



# Nordic Energy Research

Knowledge-creation  
supporting energy and  
climate decision making in  
the Nordics

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Nordic Energy Research



# What we do

We are the platform for cooperative energy research and policy development under the **Nordic Council of Ministers** – the intergovernmental body between Denmark, Finland, Iceland, Norway and Sweden.





# Nordic Energy Research

**Financing  
Research**

**Analysis**

**NCM secretarial  
support**



**Nordic Energy  
Research**



# Agenda

- ~~Who we are and what we do~~
- The Baltic Energy Technologies Scenarios 2018-report
- The Joint Baltic Nordic Energy Research Programme
  - In-depth into BaltHub project
- Networking Group on Carbon Capture, Use and Storage
- Nordic Clean Energy Scenarios



# Baltic Energy Technology Scenarios 2018

Liepāja, Latvia.





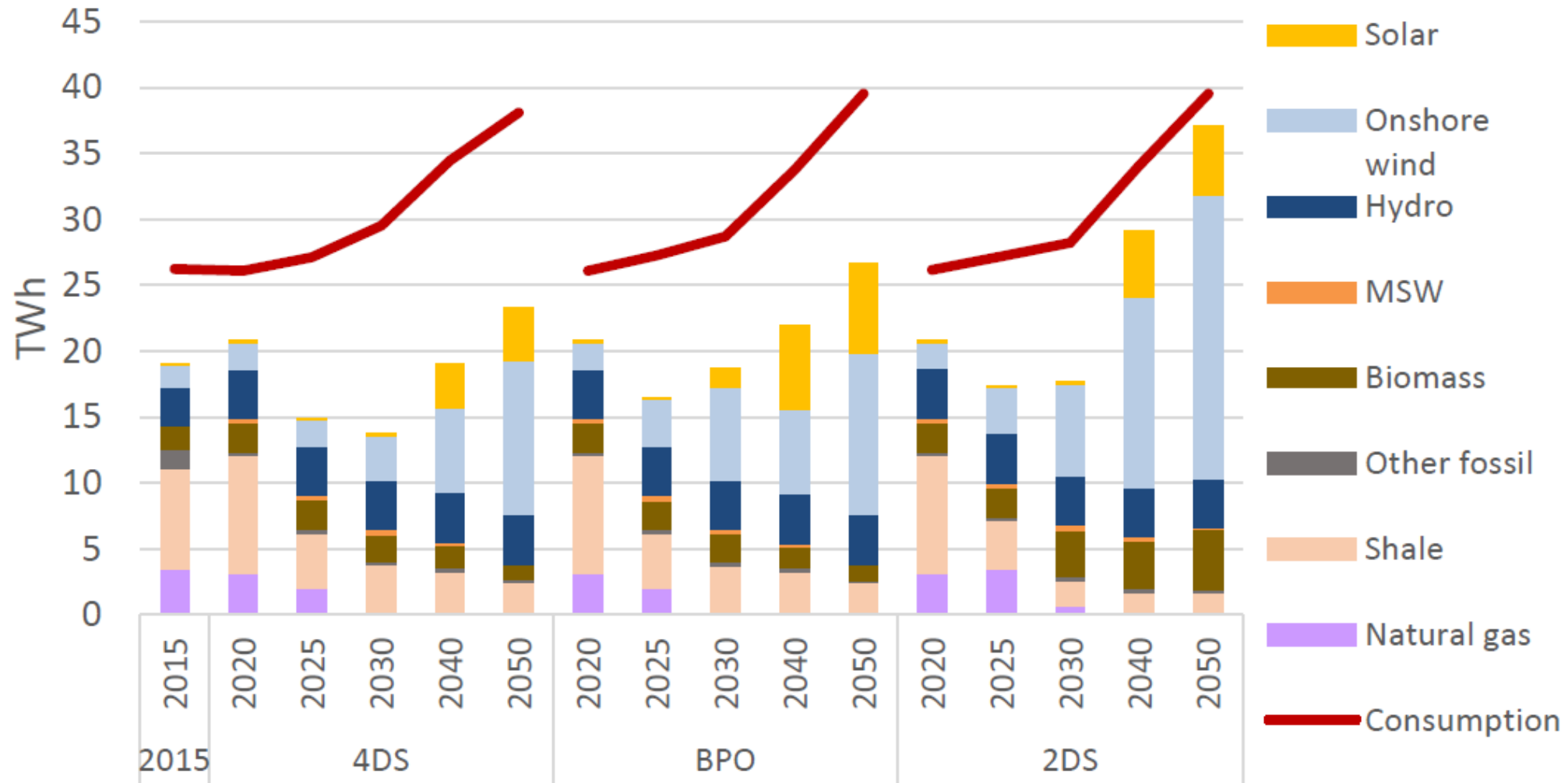
## Baltic Energy Technology Scenarios 2018

# What we wanted to do:

- Build on the experiences from the Nordic Energy Technology Perspectives 2016 (NETP)
- Produce a coherent analysis of the energy system in all three Baltic countries
- Give input to the Baltic states' reporting on the EU integrated national energy and climate plans
- Find research areas for more Baltic-Nordic cooperation

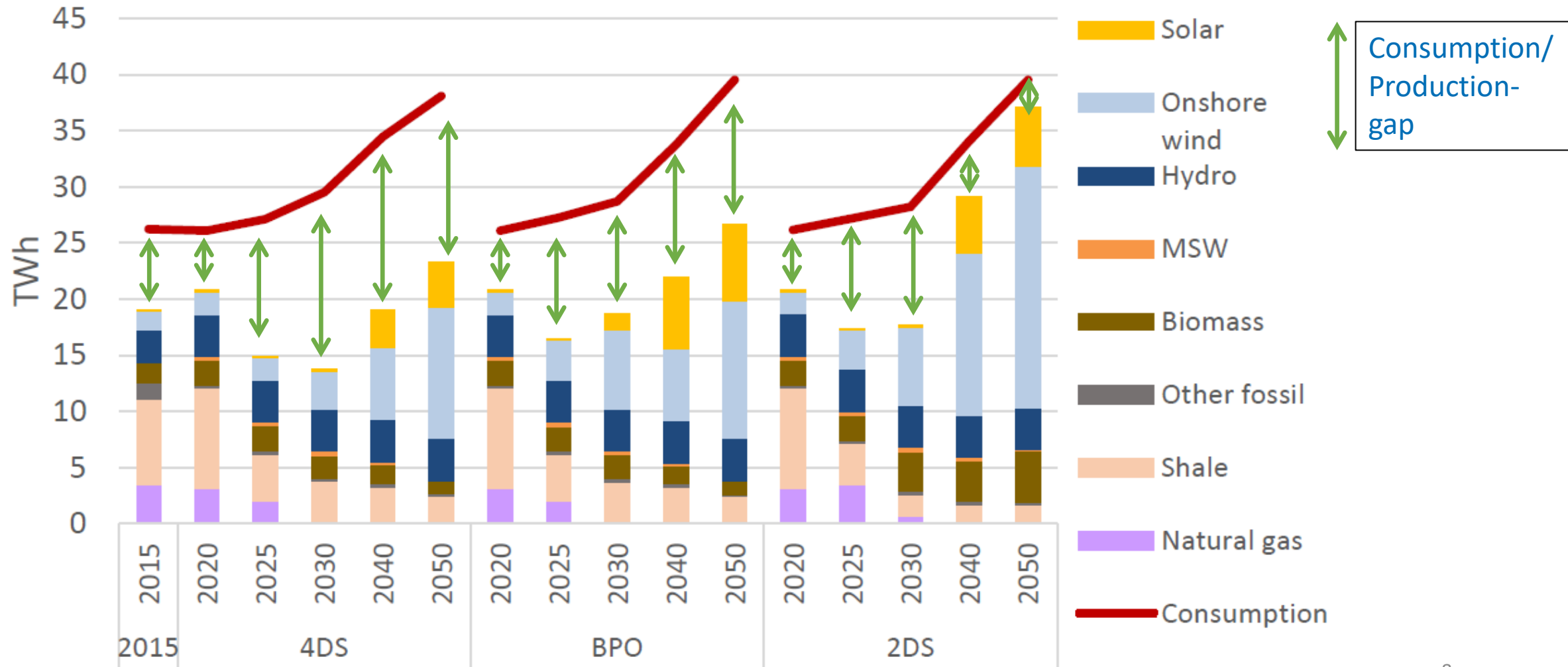


# The Baltic countries are likely to remain net importers of electricity





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## Baltic Energy Technology Scenarios 2018

### 4 key BENTE findings:

1. **GHG reductions should be led by the electricity and district heating sectors.**
2. **The Baltic countries could achieve proposed renewable energy targets using domestic resources.**
3. **Electricity consumption is projected to increase.**
4. **Renewable energy is becoming the cheapest option for new electricity generation.**



# Joint Baltic-Nordic Energy Research Programme







# Background

- NEF has, since 1999, received an additional grant for Baltic and North-western Russian cooperation
- It was challenging to get applicants from the Baltics and North-West Russia to NEF's call for proposals
- In 2018, NEF started a four-year joint Baltic-Nordic energy research program





This research collaboration is a **jointly funded research program** between NER, Estonia, Latvia and Lithuania, with NER as the programme manager.





# The Joint Baltic-Nordic Energy Research Programme

## Aims:

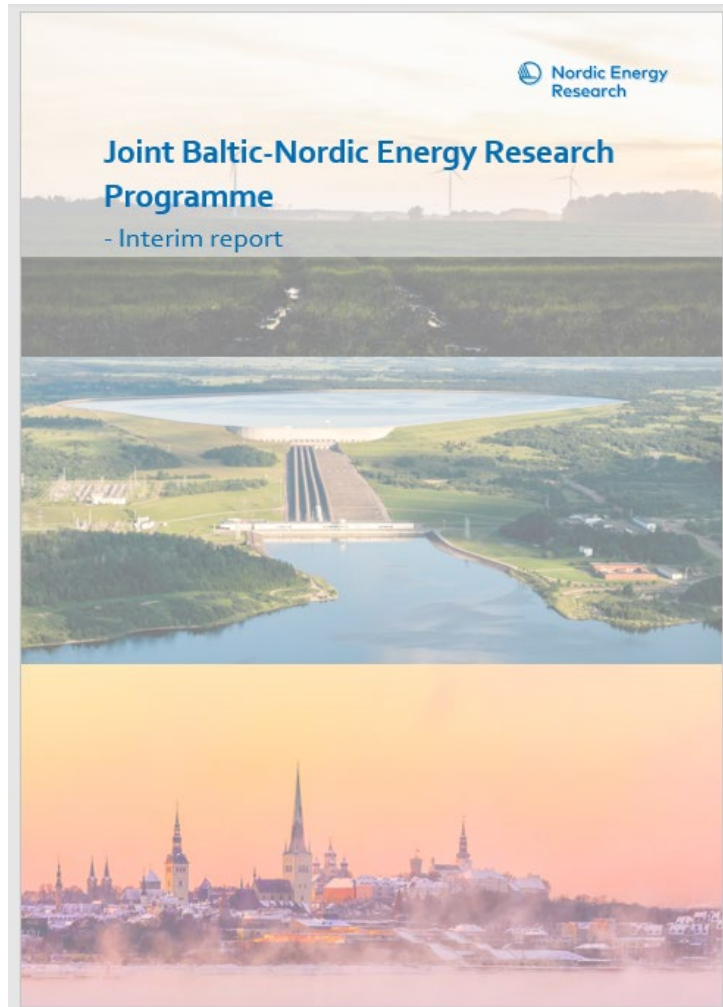
- Action no 1:  
Promotion of intra-Baltic and Baltic-Nordic research projects with participation of Baltic researchers
- Action no 2:  
A Baltic-Nordic Doctor of Philosophy (PhD) collaboration
- Action no 3:  
Exchange of energy researchers between the Baltic and Nordic countries.

## The thematic scope:

- Decarbonisation of the transport sector
- Energy efficiency in buildings and industry
- Energy system analysis
- Challenges and opportunities for regional electricity grids



# Joint Baltic-Nordic Energy Research Programme – 2018-2021



Six research projects funded - Three new ones on the way

Two reports completed - one on the way

Two mobility projects - a third out for proposals





# Joint Baltic-Nordic Energy Research Programme

## **2019 research projects**

- Fast, flexible and secure decarbonisation of the Baltic states – possible progress in the next Ten years (FasTen)
- Integrating energy sufficiency into modelling of sustainable energy scenarios
- Knowledge sharing on NZEB buildings in the Nordic-Baltic region

## **2020 research projects**

- Techno-economic performance and feasibility study of the 5GDHC technology using agent based modelling and GIS
- Interconnecting the Baltic Sea countries via offshore energy hubs
- Impacts of ambitious energy policy pathways

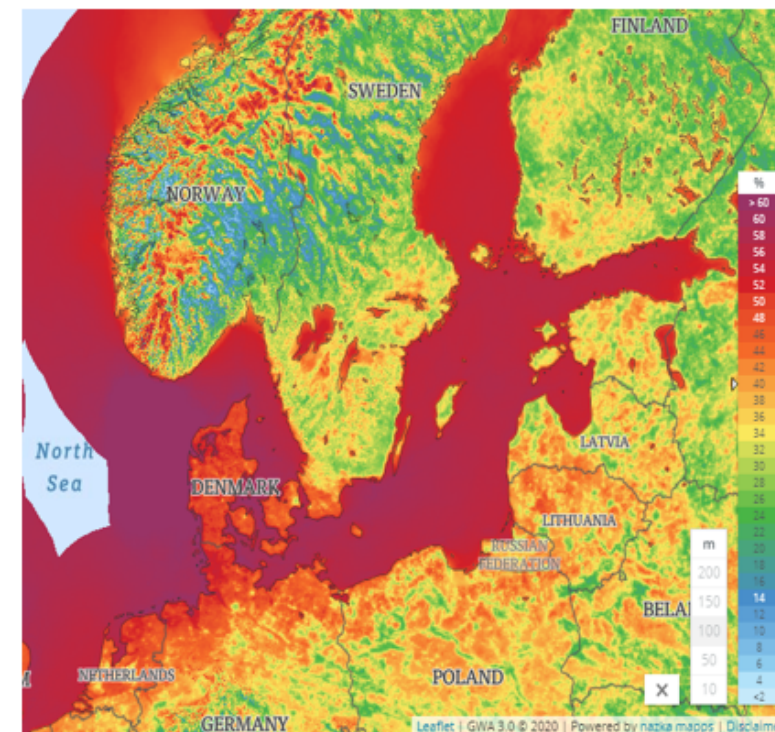


# Overview of BaltHub



# Interconnecting the Baltic Sea countries via offshore energy hubs (BaltHub)

- **BaltHub analyses the cost-effectiveness of Baltic Sea energy hubs**
  - Wind power connected far offshore where wind speeds are high
  - Hubs interconnect the onshore energy systems of the Baltic Sea countries
- **The energy hubs can provide for the expected increase in demand towards 2050**
  - Driven by sector coupling
- BaltHub is funded by the Nordic Energy Research
  - Via the Baltic-Nordic Energy Research Programme





# BaltHub partners and Observers

- **Partners:**

- Technical University of Denmark (DTU), Denmark
  - » DTU Wind Energy & DTU Management
- SINTEF, Norway
- Tallinn University of Technology (TalTech), Estonia
- Kaunas University of Technology (KTU), Lithuania

- **Observers**

- Fingrid, Finnish TSO
- Energinet, Danish TSO
- Elering, Estonian TSO
- LITGRID, Lithuanian TSO



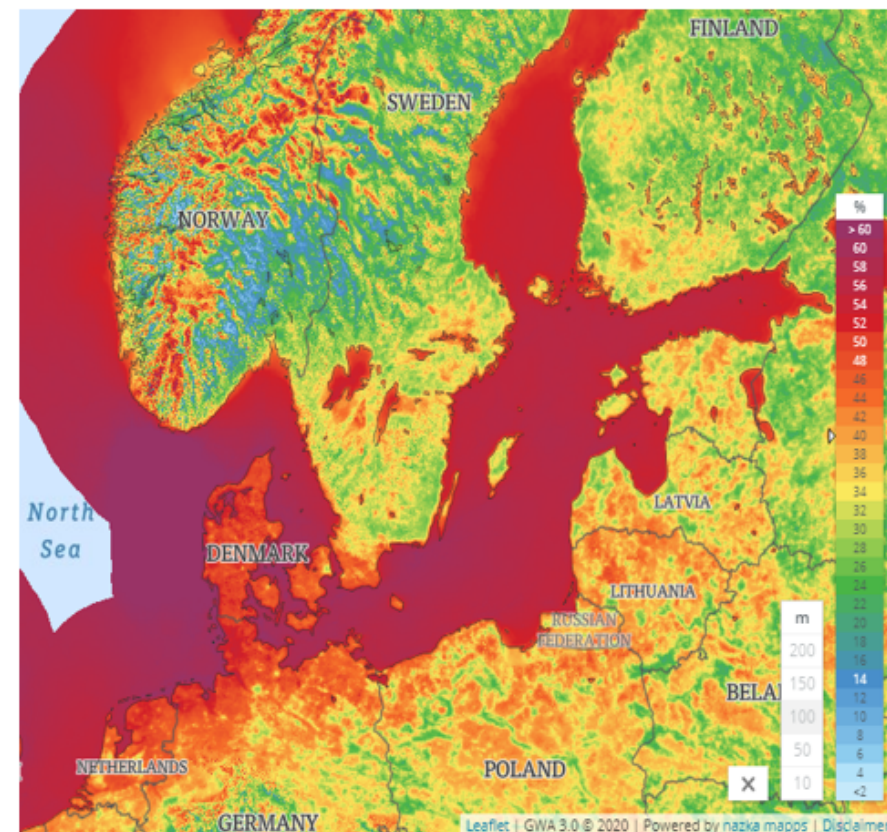
# BaltHub research questions

1. Are offshore energy hubs a cost-effective solution for driving green transition in Baltic Sea countries?

How is this impacted by key input parameters?

2. Do large-scale wake losses jeopardize the cost-effective buildout of such hubs?
3. Are the hubs beneficial in interconnecting the Baltic Sea region's countries?
4. What are the optimal here-and-now offshore infrastructure investment decisions?

- Considering uncertainty of the future



Are offshore energy hubs a cost-effective way to harness the significant offshore wind potential in the Baltic Sea?



# Open call for research proposals:

- This call of 5,25 million NOK aims to support three research projects of up to two years in length.
- Each project can be eligible for funding of up to 1,75 MNOK for the project period (up to 2 years).
- **Call deadline:** 22.09.2021 13:00

Apply [here](#).

## Call for proposals: Research projects within the joint Baltic-Nordic Energy Research Program for 2022-2023

Nordic Energy Research is issuing a call for proposals for research projects within the joint Baltic-Nordic Energy Research Program. The thematic scope of the call is limited to one (or more) of the following four areas: Decarbonization of the transport sectorEnergy efficiency in buildings and industryEnergy system analysisChallenges and opportunities for regional electricity grids The scope of the call covers technical/natural sciences and social science-based research on energy. These projects should aim at addressing research questions from a Baltic-Nordic perspective...

[Read the full call](#)





# Open call for mobility proposals:

- Under this call, there is a total of NOK 6 million available for projects coordinated by Nordic or Nordic-Baltic constellations. Of this, NOK 1 million is specifically reserved for partners in Nordic-Baltic projects.
- Each project can be eligible for funding of up to 1 MNOK for the project period (up to 3 years).
- **Call deadline:** 28.10.2021 13:00

Apply [here](#).

## Call for proposals involving Nordic or Nordic-Baltic PhD and Researcher mobility and Networking activities

Introduction The Nordic countries have a unique and long-standing cooperation on energy, which has created a solid foundation for the development of a sustainable and secure energy supply in the region. Now it is time to take the next step and further the Nordic energy cooperation with the green transition as the new framework. The green transition is a process of changing our production, our way of thought, our investments, and our institutions for a sustainable future. In that future...

[Read the full call](#)





# **Networking Group on Carbon Capture, Use and Storage (NGCCUS)**

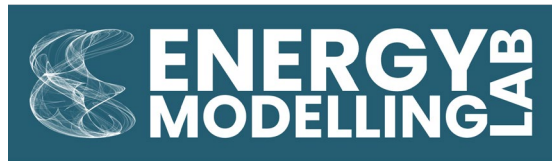


# NGCCUS, 2019-2021

- **Why** was the group established?
  - The NGCCUS emerged in 2018 after it was noted that there was a significantly increased interest in CCUS and decarbonization strategies in these regions.
- **Who** is involved in the group?
  - The representatives from Nordic countries and the autonomous regions, as well as the Baltic countries (also known as Nordic-Baltic 8, NB8).
- **What** does the group aim to do?
  - promote information exchange and cooperation on CCUS policy development and decarbonization,
  - discuss CCUS issues concerning policies and strategies and make proposals to the EK-E for example on EU regulations, and
  - monitor the development in the decarbonization area and within CCUS in the Nordic and Baltic region, with focus on all technologies and system solutions.



# Project Partners





# NORDIC CLEAN ENERGY SCENARIOS

Solutions for Carbon Neutrality



Nordic Energy  
Research



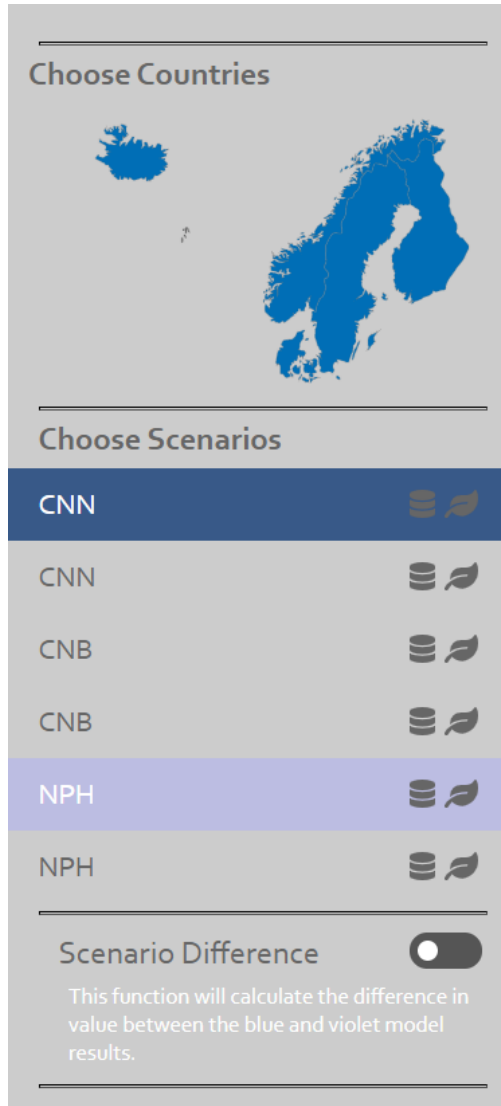
# NORDIC CLEAN ENERGY SCENARIOS

Solutions for Carbon Neutrality



Access the Nordic Clean Energy  
Scenarios report at  
[WWW.NORDICENERGY.ORG](http://WWW.NORDICENERGY.ORG)





Explore all data and results through NCES  
open access tools

AVAILABLE AT

[WWW.NORDICENERGY.ORG](http://WWW.NORDICENERGY.ORG)

- Launch event recording
- Open access models
- Nordic energy statistics database
- Complete technology catalogue
- Web tool for scenario results and sensitivity analyses



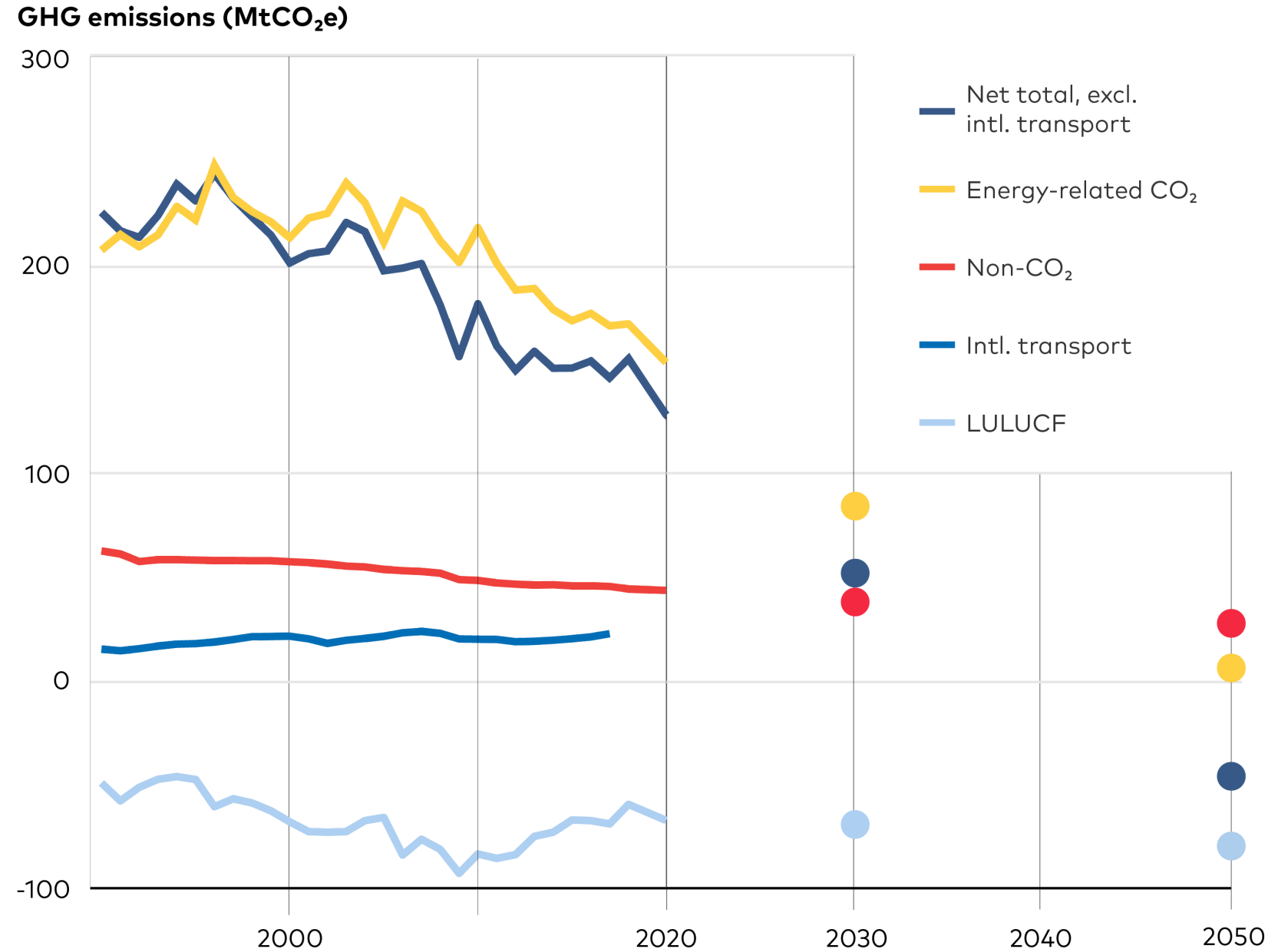
**Kevin Johnsen, Senior adviser**  
**Kevin.Johnsen@nordicenergy.org**

**See more at [www.nordicenergy.org](http://www.nordicenergy.org)**



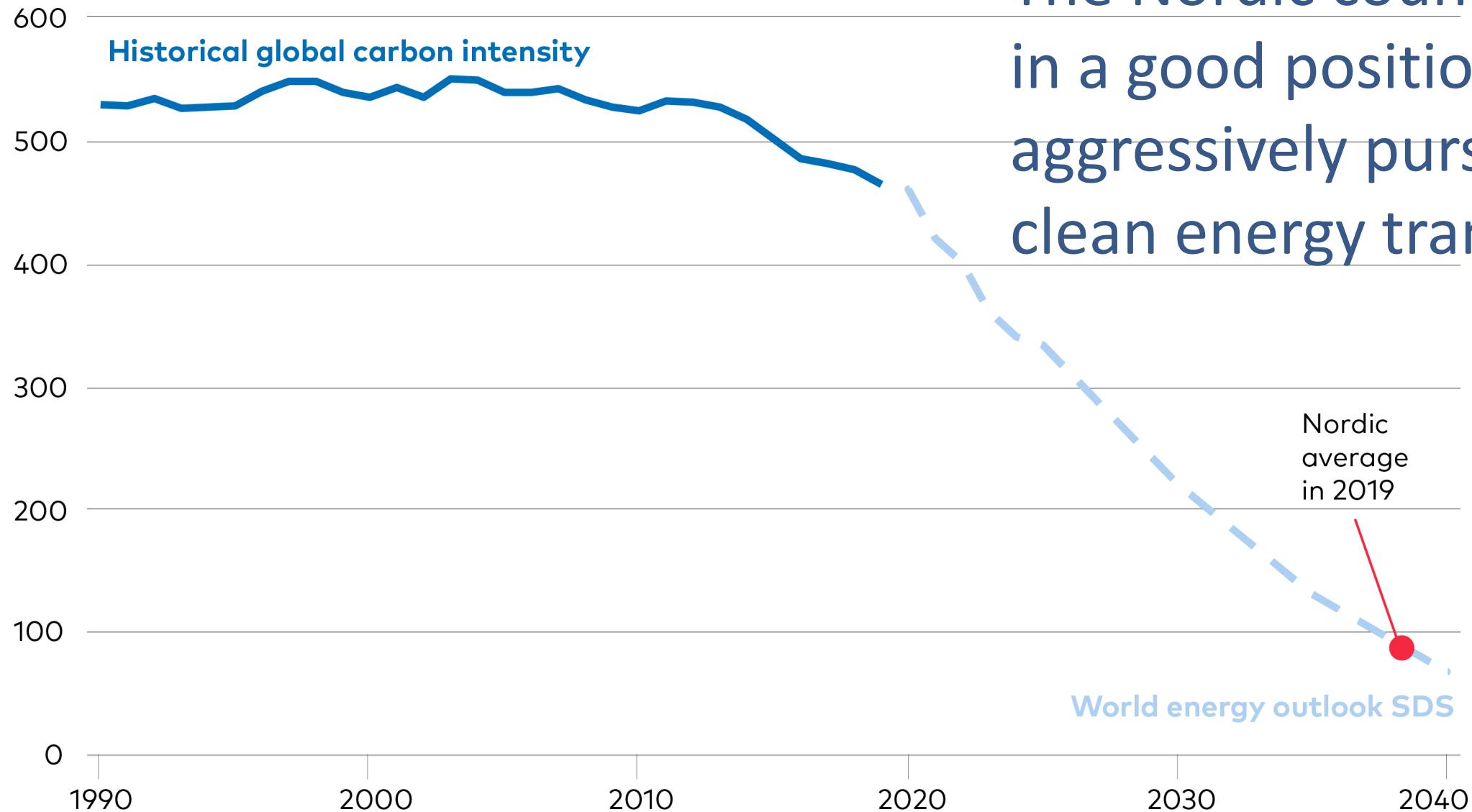
Nordic targets  
for GHG  
reductions are  
ambitious.

But the rate of  
change must  
increase to  
achieve carbon  
neutrality





gCO<sub>2</sub>/kWh

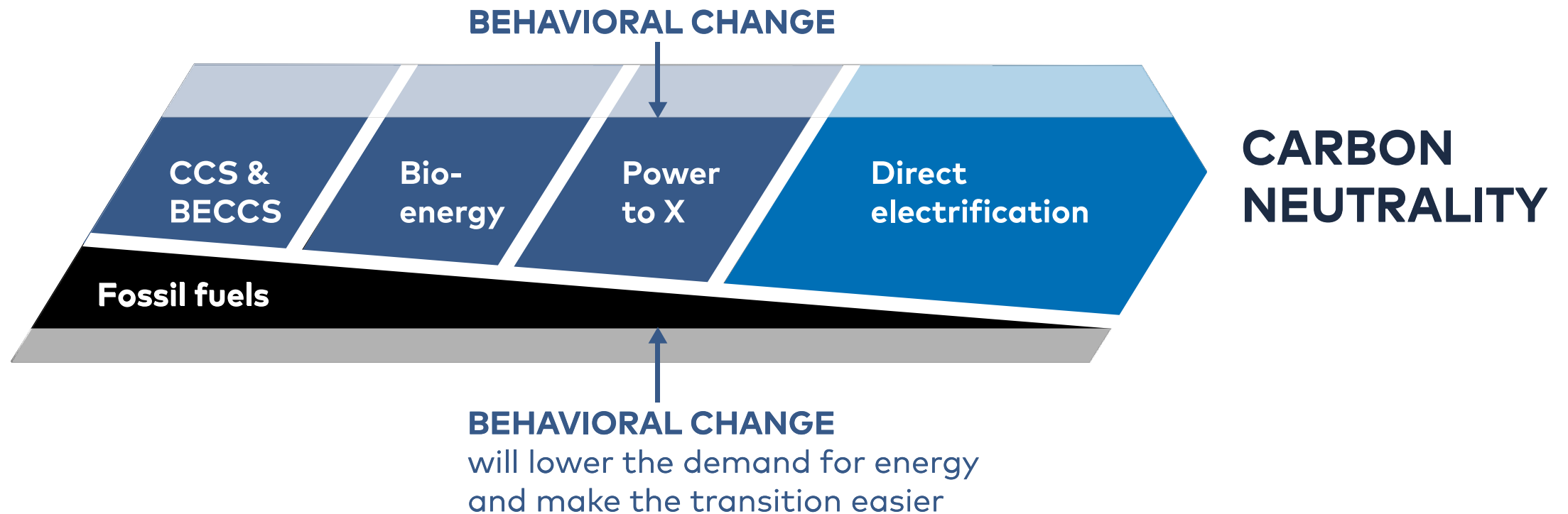


The Nordic countries are in a good position to aggressively pursue a clean energy transition

World energy outlook SDS



# Five Solution Tracks to Carbon Neutrality



Nordic Energy  
Research



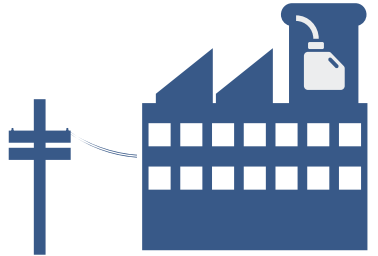
# Four target areas for Nordic collaboration



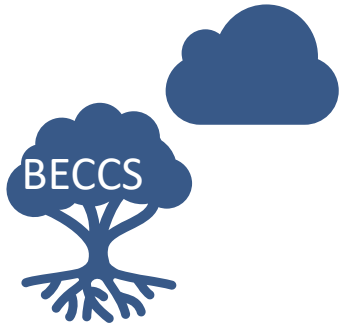
Stronger coordination of and commitments to Nordic power infrastructure planning



Nordic cooperation on integrated offshore wind and grid development



Common vision for the role of PtX production in the Nordics



A common Nordic CCS strategy



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