

Highlights 2019 and Outlook for Land Based Salmon Farming

NASF, 5 March 2020

Knut Nesse, CEO



An underwater photograph of a salmon farming net. The net is made of a dark mesh and is filled with numerous salmon. The water is clear and blue, with sunlight filtering through from the surface. The fish are swimming in various directions, some near the net and others further away.

TECHNOLOGY FOR SUSTAINABLE BIOLOGY

Complete Solutions

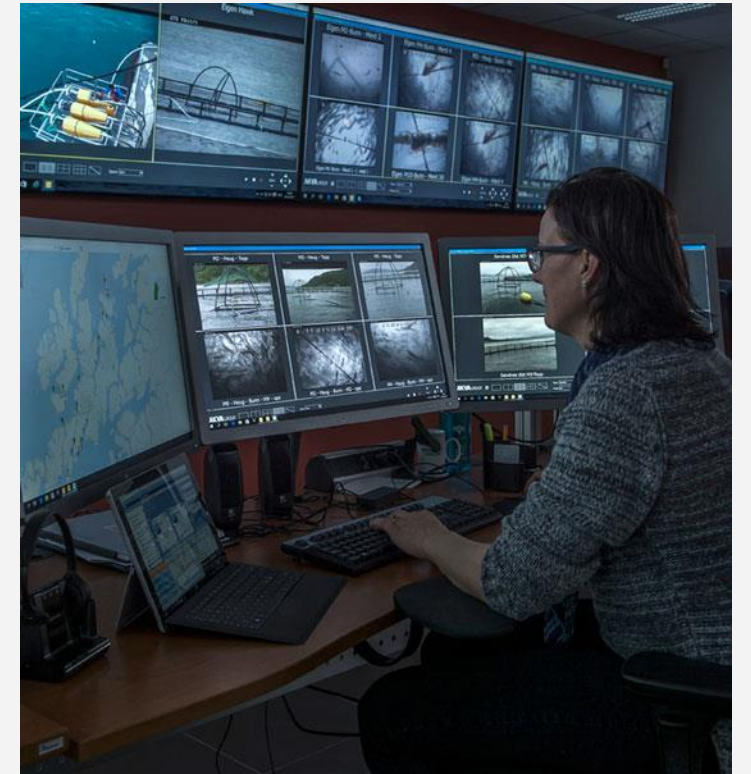
Cage Based Technology



Land Based Technology



Digital Technology



AKVA group in brief



Leading
technology
and service
partner



Listed on
Oslo stock
exchange
since 2006



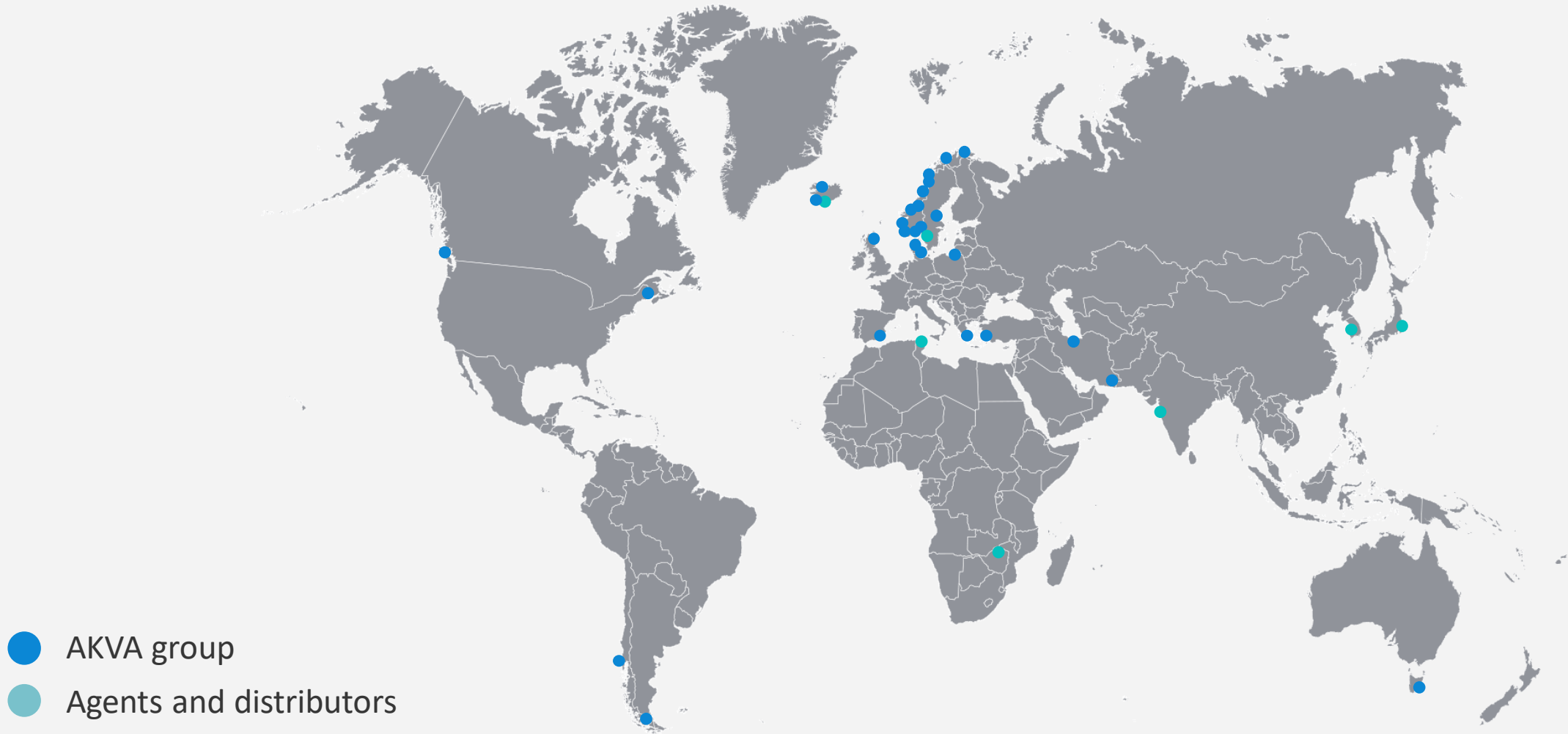
Deliveries
in 65
countries
over 40
years



Companies
in 11
countries.
Approx.
1500
employees



Global Presence





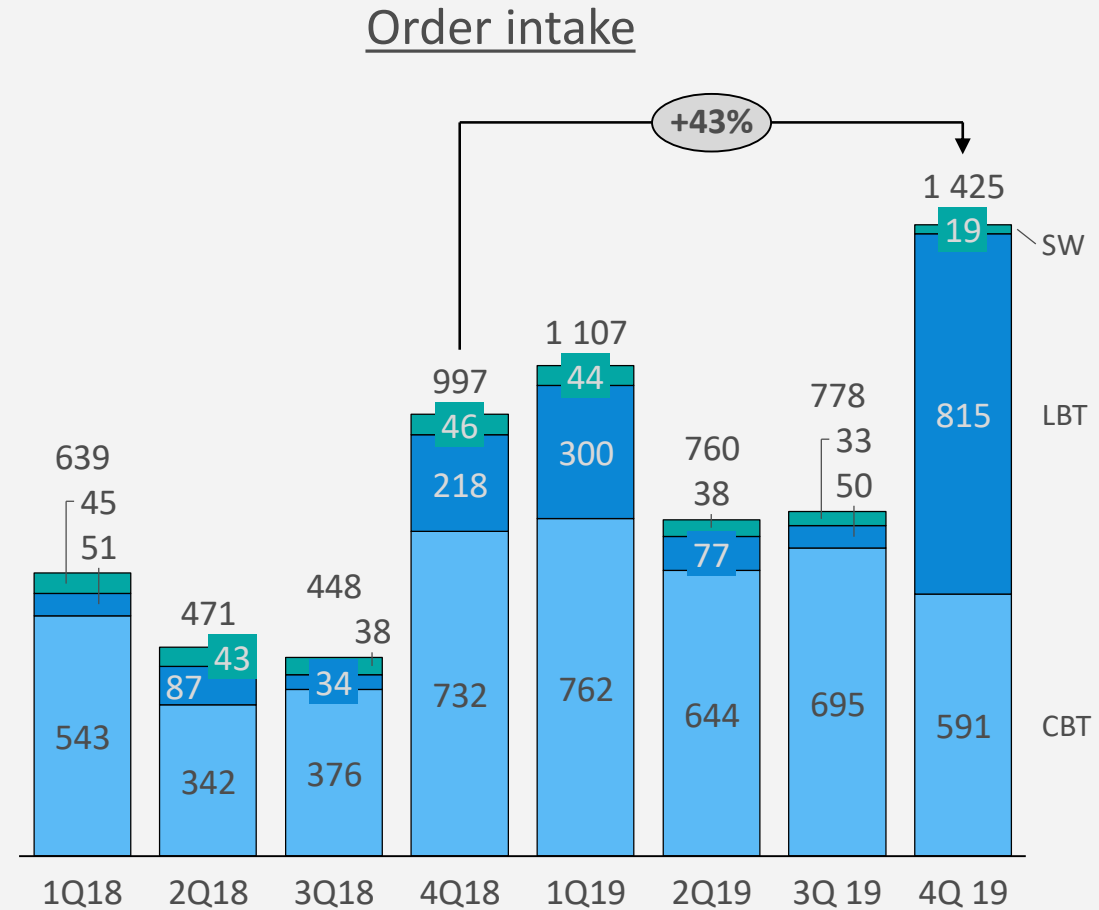
 Highlights 2019

Technology for sustainable biology

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Strong order intake

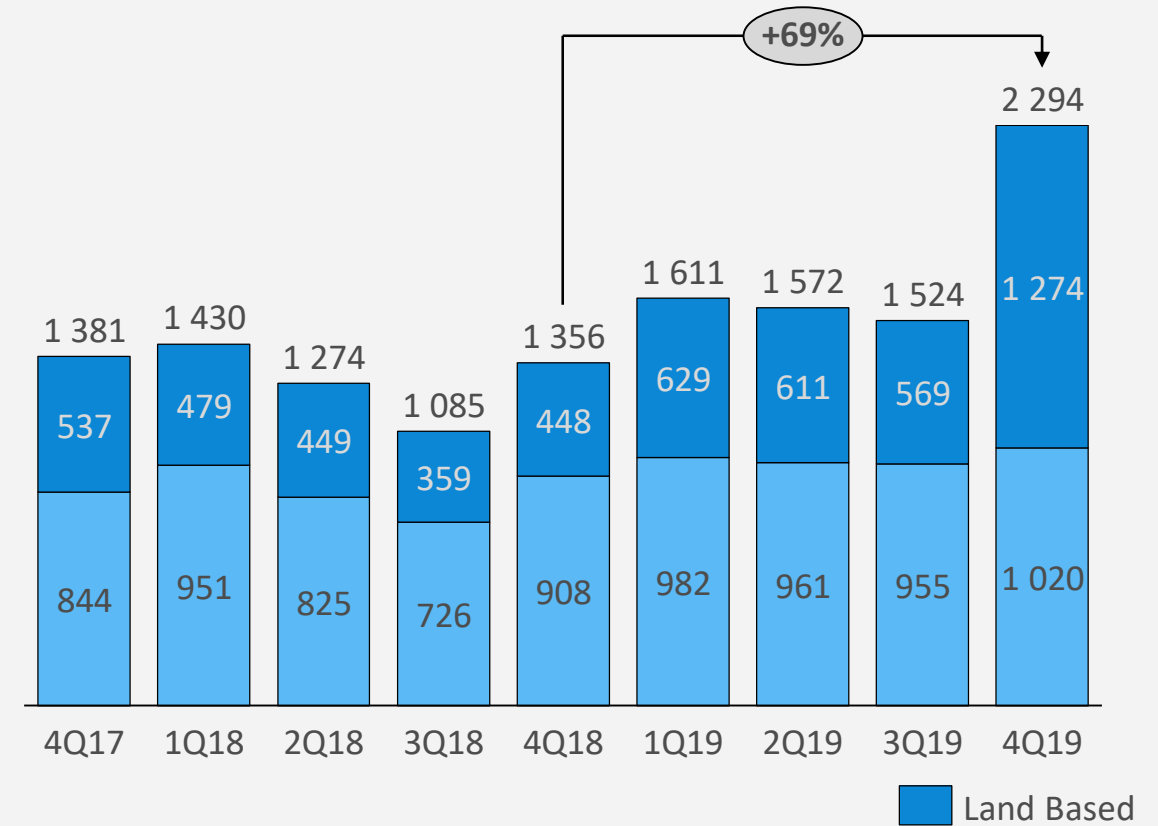
- Order intake of 1425 MNOK
- 500 MNOK order with Nordic Aqua Partners for a land based salmon farming facility in China
- 10,3 MEUR contract with Cooke Aquaculture for a smolt facility in Chile.
- Order signed for phase 3 of a smolt facility at Tytlandsvik Aqua
- Strong quarter for Europe & ME, especially within export
- Last twelve months order intake of 4,014 MNOK, compared to 2,555 MNOK full year 2018



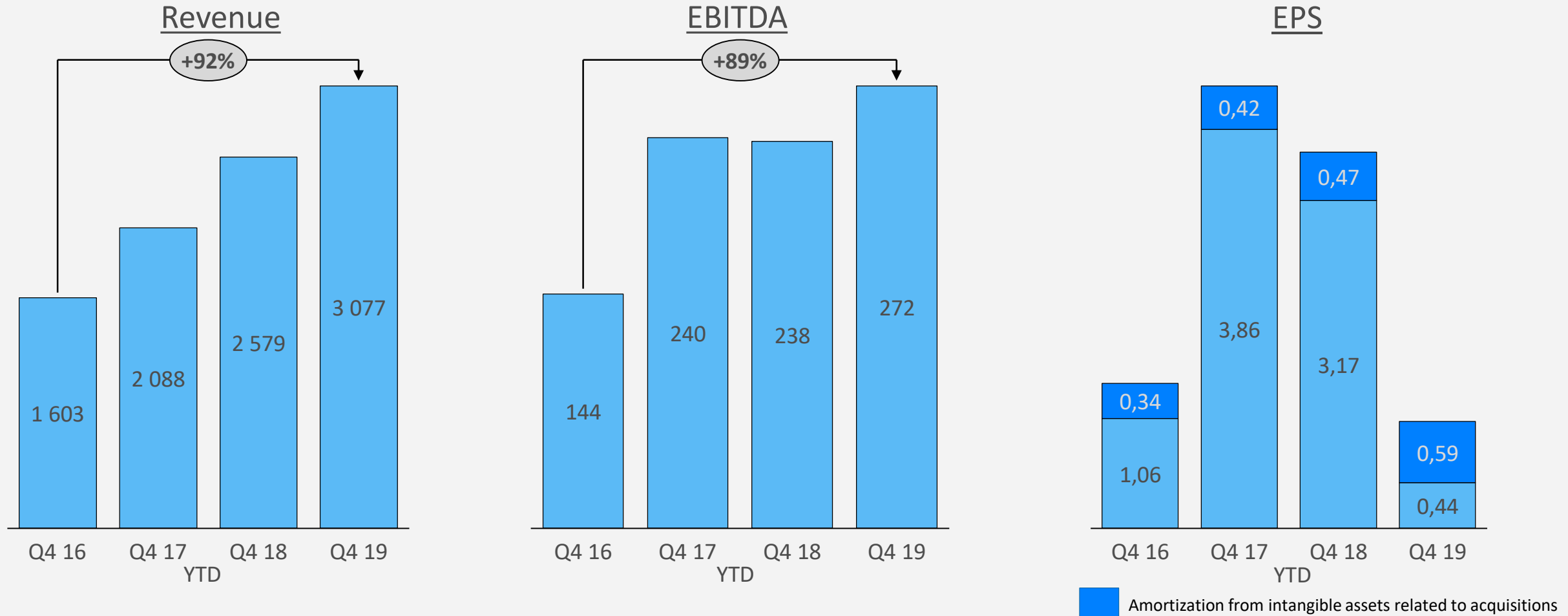
Record high order backlog

- Fourth quarter 2019 – Highlights
 - Order backlog at end of December of 2.3 BNOK
 - Included orders in Q4 for a RAS facility in Chile with Cooke (10,3 MEUR) and a RAS facility (full grow out) in China with Nordic Aqua Partners for 500 MNOK
 - Solid growth in backlog also within export, Scotland and Spain
 - Other larger orders in backlog includes 4 barges for Chile with a value of 12,6 MUSD
 - Won Land Based tender with Russian Sea of 11.9 MEUR in June, not yet in backlog

Order backlog



Key financial metrics



In August 2018, number of shares increased from 25 834 303 to 33 334 303. When calculating the EPS the monthly average shares outstanding has been used.

Outlook – AKVA group

- Strategy process to be revisited, on the basis of strong financial capacity and amongst other stronger focus on full grow out RAS facilities within the Land Based segment
- New organizational structure established. Plans for further strengthening the organization under development
- Service station for nets to be built in northern Norway (with partner), plans for additional station underway
- Plans underway to further expand net sales internationally
- Presence in eastern Canada, good progress made in the quarter with regards to establishing a service business – agreement signed for the purchase of Newfoundland Aqua Service Ltd.
- Strong order backlog, especially within Land Based, profit review of backlog carried out
- Competitive position strengthened by new cage concept and waterborne feeding, launched Q3, as well as environmental sensor buoys and new digital camera launched in Q1 2020. New generation Tube Net (preventive sea lice solution) under development, strong interest in the market
- Digitalization strategy making further progress with additional installations for Precision feeding – pipeline is growing



Group Strategy process initiated – key themes

Land Based

On-growing
Post Smolt



Digital

Data Platform
Computer vision / AI



Innovation

Prioritization
Fish health concepts



Learning & Development

People and competence
Project and contract management

A photograph of a modern aquaculture facility. The image shows a long, narrow aisle between large, cylindrical tanks with corrugated metal walls. In the center, a metal staircase with railings leads up. Large black pipes run horizontally across the aisle, supported by metal frames. The ceiling is high with visible structural beams and lighting fixtures. The overall atmosphere is industrial and clean.

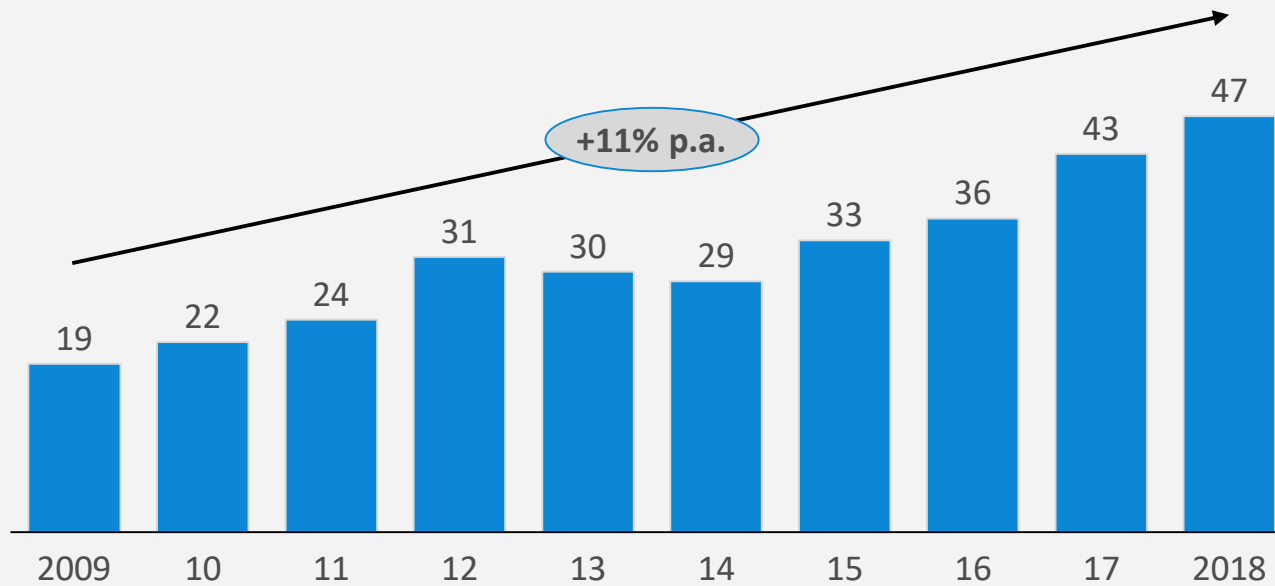
 The Norwegian Smolt Market

Technology for sustainable biology

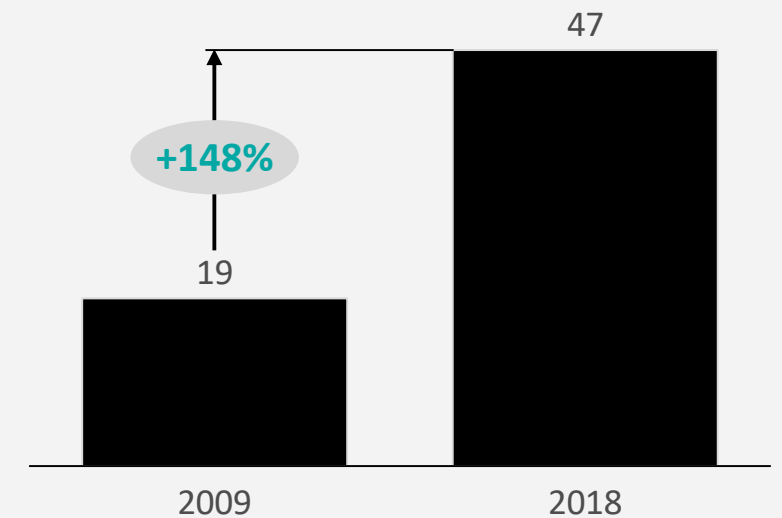
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Norwegian smolt production has grown 150% over the last 10 years

Smolt production¹; '000 metric tonnes WFE



Smolt production¹; '000 metric tonnes WFE



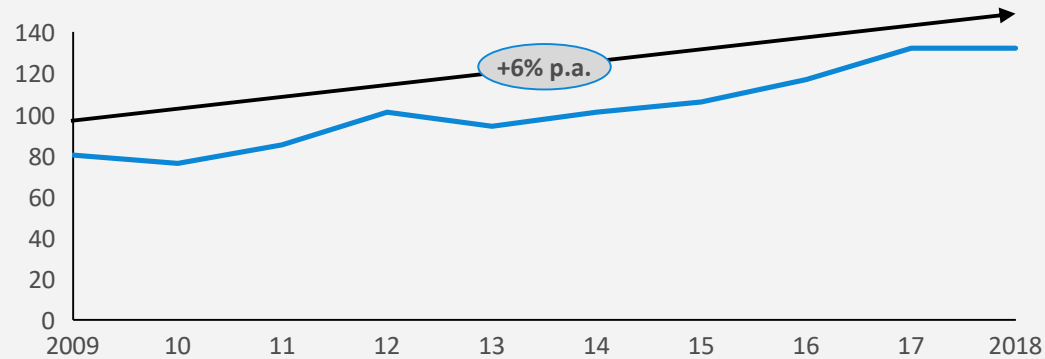
Source: Norwegian Directorate of Fisheries and McKinsey analysis

¹ Calculated based on volumes (number of units) and average smolt size

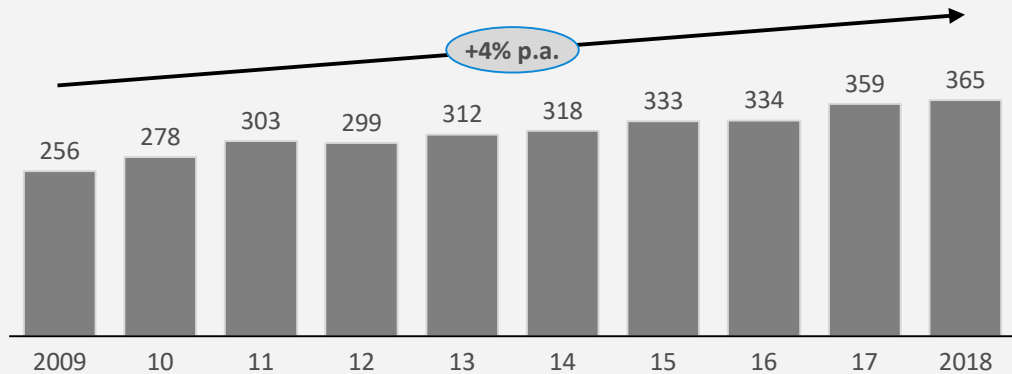
Technology for sustainable biology

Growth in Norwegian smolt production has been driven by both size and volume growth last 10 years

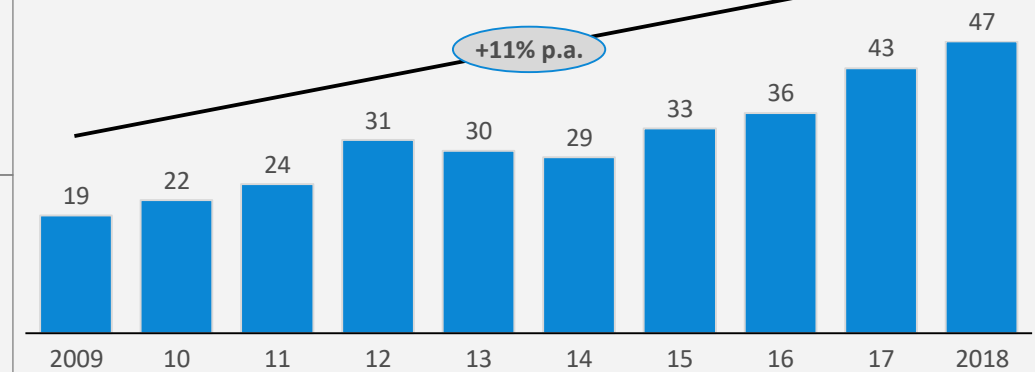
Avg smolt size, metric grams



Salmon smolt volume; '000 units



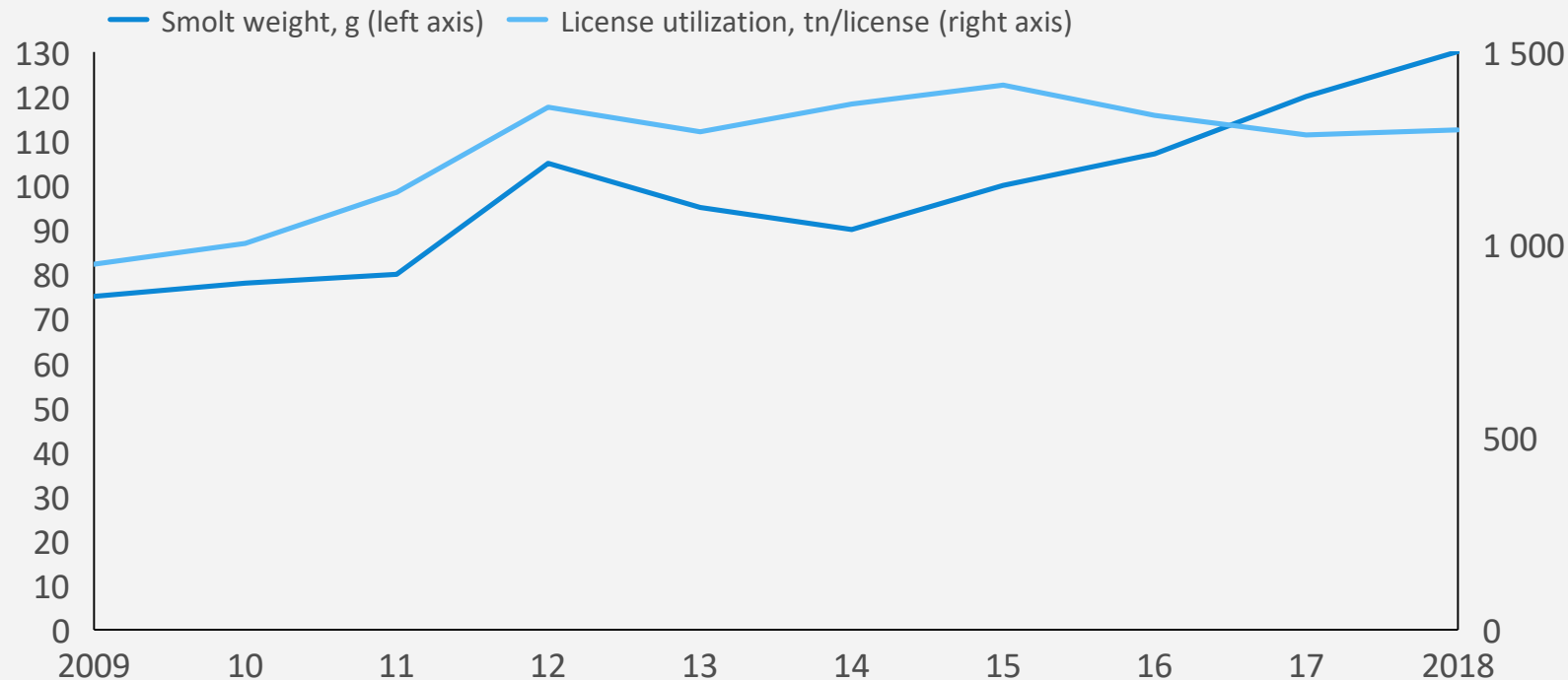
Salmon smolt production; '000 metric tonnes WFE



Source: Norwegian Directorate of Fisheries and McKinsey analysis

Utilization of sea licenses has increased in line with smolt size – Indicating smolt size is a key driver for improved utilization

Growth of smolt size and utilization rate,
g / metric tonnes



Norwegian **smolt size and sea production license utilization** have seen steady growth in the period 2009-2018, showing a **relatively strong growth correlation**

Average smolt size has grown from ~80g to ~130g from 2009 to 2018, while **utilization has grown from 950 to 1300 tonnes per license** in the same time period

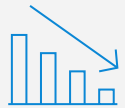
Source: Norwegian Directorate of Fisheries and McKinsey analysis

Farmers have been increasing smolt size to increase harvest, cut sea-costs and limit environmental footprint



Increased harvest volumes

- Larger smolt **increases harvested volumes** due to shorter time in sea which allows for **better license utilization**, as new smolt can be introduced more frequently
- Larger smolt implies **larger production at land which can be added to the total production in sea**



Cost efficiency of sea facilities

- Larger smolt need less time in the sea and are more robust – **improved survival rate from less exposure to biological risk**, reducing cost of mortality and biological treatments
- Producing more on land allows for **more efficient production cycle**. This can either be used to **increase production in sea** or **keep sea production constant**



Environmental benefits and animal health

- **Improved animal health** – Reduced sea time leads to lower disease pressure and sea lice exposure
- **Better environmental footprint** – more time for nature to recover if fallowing periods are extended, or potentially reduced fish escapes from fewer accidents when intervening with the fish

“We have designed a smolt strategy that will yield significantly higher license utilization and result in higher harvest volumes”

Major farmer

“Farmers focus on larger smolt as more robust, with lower mortality. The BIG advantage is less risk of lice and other diseases. Less time in the sea will reduce the biological risk, and thus reduce costs”

Production consultant

“The primary driver for increased smolt size is lice and other diseases”

Medium farmer, Mid-Norway

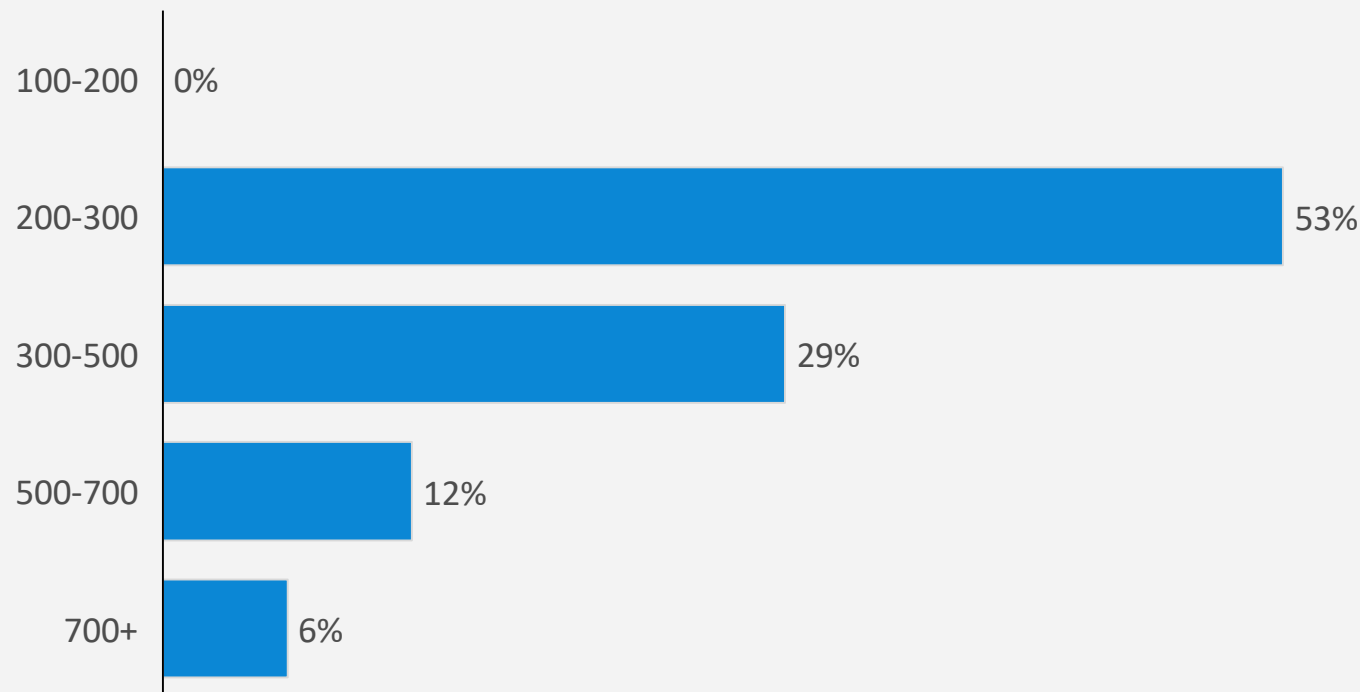
“We face big biological challenges with for example lice – sometimes treatment is needed every 3rd week. Larger smolt is a way to fight this”

Medium farmer, Mid-Norway

Source: McKinsey analysis

Half the industry targets 200-300 gram smolt, other half is looking for 300-1000 gram

What smolt size does your company plan for the next 10 years?



Source: McKinsey analysis

"We have built to increase from 100g to 200g next 5 years. Depending on results of other players we will not yet defined a specific size goal, but expect to be at 200g on average in 5 years. This is aligned with the trend in our area (Trøndelag)"

Medium sized farmer

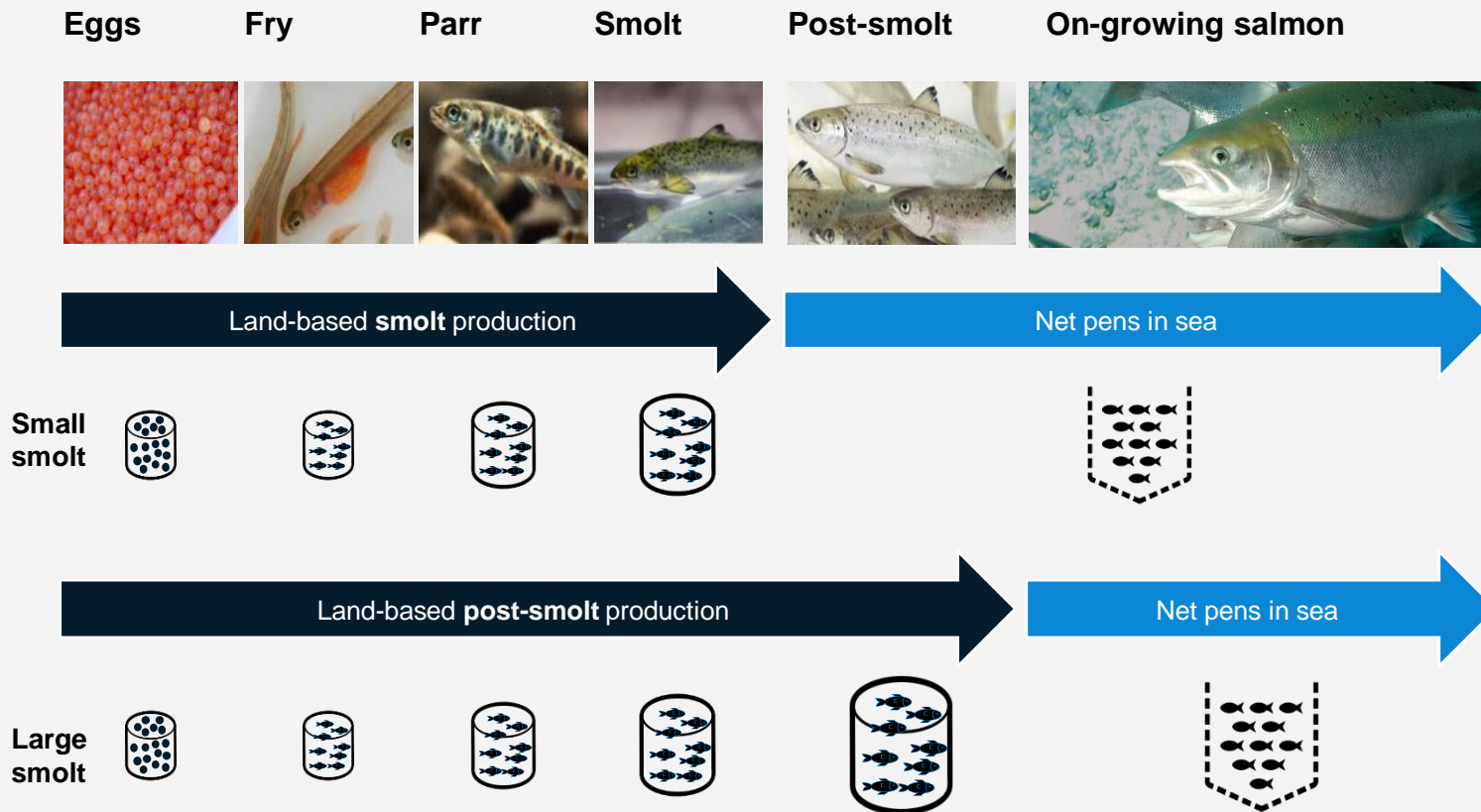
"I believe the smolt size will double next 5 years from current level at ~120g, and continue from there. We are planning and investing for 250g and up to 400g, which I believe is aligned with the national trend"

Small farmer

"We are planning to start release of 500g smolt Q3 2019, moving towards 40-50% of smolt release at this size by 2021. If this is successful we expect to have 100% at 500g in the years to come. This will require more investments in facilities"

Larger farmer

Larger smolt allows for more efficient sea production, but farmers waiting to see actual results



Source: McKinsey analysis

“We’re not sure exactly how much more we’ll be able to produce by increasing the smolt size and how large smolt we can use – it’s a learning period for us”

Major salmon farmer

“As a farmer we have so much we want to achieve with larger smolts, and in theory everything should be fine, but there is currently very little practical experiences, in particular for smolt sizes 400 gram and up”

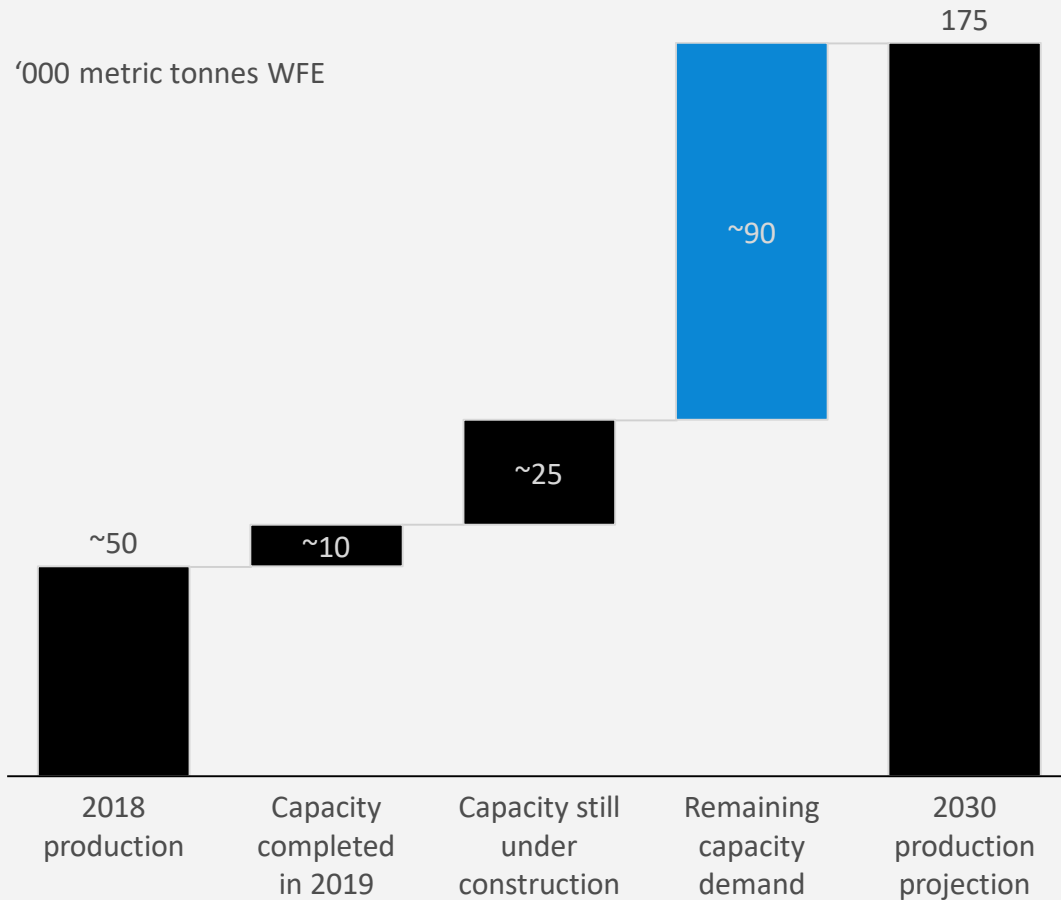
Major salmon farmer

“How large does smolt need to be to have two cycles per following period? We do not know, and in the industry there are many opinions on this.

Further, this would require so large investments, and this is not on the table yet, we want to see results on larger smolt before we can consider that”

Major salmon farmer

The Norwegian market is short 90k tonnes of smolt capacity in 2030 - additional 40-50 facilities to be built or expanded



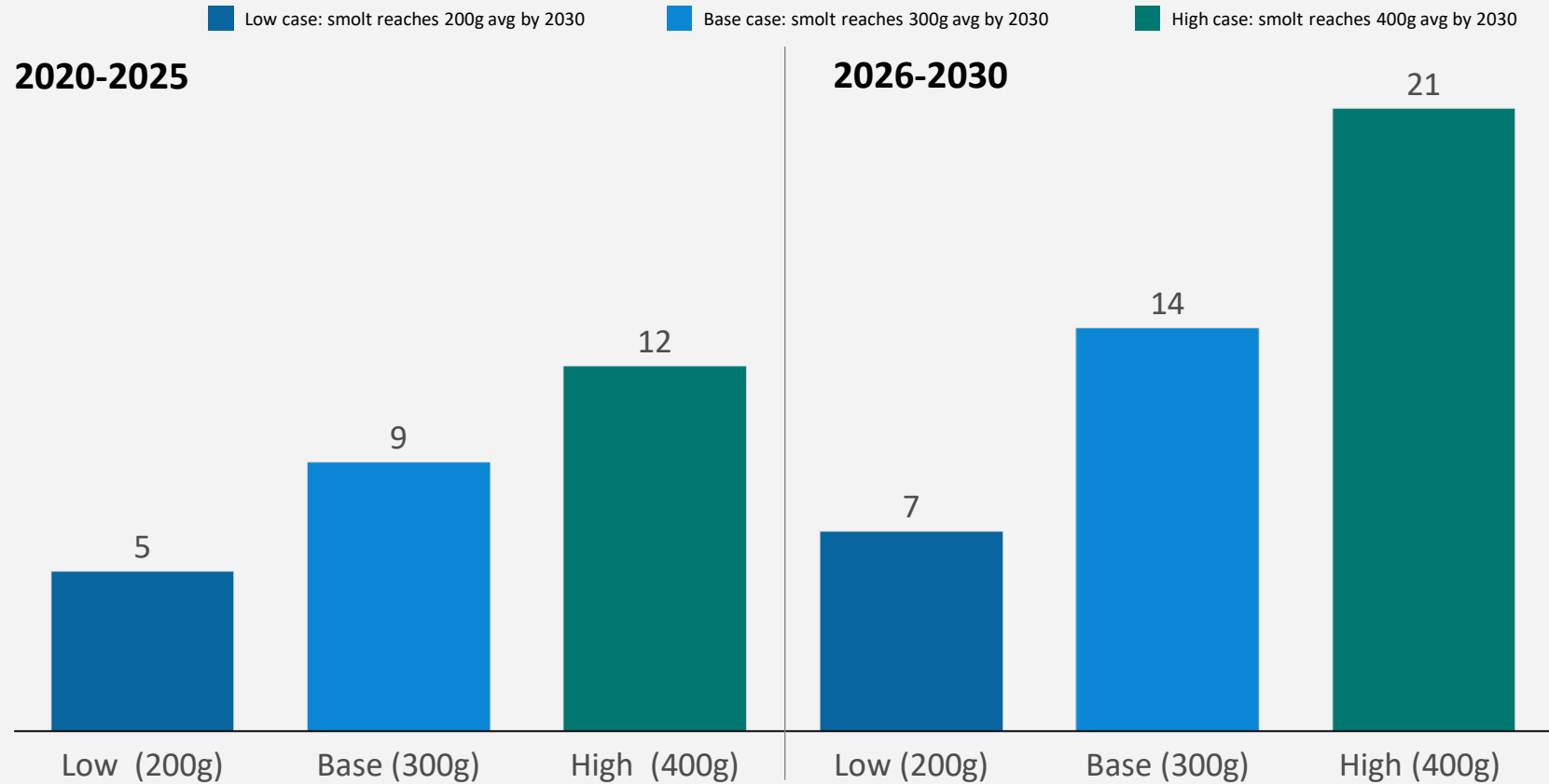
~10k tonnes new capacity was completed in 2019, and facilities with total capacity of **~25k tonnes are currently under construction**

However, the **market is still short ~90k tonnes of the projected capacity demand** in 2030 when considering an average smolt size increase to 300g next 10 years, as well as increased production at 4% per year

Assuming **average smolt facility** to operate at **1500-3000tn capacity** in the next 5-10 years, **40-50 facilities are yet to be constructed or expanded** to supply the projected demand of 175k tonnes smolt per year by 2030

Source: McKinsey analysis

Expected investments in Norwegian land based farming facilities towards 2030 is NOK 12-33Bn, dependent on desired smolt size



Market is driven by biomass volume and building costs

- Total smolt production is expected to grow with 55-160,000 tonnes in the next 10 years
- Smolt number is expected to continue to grow at 4% per year
- Smolt sizes in 2030 considered are:
 - Low case = 200 gram
 - Base case = 300 gram
 - High case = 400 gram
- Capex per 1000 tonnes
 - New facility: NOK ~220Mn
 - Expansion: NOK ~140Mn

Source: McKinsey analysis



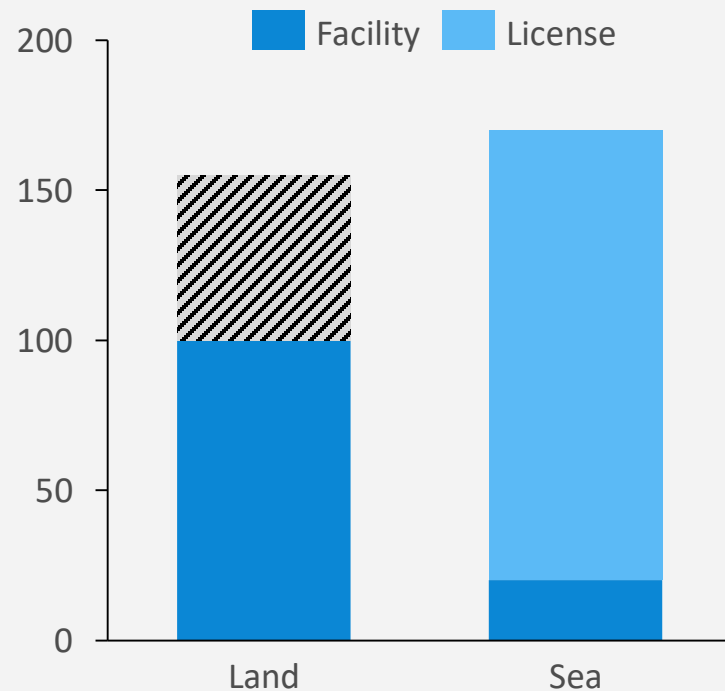
 Land Based Salmon Farming

Technology for sustainable biology

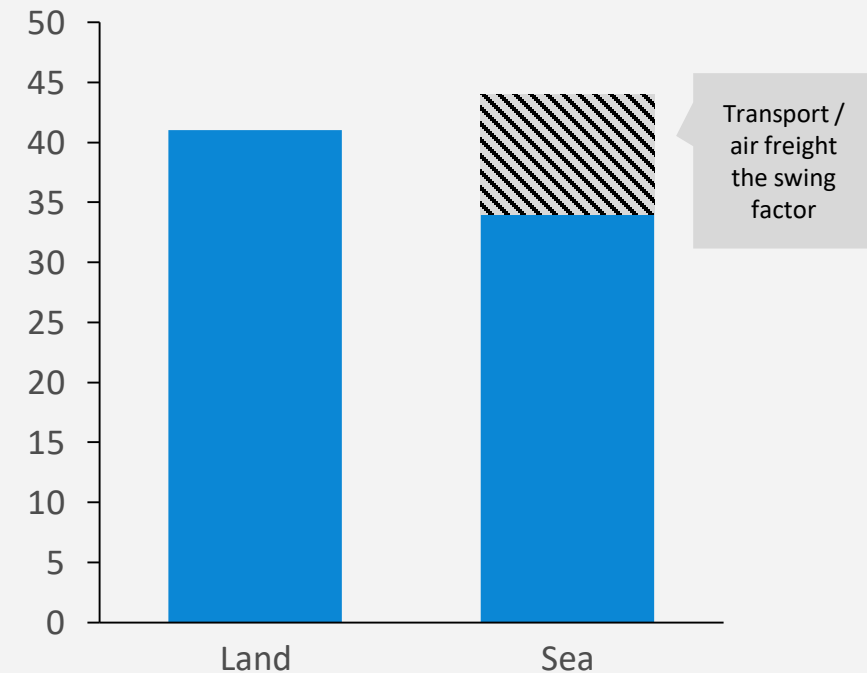
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Land based salmon farming has become financially relevant ...

Capex for per 1000 tonnes, NOK millions



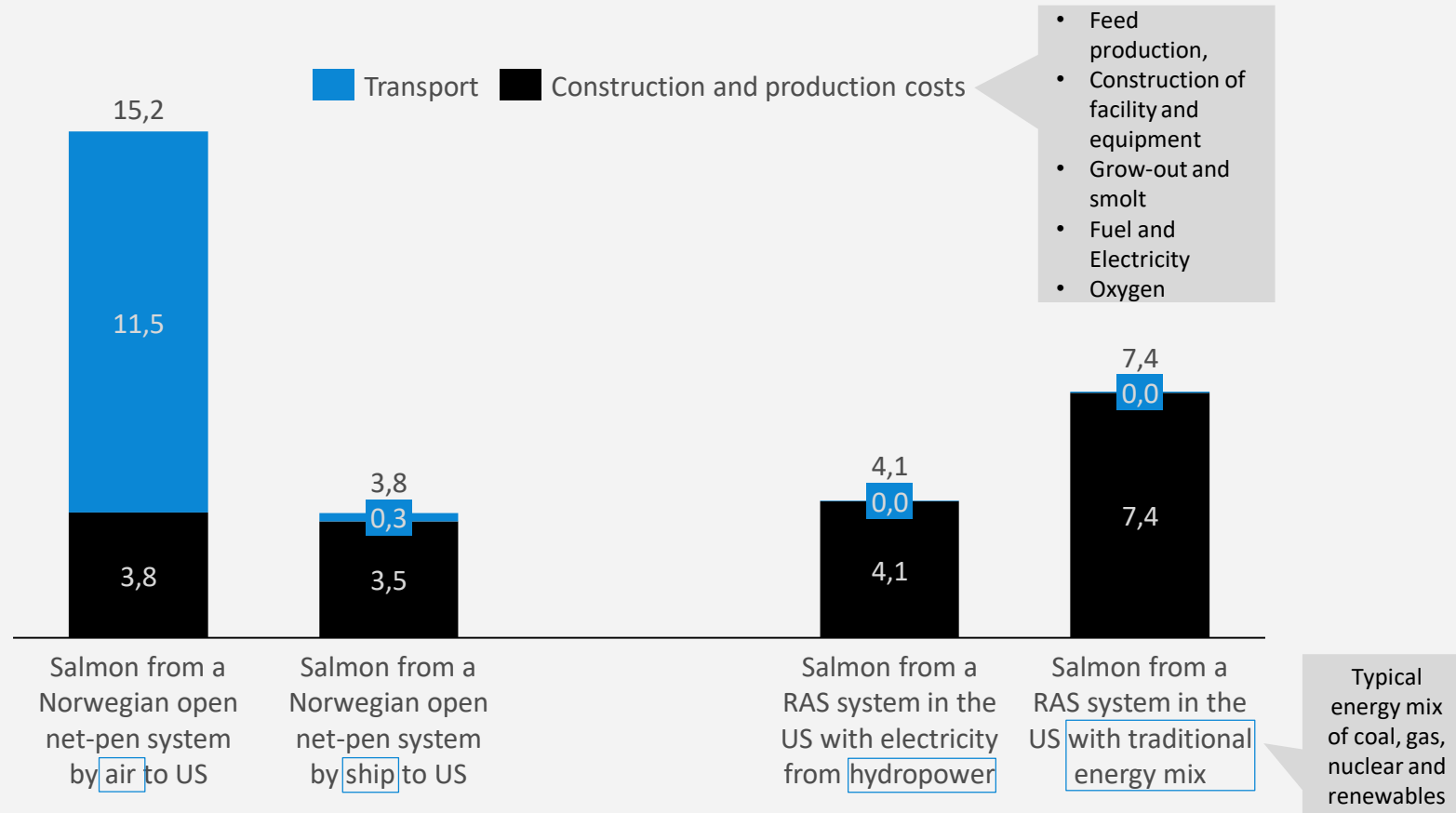
Opex, NOK / kg



Source: Norwegian Directorate of Fisheries, DNB and AKVA group analysis

... and is also competitive in a sustainable context

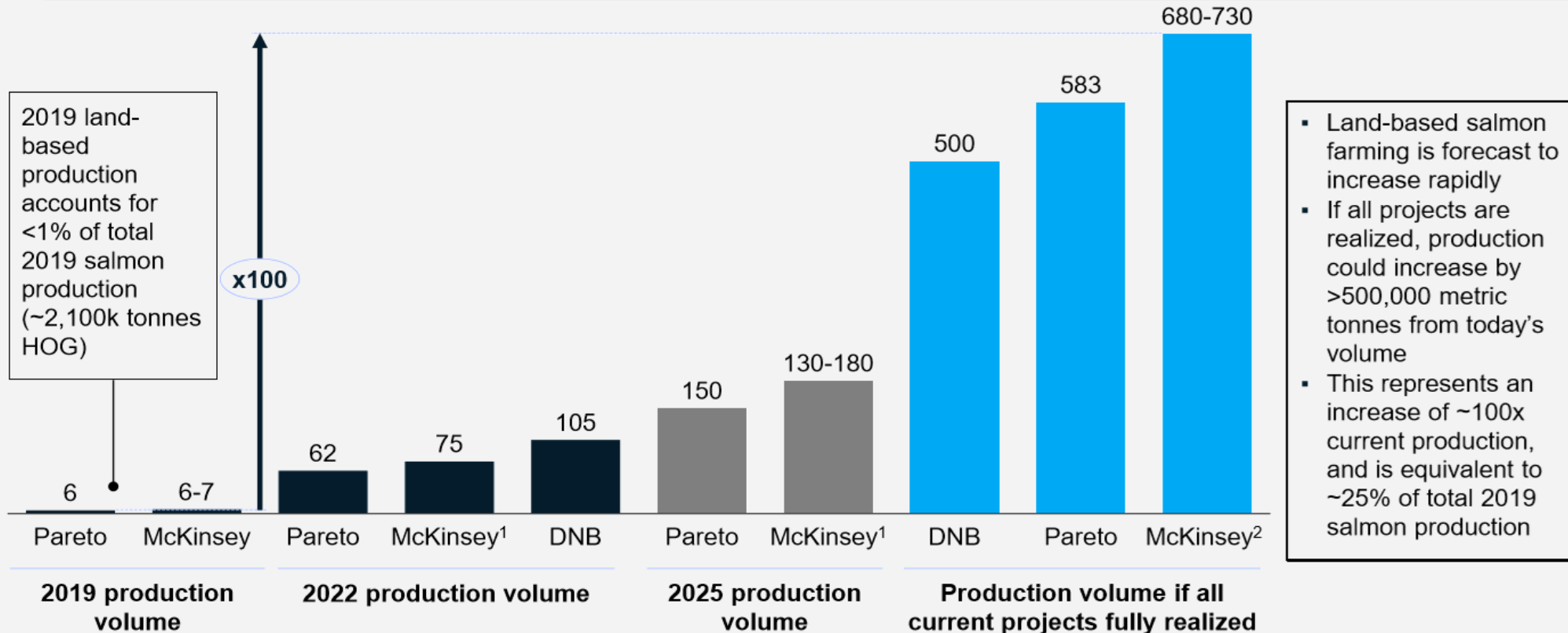
CO₂ eq. per kg



Source: The Norwegian Aquaculture Analysis 2019, EY (Liu, Rosten, Henriksen, Hognes, Summerfelt and Vinci: Comparative economic performance and carbon footprint of two farming models for producing Atlantic salmon (*Salmo salar*): Land-based closed containment system in freshwater and open net pen in seawater)

Land based salmon farming expected to yield 150k tonnes in 2025...

Land-based salmon production by year; thousand metric tonnes HOG



Source: McKinsey analysis

... and number of planned projects beyond are significant

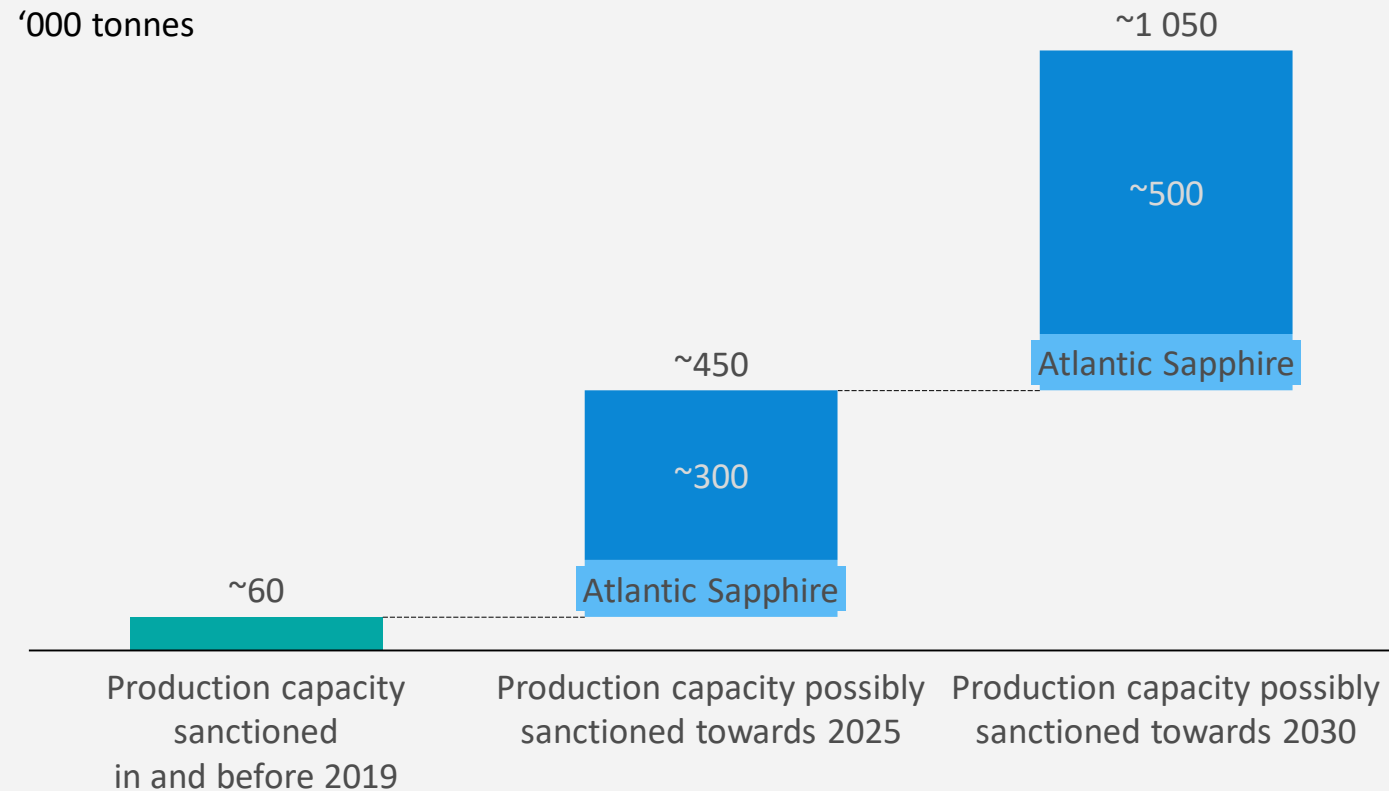
- The list of planned land based salmon farming projects are increasing day-by-day
- Current planned capacity is between 750 – 800 thousand tonnes
- Complex project characteristics; new customers, equity and debt financing need to be obtained, operational competence need to be built in new markets etc.
- Short/medium term limitation in how many projects the supplier industry can undertake simultaneously

Planned on-growing projects per May 2019:

Navn	Land	Norsk	Slakt	Prod. planer				
1. Salmon Evolution AS	Norge	Ja	Nei	28.800 tonn				
2. OFS Andenes AS	Norge	Ja	Nei	20.000 tonn				
3. Erko Seafood AS	Norge	Ja	Nei	15.000 tonn				
4. OFS Måley AS	Norge	Ja	Nei	15.000 tonn				
5. Andfjord Salmon AS	30. Pure Salmon (5 anlegg)			Kina	Nei	Nei	100.000 tonn	
6. Havlandet RAS	31. Shandong Oriental			Kina	Ja	Ja	20.000 tonn	
7. Tomren Fish AS	32. Nordic Aquapartners			Kina	Ja	Nei	8.000 tonn	
8. Aquaculture Innovation AS	33. Xinjiang E"he Construction			Kina	Nei	Nei	1.000 tonn	
9. Kobbøvik og Furuholmen AS	34. Tianjin Changjiufada Comp.			Kina	Nei	Ja	250 tonn	
10. Salmofarms AS	35. Cape d"Or			Canada	Nei	Ja	2.500 tonn	
11. Salmo Terra AS	36. Namgis Kuterra			Canada	Ja	Ja	2.000 tonn	
12. Gaia Salmon AS	37. Golden Eagle Aquaculture			Canada	Nei	Ja	1.000 tonn	
13. Vadheim Akvapark AS	38. Sustainable Blue			Canada	Nei	Ja	500 tonn	
14. Fredrikstad Seafood AS	39. Landeldi			Island	Nei	Nei	5.000 tonn	
15. Bulandet Miljøfisk AS	40. Samherji			Island	Nei	Ja	3.000 tonn	
16. Smart Salmon AS	41. Matorka			Island	Nei	Nei	1.500 tonn	
17. Oppdal Fjellmat og Fjellfisk AS	42. Pure Salmon Japan			Japan	Nei	Nei	10.000 tonn	
18. Lofoten Salmon AS	43. Proximar			Japan	Ja	Nei	6.000 tonn	
19. Hjelvik Matfisk AS	44. FRD/Mitsui			Japan	Nei	Nei	1.500 tonn	
20. Ecomarin Seafarm AS	45. West Coast Salmon			Ser-Afrika	Nei	Nei	4.800 tonn	
21. Atlantic Sapphire	46. South African Salmon			Ser-Afrika	Nei	Nei	2.500 tonn	
22. Nordic Aquafarms	47. Nordic Corporation			Ser-Afrika	Nei	Nei	1.800 tonn	
23. Whole Oceans	48. Global Fresh Fish			Russland	Nei	Nei	30.000 tonn	
24. Pure Salmon	49. «Vologda»			Russland	Nei	Nei	2.500 tonn	
25. Aquabanq	50. Vikings Label			Dubai	Ja	Nei	10.000 tonn	
26. AquaBounty	51. Fish Farm			Dubai	Nei	Ja	180 tonn	
27. Hudson Valley Fish Farm	52. Atlantic Sapphire Denmark			Danmark	Ja	Ja	3.000 tonn	
28. Inland Sea	53. Danish Salmon AS			Danmark	Ja	Ja	2.000 tonn	
29. Superior Fresh	54. Jurassic Salmon			Polen	Nei	Ja	1.000 tonn	
	55. Global Fish			Polen	Nei	Ja	600 tonn	
	56. Pure Salmon Frankrike			Frankrike	Nei	Nei	10.000 tonn	
	57. Rodsel Group			Spania	Nei	Nei	8.000 tonn	
	58. Newco			Latvia	Nei	Nei	5.000 tonn	
	59. EFC Scotland			Skottland	Ja	Nei	4.000 tonn	
	60. Fifax			Sverige	Nei	Nei	3.200 tonn	
	61. Berliner Lachs			Tyskland	Nei	Nei	2.000 tonn	
	62. Swiss Lachs			Sveits	Nei	Ja	600 tonn	
	63. BDV/SAS			Frankrike	Nei	Ja	100 tonn	
	Sum						749.350 tonn	

Source: Project list from "Laks på Land" 2019 conference hand-out

Possible sanctioning of 1 million tonnes production capacity for land based salmon farming towards 2030



Source: AKVA group analysis

AKVA recently awarded a full grow-out RAS project for 8,000 tonnes salmon in China by Nordic Aqua Partners

- AKVA as strategic partner in NAP
- Equity stake to secure partnership and successful execution
- Learning and developing by a close follow-up on all technical, operational and biological performance measures
- Additional projects in pipeline

Nordic Aqua Partners at a glance

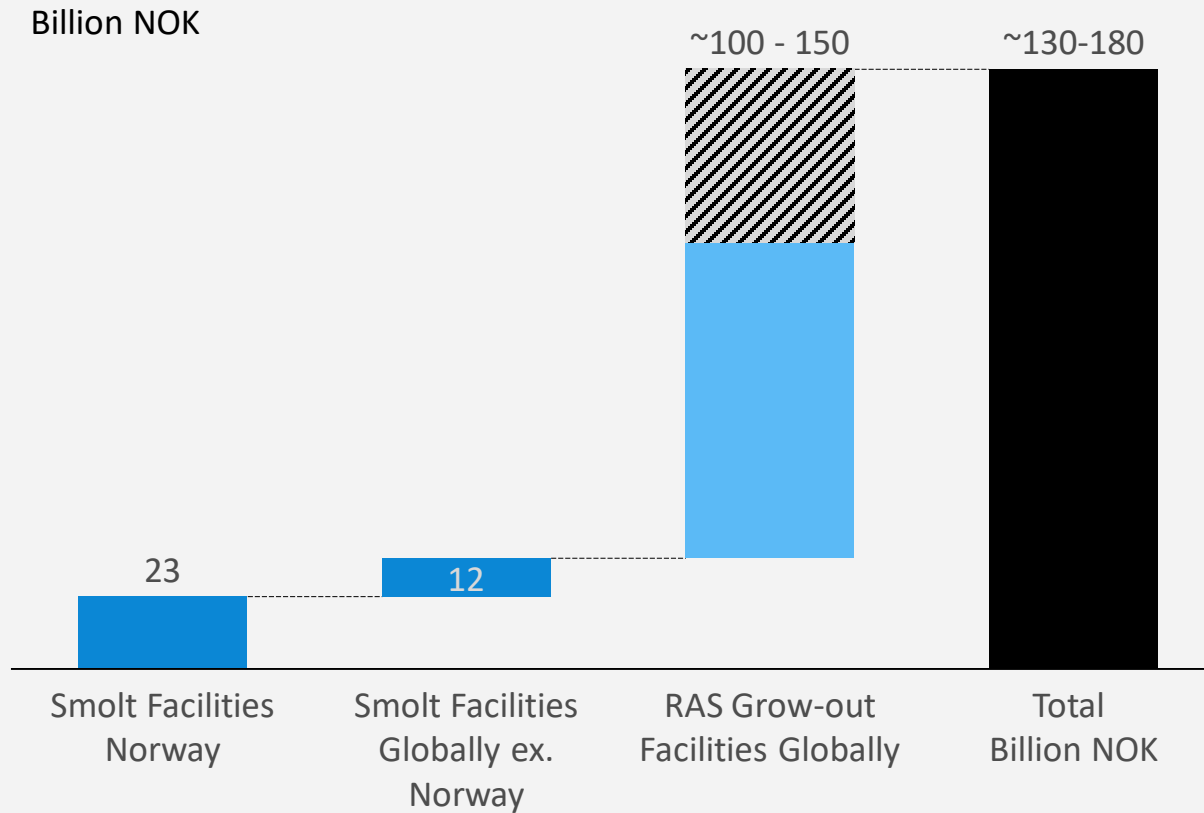
Unique setup for land based salmon farming in China

- First fully-integrated and commercially viable large scale RAS facility in China
- Based on state-of-the art RAS technology by world-leading supplier AKVA Group
- World class management team with complementary skillset
- Investor-backing from two global industry players
- Substantial support from local government (land, infrastructure, facilities)
- Attractive export credit financing

Nordic Aqua Partners is poised to take a leading position in the world's most attractive market for Atlantic Salmon with unparalleled land based advantages



Summary: Significant investments in both smolt and full grow-out production facilities towards 2030



Source: AKVA group analysis

