BalticSeaH2

BalticSeaH2 Valley – The maritime approach

Demonstrating hydrogen economy with the largest cross-border Hydrogen Valley in Europe

The project is supported by the Clean Hydrogen Partnership and its members.

Clean Hydrogen Partnership

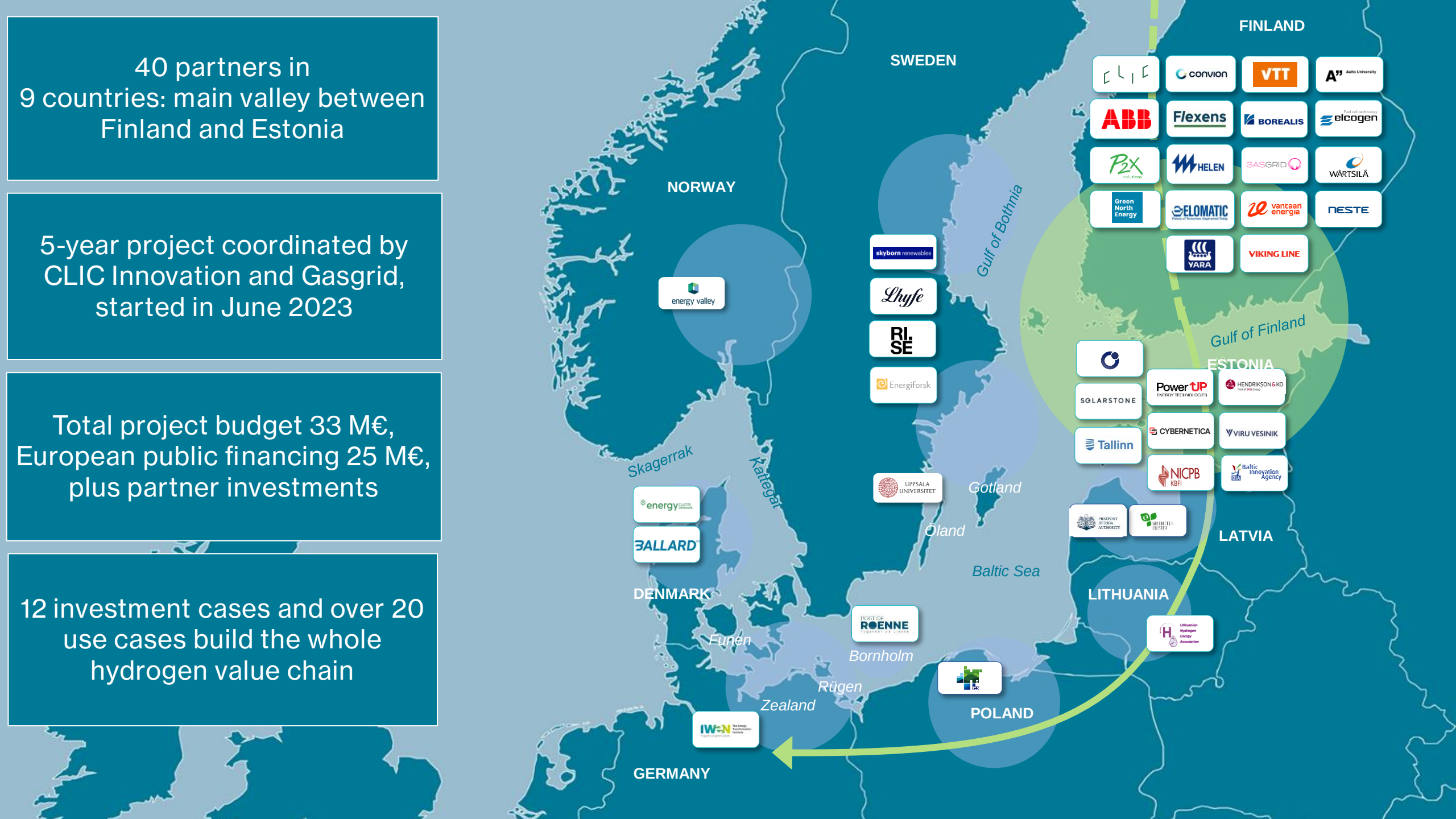
Co-funded by the European Union

40 partners in
9 countries: main valley between Finland and Estonia

5-year project coordinated by CLIC Innovation and Gasgrid, started in June 2023

Total project budget 33 M€, European public financing 25 M€, plus partner investments

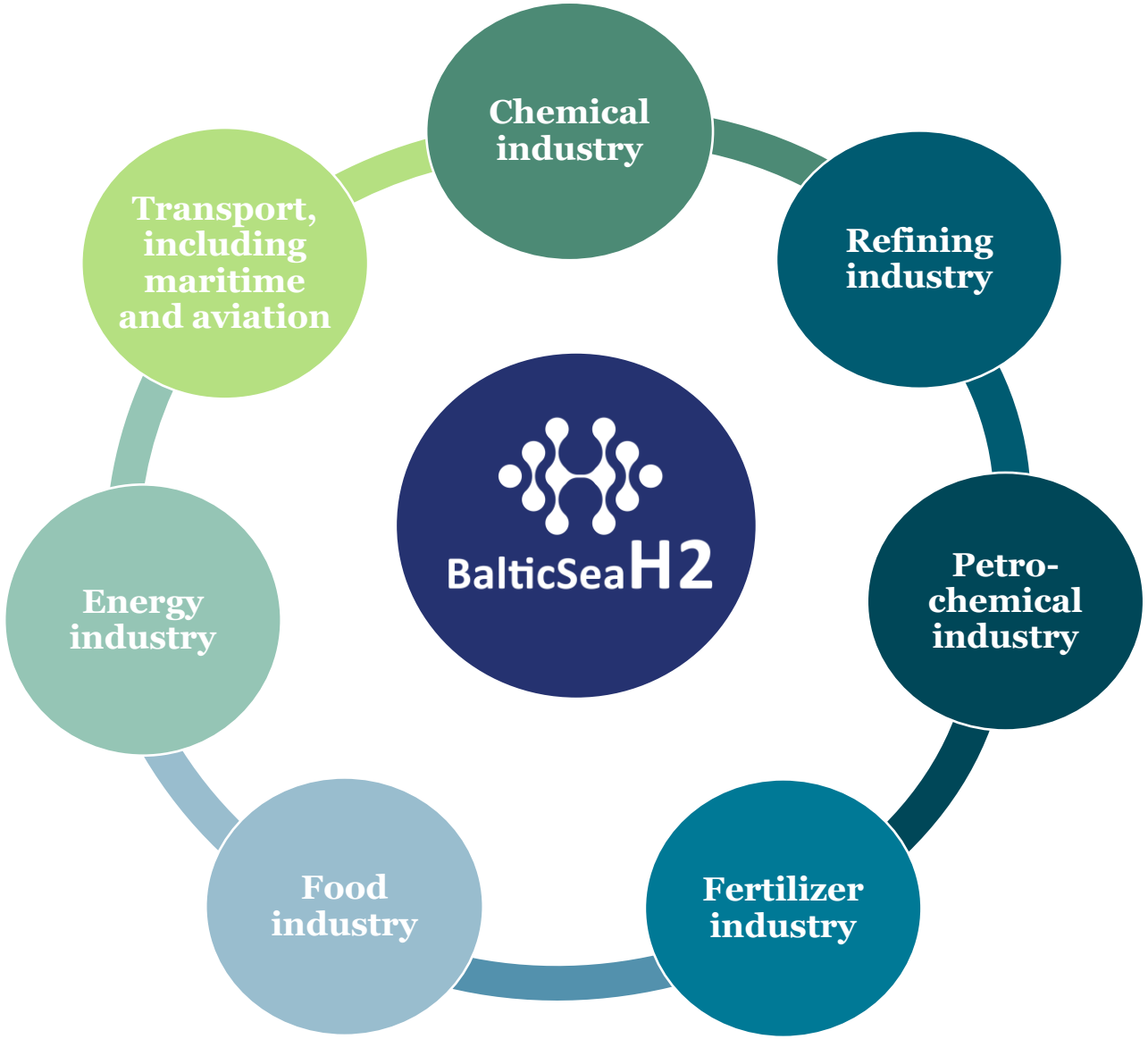
12 investment cases and over 20 use cases build the whole hydrogen value chain



Use cases and industries involved in BalticSeaH2

‘Investment cases’ integrate multiple use cases from our collection of + 20 use cases to create the hydrogen value chain simultaneously.

Not all cases are published yet – follow the project to know first when our partners publish their investments!



Co-funded by the European Union

BalticSeaH2 Valley implementation plan by 2030

Renewable hydrogen production targets (tonH_2/year)

In production
Harjavalta 20 MW

FID made in 2024
3H2 pilot plant 3 MW

FID estimated H1/2026
Joensuu 30-40 MW

FEED
Naantali 280 MW

70000
60000
50000
40000
30000
20000
10000
0

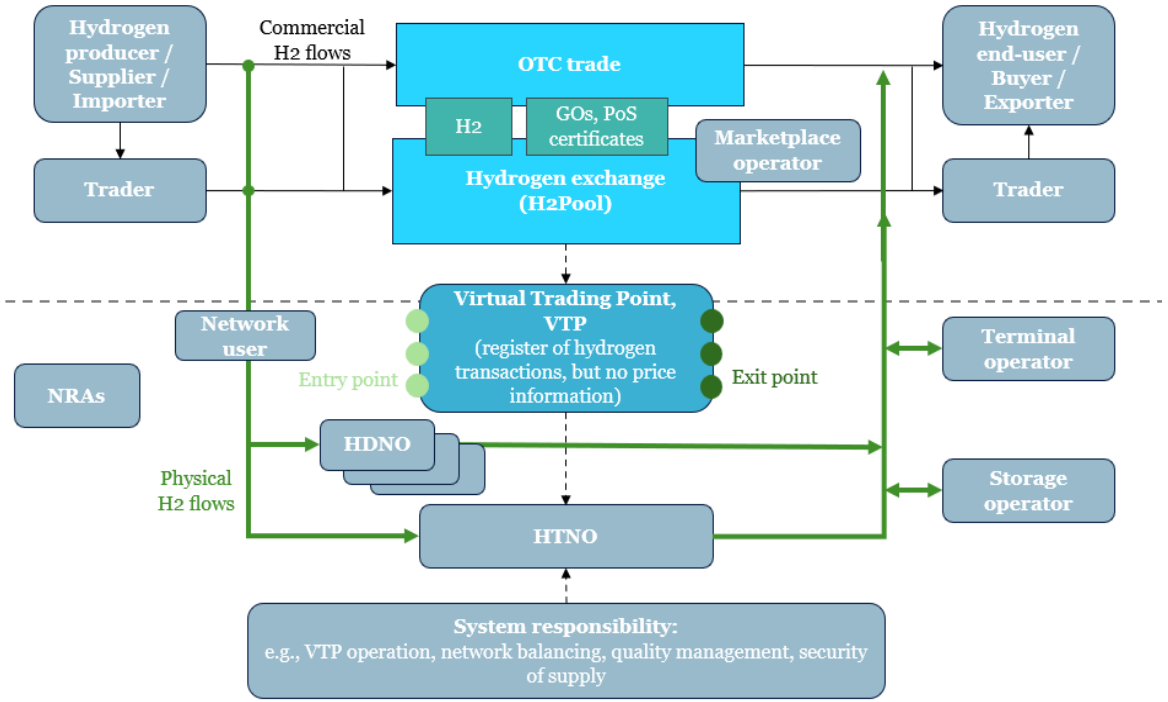
Total ~60,000 ton/a

2024	2025	2026	2027	2028	2029	2030
	3,000 ton/a	500 ton/a		5,500 ton/a	36,000 ton/a	15,000 ton/a
	H2 & E-methane	H2 for refuelling		H2 & E-methanol	Green ammonia	
	Target sectors: Transport, Food industry, Storage	**Target sectors:** Transport, Industry, Storage		**Target sectors:** Transport, Energy, Industry	**Target sectors:** Maritime, Industry	**Target sectors:** Transport, Energy, Industry, Storage

Note: The plants that are already under construction have received investment financing from the Innovation Fund, IPCEI, RRF, or other funding from the Finnish ministry or the Finnish Climate Fund.

Co-funded by the European Union

Hydrogen exchange and trading platform H2Pool



Project status

Under construction
From Nov 2024

Proof of concept
Q4/2025

Piloting
Q1 / 2026

Competitive commodity market
- Commodity H2
- H2 GOs and certificates
- Hybrid commodity H2 + H2 GO

Regulated services in the hydrogen system
- Standard capacity products
- Commodity charge
- Balancing H2 products
- Large-scale hydrogen storage capacity products

2024 2025 2026 2027 2028 2029 2030

Target sectors:
All sectors

Co-funded by the European Union

Use Case Map

The use cases span a wide area and are not all connected to production cases. Some use cases are still far from implementation, but they are being explored to assess feasibility and identify potential challenges.

- P — H2 Production
- S — H2 Storage
- T — End Use: Transport
- I — End Use: Industry
- E — End Use: Energy
- O — Other

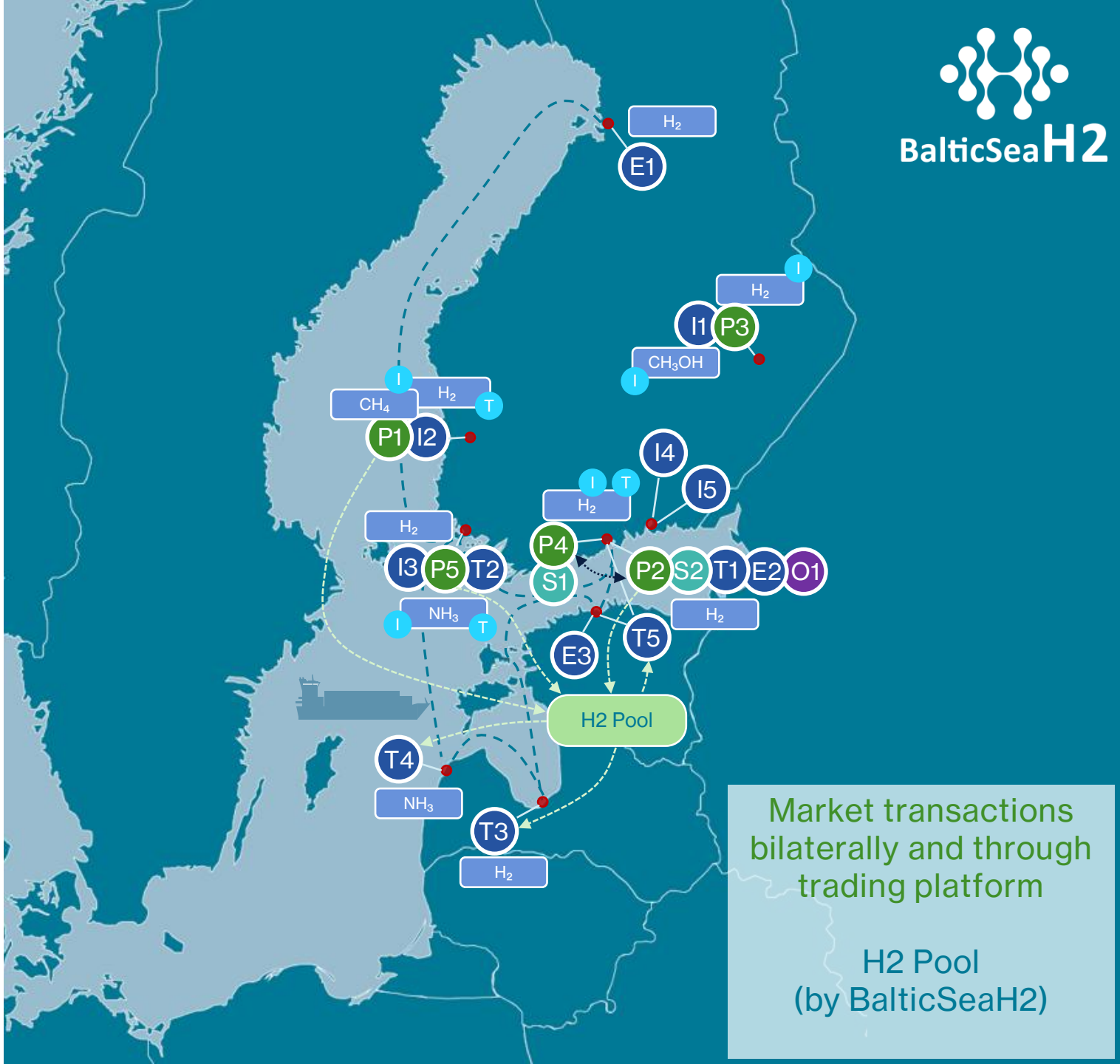
H2 trading

Use Cases not linked

Use Cases linked

CH_3OH H_2 CH_4 NH_3 — Products & derivatives

T I E — End Users outside the consortium



Co-funded by the European Union

Clean Hydrogen Partnership

The project is supported by the Clean Hydrogen Partnership and its members.

Maritime in focus

Despite not being a hydrogen valley with a primary focus on maritime activities, a remarkable part of BalticSeaH2 Use Cases have a maritime connection.

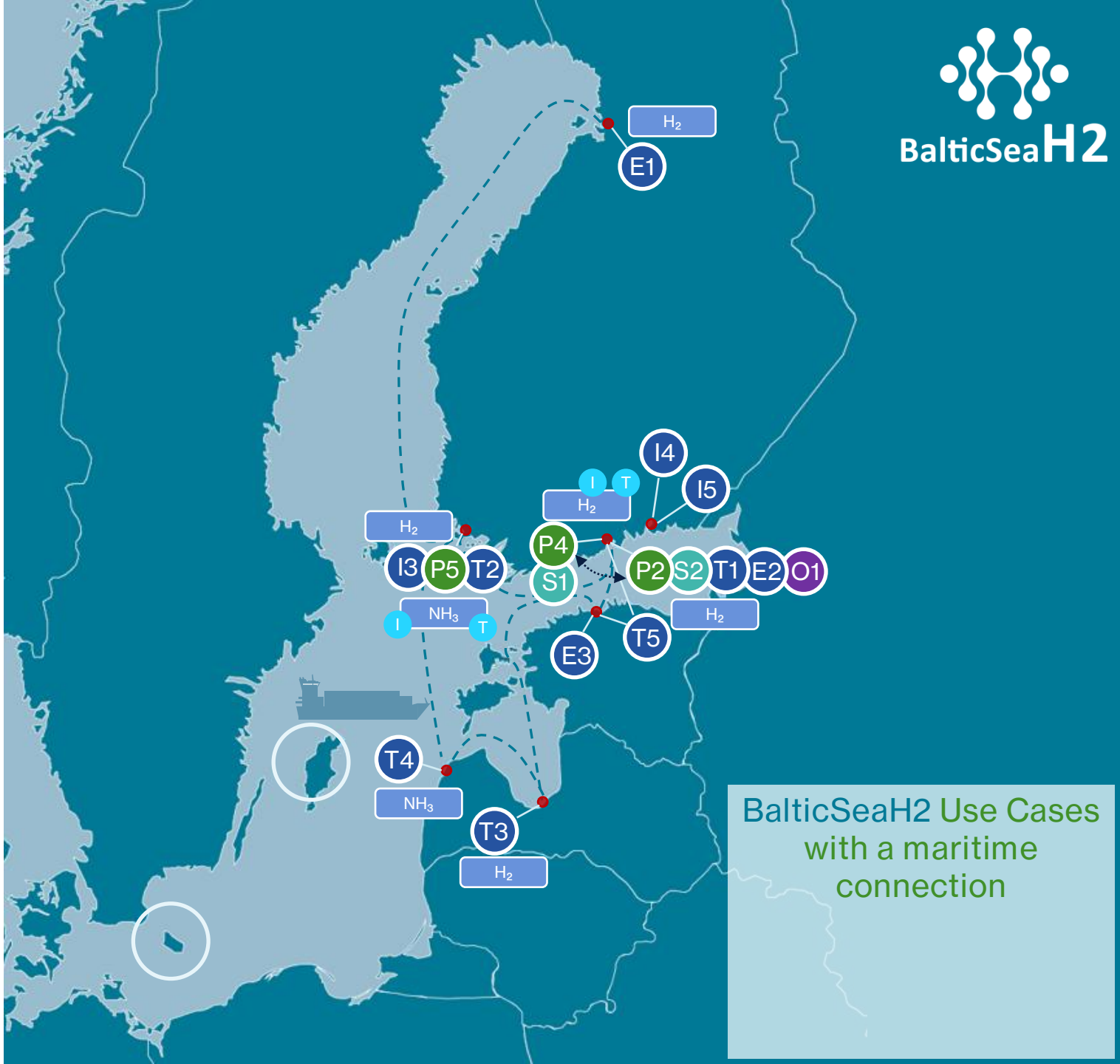
This outlines **the importance of maritime operations for the hydrogen economy** and vice versa.

In BalticSeaH2, there are **7 port areas** where concrete hydrogen related investments take place. Three Use Cases will be producing and storing **next generation marine fuels** and two are **rethinking the vessel** engineering.

Co-funded by the European Union

Clean Hydrogen Partnership

The project is supported by the Clean Hydrogen Partnership and its members.



Port of Visby
Gotland Sweden

Ecosystem role

- Fully integrated energy system on the island
- Hydrogen-ready ferry development
- XR-based modelling of bunkering operations

Why it matters?

- Impact on security of supply, tourism, logistics and regional economy
- Strong alignment with Sweden's island-based decarbonisation and innovation agenda
- Testbed for Integrated Island Mobility & Maritime Energy Systems

Port of Visby

Testbed for Integrated Island Mobility & Maritime Energy Systems

What the project will do:

The project examines **hydrogen supply** and potential maritime applications in and around the Port of Visby, including port operations, bunkering concepts, and integration with Gotland's regional energy system.

In addition, the project will develop an **XR (Extended Reality) environment** that simulates hydrogen and ammonia bunkering operations at Visby, enabling training, safety analysis, stakeholder engagement, and standardisation work. The work is carried out by partners RISE and Uppsala University.

Current status:

Work is progressing on both the hydrogen supply assessment for Gotland and the XR bunkering demonstrator. The work reinforces Gotland's growing role as a **real-world testbed** for hydrogen-based maritime and regional mobility solutions.

Co-funded by the European Union

Port of Rønne
Bornholm Denmark

Ecosystem role

- Node of the Bornholm Energy Island concept
- Links to offshore wind, PtX, and smart grid innovation
- Potential location for Baltic Sea green bunkering & distribution hub
- Supported by a high-level industrial consortium

Why it matters?

- Key location for scaling green maritime fuels across the Baltic Sea
- Port acts as an enabler for regional H_2/ammonia logistics and future PtX flows
- Intersection of energy transition and maritime decarbonisation

Port of Rønne

BalticSeaH2

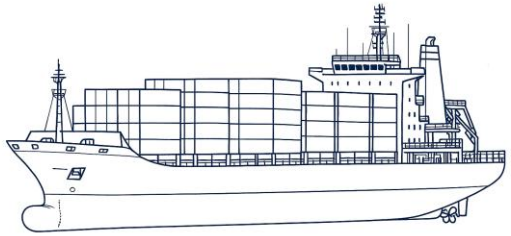
Bunkering and Integration with Energy Island, Offshore Wind & PtX

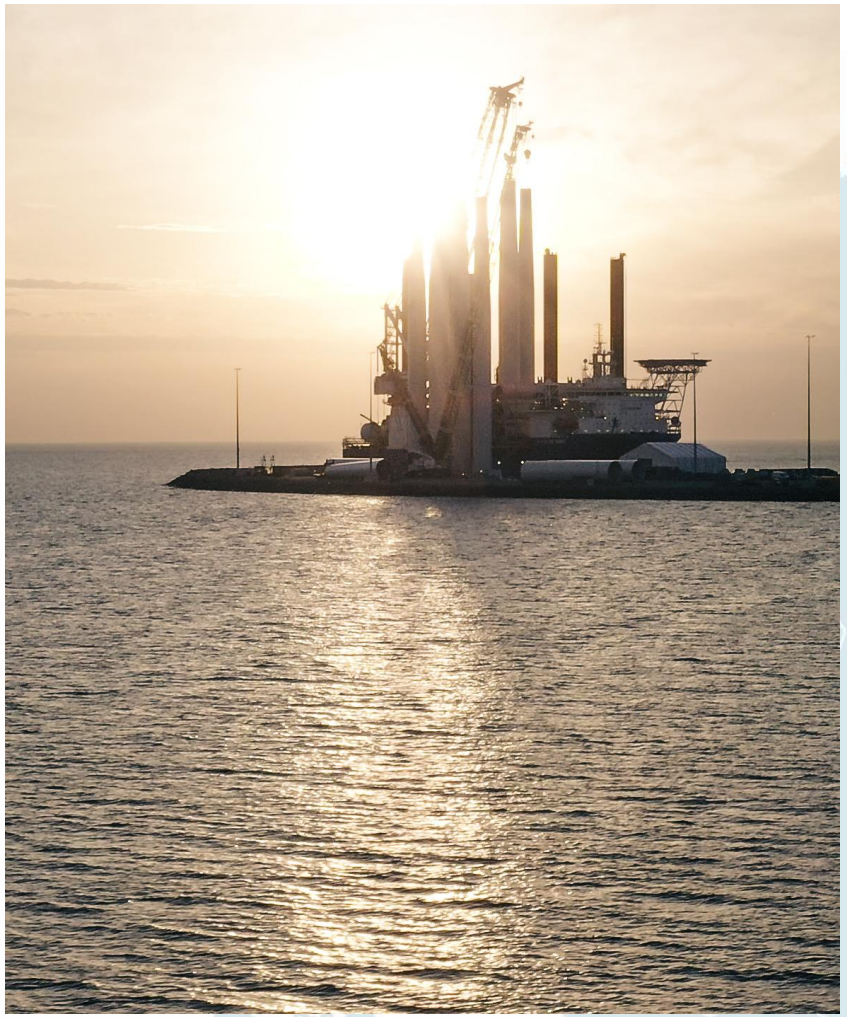
What the project will do:

The project explores the establishment of hydrogen or ammonia **bunkering** facilities at Bornholm's Port of Rønne, assessing logistics, local demand, and integration into the Baltic hydrogen corridor.

Current status:

The Port of Rønne is actively developing into a green bunkering hub. A feasibility study is underway with the industrial consortium (including Wärtsilä), and practical steps such as partner engagement and mapping of a customer network are advancing — reinforcing the port's strategic role in **hydrogen and ammonia logistics**.





Co-funded by the European Union

Port of Riga
Latvia

Ecosystem role

- Latvia's primary multimodal logistics hub
- Hydrogen solutions impact the entire Ventspils–Riga–Daugavpils corridor
- Strategic site for hydrogen storage, distribution and industrial applications
- Functions as a testbed for Latvia's national hydrogen strategy

Why it matters?

- Riga is a national industrial backbone
- Hydrogen technologies have the potential to scale inland
- Strong alignment with Latvia's long-term decarbonisation and infrastructure roadmaps

Freeport of Riga

Integration with the Latvian Industrial & Logistics Ecosystem

What the project will do:

The project assesses the feasibility of converting the Port of Riga's own operational vessels to hydrogen or hybrid propulsion and evaluates required port-side energy and bunkering infrastructure.

Current status:

Pre-feasibility work is ongoing. Technical expertise has been sourced, and initial studies on hydrogen readiness and ammonia bunkering have been completed for the Riga port ecosystem and Latvian port transition plans. No investment decision yet (planning phase).

The port has announced >€7 million of development investments in 2025, focused on infrastructure like access roads, modern checkpoints and industrial areas.

Co-funded by the European Union

Port of Ventspils
Latvia

Ecosystem role

- Major chemical logistics centres with existing pipelines, storage and terminals
- Natural anchor for a green ammonia production, storage and export value chain
- Key cross-border linkage to Finnish green ammonia investments

Why it matters?

- Ventspils is evolving into a full industrial ammonia hub
- Connects northern and southern BSR green fuel investments
- Strengthens Latvia's position in emerging Baltic green fuel corridors

Port of Ventspils

Strategic Green Ammonia Hub & Enabler of Cross-Border Value Chains

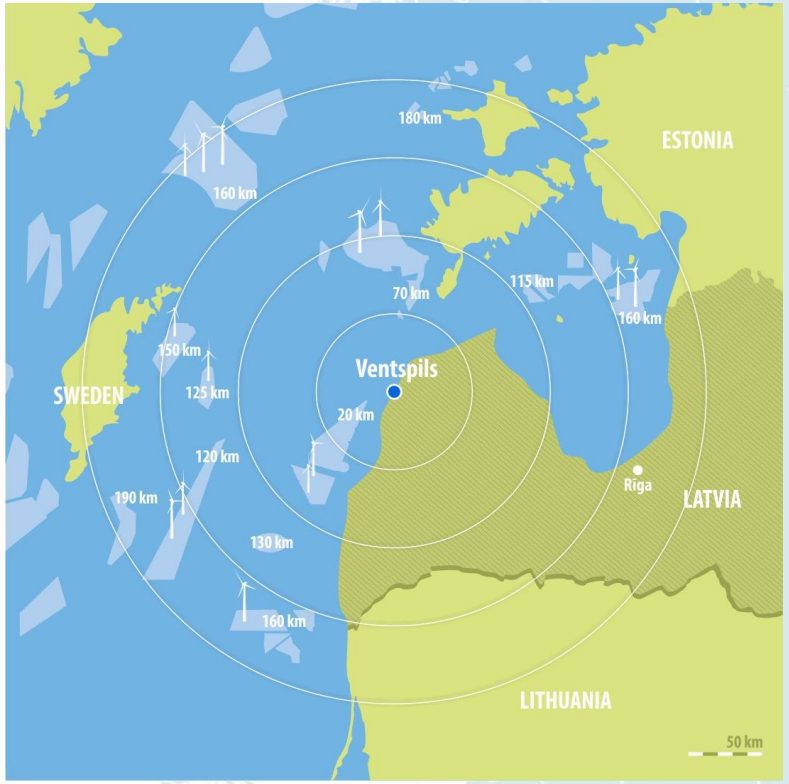
What the project will do:

The project investigates the potential transformation of the existing ammonia terminal into a green ammonia production, storage, and maritime bunkering hub in the scale of ~250,000 t green ammonia.

Current status:

Pre-feasibility study is underway with investor scouting ongoing. Engagement with the Freeport Authority continues, and desk studies on ammonia bunkering and regulatory requirements have been completed.

External to BalticSeaH2, PurpleGreen Energy is developing a large-scale renewable ammonia export plant at the Freeport of Ventspils, underlining the port's emerging role as a green ammonia hub in the Baltic Sea.



Co-funded by the European Union

Smooth sailing?

Case: Auxiliar fuel cell for vessels

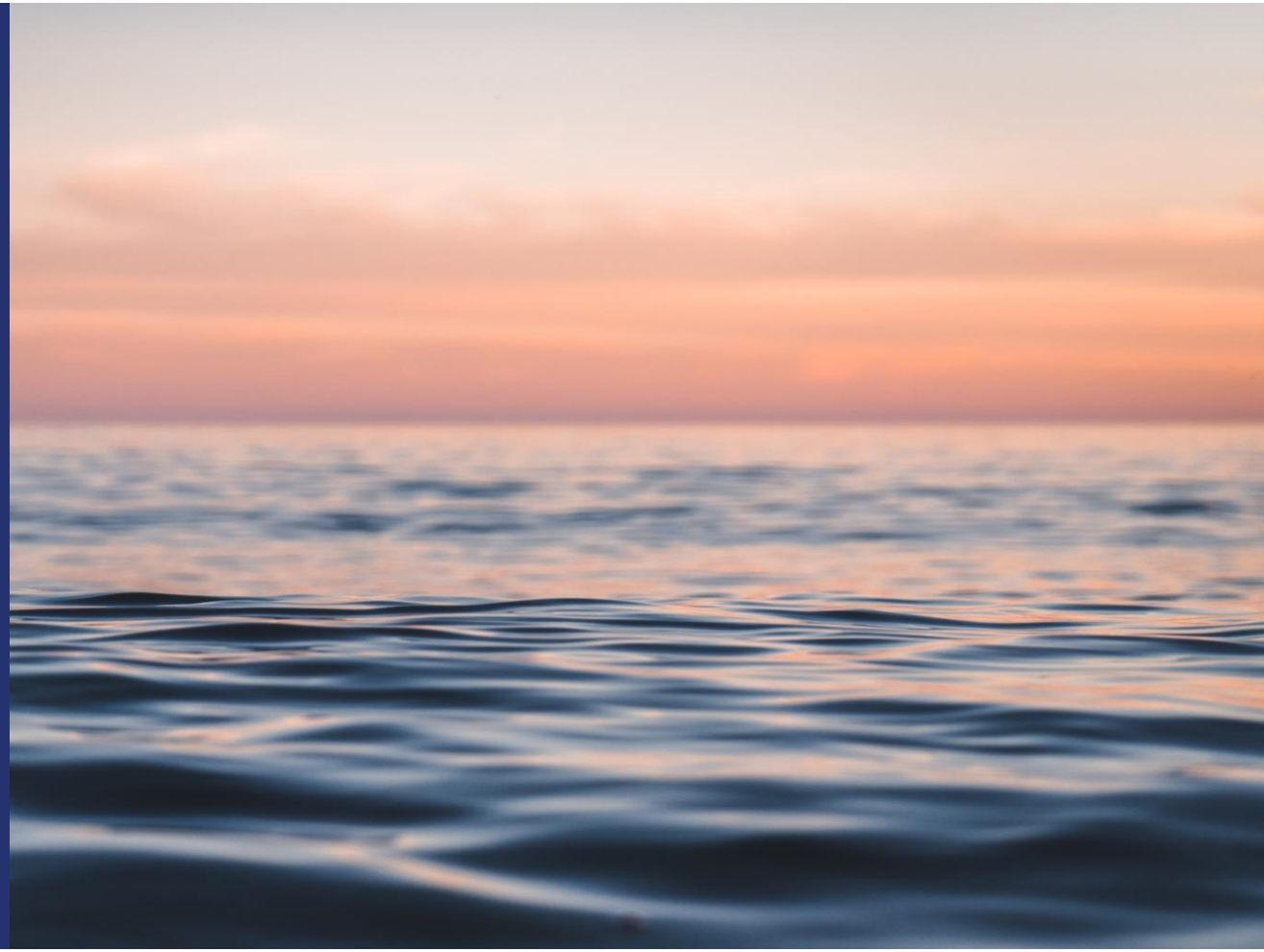
- Modular fuel cell auxiliary unit for marine and stationary uses
- ➢ Early focus switched to stationary onshore unit due to the pending demonstration site

Case: Bunkering of H2 to ships

- Feasibility study and investment plan for a H2 marine bunker station for a ferry route between Helsinki (FI) and Tallinn (EE)
- ➢ Case dismissed due to the early adopter feasibility issues

Case: Maritime use of ammonia

- Production of green ammonia
- Used as marine bunker fuel
- ➢ Site size tripled up to 280 MW



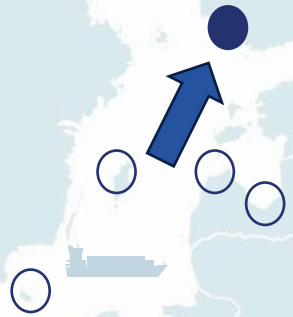
Co-funded by the European Union

Case connections: Green Ammonia for Maritime Transport

What the project does:

The project develops green ammonia production and distribution solutions for maritime and industrial use:

- **Green North Energy develops a green ammonia plant in Naantali**, which aims to supply future marine fuels for the Baltic Sea region.
- In parallel, the project examines the potential of **the four ports as bunkering hubs** and for Ventspils terminal and Port of Riga **in Latvia also as storage hubs**, enabling cross-border ammonia logistics and long-term marine fuel deployment.



Current status:

- Green North Energy has advanced a feasibility study for maritime-linked fuel production. Phase 1 of the green ammonia market study is completed, and technical and environmental work for the Naantali plant is progressing.

Co-funded by the European Union

BalticSeaH2 Valley implementation plan by 2030

Renewable hydrogen production targets (tonH_2/year)

In production
Harjavalta 20 MW

FID made in 2024
3H2 pilot plant 3 MW

FID estimated H1/2026
Joensuu 30-40 MW

FEED
Naantali 280 MW

70000
60000
50000
40000
30000
20000
10000
0

3,000 ton/a
H2 & E-methane

500 ton/a
H2 for refuelling

5,500 ton/a
H2 & E-methanol

36,000 ton/a
Green ammonia

15,000 ton/a

Total ~60,000 ton/a

2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030

Target sectors:
Transport
Food industry
Storage

Target sectors:
Transport
Industry
Storage

Target sectors:
Transport
Energy
Industry

Target sectors:
Maritime
Industry

Target sectors:
Transport
Energy
Industry
Storage

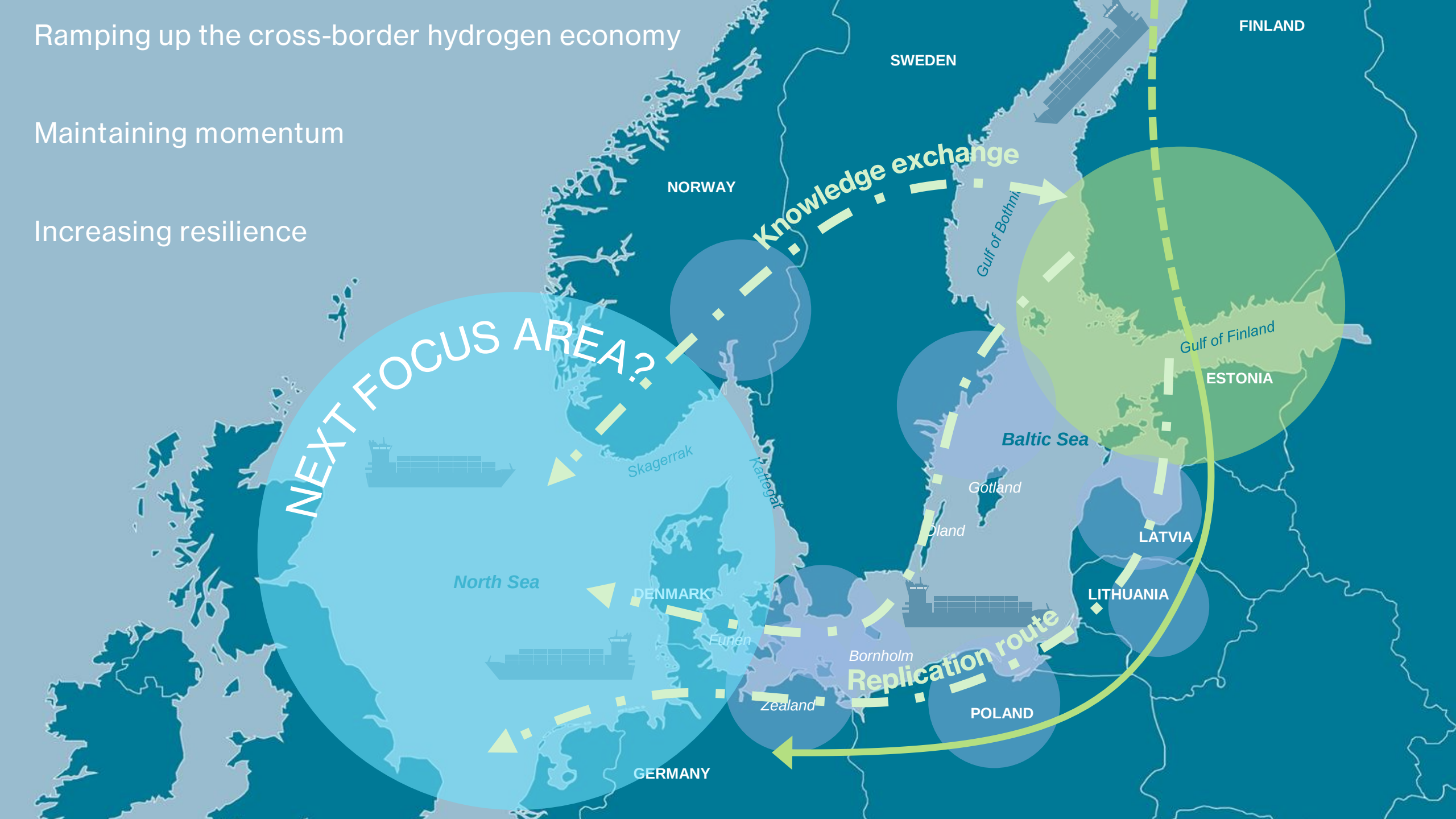
Note: The plants that are already under construction have received investment financing from the Innovation Fund, IPCEI, RRF, or other funding from the Finnish ministry or the Finnish Climate Fund.

Co-funded by the European Union

Ramping up the cross-border hydrogen economy

Maintaining momentum

Increasing resilience



Follow us!

@BalticSeaH2

BalticSeaH2

BalticSeaH2valley.eu

Subscribe to
BalticSeaH2 newsletter!

The project is supported by the Clean Hydrogen Partnership and its members.

Clean Hydrogen Partnership

Co-funded by the European Union

Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the Clean Hydrogen Partnership. Neither the European Union nor the granting authority can be held responsible for them.

BalticSeaH2

Thank you for your attention!

The project is supported by the Clean Hydrogen Partnership and its members.

Clean Hydrogen Partnership

Co-funded by the European Union