



# Establishing a Green Hydrogen Ecosystem at the Port of Hirtshals

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# Agenda

1. Port of Hirtshals and Norwegian Hydrogen
2. CONVEY core concept
3. CONVEY status
4. CONVEY conclusion



# Port of Hirtshals

## Four Key Business Areas:

- **Fishery and Fish Processing**
  - Near Europe's best fishing grounds
  - One of Denmark's largest fishing ports
  - Leading receiver of salmon
- **Maritime Services**
  - Cluster of maritime service companies
  - Full-service offerings for seafarers and vessels
- **Transport and Logistics**
  - Direct ferry routes to Nordic region
  - Easy access to Denmark's motorway network
  - Handles cargo, bulk goods, containers, and project cargo
- **Circular Development Projects**
  - Active role in green transition
  - Partner in EU projects for circular visions

# GREEN PORT DEVELOPMENT

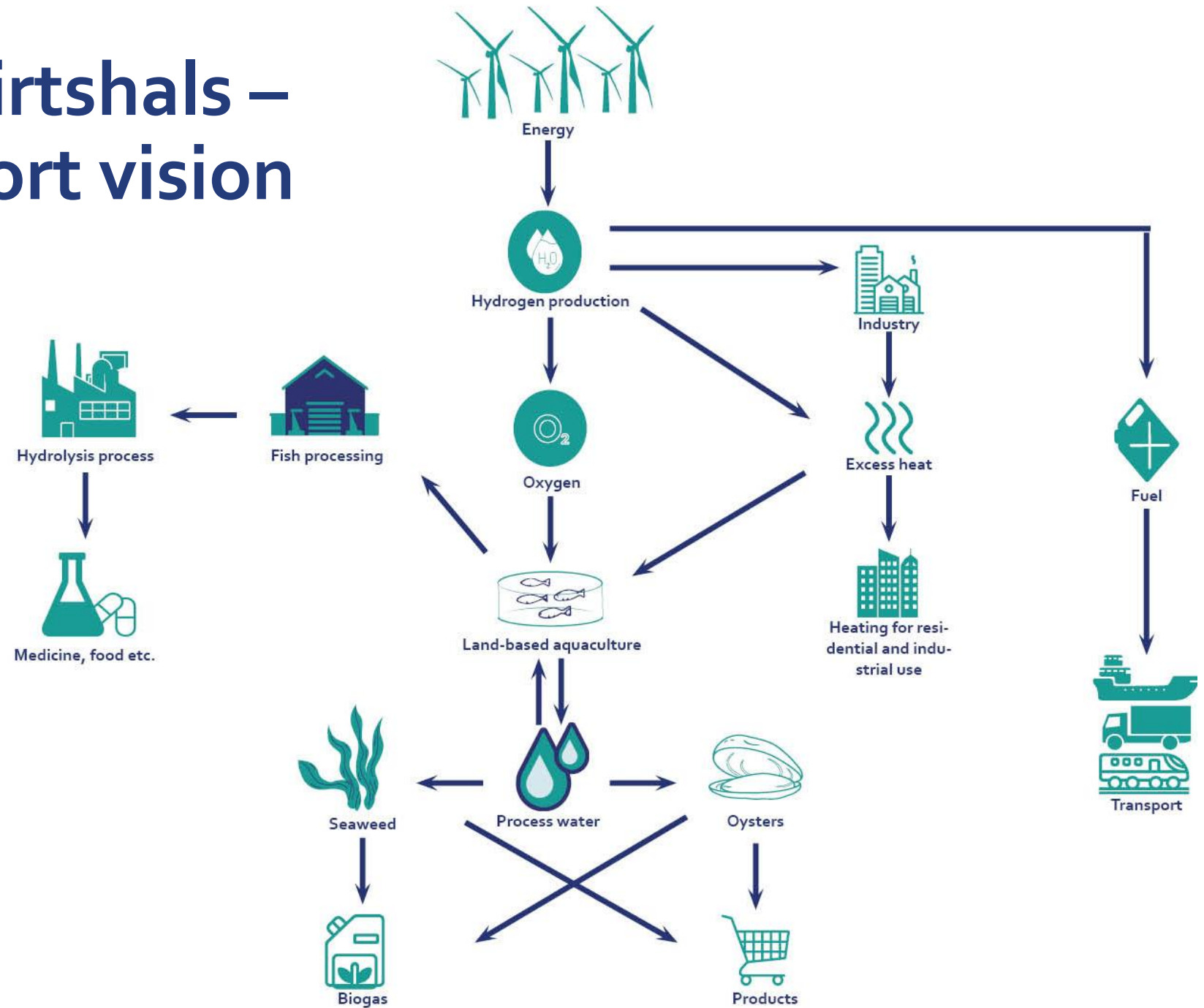
## PORT OF HIRTSHALS

- New and innovative approach to port development
- Become greenest port in Europe

## GREENPORT NORTH

- Green transition for companies in the port
- New business models and framework conditions
- Energy efficiency, sector coupling and green fuels

# Port Of Hirtshals – circular port vision





**Norwegian  
Hydrogen**

# GREEN HYDROGEN PRODUCTION

We use renewable energy to produce green hydrogen. With our world-class production facilities and infrastructure, we enable and accelerate the green transition.



# Nordic presence - Global network



FLAKK GROUP



MITSUI & CO.



HOFSETH



Ålesund



Oslo



Stockholm



Helsinki



Hjørring



Copenhagen

# Mature activity and project portfolio



**Hellesylt (NO)**  
**3 MW**



**Grøn Brint (DK)**  
**5 MW**



**Rjukan (NO)**  
**25 MW**



**Hirsthals (DK)**  
**5 MW**



**Stavanger (NO)**  
**30 MW**

# CONVEY

*Hydrogen Ecosystem Model in Port of Hirtshals*

# CONVEY concept



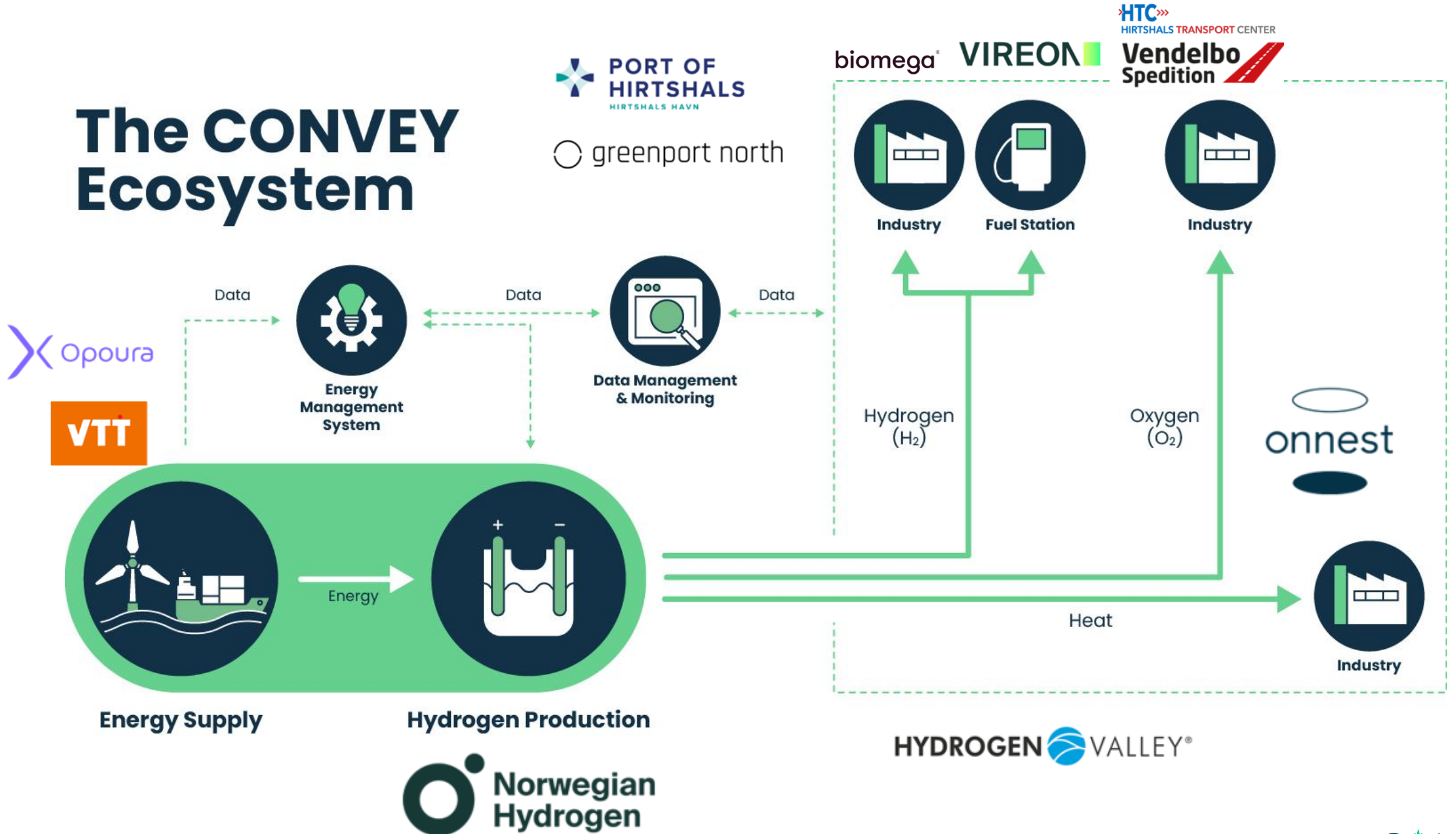
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CONVEY

The CONVEY Valley features a wind energy site powering a 5 MW hydrogen production and storage facility. It includes pipelines for efficient hydrogen and oxygen distribution. Initial off-takers include road transport logistics and the food industry, focusing on aquaculture production.



# The CONVEY Ecosystem



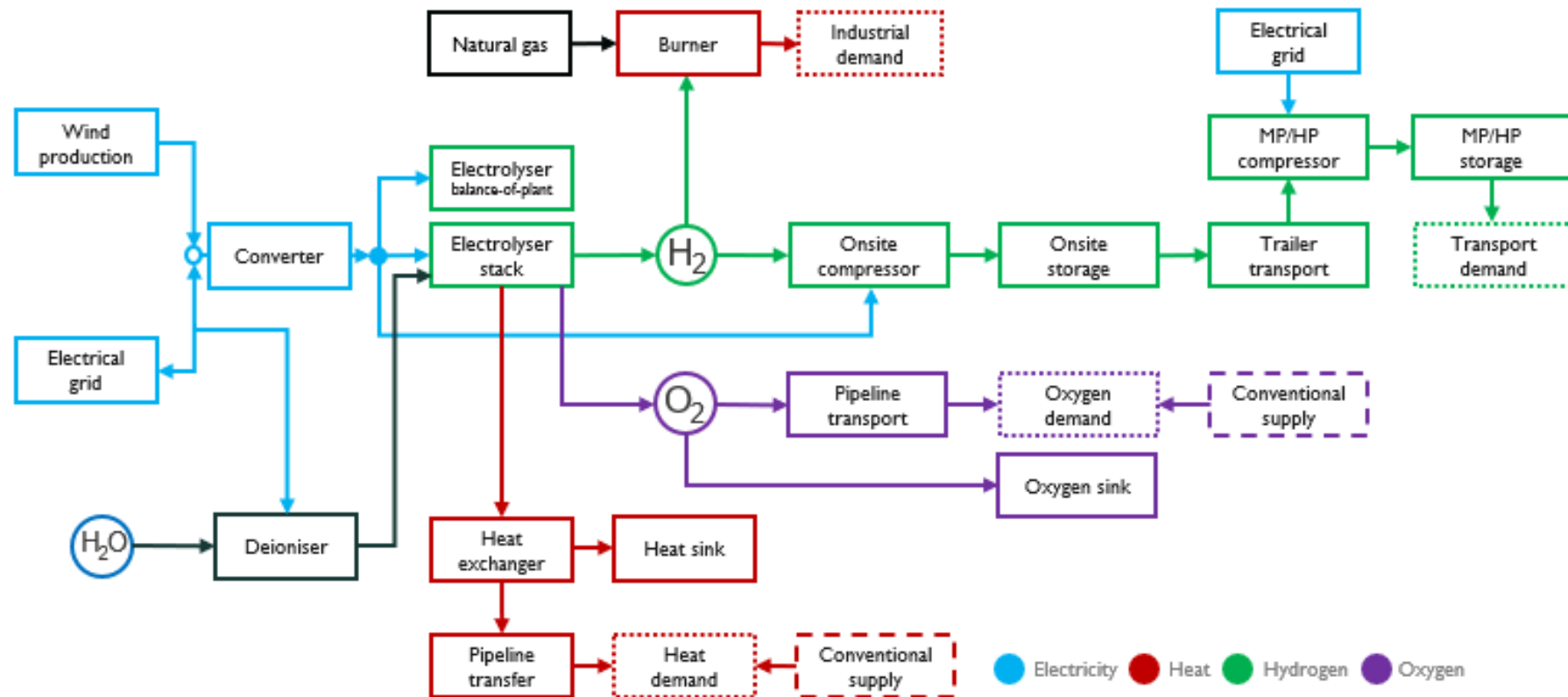
# CONVEY status



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# Energy system design

- Circular port energy system model developed by VTT, supporting techno-economic scenario analysis.
- Multi-scenario simulations demonstrated system economic viability and emissions reduction potential.



# Infrastructure development status

- *The routing and interface concepts for H<sub>2</sub>, O<sub>2</sub>, and heat are established and technically validated by Norwegian Hydrogen.*
- The plant layout, grid-connection concept and distribution interfaces have been established, and preferred OEMs for electrolysis and compression/distribution have been identified. Preparations for permitting and construction are complete.
- Technical implementation is pending final investment decisions from offtakers and confirmation of supplier contracts.



# Business Model & Exploitation & Replication

Monitoring of regulatory context and future funding mechanisms on going.

Joint business model development underway with input from system modelling and stakeholder consultation.

First set of Key Exploitable Results (KERs) identified and structured.

Initial replication groundwork completed including stakeholder engagement, port outreach, and best-practice data collection.

Early insights gathered on challenges and enablers for replication across EU ports.

# CONVEY conclusion



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CONVEY

# Key Success Factors and Challenges of the CONVEY Project

- Strong collaboration among stakeholders is essential for success.
  - Community building takes time and resources. Hardship lies in walking the talk.
- Continuous funding and investment are critical for project sustainability.
  - Finding supplementary funding sources is challenging as rules vary among funding providers.
- Innovative solutions can enhance efficiency and effectiveness.
  - Need to balance between realistic implementation and high complexity.
- Focus on replication and scale up from the beginning.
  - To create a renewable hydrogen market, solutions need to be replicable and scalable.



# Thank you for your time

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