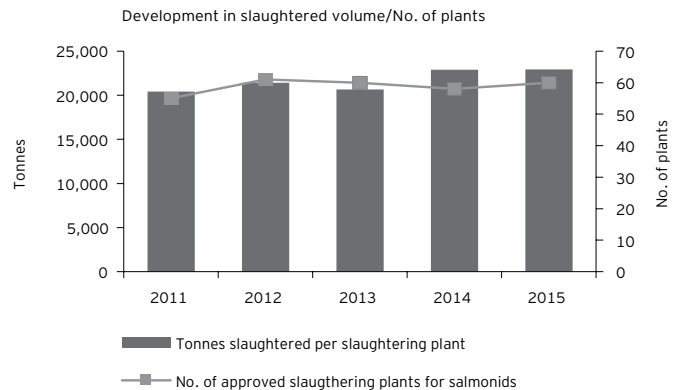
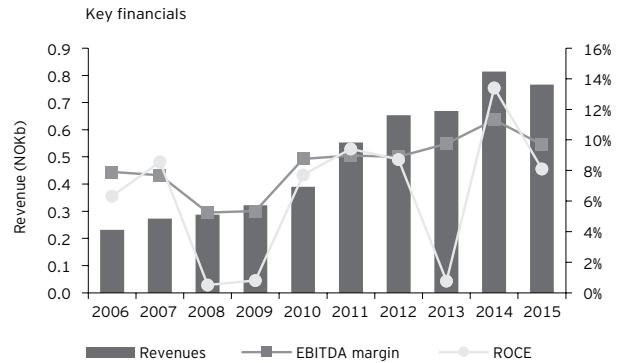
## Slaughtering

The companies in this subsegment offer slaughtering services. Similar to trading, slaughtering is offered by both independent suppliers and by salmon producers as an integrated part of their value chain. This analysis only includes slaughtering businesses that are organized in separate legal entities, and it will therefore underestimate the total size of the subsegment.

- ▶ The subsegment's revenue increased steadily from 2006, but experienced a drop for the first time in 2015 with 5.9%. Several companies in the subsegment suffered a revenue decrease in 2015 due to lower delivered volumes of fish from farmers as a consequence of diseases.
- ▶ The total volume of slaughtered fish increased slightly with 3.7% from 2014 to 2015, indicating a small growth in the volume slaughtered by slaughtering plants owned and run by companies of salmon producers.
- ▶ From 2011 and 2015, the number of approved slaughtering plants has been relatively stable between 55 and 61. Since 2012, the volume of slaughtered fish has only increased by 5.3%, i.e., the slaughtered volume per plant has also remained more or less on the same level.
- ▶ The EBITDA margin has grown with the increasing revenues, but dropped from 11.3% in 2014 to 9.7% in 2015. This was primarily due to higher personnel expenses relative to revenues.
- ▶ The subsegment's ROCE has fluctuated significantly over the years. Whereas capital employed has steadily increased, EBIT has varied and driven changes in the annual ROCE. In 2013, ROCE was impacted by a significant write-down in one company that experienced a sudden drop in volumes. Adjusted for this write-down, the ROCE in 2013 was 8.4%. Due to lower EBIT, ROCE decreased from 13.4% in 2014 to 8.1% in 2015.
- ▶ Ensuring sufficient and cyclic supply of raw materials pending on seasons and dealing with outbreaks of diseases and sea lice are the main industry challenges that affect independent slaughtering plants.

## Top five companies (2015 revenues)

1. Pure Norwegian Aquaculture AS
2. Viking Fjord AS
3. Slakteriet AS
4. Martin E Birknes Eftf AS
5. Salten N950 AS



Source: The Norwegian Food Safety Authority



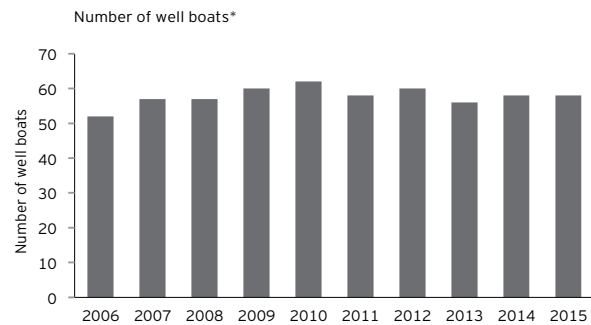
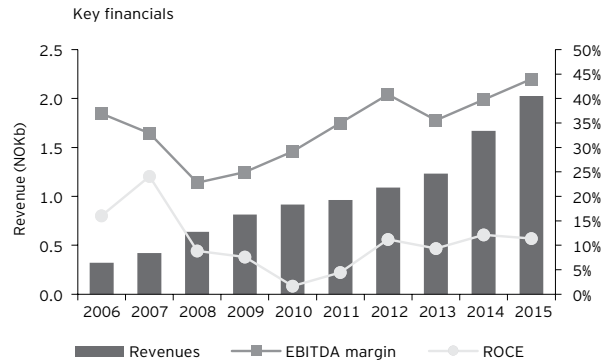
### Transportation on sea

The subsegment consists of well boat companies that transport smolt to sea farms and live salmon and trout from farming cages to harvesting or processing plants. These companies usually also offer sea lice and AGD treatment onboard well boats, as well as services such as sorting and counting of fish.

- ▶ This subsegment has become an increasing part of the growing Norwegian salmon industry and has experienced continuous growth from 2006 to 2015, with a revenue CAGR of 22.7%. The revenue growth in 2015 was 21.4%, significantly down from formidable 35.7% in 2014. The increasing use of well boats for treatment of sea lice and AGD has contributed to the high revenue levels.
- ▶ Higher activity has increased the annual number of employees from 2006.
- ▶ The EBITDA margin has increased along with revenues, reaching an all-time high level of 44.0% in 2015, up from 39.8% in 2014. A higher gross margin has been the primary driver behind the increase, most likely reflecting a combination of higher rates and utilization of well boats.
- ▶ Spurred by high demand and high returns, increased investments in larger and more technologically advanced well boats have driven the 159% increase in capital employed since 2012. ROCE levels have remained relatively stable due to high EBITDA levels. ROCE was 11.4% in 2015, slightly down from 12.2% in 2014.
- ▶ The increased well boat capacity has primarily been driven by the building of larger well boats, as the number of well boats has remained more stable. Norwegian well boat companies are in the forefront regarding technology and operations, driven by a focus on environmentally friendly solutions and fish welfare. Parts of the fleets are operated in international waters, e.g., Canada, UK, Ireland and Chile.
- ▶ In the last couple of years, the largest well boat companies have grown bigger and increased their market share, both through acquisitions and investments in new and larger well boats.
- ▶ Given the delivered and planned new builds in 2016 and 2017, the industry is currently discussing whether the top has been reached and if there is a risk of overcapacity going forward. This will depend on the number of well boats exiting the Norwegian market in the near future (due to scrapping or international contracts), the effects of new industry regulations concerning water quality, and an increase in the establishment of salmon producer's capacity of owning well boats. If new solutions to the sea lice challenge is found and implemented, that may reduce the future need for well boats.

### Top five companies (2015 revenues)

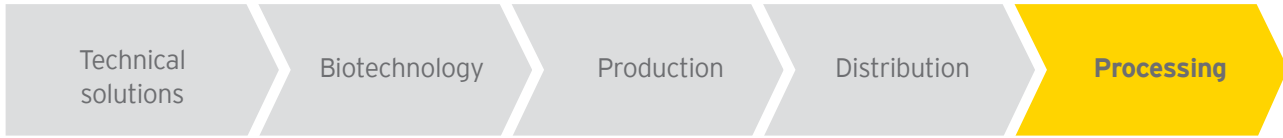
1. Rostein AS
2. Sølvtrens Rederi AS
3. Norsk Fisketransport AS
4. Bømlo Brønnbåtservice AS
5. Arctic Shipping AS



\*Based on number of members in Fraktestartøyenes Rederiforening

The well boat industry has experienced formidable growth and margins over the last 10 years. Sea lice and AGD have created a higher demand, which has resulted in under capacity. The under capacity led to increasing prices, utilization rates and investments in larger boats. In the years to come, we believe we will witness a better balance between demand and supply, which may impact EBITDA margins and ROCE.

# Increased salmon prices lead to reduced margins



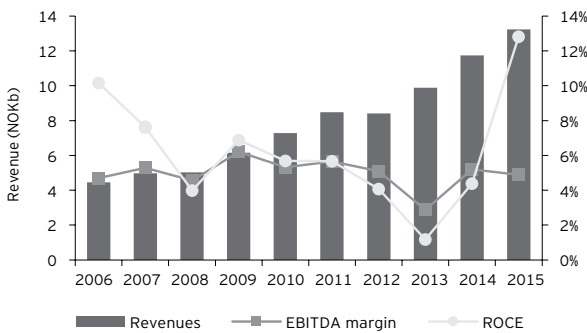
## About the segment

The processing segment includes companies offering services related to primary and secondary processing, and companies producing different types of packaging.

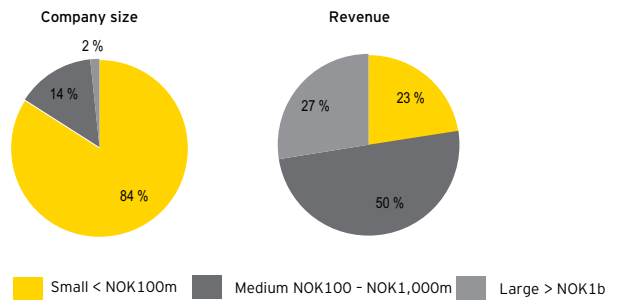
We have divided the segment into two subsegments:

- ▶ Processing
- ▶ Packaging

Key financials



Segment composition (2015)



## Processing

Processing is offered by both independent suppliers and by salmon producers as an integrated part of their value chain. This analysis only includes separate legal entities, and it will therefore underestimate the total size of the subsegment.

Processing is divided between primary and secondary processing, where secondary processing concerns products normally referred to as value-added products (VAP), namely fileting, filet trimming, portioning, smoking and the like.

- ▶ This subsegment is quite fragmented with many relatively small companies, especially within secondary processing, and the five largest companies generated approximately 52% of the total revenue in 2015.
- ▶ Increased volumes drove the revenue growth from 2006 to 2012, while the revenue growth from 2012 to 2015 was driven by the sharp increase in salmon prices.

## Top five companies (2015 revenues)

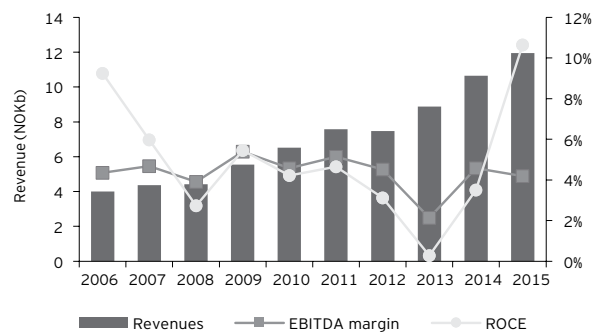
1. Sekkingstad AS
2. Nils Williksen AS
3. Hofseth AS
4. Norsk Sjømat AS
5. North Sea Aquaculture AS

## Processing

- ▶ Despite the significant price increase from 2012 to 2015, the processing industry did not experience any boost in profitability. On the contrary, the EBITDA margin level was lower in the period 2012 to 2015 compared to the prior period. From 2014 to 2015, revenue increased by NOK1.3b while at the same time the EBITDA level remained more or less the same (NOK0.5b).
- ▶ With the price growth, the costs of raw material (fish) have increased for the processing companies (at least for the ones producing VAP), without the companies being able to fully transfer this increase to the end customer. Thus, the positive margin effect due to the increase in salmon prices are absorbed by other parts of the value chain.
- ▶ Capital employed has steadily increased, and the fluctuations are a result of developments in the EBIT. The large fluctuations in the ROCE are due to the relative low EBIT level of this subsegment (a relative small EBIT increase or decrease will have a relative large impact on the ROCE).

## Packaging

Key financials



## Processing

## Packaging

### Packaging

This subsegment includes companies producing and providing different types of packaging for fish and feed, including flight cases, wrappings, bags etc.

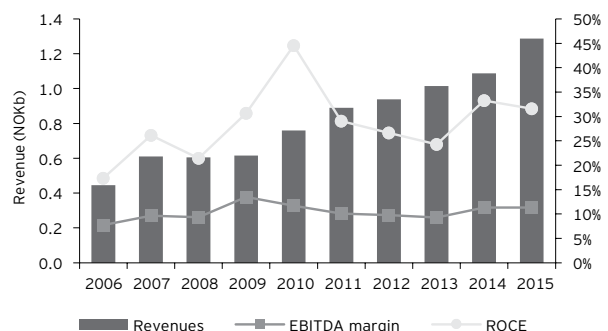
The companies within this subsegment generally produce packaging and products for other industries as well, and are therefore not solely dependent on sales to the aquaculture industry.

- ▶ The subsegment generated around NOK1.3b in revenues in 2015. This is a NOK199m (+18%) increase compared to 2014 and a NOK527m (+69%) increase compared to 2010.
- ▶ While the packaging subsegment experienced a NOK0.5b revenue growth from 2010 to 2015, the EBITDA margin remained stable at around 10% in the same period.

### Top five companies (2015 revenues)

1. Vartdal Plastindustri AS
2. Bewi Produkter AS
3. A/S Nesseplast
4. Accon AS
5. AS Viplast

Key financials





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# The values are created along the coast

## Aquaculture locations



## Geographic distribution of value creation

By looking at the headquarter locations and where licenses are operated, we get a fair image of where values are created and revenues are channeled.

Hordaland is the main county in the industry. Bergen hosts many of the largest companies in the industry (e.g., Marine Harvest, Grieg Seafood, Lerøy Seafood and EWOS) and the county has received a high allocation of sea farming and smolt production licenses.

Another center of gravity is the coast of Sør-Trøndelag and the area surrounding the island of Frøya (where Salmar's headquarter is located). Thereafter follows Nordland and Møre og Romsdal.

## Different strengths and capabilities along the coast

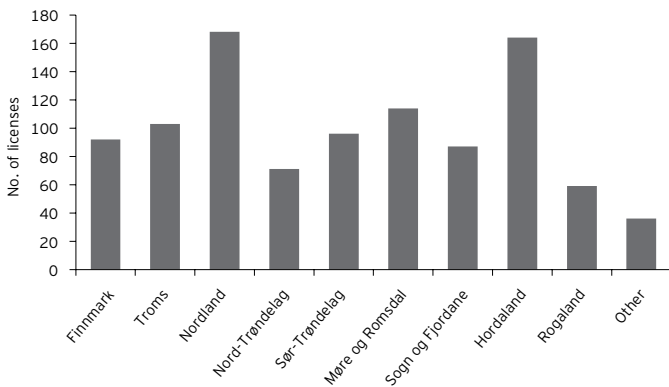
The value chain is widely represented in Hordaland, with large companies in every segment. A wide representation is also seen in Sør-Trøndelag, Nord-Trøndelag, Nordland and Rogaland.

Looking at Møre og Romsdal, we note that the largest companies mainly represent the processing, distribution and technical solutions segments.

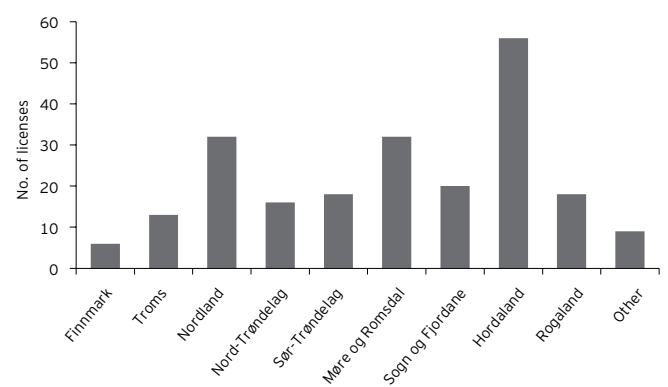
In Sogn og Fjordane, trading companies dominate, and in the southern and eastern parts of Norway, the largest companies measured by revenue mainly belong to the biotechnology and processing segments.

Source: Norwegian Directorate of Fisheries

Allocation of sea farming licenses - 2016



Allocation of smolt production licenses - 2016



Source: Norwegian Directorate of Fisheries

# The regional top five overview (revenue)\*

## Top five companies in Finnmark

1. Grieg Seafood Finnmark AS
2. NRS Finnmark AS
3. Scanfish Norway AS
4. Cape Fish Sales AS
5. SP Products AS

## Top five companies in Nordland

1. BioMar AS
2. Cermaq Norway AS
3. Nordlaks Oppdrett AS
4. Nova Sea AS
5. Prestfjord Seafood AS

## Top five companies in Sør-Trøndelag

1. SalMar AS
2. Norway Royal Salmon AS
3. SalMar Farming AS
4. Lerøy Midt AS
5. Nordic Group AS

## Top five companies in Sogn og Fjordane

1. Coast Seafood AS
2. Waynor Trading AS
3. Norwell AS
4. Bravo Seafood AS
5. Firda Seafood AS

## Top five companies in Rogaland

1. Skretting AS
2. Steinsvik AS
3. Akva Group AS
4. Toftøy Fjordbruk AS
5. NRS Feøy AS

## Top five companies in Troms

1. SalMar Nord AS
2. Lerøy Aurora AS
3. Ice Fish AS
4. Norfra Eksport AS
5. Stella Polaris Norway AS

## Top five companies in Nord-Trøndelag

1. Nils Williksen AS
2. SinkabergHansen AS
3. Midt-Norsk Havbruk AS
4. Pharmaq AS
5. SalmoNor AS

## Top five companies in the Møre og Romsdal

1. Vikenco AS
2. Hofseth AS
3. Norsk Sjømat AS
4. Ocean Supreme AS
5. West-Norway AS

## Top five companies in Hordaland

1. Marine Harvest Norway AS
2. Lerøy Seafood AS
3. EWOS AS
4. Seaborn AS
5. Ocean Quality AS

## Top five companies in other locations

1. Aker BioMarine Antarctic AS
2. Sjømathuset AS
3. Veterinærmedisinsk Oppdragscenter AS
4. Aqua Pharma AS
5. Wannebo International AS

*\*identified by company address*

# Salmon prices generated record high earnings for listed sea farming companies in 2016

Going into 2017, several of the largest Norwegian sea farming enterprises have released their Q4 results for 2016.

For this brief analysis, we have chosen to include five companies listed on the Oslo Stock Exchange, namely Marine Harvest, Austevoll Seafood, SalMar, Grieg Seafood and Norway Royal Salmon. Please note that the presented Q4 figures are based on consolidated accounts. Thus the financial information includes earnings from foreign subsidiaries as well as earnings from other parts of the aquaculture value chain and not just the sea farming subsegment.

## Record high prices equals record high earnings

The driving force behind the record high revenues and earnings was the all-time high salmon prices, which on average was 63.1 NOK/kg in 2016 compared to 42.1 NOK/kg in 2015. On the other hand, the total volume harvested decreased compared to 2015. For the five companies included in this analysis, the total volume drop was 69,598 tonnes from 2015 (807,546 tonnes) to 2016 (737,948 tonnes). However, the high prices significantly outweighed the negative volume shift, resulting in a combined revenue growth of 22.1% for these companies from 2015 to 2016.

## Biological challenges and unfavourable exchange rates

While salmon prices had a positive impact on earnings, the cost base development had the opposite effect. The total cost base for the five companies increased by 11.9% from 2015 to 2016. Biological issues and the impact of foreign exchange rates on feed costs (which constitutes the largest part of production costs of salmon) were the main drivers behind the negative development of the cost base.

Costs of handling sea lice have continued to increase and currently constitutes the largest challenge for the aquaculture industry. Increased number of treatments, high direct and indirect costs associated with treatments (e.g., lower average weight of the slaughtered fish) combined with increased mortality, mainly due to loss during sea lice treatment, had a highly negative impact on operating expenses in 2016.

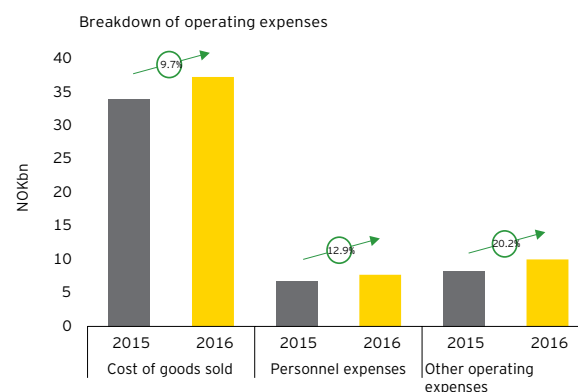
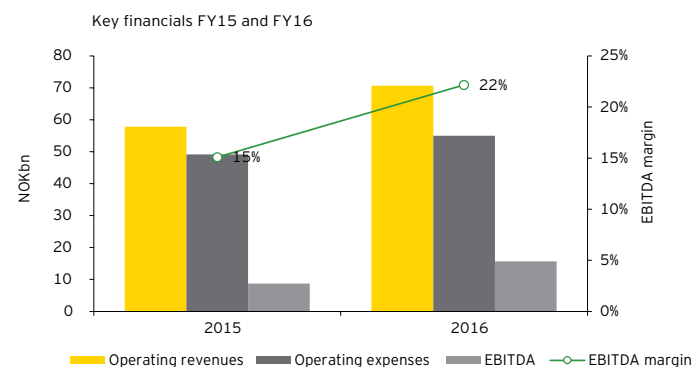
New treatment methods are continuously being developed and tested. More solutions with a non-chemical approach have appeared, and companies are expected to better adapt to these solutions going forward.

The depreciation of the Norwegian krone also had a negative cost impact in 2016. As most fish feed is traded in US dollars, the exchange rate's development in the first half of 2016 increased the relative costs in NOK.

## Included companies (FY16 revenue)

1. Marine Harvest ASA (NOK31.9b\*)
2. Austevoll Seafood ASA (NOK18.9b)
3. SalMar ASA (NOK9.9b)
4. Grieg Seafood ASA (NOK6.6b)
5. Norway Royal Salmon ASA (NOK4.2b)

\*Marine Harvest ASA reports in EUR. FY16 revenue of EUR3.51b has been converted using an exchange rate of 9.0863.



The global hunger for protein fueled the Norwegian sea farming industry, which experienced a 22.1% revenue growth in FY16.

The growth was driven by increased salmon prices. However, sea lice will continue to be costly for sea farmers and can put pressure on the profitability margin going forward.



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# Future outlook

## Finding sustainable solutions are crucial

Until the aquaculture industry overcomes the capacity challenges on production by constraining sea lice and disease problems, it is not realistic that it will be able to bypass the oil industry as the most valuable export industry in Norway.

The first hurdle in realizing this potential is to find sustainable solutions to the sea lice problem and environmental issues related to inshore fish farming. In that respect, the ongoing research and development-license program may provide the industry with robust and sustainable solutions. We expect to see outcomes of this program more clearly within three years, expecting significant effects on the production capacity as of 2020.

In the meantime, the main question in the industry will be the price level; what is a sustainable level for the international market? We already see that the processing and distribution segments face challenges because of the current price level.

However, there are clear signs showing that growth based on consumer driven processing, product development and innovation within equipment and biotech solutions will represent an increasing growth factor in the seafood value chain (SVC).

In summary, prospects are good. Based on already known export volumes for 2016, we expect that 2016 was a profitable year with historical proportions. Furthermore, we believe that 2017 will be a year with record high profits.

## Megatrends will change the industry

Looking further ahead, we expect that underlying key megatrends\*, such as "empowered customers", "behavioral revolution", "resourceful planet", "urban world" and "health reimagined", will have powerful effects on the global aquaculture and seafood industry.

### Empowered customers

Today's empowered customers understand their commercial value and expect to be understood and appealed to. In this culture of the niche, all interactions, products and services need to be personalized. The primacy of delivering differentiated experiences will have profound effects on how value is created and measured. At the same time, customers have more trust in peer recommendations and earned media than traditional paid advertising. Thus, the way products are presented, delivered to and perceived by the empowered customers in the global market place will be important to succeed at.

### Behavioral revolution

The behavioral revolution will probably impact the demand for healthy food. Chronic diseases are one of today's biggest challenges for humanity. Many of these diseases stem from human behavior

and habits, such as poor diets, lack of exercise and excessive consumption.

The digital revolution and deployment of behavioral technology solutions, e.g., by customizing nudges in smart phones and smart watches helping people to have a healthy diet, can become powerful tools.

## Resourceful planet

The resourceful planet megatrend questions if innovation can make the planet resource rich instead of resource scarce. Demographic trends will push the world's population to 9.7 billion in 2050, which will challenge the natural resource constraints. In the aquaculture industry, this implicates sustainable solutions; maybe increasing the tolerance and profitability for land based, offshore and zero wastewater fish farming. Competitors are other providers of protein nutrition, such as producers of meat and poultry, together with other marine based protein sources. Other challenges will be how to handle spill water, antibiotics and a growing demand for sustainable solutions for recirculation of water and waste. Perhaps will we see a gradual shift from well boats to harvesting vessels?

## Urban world

In 2008, the world reached a milestone. For the first time in history, the majority of the world's population lived in cities. At current rates of urbanization, the world will be two-thirds urban and one-third rural by 2050, with most of the growth occurring in Asia and Africa\*. A consequence of urbanization will be the increase in households where both spouses work - generating higher household incomes and creating other needs than spending leisure time cooking. This will have a large implication on the market growth in regards to feeding a growing population, customizing products to segments and delivering products at the right time.

## Health reimagined

Lastly, there are growing health needs. Health care spending is on an unsustainable trajectory, thanks to demographic shifts (aging population) and globalization (sedentary lifestyles that accompany economic development and urbanization). Providing a healthy food alternative will be imperative, and both fish and processed products (e.g., protein, Omega 3-based) are important in that regard.

By responding quickly and proactively, new business opportunities and value creation will emerge. If the companies in the Norwegian aquaculture industry manage to stay on top of these trends, they will be in pole position to reap the rewards of a new global reality. EY looks forward to continue following the developments up close.

\* "The upside of disruption - Megatrends shaping 2016 and beyond" © 2016 EYGM Limited  
<http://www.ey.com/gl/en/issues/business-environment/ey-megatrends>

# Methodology

## Data collection

Accounting information is publicly available from the Brønnøysund Register Centre. The companies' business addresses, as registered by the same register, have been used to reflect the entities' geographic location. The number of companies included in the analysis will vary somewhat depending on the availability of financial information.

In order to analyze economic activity by geographic location and across the value chain, we have used the stand-alone financial statements of individual legal entities. As a result, large corporations have been analyzed through their constituent individual companies and not as a consolidated group. Intercompany transactions have not been eliminated when financial figures are aggregated. In addition, the revenues of subsidiaries owned by a Norwegian holding company, but registered abroad, are not captured. 2015 figures have been modeled based on previous years where annual reports were not available by the time this report was prepared. For entities operating with divergent financial years, figures have been modeled to fit a calendar financial year.

## Inclusion criteria

A company is defined as a Norwegian aquaculture company if:

- ▶ At least 50% of its turnover is generated in the aquaculture sector and
- ▶ It is a Norwegian-registered company

## Value chain segments

Each company in the aquaculture portfolio has been reviewed individually, and an assessment has been made with regard to the company's position in the value chain.

The value chain has the following categories:

- ▶ Technical solutions
- ▶ Biotechnology
- ▶ Production
- ▶ Distribution
- ▶ Processing

Each of these categories are further broken down into subsegments to capture the huge diversity within the industry.

Companies have been categorized according to the value chain segment in which they generate the majority of their revenues.

## Company size definition

- ▶ Large companies: revenues above NOK1b
- ▶ Medium-size companies: revenues between NOK100m and NOK1b
- ▶ Small companies: revenues below NOK100m

## Location

The locations used in the analysis have been chosen to reflect and illustrate where the value creation finds place; along the coast from north to south in Norway:

- ▶ Finnmark county
- ▶ Troms county
- ▶ Nordland county
- ▶ Nord-Trøndelag county
- ▶ Sør-Trøndelag county
- ▶ Møre og Romsdal county
- ▶ Sogn og Fjordane county
- ▶ Hordaland county
- ▶ Rogaland county
- ▶ Other locations (Aust Agder, Vest Agder, Telemark, Buskerud, Oppland, Hedmark, Oslo, Akershus, Østfold and Vestfold counties)

## Calculations

EBIT = Earnings before interest and tax

EBITDA = EBIT + Depreciation and amortization

Capital employed = Total assets - (Financial long-term and short-term investments + Cash) - (Trade creditors + Tax payable + Public duties payable)

ROCE (Return on Capital Employed) = EBIT / Capital employed

CAGR = Compound Annual Growth Rate

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