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# Nasjonal konferanse om bærekraftig fôr

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# Del 3A:

# Hvordan skape ny, lønnsom industri?

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# Einar Wathne, NMBU

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# Ole Jørgen Marvik, Innovasjon Norge

# Hvordan gjøre bærekraftig fôr investerbart?

**Konferanse om bærekraftig fôr**

*Sentralen, Oslo 10.mai 2023*

Ole Jørgen Marvik, spesialrådgiver

# Hovedutfordring fôringredienser:

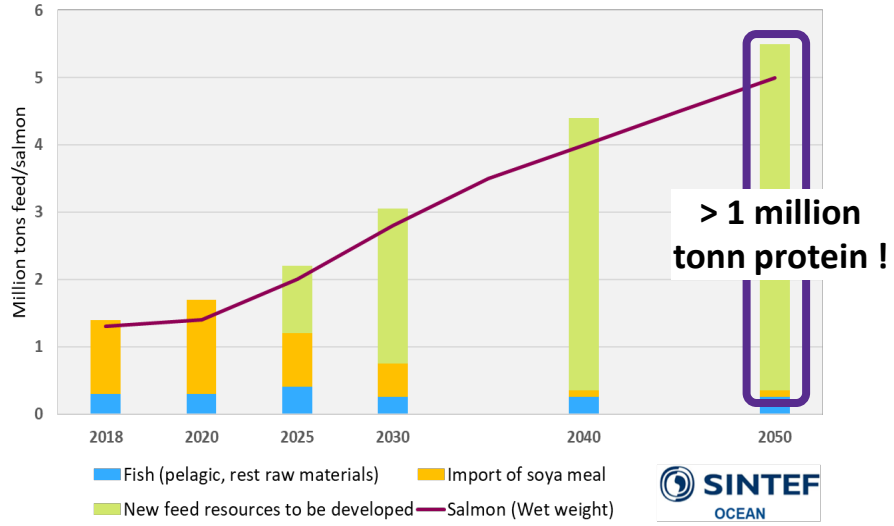
## *Levere et tilstrekkelig volum til konkurransedyktig pris !*

**Billige råvarer i en bransje med lave marginer**

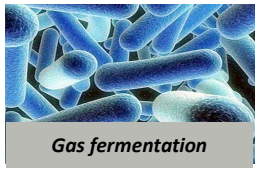

*Pelagic fish*


*Marine residuals*


*Soy & wheat gluten*



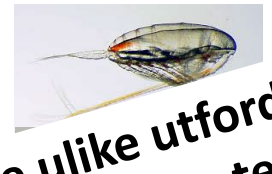

## Hva er bærekraftig nok?


*Gas fermentation*


*Mesopelagic fish*


*Cellulosic sugers*


*Insects*




*w*

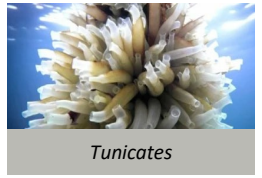
**Mange ulike utfordringer ...men ofte ikke teknologi**


*Microalgae*


*Mussels and shells*


*Grass protein*


*Krill*


*Tunicates*


*Seaweed*

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# Hva gjør prosjekter investerbare – mer enn F&U ?

***Policy (regulatorisk risiko) i samfunnsdrevne markeder***


***Systemisk risiko (avhengighets risiko) i nye verdikjeder***

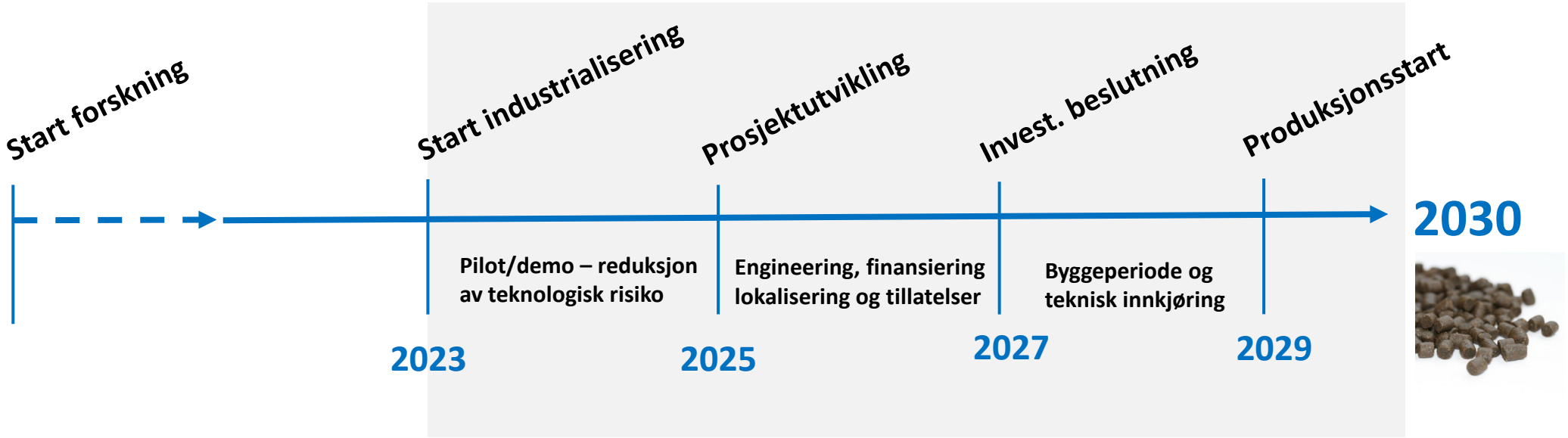
*Bærekraftig fôr AS*


- Vi trenger et samspill av mange løsninger.
- Vi må kombinere “innovation push” med “market pull”.

Innovasjon Norge

# Hva kan virkemiddelapparatet gjøre vs Industrialisering?

*Hurdalsplattformen: "...sette mål om at alt fôr til havbruksnæringen skal være fra bærekraftige kilder innen 2030"*




**Proof of principle**

**50 mill**

**Pilotering og demo**

**100 mill**

**Prosjekt-modning**

**100 mill**

**Realisering (CapEx)**

**3.000 mill**

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# Offentlig markedsstimulering?... forutsetter sertifisering!

Import-
restriksjoner

Avtaker avtale

Skatte-
insentiver

Myndigheter → Fôr produsent → Fôr kunde → Myndigheter

Innblandings-
krav

Produkt krav

Differanse-
kontrakter

Innovasjon
Norge

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# Idar Kreutzer, Næringslivets Hovedorganisasjon

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# Catarina Martins, Mowi ASA

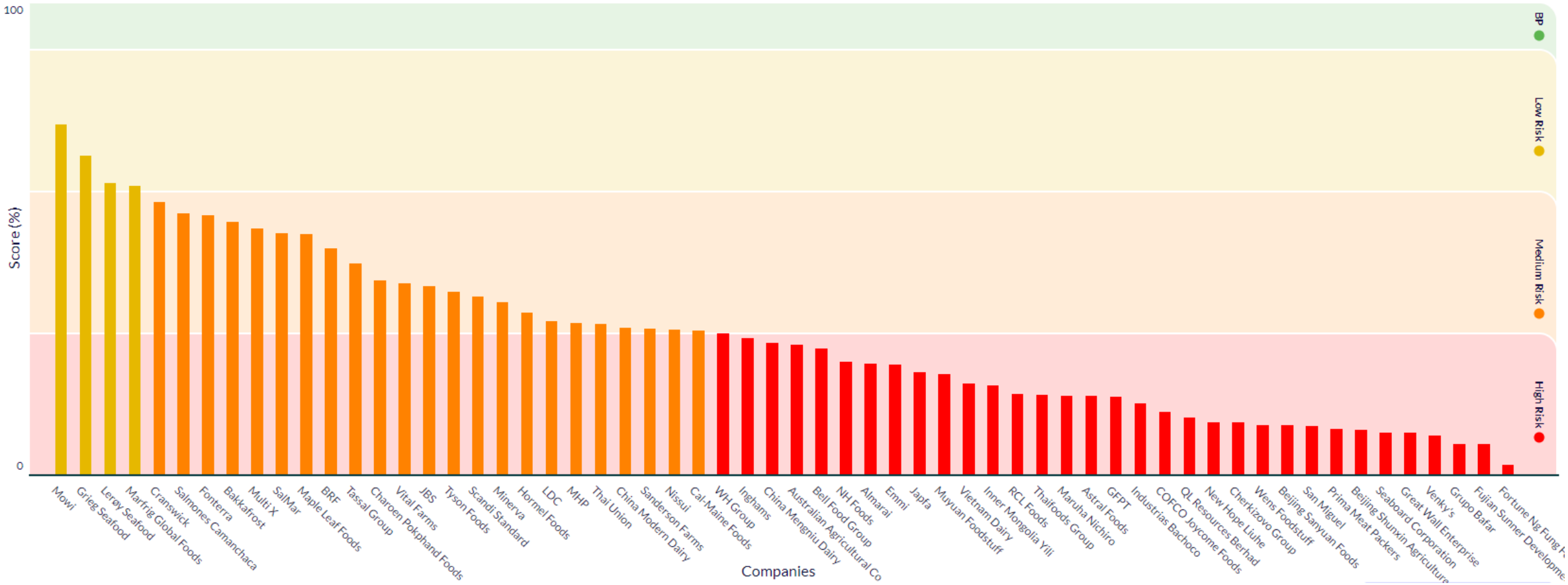
# Bærekraftig fôr

10th May 2023

Dr. Catarina Martins, CSO/CTO, Mowi ASA

Konferanse om bærekraftig fôr, Oslo, Norway

# Salmon farmers are the most sustainable already




FAIRR FARM ANIMAL INVESTMENT RISK & RETURN
A COLLER INITIATIVE

# Sustainable Feed KPIs (Mowi)

**62%**

Of scope 3 is connected with sourcing feed raw materials

**0%**

Of soy from deforestation



**3%**

Inclusion of emerging feed raw materials

**100%**

Marine raw materials MSC, Marine Trust or FIP

**100%**

Of feed suppliers approved by due diligence process on Human Rights

**53%**

inclusion of FM+FO from trimmings



**<1**

Fish in, fish out (FIFO),

salmon is a net protein producer



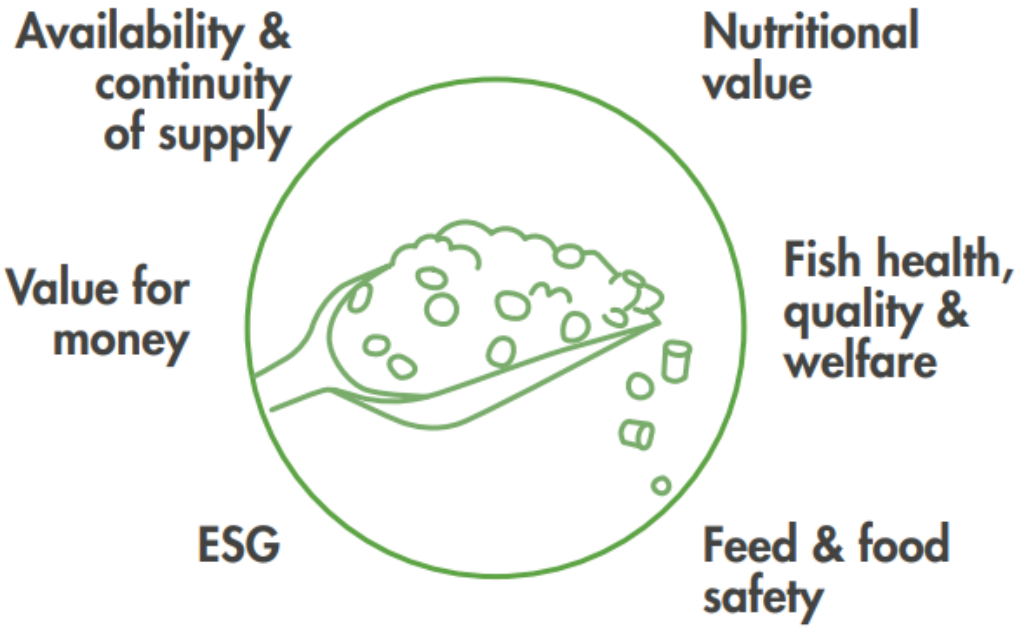
**1.15**

FCR

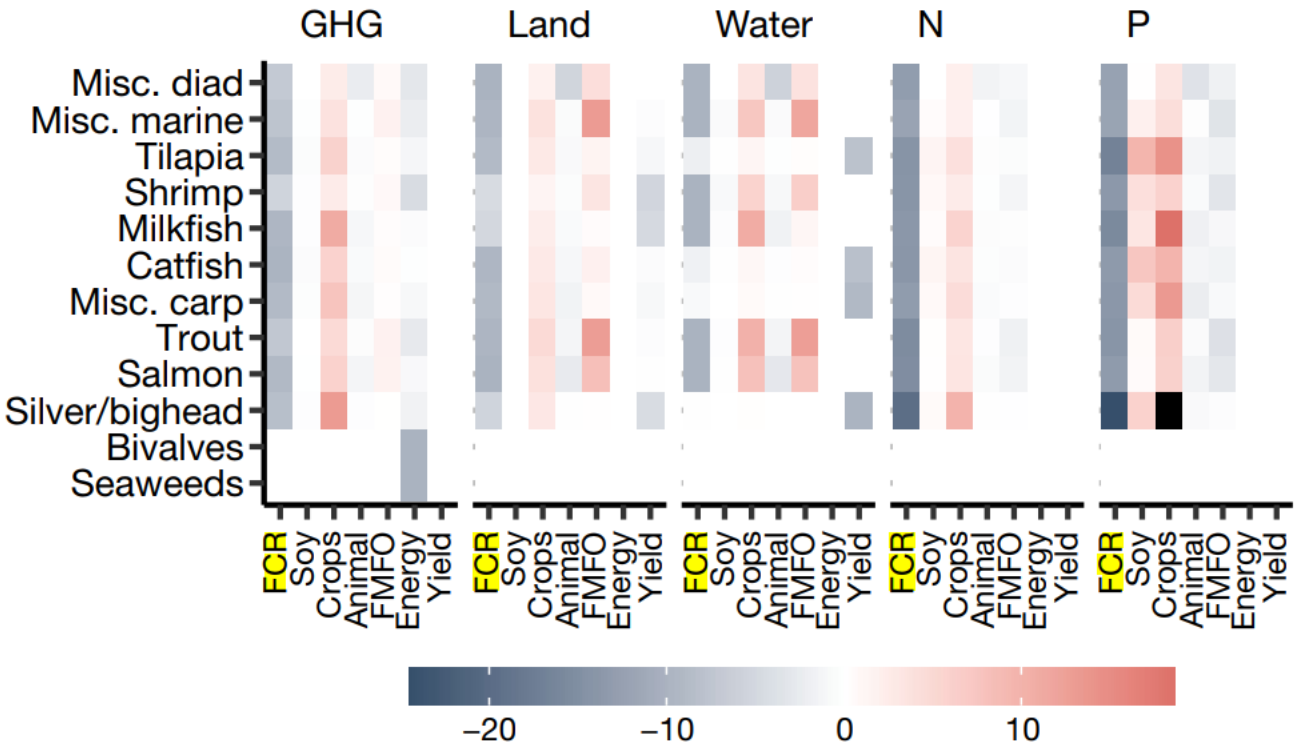


MOWI

# Emerging Feed Raw Materials: one size does not fit all




# FCR: the strongest lever to reduce environmental impact




Blue Food Assessment, 2021

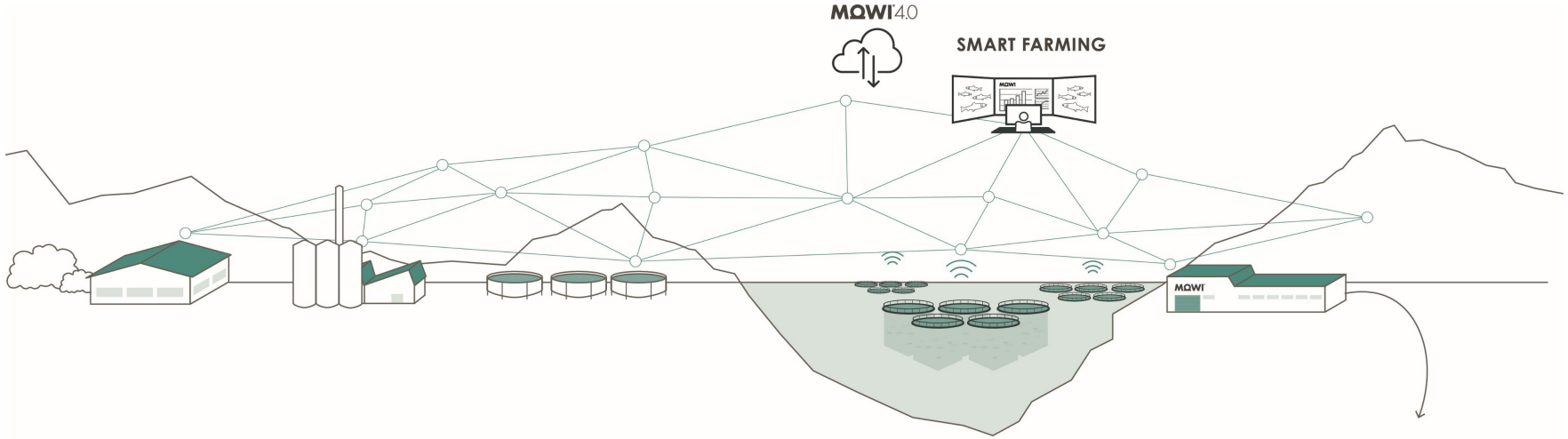
"We find feed conversion ratios (FCRs) represent the strongest lever, wherein a 10% reduction results in a 1–24% decrease in all stressors"

Gephart et al., 2021



MOWI

# Connecting the dots through data: Mowi 4.0/SMART Farming




## Breeding & genetics

**Genomic selection, traceability and benchmarking**
- optimising genomic selection
- use of high resolution phenotypes
- full traceability and benchmarking genetic progress with production data

**Nutrition and genetic interaction**
- relationship between nutrition, genetics, product quality and performance

**Best genetics for enhanced fish robustness and product quality**
- tackling fish diseases and lice challenges with improved genetics
- product quality characteristics included in breeding goals

## Feed production

**Maintain raw material flexibility**
- developing the raw-material basket and ensuring availability of cost effective, safe and sustainable raw materials

**Ensure optimal nutrient composition**
- improving our understanding of the nutrient requirements of Mowi salmon

**Diets enhancing fish robustness and product quality**
- developing functional ingredients and better meeting the nutritional needs of Mowi salmon
- feed development to fine-tune product quality attributes

## Freshwater / smolt production

**Constructing state of the art RAS facilities**
- development of bespoke Mowi optimal design for RAS systems including real-time monitoring of water quality

**Exploring new smolt production technology platforms**
- alternative production systems for post smolt production

**Optimise smolt production**
- evaluating production methods for best performance, robustness and welfare

## Seawater production / on growing

**Further reduce medicine use**
- new and better vaccines
- optimised practices and biosecurity

**Improve solutions for lice control (prevention and treatment)**
- optimising current tools
- developing novel solutions, including passive control methods Improve net-pen technology
- machine learning tools for automatic sea lice counting, biomass monitoring and autonomous feeding
- effective anti-fouling and net strategies

**Remote Operation Centres**
- developing remote farming operations centres with centralised feeding and remote expert solutions
- realising the Most Automated Farm concepts seeking simplification, automation and optimisation in daily operations

## Processing

**Ensure premium product quality**
- optimising production related factors impacting negatively on product quality
- exploring new or improved production, harvesting and processing methods

**Maintain listeria control**
- seeking better practices, solutions and tools to ensure a safe product

**Processing automation**
- on-line scanners for product quality and automatic grading

## Product

**Sustainable packaging**
- implementing the 4Rs packaging principles (Reduce, Reuse, Recycle and Replace)

**Develop new products**
- creating more diversified products that are healthy, sustainable, tasty and convenient

# Thank you

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# Del 3B:

# Debatt

# «Økonomiske virkemidler, risikoavlastning og næringspolitikk»

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