



# Sustainable Energy Hub

## Green Transformation

Port of Hamburg is becoming the centre for green hydrogen and its derivatives. Multi-energy import infrastructure as well as modern fueling infrastructure for different modes of transports enables defossilisation.

The carbon value chain and its logistics completes climate neutral sectors.

Hence, the port of Hamburg reserves specific area in the port to be a frontrunner for the transition to green molecules based green hydrogen.

# Growing demand for green hydrogen

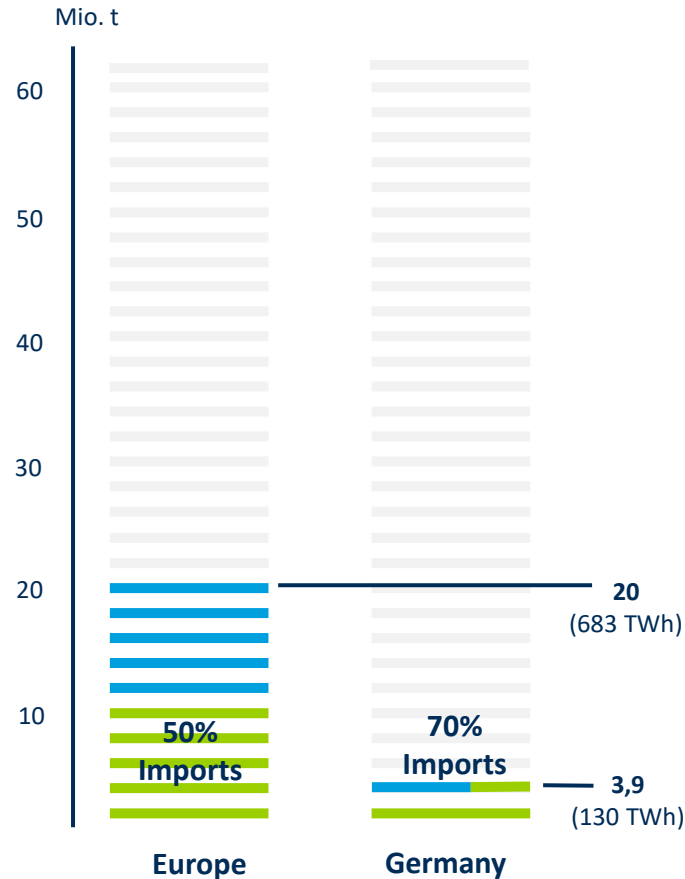
Hydrogen (derivatives) will play a major role in achieving ambitious energy and climate targets.

The German national hydrogen import strategy sets the framework for the development of vessel-based imports.

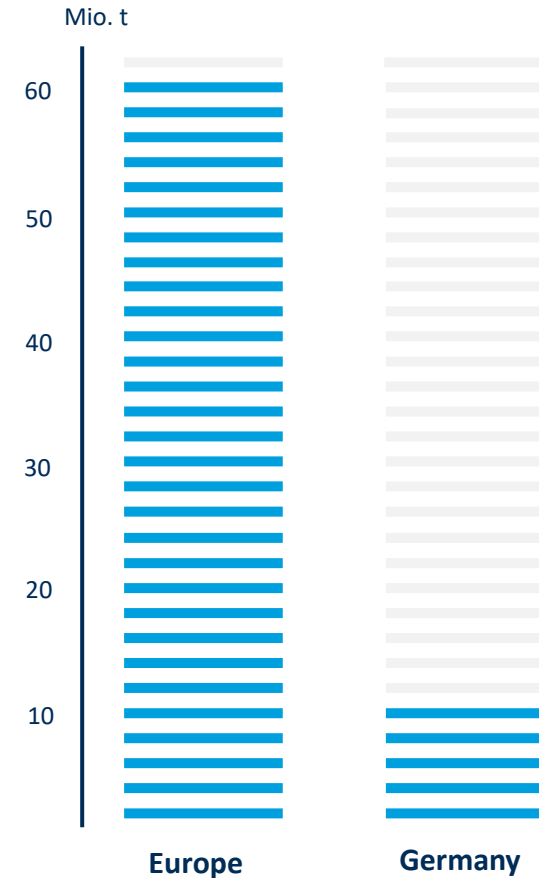
Sustainable energy carriers will be a major growth opportunity for the port of Hamburg.

Creating a value chain based on green hydrogen reconciling sustainability and growth of the port.

Projected Hydrogen Demand 2030

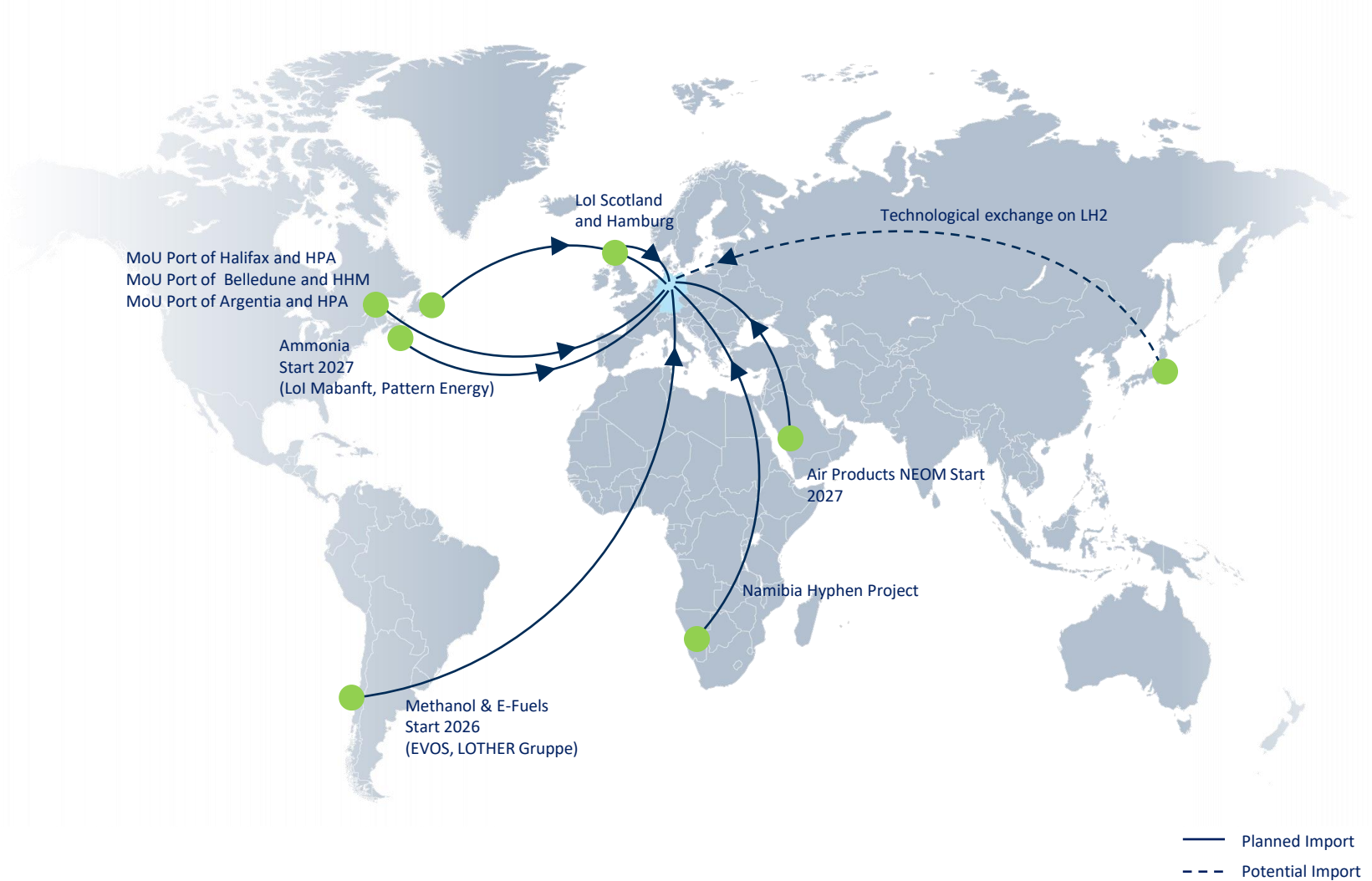


Demand Scenario 2050



## Development of hydrogen derivatives supply chains

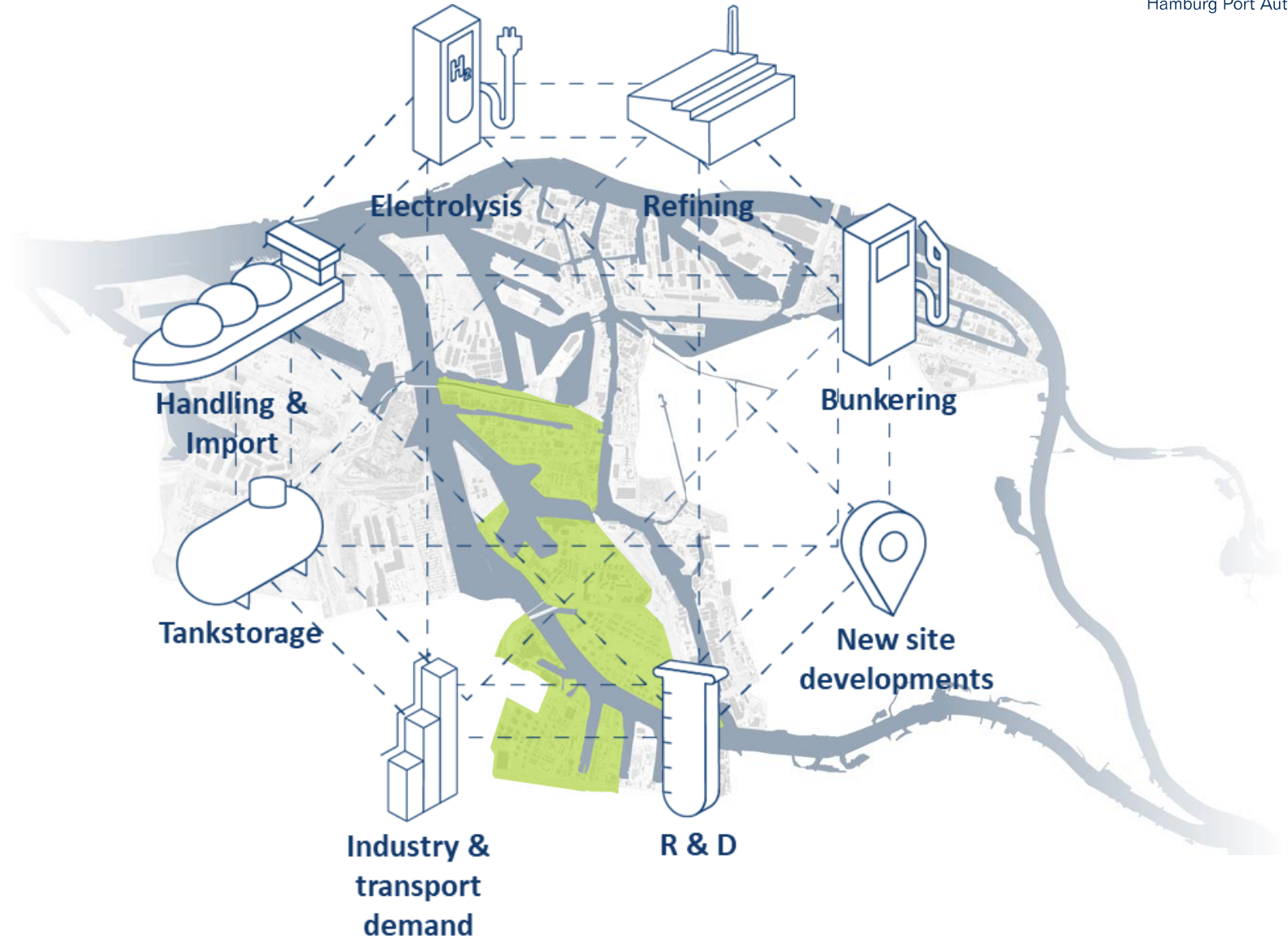
- Port of Hamburg is building a network with exporting ports to develop a maritime hydrogen supply chain.
- All foreseen vessel sizes for hydrogen derivatives are able to enter the port of Hamburg
- Initial Imports will work on hydrogen derivatives.
- First tankers with hydrogen derivatives to arrive in Hamburg in 2027



# Building a Hub for Sustainable Energy based on large-scale imports, immediate off-takers and hinterland logistics

The existing energy cluster in the port provides a strong environment for a successful energy transition:

- Deep sea and inland tank vessels
- Tank storage and refineries
- National high-voltage grid (380/110KV)
- 3 highway connections
- Europes largest railway port
- Large potential offtakers in transport, aviation, shipping, steel, copper, aluminium and refineries



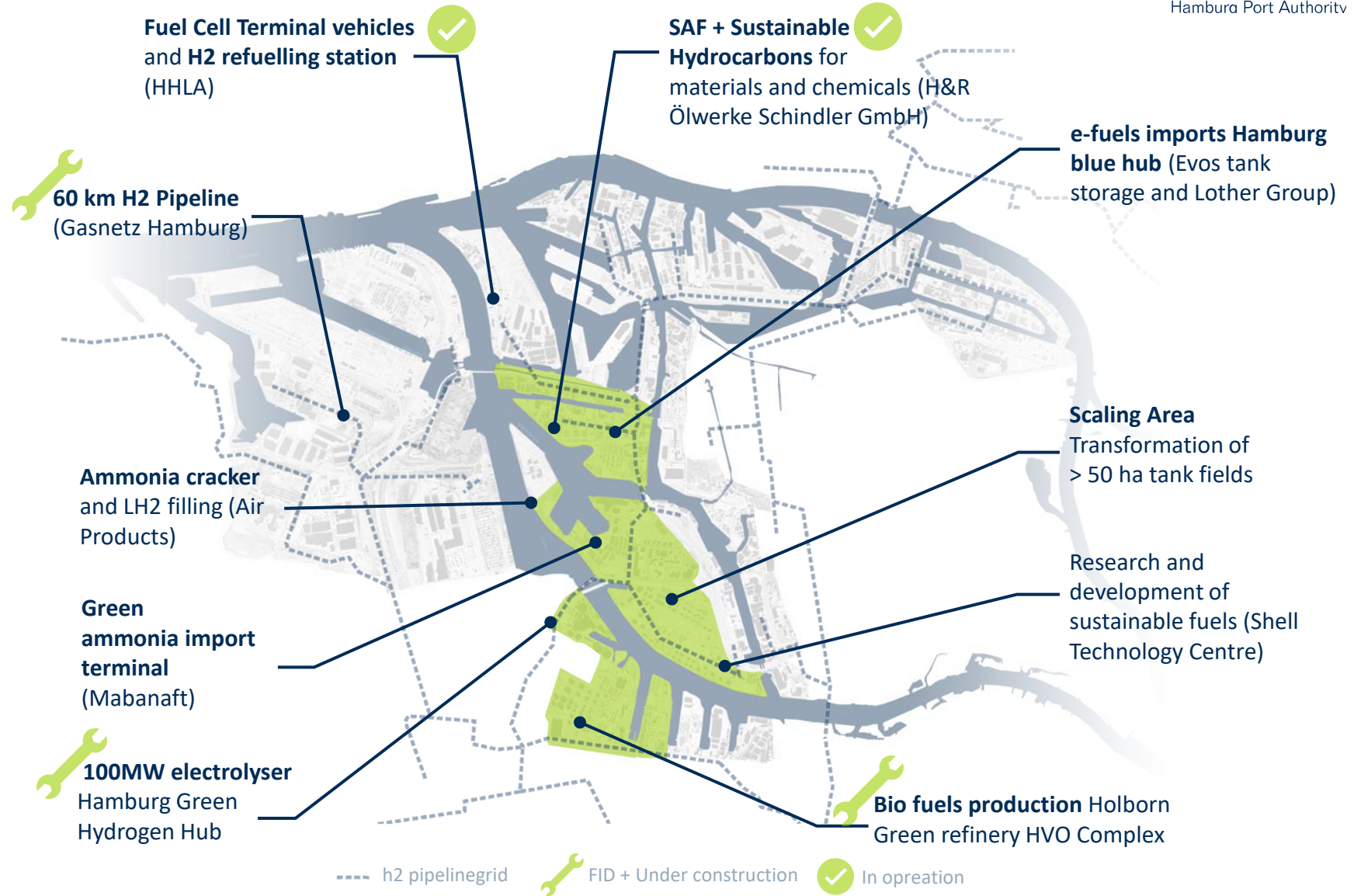
# Partnership is key for large scale transformation: The Sustainable Energy Hub Initiative



# The area of the Sustainable Energy Hub

Developing a value chain for climate neutral energy carriers based on green hydrogen

The sustainable energy hub builds on a strong cluster with decades of experience as well as ambitious transformation projects of global scale.



## Port of Hamburg a national hub for green molecules

### Building on Hamburg's strong hinterland logistics

- Hydrogen can be transported through national hydrogen grid (HH-ready in 2027 nationwide 2032)
- Derivates can be transported on largest port railway network in Europe and barges

### Potential markets:

- Shipping (NH3, Methanol)
- Aviation (LH2, SAF)
- Metal industry (H2)
- Chemical industry (Methanol, NH3)
- Chip and space industry (LH2)
- Heavy duty transport and special vehicle (LH2, e-fuels)



- H2 Pipeline
- Railway
- Barges

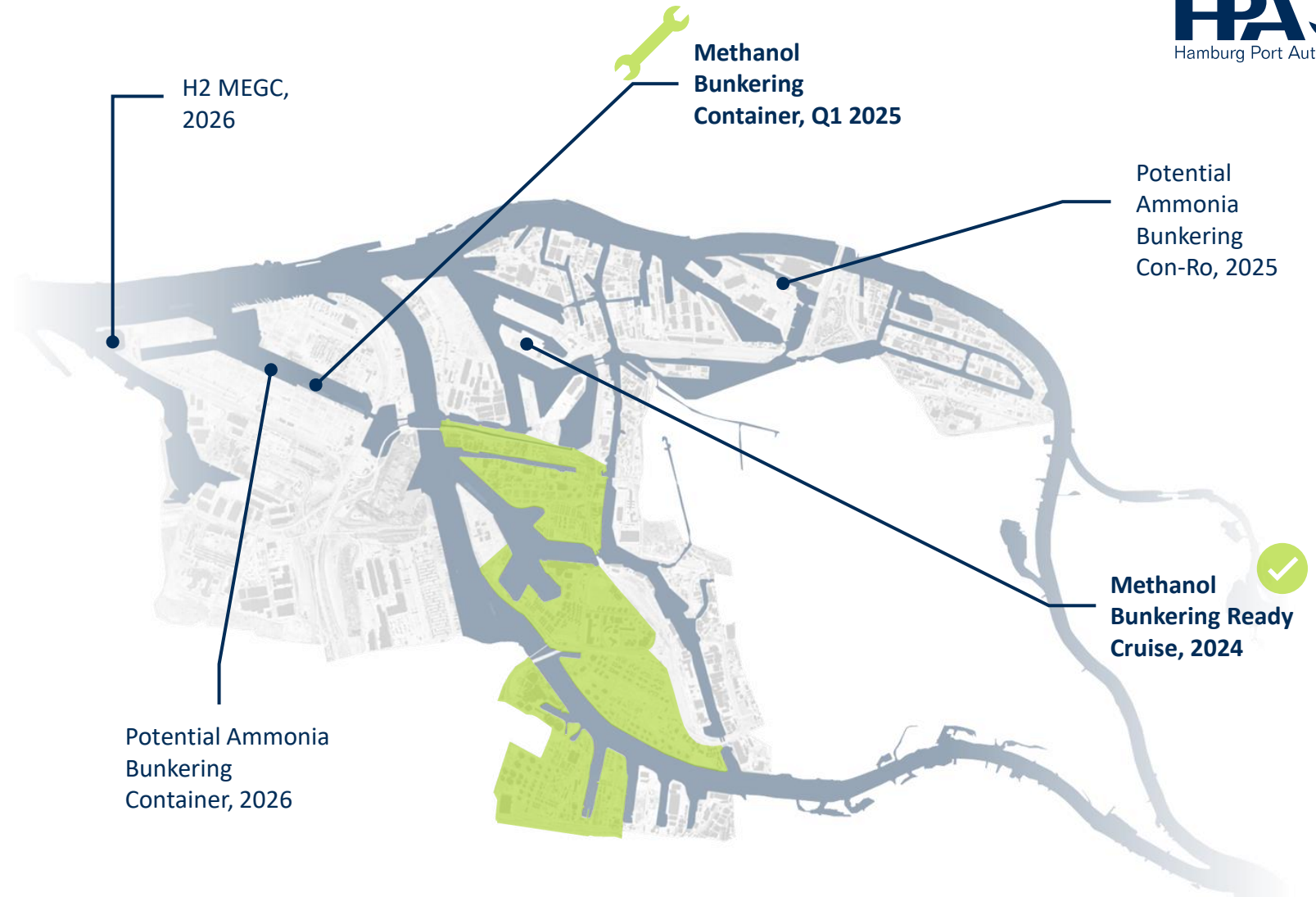
## Expanding alternative fuel supply for zero emission shipping

### IMO GHG Strategy

- Net-Zero GHG from international shipping by 2050
- Shipping as offtaker & driver for new energy import

### HPA establishes approval pro-actively requirements for bunkering of alternative fuels

- Comprehensive bunker options for alternative fuels will be available before 2040
- All vessel types will be able to bunker any climate neutral fuel in Hamburg.





# Growing Carbon Capture market

## National Carbon Management Strategy

Political support for establishing CC market for hard-to-abate emissions and offshore storage

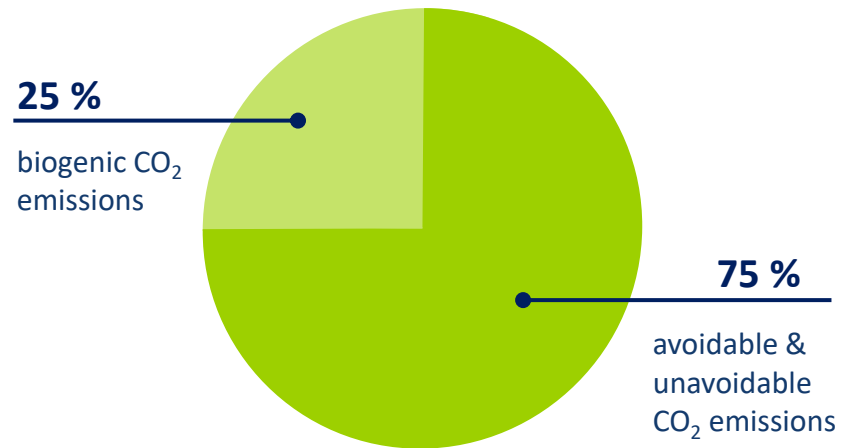
## EU Industrial Carbon Management Strategy

CO<sub>2</sub> storage capacity of 50 Mio t/pa by 2030

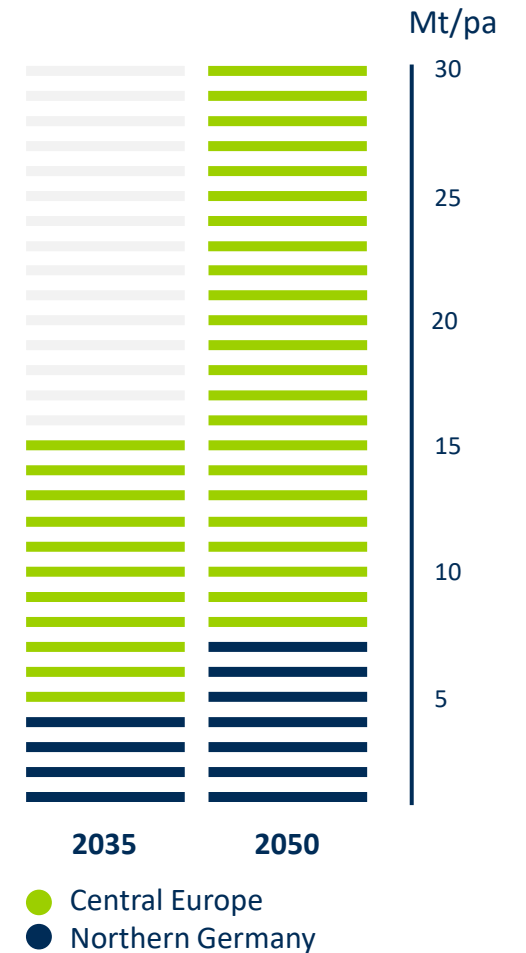
**Hard-to-abate industries are located in Port of Hamburg as carbon capture offtakers: 3,5 Mt/pa in 2050**

**Additional CO<sub>2</sub> Capture Potential from Onboard Carbon Capture (OBCC): 1 Mt/pa in 2050**

CO<sub>2</sub> Origin of Industry in Hamburg



CO<sub>2</sub> Capture Potential Industry

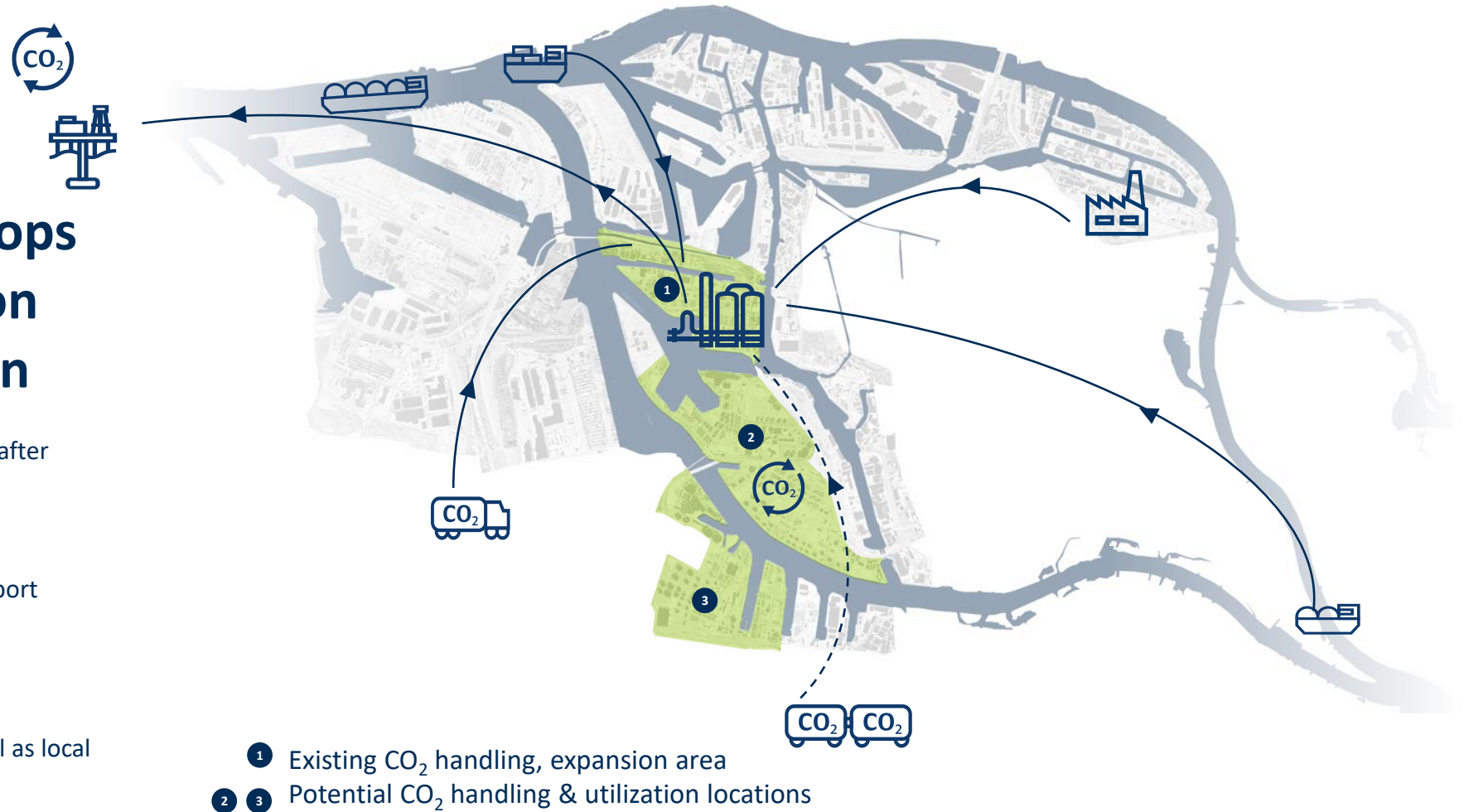


# Port of Hamburg develops a comprehensive carbon logistics and value chain

Pioneer of carbon multimodal logistics before and after pipeline network development

## Sources for CO<sub>2</sub> handling

- Hard-to-abate CO<sub>2</sub> emissions of hinterland and port industry
- Biogenic CO<sub>2</sub> emissions
- On board carbon capture (OBCC) emissions
- Carbon export for utilization and storage, as well as local utilization



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