

Deutsch Russisches Rohstoff-Forum:

Germany's Future Hydrogen Grid

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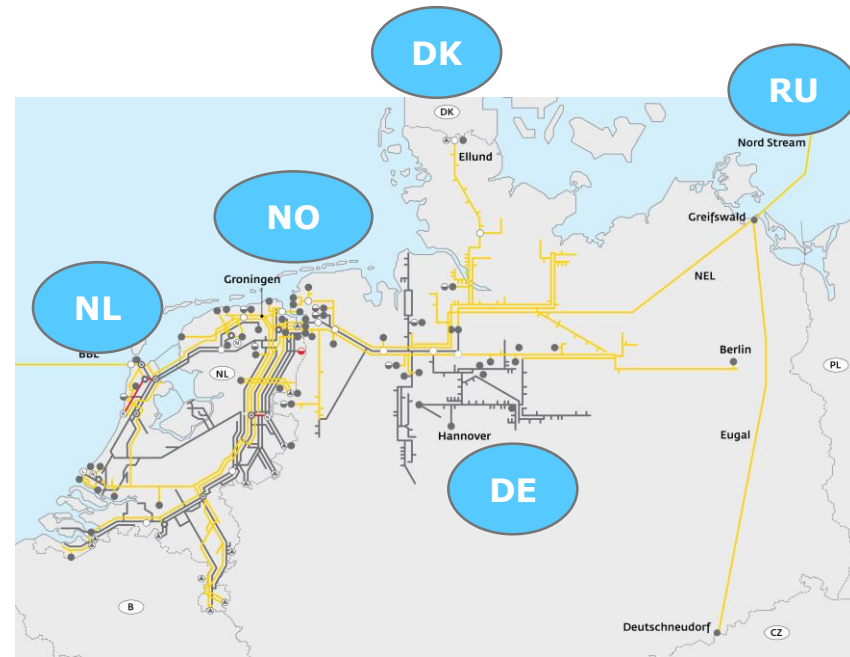
A Short introduction...

Gasunie:

- 100% owned by Netherlands (NL) state
- Gas Transport System Operator (TSO) in NL and in the North of Germany (DE)
- Connecting relevant Gas Import to Europa

Myself:

- Background in Physics/Mathematics
- Work at Gasunie since 2002
- Long Term planning (DE, EU)
- Head of Working Group "Hydrogen Transformation" of TSO Organization (FNB Gas)



15.500 km
Pipelines

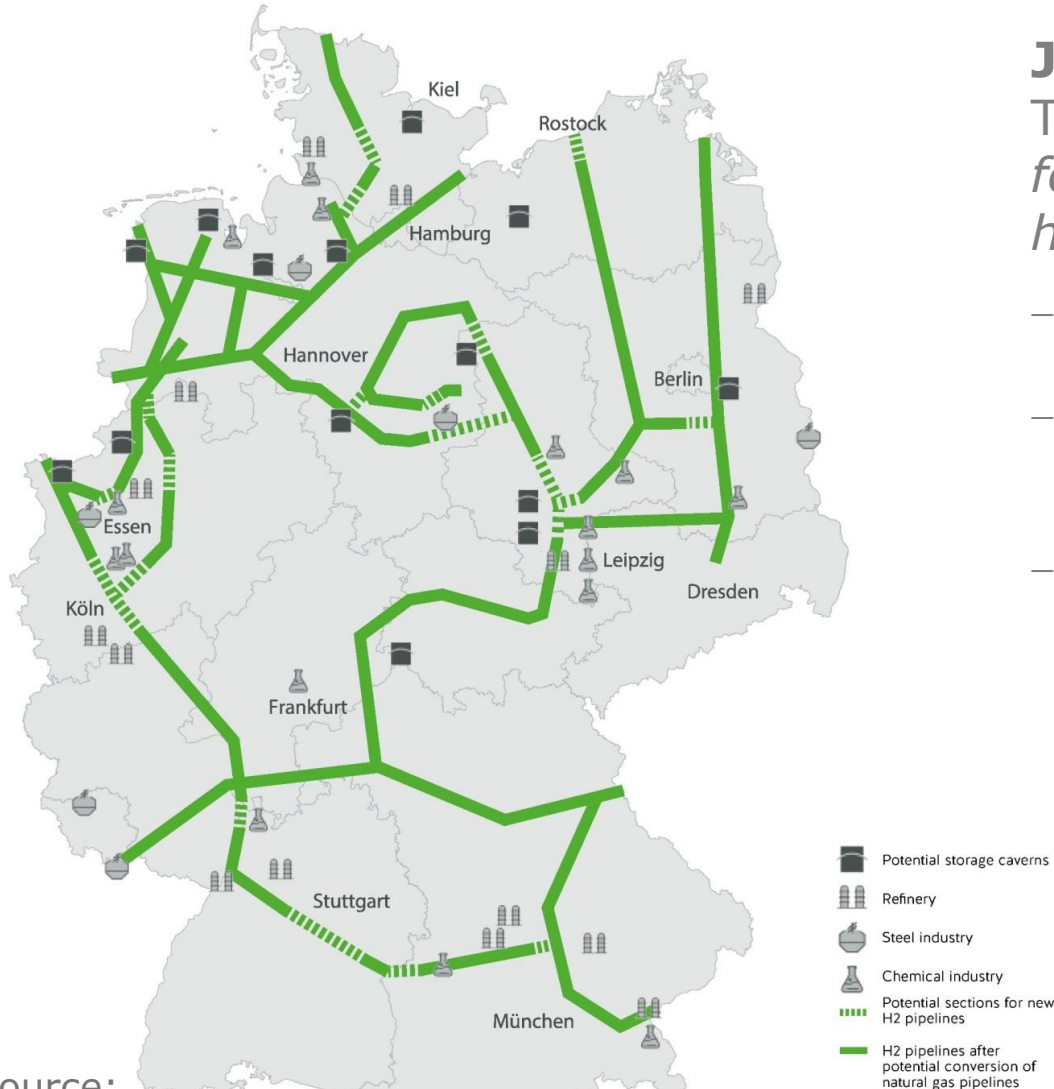
1.722
Employees

Turnover
€ 1,25 Mrd

A **vision** for a Future Hydrogen grid

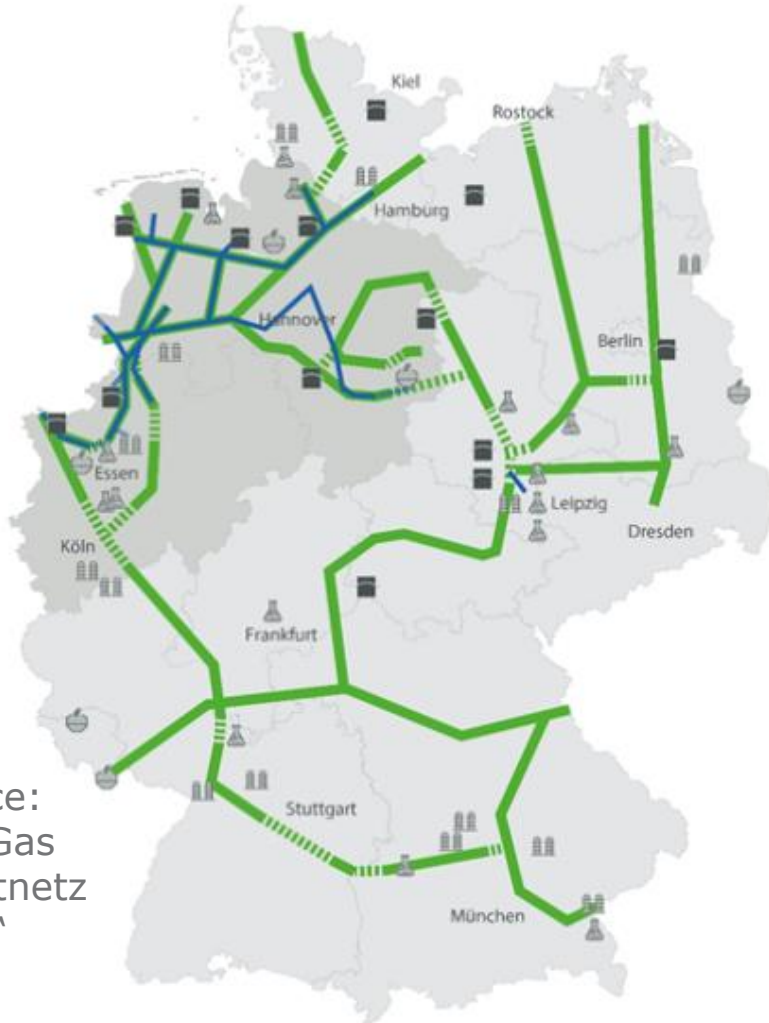
January 2020: German TSOs presented a *vision for a trans-regional hydrogen network:*

- 5,900 km
- 90% existing natural gas infrastructure
- Connection of:
 - ❖ regions with large potential for renewable energy production -> P2G
 - ❖ potential import points
 - ❖ gas storage caverns
 - ❖ industrial consumers
 - ❖ major metropolitan areas



Source:
FNB Gas „Visionäres Wasserstoffnetz“

A plan for the Hydrogen grid till 2030



Source:
FNB Gas
„Startnetz
2030“

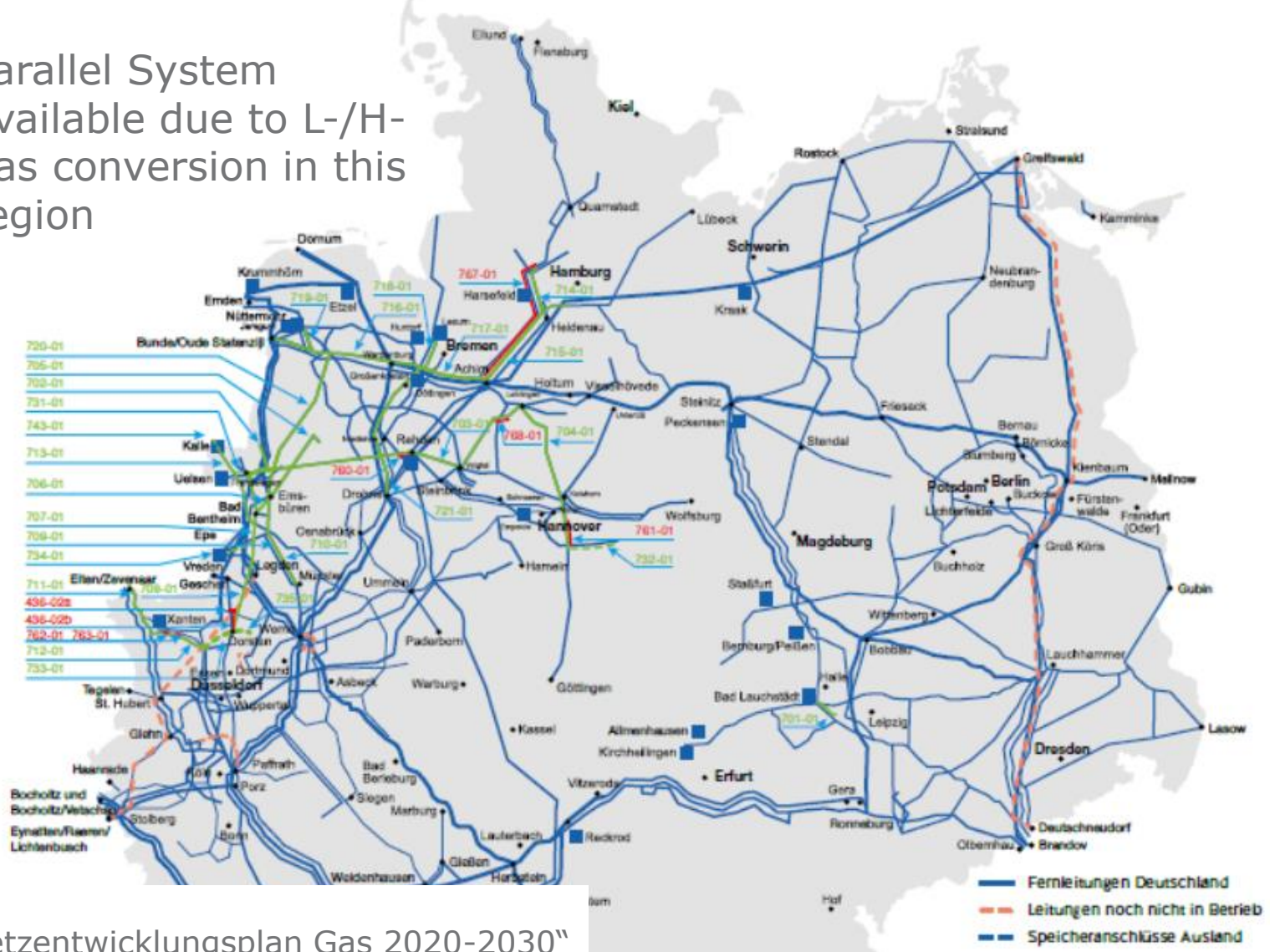
July 2020: H2 network in the *Netzentwicklungsplan Gas 2020-2030* [NDP]

- ~1,200 km (1,100 km pipeline conversions, 100 km newly built dedicated H2 pipelines)
- Demand/Supply based a market partner survey and regional studies
- First conversion of pipelines till end of 2022
- Demand centers in North Rhine-Westphalia and Lower Saxony connected with green hydrogen production in Northern Germany
- First interconnection points for H2 import from the Netherlands
- Costs: 290 million € by the end of 2025 and 660 million € by the end of 2030
- Currently TSOs waiting for approval by regulator: adjustments to the legal framework are prerequisite

→ H2 starter network modelling confirmed key elements of the visionary H2 network

A plan for the Hydrogen grid till 2030 - Details

- Parallel System available due to L-/H-gas conversion in this region



A larger view....

- Existing large pipeline Infrastructure in Europe
- Chance of Conversion to Hydrogen as for Germany



Source:
ENTSOG Transparency Platform

Thank You