

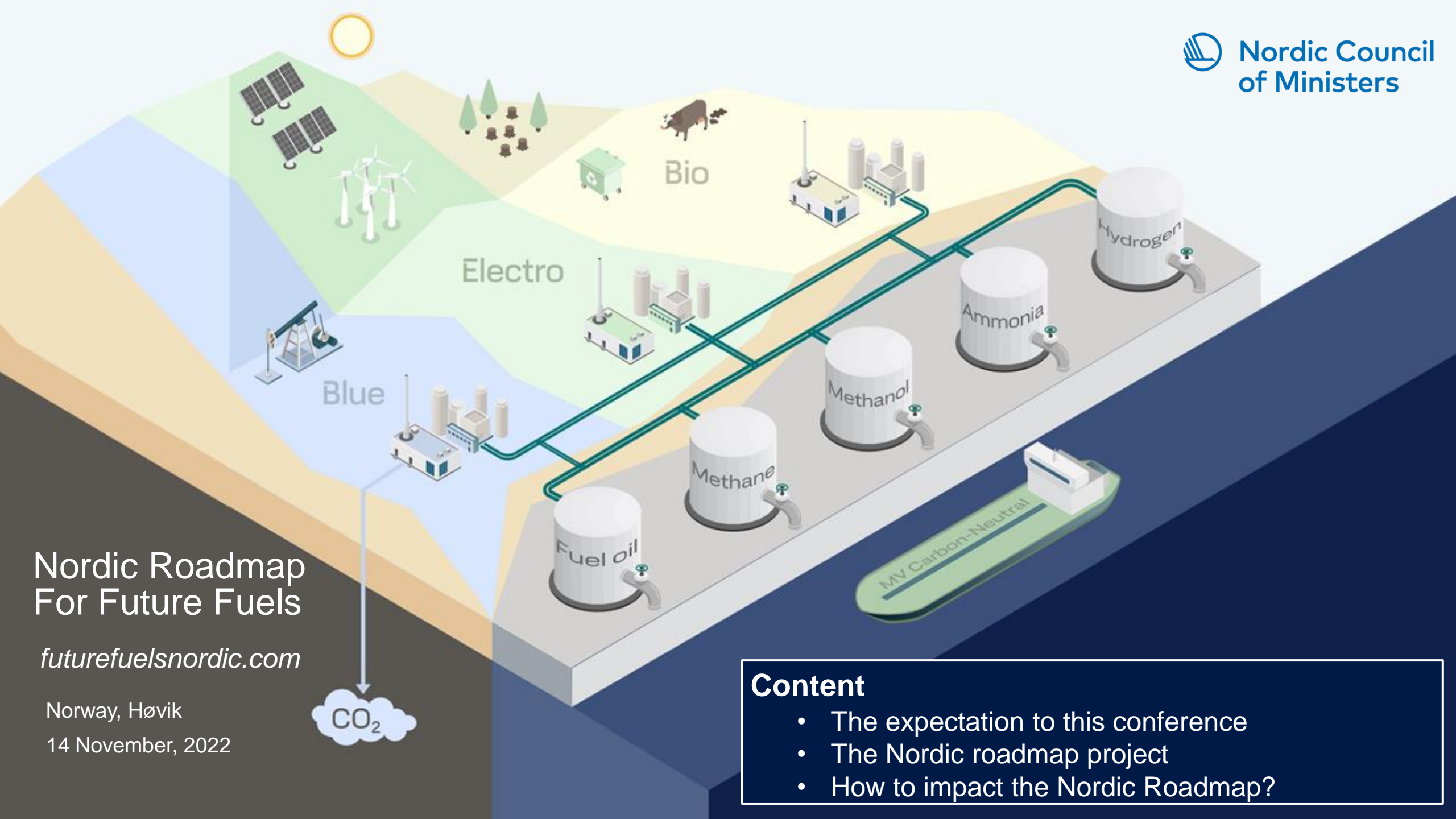
# Nordic Roadmap For Future Fuels

[futurefuelsnordic.com](https://futurefuelsnordic.com)

Norway, Høvik

14 November, 2022

CO<sub>2</sub>



## Content

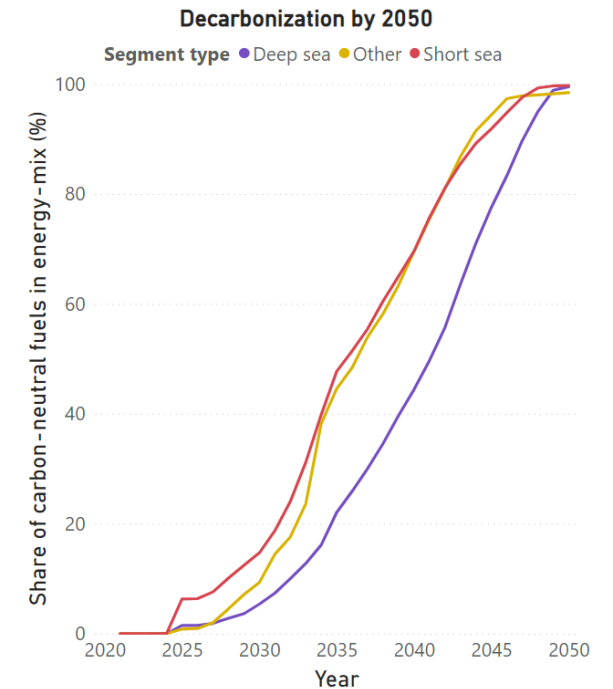
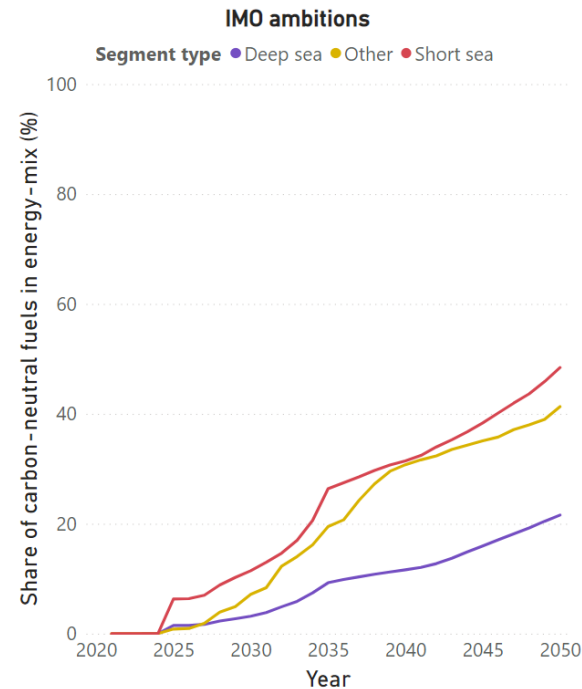
- The expectation to this conference
- The Nordic roadmap project
- How to impact the Nordic Roadmap?

# The expectation to this conference

- **Give insight** on the ambition for the Nordic roadmap project, and share results and developments
- **Get input** to our project from the industry and the authorities – relevant Nordic initiatives
- **Motivate** to join as supporting partners to the development of the Nordic roadmap
- **Promote** the Nordic cooperation platform, facilitating:
  - knowledge sharing, and the development of the Nordic roadmap
  - launch of pilot projects/studies for overcoming barriers identified in Nordic roadmap

# Uptake of carbon-neutral fuel needs to start now to achieve the IMO ambitions

- 5% carbon-neutral fuels needed in 2030 – even with current ambitions
- Decarbonisation by 2050 requires significant acceleration from 2030
- No solution that fits all segments – preparation across many solutions needed
- Short sea shipping will lead the transition – but deep-sea needs to prepare as well



Source: ISWG-GHG 12/3/14 (Norway): Initial impact assessment of the emission cap-and-trade proposal

# The Nordic Roadmap project

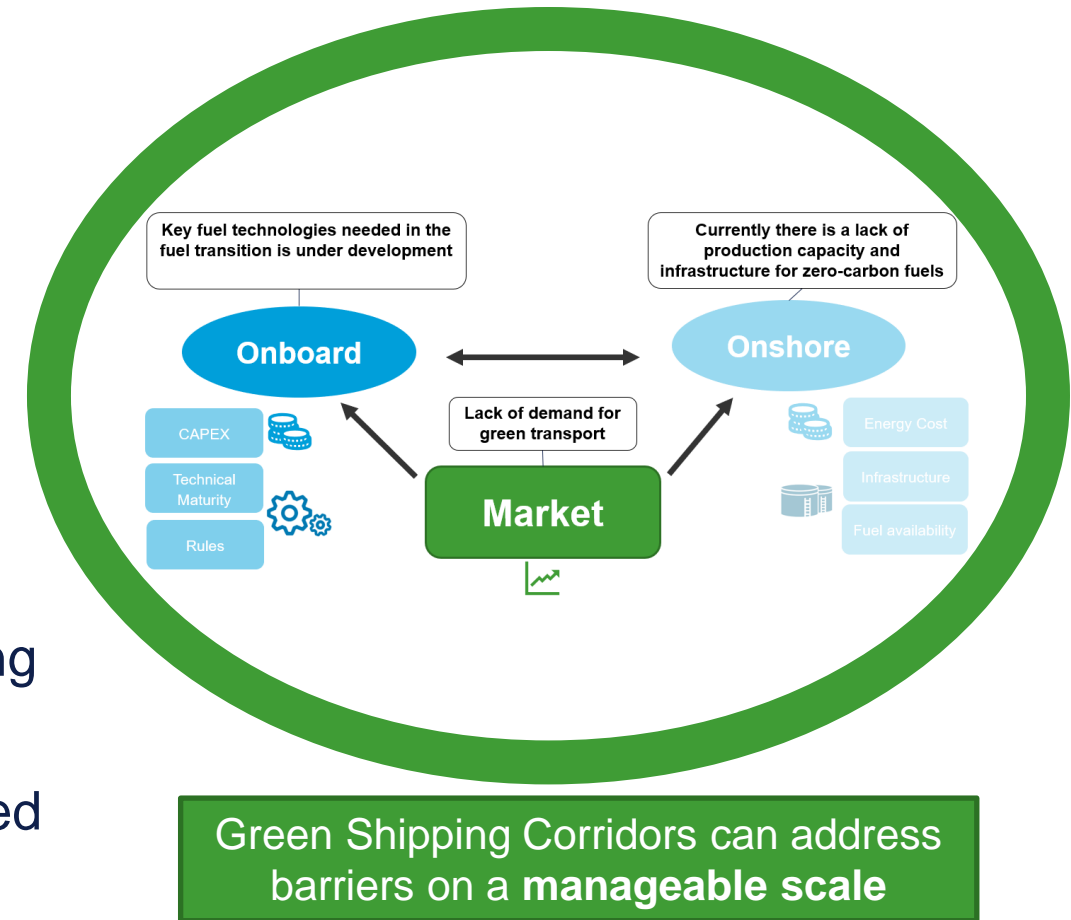
## Overall aim:

*Reduce **key barriers** to implementation and establish a common roadmap for the whole Nordic region and logistics ecosystem towards zero-emission shipping.*

## Objectives:

- Gain **technical knowledge** and regulatory development
- Develop a **Nordic Roadmap** for future fuels
- Establish a **Nordic cooperation platform** and piloting

A four-year Nordic collaboration (2022-2025), coordinated by DNV, with a budget of 2.4 MEUR. Inspired by the *Green shipping programme* in Norway.



# A Nordic Roadmap for the introduction of sustainable zero-carbon\* fuels

## Technical deliveries

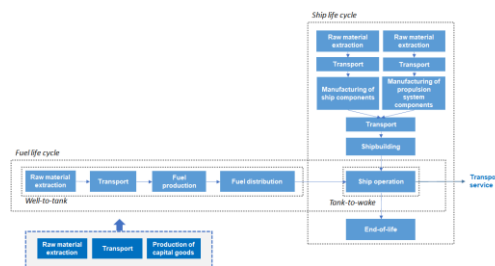
### Fuel scorecard

Identify relevant fuels:  
Ammonia, Hydrogen, Methanol

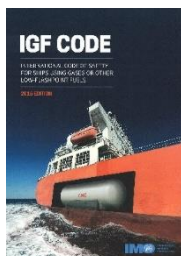
Develop KPIs

Evaluate KPIs for each fuel

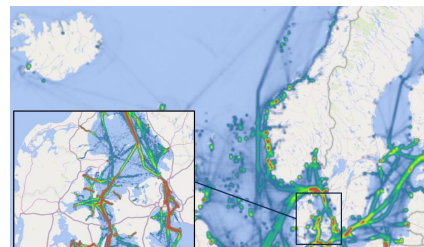
### Life-Cycle Assessment



### Regulatory framework



### Traffic & infrastructure



## Co-operation platform

### Contributing partners:



CHALMERS  
UNIVERSITY OF TECHNOLOGY



### Supporting partners:



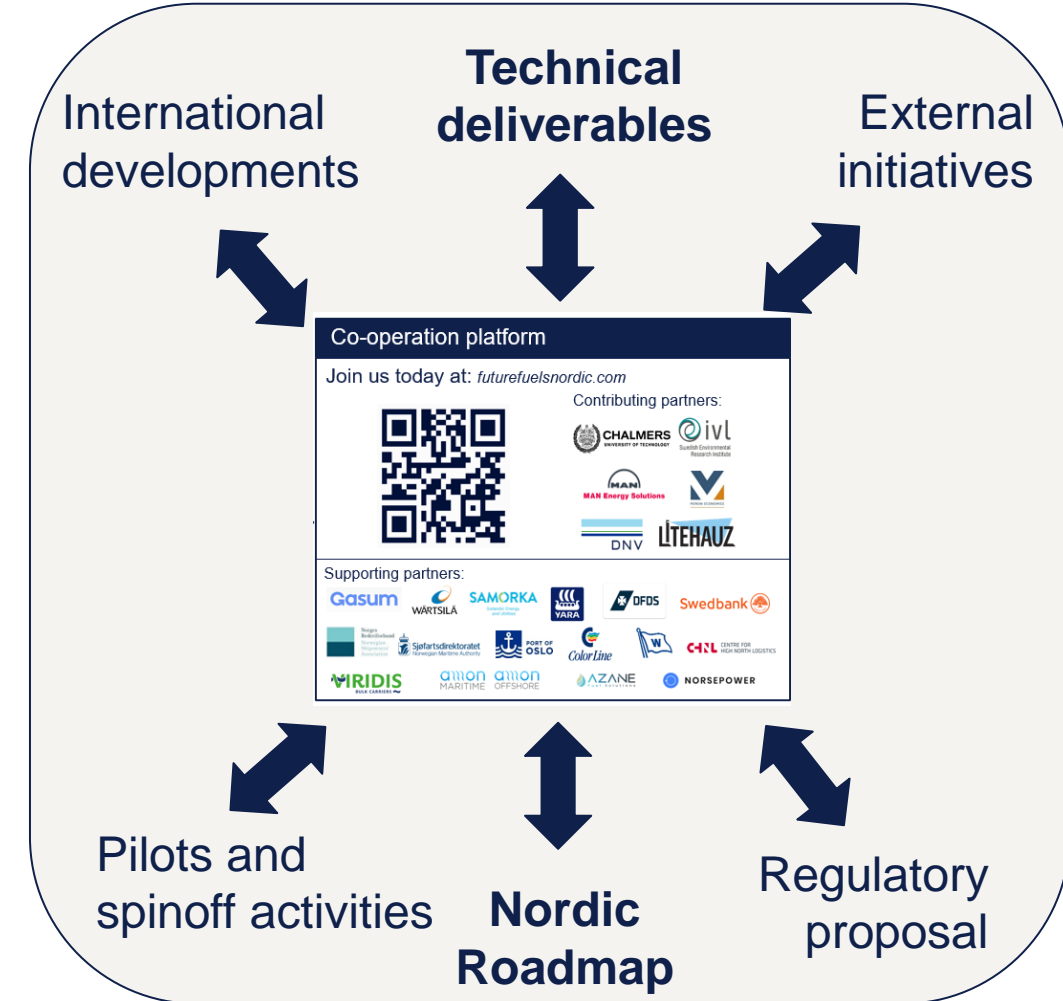
\*The term sustainable zero-carbon fuels are used to indicate fuels with potential zero climate impact throughout their lifecycle.

Join us today at: [futurefuelsnordic.com](https://futurefuelsnordic.com)

# A unique Nordic co-operation platform

1. To facilitate **dialogue and collaboration** between all stakeholders, incl. identifying spin-off activities
2. To share relevant information generated within the project, as well as outside the project – be **knowledge base** for future fuels
3. To be involved in **pilot studies** and supporting the **Roadmap** development
4. To share information about **upcoming project events** and publications, through our website

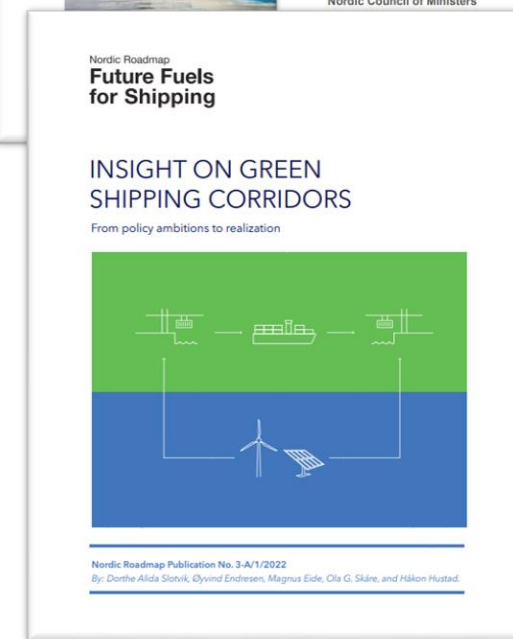
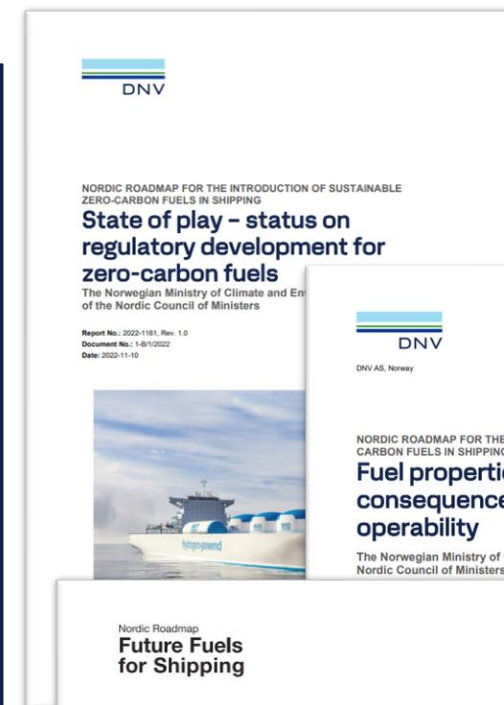
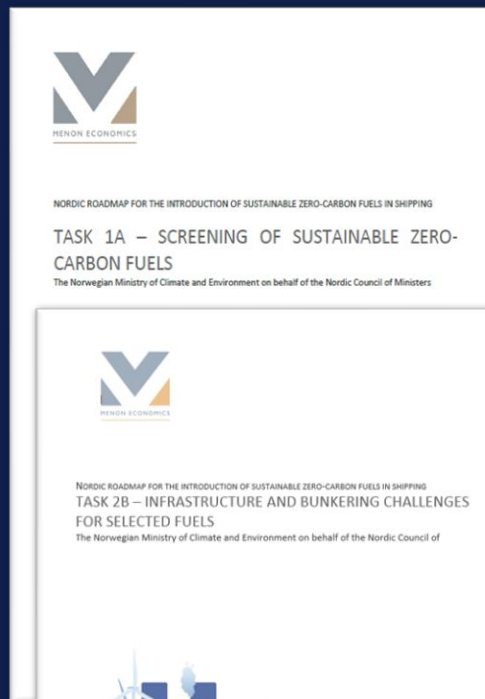
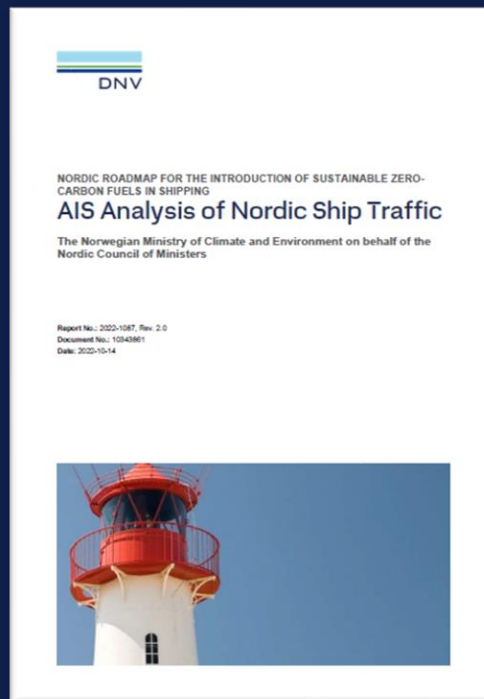
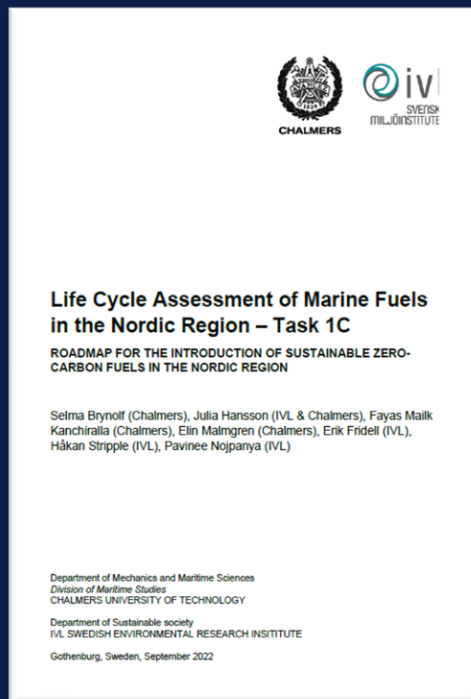
<https://futurefuelsnordic.com/>





# Technical deliverables to date

Presented here today





Nordic Council  
of Ministers

# Safety is a prerequisite for the successful and timely introduction of carbon-neutral fuels

- Lack of international safety regulations is a barrier against their implementation
- Development of regulations in IMO is key to reduce this barrier
- The Nordic Countries may help accelerate the process in IMO by submitting concrete proposals



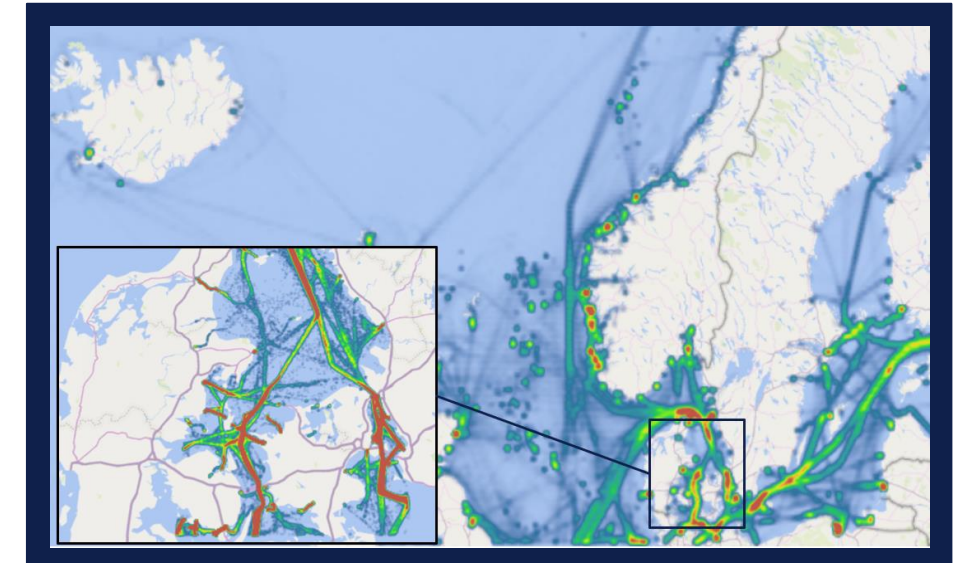
# How to impact the Nordic Roadmap?

## Through:

- Identifying and participating in **Nordic pilot studies**, focusing on green corridors
- Developing **synergies with green initiatives**, relevant for the Nordic region
- Supporting the development and the outcome of the **Nordic Roadmap**

## Looking for more partners:

Our ambition is to **increase the number of stakeholders** from the full maritime ecosystem across the Nordics, representing academia, banks & financiers, shipbuilders, ship owners, cargo owners, energy suppliers & producers, ports & infrastructure owners, NGO's, regulators and more.





WHEN TRUST MATTERS

*futurefuelsnordic.com*

# For more information contact:

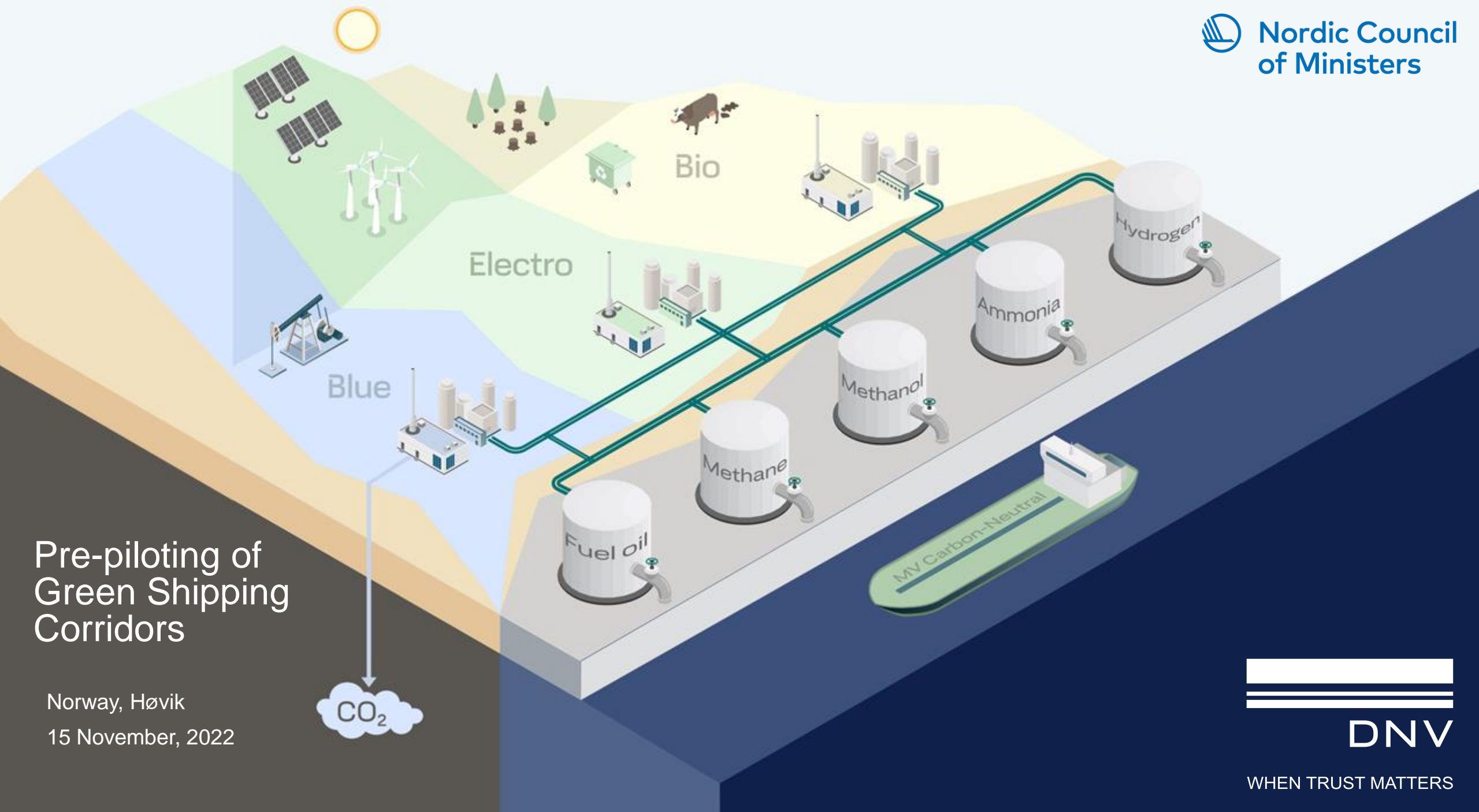
Project Manager  
Øyvind Endresen  
[oyvind.endresen@dnv.com](mailto:oyvind.endresen@dnv.com)  
+47 97403517

Deputy Project Manager  
Linda Sigrid Hammer  
[linda.sigrid.hammer@dnv.com](mailto:linda.sigrid.hammer@dnv.com)  
+47 99044288

Task Leader – Collaboration Platform  
Nathaniel Frithiof  
[Nathaniel.frithiof@dnv.com](mailto:Nathaniel.frithiof@dnv.com)  
+47 90122802

**www.dnv.com**



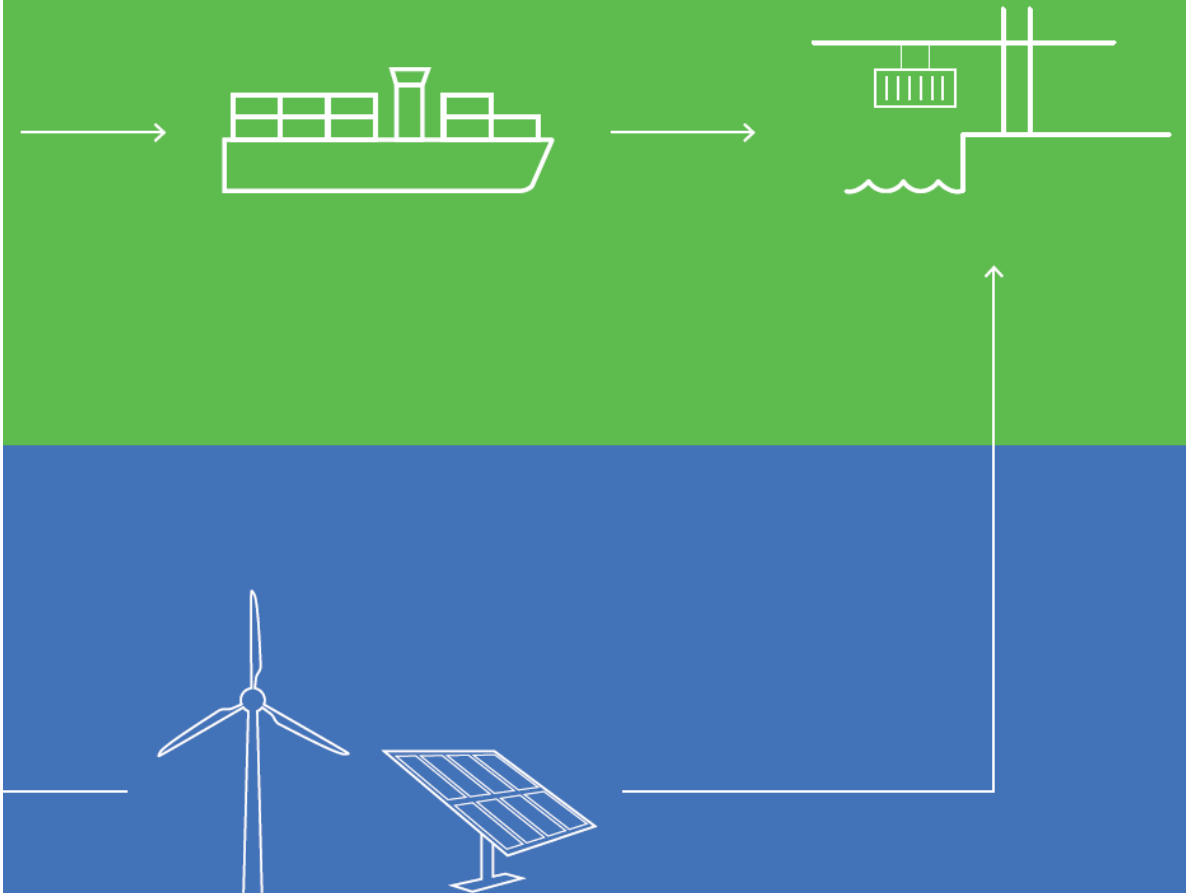


## Pre-piloting of Green Shipping Corridors

Norway, Høvik  
15 November, 2022

# Content

- The mission
- Why Green Shipping Corridors
- Work process
- Scorecards
- Learnings



# A One year pre-pilot study – linked to the Nordic Roadmap

*«To promote intra-Nordic Green Shipping Corridors that can be realized by **2025**»*

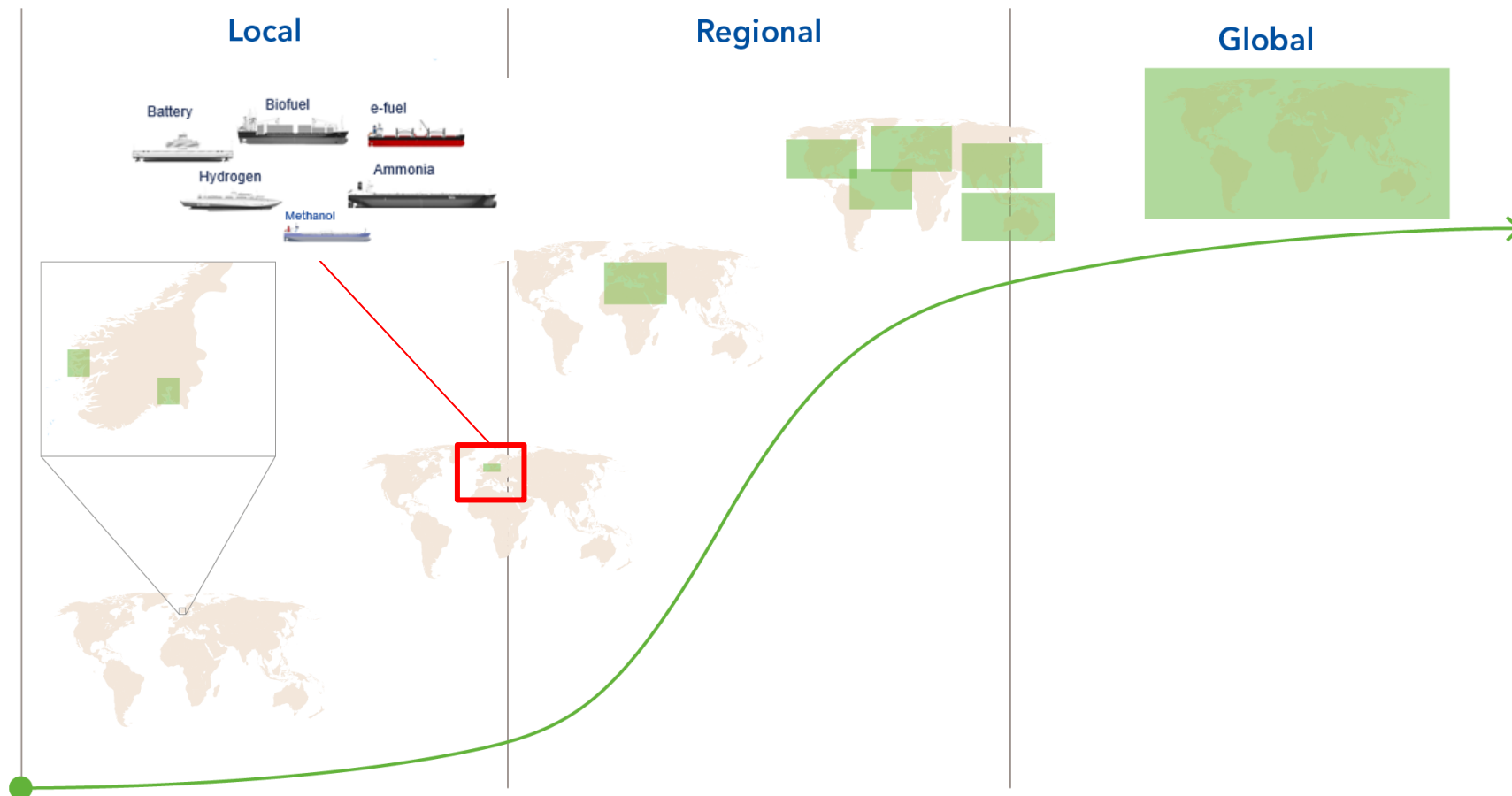
## Objectives

- 1 Identification of specific intra-Nordic shipping routes for decarbonization
- 2 Identification of relevant and interested actors that can enter into partnerships for specific projects for decarbonization of the identified routes
- 3 Establish partnerships for specific projects for decarbonization of the routes

Budget: 1 MDKK



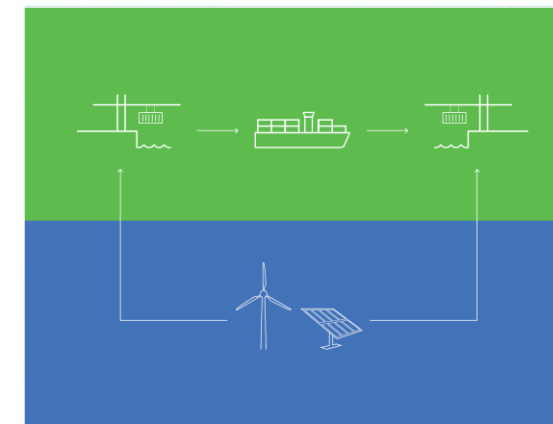
# Green shipping corridors as key enabler to overcome barriers and decarbonize shipping



Nordic Roadmap  
**Future Fuels  
for Shipping**

## INSIGHT ON GREEN SHIPPING CORRIDORS

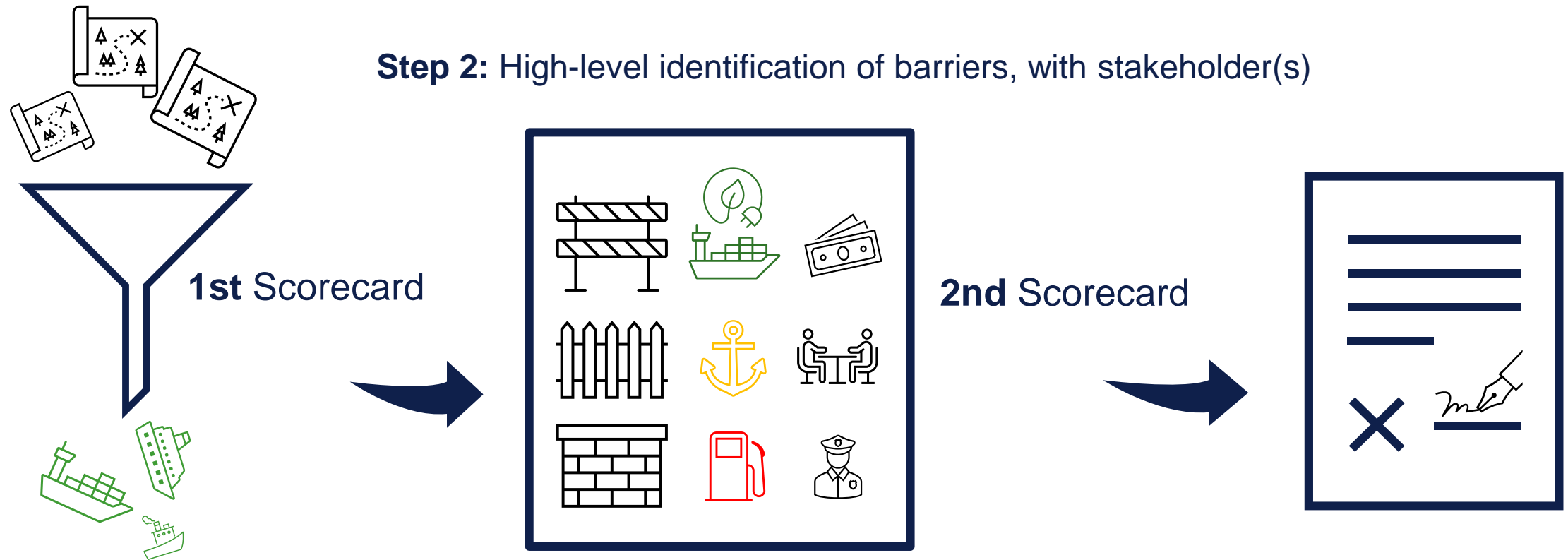
From policy ambitions to realization



Nordic Roadmap Publication No. 3-A/1/2022

By: Dorthe Alida Slotvik, Øyvind Endresen, Magnus Eide, Ola G. Skåre, and Håkon Hustad.

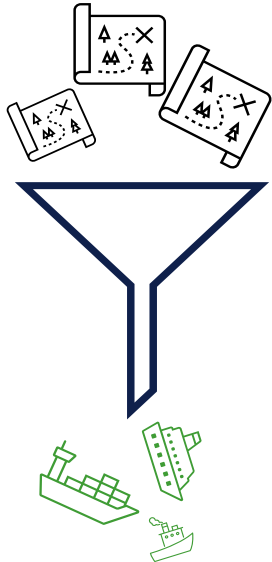
# Work Process for pre-piloting activities



**Step 1:** High-level screening of potential GSC

**Step 3:** Collaboration agreement MoU or Lol

# Step 1. High-level screening of potential corridors



Scoring scale



Dark green: 4



Light green: 3



































Orange: 2



Red: 1

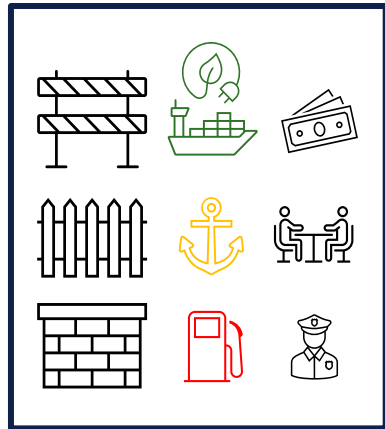


Unknown

	GHG potential	Regularity	Stakeholder motivation	Ship	Fuel flexibility: Port A	Port B	Potential for electrification	Overall rating
Green Shipping Corridor (GSC 1)								
GSC 2								
GSC 3								
GSC 4								

WORK IN PROGRESS

# Step 2. High-level identification of barriers



Scoring scale:



Ready or minor  
modifications necessary



Needs strategy and  
action to solve

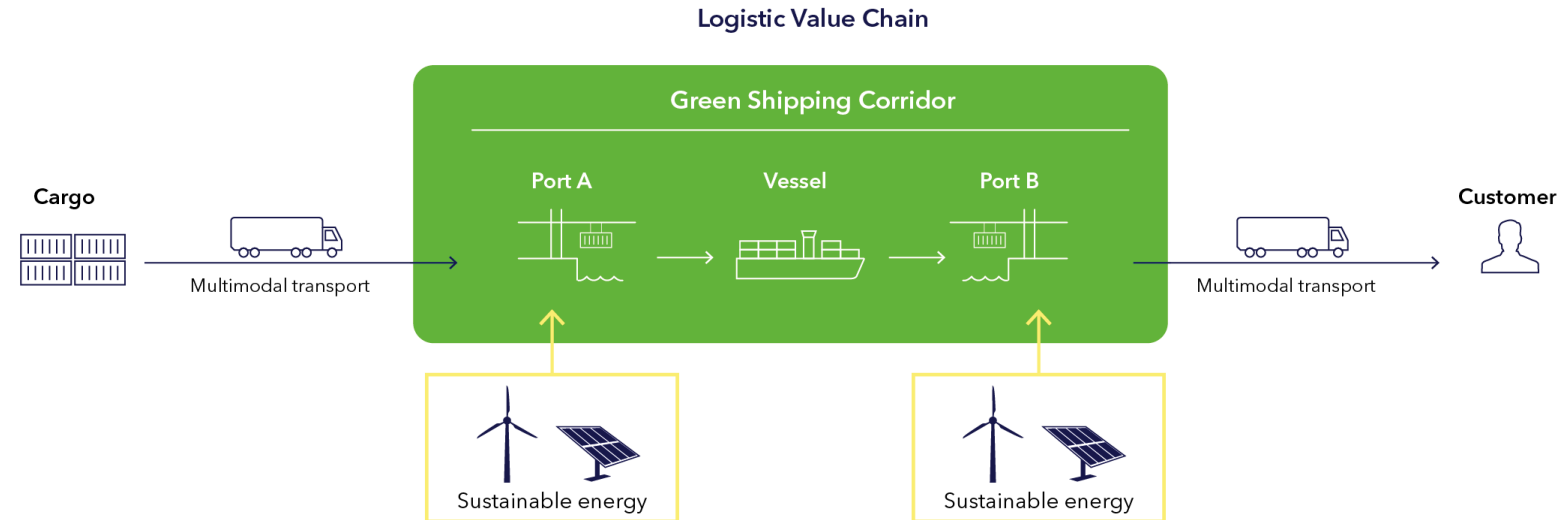


Potential showstopper

		Technical maturity	GHG abatement potential	Financial barrier	Fuel/Port readiness	Safety and regulations	Stakeholders motivation	Organisational barriers	Learning effect for future GSC
GSC 1 Barrier Workshop	Vessel								
	Port A								
	Port B								

WORK IN PROGRESS

# Step 3. Establishing partnerships



Source: Insight on Green Shipping Corridors (2022)

- After the barrier identification and scorecard, important stakeholders for each potential Green Shipping corridor will need to be identified.
- It is important that any collaboration agreement made includes key stakeholders such that the identified barriers can be tackled by the group.

*WORK IN PROGRESS*



# Learning as we go...

To move from policy ambitions to realization of green shipping corridors:

- The uptake of zero-emission fuels in shipping is still very low and faces several barriers, including high costs, low technical maturity, lack of fuel supply and bunkering availability.
- Stakeholders participating in a green shipping corridor ecosystem need a business case, - a reason to participate.
- Barriers for the different stakeholders are interconnected. Failing to overcome one barrier, business cases for all the stakeholders will fail, and the green shipping corridor will not be established.
- The core of the green shipping corridor concept, as we see it, is establishing the required level of understanding and agreement among the stakeholders for a specific transport system, such that the cost and risk level associated with using future fuels becomes acceptable. This will require innovative ways of collaboration.

Download our latest Insight paper here:

<https://futurefuelsnordic.com/insight-paper-on-green-shipping-corridors/>





WHEN TRUST MATTERS

*futurefuelsnordic.com*

# For more information contact:

Project Manager  
Øyvind Endresen  
[oyvind.endresen@dnv.com](mailto:oyvind.endresen@dnv.com)  
+47 97403517

Deputy Project Manager  
Linda Sigrid Hammer  
[linda.sigrid.hammer@dnv.com](mailto:linda.sigrid.hammer@dnv.com)  
+47 99044288

Task Leader – Collaboration Platform  
Nathaniel Frithiof  
[Nathaniel.frithiof@dnv.com](mailto:Nathaniel.frithiof@dnv.com)  
+47 90122802

[www.dnv.com](http://www.dnv.com)

