

# Kunnskapsparken Helgeland

- 21 employees
- Locations: Mo i Rana, Mosjøen and Brønnøysund.
- EU-advisor in Bodø
- Focused efforts on skills, collaboration, innovation, and visibility to strengthen regional development and business growth.
- Engaging with all industries to boost the region's growth potential and innovation capabilities.



# Collaboration creates growth!



## Business Development

We guide entrepreneurs and established companies.

- Opportunity studies
- Pre-studies
- Idea assessments
- Pre-incubation
- Incubation
- Business development
- Competence brokerage
- EU advisory
- Mapping and analyses



## Clusters and Networks

We connect actors and facilitate collaboration.

- Arctic Cluster Team
- Ocean Cluster Helgeland
- Festival Network Helgeland
- Arctic Adventure Hub
- Forum for Business Networks
- Battery Network
- Business Network Mineral
- Travel & Enjoy South Helgeland



## Development Projects

We lead regional projects that contribute to growth.

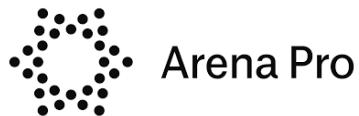
- Theseus: Industrial and Urban symbiosis in Nordland
- Energy Resilience in the North Atlantic
- EDIH Oceanopolis
- Arven
- Trainee Helgeland
- Heile Helgeland
- Skole og Arbeidsliv
- Helgeland matkultursenter
- Vitensenter Nordland
- Reiseliv Helgeland



## Study Centre

We contribute to upskilling in the region's working life.

- Project management
- Conferences and events
- Courses and competence-building measures
- Sustainability analyses, projects and initiatives
- Your Study Centre



Arena Pro



NCE  
Norwegian  
Centres  
of Expertise



Norwegian  
Innovation  
Clusters



Cluster  
Management  
Excellence  
PROVEN FOR CLUSTER EXCELLENCE

# ACT

## ARTIC CLUSTER TEAM

Sustainable and resilient solutions for the Arctic, Europe and the world

# Cluster Management

## Steering group

- Comprises eight representatives and two deputy representatives
- Elected by ACT partners at the Annual Meeting
- Ensures broad representation across industries and geographies
- Brings extensive experience in business, research, and cluster development



**Ellen Myrvold**  
Alcoa Mosjøen (leder)



**Karl-Peter Johansen**  
Nexans (medlem)



**Irina Isaeva**  
Nord university (medlem)



**Terje Ditlefsen**  
7Steel Nordic (medlem)



**Jan Gabor**  
Gabor AS og SMA Mineral (medlem)



**Marit Mork**  
Statkraft (medlem)



**Lasse Klæbo**  
Helgeland Invest (medlem)



**Eirik Hågensen**  
Fagskolen Våken (medlem)



**Hilde Rønningset**  
T1 Energy (vara)



**Dordi Snæfjellá**  
Østbø (vara)

## Cluster management team

- Managed by Kunnskapsparken Helgeland (KPH)
- KPH is a regional innovation company focused on sustainability, value creation, and growth in Helgeland
- Part of SIVA's national infrastructure for innovation and business development
- KPH has a strong network, industrial ownership, and a proven track record of delivering results.
- Trusted partner for innovation and collaboration in the region

# Europe and the Arctic urgently need sustainable and resilient solutions.



ARTIC  
CLUSTER  
TEAM



- Strengthen industrial global competitiveness
- Support Europe's supply security
- Boost value creation and exports
- Deliver climate solutions





ACT shall be a driving force  
for sustainable and resilient solutions



# Focus areas

COMMERCIALIZE  
SOLUTIONS AND  
DEVELOP GREEN  
VALUE CHAINS

STRENGTHEN ARCTIC  
RESILIENCE AND  
INTERNATIONAL  
RELEVANCE

STRENGTHEN THE  
CAPACITY FOR TWIN  
TRANSITION AND  
EXPORT

CCUS  
FORUM

HYDROGEN  
FORUM

DUAL-USE &  
DEFENCE  
FORUM

CIRCULAR  
ECONOMY  
FORUM

DIGITAL  
FORUM

COMPETENCE  
FORUM



UiT Norges arktiske universitet  
NORGES ARKTISKE UNIVERSITET  
UIT

FINNFJORD

Internia LKAB  
THE QUARTZ CORP SINTEF  
77 Nordic Wind  
RAPP BOMEK Frost  
Multiconsult Glomfjord Hydrogen INVIS  
YARA

LINEA  
norsk e-fuel Gen2 Energy Nordland MOSJØEN  
FYLKESKOMMUNE VIDERGÅENDE SKOLE  
STORVIK SHMIL Ocean GeoLoop Industri AM  
BLUEGREEN NUTRIENTS arven MON HELGELAND KRAFT  
NTNU SINTEF WASHINGTON MILLS  
StepSolutions idletechs MainTech  
axbit ilder



GreenCap  
SOLUTIONS

ACT ARTIC CLUSTER TEAM  
BERKRAFTIGE OG ROBUSTE LØSNINGER  
FOR ARKTIS, EUROPA OG VERDEN

ITEK GREEN  
TECHNOLOGIES  
Con Energy  
No Energy Wasted



ARCTIC SAPPHIRE

Nordland  
FYLKESKOMMUNE  
SALTDAL  
VIDERGÅENDE SKOLE

Nordland  
FYLKESKOMMUNE  
NORDLAND FAGSKOLE

ISOK  
Indre Salten  
Energ

NORD  
universitet  
MOBILANSWER  
HØGSKOLE FOR  
TURISME

ise  
Dragefossen

Elkem  
A Bluestar Company

Nexans

Elkem  
sma  
mineral STEEL  
A Bluestar Company

Mo  
Indstripark

tietoevry

SIEMENS

MOMEK  
GROUP

Nemko Norlab  
Nordland  
FYLKESKOMMUNE  
POLARSIRKELEN  
VIDERGÅENDE SKOLE

HS  
Helse & Sikkerhet SA

MOMEK  
INVEST

Goodtech  
MEYERSHIP

RANA  
UTVIKLING

Prolink  
INTERNATIONAL

SpareBank  
1  
SINTEF  
T Energy

HARSCO  
METALS & MINERALS

TECHLAB  
Kunnskapsparken  
Helgeland

VITENSENTER  
NORDLAND  
HELGELAND  
FERDIGBETONG  
IAF  
ØSTBØ

STRAND  
SHIPPING

IMTAS  
LOCATED

asplan  
viak  
HANESETH  
ENERGI  
HELGELAND  
INVEST

RANA  
INDUSTRIHALAS  
ARCTIC  
SEAFARM

Kvarøy  
FISKEOPPDRETT

SJURSEN DESIGN  
Haavind  
Bærekrafts  
partneren

TEROCHROME  
SLITASJETEKNIKK AS  
WHARF RESISTANT SPECIALISTS

THE  
CORING  
COMPANY

Digitale  
Helgeland  
dinPersonalpartner

Digital  
Footprint

asplan  
viak  
HANESETH  
ENERGI  
HELGELAND  
INVEST

Kvarøy  
FISKEOPPDRETT  
Sjursen Design  
Haavind  
Bærekrafts  
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TEROCHROME  
SLITASJETEKNIKK AS  
WHARF RESISTANT SPECIALISTS

Gabor  
AS  
miras

TEROCHROME  
SLITASJETEKNIKK AS  
WHARF RESISTANT SPECIALISTS

Gabor  
AS  
miras

SAFESTART

ASSET BUYOUT PARTNERS European Resource Hub AS

BRYN AARFLOT  
1947 Statkraft

Nordic  
Electrofuel

init  
Knightec  
Group

Intelecy Skift  
Næringslivets  
Klimaledelse

ROYALE

Fagskolen i Viken USN  
Universitetet i Sørøst-Norge

SEW  
EURODRIVE

NORTH  
NORWAY  
EUROPE

Nord-Norges  
Europakontor





ACT

NEW GREEN  
VALUE CHAINS



CARBON  
CAPTURE

CARBON  
LOGISTICS  
AND HUBS

CARBON UTILIZATION  
SUBSEA CARBON STORAGE

E-FUELS / AMMONIA



Photo: Benjamin Strøm Bøen/Mo industripark AS



Arctic Cluster Team  
Carbon capture and storage  
Norwegian University of Science and Technology

NEW GREEN  
VALUE CHAINS



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NEW GREEN  
VALUE CHAINS

GREEN  
HYDROGEN  
PRODUCTION

H<sub>2</sub>  
DISTRIBUTION  
HUBS

INDUSTRIAL USECASES  
H<sub>2</sub> TO MARKET

AMMONIA



NEW GREEN  
VALUE CHAINS



GREEN  
HYDROGEN  
PRODUCTION

H<sub>2</sub>  
DISTRIBUTION  
HUBS

INDUSTRIAL USECASES  
H<sub>2</sub> TO MARKET

E-FUELS / AMMONIA





# Gen<sub>2</sub>Energy



Production of Liquid Hydrogen in Mosjøen

📍  
2019  
Gen2 Energy

⚡  
1 GW  
Portfolio

👤  
18  
Employees

🎯  
2  
Projects by  
2030

# Gen2 Energy are currently developing four sites for production of hydrogen in Norway

## Nesbruket Phase I & II

- 💧 **21.000t liquid hydrogen**
- 💧 **210.000t CO2 reduction**
- 💧 **NOK 7bn investment**



# A complete value chain securing flexible use of LH2



## Transportation by Road & Rail



## Bunkering services and port operations



## Transportation by Vessels



## Largescale production of green hydrogen

- Scaling of production with increased demand
- Multiple production sites allow for security of supply
- 1GW can cover ~25% of the Norwegian fossil fuel in the maritime sector

## Distribution in Norway and to Europe

- Strong partnerships with the most experienced service providers
- Offering knowledge and support to all parts of the value chain
- Bunkering of LH2 through multiple options

## Vessels design, transport and bunkering

- Strategic partnership to develop solutions for supply and bunkering
- Experienced from implementation and use of LH2 on vessels in use today
- Offering knowledge on newbuilds and use of LH2

# Collaborations to enable LH2 Supply tailored to customer needs



Rail transport



CargoNet



Road transport



Container vessels



samskip

Tanker vessels



ECOLOG

Feeder vessels



LH2 SHIPPING



# Glomfjord Hydrogen



**44 Years in Operation,  
Ahead of Its Time**

## Road Construction County Road FV17 Glomfjord – Ørnes Feasibility Study

A low-emission construction project using hydrogen

Scope: New route with two tunnels

Cost: Approx. 900 MNOK

Start: 2027

Duration: 3–4 years

### **County's objective**

To be carried out as a low-emission construction project

### **Hydrogen as a solution**

Hydrogen becomes available from the company Neptun Glomfjord Green Ammonia in 2027

### **Glomfjord Hydrogen**

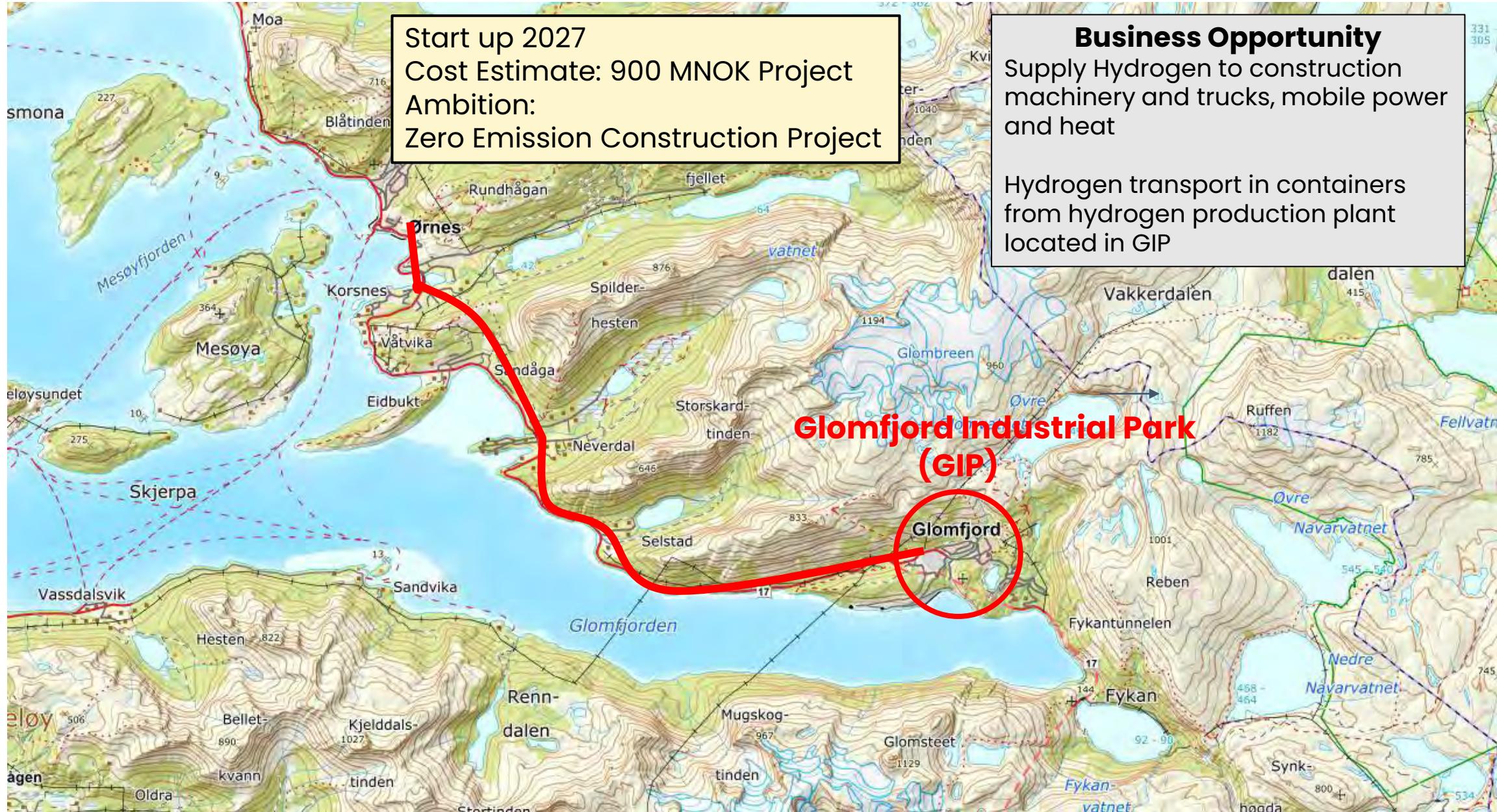
Application sent to Enova for support for a feasibility study

The feasibility study will assess the basis for a pilot project in 2027

(waiting for response from Enova)

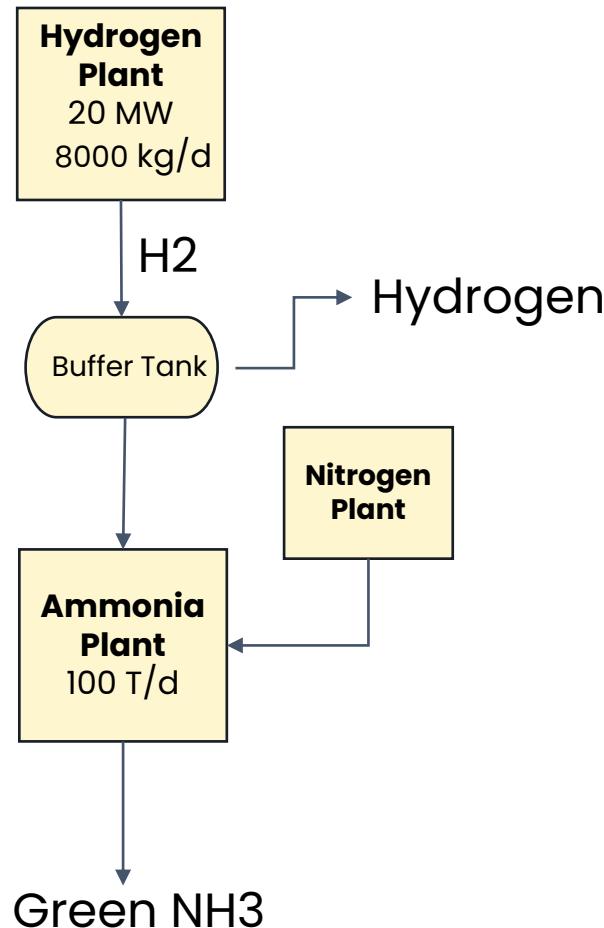
# **County Road F17**

## **Road Construction Project Glomfjord - Ørnes**



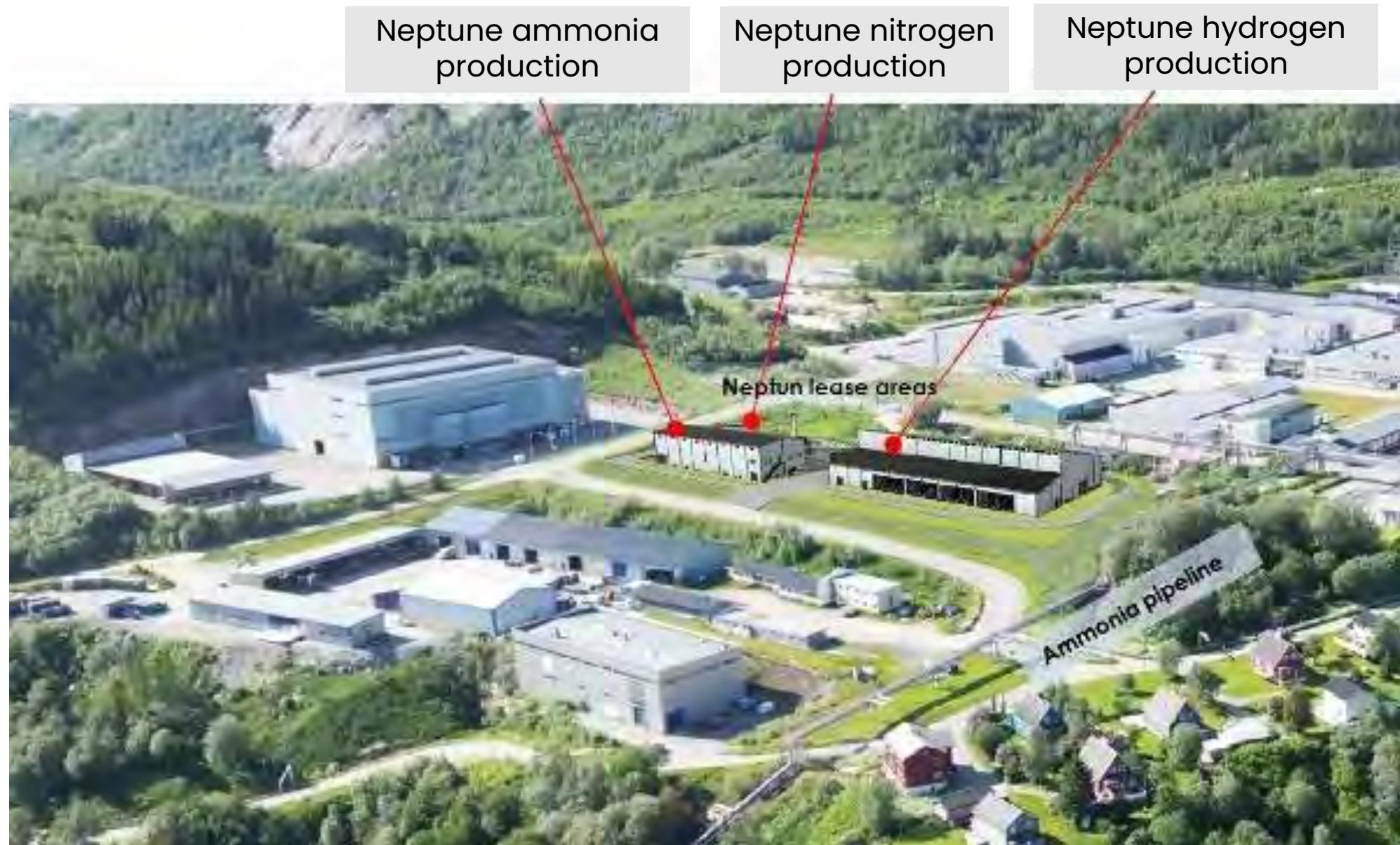
# Neptun Glomfjord Green Ammonia

Neptun Glomfjord Green Ammonia  
Production Start 2027



- The project is fully financed, and the investment decision made
- Design and engineering completed, technology choice made
- Start of site preparation in August 2025, Start of production in 2027
- Direct employees in operations will be 15
- The ammonia will be piped to Yara Glomfjord's existing mountain storage and can be used as maritime fuel or for emission-free fertilizer production

# Neptun Glomfjord Green Ammonia





# we are shaping the arctic hydrogen valley

- The initiative was launched in 2019, laying the groundwork through early positioning and collaborative activities.
- Through ACT, Nordland became part of the European Hydrogen Valleys S3 Partnership, a network of regions working together on hydrogen ecosystems, and the European Clean Hydrogen Alliance
- We have developed a strong collaboration through our Hydrogen Forum, advancing H<sub>2</sub> production and joint international market and networking activities.
- Developing collaboration between industries, academia, and technology developers in Norway, Sweden, and Finland
- Enable decarbonization of industry, transport, and maritime sectors across the Arctic region
- Infrastructure for storage, distribution, and hydrogen derivatives (ammonia, e-fuels), enabling exports to Europe and beyond





# Internationalization and East-West Collaboration

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## ACT Dinner (European Hydrogen Week):

- A private networking dinner for ACT members, attendees of European Hydrogen Week, and potential collaborators.
- Participants included business regions, hydrogen research organizations, and industries interested in hydrogen.
- Facilitated networking and collaborations between Norwegian and Swedish participants.

# Internationalization and East-West Strategy



## Green Hydrogen Europe Summit, Lisbon:

- Presented about Cluster collaboration and Innovation in the Arctic region.
- Highlighted the developments in the field of Green Hydrogen, Carbon capture and E-fuels representing ACT.

# Current status: Mapping the Arctic Non-Border Hydrogen Valley



## Northern Norway

Northern Norway is strong in green H<sub>2</sub> production, industrial decarbonization, and cross-sector collaboration.

Arctic Cluster team (ACT), Gen2 Energy, GreenH, Glomfjord hydrogen, Maritime Clean Tech, Energi I Nord, LH2 shipping, Varanger kraft

## Northern Sweden

Contribute through regional H<sub>2</sub> valleys, industrial decarbonization, infrastructure development, and research leadership.

E.g. Luleå is host of the Nordic Hydrogen Valley Conference 2025

Luleå tekniska universitet, LTU Business, Lindholmen science park, LKAB?

## Northern Finland

Is potential hub for H<sub>2</sub> production and industrial use due to proximity to Sweden & strong industrial base.

Also, Oulu hosts the Northern Power Business Forum and is a key location for H<sub>2</sub> infrastructure discussion

Potential partners: University of Oulu, Business Oulu, Oulu Energia, SSAB, Gasgrid, Metsä Fibre, QPower, Outokumpu, Green North Energy

# H<sub>2</sub> Valley Proposal Checklist

What's okay, and where is there a challenge to solve?



## Project Scope & Integration

- Cover production, storage, distribution, & multiple end-uses
- At least two H<sub>2</sub> applications from two different sectors (energy, industry, transport)
- Demonstrate system-level innovation & sector coupling
- interoperability with existing infrastructure where relevant

## Technical Requirements

- ≥ 4,000 tn/year of clean H<sub>2</sub> from new capacity (last 2 years during the project).
- Shared H<sub>2</sub> supply infrastructure.
- Integration with renewables & storage for flexibility.
- State-of-the-art technologies
- Preliminary H<sub>2</sub> safety plan included.
- Sustainability aspects clearly addressed

## Operations & Impact

- Minimum 2 years of operation with monitoring and KPIs.
- Demonstrate CO<sub>2</sub> reduction & air quality improvements vs incumbent tech.
- Clear pathway to financial viability after 2 years.
- Scalability analysis & replication strategy

## Implementation & Funding & Knowledge sharing

- Implementation plan, timeline & milestones.
- Funding plan including co-funding sources.
- LoI's from authorities and off-takers.
- Communication plan with measurable KPIs.
- Plan for synergies with existing valleys and skills exchange.



## Kicking Off the Theseus Hub4Circularity Project in Athens

Arctic Cluster Team (ACT) is proud to announce participation in a groundbreaking project aimed at enhancing sustainability and circular economy practices in the industrial sector through the establishment of a Hub for Circular (H4C). The EU-funded project has recently secured around 230 million NOK for circular innovations.

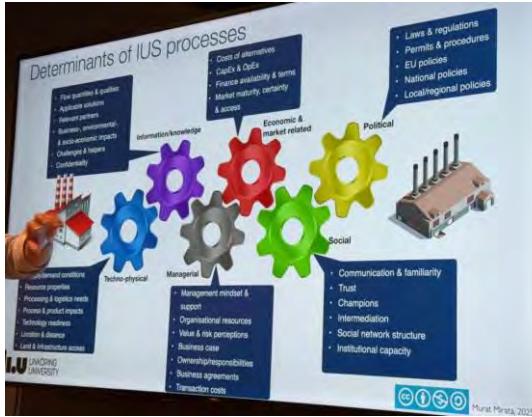


# Plastics Workshop

Nov. 2025, Hemnesberget

• Kunnskapsparken  
Helgeland

SINTEF



# Workshop w/bio-industry

A Green Week partner event

June 2025, Bodø



Funded by the European Union's Horizon Europe Innovation Actions Programme under Grant Agreement No 101178059. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or HADEA. Neither the European Union nor the granting authority can be held responsible for them.



• Kunnskapsparken  
Helgeland

SINTEF

## Russia–Ukraine war over past day: Escalation intensifies with deep strikes and energy attacks

08 Oct 2025 09:00 ↑ 08 Oct 2025 09:52

UKRAINE AND RUSSIA AT WAR Share



Russia–Ukraine war over past day: Escalation intensifies with deep strikes and energy attacks | News.az

RESEARCH PAPERS | 19th August 2025

## The Scale of Russian Sabotage Operations Against Europe's Critical Infrastructure

This IISS paper assesses Russia's unconventional war on Europe, focusing on sabotage of critical infrastructure, from military sites and energy grids to communications and undersea cables, testing the resilience of European governments and societies and challenging NATO/EU deterrence.

<https://www.iiss.org/research-paper/2025/08/>



ARCTIC CLUSTER TEAM  
Sammen om nye bærekraftige løsninger  
for Nord-Norge, Pôr og hele verden



Iceland Renewable  
Energy Cluster



Energy Debate ▾ Products ▾ What We Do ▾ Who We Are ▾ In the Media

Low-Carbon Energy | Oil Markets | Gas and LNG | Risk | Competitive Intelligence | Energy Intelligence Premium

THE BIG PICTURE

## Europe Braces for Escalating Hybrid War Risks

<https://www.energyintel.com/00000199-a0b3-dcbb-1bb9-e3f3b9430000>

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A PART OF WATCH MEDIER

# ENERGYWATCH

UTILITIES OIL & GAS RENEWABLES CLEANTECH POLICY & TRADING

ADVISORS | SUBSCRIPTION

**The cyber threat is growing:**  
“Hacker groups are particularly focused on breaking into Europe's energy supply”

Decisions made on the world stage have increased attention on the European energy sector. A security specialist gives four reasons as to why the number of cyber attacks has exploded.

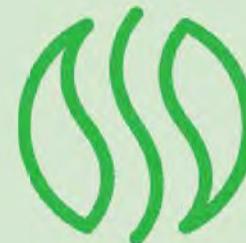
# Energy Resilience in the North Atlantic (ERNA)

An Arctic cross border Collaboration Project funded by NORA



**ACT**

ARCTIC CLUSTER TEAM  
Sustainable solutions for Northern  
Norway, Paris and the World



Iceland Renewable  
Energy Cluster

# From Dependence to Resilience

## THE EU'S ARCTIC POLICY

### A SAFE, STABLE, SUSTAINABLE, PEACEFUL AND PROSPEROUS ARCTIC

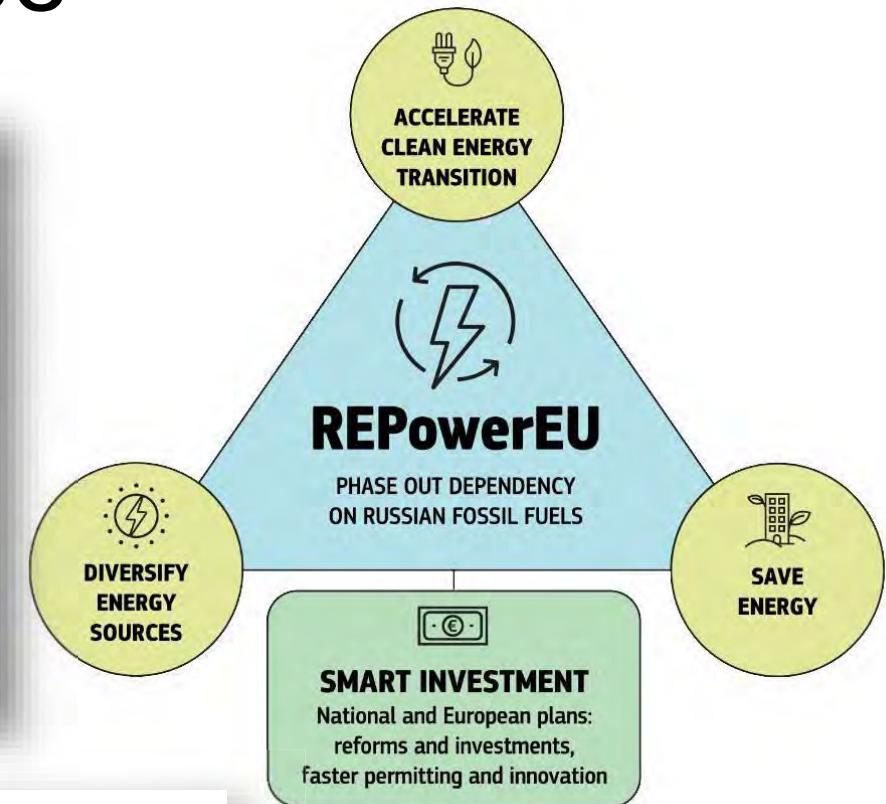
We believe that a safe, stable, sustainable, peaceful and prosperous Arctic is important not just for the Arctic itself, but for the EU and the entire world. While the Arctic states hold the primary responsibility for tackling issues within their territories, many of these issues do not respect borders, and regional or multilateral cooperation can effectively address them.

The [EU's updated Arctic policy, published on October 13, 2021](#), aims to help preserve the Arctic as a region of peaceful cooperation, to slow the effects of climate change, and to support the sustainable development of Arctic regions to the benefit of Arctic communities, not least Indigenous Peoples, and future generations.

The implementation of the EU's Arctic policy will help the Union to deliver the targets defined by the EU Green Deal and meet its geopolitical interests.

Two years of REPowerEU:  
Strengthening Europe's  
energy resilience

Svalbard Takes Its First Step  
Towards Becoming a Zero-  
Emission Community





# ERNA

## Aim

- Strengthen regional energy resilience through innovation, knowledge-sharing, and partnerships
- Support development of sustainable, flexible, and secure energy systems across the North Atlantic

## Focus Areas

- Energy recovery and storage
- Energy security and robust systems
- Knowledge exchange and best practice sharing
- Policy recommendations for resilient energy future

## Further plans (Year 2 -3)

- Innovation challenges, AI & digitalization workshops
- Events in Greenland/Faroe Islands to formalize partnerships & align strategy
- Expand network to include Scotland and Canada
- Explore EU/EEA funding (Interreg, Horizon Europe, EEA Grants) for large-scale projects
- Engage students and universities via hackathons, teamwork projects, and youth-focused initiatives

# NORA – Nordic Atlantic Cooperation

Members: Greenland, Iceland, Faroe Islands, coastal Norway

## Goals

- Strengthen regional cooperation to build a dynamic and sustainable North Atlantic
- Support economic development, innovation, and resilience
- Facilitate cross-border collaboration between private sector, research, and institutions

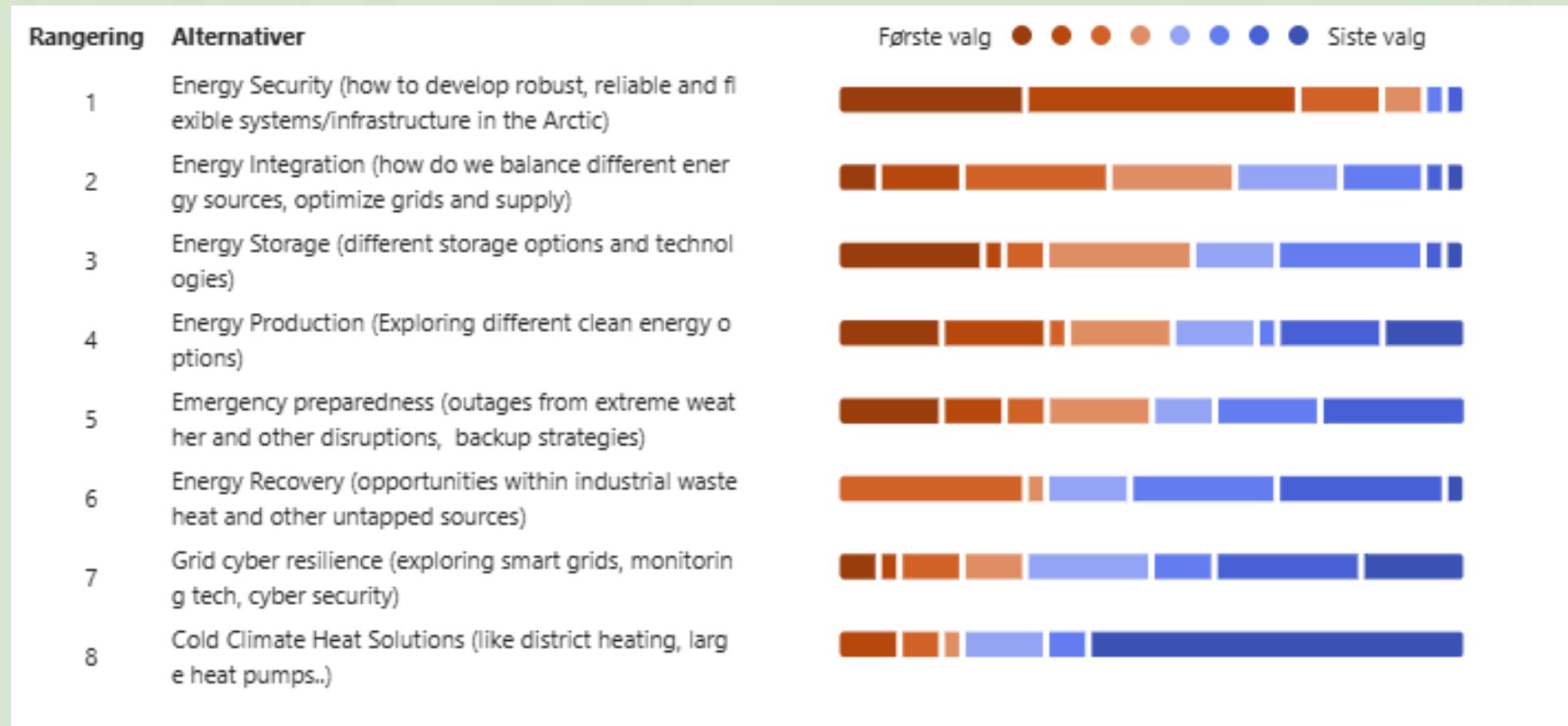
## Core activities

- Project Funding
- Agenda Setting
- Alliance Building

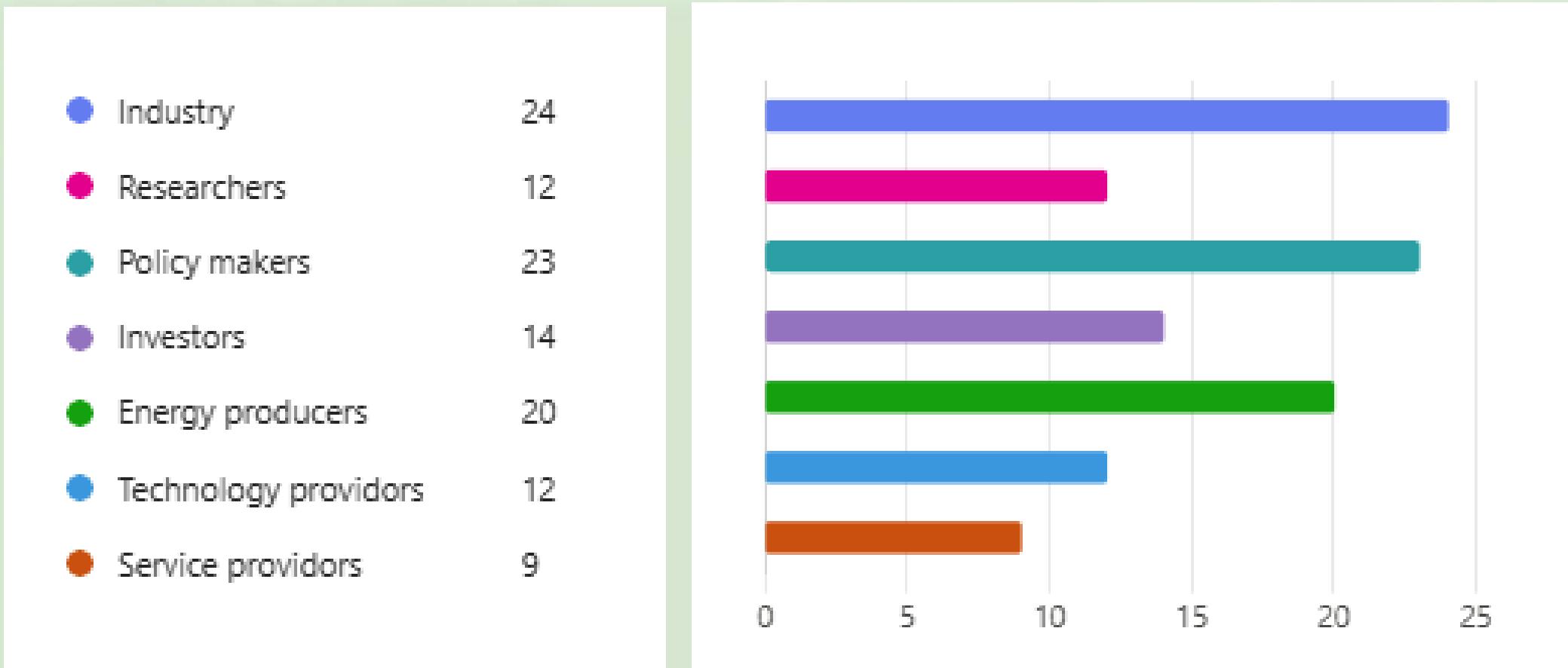
## Focus areas (2025-28)

- Resource security and circular economy
- Mobility and green transition
- Artificial intelligence
- Regenerative tourism
- Marine industries and food production
- Seniors as active contribution in rural growth
- Nice place to live

# Most relevant topics (30 answers)



# Actors of importance for ERNA (30 answers)



# Kick-off meeting

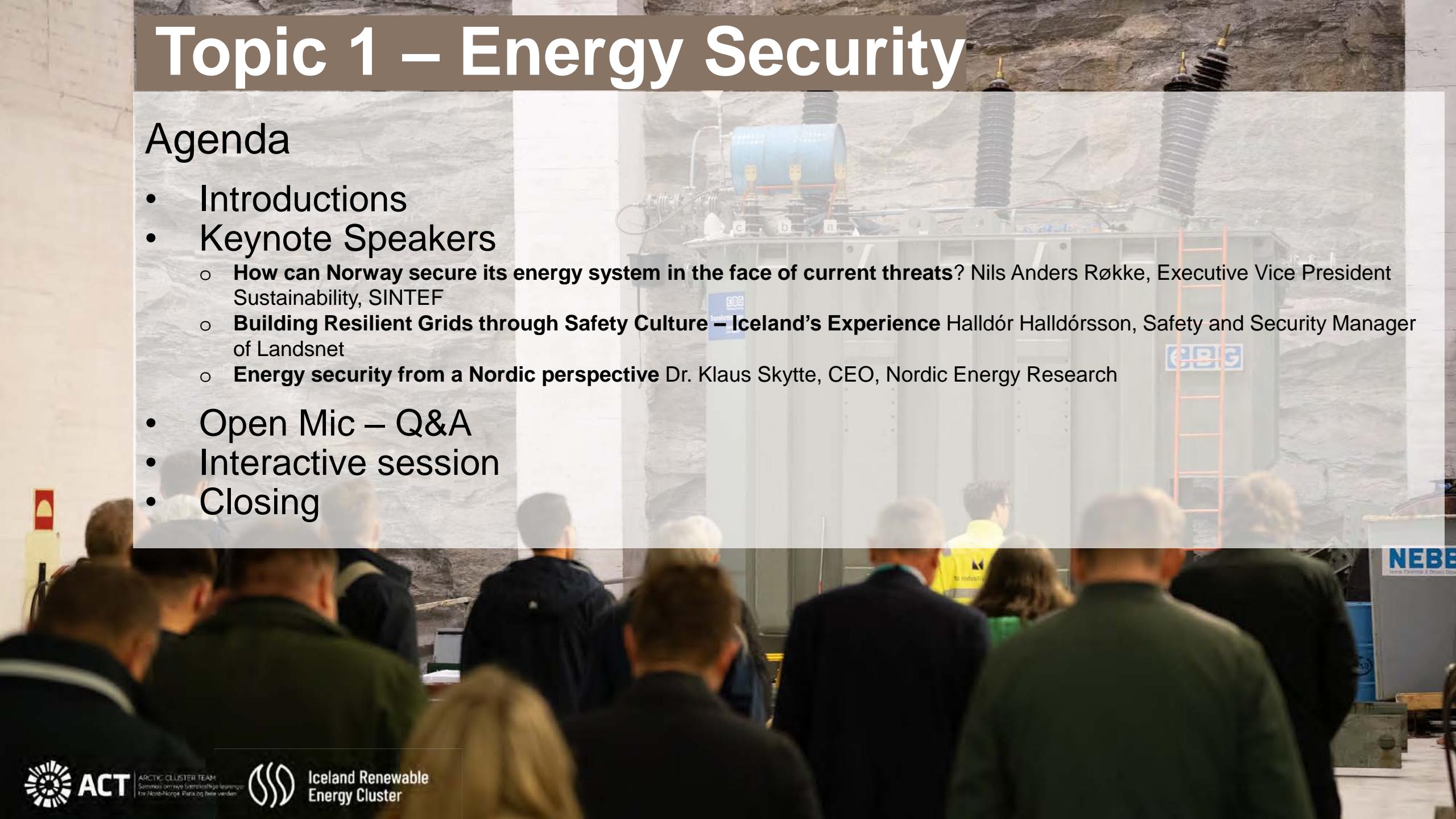
## Agenda:

- Background of the Project
- Project Partners: Norway, Iceland, Greenland, Faroe Islands
  - Norway: Monica Paulsen, Cluster Manager, Arctic Cluster Team
  - Iceland: Rósbjörg Jónsdóttir, Cluster Manager, Iceland Renewable Energy Cluster
  - Greenland: Eva Jørgensen, Greenland Business Association
  - Faroe Islands: Kári Mannbjørn Mortensen, Umhørvísstovan (Faroese Environment Agency)
- Keynote Speakers
  - Resilience in the Arctic – and the role and vulnerability of energy systems  
Erla Sigríður Gestsdóttir, leader of Energy, Ministry of Environmental, Energy and Climate, Iceland
  - From Competition to Balance: The need for Flexible and Resilient Energy Systems in the Arctic  
Mons Ole Dyvik Sellevold, Project Manager, Store Norske Energi, Svalbard
- Introduction Round, Open Mic Session
- The Way Forward

# Topic 1 – Energy Security

## Agenda

- Introductions
- Keynote Speakers
  - **How can Norway secure its energy system in the face of current threats?** Nils Anders Røkke, Executive Vice President Sustainability, SINTEF
  - **Building Resilient Grids through Safety Culture – Iceland's Experience** Halldór Halldórrsson, Safety and Security Manager of Landsnet
  - **Energy security from a Nordic perspective** Dr. Klaus Skytte, CEO, Nordic Energy Research
- Open Mic – Q&A
- Interactive session
- Closing



# The road going forward (2026)

20/10 at  
1200 (CET)  
Kick-off  
meeting

26. November at  
1300 (CET):  
Energy Security

28. January at  
1300 (CET):  
Production, Storage  
and Recovery

4. March at  
1300 (CET):  
Energy Integration

22. April at 1300 (CET):  
Emergency Preparedness,  
Risk Management  
& Safety Culture

# Trust. Collaboration. Innovation.



**Collaboration as a Method**  
We build partnerships that empower all



**Open Innovation in Practice**  
We connect industries and ideas to create something new — together



**Accelerating Development**  
We move faster from idea to action.



**Driving Sustainability**  
Shaping the future of industry.



**Trust as a Foundation**  
Sharing knowledge and ambitions to strengthen everyone.

# Thank you for listening!





# Monica Paulsen

Cluster Manager, Arctic Cluster Team

mp@kph.no

+47 470 20 460

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