

Picture courtesy of Gas Connect Austria

# Hydrogen network: Towards a European hydrogen infrastructure?

6 th Franco-German Energy Forum

Sara Piskor, Director of Strategy, Policy and Communication,

# #NoTransitionWithoutTransmission

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## Gas grids allow:

Efficient transport of major volumes of energy and will continue to play a major part of the future energy system.

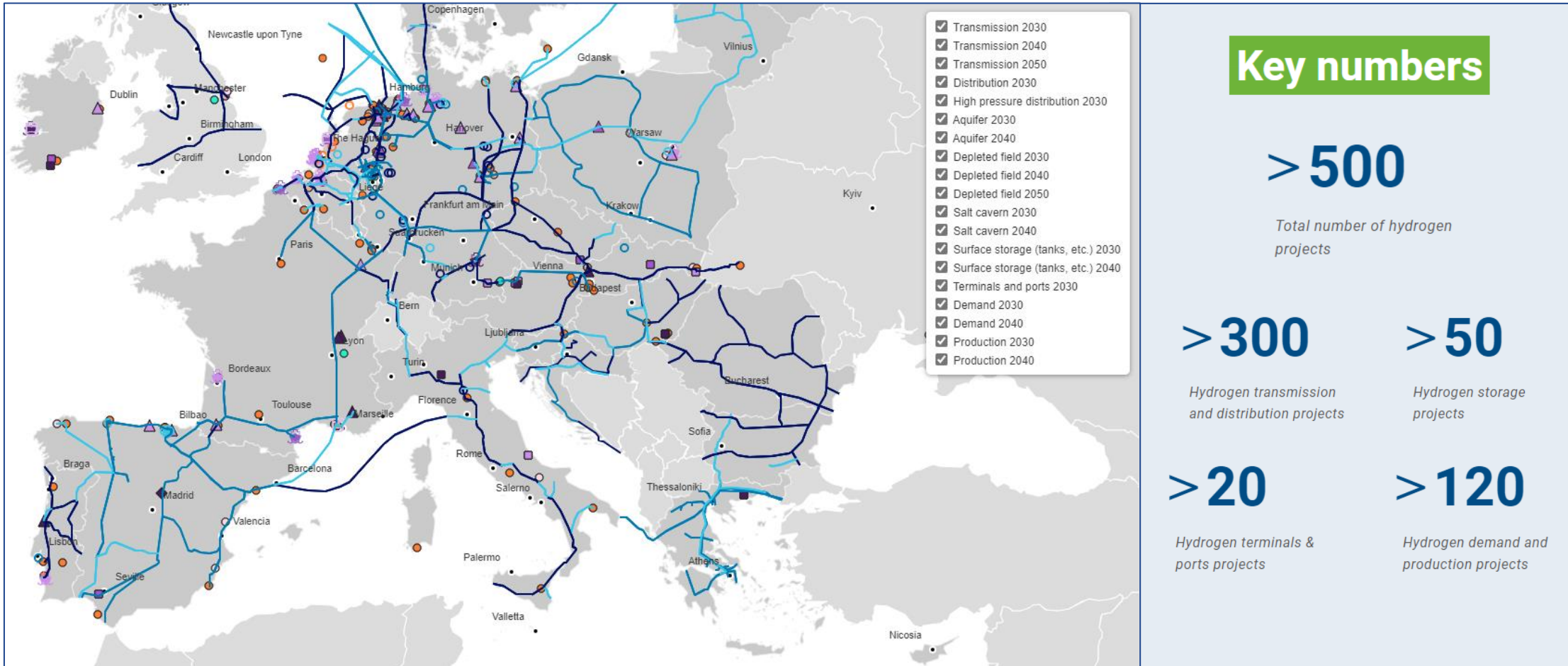
## Pipelines support:

Decarbonisation for industry incl. shipping and aviation with hydrogen Energy System Integration, as smart location of electrolysis and storage will address intermittency of renewables and their curtailment

## Repurposing of gas grids brings:

High societal benefits (1/3 of costs of the new build connections)  
Speedier projects implementation (transmission permitting, right of way)  
Connects clusters, increasing their additionality rule compliance chances and security of supply

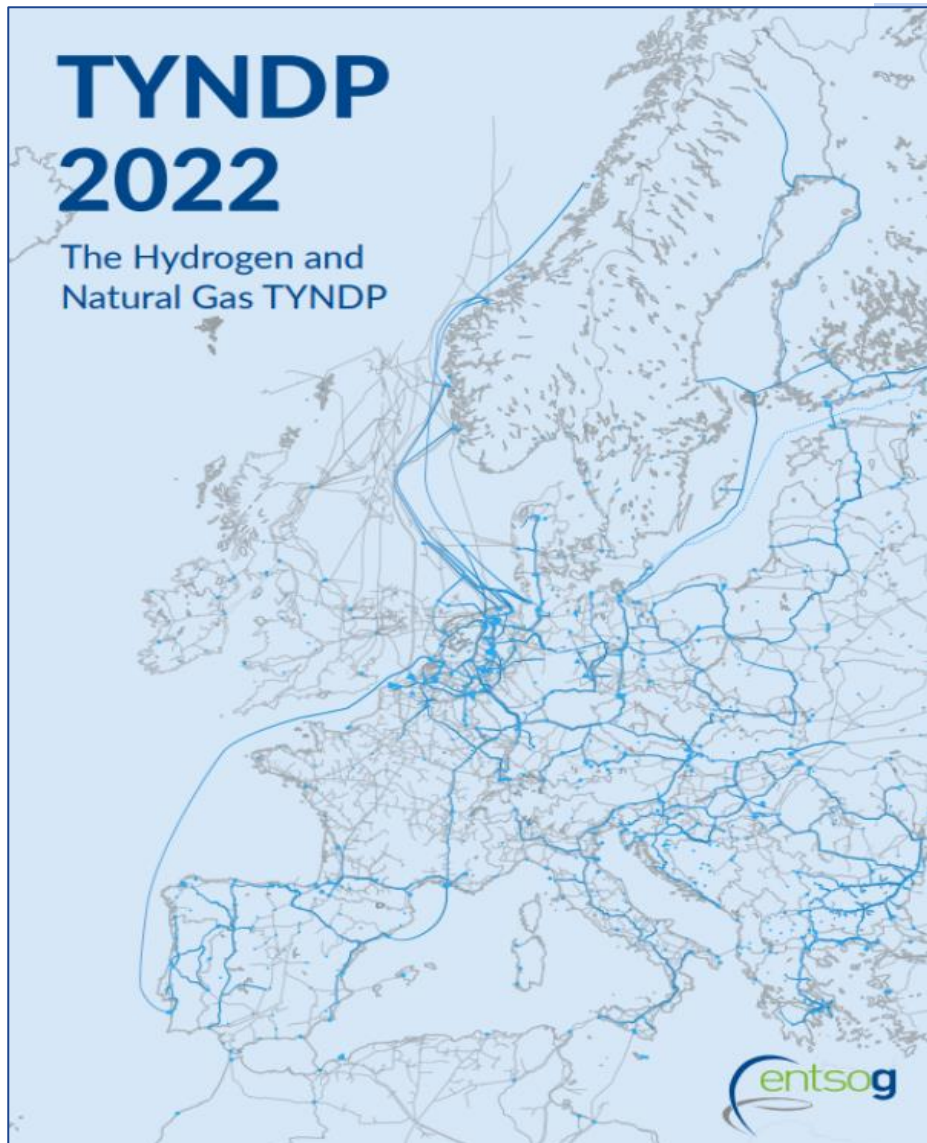
# 2% of FIDs only: from Hydrogen Infrastructure Map to Future Network



<https://www.h2inframap.eu/>

# TYNDP2022: Gas and Hydrogen

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- Ten-Year Network Development Plan 2022 includes gas and hydrogen
  - New infrastructure category: Energy Transition Projects
    - 215 investments into energy transition projects
    - 152 of those investments in new or repurposed infrastructure
  - TYNDP and scenarios are fully publicly consulted
- More about TYNDP: <https://tyndp2022.entsog.eu/>

# Status On Planning for Gas and Hydrogen

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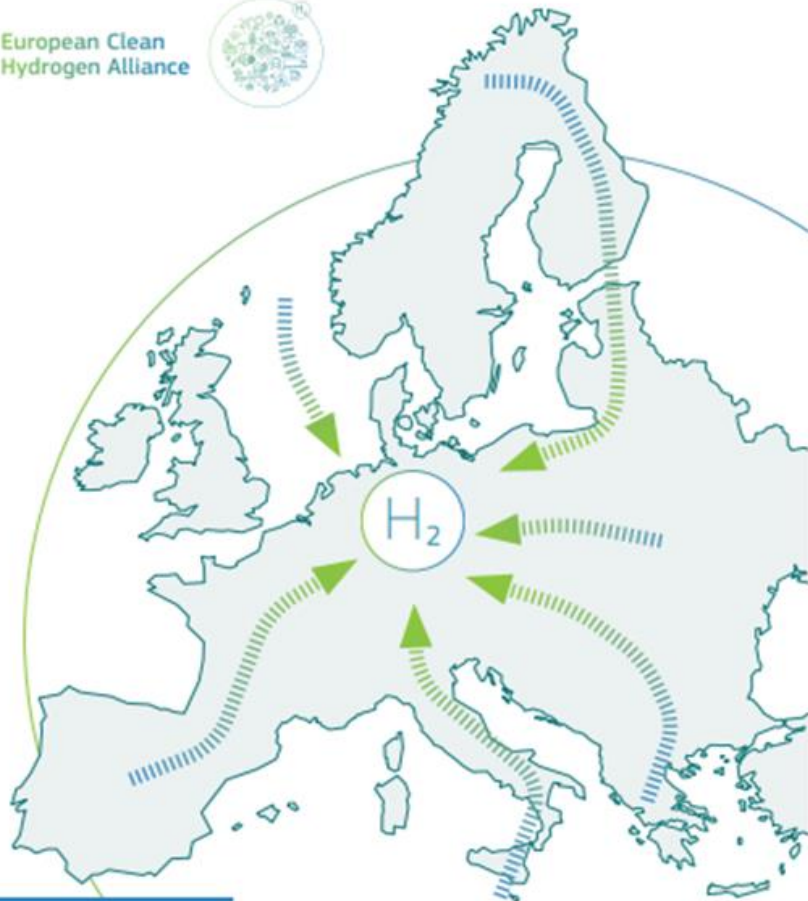
- **Regulation (EC) No 715/2009:** Art. 8(10) ENTSOG's non-binding TYNDP - includes natural gas and hydrogen networks and identifies cross-border investment gaps
- **Renewed TEN-E:** ENTSOG produces cost-benefit analysis methodology (CBAM) (Art. 11) that is applied on the basis of EC-approved scenarios (Art. 12) as follows:
  - CBAs for hydrogen infrastructure PCI/PMI candidates within TYNDP as one input for MSs and EC to decide on granting PCI/PMI status
  - infrastructure gaps reports within TYNDP (Art. 13)
  - cross-border cost allocation procedures (Art. 16)
- ENTSOG has submitted a draft CBAM to EC, ACER, MSs for their opinion. The final CBAM is subject to EC scrutiny and requires EC approval.

# Hydrogen Supply Corridors

## LEARNBOOK ON HYDROGEN SUPPLY CORRIDORS

Clean Hydrogen Alliance  
Transmission and  
Distribution Roundtable

European Clean  
Hydrogen Alliance



March 2023

ENTSOG is facilitator of European Clean Hydrogen Alliance Transmission & Distribution Round Table published the Hydrogen Supply Corridor LearnBook in 2023

Six corridors looked into:

- South Central H<sub>2</sub> supply corridor
- Iberian H<sub>2</sub> supply corridor
- North Sea H<sub>2</sub> supply corridor
- Nordic Baltic H<sub>2</sub> supply corridor
- Eastern H<sub>2</sub> supply corridor
- Southeastern H<sub>2</sub> corridor

Addressing REpowerEU ambition with hydrogen for fully functioning economy:

Six cross-border hydrogen corridors and import routes require:

Joint planning for gas and hydrogen (security of supply, market ramp-up)

Clear tariffication and financial support schemes

**Three more LearnBooks planned: Imports, Financing, Implementation**

## Predictable regulatory framework: Gas Package

- Avoid market fragmentation by derogations and islands - TSO/DSO definitions and time bound derogations for existing/geographically-confined networks
- Non-discriminatory third-party access as a key underlying principle for level playing field among market participants
- Joint planning at EU and national level ( TYNDP, NDPs, governance)

## Holistic approach to network planning that realises synergies between hydrogen, gas and electricity

- Security of Supply for all molecules at all times
- Smart siting and sizing of the electrolysers to avoid curtailment
- Prepare for the scale of the markets with biomethane, H2 in all carriers and with CCUS

## De-risking of investments

- Tariffs – Mandatory Zero IP does not solve the so-called “tariff pancaking” issue, but is causing action premium pancaking; instead –it is removing cost transparency, so much requested by the first off takers and generates massive revenue renegotiations (with 5 parties for France, 9 parties for Germany).
- Cost mutualization - Regulatory clarity for NRAs approvals and support tools for early investments (where scale of the market is not entirely clear)
- Strict **Industrial policy** coordination (among DG GROW, DG CLIMA, DG ENER) is crucial
- Role of the EU financial institution and public lenders: *ECH2A Financial Learnbook* review of funding policies of All EU lenders targeted for infrastructure funding without collision with state aid rules





**Thank you for your attention**

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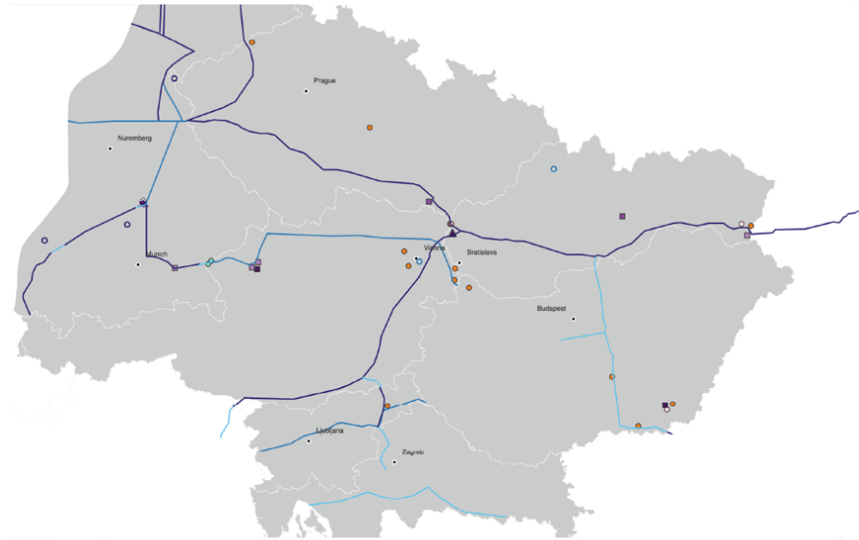
ENTSOG - European Network of Transmission System Operators for Gas

Avenue de Cortenbergh 100, 1000 Bruxelles

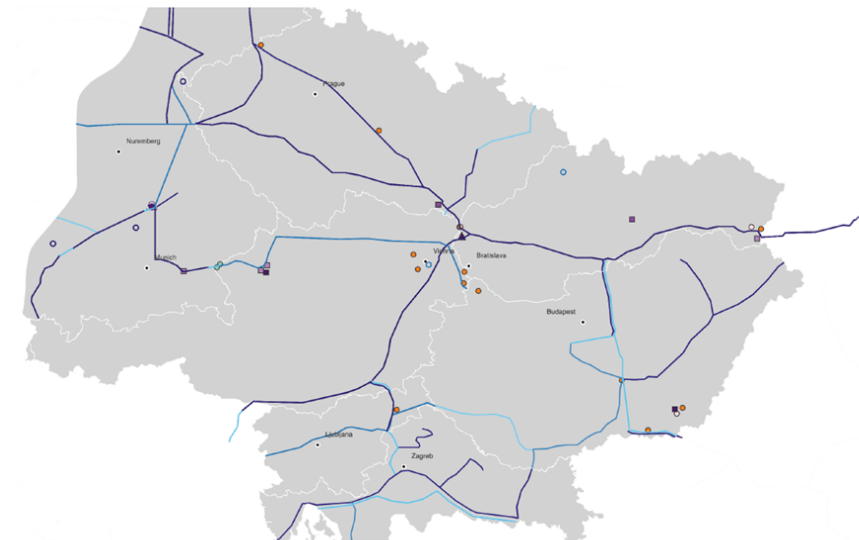
[www.entsog.eu](http://www.entsog.eu) | [info@entsog.eu](mailto:info@entsog.eu)



# Hydrogen Supply Corridors – Eastern H2 corridor to Ukraine



Eastern H2 corridor - Infrastructure 2030



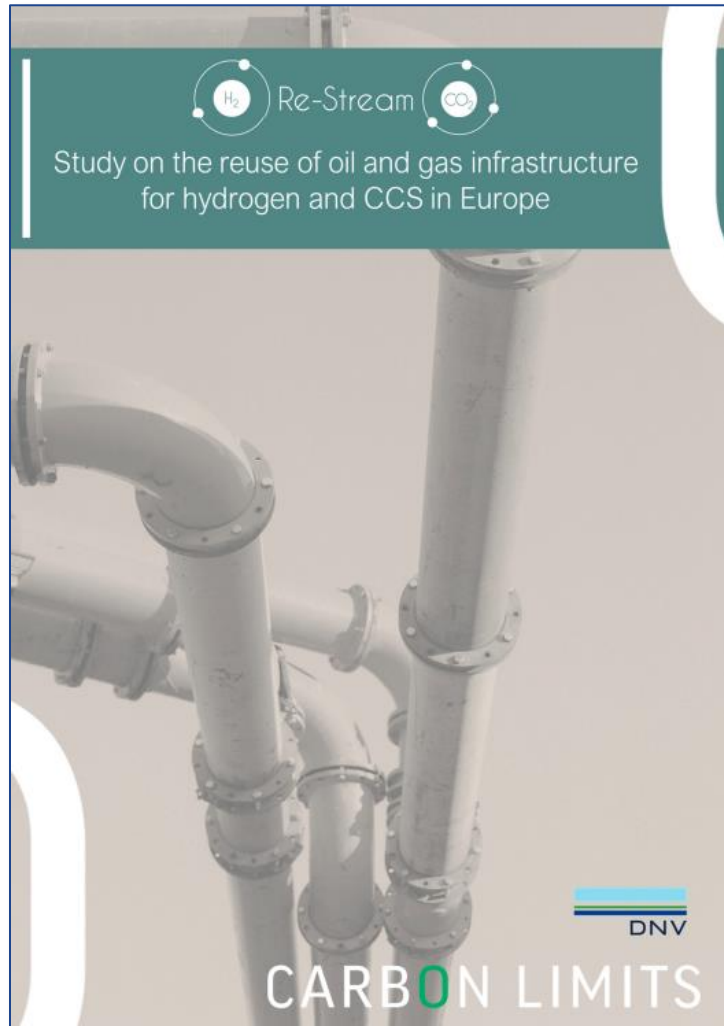
Eastern H2 corridor - Infrastructure 2050

- |  |  |  |
|--|--|--|
| <p><b>Transmission</b></p> <ul style="list-style-type: none"> <li>— New</li> <li>— New and conversion</li> <li>— Conversion of existing infrastructure</li> </ul> <p><b>Distribution</b></p> <ul style="list-style-type: none"> <li>○ New</li> <li>○ New and conversion</li> <li>○ Conversion of existing infrastructure</li> <li>○ Completed</li> <li>--- High pressure distribution</li> </ul> | <p><b>Storage</b></p> <ul style="list-style-type: none"> <li>◆ New and converted aquifer</li> <li>◆ Conversion of existing aquifer</li> <li>■ New depleted field</li> <li>■ New and converted depleted field</li> <li>■ Conversion of existing depleted field</li> <li>▲ New salt cavern</li> <li>▲ New and converted salt cavern</li> <li>▲ Conversion of existing depleted salt cavern</li> <li>□ New surface storage</li> </ul> | <p><b>Terminals and ports</b></p> <ul style="list-style-type: none"> <li>◆ New</li> <li>◆ New and conversion</li> <li>◆ Conversion of existing infrastructure</li> </ul> <p><b>Demand</b></p> <ul style="list-style-type: none"> <li>● Demand</li> </ul> <p><b>Production</b></p> <ul style="list-style-type: none"> <li>● Electrolyser</li> <li>● Methane Reforming (SMR/ATR)</li> <li>○ Other/no data available</li> </ul> |
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Robust corridors are needed to supply Europe with clean hydrogen and to connect Europe  
 Different sources help to supply and lend Security of Supply  
 2 possible routes are in preparation and allow different transport options

# Re-Stream Study

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## Repurposing of existing pipelines

- 42.000 km of onshore pipelines were analysed
- Onshore, close to 70% of the pipeline total length can be reused considering the current state of knowledge/standards
  - More testing needs to be done for the rest.
  - None of the pipelines analysed can be categorically excluded from reuse as of today.
- Most of the offshore pipelines can be reused for hydrogen
- Download Re-Stream study [here](#)