

Dedicated port area to drive the energy transition

Green hydrogen will play a major role to achieve ambitious energy and climate targets. Hence, the port of Hamburg reserves specific area in the port to be a frontrunner for the transition to green molecules based on 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.



Growing demand for green hydrogen

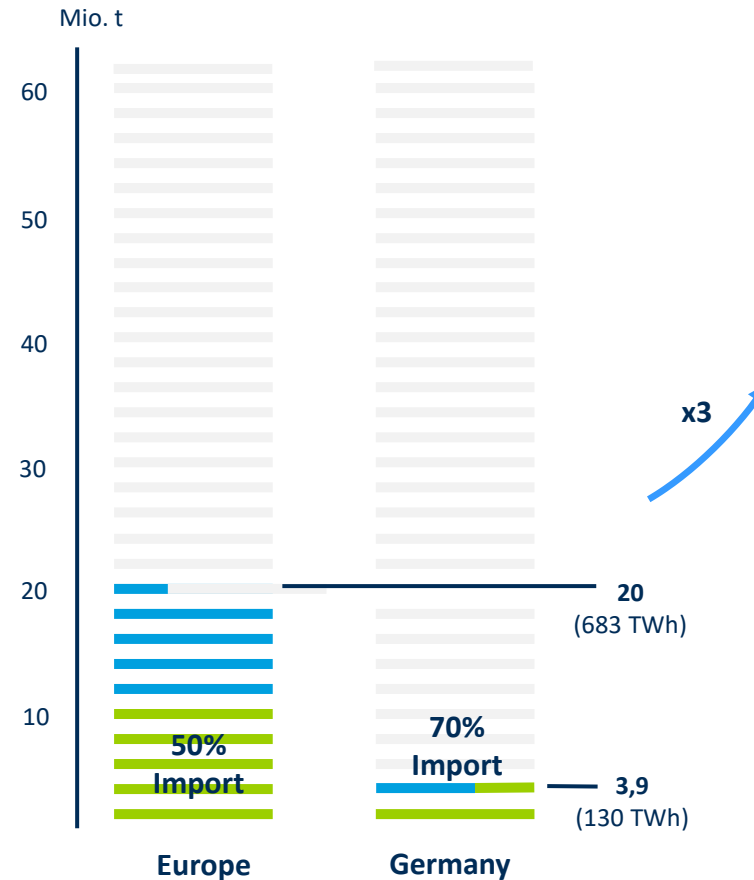
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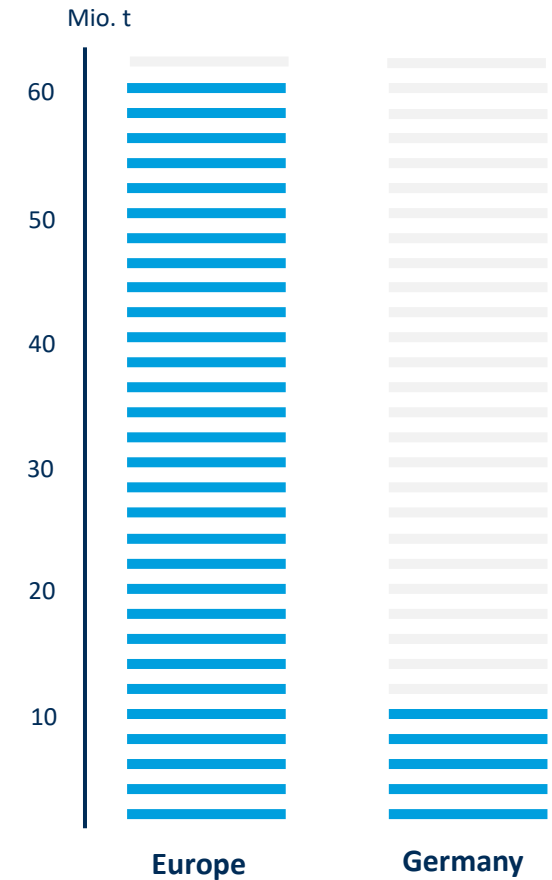
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Projected Hydrogen Demand 2030

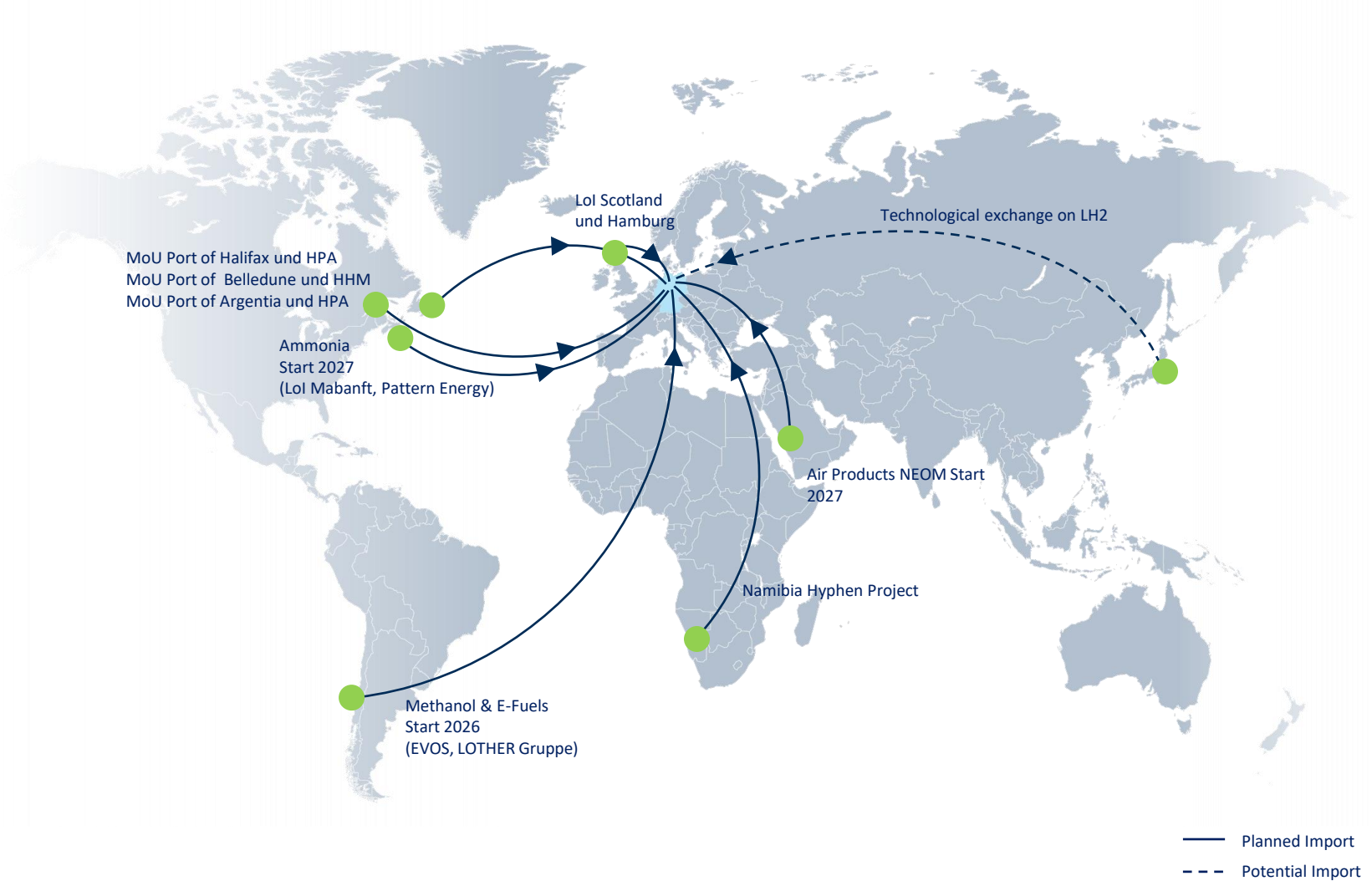


Demand Scenario 2050



Development of hydrogen derivatives supply chains

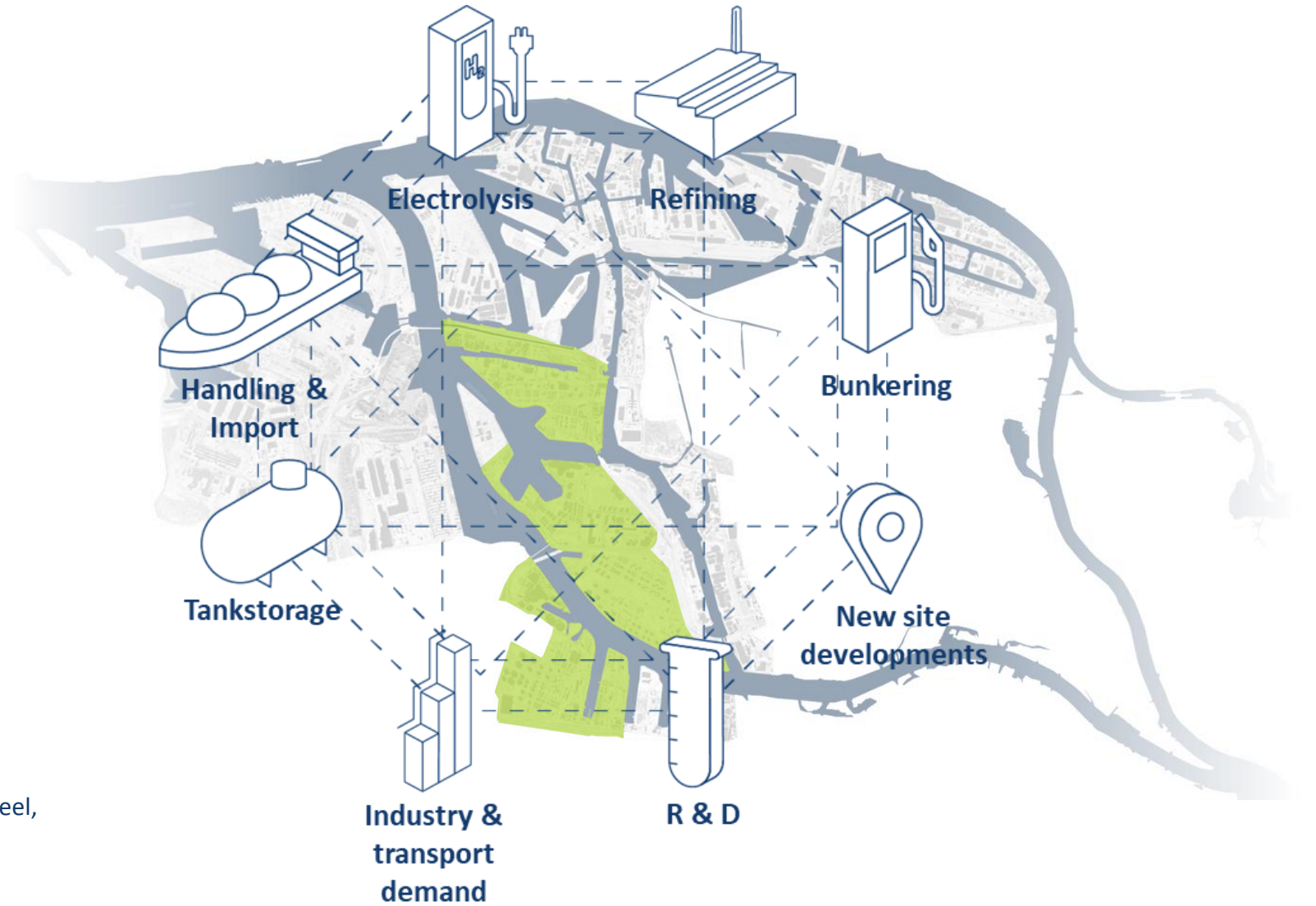
- Port of Hamburg is building a network with exporting ports to develop a maritime hydrogen supply chain.
- All foreseen vessel sizes for hydrogen derivatives can enter the port of Hamburg
- Initial Imports will work on hydrogen derivatives.
- First tankers with hydrogen derivatives to arrive in Hamburg 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
- Europe's largest railway port
- Large potential offtakers in transport, aviation, shipping, steel, copper, aluminium and refineries

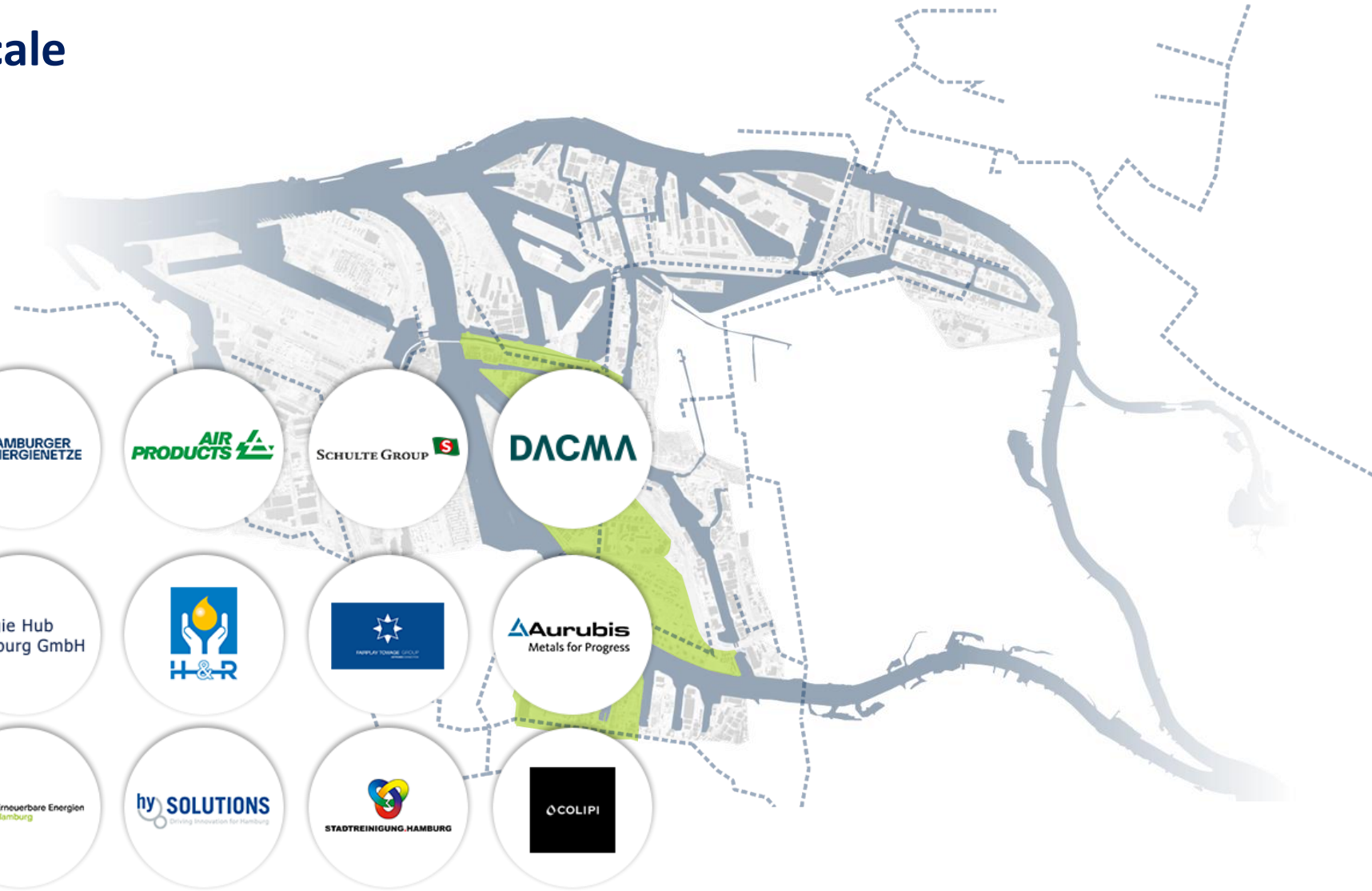


Partnership is key for large scale transformation:



SUSTAINABLE ENERGY HUB

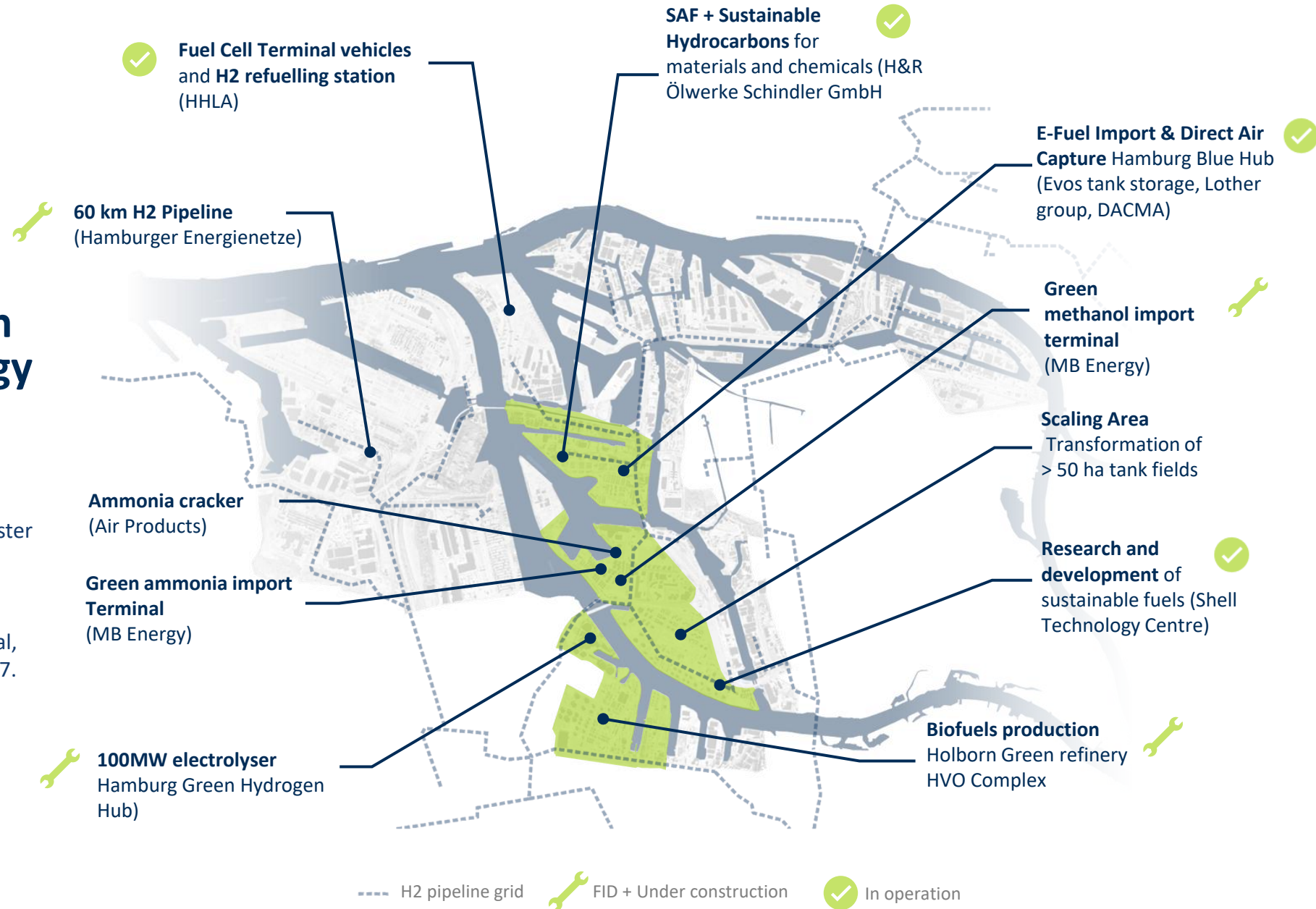
initiative by HPA



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.

Key infrastructure projects such as import terminal, pipeline, electrolyser will come operational in 2027.



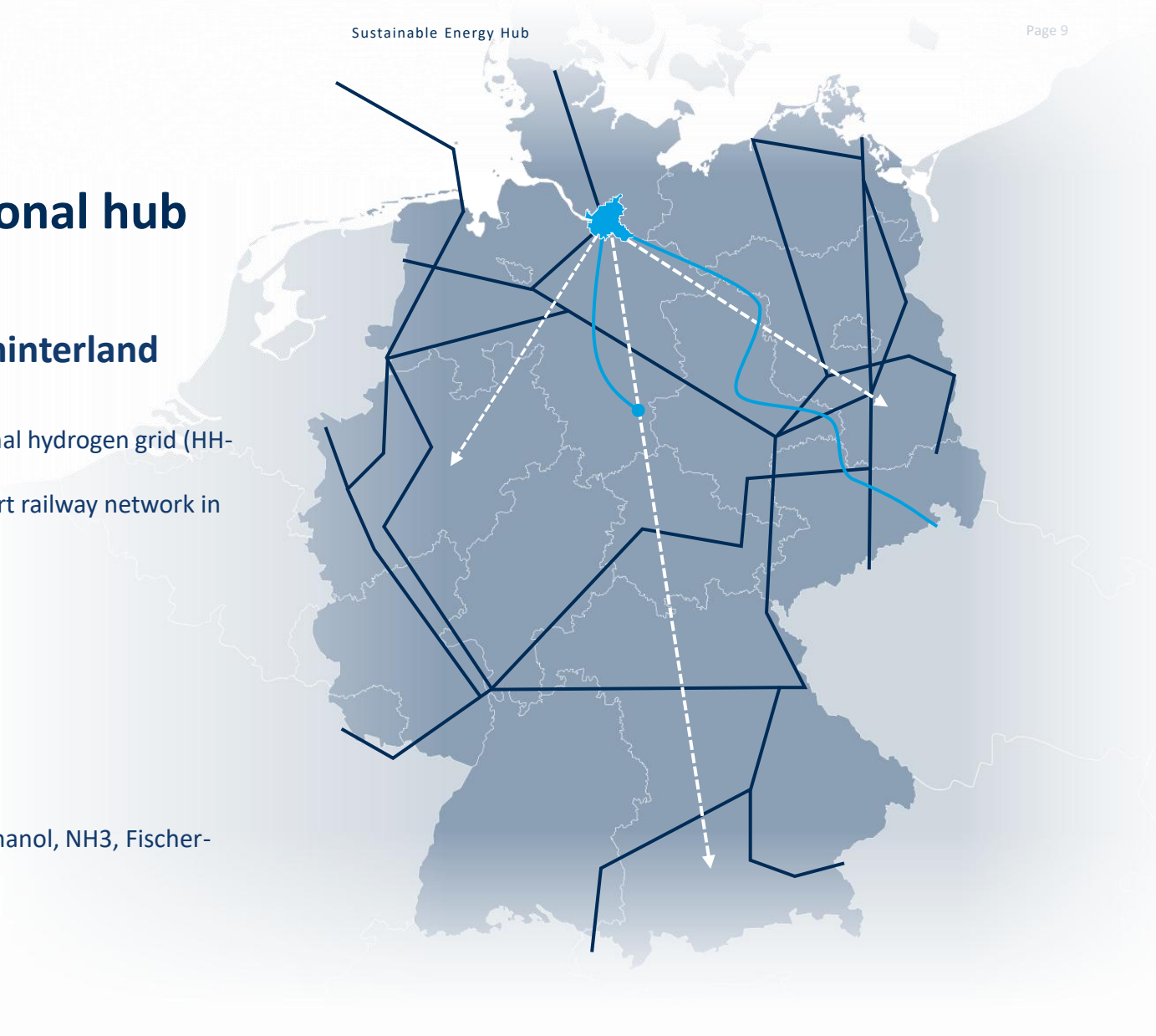
Port of Hamburg a national hub for green molecules

Building on Hamburg's strong hinterland logistics

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

Potential markets:

- Heavy duty transport and special vehicles (LH2, e-fuels)
- Shipping (NH3, Methanol)
- Aviation (LH2, SAF)
- Metalworking industry (H2)
- Chemical and pharmaceutical industry (Methanol, NH3, Fischer-Tropsch products)
- Chip and space industry (LH2)
- Energy storage (H2, NH2, Methanol)



- H2 Pipeline
- Schiene
- Barges

Expanding alternative fuel supply for zero emission shipping

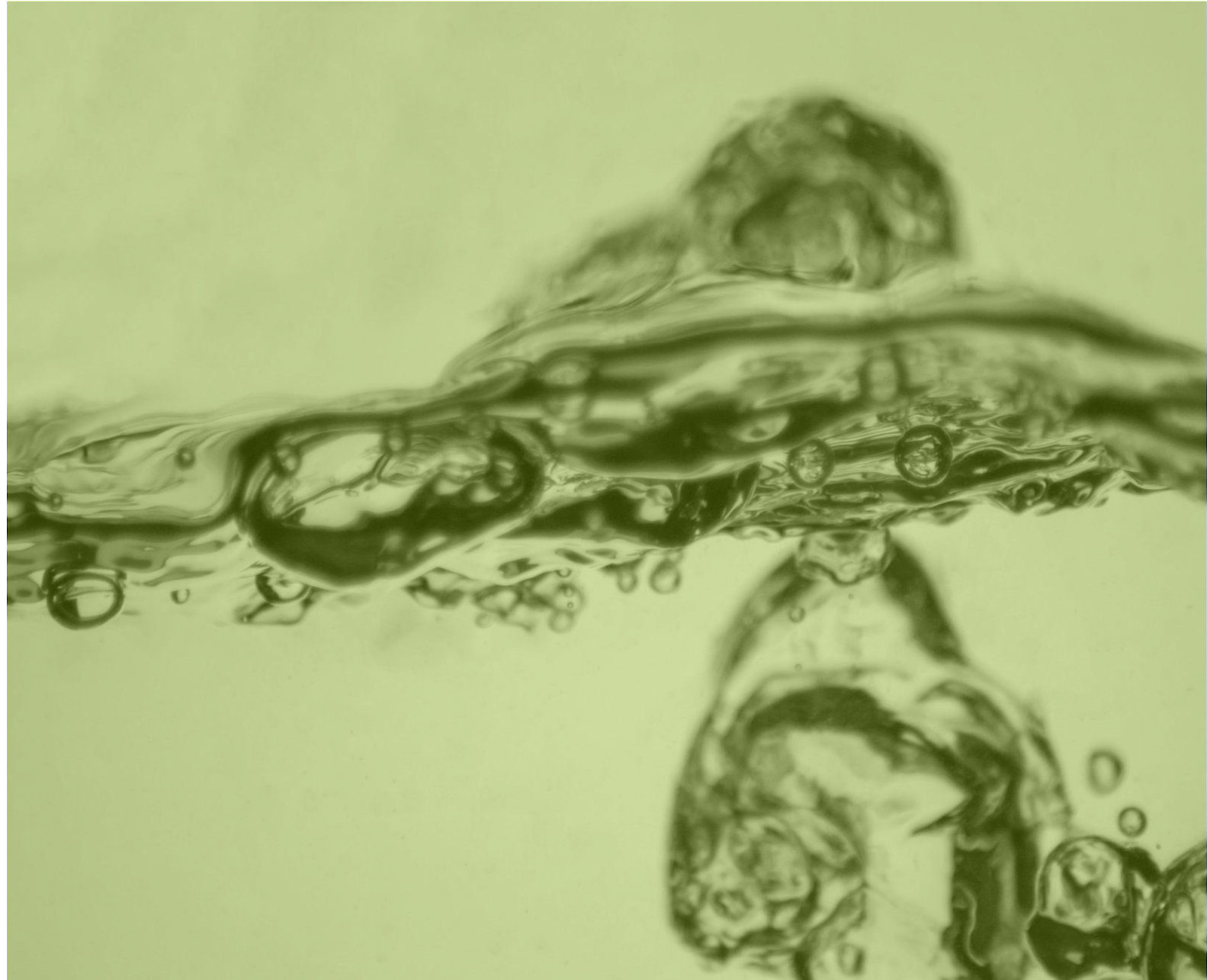
CO₂ 

Fossil fuelled ships cause **80.000 t CO₂** per year in the Port of Hamburg.

IMO GHG Strategy

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

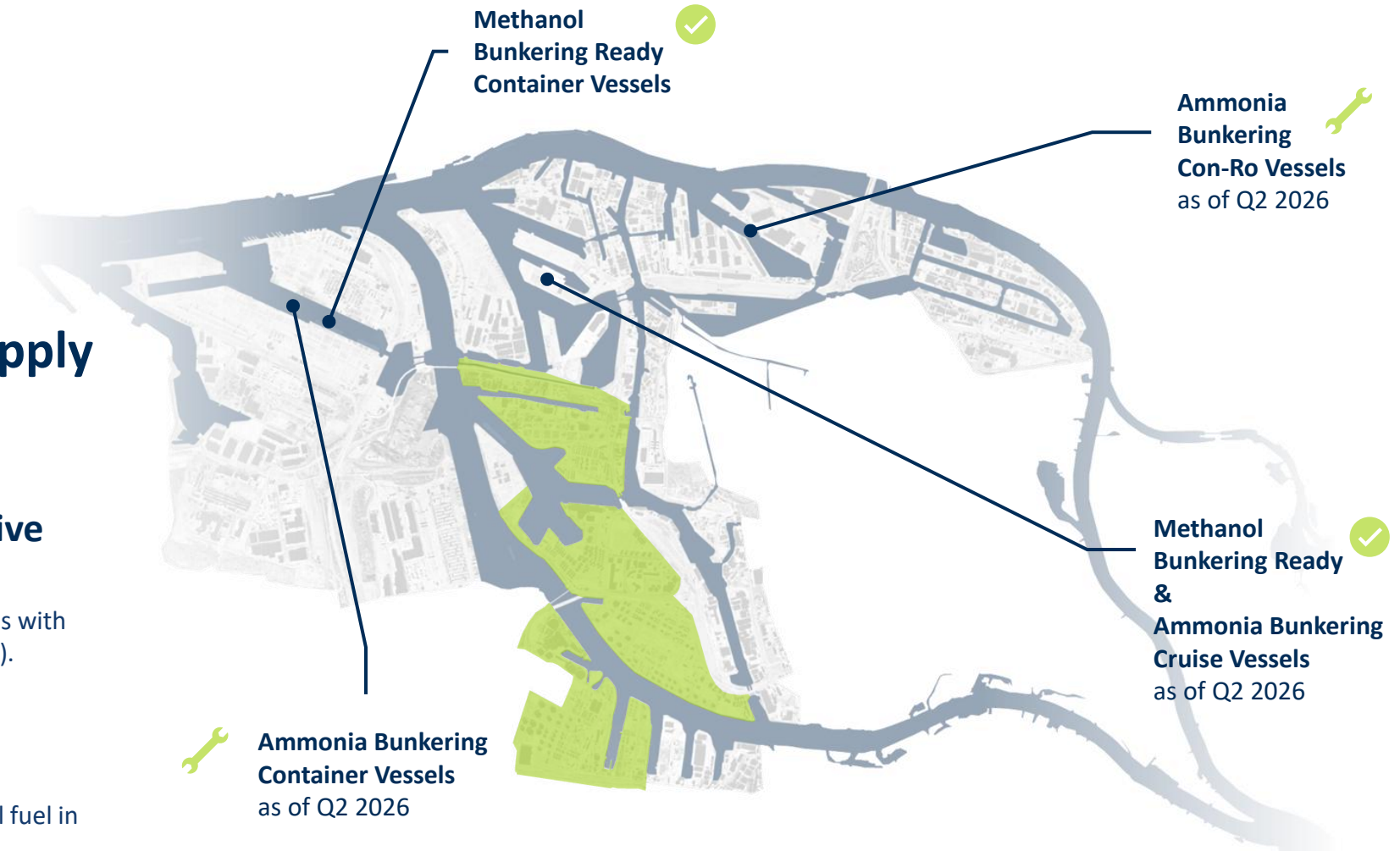
HPA establishes pro-actively approval requirements for bunkering of alternative fuels



Expanding alternative fuel supply for zero emission shipping

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

- Approval needed for bunker processes of alternative fuels with <math><55^{\circ}\text{C}</math> flashpoint outside of tanker port areas (GGBVOHH).
- Tanker port areas are bunker ready.
- Biofuel bunker ready portwide.
- First Bio-LNG Bunkering in 01/2025
- Exchange of H_2 MEGC possible portwide.
- All vessel types will be able to bunker any climate neutral fuel in Hamburg.
- Methanol bunker forecast 2030: 85.000t – 300.000t /y



Rollout plan for hydrogen supply for Road and Rail transport

Alternative Fuels Infrastructure Regulation

hydrogen refueling infrastructure at all urban nodes and every 200 km in the TEN-T core by 2030

HPA analyses and coordinates roll out of alternative fuel provision

Port of Hamburg as test-field for hydrogen powered shunting locomotives in sH2unter@ports project



Ausbauplan Wasserstoffversorgung für Straßen- und Schienentransport

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1 **Aluminiumstraße:**
Existing petrol station, potential expansion for dual-use: trucks and locomotives (sH2unter@ports)
- 2 **Altenwerder Ost:**
Potential location in 2026
- ✅

3 **Container Terminal Tollerort:**
Petrol station in operation for dual-use: trucks and terminal equipment (Clean Ports & Logistics)
- 4 **New location "Blumensand"**
potential location
- 5 **Location for truck stop**
Potential location in 2030



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

CO₂ 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 CO₂ Capture Potential from Onboard Carbon Capture (OBCC): 1 Mt/pa in 2050



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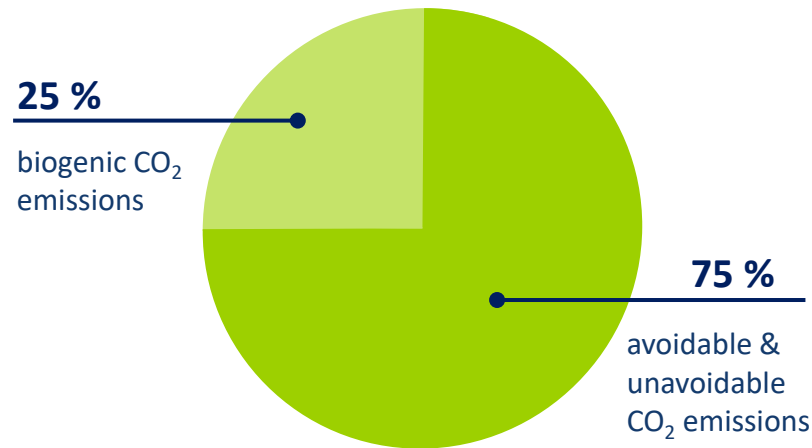
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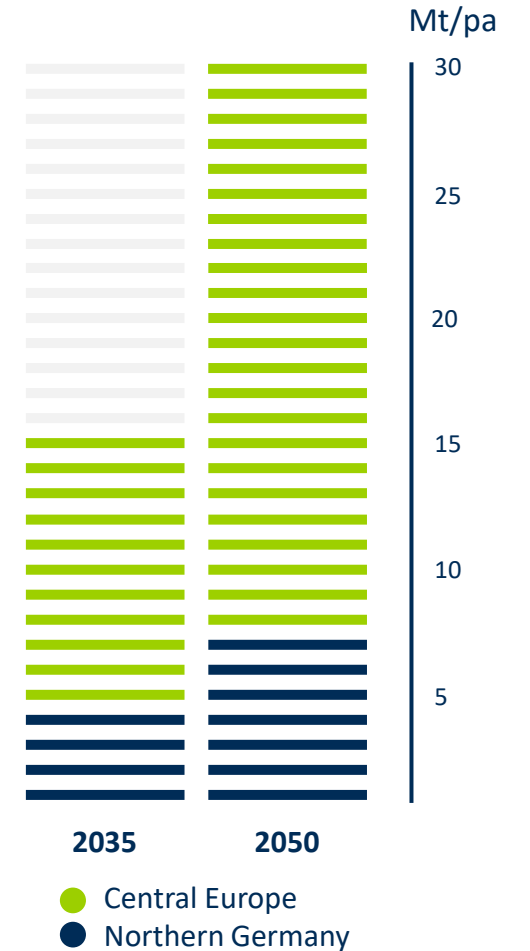
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CO₂ Origin of Industry in Hamburg



Carbon Capture Potential Industry

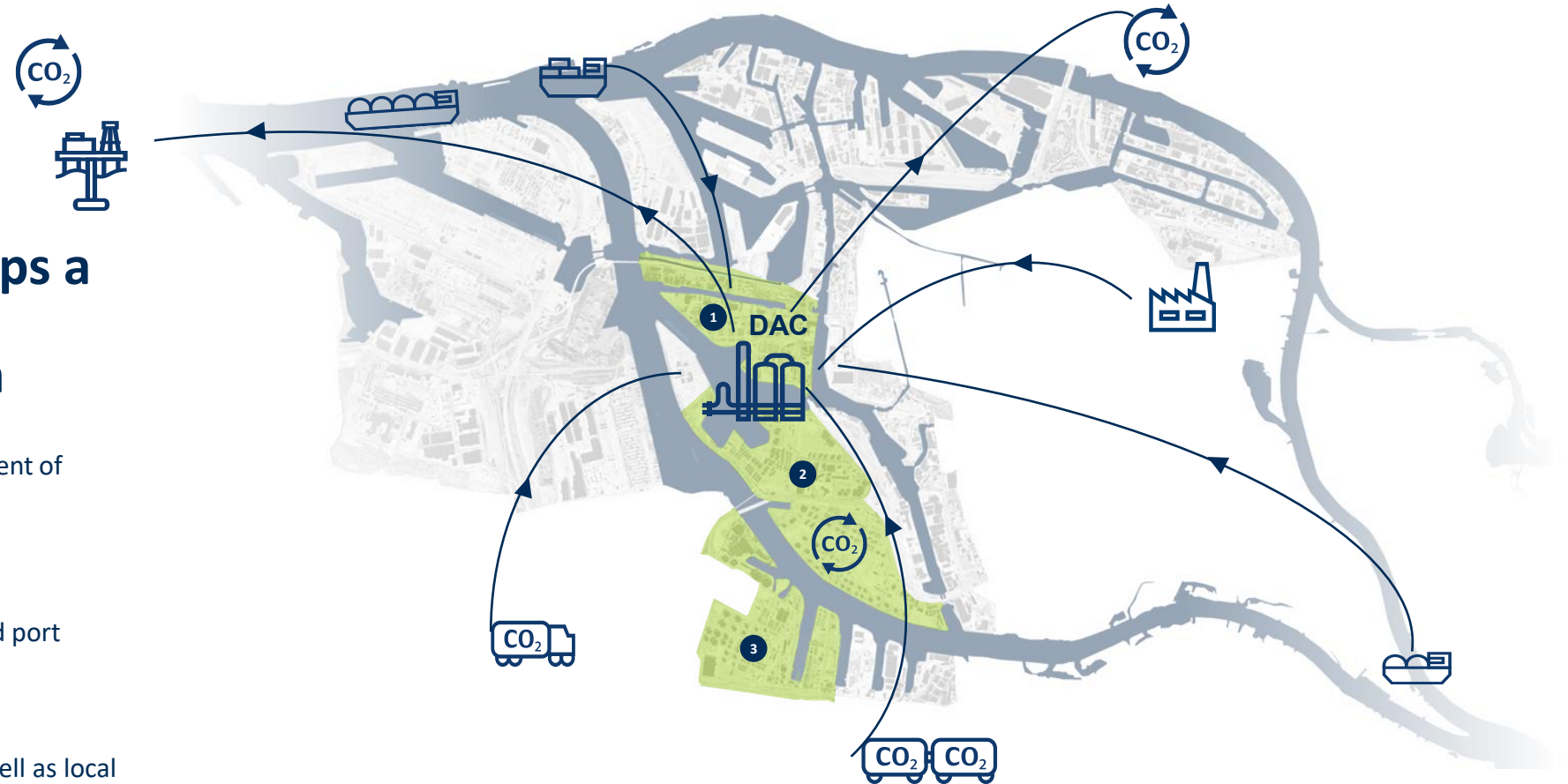


Port of Hamburg develops a comprehensive carbon logistics and value chain

Pioneer of carbon multimodal logistics independent of pipeline development

Sources for CO₂ handling

- Hard-to-abate CO₂ emissions of hinterland and port industry
- Biogenic CO₂ emissions
- On board carbon capture (OBCC) emissions
- Carbon export for utilization and storage, as well as local utilization



- ① Evos Hamburg & DACMA: Existing CO₂ handling, DAC, expansion for CCS/CCU
- ② ③ Potential CO₂ handling & utilization locations