History and future of Norwegian salmon farming

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DNB’s international footprint

Banks with 17 of top 20 salmon farmers globally
In-depth industry knowledge developed through close long-term relationships with key customers
Leading arranger of debt and investment banking services in the seafood sector
Agenda

• How did we get there
• Where we are now
  - The good stuff
  - The less good stuff
• Where we are headed
A fantastic journey..

Harvest of Atlantic farmed salmon in Norway

Source: SSB
..but a difficult birth

Supporting income for the «fisher-farmer»

Source: Norwegian Government
Operational efficiency

Higher volume but fewer companies and fewer sites

Strong decline in # of Norwegian salmon farmers

# of salmon farming companies in Norway

Source: Fiskeridirektoratet
Disease prevention is key

Antibiotics and salmon production in Norway – the power of vaccines

Source: Kontali, Norsk medisinaldepot, Norwegian Institute of Public Health, Veterinærinstituttet

IPN QTL – the power of genetics

Source: Kontali, Norsk medisinaldepot, Norwegian Institute of Public Health, Veterinærinstituttet
The Far North – from Ugly Duckling to Beautiful Swan

*Conditions not too different from Iceland*

EBIT-margin in the North from below national average to above

**EBIT-margin difference in %-points, Finnmark & Troms vs Norway total**

Source: DNB Seafood, Fiskeridirektoratet
Logistics & marketing a key part of the success story
Aquaculture has a simpler value chain than fisheries

Source: Ragnar Tveterås
Ideology has no role in biological industries

Trygve Bratteli, social democrat and Norwegian PM
Too much regulation: economic inefficient, partially biological inefficient

Milton Friedman, liberalistic economist and Chile advisor
Too little regulation: biological inefficient, which means economic inefficient

Goldilocks – just right
Not too little, not too much – but just right is good!

Regulate everything!
Regulate nothing!
Salmon farming success factors

Optimal water temperature (Celsius)

Culture

Holy triangle

Marketing & logistics

Sources: Hofstede, Marine Harvest, Norway Seafoods, DNB Seafood
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• **Where we are now**
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A money making machine

Value creation per employee in selected industries, NOKm

- Norway ex-oil
- Wood industries
- Forestry
- Fish processing
- Salmon farming
- Fisheries
- Agriculture

Source: SINTEF
Saving local coastal communities

Lovund
Large benefits for other parts of the economy

Oslo largest seafood stock exchange globally by Mcap

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<th>Company</th>
<th>Market Cap NOKbn</th>
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<td>Elkem</td>
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Source: OSE, SINTEF, Norwegian Seafood Council

Ripple effects in terms of employment and value creation

Major & counter cyclical contributor to Norwegian export

Seafood export value NOKbn

15
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Dreams of grandeur vs regulatory maze

Aquaculture: 9 laws, 6 Ministries, 6 government agencies, county municipalities and municipalities

Source: E24, Austevoll Seafood
Growth ended in 2012

Sea lice has become the OPEC of the salmon market

Prices exploded when volume growth disappeared

Sources: SSB, DNB Seafood
Current salmon production regime at the end of the road?

Stagnant volumes not the only symptom

Data: Fiskeridirektoratet, New Yorker, DNB Seafood
Fat cat millionaires polluting the fjords..

Public perception sometimes not constructive

Salmon farmers have a good sustainability story to tell – but often forget to tell it..
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Price & cost have decoupled..

- Step change in profitability last 5 years
- Price is no longer determined by cost
- Cost is up but so far the consumer has picked up the bill..

Sources: Fiskeridirektoratet, SSB, DNB Seafood
An end to the pork cycle, what’s next?

Cost drives price longer term

EBIT margin salmon and trout farming in Norway, inflation adjusted, industry wide. NOK/kg

Source: Fiskeridirektoratet, SSB, company reports, DNB
What sets the price?

Volume planning for salmon farmers in the current market environment is easy.

*From Pork Cycle to The Pedal To The Metal: supply doesn’t impact prices in a systematic way anymore (Random biological and weather factors still do)*
Implicit salmon price levels & margins

- High prices are not a worry, the market accepts these levels.
- High margins could be a worry in that it triggers massive innovation, new players and potential disruptive changes down the road. And the taxman..
Demand is the new sheriff in town
..but also the dark side of the moon

Yes, population growth is massive ..but not that relevant for salmon

- Better market segmentation
- E-commerce, new distribution formats, better logistics
- Consumption/capita +1.3 kg in Finland last 8 years – same as total in USA...
- Dark side of the moon, we drown in data for supply but have mostly anecdotes for demand

Sources: UN, Marine Harvest/Kontali, DNB Seafood
Salmon is good for the planet!

Salmon farmers top the FAIRR animal protein sustainability index

FAIRR is the world’s first comprehensive assessment of the largest global animal protein companies on critical environmental, social and governance issues

- 4 of 5 «low risk» companies are salmon farmers
- 6 of 11 top companies are salmon farmers

Sources: FAIRR
New frontiers and technology

- Optimizing & debottlenecking current production
- New territories: Iceland, NE Canada, Chile region XII
- Land based
- Offshore
- Digitalization (& genetics)
A lot of innovation along many dimensions!
Conclusions

LESSONS LEARNT IN NORWAY AND OTHER SALMON FARMING REGIONS

• Biosecurity is alpha & omega and should be the basis for regulations and corporate structure
  - Large sites far apart & “One company one fjord”
• Sustainability - license to operate and to grow
  - Speak not only to politicians, but also society in general and the consumer
• Holy triangle; Government & Industry & Academia should work well together
  - Good regulations can be a national competitive advantage ensuring sustainability and operational efficiency
  - Have you own research, most salmon farming challenges are global – but some are local!
• Marketing & logistics are important
  - The salmon farming success story is about the market also, not only production

FUTURE TRENDS

• Focus on sustainability will only increase; aquaculture is part of the solution – not the problem
• Demand will continue to grow structurally
• End markets are becoming more differentiated and sophisticated – branding next step
• Massive innovative pressure will lead to breakthrough in “traditional” salmon farming, along the value chain, and in new production methods
The force is with us!

“All” the mega-trends in favor of the fish farming industry

An increasing world population needs food

Growing middle class in emerging markets demands more protein

Better grocery retail supply chains in emerging markets

Higher educated population eats healthier

Ageing population eats more fish

Limited CO2 waste and water consumption vs other animal production

Limited volume potential in fishing, growth has to come from fish farming

Low feed conversion rate vs other animal production

Source: DNB Seafood
Thank you for the attention