

HAMBURG PORT AUTHORITY

JOURNEY FOR CLIMATE NEUTRALITY

Overview of projects and timelines for climate neutrality in 2040

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Hamburg | William

"Making port operations climate-neutral by 2040." (Port Development Plan)

HPA journey for climate neutrality.













Hamburg Port Authority Energy Energy Energy Energy









Seagoing Vessels Inland Vessels Port Vessels Trucks *(Terminal Equipment)*

Sustainable Energy Hub: Import and Production CO₂ Logistics Chain Alternative Fuels

Wind & Solar Power Power Storage & Management



Onshore power supply for seagoing vessels to eliminate emissions at berth



Seagoing vessels at berth account for round about **200,000 t CO2** per year!

HPA builds and operates shore power

- Zero emission at berth is mandatory for cruise and container from 2030 (Fuel EU Maritime)
- We aim to halve the CO₂ emissions from seagoing vessels at berth by 2030 in order to archive zero CO₂ emissions at berth by 2040.
- HPA will continuously expand onshore power supply to support ship owners to comply with net zero greenhouse gas emissions in international shipping in 2050 (IMO GHG Strategy).





Energy Nexus / Electrification Seagoing Vessels





OPS expansion plan for Seagoing Vessels

In use/ commissioning phase

1	Cruise Center Altona	1 CP	12 MVA
2	Cruise Center Steinwerder	1 CP	16 MVA
3	Container-Terminal Eurogate	3 CP	each 7,5 MVA
4	Container-Terminal Burchardkai	3 CP	each 7,5 MVA
5	Container-Terminal Tollerort	1 CP	7,5 MVA

Under construction (2025)

6	Container-Terminal Altenwerder	
7	Cruise Center Hafencity	

3 CP each 7,5 MVA 2 CP 14 MVA

To be completed by 2030

- Terminal Oswaldkai
- Upgrade Container-Terminal Eurogate
- Upgrade Container-Terminal Burchardkai
- Upgrade Container-Terminal Tollerort
- Upgrade Container-Terminal Altenwerder
- Container-Terminal Athabaskakai
- Süd-West-Terminal
- CP = Connection Point, MVA = Mega Volt Ampere





Energy Nexus / Electrification Seagoing Vessels





Onshore power supply for inland vessels to eliminate emissions at berth



Approximately 11,000 inland vessels transport around 7 million tons of cargo per year in the port of hamburg.

Onshore power where it make sense

- When available port regulations demands use of shore power.
- We aim to provide all berth for inland vessels with shore power by 2030.
- On shore power can be a stepping stone for full electric propulsion and zero emission shipping

Inland Port Seagoing







Ensure a cross-port charging infrastructure for inland vessels

Location with shore power connection

1	Billwerder Bucht	2022
2	Aue Hauptdeich	2024
3	Finkenriek	2024
4	Rethe Wassertreppe	2025
5	Eversween	2025
6	Holthusenkai	2026

More to come ...

Location without shore power connection





Energy Nexus / Electrification Inland vessels



Deploying charging and onshore power to enable zero emission port vessels



Port vessels account for round about 35,000 t CO2 per year!

HPA supports full electrification with charging infrastructure

- HPA innovates electric propulsion with it's fleet of 45 vessels.
- Existing onshore power network will be constantly updated and expanded to charging infrastructure for full electric propulsion.
- Overnight and megawatt charging systems will be developed
- Our aim is to have comprehensive charging infrastructure in place by 2035 to archive zero emission port vessels in 2040





Energy Nexus / Electrification Port vessels

Electrification



Deploying charging and onshore power to enable zero emission port vessels

Location with shore power connection

- Schaartorschleuse (LSBG)
- 2 Überseebrücke
- 3 Kehrwiederspitze
- Löschbootstation Harburg
- 5 TBLU
- 6 Rugenbergen
- 7 WSPK 1
- 8 WSPK 2
- WSPK 3
- Lotsenstation
- 11 Neumühlen
- 22 Sauger Liegeplatz
- 13 Finkenwerder
- Landungsbrücken







Zero emission road transport



- **31.200 t CO2** in the Port of Hamburg are caused by trucks in 2022 (-15%: 2018)
- 17.000 trucks pass through the port of Hamburg every day

HPA develops charging network for electrified heavy-duty vehicles

- HPA acts as landlord and enabler to secure deployment of public charging network
- Legislation support the deployment of charging stations (EU AFIR) and demands the increase of electric trucks (National Climate Action Programme 2030 1/3 of fuel consumption needs to electric or e-fuels).











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Sustainable Energy Hub

Dedicated port area to drive the energy transition

Green hydrogen is going to 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 green hydrogen.





Projected Hydrogen Demand 2030

Demand Scenario 2050

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.







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 derivates can enter the port of Hamburg
- Initial Imports will work on hydrogen derivates.
- First tankers with hydrogen derivatives to arrive in Hamburg in 2027



--- Potential Import



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





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 pro-actively approval 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.







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 bord carbon capture (OBCC) emissions
- Carbon export for utilization and storage, as well as local utilization



2 3 Potential CO₂ handling & utilization locations









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Renewable energy potential in port of Hamburg

- development of 5 wind turbines
- development of 20 MW ground mounted solar PV
- Ongoing screening further potential renewables and potential areas (f.e. floating PV, repowering)
- Innovative renewable production (eg. film based PV, vertical wind)





