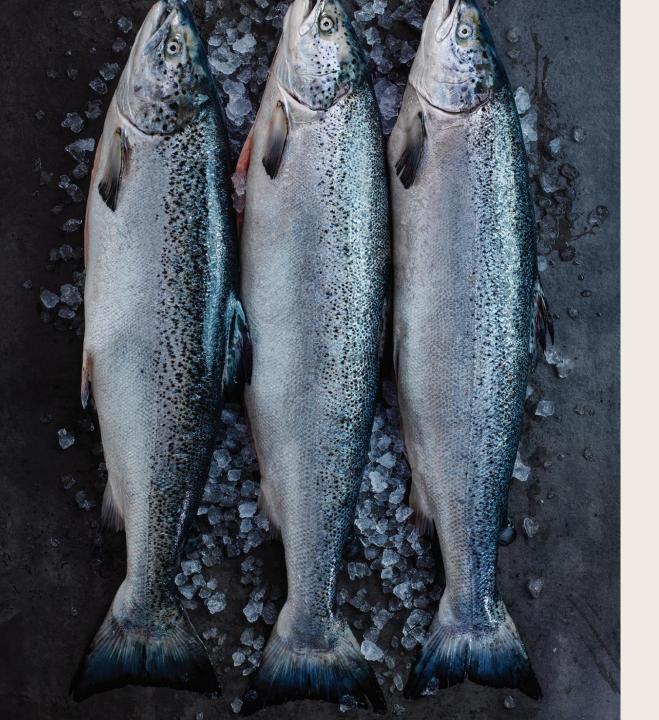


NCE Seafood Innovation

Cluster Strategy Launch 2022-2024

Nina Stangeland, Managing Director





Agenda

- A future-oriented cluster strategy
 - Nina Stangeland, NCE Seafood Innovation
- Presentation of industrial areas of priority
 - Björgolfur Hávardsson, NCE Seafood Innovation
 - Endre Sæter, Cargill
 - Nina Stangeland, NCE Seafood Innovation
 - Ingunn Sommerset, Vetrinærinstituttet
 - Anne Hilde Midttveit, Lerøy Seafood
- Cluster activity to connect on,
 - Cathrine Gravdal & Solveig Holm, NCE Seafood Innovation

After the program there will be food and networking

NCE Seafood Innovation

Strategy process





Vision:

Contribute to sustainable growth and development of the seafood industry



Connecting the seafood industry by working together

Industry Partners

























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 Univeristy 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

Inka AS

Aqua Pharma Group **Bolaks AS** Bremnes Seashore AS Eide Fjordbruk AS Garware Technical Fibres Ltd. Hatch Blue Norway AS Hordafor AS

Innovasjø Akvakultur AS

Ecotone AS eMar Digital AS **EVOY AS**

Kontali Analyse AS Fjord Maritime AS LingaLaks AS Hauge Agua AS North Atlantic Innomar AS Seafood Forum AS JET Seafood AS PatoGen AS Konree Innovation Limited Proximar Seafood AS Kuehnle AgroSystems

Oceanium Ltd

Pure Lobster AS

Quantidoc AS

Resqunit AS

SeaSmart AS

SFD AS

Salmo AS

Optimeering Agua AS

Scantrol Deep Vision AS

SeaGuard AS Searas AS

Seas of Norway AS

ShrimpVision AS

Submerged AS

Seaborn AS Marea Sekkingstad AS Marimetrics AS Skanem Stavanger AS Metapod AS SpareBank 1 SR-Bank ASA Microclean AS Proximar Observe Technologies

Start-ups

Ace Aquatec AS Akvareforma AS Algaepro AS Anteo AS AquaByte AS AquaFarm Equipment AS Aquamedic AS AquaPro AS **Bioceanor SAS** BioVivo Technologies AS Blue Breeder AS Blue Lice AS

Tekslo AS Dynamic Space Technologies AS TomKat Global Solutions Pty Ltd Tracio

Fishency Innovation AS

Viking Aqua AS W-Sence AS

Risk capital

Farvatn AS Momentum Venture Management AS

Collaborators

City of Bergen Centre for Digital Life Norway Connect Vest Norge GCE Ocean Technology Innovation Norway Invest in Bergen Katapult Ocean AS Maritime Bergen The Research Council of Norway Siva Startuplab AS Vestland County Council VIS - Vestlandets Innovasjonsselskapet



Mission:

NCE Seafood Innovation will be a preferred business cluster in the Norwegian Seafood Industry. The cluster will be an active contributor, catalyst, inspirer and connection point for our partners and members in the seafood industry to

- solve key industrial challenges and
- realize opportunities for sustainable growth and development

through targeted collaboration and knowledge sharing and innovation within defined areas of priority



Industrial areas of priority





Digital transformation and digitalization



Fish health and welfare



Novel feed ingredients



Future competence and talent attraction







Knowledge sharing

=OCUS

PROJECTS

ACTIVITIES

- Project development
- Pushes innovation in the area
- Industrial connection
- Project development and continuation of project ideas:
 - Packaging/Wrapping
 - Circular Economy
 - Sustainability etc.
- - indicators/taxonomy

Focus group:

Climate, environment and circular economy

- Project development and workshops for innovation
- Facilitation of meeting arenas
- Competence sharing
- Industry connection program
- Circular Economy program



- Knowledge sharing
- Project development
- Aquacloud operation, development
- Pushes innovation in the area
- Industrial connection
- Project development and continuing focus on established projects;
- EU-Projects: Ifishiency and NewTechAqua
- Aquacloud; Spin-off projects
- Infrastructure, OINK
- Norwegian Cognitive Center

Focus group:

Digital transformation and digitalization

Other:

- Workshops for innovation
- Aquacloud: gathering and sharing of data
- Facilitation of meeting arenas
- Knowledge sharing
- Industry connection program

Fish health and welfare



- Knowledge sharing
- Project development
- Pushes innovation in the area
- Industrial connection
- Project development of new projects
- Aquacloud; Spin-off projects around Fish health
- Melanin project
- **KABIS**
- New potential projects:
 - Fish healt/welfare

Focus group:

Fish Health/Welfare

Other:

- Project development and workshops for innovation
- Aquacloud: dataset for fish health and standardization work
- Facilitation of meeting arenas
- Knowledge sharing
- Industry connection program

Novel feed ingredients



- Knowledge sharing
- Project development
- Pushes innovation in the area
- Industrial connection
- New potential projects:

Novel feed ingrediens

Land meets Ocean – project

Facilitation of meeting arenas

Industry connection program

Focus group:

development

Knowledge sharing

Other:

- Project development
- Collaborative projects with other industies
- Focus on commerzialization of new feed ingredients
- Land meets Ocean

Future competence and talent attraction



- Knowledge sharing
- Education- and competence programs
- Learning and implementation materials
- Promotes "Lifelong learning"
- Talent attraction
- Project development and continuing focus on established projects;
 - KABIS
 - RAS education
 - RAS digital videos
 - Innovation Talent Camp
- Learning materials on implementation of standards

Focus group:

Future Competence

Other:

- Seafood Trainee
- Seafood Next
- Seapoint -Knowledge sharing portal
- Talent attraction work
- Initiatives in education and learning



Strategic approach

Knowledge sharing

- Facilitate meeting arenas
- Increase knowledge sharing across the industry
- Share expertise and competence from our partners and members
- Connect actors across the industry
- Make visible and actively focus the industrial areas of priority
- Strengthen NCE Seafood Innovation focus on projects, services and meeting arenas together with partners and members





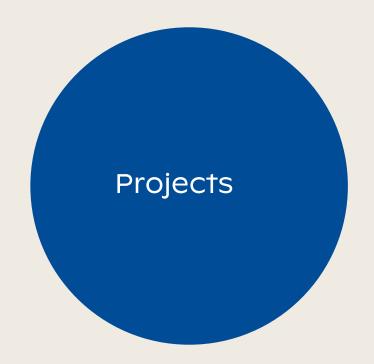
Strategic approach

Innovation

- Be a driving force, connection point, catalyst and inspirer to trigger innovation projects across the industry
- Increase collaboration and innovation projects that aim to solve challenges and realize opportunities for value creation in the seafood industry
- Contribute to project development in the cluster's industrial focus areas
- Strengthen entrepreneurship and intrapreneurship in the seafood industry
- Contribute to facilitate the infrastructure for innovation and development
- Strengthen the ecosystem for innovation in the seafood industry



How?



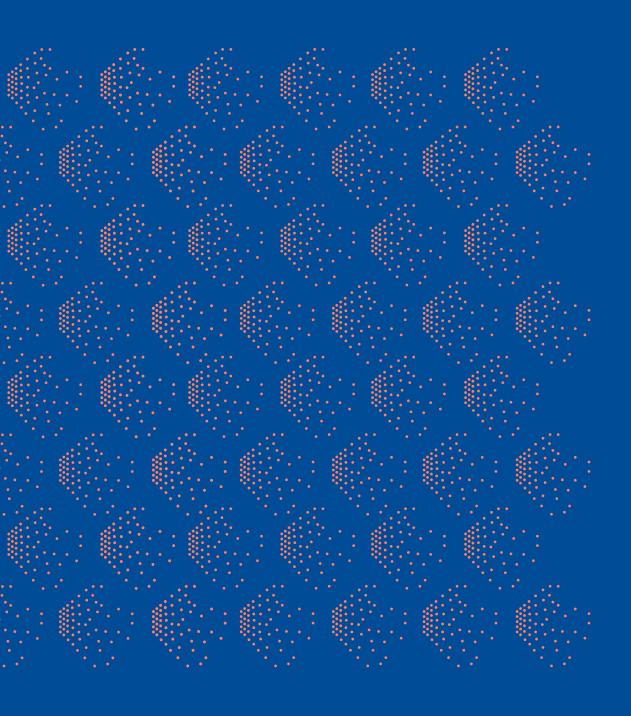
- Development of innovation projects
- Project implementation
- Knowledge sharing on project results



- Relevant services for the industry
- Built up thematically around industrial initiatives
- Is in line with the mandate
 - Knowledge sharing
 - Innovation



- Relevant meeting arenas giving value to partners and members
- Focus the industrial areas of priority
- Target the different stakeholders in the Cluster



Industrial areas of priority



Industrial areas of priority





Digital transformation and digitalization



Fish health and welfare



Novel feed ingredients



Future competence and talent attraction





Digital transformation and digitalization





Einar Wathne

Chairman of the Board, NCE Seafood Innovation

«We need to make visible and inspire on 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.»

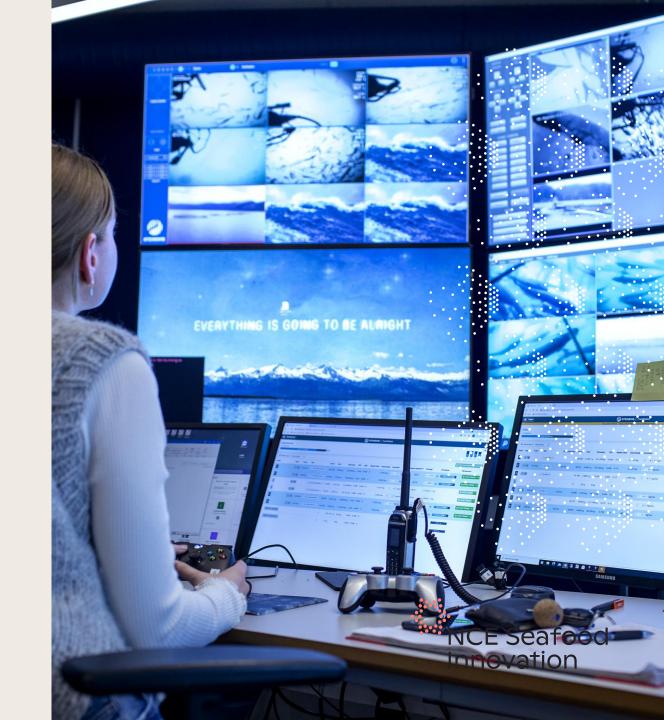




Digital transformation and digitalization

How can NCE Seafood Innovation contribute?

- Sharing knowledge on the topics of digital transformation and digitalization
- Developing projects that contribute to digitalization, data sharing and standardization at an industrial level
- Use AquaCloud as platform for innovation projects
- Being a driving force for innovation on this area within the aquacultural industry
- Inspire new and established companies to look at the seafood industry as their area of interest
- Connect players in the industry for collaboration, innovation and knowledge sharing



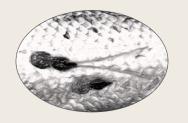
AquaCloud

- AquaCloud continuous to function as a hub for our work on digital transformation
- We are receiving considerable volumes of data one a daily basis, the volume increases as more companies come online
- We want to increase access to data by means of specific data sets – the customer group is diverse and has different needs
- We are continuously evaluating further data to download based on specific needs
- AquaCloud continues as the platform to build projects on
- Continuous focus on standards and standardisation – 3 projects finished or under ways at this time
- Implementation of standard through coursing and information



AquaCloud is a company governed by fish farmers working for sustainable growth in the seafood industry

through standardization and sharing of data for innovation, research and development

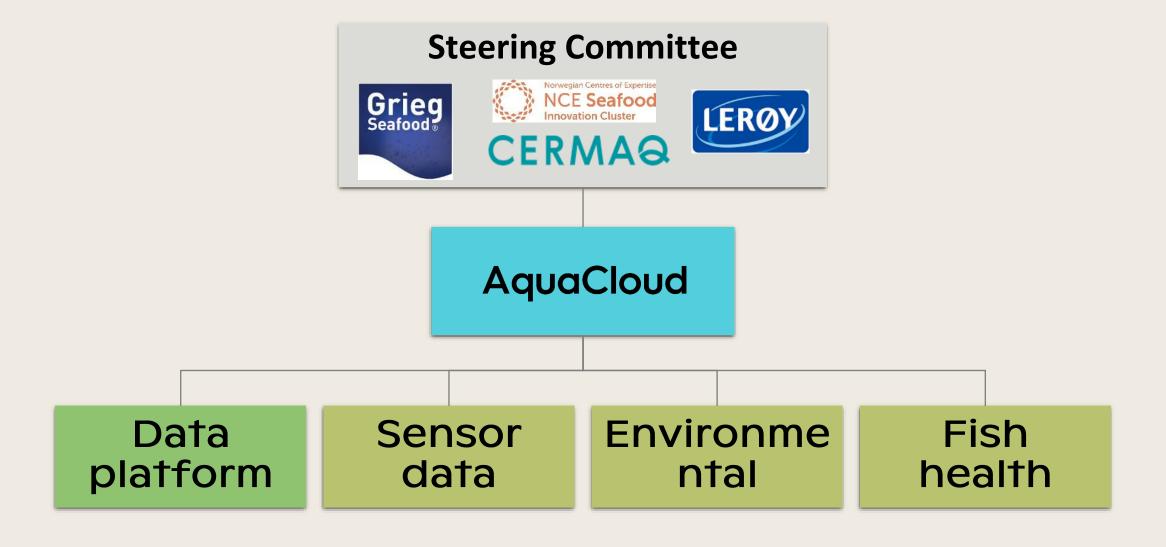












Published AquaCloud work products





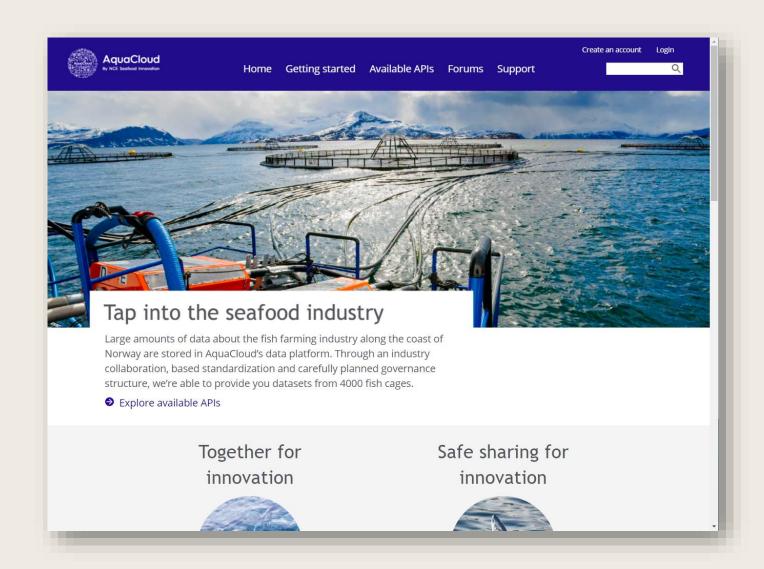
Coming soon



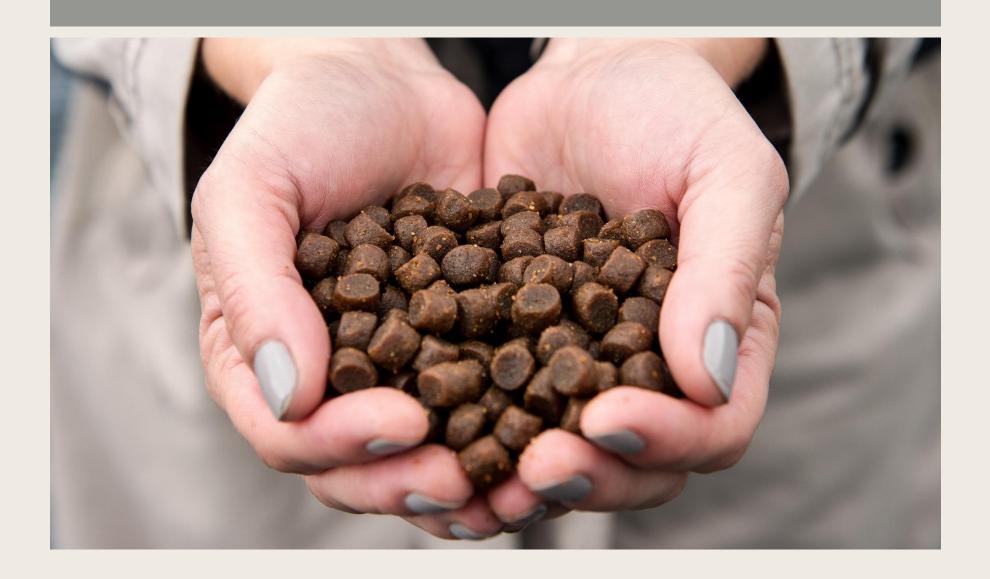


Data sharing

- APIs released through our Developer Portal
- Initial release will focus on REST APIs
- Planned: CSV/files
- Different (commercial) plans will be available



Novel feed ingredients







Endre Sæter

Business Develop Manager, Cargill







Focus on feed ingredients

Feed ingredients represent about 70% of the total GHG footprint of salmon

To reach our joint industry goals to reduce GHG we need to develop new and better supply alternatives for our current raw materials.

We also need to develop new alternative supply of feed ingredients to support the industry growth.

Environmental, Social and Governance (ESG) has become a hot topic in the finance world

- Developing current and new raw materials is more than price and nutrition
- The trend is that companies need to take more control over their ESG risks to secure financing
- Effective traceability and environmental data handling will be key to document this



Why NCE Seafood Innovation in this respect...

Through its unique position in the seafood industry, NCE;

- Know what the seafood members are looking for
- Play a vital role to search for and identify such relevant new technology
- Coordinate verification of innovation potential with relevant industry partners
- Is a nursery for the early innovations
- Facilitate cross industry workshops to ensure alignment
- Represent the industry externally



Future competence and talent attraction





Henning Beltestad

CEO, Lerøy Seafood

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





Focus areas in this work

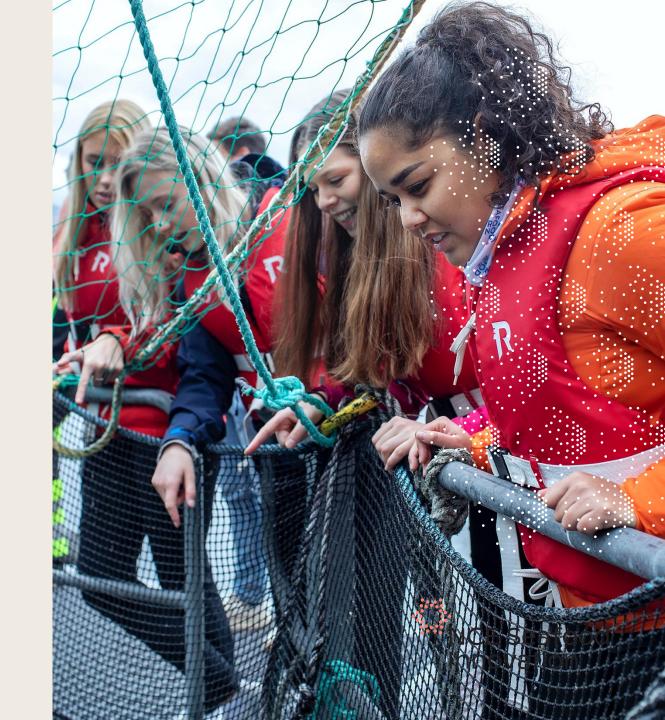
- Knowledge sharing
 - Meeting arenas and knowledgesharing initiative
 - Seapoint
- Contribute to development of education programs
 - All levels
 - RAS education has been a prioritized area
- Deliver Competence programs for the industry
 - Seafood Trainee and Seafood Next
- Learning and implementation materials
 - RAS digital learning and Seapoint videos
 - Implementation programs for Standards
- Talent attraction
 - Innovation Youth camps
- Promote and contribute to "Lifelong learning"



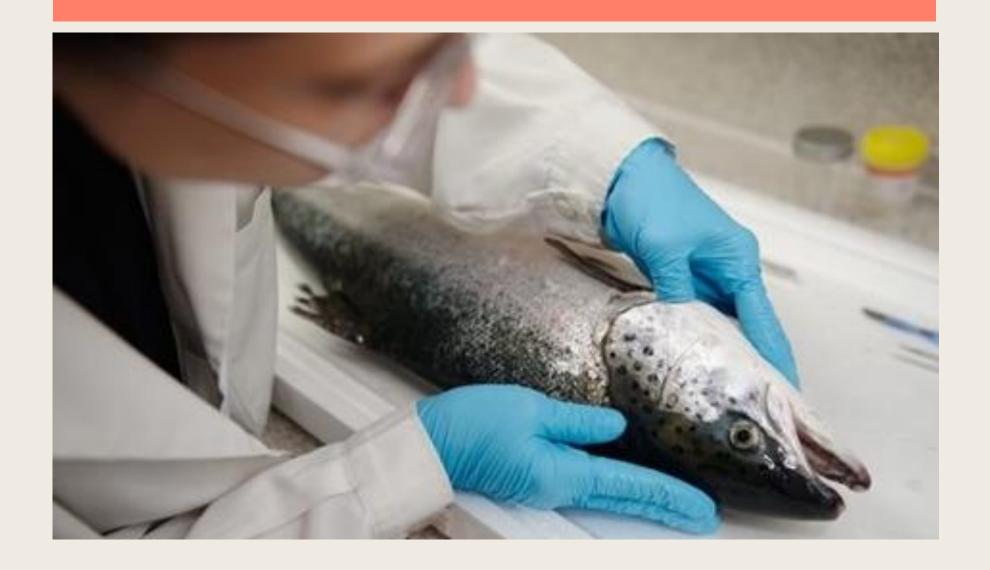
Future competence and talent attraction

How can NCE Seafood Innovation contribute?

- Facilitate industry collaboration to address future need for competence and talent attraction in the industry
- Generate initiatives to address the need for new education programs, competence programs and talent attraction initiatives at an industrial level; RAS education programs, Seafood Trainee/Next, and Youth Camps
- Be a relevant partner for NCE Seafood Innovation to address the topic from an industry perspective



Fish health and welfare







Ingunn Sommerset

Fish Health Specialist, Norwegian Veterinary Institute

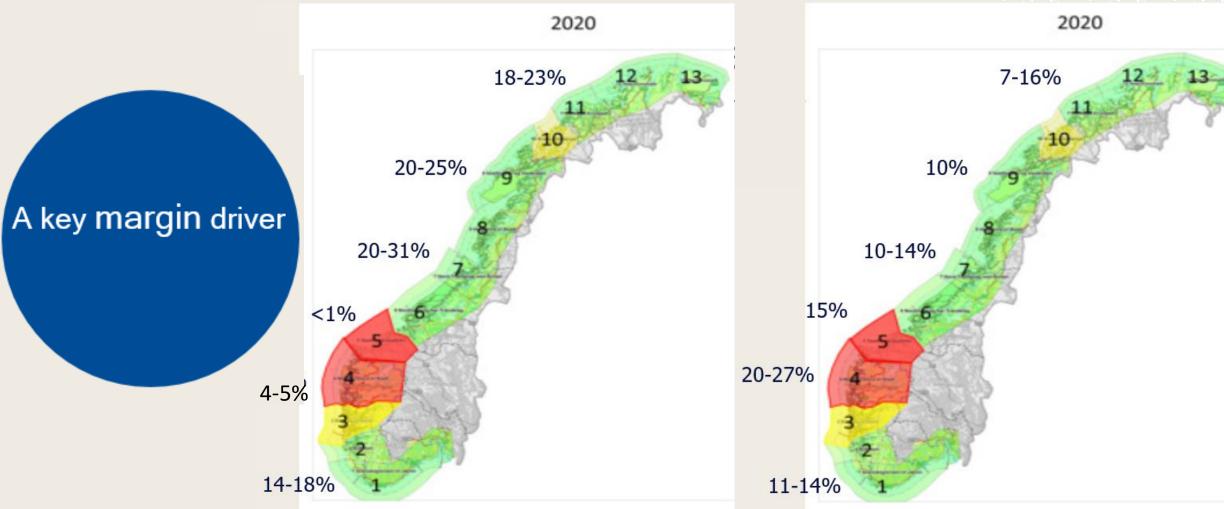




Fish health is ...



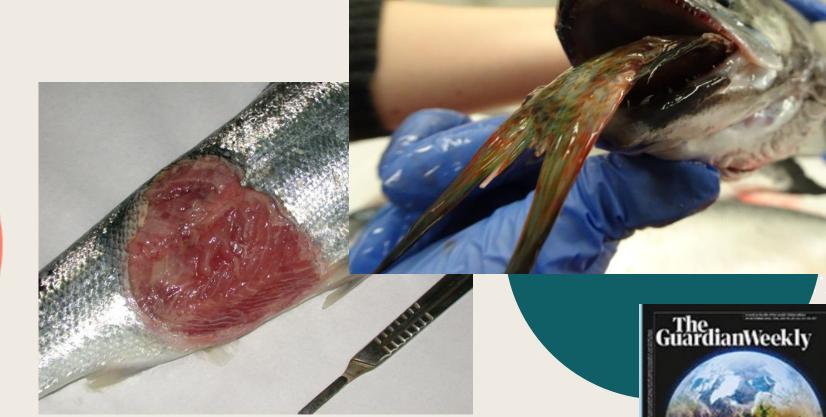
Mortality, salmon farming



Figures provided by Prof. Bård Misund (UiS), Nov. 2021

Fish health is ...

Animal welfare and ethical farming

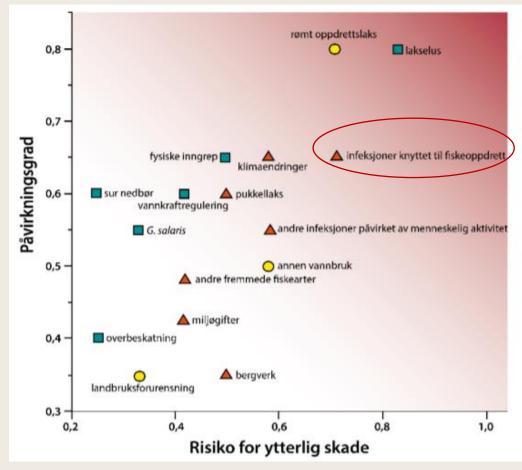


Farmed fish suffer pain and stress, says report that criticises welfare failings

Instead of Atlantic salmon and trout, study says the industry should focus on cultivating species with less complex needs

Fish health ...





Figur 7. V urdering av påvirkningsfaktorer og bestandstrusler for norske laksebestander. Bakgrunnsfar ngen illustrerer alvorlighetsgrad (mørk farge mest alvorlig). Fargene på punktene symboliserer god kunnskap og lav usikkerhet om utvikling (grønn), moderat kunnskap og moderat usikkerhet om utvikling (gul), og dårlig kunnskap og stor usikkerhet om utvikling (rød).

Kilde: Vitenskapelig råd for lakseforvaltning 2021. Status for norske laksebestander i 2021.

NEWS: Norwegian Species Databank 24th Nov 2021 add wild Atlantic salmon to **list of threatened** animals



Fish health is ...



Animal welfare and ethical farming



... linked to aquaculture sustainability



Siri Vike

Director Strategic Development, PHARMAQ Analytiq, NCE Seafood Innovation Board Member

«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.»

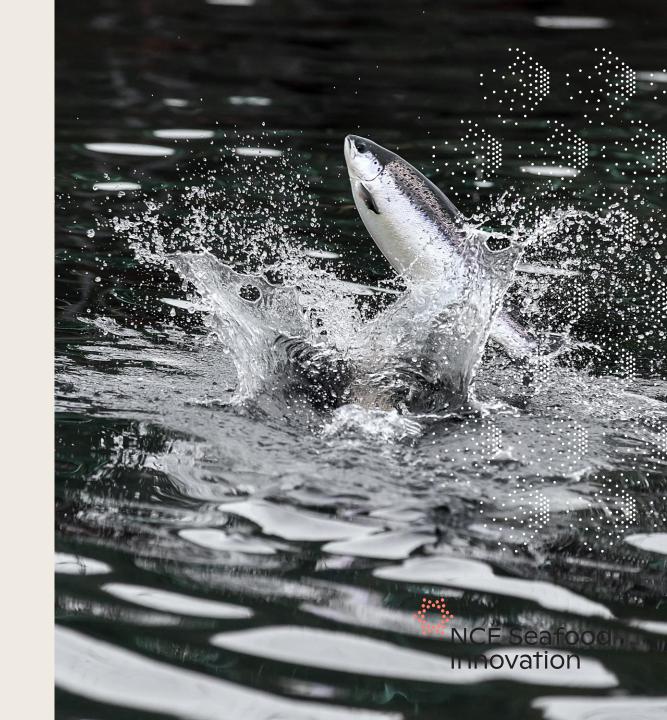




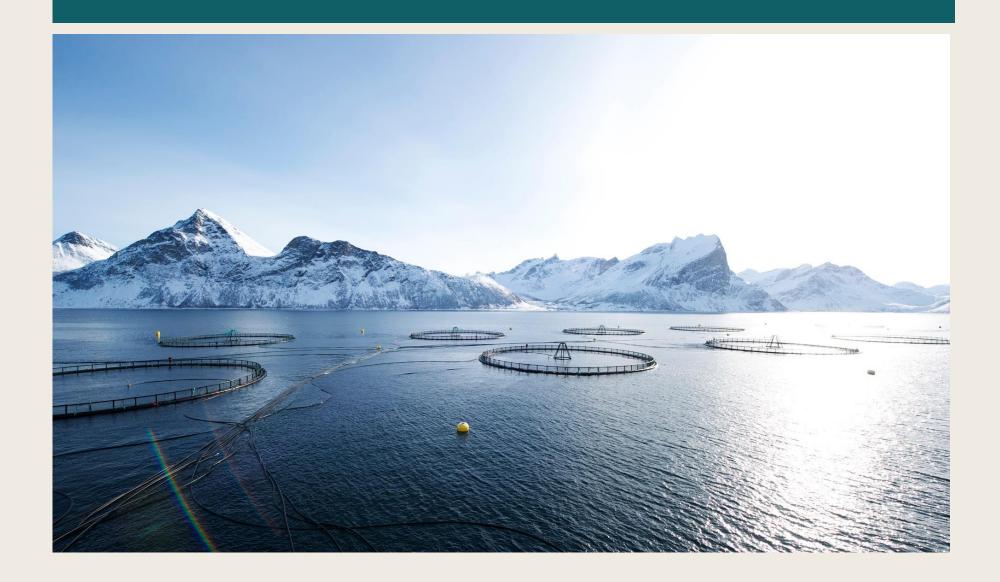
Fish health and welfare

How can NCE Seafood Innovation contribute?

- Facilitate transfer of knowledge between industry, academia and start-ups on the different areas around fish health and welfare
- Continue to initiate and contribute to the standardization job - if we are to improve, we must be able to measure it
- Use the potential within digitalization and data to gain more insight on fish health and welfare
- Contribute to more innovation projects around "early warner's" and prophylactic measures
- Include fish health/welfare in education and competence programs



Climate, environment and circular economy







Anne Hilde Midttveit

Group Responsible for Quality, Environment and CSR Lerøy Seafood Group ASA









Why?

- It is an important topic:
 - For the word
 - For our employees
 - For the young generation tomorrows employees and customers
 - For the stakeholders, customers, investors and the finance business
 - Where our industry has an advantage
 - For us in Lerøy «Lerøy's vision is to be the most profitable global supplier of sustainable high-quality seafood»
- If we do not focus un this topic
 - No funding
 - No business





Challenges:

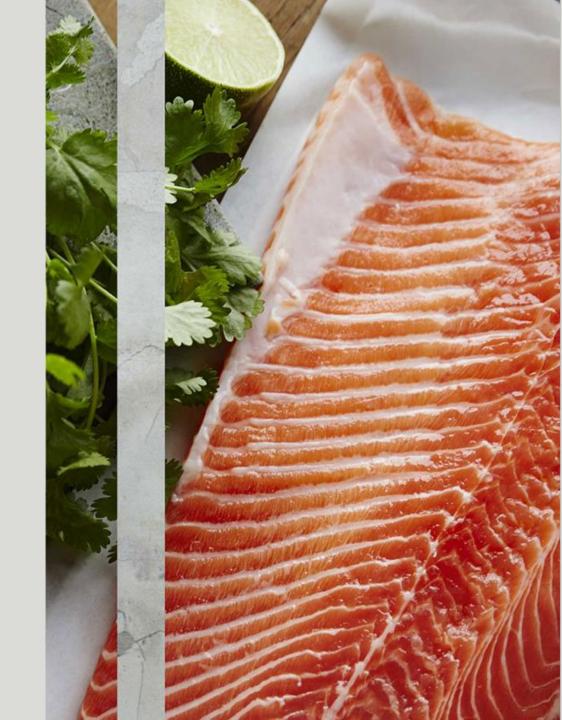
- We have to:
 - Focus on climate emissions throughout the value chain
 - Be better on recycling
 - Find new fuels to be able to operate the large boats we need for our business
 - Transport more by sea
 - Find some new raw materials for fish feed
 - Become better to communicate about the benefits our industry has related to sustainability
 - Be open about what the industry do





Possibilities:

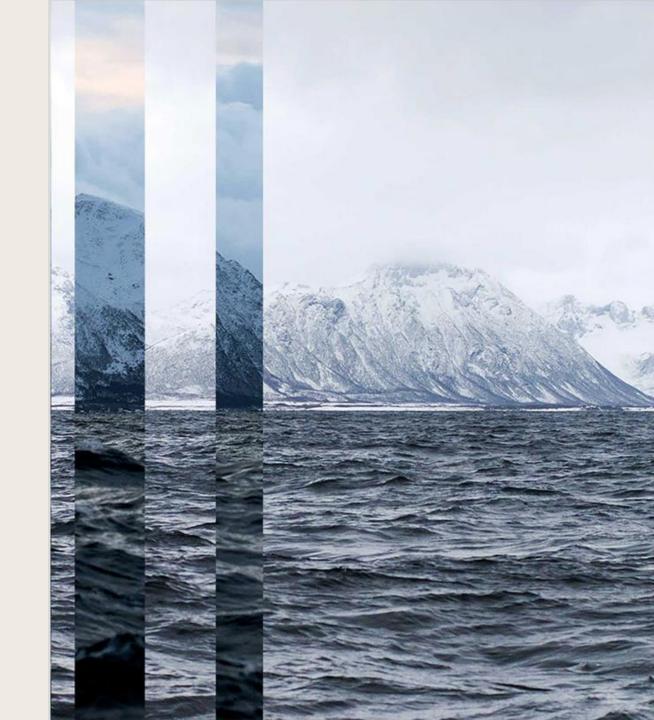
- An increasing population needs a balanced diet where seafood will be important in the future
- Seafood is among the most sustainable sources of protein we have
- New raw materials for fish feed can be produced in Norway – new industry
- We have a long coast line only 2-5% of the protein we eat today is produced in the sea
- Seafood will be demanded in the future because of sustainability
- If we focus on sustainability the industry will grow
 - Increased revenues
 - Increased number of exciting jobs





What can NCE seafood innovation do to help the industry?

- Innovation New projects
 - Recycling
 - New packaging
 - New fuels
 - Fishing gears
 - Fishing techniques
 - Equipment
 - New species
 - Raw material for fish feed
 - And so on....
- Education and training
- Communication





The Norwegian Seafood Pioneer

Cluster activity to connect on



Seafood Trainee

- Seafood Trainee has 20-30 participants per program, 1 program per year
- Seafood Trainee kull #6: next modul in Trondheim 19.-21. January
- The recruitment for participants to Seafood Trainee #7 has started.
 Deadline for applications: 31.12.2021
- Seafood Trainee kull #7 starts up in September 2022
- Free programcost for members and partners*
- *According to member and partnership terms
- Link to webpage: https://seafoodinnovation.no/trainee/

Connection point: Cathrine Gravdal



Kick-start your career in the seafood industry!



Seafood Next

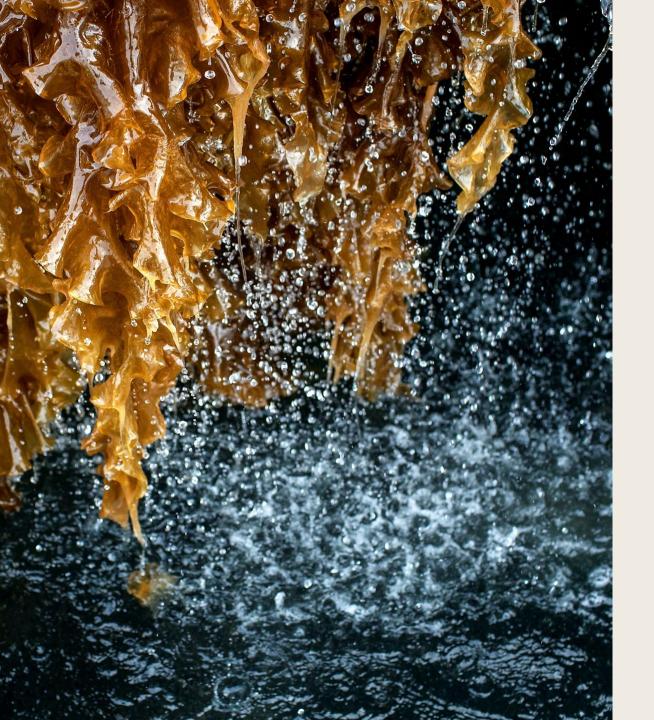
- 60 participants trough the year, 30 participants per program (2 programs each year)
- The next program starts in May 2022
- Two ongoing programs: kull #2 and kull #3
- Link to webpage:
 https://seafoodinnovation.no/seafoodnext/

Connection point: Benedicte Skogen



Accelerate your knowledge!





Seafood Circular Economy Program

- Program with 5 sessions of 4 hours starting winter 2022
 - -Introduction of models, terminology and circular business models
 - Insight in framework conditions
 - Presentation of cases
 - Company visits
 - Group work with exchange of experience and problem solving
 - Training materials for preparation in advance of the gatherings
- The program will contribute to increased competence in the seafood industry within
 - Circular economy and framework conditions
 - Value creation potential through circular business models
- The program will provide knowledge and inspiration to
 - New circular business models across value chains
 - More circular economy solutions in the seafood industry

Connection Point: Solveig Holm





- An online knowledge center with full access for all employees in member and partner companies.
- Access knowledge and network in the cluster ecosystem
- Synergies with digitalization of the content in Seafood Next, Seafood Trainee, RAS videoes, and other content from cluster collaborators
- www.seafoodinnovation.no/seapoint

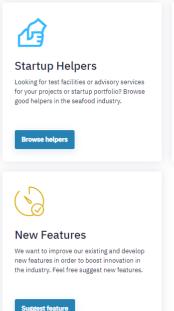




Innovation and our partners host events

throughout the year.

Find events



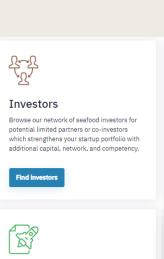
Public Funding

Find funding

Browse public funding from the Norwegian

and European governments, for your

innovation activities or startup portfolio.



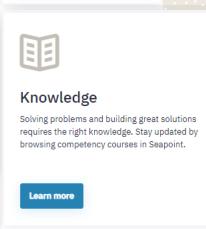
Startup Documents

our partners and members.

Spend less time on business planning and

collection from NCE Seafood Innovation, and

legal documents by using this curated



Upcoming Startups

and discover investment cases.

Browse startups

Get to know upcoming seafood startups

transforming the industry with new solutions

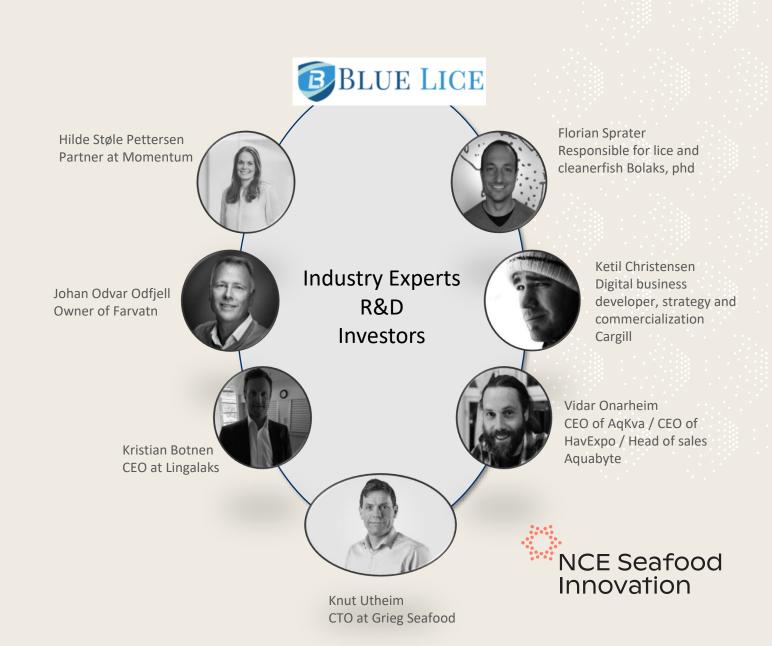
Connection point: Carl H.B. Haukås



Validation of new seafood solutions

- Presentation of new solutions
- Handpicked expertise in panel
- Confidential discussions and feedback
- Effective format (2h, digital or physical)
- 4 x Year

Connection point: Björgólfur Hávarðsson



AquaCloud





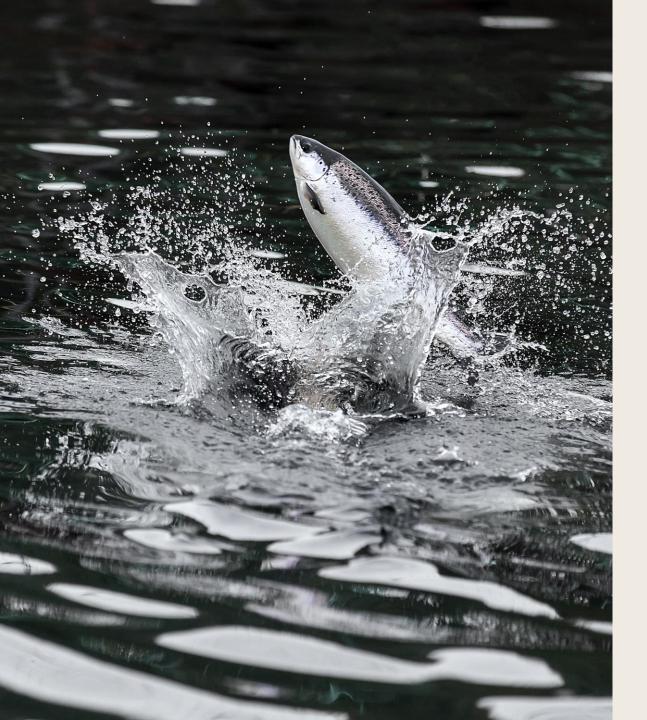
Connection Point : Christian Hope

EU Advisory



Connection Point : Karianne Kjoen Andersen





Innovation projects

Projects

New projects and established projects

Connection point: Björgólfur Hávarðsson

Land meets Ocean

Connection Point: Elise Sæle Dahle

Competence Projects

RAS Education Projects: Benedicte Skogen Implementation of standards: Solveig Holm Talent attraction Projects: Benedicte Skogen

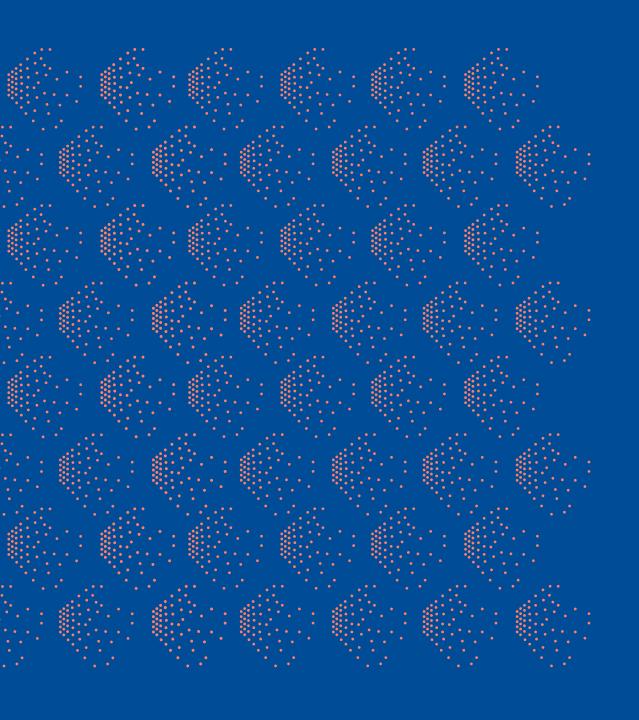


Meeting Arenas & Knowledge Sharing

Facilitate and implement valuable meeting places:

- Partner and member meetings
- Webinars, breakfast meetings, professional lunches, etc.
- Conferences with partners
- Digital competence sharing 24/7, through Seapoint
- Min. 80 meeting arenas annually, annually 3 different (3x4 gatherings) competence programs + increased activity at Innovation Talent Camp





Wrapping up

