



National Hydrogen Pipeline Projekt Update

21 October 2025, Hydrogen & Carbon Capture Technology World Expo 2025

Overview for the presentation

- Starting point – Demand scenarios for hydrogen and methane
- Hydrogen core network
- Network Development Plan
- Approval of the scenario framework
- Next steps

Contact^{for}
Policymakers
and **the Public**

Transmission
System Operators
for Gas

12

Transmission

Grid in kilometers

> 40.000

www.fnb-gas.de/en

Networkplanning
for **Gas** and
Hydrogen

Coordination
of **Technical
Exchange**
between Members

Association of
**GAS Transmis-
sion** Operators

Employees
of the TSOs

> 3.500

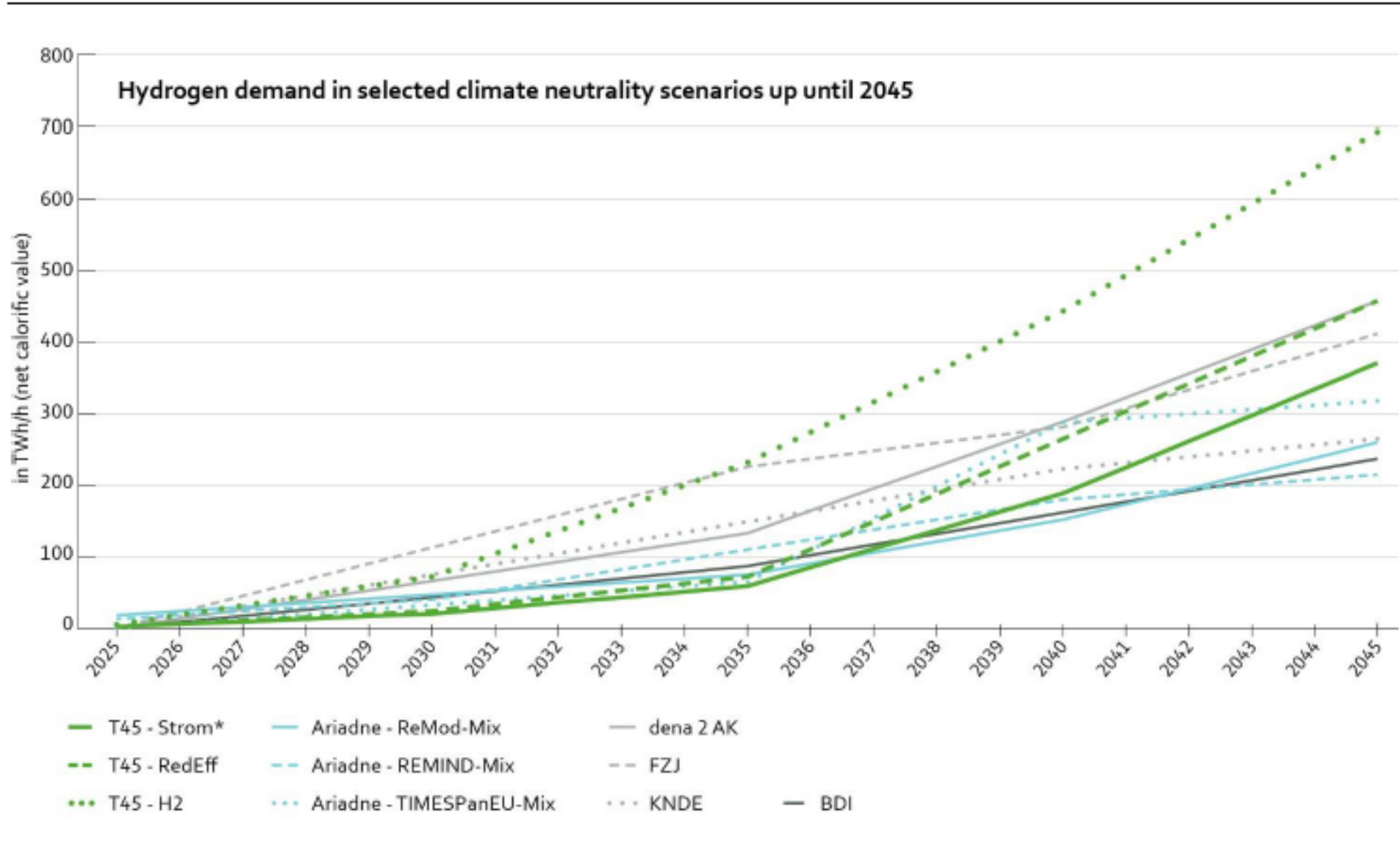


Starting point

Demand scenarios for hydrogen and methane

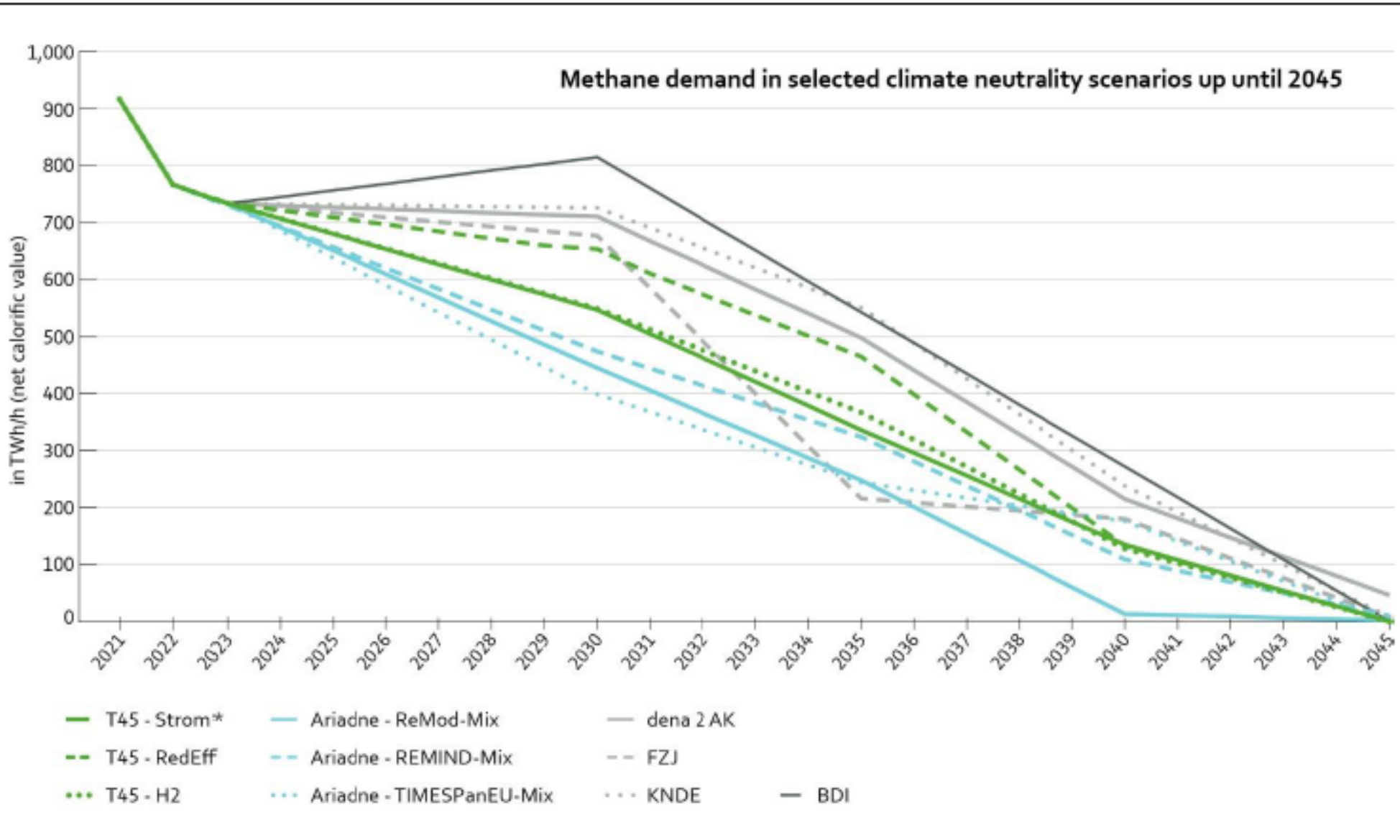
- Hydrogen is a requirement for decarbonisation of the German industry and other sectors

Figure 22: Hydrogen demand in selected climate neutrality scenarios up until 2045



Source: Gas transmission system operators based on [BMWK 2024], [dena 2021], [Agora 2021], [FZJ 2022], [Ariadne 2022]

Figure 23: Methane demand in selected climate neutrality scenarios up until 2045



Source: Gas transmission system operators based on [BMWK 2024], [dena 2021], [Agora 2021], [FZJ 2022], [Ariadne 2022]

From planning status to approval



**Joint application for the
hydrogen core network**

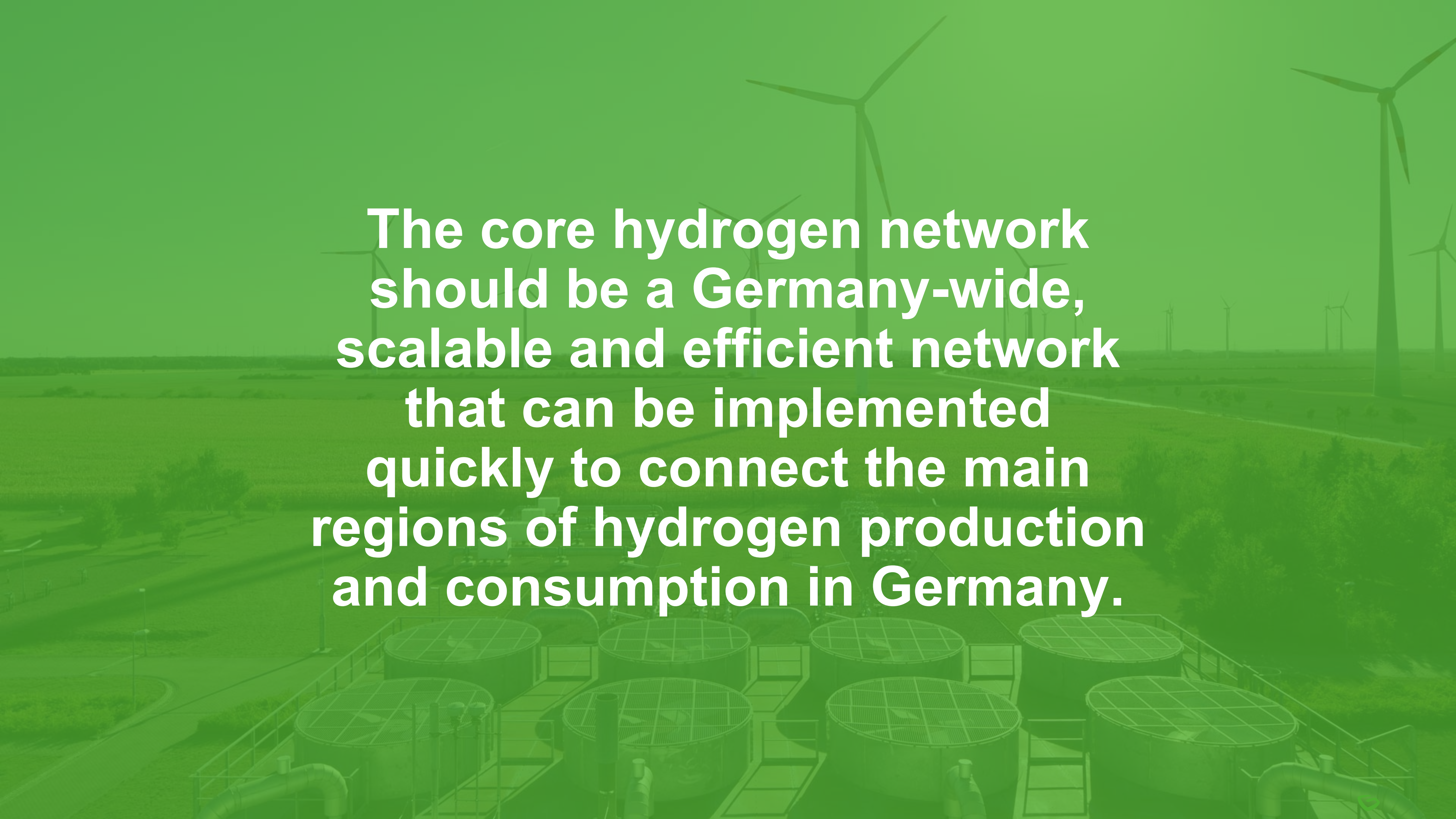
- ✓ July 2023: Publication of first planning status (11,200 km)
 - Consultations by gas TSOs and ministry
 - Core network optimisation

- ✓ November 2023: Submission of draft application (9,700 km)
 - Informal Consultation by BNetzA
 - Final core network optimisation

- ✓ July 2024: Submission of core network application by gas TSOs (9,666 km)
 - Formal consultation by BNetzA
 - Implementation of change request by the TSOs

- ✓ **October 2024: Approval of core network (9,040 km)**





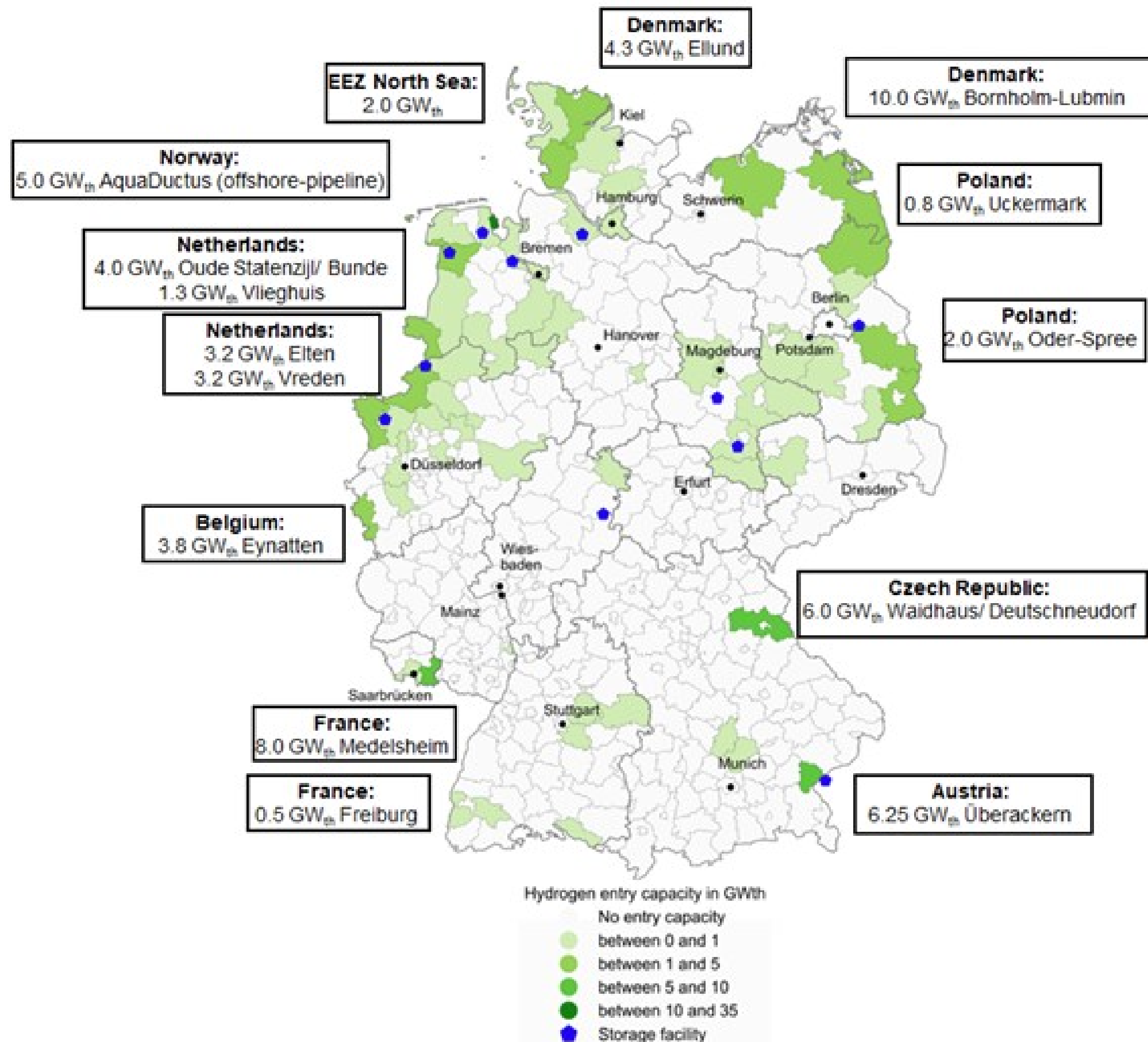
**The core hydrogen network
should be a Germany-wide,
scalable and efficient network
that can be implemented
quickly to connect the main
regions of hydrogen production
and consumption in Germany.**

Definition of political criteria



- IPCEI and PCI projects
- Projects for integration into a European hydrogen network
- Projects associated with specific industrial sectors (iron and steel, chemicals, refineries, glass industry, ceramics, etc.)
- Large CHP plants and power stations
- Hydrogen storage projects
- Electrolysers

Focus: Integration into a European hydrogen network



- European integration was an important goal in the development of the hydrogen core network
- Various import options for hydrogen

Hydrogen core network facts and figures



*gem. Genehmigung vom 22.10.2024

- Target year for realization: 2032
- Gradual expansion; the first pipelines will be commissioned as early as 2025
- Total pipeline length: 9,040 km (approx. 60% / 5,088 km of repurposed natural gas pipelines and 40% / 3,952 km of newly built pipelines)
- Transmission volume: 278 TWh
- Exit capacity: 87 GW
- Entry capacity: 101 GW
- Investment volume: 18.9 billion euros

→ TSOs have started building up the network

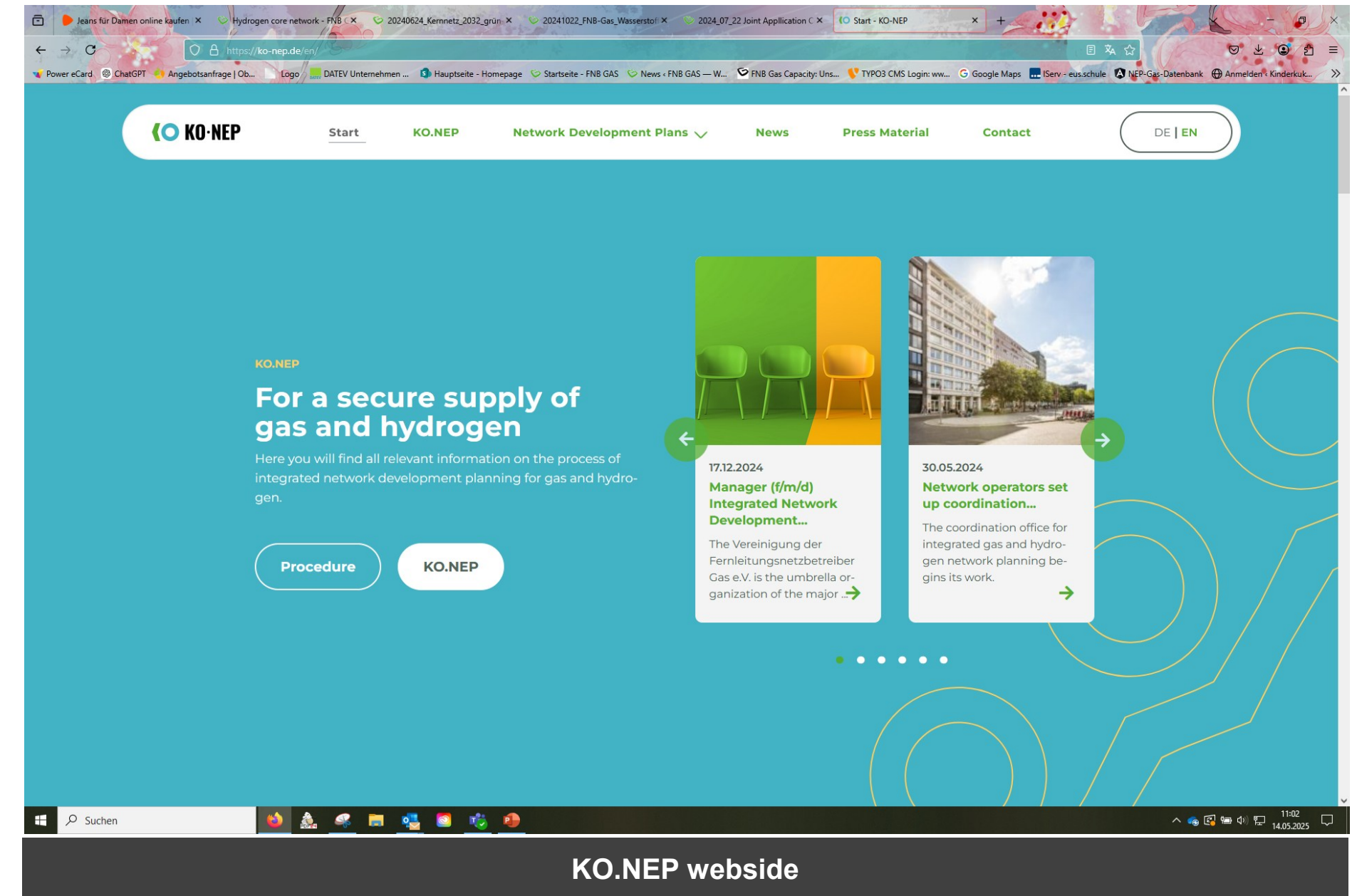
Regular network development planning and distribution grids

Further development and optimisation of the core network is part of the regular integrated network development planning process for gas and hydrogen:

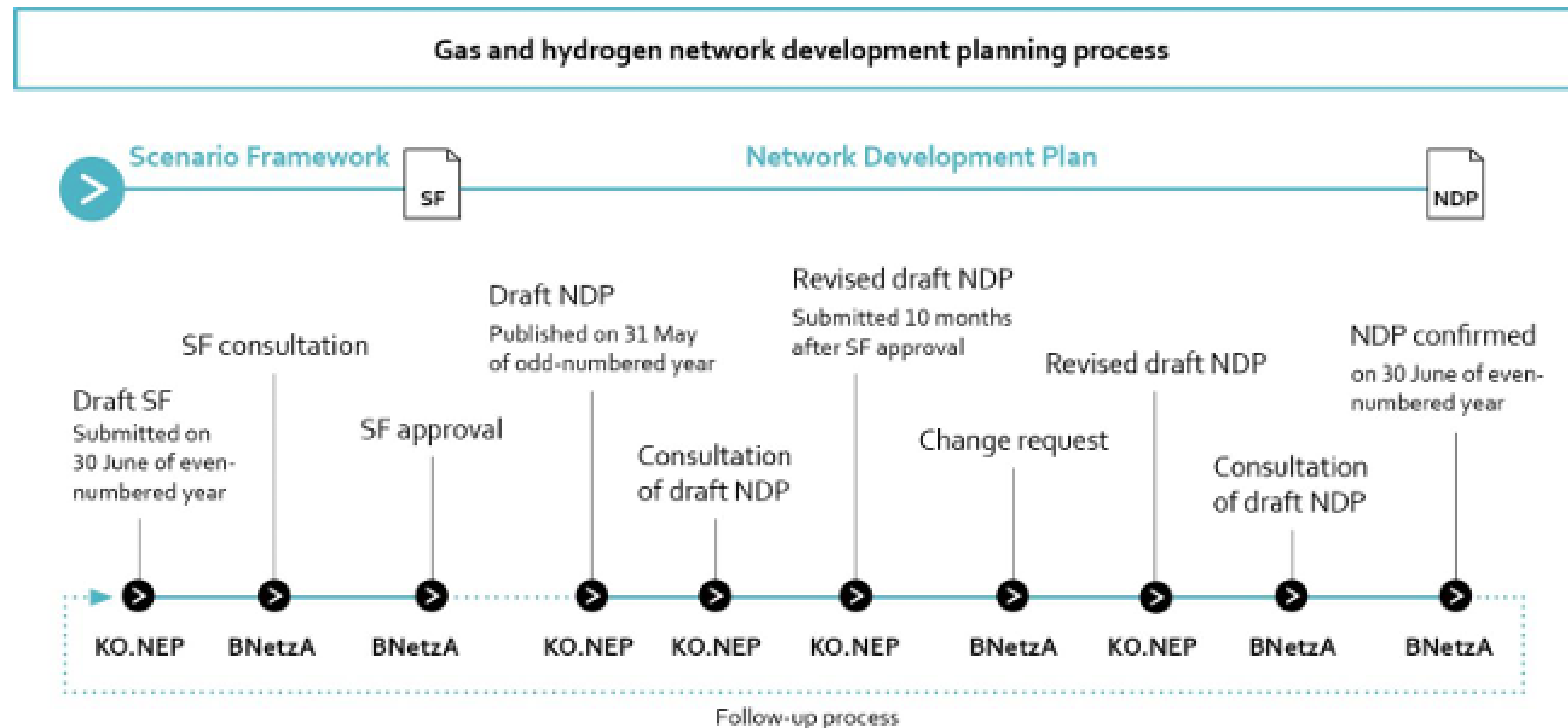
- Rolling integrated process for gas and hydrogen (2 years)
- Review of core network with respect to the market developments

Transformation of distribution grids:

- Create processes to link the network planning at the different levels
- Engaged in creation of legal and financial basis for the transformation



Process of further developing the hydrogen and methane network



- Regular two-year process for the further development of the hydrogen network
- Review of the measures of the hydrogen core network, which will go into operation from 2028, in the 2025 process

Approval of the scenario framework

- <https://www.bundesnetzagentur.de/EN/Areas/Energy/NEP/start.html>
- The Coordination Office for Integrated Gas and Hydrogen Network Development Planning (KO.NEP) presented the scenario framework for the gas and hydrogen NDP 2025-2037/2045 in summer 2024.
- The Bundesnetzagentur held a consultation on it, along with the electricity scenario framework, from 2 to 30 September 2024. It received 65 responses on the gas and hydrogen scenario framework.
- A wide range of possible developments towards decarbonisation are shown in the approval; three scenarios looking ahead to 2037 and 2045.

Exit capacity for hydrogen

Tabelle 1: Ausspeiseleistung Wasserstoff

Sektor	Szenario 1 2037	Szenario 2 2037	Szenario 3 2037	Szenario 1 2045	Szenario 2 2045	Szenario 3 2045
Kraftwerke	29 GW _{el}	41 GW _{el}	5 GW _{el}	60 GW _{el}	81 GW _{el}	59 GW _{el}
Industrie	35 GWh/h	18 GWh/h	7 GWh/h	92 GWh/h	42 GWh/h	42 GWh/h
Private Haushalte	11 GWh/h	0 GWh/h	0 GWh/h	21 GWh/h	0 GWh/h	0 GWh/h
Gewerbe/ Handel/ Dienstleistungen	3 GWh/h	0 GWh/h	0 GWh/h	5 GWh/h	0 GWh/h	0 GWh/h
Verkehr	4 GWh/h	0 GWh/h	0 GWh/h	7 GWh/h	0 GWh/h	0 GWh/h
Grenzübergangs- punkte	*	*	*	30 GWh/h	30 GWh/h	30 GWh/h
Speicher	**	**	**	**	**	**

*Es ist zu ermitteln, welche Kapazität ausbaufrei darstellbar ist

** Die Ausspeiseleistung muss in einem sachgerechten Verhältnis zur Einspeiseleistung stehen, sodass eine vollständige Befüllung der Speicher ermöglicht wird.

- Focus on power plants and industry
- Scenario 1 with additional hydrogen use in other sectors (buildings and transportation)
- Specification of Germany-wide demand values; market survey for regionalization

Entry capacity for hydrogen

Tabelle 2: Einspeiseleistung Wasserstoff

Sektor	Szenario 1 2037	Szenario 2 2037	Szenario 3 2037	Szenario 1 2045	Szenario 2 2045	Szenario 3 2045
Grenzübergangs- punkte	Mind. 58 GWh/h	Mind. 58 GWh/h	Mind. 10 GWh/h	Mind. 58 GWh/h	Mind. 58 GWh/h	Mind. 58 GWh/h
Speicher	Mind. 36 GWh/h	Mind. 36 GWh/h	Mind. 6 GWh/h	Mind. 36 GWh/h	Mind. 36 GWh/h	Mind. 36 GWh/h
Sonstige Importe (u. a. LH2 und Derivate)	Mind. 4 GWh/h	Mind. 4 GWh/h	Mind. 1 GWh/h	Mind. 4 GWh/h	Mind. 4 GWh/h	Mind. 4 GWh/h
Elektrolyse	Mind. 32 GW _{el}	42 GW _{el}	Mind. 6 GW _{el}	Mind. 32 GW _{el}	58 GW _{el}	Mind. 32 GW _{el}
Die Summe der Einspeisekapazitäten Wasserstoff muss in jedem Lastfall mindestens die Summe der Ausspeisekapazitäten Wasserstoff decken.						

- Importance of border crossing points
- Specification of Germany-wide demand values; market surveys for regionalization

Next steps

Next steps

- Modeling for the various scenarios is currently underway
- Publication of the first draft of the network development plan for gas and hydrogen expected in the first quarter of 2026; followed by consultation on the first draft
- The first draft is then edited and a second revised draft is submitted to the Federal Network Agency

Thank you for your attention.

Stefan Mellahn

Senior Manager Netzentwicklungsplanung Gas und Wasserstoff

Vereinigung der Fernleitungsnetzbetreiber Gas e.V.

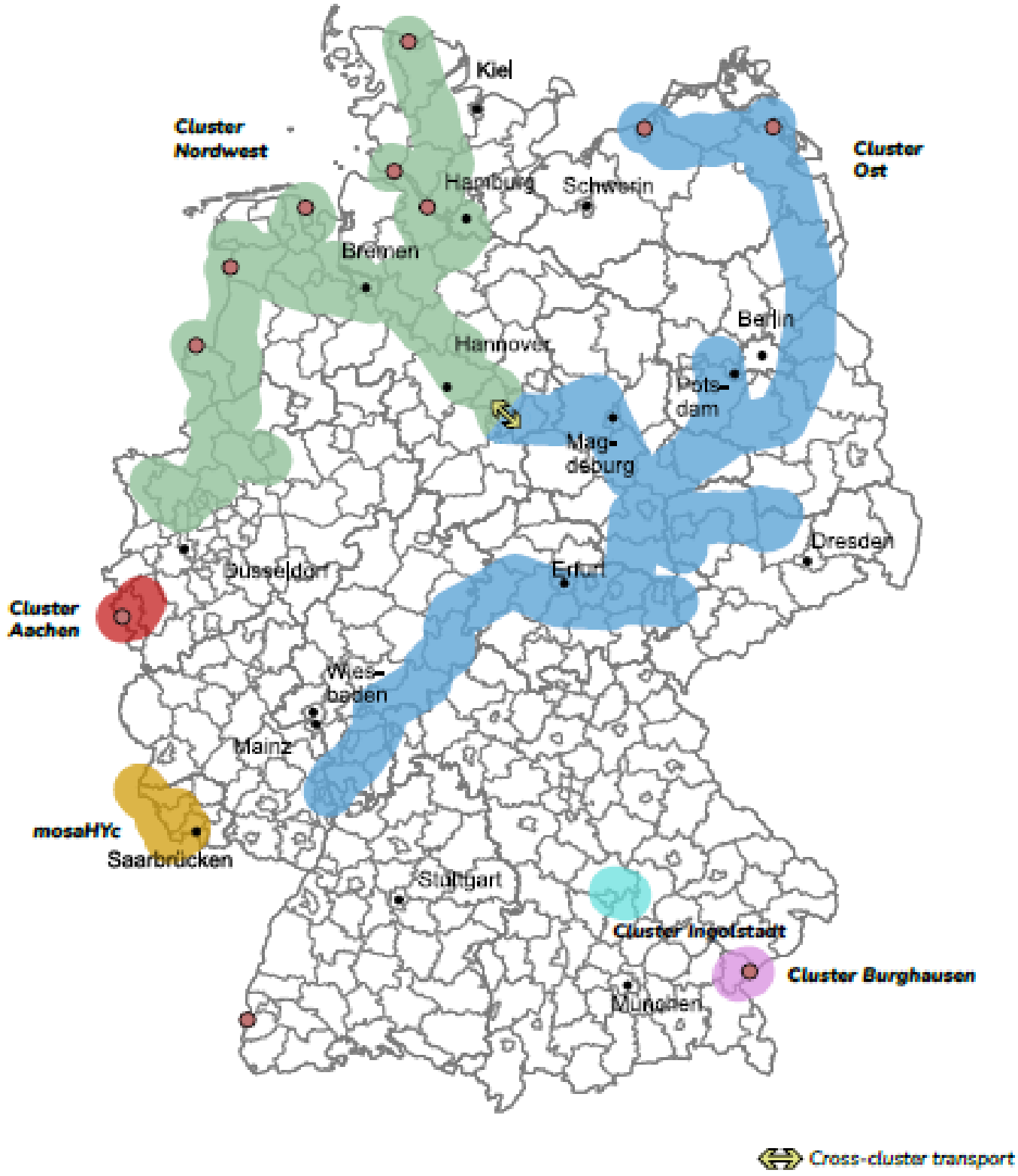
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Back up

The schematic representation of the clusters as of December 31, 2029, on the path to the hydrogen core network

31.12.2029



approved target core network

