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Nina Stangeland
Managing Director
NCE Seafood Innovation/
The Seafood Innovation
Cluster AS



Managing Director High level of activity and new industrial areas of priority

Another extraordinary year has passed, but carrying with us our experiences from 2020, NCE Seafood Innovation was well positioned to manage another pandemic year, carry out our projects and services, facilitate meeting arenas and deliver value to our partners and members.

We have maintained a high level of activity throughout the entire year and had close to 3000 participants involved in nearly 60 meeting arenas. We have increased our project activities as well as our project funding, which is reflected in our earnings. This is simply the result of close and good collaboration with the cluster partners and members, and I wish to thank all for the formidable efforts throughout the year.

Among the highlights, we have reason to emphasize the AcquaCloud development. Standards for fish health are now in place and ready to be implemented, and we have launched the first environmental data sets. Our competence programmes, Seafood Next and Seafood Trainee, continue their steady development with more participants than ever.

Together with other clusters within the blue and green bio economy, we have put more emphasis on our "Land meets

Ocean" initiative, and we have organized several knowledge sharing events in different fora with close involvement from partners and members.

Last, but not least we have prioritized to strengthen our project development efforts, resulting in several exciting innovation projects.

"The new industrial areas of priority are based on central challenges the seafood industry must solve jointly"

Throughout most of the year, we have worked with a new strategy for the 2022–2024 period. Partners and members have been strongly involved in the process of setting out a new direction to ensure NCE Seafood Innovation is a relevant and preferred national cluster able to develop in line with the wishes of our members and partners.

As a result of this thorough process, we have pinpointed five new, important areas of priority where we will join forces with our partners and members to find solutions:

- Climate, environment, and circular economy
- Digital transformation and digitalization

- Fish health and welfare
- Future feed ingredients
- Future competence and talent attraction

All these industrial areas of priority are related to central challenges the seafood industry must solve collectively in order to contribute to development and growth. We cannot solve them on our own; they must be solved through joint efforts.

The cluster's most important role is to facilitate knowledge sharing and promote innovation within these industrial areas. In addition, we will initiate and serve as a facilitator for matchmaking, thereby enabling broad collaboration between our partners and members.

Our well-founded strategy gives us the opportunity to serve as a strong contributor to sustainable growth and development within a significant Norwegian export industry. We are facing exciting times, where NCE Seafood Innovation as a solid cluster will work together with partners and members in the seafood industry to create value and good results. We look forward to keeping up the good work in 2022. Our contribution can make an important difference.

Board of Directors Pointing out direction with new strategy

The year of 2021 was the second under the pandemic. Limitations on interactions have forced the NCE Seafood Innovation's activities to take new forms. The board is highly satisfied with the innovative approach from the team to change working modus in NCE Seafood Innovation, and keeping up an exceptional high activity level. Actively seeking feedback from member community we get confirmation of NCE Seafood Innovation remaining a very relevant partner in innovation and knowledge sharing for our members and partners.

During 2021 a new and more focussed strategy plan was developed in close collaboration with cluster partners and members. The new strategy plan will set the course for our work in the years to come and the main objective are for the cluster to act on the seafood

industry's most pressing challenges like digitalisation, fish health and welfare, climate footprint and the need for novel ingredients in aquafeeds. Growing with clear focus and by recruiting highly competent talents, NCE Seafood Innovation aim to create even better results and add further value to the cluster's partners and members. And our growth shall be within sound financial frames, and with focus on further development of internal competencies.

Einar Wathne
Chairman of the Board
NCE Seafood Innovation/
The Seafood Innovation
Cluster AS



Digital transformation and digitalization

"We need to make visible and inspire concerning how digital transformation can increase value creation in the industry as well as contribute to increased digitalization and sharing of data across players in the aquaculture industry."

Einar Wathne
Chairman of the Board



Climate, environment and circular economy

"To reduce the industry's climate and environmental footprint and stimulate the circular economic mindset, we need to release the power of collaboration, the sharing of knowledge and the development of projects."

Andreas Kvame
CEO
Grieg Seafood



Fish health and welfare

"Sharing knowledge and developing projects for fish health and welfare is crucial for the future development of a sustainable industry."

Jan-Emil Johannsen
CEO
Benchmark Genetics



Novel feed ingredients

"Realizing the potential of new feed raw materials and enabling commercialization of feed ingredients is vital for the future of the seafood industry"

Fredrik Witte
Managing Director
Cargill Aqua Nutrition North Sea



Fish health and welfare

"Improving fish health and welfare and reducing mortality must be high on the agenda in the industry, as this is the simplest and most effective way to achieve increased sustainability – in any meaning of the word."

Siri Vike
Director Strategic Development
PHARMAQ Analytiq



Future competence and talent attraction

"Future oriented competence and lifelong learning is vital to attract talents to the seafood industry, and there is a need for developing and strengthening competence projects rooted in the industry."

Henning Beltestad
CEO
Lerøy Seafood Group

Cluster management



Together with our cluster members we aim to fulfil the UN's sustainability goals

To achieve this, we put every effort into facilitating global partnerships and properly preserving and utilizing our oceans and marine resources. Particularly relevant to the cluster's work are the following Sustainable Development Goals

No 3 Good health and well-being
No 9 Industry, innovation and infrastructure

No 12 Responsible consumption and production

No 13 Climate action

No 14 Life below water

No 17 Partnerships for the goals

3 Good health and well-being

Because salmon is a healthy product, the seafood industry has a favourable starting point for contributing to health and well-being. In line with our ambitions of being an inclusive industry, NCE Seafood Innovation also will work determinedly to secure good health and promote good quality of life for everyone working in the seafood industry. An important part of this work is to ensure ideal environmental, financial, and social conditions for people working in the seafood

industry, for them to utilize their skills and contribute to the development of society.

9 Industry, innovation and infrastructure

As part of one of Norway's largest industries, it is our duty to support the efforts to develop infrastructure that will steer our country and the world in a greener direction and towards a low emission society. Consequently, NCE Seafood Innovation is working to promote research and technology development within the seafood industry as well as investments in transport and infrastructure that contributes to sustainable development.

12 Ensure sustainable consumption and production patterns

In keeping with our overall vision, the cluster as a supplier to the global community aims to ensure sustainability throughout the entire seafood value chain, with the firm belief that innovation and knowledge sharing is a vital contribution.

13 Climate action

As part of an international industry, we are aware of the importance of making

every effort to reduce activities that may have a negative impact on the climate. NCE Seafood Innovation works actively for the seafood industry to achieve sustainability at every level while leaving the smallest climate footprint possible.

14 Conserve and sustainably use the oceans, seas and marine resources

Through leading-edge technology, innovation perspective, industry driven research and knowledge sharing we apply our joint expertise to achieve sustainable ocean farming and value creation in the utilization of marine resources – to protect our ocean resources for the future generations.

17 Revitalize the global partnership for sustainable development

As a world leading seafood cluster and Norwegian Centre of Expertise, we see it as our natural obligation to facilitate and initiate new partnerships. We acknowledge the pressing importance of sustainable development. This is why we strive to incorporate sustainability in all our projects, interactions, activities and knowledge sharing across every business area.



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Managing Director
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Nina has the overall responsibility for the cluster's management, activities and projects, and is reporting to the board of The Seafood Innovation Cluster.



Benedicte Skogen
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Benedicte is responsible for events, strategic marketing and communication.



Björgolfur Hávarðsson
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Pia is responsible for startups and the programs related to entrepreneurs.



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Solveig is working with strategic projects and events.



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Carl is responsible for Seapoint and communication activities.



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Cathrine is responsible of administration in addition to Seafood Trainee.



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Silje is responsible for digital communication.



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Karoline assists the cluster with administrative tasks and events.



Elise Sæle Dahle
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Elise is working across four different clusters in the green and blue sector.



Christian Hope
Data Manager AquaCloud
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Christian is the Data Manager of AquaCloud.

In 2022, we welcome to our team: Frida Iversen, Dominuque Flatten Kristian Blom and Cathrine Ulvatne.

Cluster facts

Cluster programs

- 24 Candidates attending Seafood Trainee
- 53 Participants attending Seafood Next
- 8 Businesses participating in the Capital Raising Program

Cluster members

102

- 102 Partners and members in total
- 15 New start-up members
- 1 New Risk Capital Members

Project funding

7,5 MNOK

- MNOK 7,5 New project funding in 2021

Services

7

- 3 Competence service
- 1 Innovation service
- 2 Entrepreneurship service
- 1 EU Advisory

Cluster communication

- 23 Newsletters
- 1700 Followers on Facebook
- 1498 Followers on Twitter
- 5384 Followers on LinkedIn

Projects

12

Events

73

- 73 Events in total
- 40 Digital or hybrid events
- 3000 Participants at cluster events
- Podcast series: AquaCloud

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Connecting the dots by working together

Industry partners



THOMMESSEN

Deloitte.



R&D Partners

BI Norwegian Business School
Institute of Marine Research
Western Norway University of Applied Science
NIVA – Norwegian Institute of Water Research
NMBU – Norwegian University of Life Sciences
Nofima AS
NORCE Norwegian Research Centre AS
NORD University
NHH Norwegian School of Economics
Sintef Ocean AS
University of Bergen
Norwegian Veterinary Institute

Members

Aqua Pharma Group
BioMar AS
Bolaks AS
Bremnes Seashore AS
Eide Fjordbruk AS
Garware Technical Fibres Ltd
Hatch Blue Norway AS
Inka AS
Innovasjø Akvakultur AS
Kontali Analyse AS
LingaLaks AS

North Atlantic Seafood Forum
Patogen
Proximar Seafood AS
Seaborn AS
Sekkingstad AS
Skanem Stavanger AS
Proximar Seafood AS
Seafood Forum AS
SpareBank 1 SR-Bank ASA

Start-ups

Ace Aquatec AS
Akvareforma AS
Algaepro AS
Anteo AS
AquaByte AS
AquaFarm Equipment AS
Aquamedic AS
AquaPro AS
Aquaticode Ltd.
Bioceanor AS
BioVivo Technologies AS
Blue Breeder AS
Blue Lice AS
Dynamic Space Technologies AS
Ecotone AS
eMar Digital AS
Evoy AS
Fishency Innovation AS
Fjord Maritime AS

Hauge Aqua AS
Innomar AS
JET Seafood AS
Konree Innovation Limited
Kuehnle AgroSystems
Marea
Marimetrics AS
Microclean AS
Moreld Aqua AS
Observe Technologies
Oceanium Ltd
Optimeering Aqua AS
Pure Lobster AS
Quantidoc AS
Resqunit AS
Salmo AS
Scantrol Deep Vision AS
SeaChange Biochemistry Inc.
SeaGuard AS
Seas of Norway AS
SeaSmart AS
Searas AS
SFD AS
ShrimpVision AS
Submerged AS
Tekslo AS
TomKat Global SolutionsPty Ltd
Tracio
Tysfjord Marine Farm AS

Viking Aqua AS
W-Sence AS

Risk capital

Farvatn AS
FundingPartner AS
Momentum Venture Management AS

Collaborators

Financial Collaborators
Innovation Norway
Siva
The Research Council of Norway
Vestland County Council
City of Bergen

Cluster to Cluster Collaborators

Biotech North
GCE Ocean Technology
Invest in Bergen
Katapult Ocean AS
Maritime Bergen
NCE Blue Legasea
NCE Heidner Biocluster
Startuplab AS
VIS – Vestlandets Innovasjonsselskap

Sharing knowledge in popular programs



There is great need for training and knowledge sharing in the seafood industry. NCE Seafood Innovation’s members benefit greatly from our competence programmes and these, together with our innovation portal Seapoint and our capital raising programme, are becoming increasingly popular.

Seafood Trainee

NCE Seafood’s trainee programme, Seafood Trainee, is a highly popular and attractive programme for those who wish to learn more about the seafood industry. Here, the trainees gain a great insight into the entire value chain of the seafood industry. By the end of 2021, 162 trainees from 30 companies had participated in the programme.

Last year, 55 participants from Seafood Trainee and Seafood Next, for the first time, travelled to Iceland, where they learned how businesses work determinedly with circular economy and how innovative companies have established themselves based on high-level fish utilization.

Seafood Trainee is the first Norwegian seafood industry trainee programme, and the candidates’

backgrounds are studies in biology, technology, fish health, aqua culture, economy, social science, marketing and law.

The companies decides what kind of competence it needs, and through the Seafood Trainee programme, the trainee gets to participate in a professional programme consisting of four sessions lasting three days each.

The programme is open to all companies that want to participate and there is no fee for members and partners.



Seafood Next

Seafood Next is a highly popular international competence programme for new employees in the seafood industry and others who need some professional input. The programme emphasizes sustainable growth and innovation in the seafood industry and includes four three-day sessions throughout the year. The programme gives participants insight into the seafood industry’s value chain, innovation, mega trends and circular economy.

NCE Seafood Innovation established the programme in 2020, with 36 participants who completed their programme in Iceland in September 2021. In 2021, two programmes were carried out with 30 and 23 participants respective.



Seapoint

Every cluster partner and member has access to Seapoint, which NCE Seafood Innovation keeps constantly updated with new and interesting content. Among other things you can gain an understanding of the seafood industry’s value chain, discover how RAS technology works or map seafood investors and subsidy schemes.

NCE Seafood Innovation has future competence as its strategic focus area, and Seapoint is an important tool in contributing to knowledge sharing for all our members in Norway and abroad.

Capital Raising in the Seafood Sector

Providing the necessary capital for further growth for start-ups and scale-ups may seem difficult. That is why NCE Seafood Innovations has a capital programme tailor made for entrepreneurs who want to work strategically with attracting investors and capital. Through four sessions, the participants get to learn about upscaling strategies, investor mapping, value assessment, investor presentation and how to best sell your message. A mentor panel will also be available for one-to-one meetings with every company.

– The NCE Seafood Innovation Capital Raising Program has helped us a lot in structuring ourselves. It’ll be helpful in the long term with the investment community around Shrimp Vision, especially in Bergen. It’s very positive that NCE Seafood Innovation is doing this, as it’s not just the participants of the capital programme who will benefit from this, but the entire start-up community in the seafood sector, says Sjur Øyen from Shrimp Vision.

Events and meeting arenas

In 2021, NCE Seafood Innovation organized 73 events, of which 40 was digital or hybrid. In total, there were around 3000 participants at these events, which we are very pleased with.

As a partner or member, you have access to all these meeting arenas.



Participants in 20tretti are discussing how to solve today's climate headaches.



At Haviunsj we want to inspire, build networks and to build competence across the ocean industries.

You can find dates for all upcoming events on our website:
[→ seafoodinnovation.no](https://seafoodinnovation.no)

Resource Groups

Experts and business leaders meet in resource groups for discussions concerning the challenges the industry is facing. The members joining the resource groups contribute with competence and advice, influencing the cluster's strategic focus and projects.



Executive Seafood Forum

Executive Forum is our think tank for future innovation within NCE Seafood Innovation. In this forum, Seafood Innovation partners' executive leaders meet for inspiration, industry updates and knowledge sharing and to discuss strategic topics of importance to the cluster's future work.



The Ocean 2021



The Ocean 2021

Partner Meeting

Twice a year the cluster invites members and partners to meet with other seafood companies. At these networking and knowledge sharing events we address and present different sustainability and innovation related areas in the seafood industry.

Upcoming Seafood Startup

Upcoming Seafood Startup are events where the purpose is to connect entrepreneurs with different stakeholders such as industry players, investors and professionals/academia to improve their business models based on valuable feedback from an expert panel.



Launch of The Norwegian Aquaculture Analysis 2020 together with EY



Project Meetings

We invite our partners and members to take part in project meetings concerning specific topics.

Competence programs

Our competence programs are open to all, with special conditions applying to partners and members.

Other events and meeting arenas

- HAVIunsj
- Seafood Innovation Day (NASF)
- Young Leadership Summit (NASF)
- Innovation Camps
- Launch Fish Health Report
- Launch The Norwegian Aquaculture Analysis 2020
- 20tretti
- EU-webinars and workshops
- Podcast series with Aqua-Cloud and LØRN.TECH

Projects to increase innovation and sustainability

NCE Seafood Innovation develops projects for innovative and sustainable production of seafood. Our projects aim to strengthen and develop Norway’s leading position as seafood nation – securing a sustainable future for aquaculture.



AquaCloud

AquaCloud was established in 2017 as a big data project anchored in the aquaculture industry's need to solve common challenges in order to create sustainable growth. The platform receives updates from participating companies and represents a unique repository of high-resolution data from their farming operations. Current partners include Grieg Seafood, Cermaq, Lerøy Seafood, Bremnes Seashore, Bolaks, Lingalaks and Kvarøy Fiskeoppdrett.

In 2021, AquaCloud has completed the following major milestones:

- Implemented categorized mortality reporting from participating fish farmers
- Initiated fish health collaboration with Sjømat Norge and Norwegian Veterinary Institute to establish a national fish health database
- Launched initial shared data-sets from the AquaCloud Platform, including last 30

days of environmental data for individual farming sites in Norway

- Proposed new standard for mortality causes in collaboration with Norwegian University of Life Sciences, with the final report officially launched in September and adopted for implementation by the fish health database project in Sjømat Norge
- Completed AquaCloud's efforts to provide input on environmental measurements and fish health to NS 9417, with the new standard now being put up for final enquiry
- Podcast series with AquaCloud and LØRN.TECH providing insight into the digitalization of the seafood industry.



Land meets Ocean

Land meets Ocean is a crossover initiative to strengthen the Norwegian bioeconomy. The project aims to enable innovation and industrial growth across agriculture, aquaculture and fisheries industry by improve the utilization of bio-resources, increase the circularity within the industries and reduce the carbon footprint.

Behind the project are four national industry clusters within the blue and green bio economy; NCE Seafood Innovation, NCE Blue Legasea, Biotech North, and NCE Heidner Biocluster.

Innovation Camps

In 2021, we organized three innovation camps together with our partners and members, and Ungt Entreprenørskap. The project’s goal is to increase talent attraction, and the interest in the seafood industry among young students.

Through a new collaboration agreement with Ungt Entreprenørskap, we want to increase talent attraction for the seafood industry through innovation camps in upper secondary school.

The new agreement with Ungt Entreprenørskap will secure 9 innovation camps in different regions throughout 2022, and a total of 900 students from upper secondary school will be given the opportunity to build competence in sustainability, innovation, entrepreneurship, and seafood.



Students at Nordahl Grieg is solving the case challenge on how to get young people to eat more seafood.



iFishIENCI

IFISHIENCI is an EU funded project bringing together 16 partners to make genuine improvements to fish farming worldwide. The overall goal of the project is to provide new intelligent feeding technologies to support ambitious, but sustainable growth for the European aquaculture industry.

NewTechAqua

The main goal of the EU funded NewTechAqua project is to expand and diversify European aquaculture production of finfish, molluscs, and microalgae by improving feeding control, focusing on circular economy and advanced methods in water monitoring and digital decision support.

AquaMare

Aquamare is a strategic positioning project of NCE Seafood Innovation that has triggered funds from The Research Council of Norway to set aquaculture as a major strategic focus area in future EU programs. Our goal with AquaMare is to help aquaculture be recognized and prioritized as an important measure that can create sustainable global food production.

RAS (Recirculation Aquaculture Systems)

The project's goal is to secure members and partners' access to competence and education within RAS. In 2021 the project delivered 1) a national training program for teachers within RAS, 2) a new vocational technical college within RAS, 3) course for employees in the seafood industry, and 4) video training materials within RAS.

KABIS

The project KABIS (increased capacity for sustainable and innovative seafood production) aims to contribute to new educational programs, new knowledge and increased innovation in closed production technology for the aquaculture industry.

Norwegian Cognitive Center

The Norwegian Cognitive Center is a strong industry crossover initiative to build Norway as a powerful European hub for applied AI and to attract expertise. NCE Seafood is one of the initiators together with four industry clusters representing a total of 500 companies.

Norwegian Ocean Alliance to Horizon Europe (NOAH)

The NOAH project aims to establish a collaborative ecosystem between academia, the institute sector, and industry clusters in Norway to set up an arena for elaborating common views and statements to promote «blue» topics, and the blue economy in the Horizon Europe work programs.

Ocean Innovation Catapult

Ocean Innovation Norwegian Catapult provides world-leading expertise and test infrastructure to accelerate innovative ideas towards the market, to boost sustainable growth in the ocean industries.

Biosirkel

The project's main goal is to strengthen Western Norway's green competitiveness by building capacity and competence to accelerate bio circular interaction and value creation. The project is funded by The Research Council of Norway by 28 MNOK.