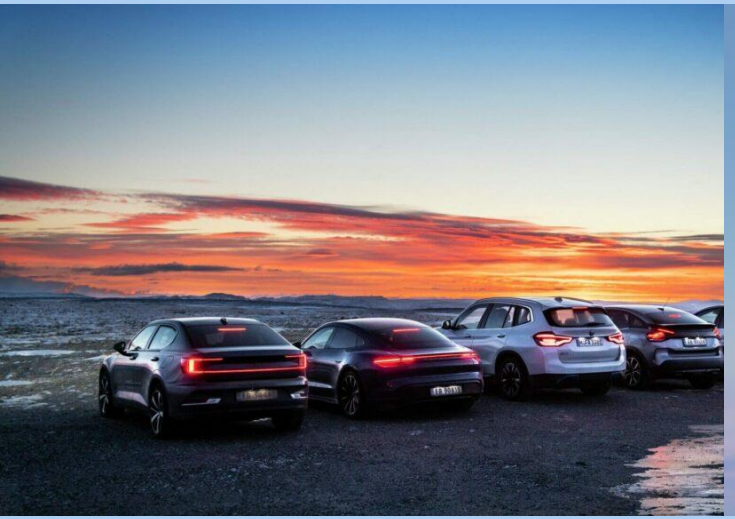
Nordic Research Programmes on Sustainable Fuels



Svend Søyland, Senior Adviser Nordic Energy Research

Nordic Energy Research

The Green Future of Maritime Operations, **4-6th October 2022 Nuuk, Greenland**

Nordic Energy Research - What we do

- Nordic Energy Research is 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.
- We fund R&D to promote a sustainable future
- We contribute to policy-making

Policy landscape

- Paris Agreement
- EU: Fit for 55 – maritime transport
- Clydebank Declaration
- MI – Zero-emission shipping
- World Heritage Fjords 2026

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MISSION INNOVATION


Choosing
Green
Nordic
erspectives

NER transport Programmes

Completed:

- Electric vehicles and trucks (NEVS)
- Sustainable Aviation Fuels
- SHIFT - flagship programme

Ongoing:

- NMTEP – Phase 1
- Nordic hydrogen valleys as energy hubs – focus on ports

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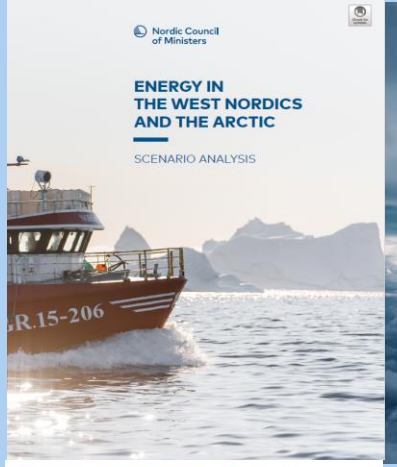

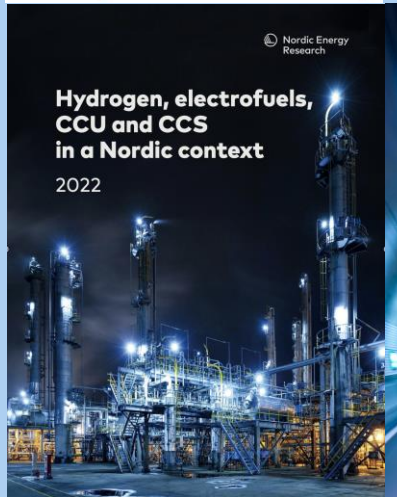

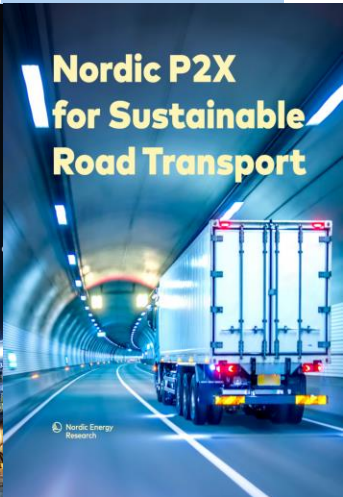

Alternative fuels and energy carriers

Biofuels

Electric

LNG/LBG

Hydrogen

Methanol

Ammonia

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Nordic Maritime Transport and Energy Research Programme

"**The CAHEMA project** hypothesises that marine engines could use a combination of **ammonia and hydrogen** as fuels, based on **new engine concepts**, to operate successfully and without pollutants and GHG-emissions".

"**The AEGIR project** proposes a unique **fuel cell** and membrane-based system for efficient conversion of **ammonia** into electric energy."

"**The HOPE project** is a ship concept where a typical RORO/ROPAX-vessel with range of around 100 nautical miles with **hydrogen as fuel and fuel cells** for energy conversion".x

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Expert workshops at WMU

"Prospects for Energy and Maritime Transport in the Nordic Region"
Expert Workshop 26-27 February 2020
Link

"Ammonia and hydrogen as maritime fuels"
NMTEP Workshop 20-21 April 2022
Link

Concluding workshop NMTEP Phase I
Ultimo March 2023

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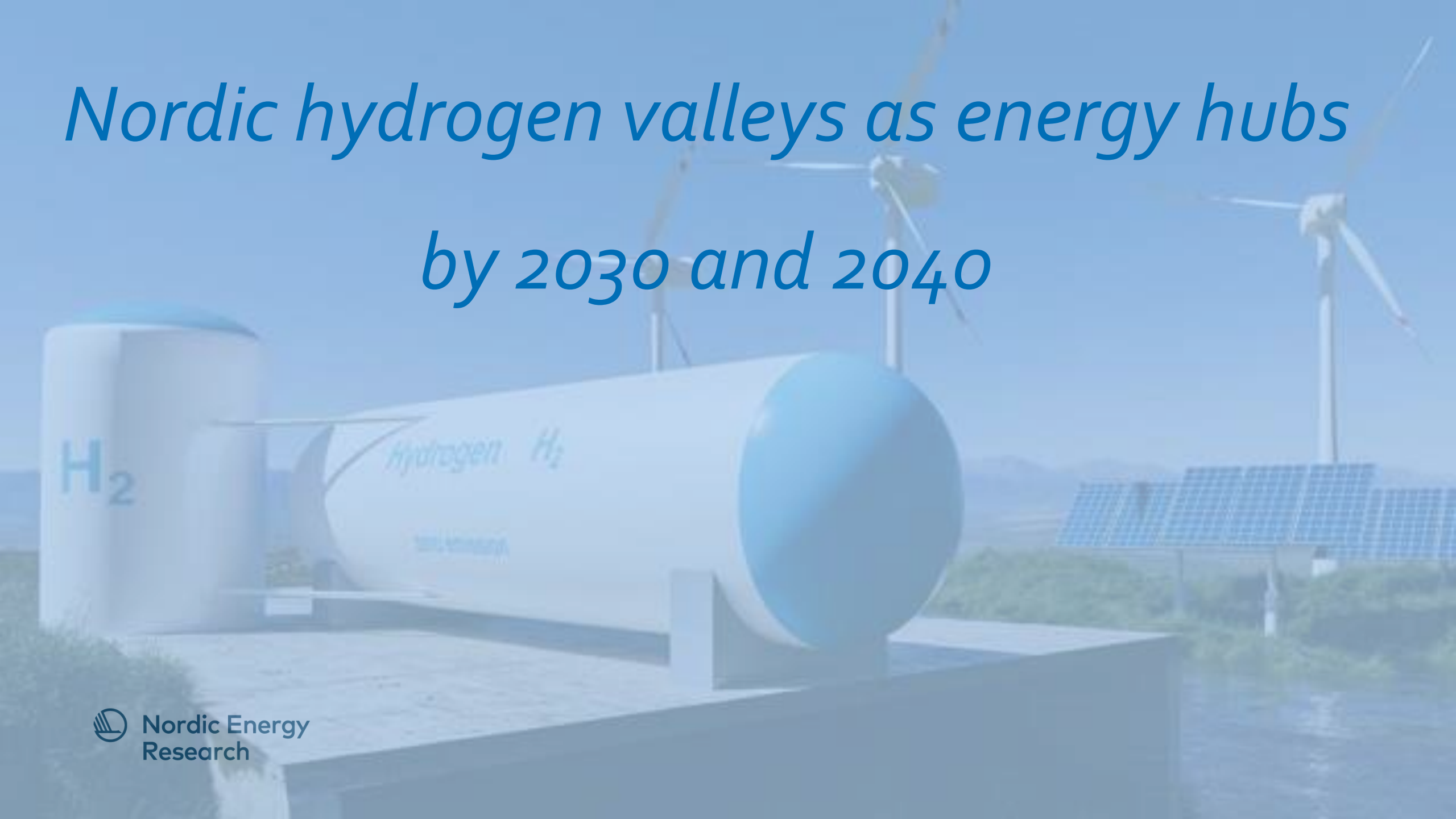
WMU WORLD MARITIME UNIVERSITY

Nordic hydrogen valleys as energy hubs by 2030 and 2040



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Why this call ?

- Hydrogen can become a zero-emission energy carrier, storage solution, serve as feedstock and as a fuel for hard-to-abate sectors.
- Nordic countries have roadmaps and strategies related to hydrogen.
- Several research programmes and industrial projects launched.
- Create outcomes and impact of greater value for the countries involve than could be achieved through national activities alone.

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Scope I

- Demonstrate the use of hydrogen, ammonia and electrofuels in the wider energy systems, including links to sector coupling.
- Assess technological, safety and socio-economical barriers for a hydrogen, ammonia and e-fuel based transition.
- Identify and outline ambitious pathways towards 2030 and 2040 hydrogen value chains and infrastructure in energy hubs.

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Scope II

- Deliver tangible outputs at clearly defined milestones
- Adjust for emerging shifts and technological breakthroughs.

- Submission deadline: 31st October 2022

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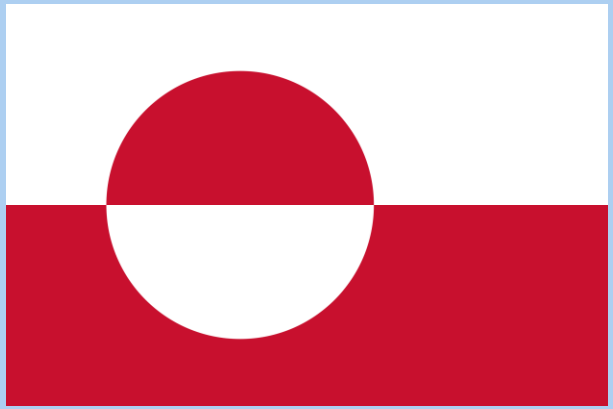
CO_2 emissions by sector 2020



532,913.409 tons

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Why is this relevant for Greenland?

Coastal

Offshore

Cruise

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Production-distribution –end use

Renewable Energy

End-users

Production of green fuels

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Shore power

On Shore Power Supply in the Nordic Region – Project Report 20.08.2021

Nordic Innovation

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