

# Perspectives on the bioeconomy

Industrial Biotech Network Norway (IBNN)

-  
For Innovation and Growth

**BIOSMART START-UP CONFERENCE**

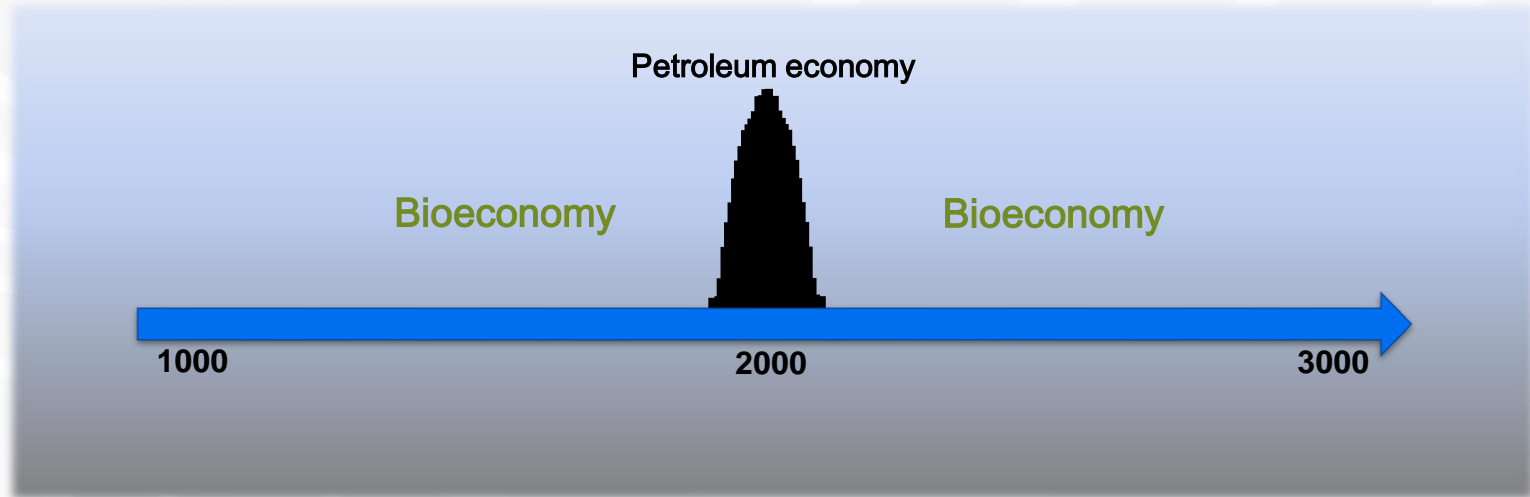
Trondheim, June 1st 2015

Ernst Kloosterman, Managing director IBNN



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# PERSPECTIVE



## The knowledge-based bioeconomy



*"The bioeconomy can be thought of as a world where biotechnology contributes to a significant share of economic output."*



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# The knowledge-based bioeconomy



A bioeconomy involves three elements:

- biotechnology
- renewable biomass and
- integration across disciplines

**Feedstock  
suppliers**



**Technology  
providers**



**Product  
developing  
industries**



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# What is bioeconomy?

“The industrial transition of sustainably utilizing renewable aquatic and terrestrial resources in energy, intermediates, and final products for economic environmental, social and natural security benefits”

(USDA Report "Opportunities in the Emerging Bioeconomy, 2014")



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# What is IBNN?

Industrial Biotech Network Norway (IBNN)

is a network of (and gateway to)  
companies, technology providers, finance-, knowledge and  
research institutions  
in Norway,  
that focus on industrial biotechnology  
and the biobased industry



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# What is industrial biotechnology?

Industrial biotechnology, also known as white biotechnology, uses enzymes and micro-organisms to improve industrial processes and generate valuable products in sectors as diverse as chemicals, food and feed, healthcare, detergents, paper and pulp, textiles and energy



# Industrial Biotech Network Norway

We foster innovation and facilitate  
the development of products and services  
based on biorenewables or  
on the use of biotechnology as an enabling  
technology



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# So what is IBNN?

IBNN wants to be an innovation network of companies, technology providers, finance-, knowledge and research institutions in Norway, within industrial biotechnology and the biobased industry



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# Objective

IBNN aims to  
strengthen the innovative development of new and existing  
processes, products, applications and markets of the  
Norwegian bio-based industry and industrial biotechnology  
sector



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# IBNN - organization

## THE BOARD



Chairman  
Jan Buch Andersen



## THE MANAGEMENT



Ernst Kloosterman  
Managing director



Susanne Werner  
Communication advisor



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# IBNN - members



- ❑ Networking and knowledge transfer
- ❑ Study tours and bench-marking
- ❑ Identifying partners and projects
- ❑ Branding Norwegian expertise

## **INDUSTRY**

Alginor  
Barentzymes  
Bergen Teknologioverføring  
Biomega  
Bioprotein/Calysta  
DUE Miljø  
EPAX AS  
FMC Biopolymer  
Idia as  
MicroA  
Norilia (Nortura)  
Nutrimar  
Olympic Seafood  
TINE SA  
Treklyngen/Vikenskog

## **CLUSTERS**

BioTech North  
Heidner/Kunnskapspark  
Hedmark  
LegaSea/Kunnskapspark  
Ålesund

## **CONTRACT RESEARCH**

IRIS Research  
UNI Research AS  
NOFIMA AS  
PFI - Papir og Fiberinstituttet  
SINTEF Fiskeri og Havbruk AS  
SINTEF Materialer og Kjemi  
BarentsBiocentre ab

## **ACADEMIC INSTITUTIONS**

NTNU - Fakultet for  
Naturvitenskap og teknologi  
NMBU - Universitetet for Miljø  
og Biovitenskap  
Universitetet i Bergen  
Universitetet i Tromsø

## **INVESTORS**

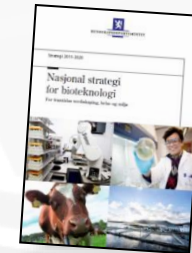
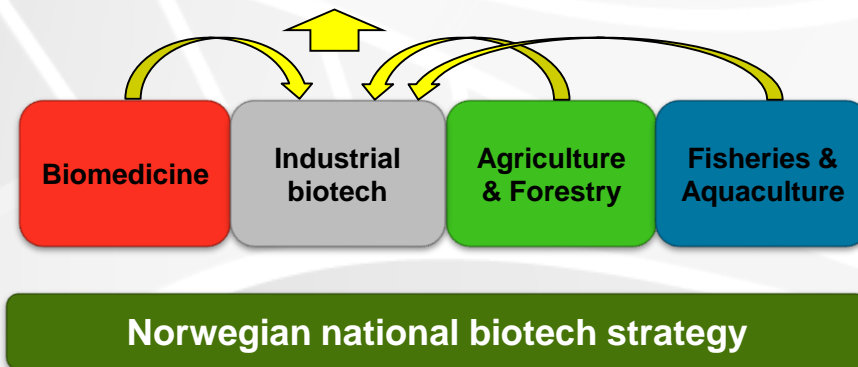
Sarsia Seed



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# Part of a program

## Towards an integrated strategy for the bioeconomy



# IBNN activities

- ☐ Analysis and strategy processes
- ☐ Networking and meeting arena's
- ☐ Communication
- ☐ Learning and competence



## IBNN activities - analysis

The image shows a portion of a database table. A large, bold, black watermark with the word "Database" is oriented diagonally from the bottom-left towards the top-right, covering most of the visible content. The table itself has a light gray background with white grid lines. The visible text in the table includes:

	Bergen og Zo...	
1430	Ås	
8049	Bode	Partner
7014	Trondheim	
5362	Skjervag	Partner
	Ytterøy	Partner
	Ytterøy	Partner
	Østmark	Partner
		Prospekt
		Partner



Industrial production of marine microalgae  
as a source of EPA and DHA rich raw material in fish feed  
– Basis, knowledge status and possibilities  
FHF project no. 900771



Hans Kleivdal  
Uni Research

Matilde S. Chauton  
SINTEF

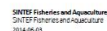
Kjell Inge Reitan  
SINTEF



### A new Norwegian bioeconomy based on cultivation and processing of seaweeds: Opportunities and R&D needs

A research work supported by Innovation Norway

**Authors**  
Jonann Skjærmo, Inga Marie Aasen, Johanne Arff, Ole Jacob Broch, Asa Cervajal, Marit Christelle, Silje Forbord, Vegvar Olsen, Kjell Inge Arntsen, Turid Rustad, Judith Sandqvist, Rolf Solbakken, Kristine B. Steishovden, Bernd Wittgers, Robert Wolff and Aleksander Hand



Follow-up  
→ SIGs



Sintef F&H publishes seaweed report



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# IBNN activities - networking, meeting arena's

## Special Interest Groups

Cross-sectorial and multidisciplinary meeting places for actors with an interest in specific areas



Coming up: SIG Lignocellulose

# IBNN activities - networking, meeting arena's

## Open seminars

IBNN seminars and seminars in collaboration with large projects

Developing the biobased industry in Norway - IBNN open seminar



Marpol open seminar



# CYCLE

Reduction and Utilization of Food Loss and Waste



NorZymeD - Annual open seminar 2014



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# IBNN activities - communication



<http://indbiotech.no>

## INDUSTRIAL BIOTECH NETWORK NORWAY

The Industrial Biotech Network Norway (IBNN) is an innovation network aiming to a the development of industrial biotechnology and biorefining. We bring together ind organizations from industry, academia and investor communities. Our focus is biotec enabling new processes and products based on renewable feedstock.

Norwegian industry and knowledge institutions aim to be in the forefront of the emerging bioeconomy.

The company Borregaard operates one of the most advanced and fully integrated biorefineries globally, exploiting 100% of the wood material for a large portfolio of high-end products.

The aviation industry has taken the challenge and is planning for biofuel production based on spruce to be ready in 2020.

Norway, being the world's second seafood exporter, has a flourishing diets sector. The aquaculture an eries industry has taken up advan of marine side-streams to valuabl for instance through enzymatic h; upgrading.

In addition, the agricultural sector numerous initiatives related to ne former waste-streams.



## Looking for a business opportunity or a technology partner?

We can help you access Norway's knowledge base and innovative players within industrial biotechnology and the bio-based industry.

## Join our network

We are welcoming anyone interested in industrial biotechnology, and in developing new and sustainable processes and products. In 2014-2015 we are starting up Special Interest Groups (SIG) within the following fields: Microalgae, Seaweed, Lignocellulose, Biorefinery and Biocatalysis.

## Member benefits

- Access to a cross-sectorial and multidisciplinary network within industrial biotechnology and biorefining, in Norway and internationally.
- Meetings, open seminars and special interest groups tailored for the IBNN members
- Courses, study tours and other competence-raising measures
- Active collaboration with other members to resolve common challenges
- Access to market information and reports
- Active promotion of actors, research and technology within the network
- National and international branding of industrial biotechnology in Norway

## Welcome to contact us!

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[www.indbiotech.no](http://www.indbiotech.no)

Follow us on Linkedln:  
Industrial Biotech Network Norway or twitter @SusanneW @E\_Kloosterman.



IB Networks Newsletter  
May 2014, week 19

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Bioeconomy is on the agenda the coming months

## Meet us at EFIB 2014

For the second time Innovation Norway, the IB Network, Innovate UK and KTN are organising a joined Norway - UK stand at EFIB, the European Forum for Industrial Biotechnology & Biobased Economy. Meet the following representatives from the Norwegian Biobased Industry: MicroA, Nutrimar, DUE MILJØ, Norilia, Barentzymes, Niri, Paper & Fiber Institute, Sintef Materials & Chemistry and Bioprotein. 1-2-1 Meetings with these organisations are made via the EFIB website. Norwegian organisations should contact the [IB Network secretariat](#) before registration.

[EFIB program and registration](#)



## Official start of enzyme company Barentzymes

7 May - Tromsø Science Park/BB Lab

Barentzymes was founded early December 2013, but the official opening will be on May 7th. The company is headquartered in Tromsø, Northern Norway at the Barents BioCentre lab, which opened its doors fall 2012. The company starts with twelve employees and chose for Tromsø because of the excellent professional environment and new established infrastructure. Barentzymes will be addressing the need for enzyme based solutions in industrial biotechnology.



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# IBNN activities – learning & competence

UK-Norway Success at EFIB 2014



Study tour - Biorenewables Development Centre,  
York – feb 2015



Scottish IB delegation visits  
Norway – Sept 2014



EFIB 2013

European Forum for  
Industrial Biotechnology

30 September - 2 October | SQUARE Brussels, Belgium



SEAWEED  
FOR BIOFUEL

Towards a Sustainable  
Seaweed Supply Chain



WHEN: Wednesday 21<sup>st</sup> May 2014 TIME: 9.30am – 4.30pm  
WHERE: Scottish Association of Marine Science, Oban, Argyll, PA37 1QA

COST: FREE REGISTRATION: <https://seaweed4biofuel.eventbrite.co.uk>

Seaweed for Biofuel is brought to you by the Algal Bioenergy Special Interest Group and Innovation Norway and is aimed at enhancing collaboration and addressing supply chain challenges around developing a sustainable and robust algal biofuel network.



Industrial  
Biotechnology Showcase  
11-12<sup>th</sup> February 2015. QEII Conference Centre, London

[www.ibif-uk.com](http://www.ibif-uk.com)

Study tour to Scotland: Seaweed – May 2014

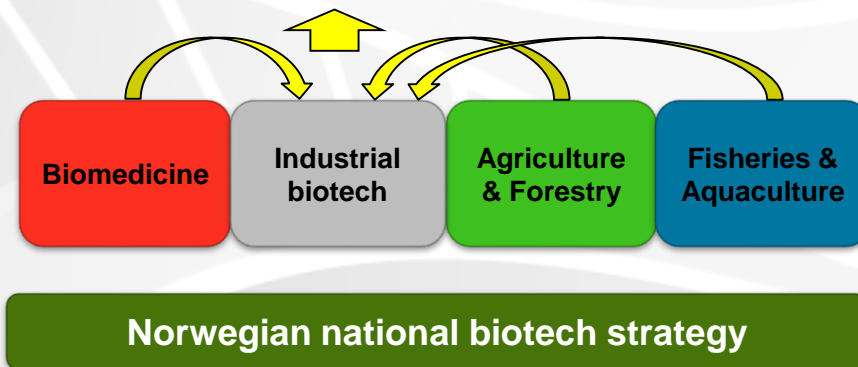


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# Part of a program

## Towards an integrated strategy for the bioeconomy

- Scaling up & demonstration** ✓ Biorefinery program, April 2013, Innovation Norway
- Investment in new technologies** ✓
- Cross-sectorial knowledge transfer** ✓ Industrial Biotechnology Network, June 2012
- Awareness and opportunity investigations** ✓ MoU Norway-UK, Feb 2011  
Innovation Norway – Innovate UK



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# Towards bioeconomy (but how?)



- Research Council programs (Biotek2021, Bionær, SFI etc)
- Innovation Norway's bioeconomy program
- NIBIO
- National bioeconomy strategy – led by Nærings og fiskeridepartementet

IBNN will have to reposition itself

- Bioeconomy
  - Industry
  - Innovation
  - Communication



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Thank you for your attention!

**More info:**

<http://indbiotech.no>



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