Green Transistion

Enhancing strategic energy gateways

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PORT OF TALLINN

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Green Transition Shipping

Global Footprint

- Global fuel consumption 300 M t (2024)
- Over 95% fossil fuels
- Maritime transport accounts for nearly **3%** of global CO_2 emissions

Ambition

IMO, CO_2 intensity reduction (vs 2008):

- 2030 -40%
- 2040 -70%
- 2050 -100%

FuelEU Maritime, CO_2 intensity reduction (vs 2020):

- 2030 -6%
- 2040 -31%
- 2050 -80%

EU ETS

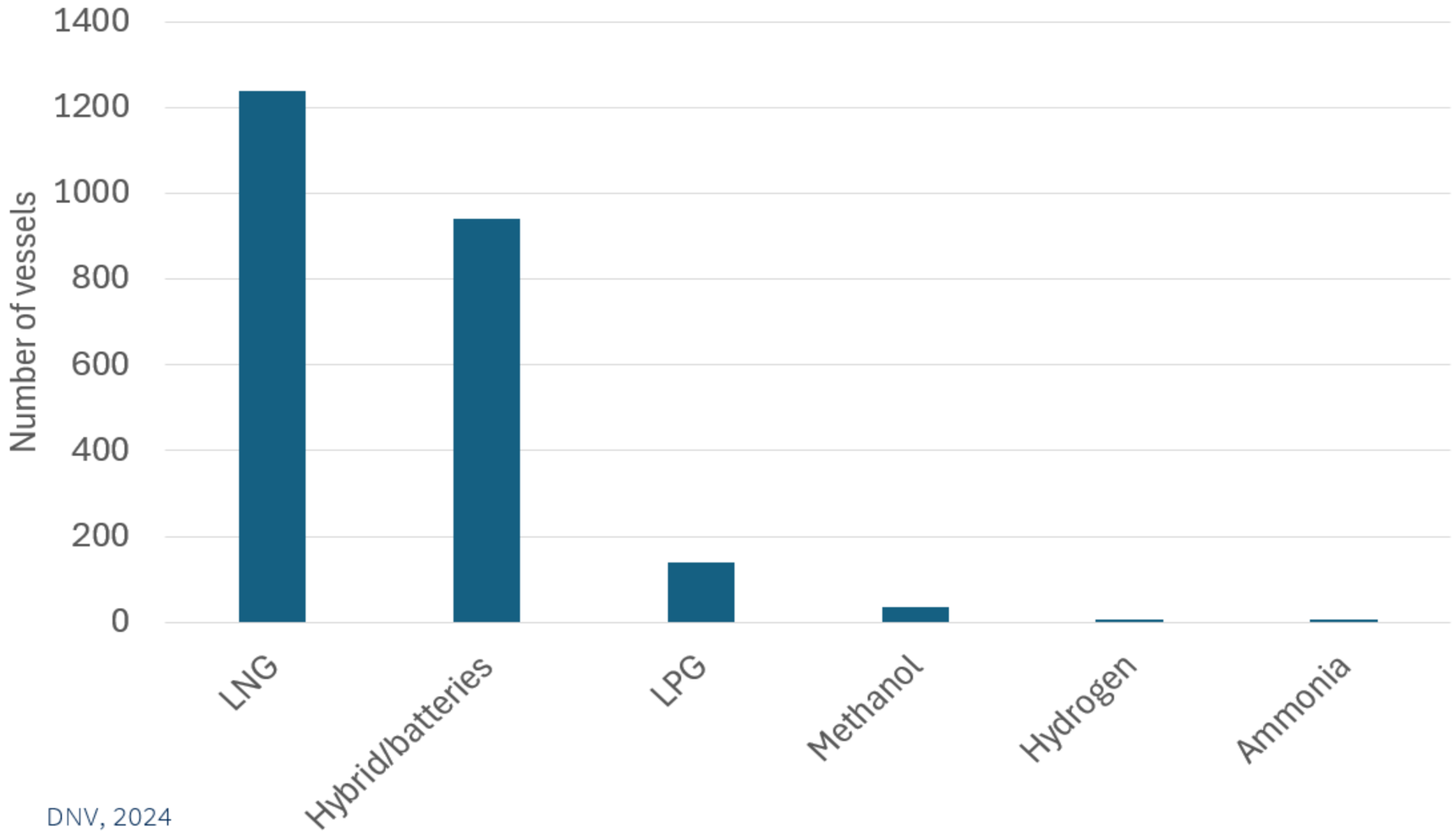
- 2024 = 40%
- 2025 = 70%
- 2026 = 100%

Sustainable energy sources for maritime sector

- LNG (?)
- Methanol
- Ammonia
- Hydrogen
- Electricity
- Biomethane

NB! Fully electric operations

Ships on Alternative fuels (2024)



DNV, 2024

Challenges in Storage and Ship Design

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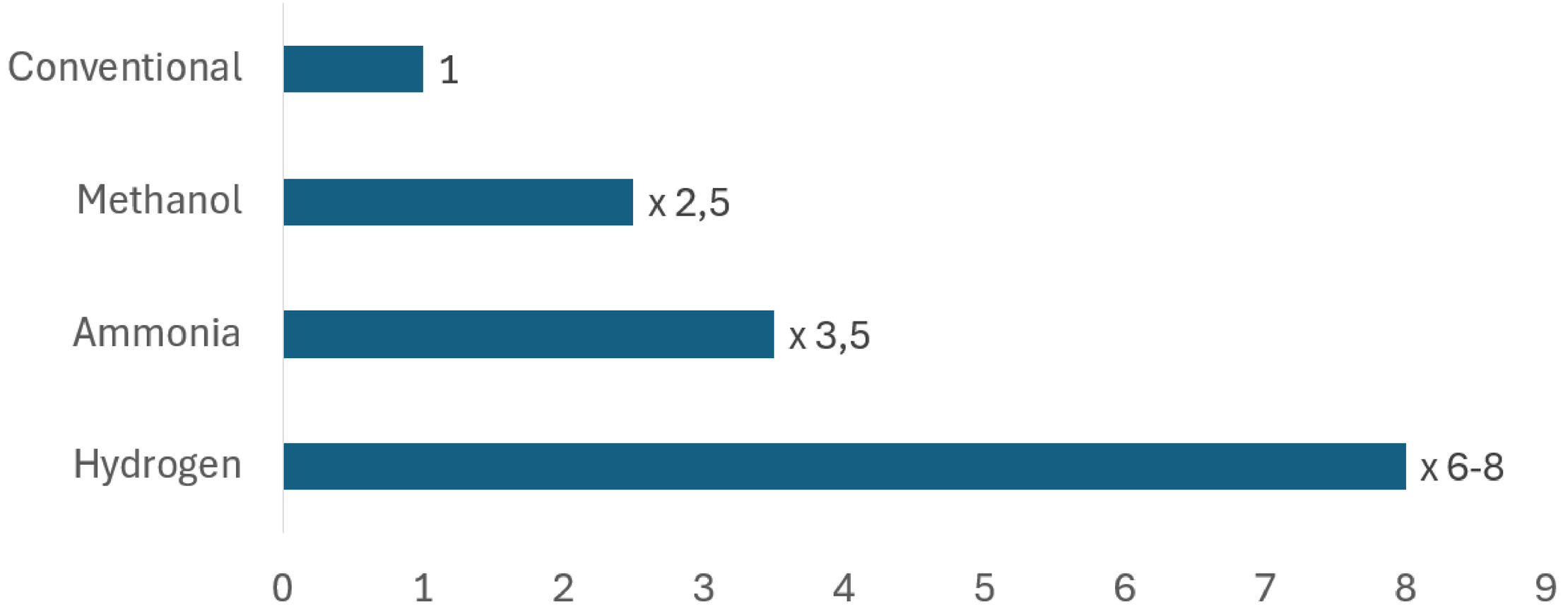
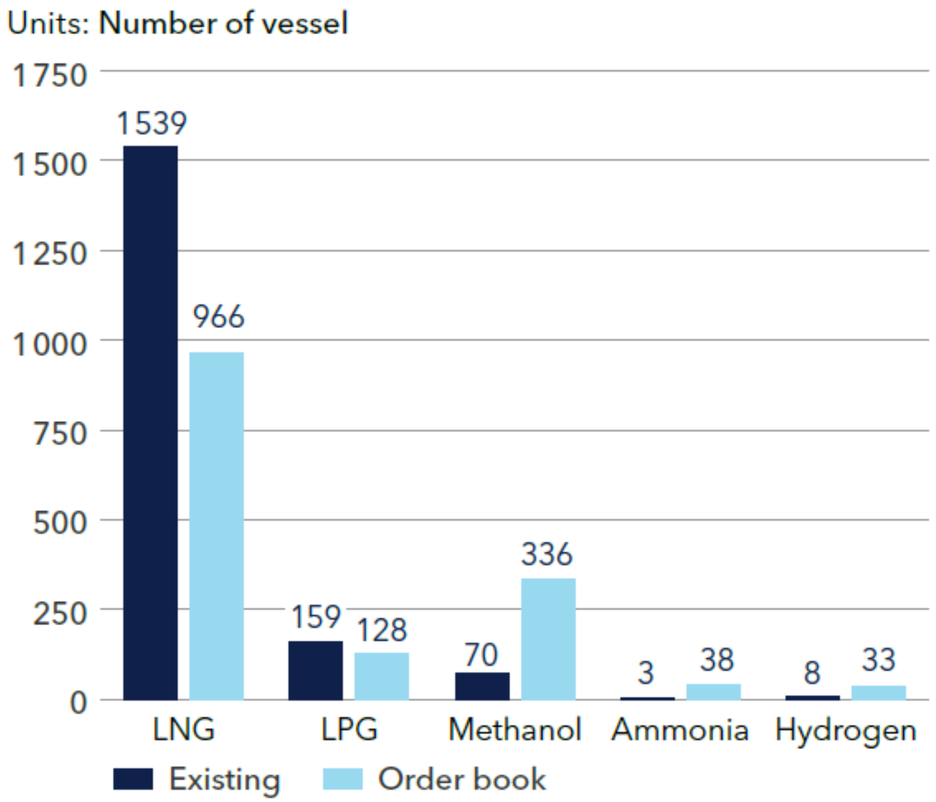


Ship Orders



Source: Alternative Fuels Insight (AFI) - afi.dnv.com, as of August 2025

Fuel Supply

- The production is on early stage
- Multiplicity and duplication of projects
- Input availability, price and regulation

Year	LNG (M t)	Methanol (M t)	Ammonia (M t)	Hydrogen (M t)
2024	35	1,2	Minimal	0,1
2030	50	10-15	5-10	5-10
2040	65	20-30	30-40	15-25
2050	Decrease…	40+	80+	50+

Compiled by Port of Tallinn, DNV, Energy Technology

Conclusion

- Shipping sector continues to grow
- Alternative fuels segment in its early stage
- Demand – trend lines clearer in the near-medium term
- Supply – input availability, price, regulations

Will Estonia take up the opportunity?

Green Transition in Port of Tallinn

PORT OF TALLINN

BUSINESS FIELDS

Passengers

- 10+ mln passengers a year
- 5500 ship calls a year
- Old City Harbour and Saaremaa Harbour
- Welcoming passenger ships, offering and developing the port infrastructure, serving passengers and vehicles.

Cargo

- 15+ mln tons of cargo a year
- 1600 cargo ship calls a year
- Muuga Harbour, Paldiski South Harbour
- Welcoming cargo ships, offering and developing the port infrastructure, serving passengers and vehicles.

Shipping

- Operating ferry traffic between the mainland and major islands
- 2,4 mln passengers, 1,2 mln vehicles a year
- Ice breaking in the ports of Northern Estonia.

Real Estate

- 16 ha Old City Harbour real estate development
- 76 ha Muuga Industrial Park
- 39 ha Paldiski South Harbour Industrial Park
- 10 ha Saaremaa Harbour
- Land and commercial space

PORT OF TALLINN

Where we operate

from harbours to vessel operations

Port of Tallinn doesn't by far mean ports in the city limits of Tallinn.

Port of Tallinn is a port complex with harbours located all over Estonia.

Ice-breaker Botnica

Muuga Harbour

Tallinn: Old City Harbour & Old City Marina

Paldiski South Harbour

Ferry transfer to islands

Saaremaa Harbour


Old City Harbour


Muuga Harbour


Paldiski South Harbour


Saaremaa Harbour

Alternative Fuels at Port of Tallinn

Production, storage, bunkering

JetGas, Estonia

- Liguid methan terminal
- 5 tanks total 5 000 m3
- Commissioning 2030

Derivaat NH3, Estonia

- Production of green ammonia
- 20 000 tons annually
- Comissioning 2028

Protio, USA

- Green Methanol production
- 200 000 tons annually
- Construction starting 2028/30

Methanol

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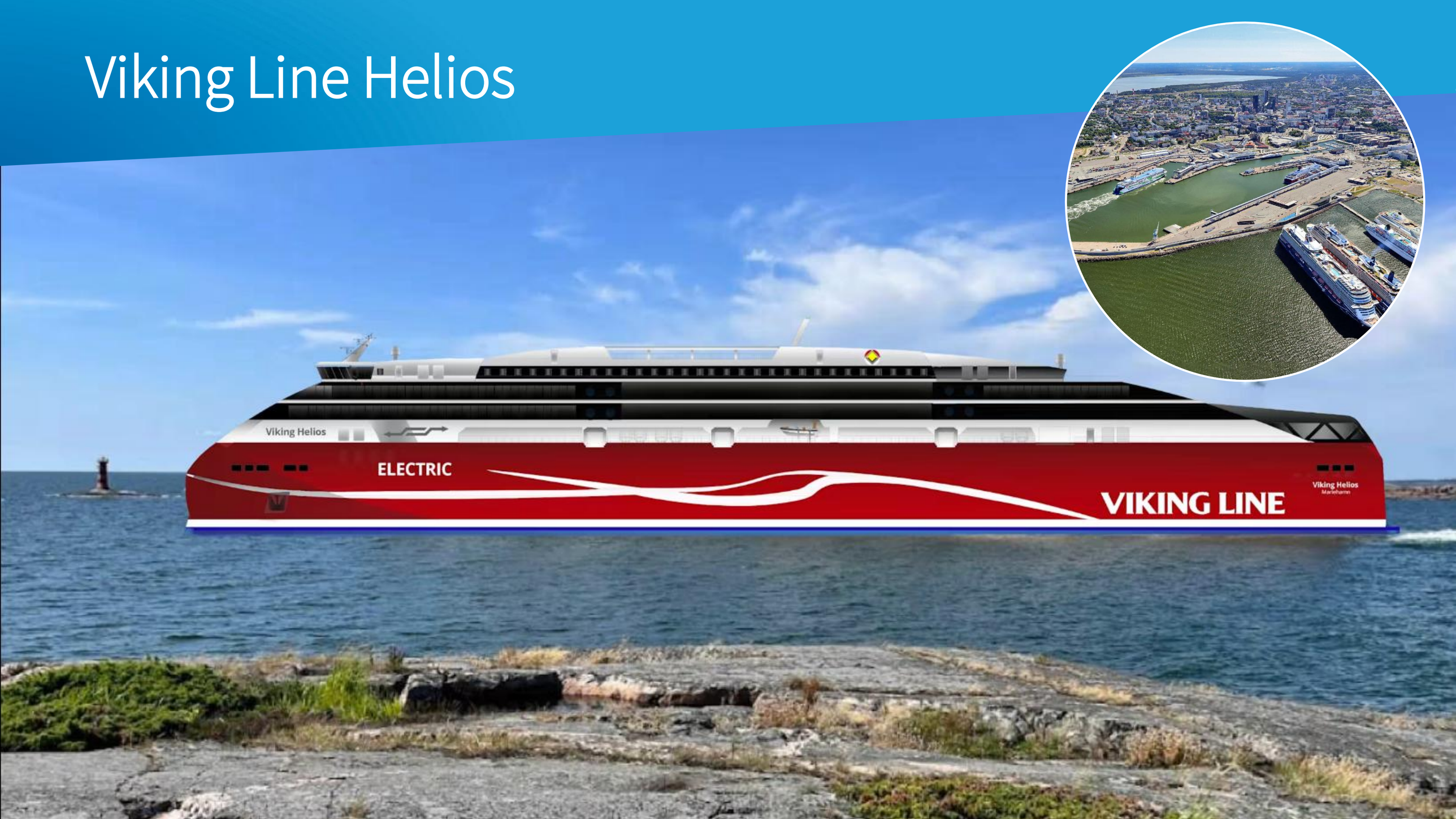
X-Press Feeders:
Rotterdam – Antwerpen – Vuosaari – Muuga – Kotka – Rotterdam

Viking Line Helios



Rail Baltica

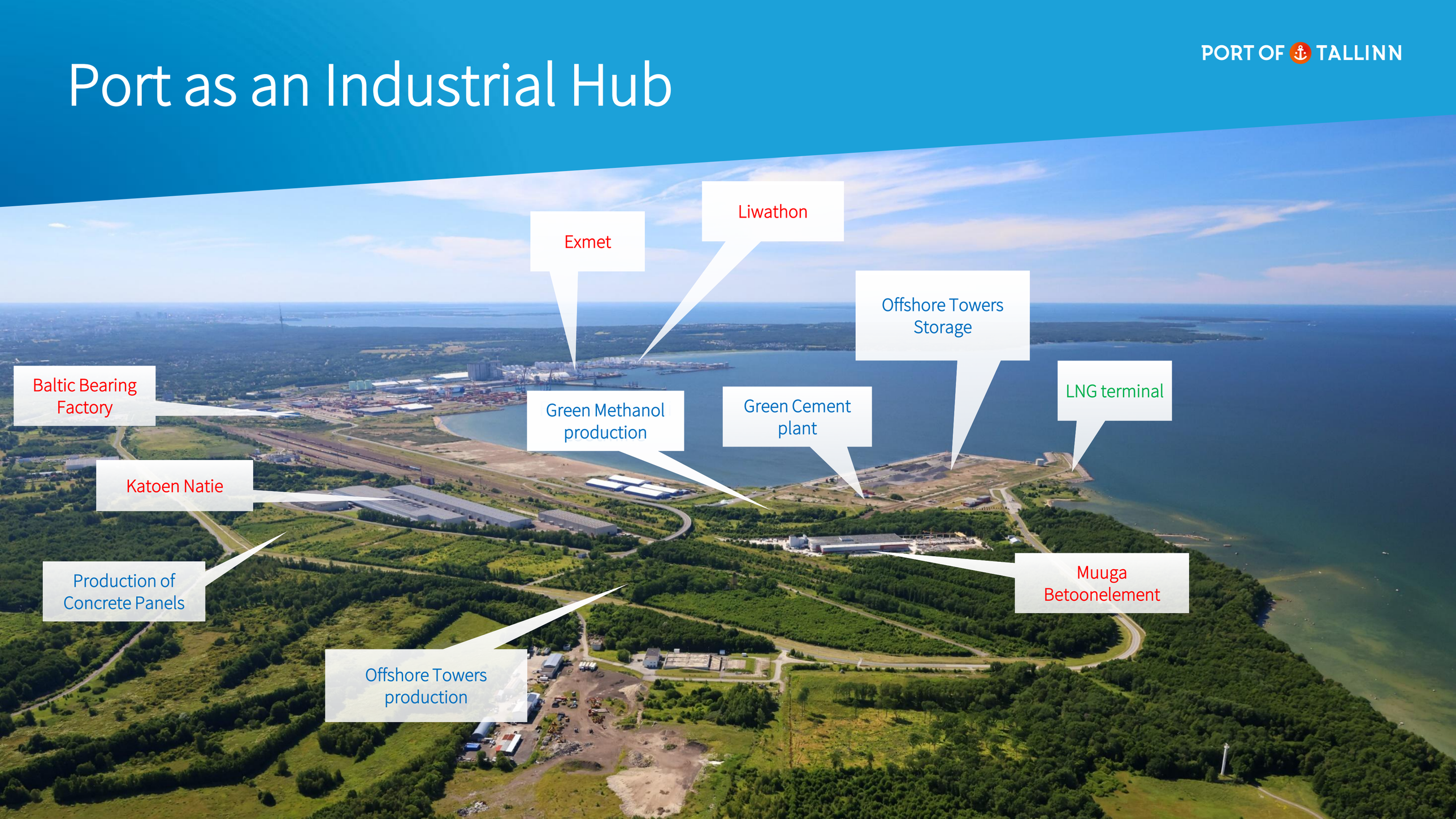
Muuga will be the only port in the Baltics having terminal inside the Port area(2029)

PORT OF TALLINN

Helsinki
Tallinn
Pärnu
Riga airport
Riga
Panevėžys
Kaunas
Vilnius
Białystok
Warszawa
Berlin
Hamburg
Bremerhaven
Bremen
Osnabrück
Hannover
Amsterdam
Rotterdam
Antwerpen
Bruxelles
Köln

Port as an Industrial Hub

PORT OF TALLINN



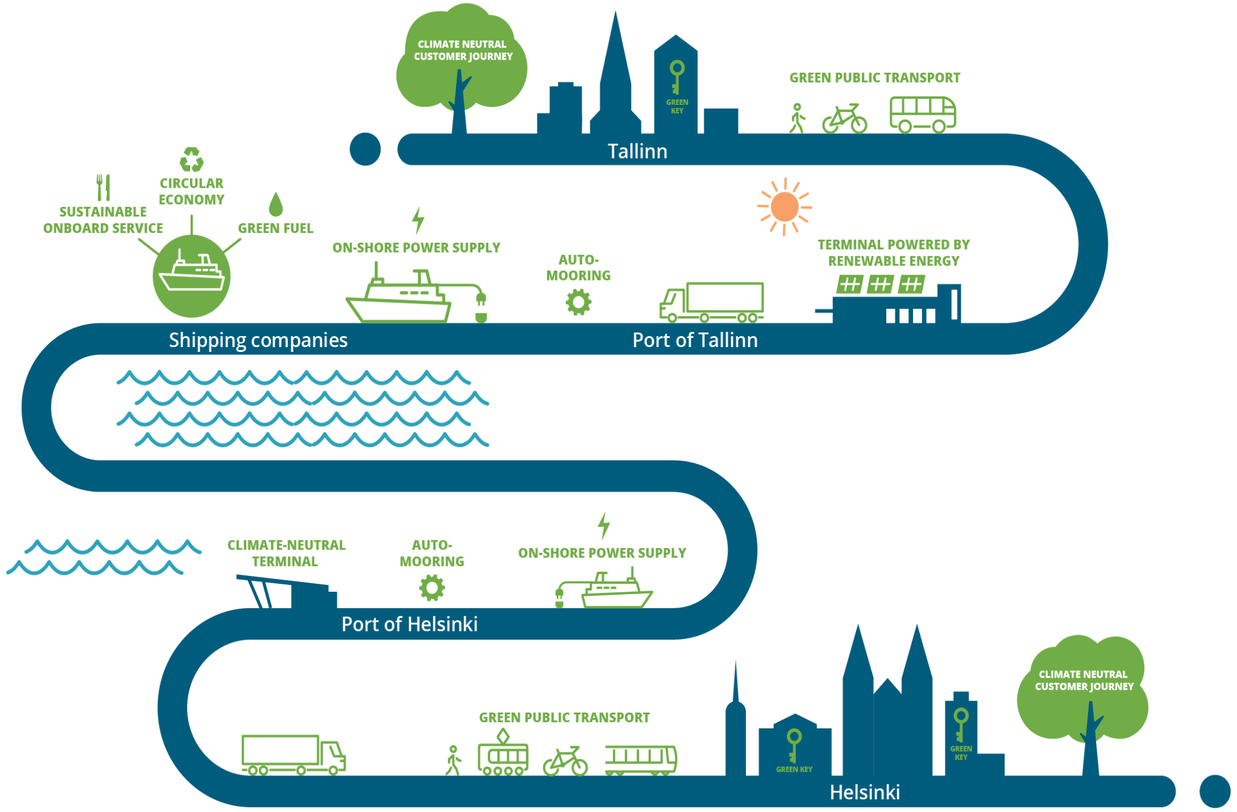
Developments at Paldiski South Harbour:
Green energy and offshore wind base

PORT OF TALLINN

FIN-EST
Green Corridor:
Estonia-Finland
Green Corridor

Routes: Helsinki-Tallinn, Vuosaari-Muuga

Goal: A climate-neutral travel and trade route



PORT OF TALLINN | PORT OF HELSINKI | Tallinn | Helsinki

TALLINK | SILJA LINE | VIKING LINE | ECKERÖ LINE | KLIIMAMINISTEERIUM

SWED-EST
Green Collaboration:
Sweden-Estonia Green Collaboration

Routes: Stockholm-Tallinn, Kapellskär-Paldiski

Goal: sustainable network-based green maritime cooperation

- Promote decarbonization
- Reduce CO2 emissions
- Enhance green practices within the maritime sector
- Increase the number of passengers, ro-ro units and ship calls
- Long-term environmental, economic and operational benefits

PORTS OF STOCKHOLM

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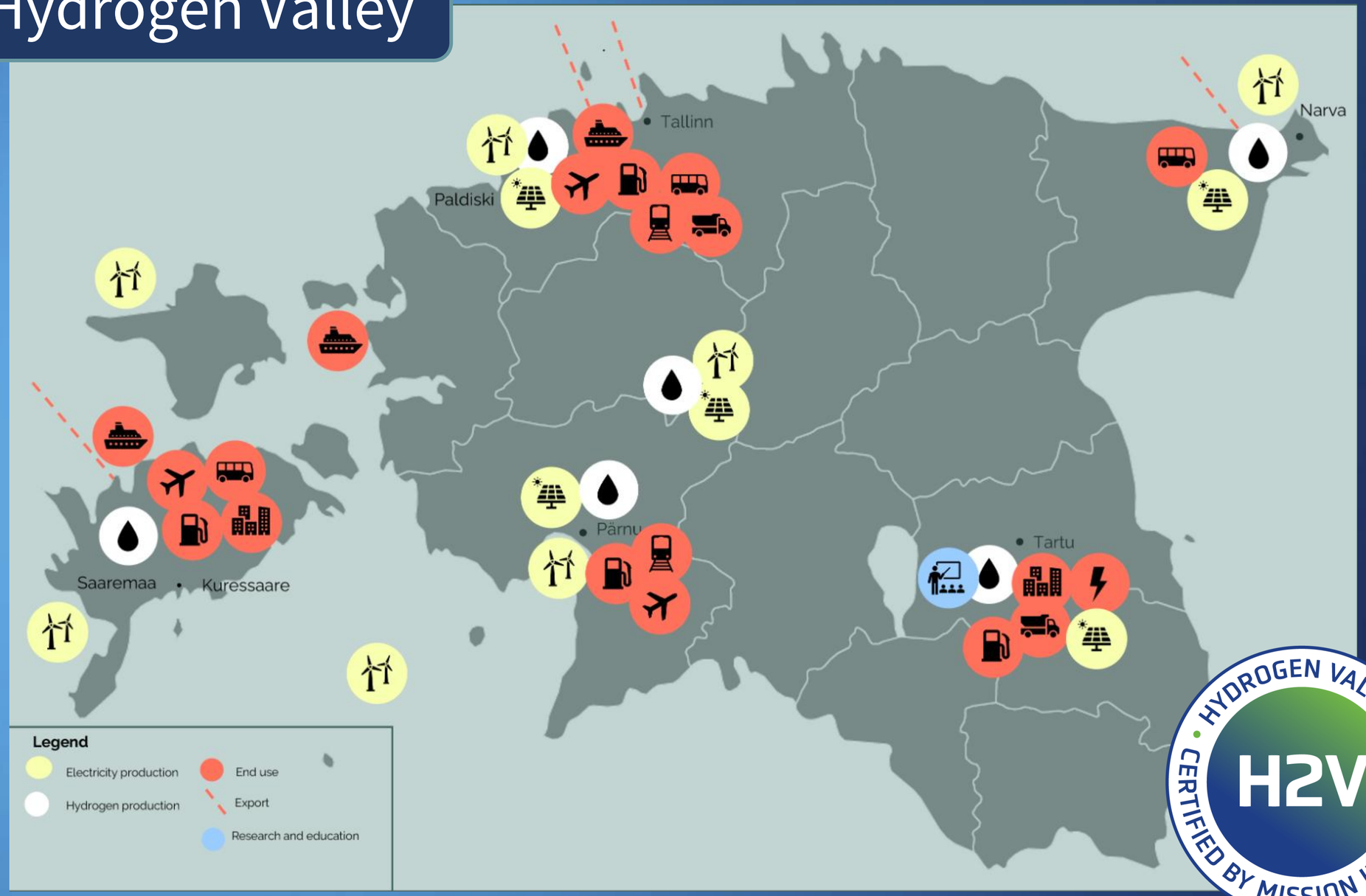
Estonian Hydrogen Valley



Interreg
Baltic Sea Region

Co-funded by
the European Union

ENERGY TRANSITION
H2Deri@BSP

H2Derivatives@BalticSeaPorts

A cooperation project to develop proof-of concepts
for the uptake of H2 derivative fuels

Port of Hamburg
MARKETING

H2Derivatives@BalticSeaPorts
Challenge

Interreg Baltic Sea Region

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ENERGY TRANSITION
H2Deri@BSP

- Maritime transport plays an essential role in the EU economy but still is a large source of GHG emissions.
- The EU reacted with the “Fit for 55” package, requiring clean fuels for shipping by its FuelEU Maritime regulation.
- Green H2-derivatives will play a major role.
  Import from oversees or production and storage in the Baltic Sea ports requires them to become green energy hubs.

H2Derivatives@BalticSeaPorts
Project in a Nutshell

Interreg Baltic Sea Region

Co-funded by the European Union

ENERGY TRANSITION
H2Deri@BSP

H2Der@BSP will provide

- A clear perspective on future energy qualities and quantities to find solutions for planning and investing in appropriate port & terminal infrastructure,
- an adapted port regulatory framework, and
- a communication strategy to increase acceptance of investments.

H2Der@BSP will increase

… capacities of port authorities in the Baltic Sea Region to support them to prepare for transshipment, storage, and bunkering of green H2-derivatives.

Implementation Phase: 03/2025 – 02/2028

Project ID: #076, H2Deri@BSP

H2Derivatives@BalticSeaPorts
Project Partnership

Interreg Baltic Sea Region

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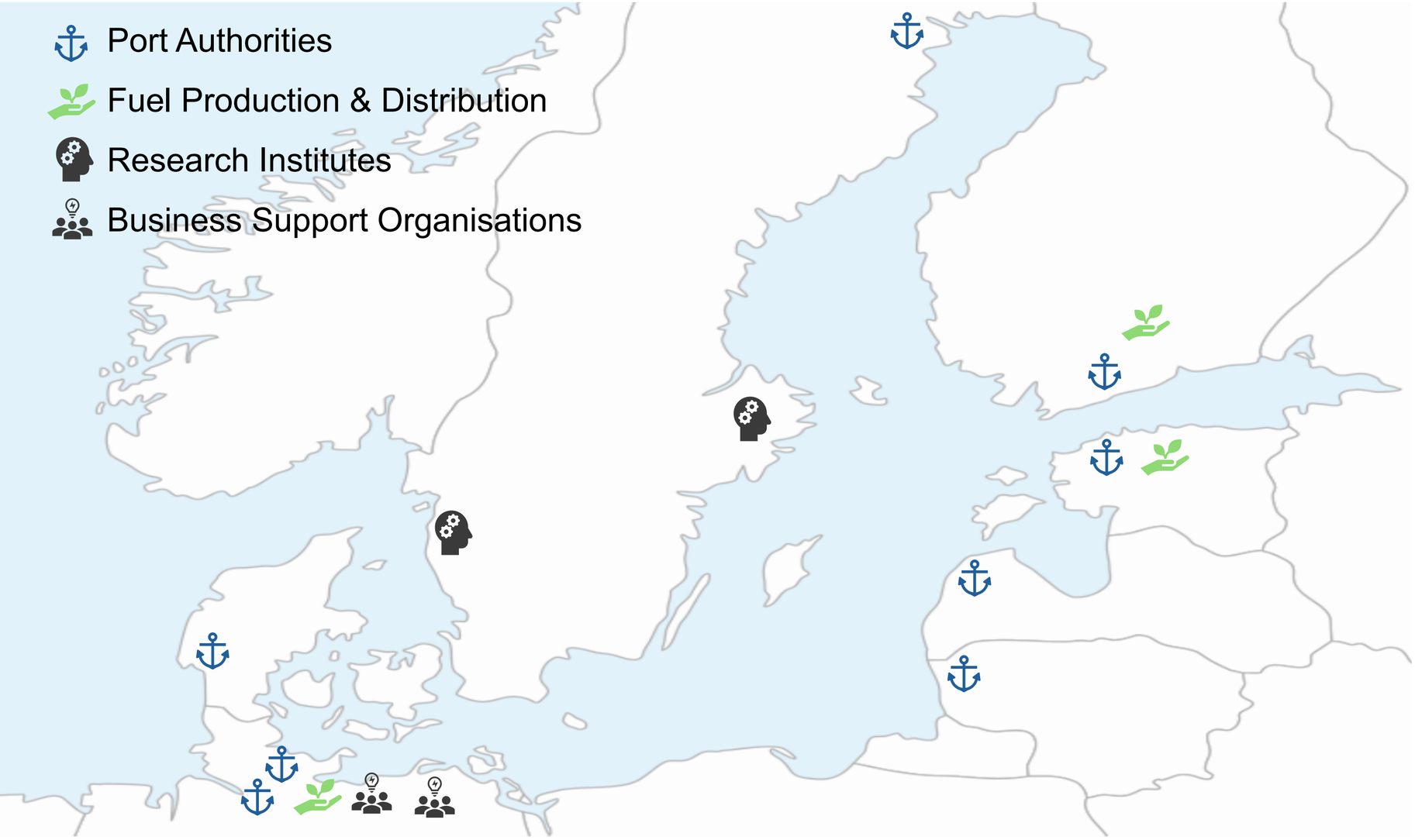
ENERGY TRANSITION
H2Deri@BSP

- Port Authorities
- Fuel Production & Distribution
- Research Institutes
- Business Support Organisations



- Hamburg Port Authority
- Freeport of Ventspils Authority
- Klaipeda State Seaport Authority
- Port of Kiel
- Port of Esbjerg
- Port of Helsinki
- Port of Luleå
- Port of Tallinn

- Alexela
- Gasum
- Mabanaft

- IVL Swedish Environmental Research Institute
- Lindholmen Science Park

- Association of German Seaport Operators
- Port of Hamburg Marketing (Lead Partner Organisation)

H2Derivatives@BalticSeaPorts
Work Packages

Interreg Baltic Sea Region

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ENERGY TRANSITION
H2Deri@BSP

WP1 Preparing solutions

- H2-derivative Market Demand Analysis for Baltic Sea Ports
- H2-derivative Port Infrastructure and Bunker Supply Guideline
- H2-derivative Port Regulatory Framework
- H2-derivative Port Residential Communication Strategy

WP2 Piloting and evaluating solutions

- Techno- and economic analysis model for investments
- Port bunkering mapping instrument (which terminal and ship type can bunker where)
- Specifications of a methanol bunker vessel evaluated against real life functionality and operations in ports.
- Methanol truck-to-ship bunkering feasibility tests in ports
- Evaluation and recommendation for port regulatory frameworks and port safety handing manuals
- Completed Port Communication Strategy

WP3 Transferring solutions

- Bunkering mapping instrument
- Sharing of improved port regulatory frameworks
- Sharing of updated port safety handling manual (bunker in ports: ship-to-ship & truck-to-ship)
- Key enablers engagement strategy
- Communication strategy to residents about infrastructure investments
- Updated port development plans, MoUs or agreements

Foundational study: Execution of H2-Derivative Market Analysis for Baltic Sea Ports as green energy hubs

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ENERGY TRANSITION
H2Deri@BSP

1. Identification of **current** national H2-derivative energy consumption per involved project country (DE, SE, FI, EE, LV, LT, DK)
   - Supply and demand of H2-derivatives today in BSR
   - Bunkering today in BSR ports: locations, quantities and qualities
   - Mapping of existing infrastructure for H2-derivatives: production, distribution, storage, transshipment and bunkering

2. **Forecast for** future green H2-derivative energy demand, per involved partner port - **2030, 2035, 2040, 2050**
   - Forecast supply and demand of the different H2-derivatives in BSR (land- and seaside)
   - Planned bunkering in BSR ports to identify ports with major role in energy supply: locations, quantities and qualities
   - Planned infrastructure for H2-derivatives: production, distribution, storage, transshipment and bunkering

ivl Swedish Environmental Research Institute

H2Derivatives@BalticSeaPorts
Project Outputs

Interreg Baltic Sea Region

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ENERGY TRANSITION
H2Deri@BSP

- H2-Derivative Port Infrastructure & Bunker Supply Guideline, containing:
  - Techno- and economic analysis model for investments,
  - port bunkering mapping instrument (which terminal and ship type can bunker where),
  - specifications of a methanol bunker vessel evaluated against real life functionality and feasibility of operation in ports, and
  - feasibility of operation and functionality of methanol truck-to-ship bunkering.
- H2-Derivative Port Regulatory Framework & Port Safety Handling Manual
- H2-Derivative Port Residential Communication Strategy

H2Derivatives@BalticSeaPorts
Supporters Network – Their Role

Interreg Baltic Sea Region | Co-funded by the European Union

ENERGY TRANSITION H2Deri@BSP

Exchange of expertise and support in finding solutions

- Sharing knowledge and best practice to prepare port authorities for transshipment, storage & bunkering activities of green H2-derivatives in ports
- Support in finding solutions to overcome legislative- and, or regulation obstacles in port environments

Support in dissemination and durability of solutions

- Share solutions developed and acting as multiplicators
- Joint events and/or invitation to workshops, events (speaker role), exhibitions

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