

HAMBURG MOORBURG – HYDROGEN HUB IN NORTHERN GERMANY

REPURPOSING OF THE HAMBURG COAL PLANT

Anselm Sprandel
Head of Department for Energy and Climate,
Ministry of Environment, Climate, Energy and Agriculture, City of Hamburg

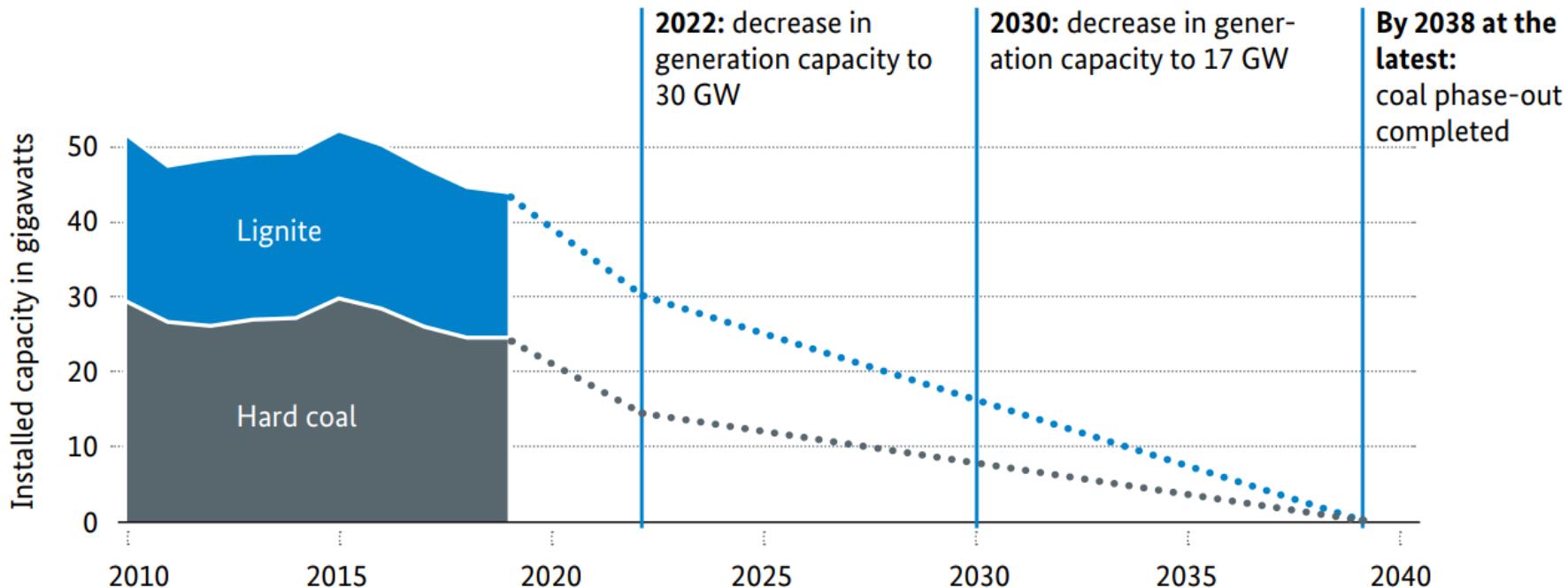
28 April 2021



OUTLINE

- 01 Climate and economic policy goals
- 02 Hamburg's hydrogen forecast and hydrogen activities
- 03 Moorburg – from coal-fired power plant to green hydrogen hub
- 04 Integration into the European context

Germany's planned coal phase-out path



Federal Ministry for the Environment, Nature Conservation and Nuclear Safety 2020: Climate Action in Figures

Climate and Economic policy goals in Hamburg

Climate Plan

Joint Hydrogen Strategy
of Coastal Federal States



2025: 500 MW electrolysis power
2030: 5 GW electrolysis power
2035: Green hydrogen economy

Hamburg coalition
agreement
2020-2025

National Hydrogen
Strategy

Decarbonisation of port, industry, logistics and air transport

Building a competitive green hydrogen economy

Hamburg's hydrogen forecast

Hypotheses

- Demand is not yet foreseeable; most studies assume that demand will soon exceed supply.
- The goal is to use green hydrogen, but there will be a transition phase.
- Hamburg will have to import hydrogen due to a lack of green electricity.
- As a port city, Hamburg wants to become an import location for green hydrogen.

Hydrogen demand – Port of Hamburg



Activities to achieve these objectives

Hydrogen Economy Cluster

Supporting infrastructure projects (e.g. H2 pipeline, network)

Feasibility study Moorburg

Application “Technology and Innovation Centre for Hydrogen Technology for Mobility Applications”

H2 import strategy

Cooperation with universities and research

Building international alliances

Commitment to the expansion of renewables

Supporting the IPCEI process

Involvement in regional and national committees (e.g. National Water Council)

Moorburg – Coal-fired power plant



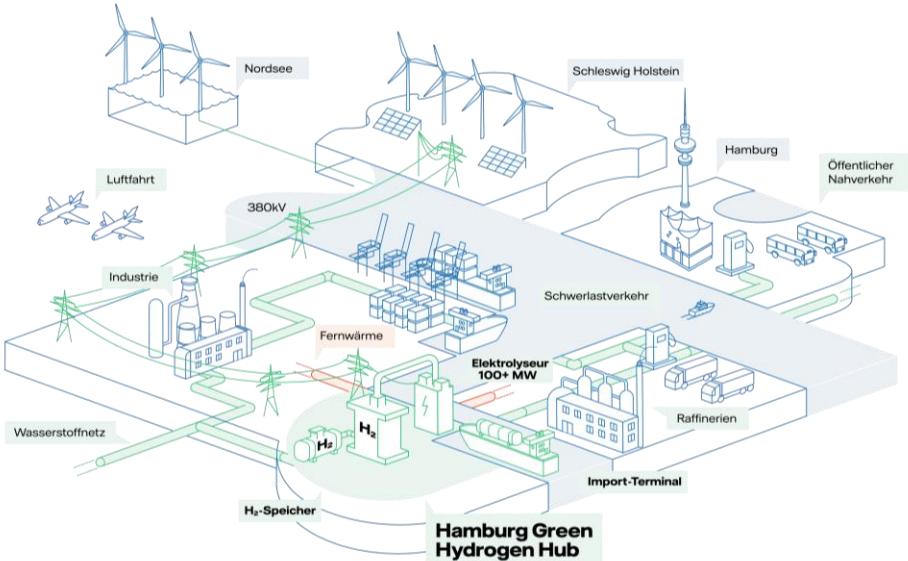
Copyright by Vattenfall

Profile of the CHP plant

- In operation since 2015
- Capacity approx. $2 \times 800 \text{ MW}_{\text{el}}$ supplying process steam to a neighbouring refinery
- Power production in 2019: 5.8 Mrd. kWh
- Number of employees: 190
- Located in the port of Hamburg

2021: Electricity from these units can no longer be marketed. The bid for an early closure of Moorburg was part of the first auction process to reduce coal-fired power generation in Germany.

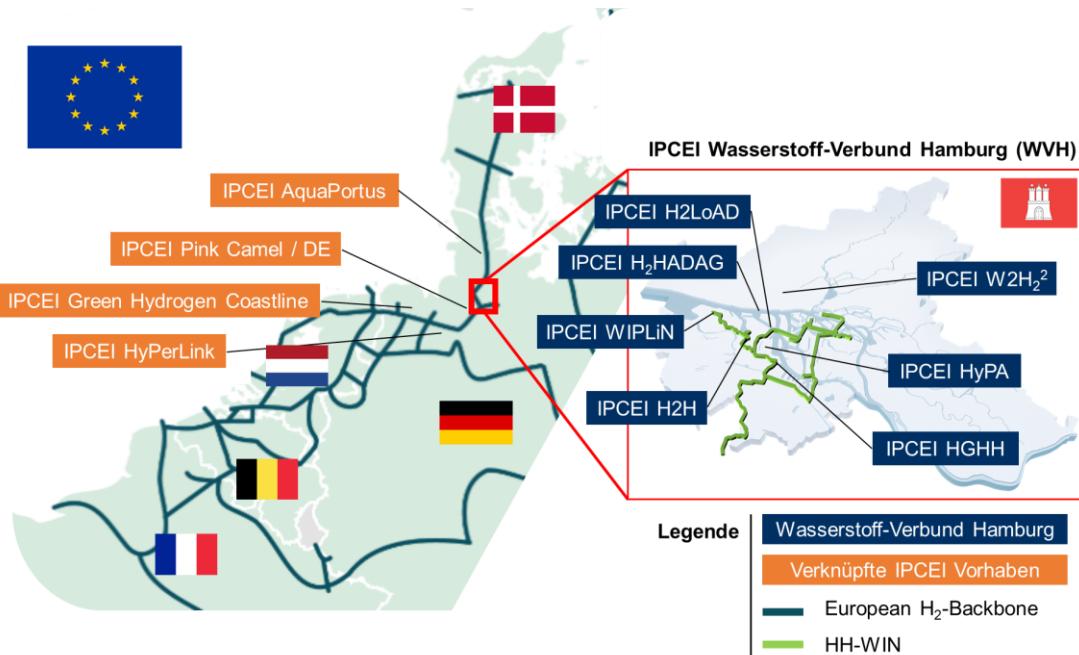
Moorburg – Hamburg's green hydrogen hub



Special locational advantages

- Connection to the 380 kV national transmission grid
- Accessibility by seagoing vessels as a hydrogen import terminal
- The focus is on an electrolyser with a capacity of at least 100 MW and on a large storage facility
- Plans for a hydrogen grid within the industrial area
- Proximity to hydrogen users in industry, logistics and mobility

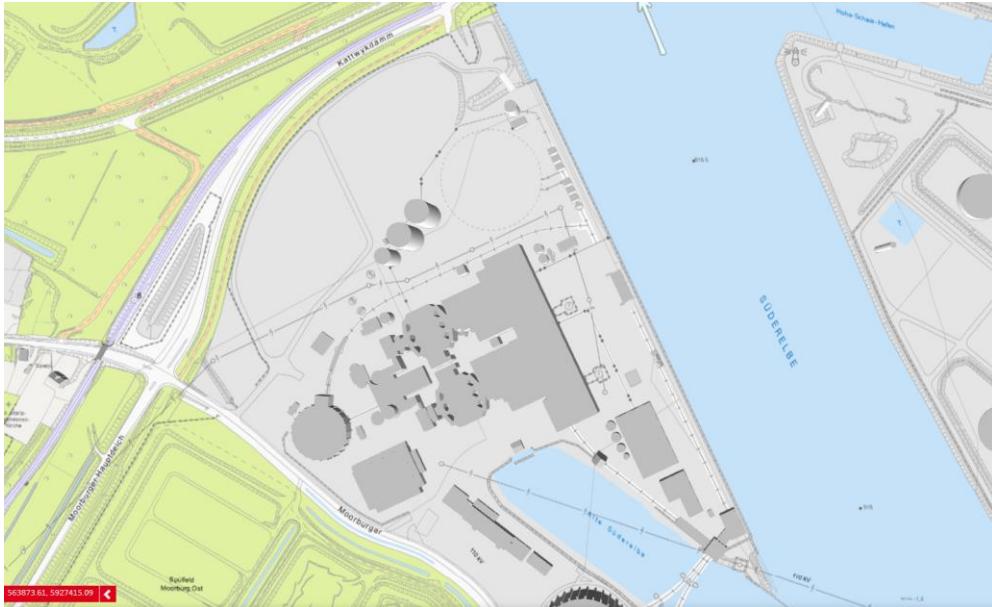
Integration into the European context



- Based on the high industrial density, on-site acceptance is possible
- Here too there is a wide range of projects
- HH-WIN – the planned transport pipelines in Hamburg – will enable all projects at the site to be integrated into the European hydrogen framework

Governance

The Free and Hanseatic City of Hamburg has four specific levers to control the conversion and further development of the Moorburg site:

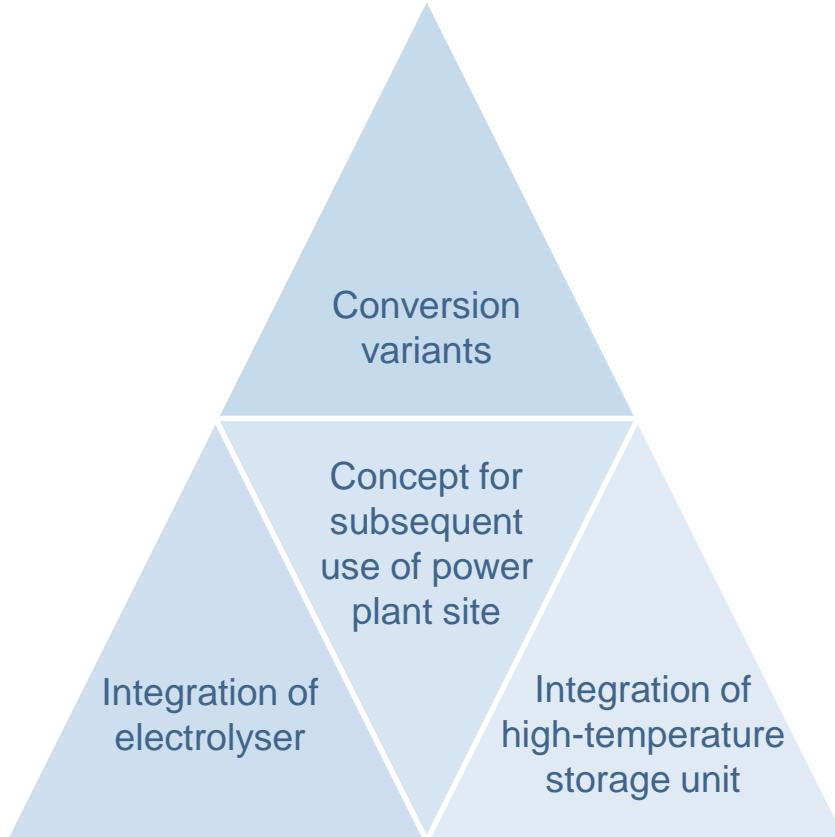


- Its co-ownership of the operating property
- Its public companies
- Its financial support
- Its close networking with industry and transport and logistic companies

Thank you for your attention

Back-up

Feasibility study at the Moorburg power plant site



Content

- Energy function
- Availability of green electricity
- Needs assessment
- Infrastructural integration
- Subsequent use of existing buildings and technical facilities
- Consideration open to all technologies