

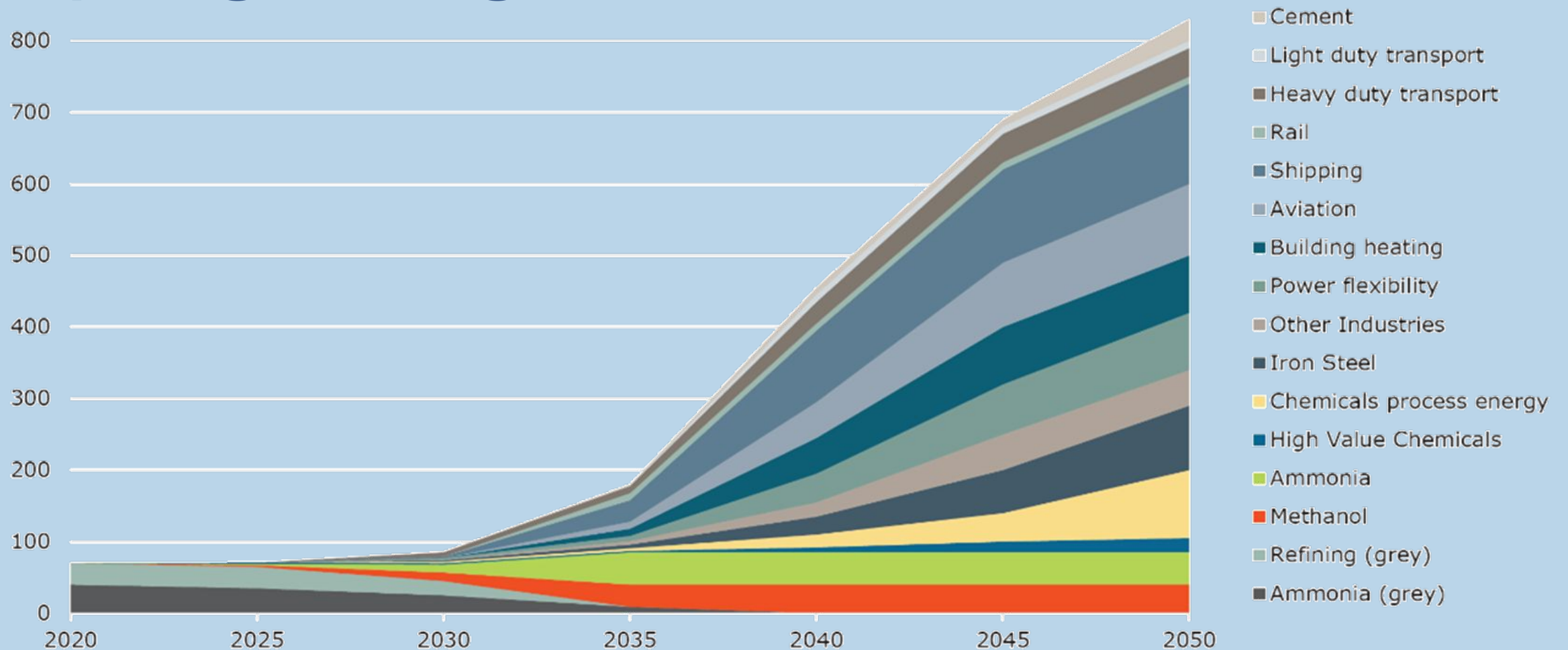
Hydrogen, electrofuels, CCU and CCUS in a Nordic Context*

* Upcoming report prepared by COWI for Nordic
Energy Research

Presented by:
Rune Volla, Research Council of Norway
Nordic Pavilion @ COP26
8th November 2021



Hydrogen usage towards 2050



- 90+ industrial scale projects
- Joint private sector & R&D initiatives
- Electrolyser efficiency improving (cost/Kw)
- Combining solar PV and wind
- EU Hydrogen Strategy -
double power demand in EU by 2030
- Reforming price on carbon (EU-ETS)
- De-risking investments Chicken/Egg
- Low-cost hydrogen - export commodity?

Technology



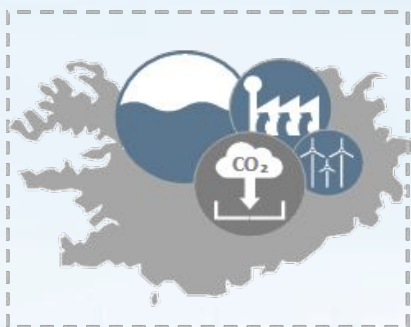
Policy



Market



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Wind power



Hydro power



Solar power



Geothermal power



Nuclear power



Forestry residues



Pulp-/paper waste



Agricultural waste



CO₂ storage



Salt caverns H₂
Storage



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Recommendations from the report



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Nationally

R&D:

- Investigate the energy and climate effects of CCU and CCS
- Hydrogen and CO₂ storage potential

Policy:

- Ratify the amendment to Article 6 in the London Protocol

THE LONDON CONVENTION AND PROTOCOL:

THEIR ROLE AND CONTRIBUTION TO PROTECTION OF THE MARINE ENVIRONMENT

Nordic level – R&D and competence

- Develop models and solutions for hydrogen distribution and storage
- Increase the skills needed for hydrogen & electro-fuel production & CCUS
- Develop cross-Nordic training programmes
- Develop a Nordic network for carbon storage facilities



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Nordic level – Policy & Regulation

- Involve Nordic stakeholders to address financial, technical, & regulatory challenges
- Collaborate on regulatory measures
- Establish financial incentives: CO₂ pricing, taxation, or reversed auctioning



Collaborate Internationally

- biogenic carbon as part of international carbon schemes
- financial support mechanisms
- hard-to-decarbonize sectors



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Integrated SET Plan

CETP

Clean Energy Transition Partnership

Strategic Research and Innovation Agenda

v1.0

Endorsed by European Countries and the European Commission

November 2020

The Clean Energy Transition Partnership is a transnational joint programming initiative to boost and accelerate the energy transition, building upon regional and national R&I funding programmes.

Final remarks



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Thank you for your attention!

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The Research
Council
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