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The cost of lice

Economic Impact of parasitic diseases in Atlantic Salmon

WORKSHOP FOR THE MANAGEMENT OF PARASITES IN NORTH EUROPEAN FISH SPECIES
EAS, BERLIN, 9/10 2019



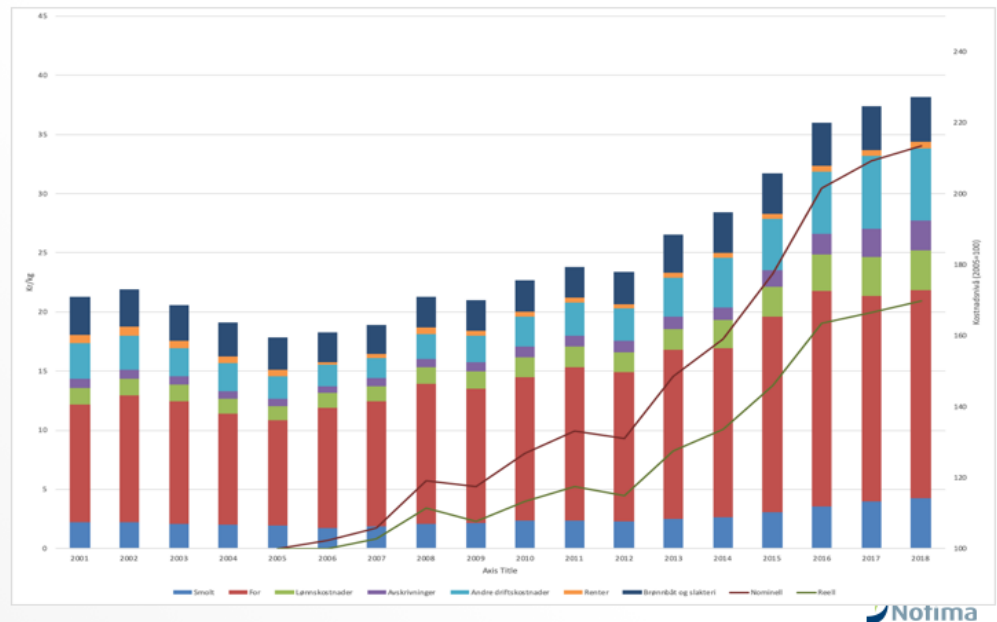
Audun Iversen and Øystein Hermansen

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I will report from work commissioned by FHF

5th year studying drivers for cost development

Production costs are still growing – but not by much



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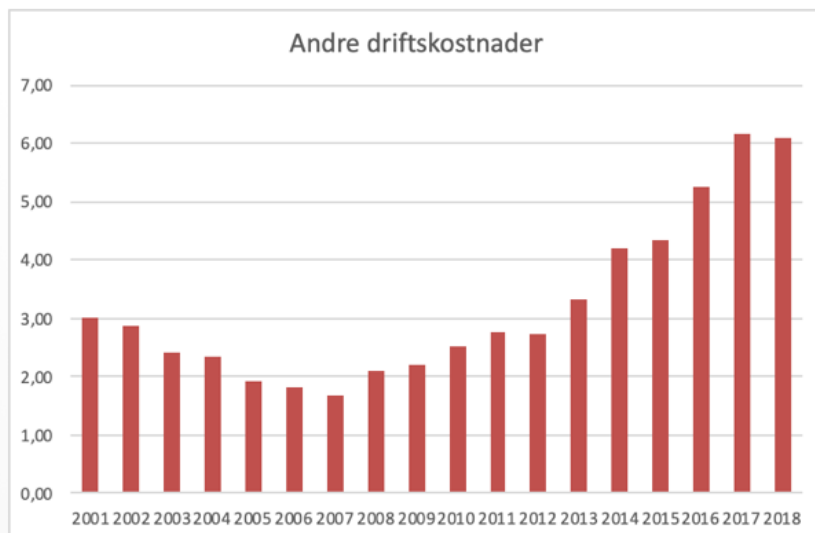
The feed cost is not increasing, but otherwise, most cost components increase. And much of this increase is related to lice, more or less directly.

There was only 2,5 % cost increase from 2017 to 2018, but:
 113 % increase since 2005
 70 % increase in real terms

(Almost) all costs are increasing: smolt, labour, capital costs et.c

«Other operating costs» slightly decreasing

This is where a bulk of lice cost shows



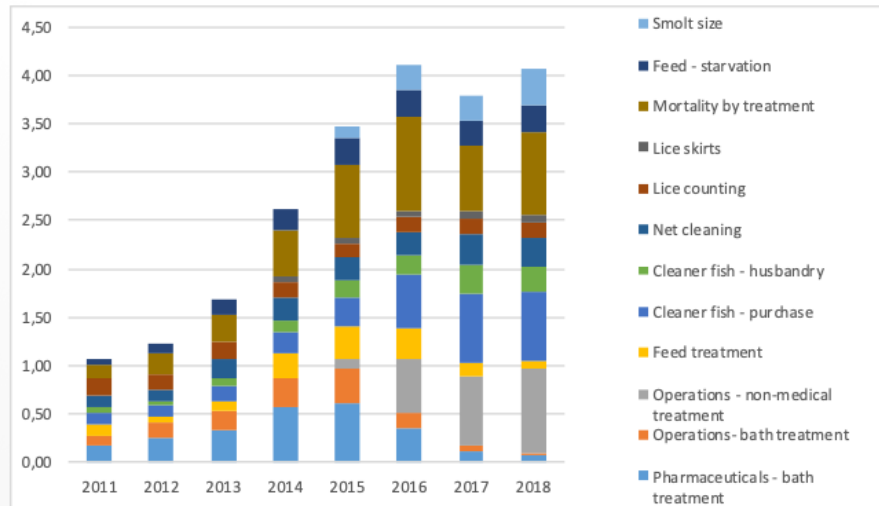
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- More preventive measures
- Still costly treatment
- Services purchase is still high

Lice cost is no single cost

Direct costs (NOK) per kilo produced



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Monitoring
Preventive measures
Treatment
Mortality
Starvation

Lice affects operations in many ways, which I will come back to

Cleaner fish

Cost per kilo produced:

- Cost price
- Transportation
- Labour
- Hide
- Feed
- Net cleaning



1,20 NOK/kg

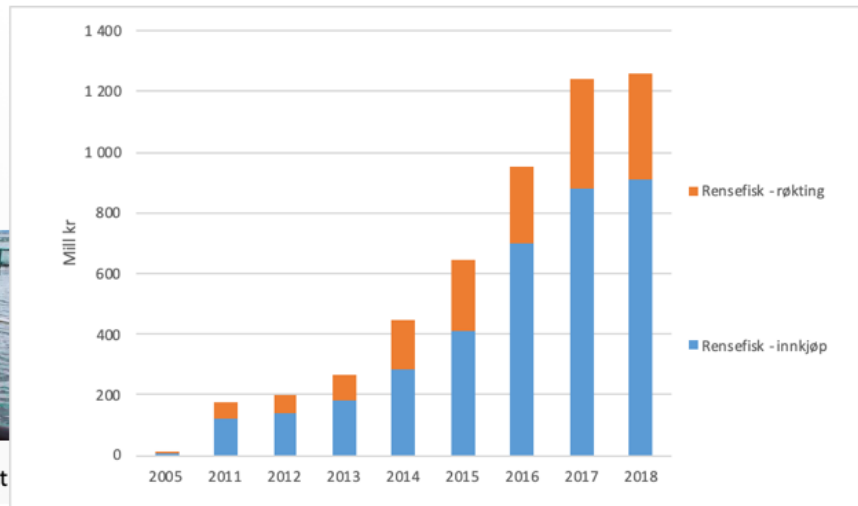


For those using cleaner fish we have calculated a cost of NOK 1,20 kr per kilo produced

Total cost of cleaner fish



Photo: Anders Furuset



The use of cleaner fish is still large, but use has been reduced slightly

Just below 40 million cleaner fish in 2018, price now at above 20 NOK per piece

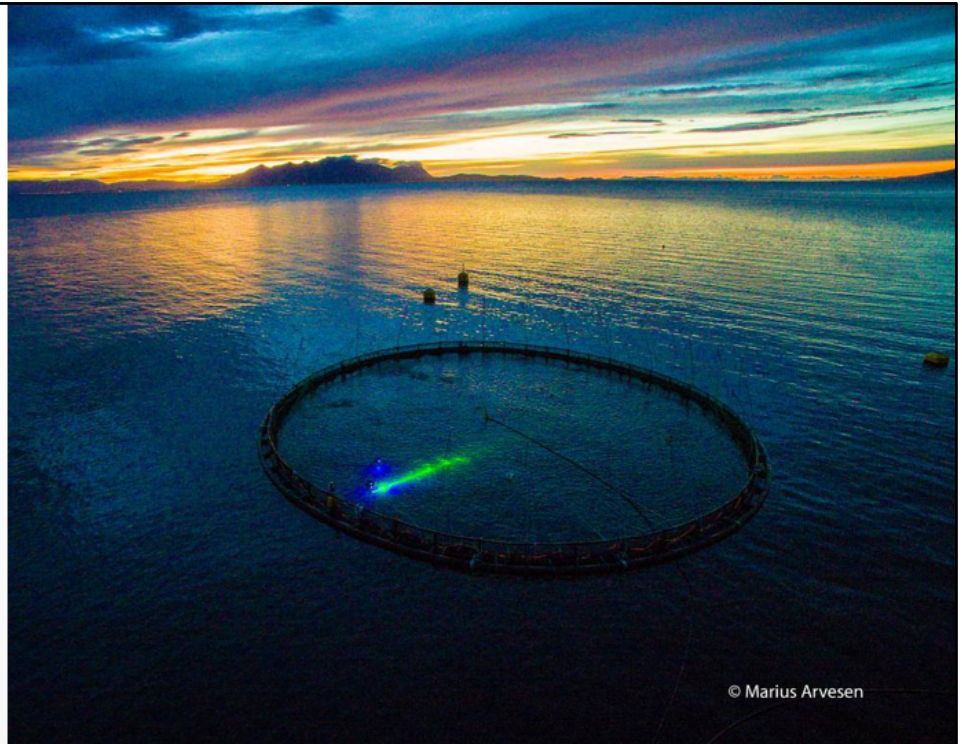
We see that most costs are related to the purchase of the fish, or production of the fish (blue), but also labour (orange)

Laser

Investment cost
Service fee
Limited work effort



0,34 kr/kg
(per kilo produced)



© Marius Arvesen

Laser is not yet widely used

But for those that use it, the cost is about 0,3 or 0,4 NOK per kilo produced

Bath treatment

Pharmaceuticals
Operations



0,5 - 1 kr/kg
(per kilo treated)



18.08.2015

Kostnadseksplasjon i lakseoppdrett?

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Bilde lånt fra AQS, en leverandør av avlusningstjenester

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Bath treatments are huge operations, thus very expensive

This is a quite typical operation, involving 4 boats, and with hydrogen peroxide, this one is huge

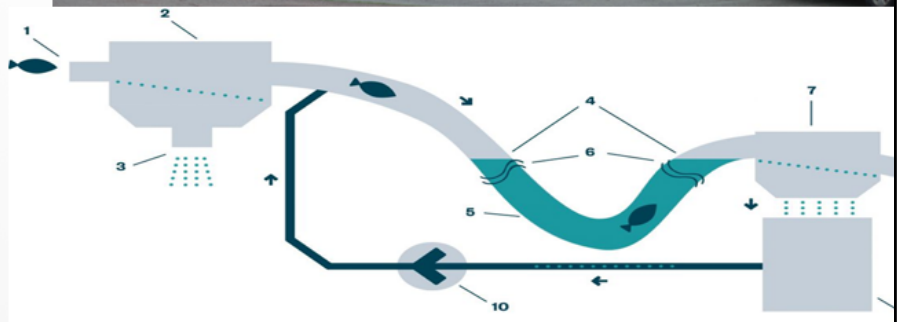
10-12 people involved, long hours for three days to clean one site

Non-medical treatment

Here: Thermolicer

Hydrolicer
Optilicer
Flatsetsund
Skamik
Et.c

 **0,55 kr/kg**
(on average)

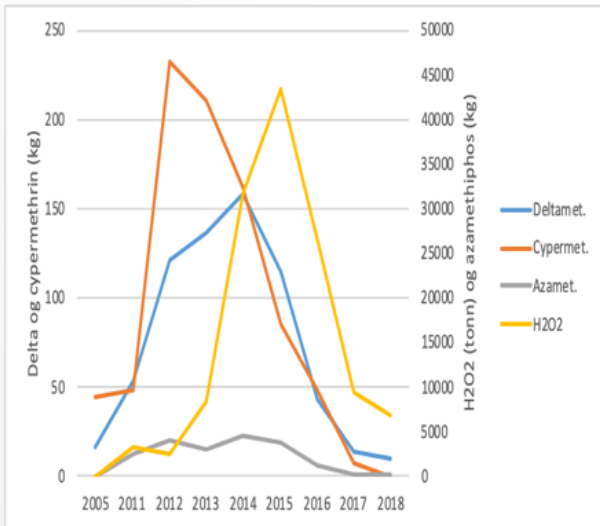


There are several concepts for non-medical de-licing

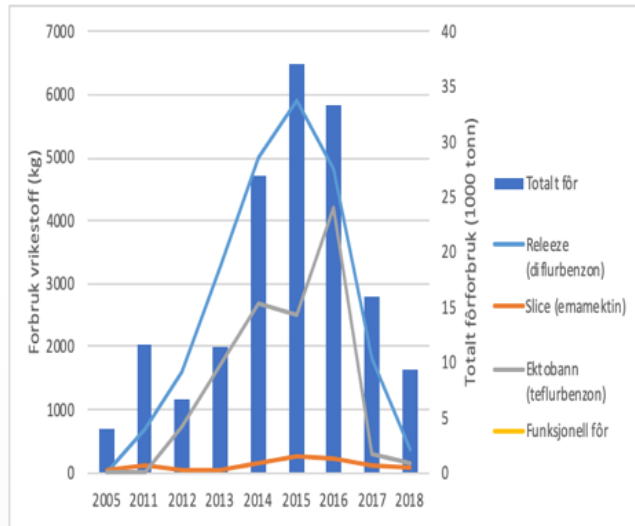
They require huge investment, but less people involved, no medicals

Mortality is in some cases high, very much determining this cost

Pharmaceuticals



Feed additives



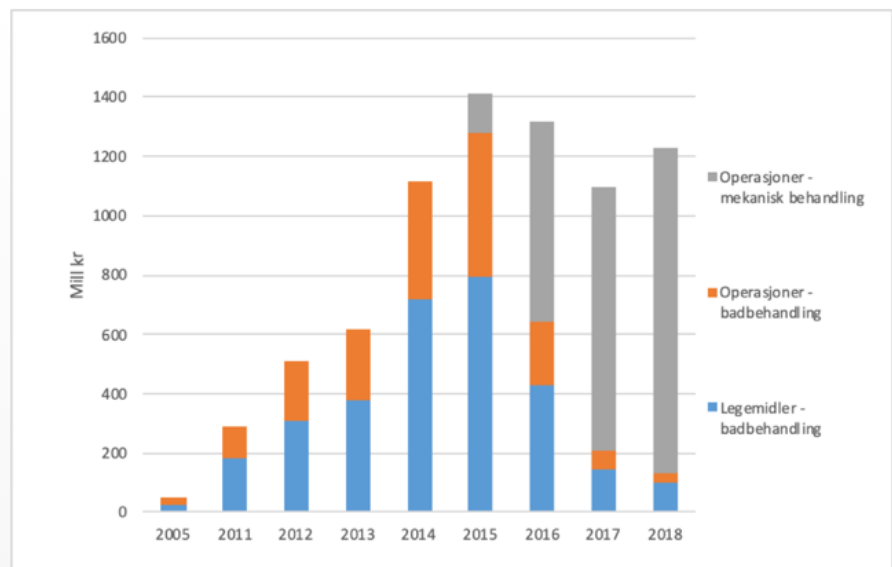
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The use of Pharmaceuticals has been dramatically reduced

The same applies for feed treatment

Total cost for bath and non-medical treatments



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Overall cost of treatment is lower than the top in 2015, but did increase from 2017.

Three major trends:

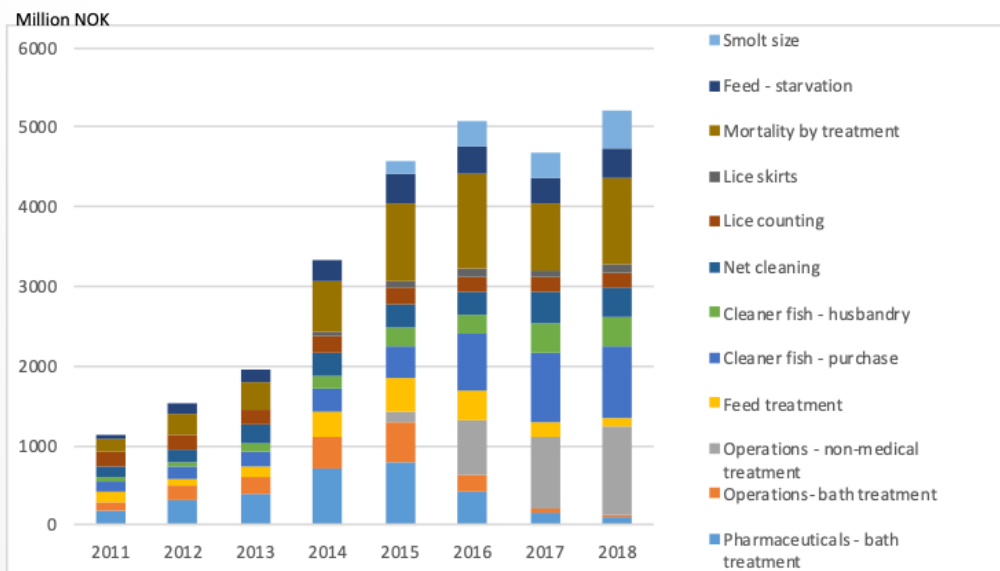
This shows the transition from medication to non-medical treatments

Less treatment involving medication

More non-medical treatment

Treatment of single or fewer pens

Direct "lice cost"



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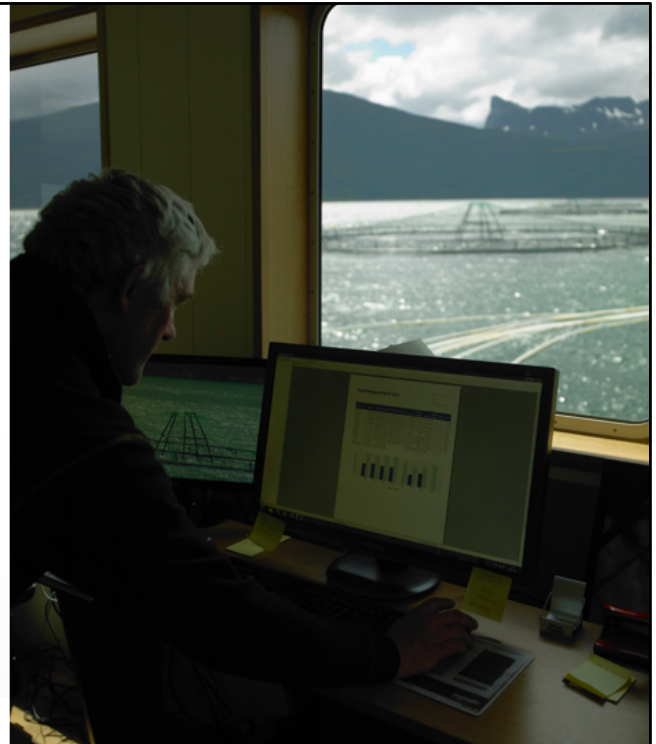
This is an estimate of the direct costs associated with lice

We have not counted the effect of «lost» production

This does not include indirect costs, which I will touch upon later

Indirect lice costs

- Smolt:
 - Larger smolt
 - Lower smolt yield
 - Investment in smolt facilities
- Higher labour cost per kilo
- Weaker biological results
 - Higher mortality?
 - Higher FCR?



Lice affects production in many ways, and it ways that make production more costly

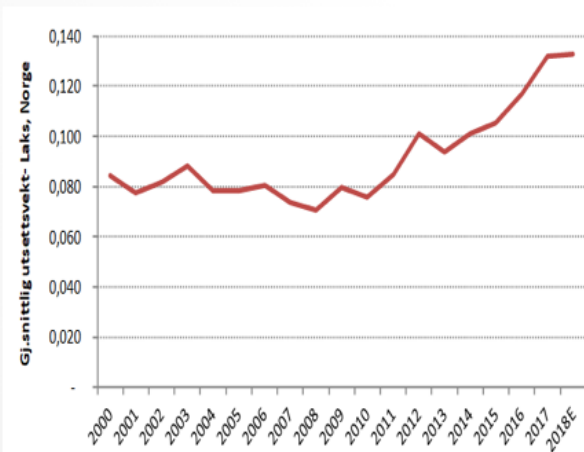
The effect of lice is not just evident as an increase in «other operating costs», but in almost all cost items

I will not go into detail on this, as there are more factors than lice that affect each of these cost components

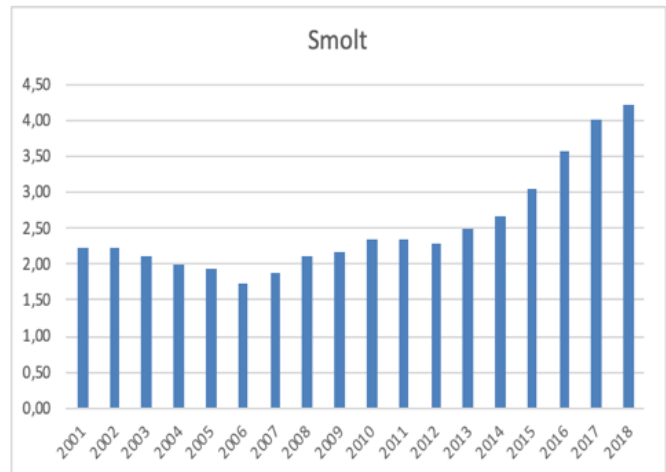
And that is also why it is so difficult to calculate the effect of lice on these

Lice is an important driver for larger smolt

Weight of smolt released



NOK per kilo gutted salmon



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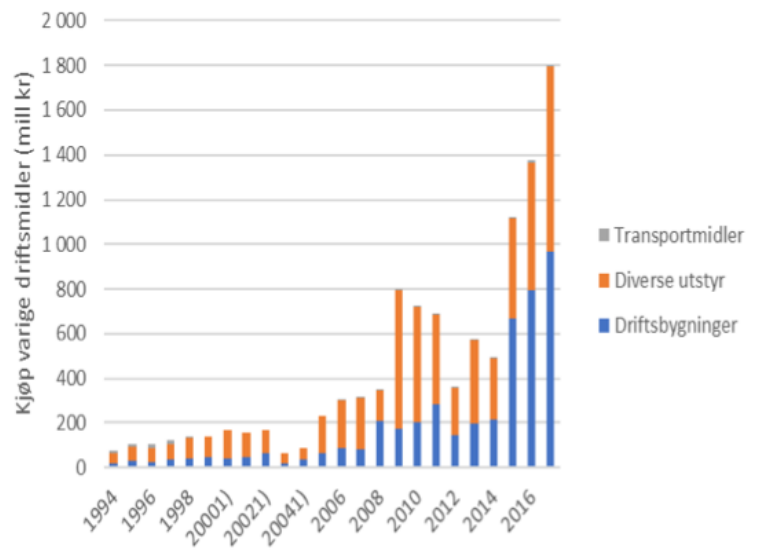
Smolt cost per kilo produced has increased markedly lately

75 % increase last 5 years

The increased weight of released smolt is one explanation

Investment in smolt facilities

(non-financial assets)



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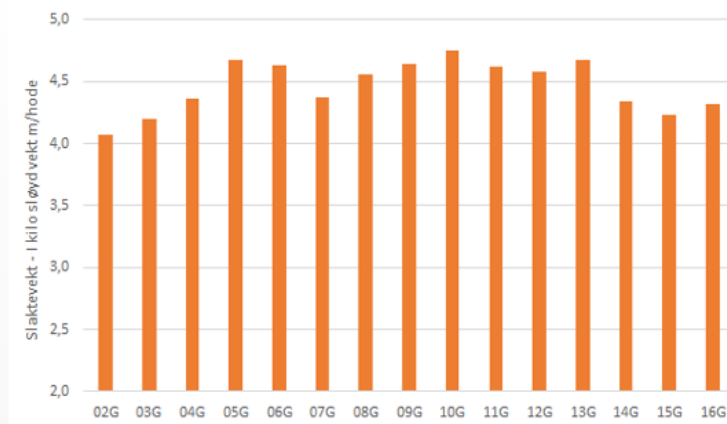
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We see a totally new level of investment from 2015 to 2017

So, investment adds to smolt cost, (or to «Depreciation» if smolt production is in the same firm as production)

Weight at harvest

Downward trend

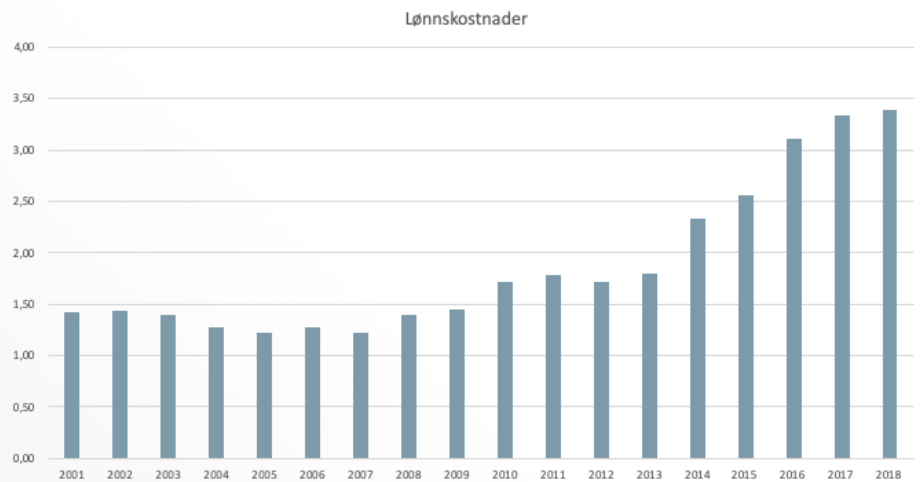


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Longtime downward trend in weight at harvest, fewer kilo produced

Labour cost



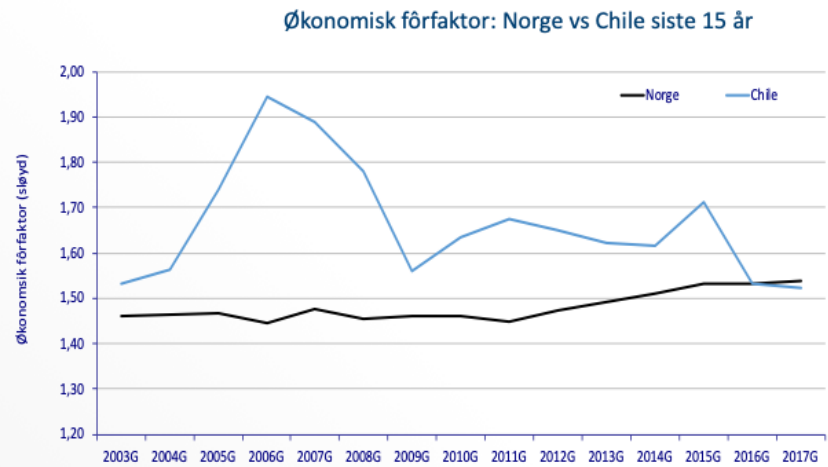
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Labour cost has increased steeply, as prevention and treatment for lice increase the need for labour

And this even underestimates the development, as much of this work is outsourced, and is found under «Other operating costs»

Feed conversion ratio



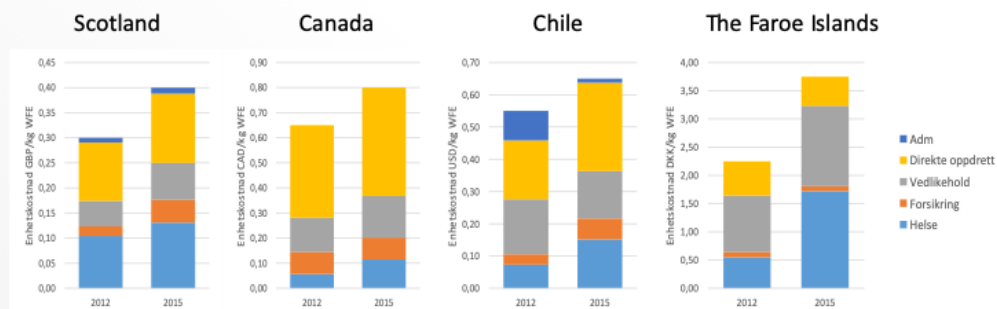
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FCR has increased in Norway, as a result of treatment, with mortality and lower harvest weight

Similar development in all regions



Our examples are all from Norway,

but development is similar in all regions, although with differences

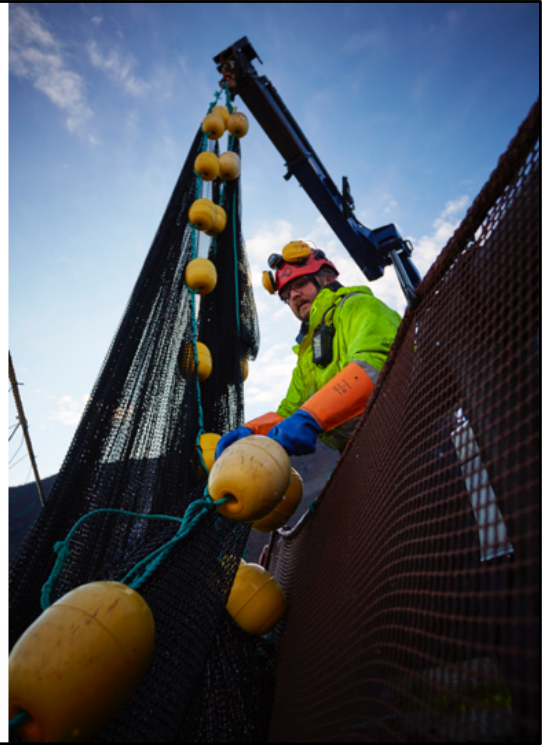
– not sure if that is a comfort or not...

These numbers are from last time we did a comparison between producer nations, a new one is on its way soon.

“Take home messages”:

- Lice is still an important cost component
- Cost of treatment is reduced, but still high
- Cost of prevention increases
- The lice situation affect farming practices – most often in a cost-increasing way
- All salmon-countries have similar challenges

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Takk til FHF!