Ready4H2

Gas distribution grids – collaboration and partnerships for the energy transition

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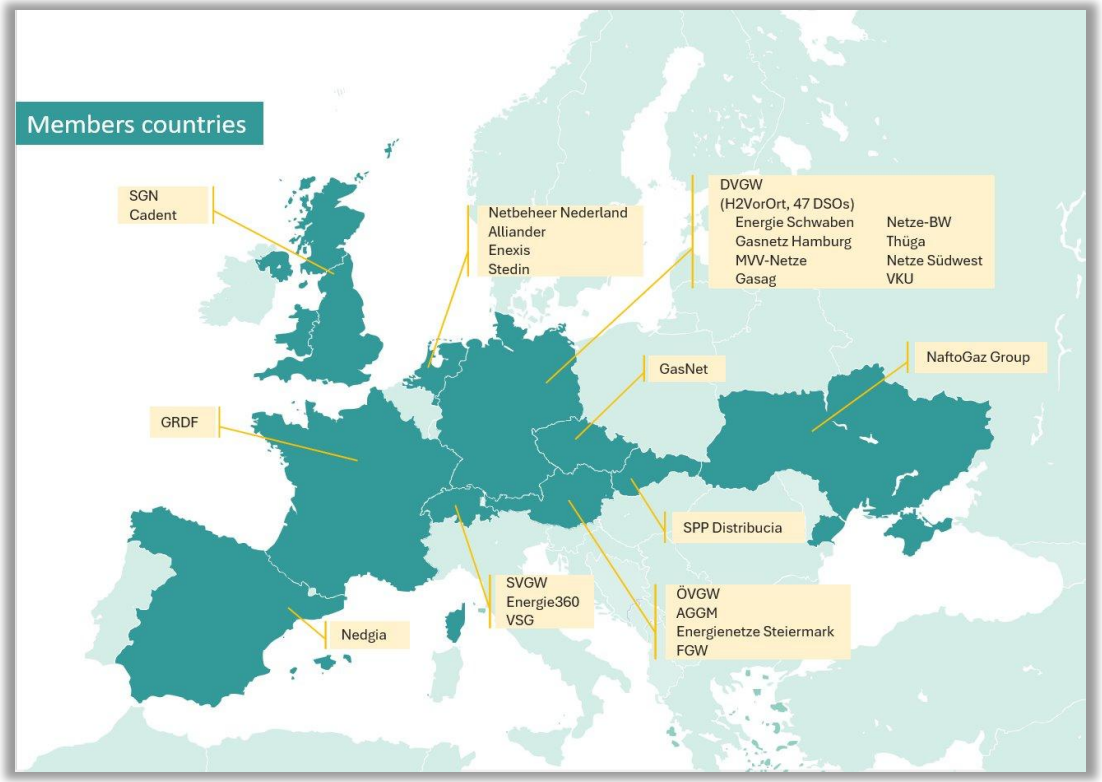
Ready4H2 - the European initiative focused on hydrogen distribution

The **Ready4H2** project consists of more than **70 European gas distribution operators (DSOs) and national organisations in 10 countries** in Europe working together to support a hydrogen market for future energy delivery.

We operate 1.6 M km distribution pipelines (including 55% of Europe's total).

We serve 90 M gas consumers in all sectors including power generation, industry, transportation and heating, which need hydrogen to decarbonise.

We are getting ready to deliver hydrogen, with over 50 projects underway.



Hydrogen Europe · ERIG · eurogas · GD4S · GEODE · GERG · marcogaz

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Collaboration is the essence of the project

Partners

Member associations

	Eurogas		GD4S	Marcogaz	ERIG	HE	GERG	GEODE
Common membership with Ready4H2	DVGW		Cadent	DVGW (Board)	DVGW (Pres)	DVGW		
	GRDF		GRDF (President)			GRDF	GRDF	
	Thüga (Chair Distrib'n)	Nedgia	Nedgia	SVGW (Vice Pres)	SVGW (Board)	Thüga	Nedgia	
	Enexis	Naftogaz	Enexis	ÖVGW	ÖVGW (Board)	AGGM	SGN (President , H2 Chair)	
	SPPD	E.ON	Alliander (Chair H2 WG)	SPPD (SK GasOil Asso)	VSG	E.ON		
	CGA/Gasnet (Chair Distr)	Netze BW	Stedin					

Ready4H2 activities have developed with the needs of the members

2020

Phase 1

Reports on gas networks getting ready to convert and the value of gas distribution in a decarbonised EU.

- Established community
- Established knowledge sharing platform
- Member survey

Phase 2

Roadmap for local gas distribution networks to transform to hydrogen

- Published 2 brochures on role of distribution grids
- Published Transformation Roadmap
- Policy Talk event in Brussels

Phase 3

Studies on the role of distribution grids in delivering hydrogen, cost of repurposing and DSO readiness

- Brussels-based organisation
- Structured knowledge sharing
- Confirmed role of DSOs
  - Geospatial study
  - Repurposed grid cost study
  - Transformation Roadmap survey
  - Project database
- Strategy workshop in Prague

Phase 4

2025

- Targeted advocacy
- Knowledge sharing
- Liaison with TSOs
- Deep dives into factors affecting the business case for conversion to hydrogen
- Gas Package implementation
- Policy Talk event in Brussels

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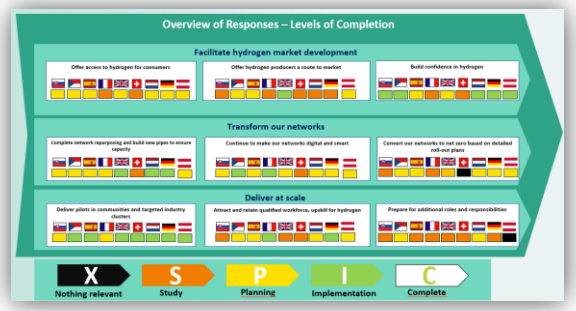
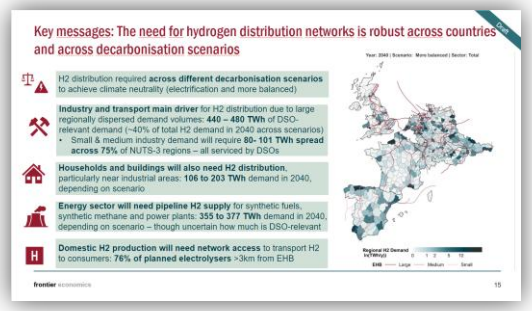
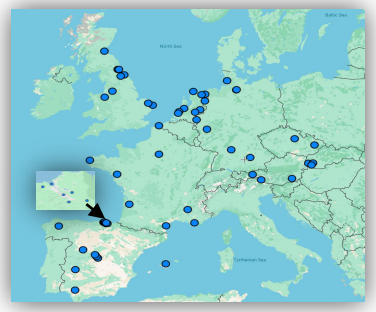
Outcomes of collaboration over last year - joint studies and strengthened advocacy



Transformation Survey (Frontier Economics)
Evaluate the progress of members along the Ready4H2 Transformation Roadmap and identify key successes and challenges.



Geospatial study
(Frontier Economics)
Map the role of DSOs in delivering hydrogen to HTDS across Europe.



Project database
Capture Ready4H2 member projects that test feasibility of DSOs delivering H2 at scale.

Cost study (DBI)
Estimate the cost to convert a gas distribution grid to hydrogen.

Advocacy
Sharing results and ongoing knowledge within and beyond membership.

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Ready4H2 Transformation Survey

The **Ready4H2 Transformation Roadmap** was developed in 2022 to assist gas DSOs understand better the steps to becoming "hydrogen ready", ie *able to accept hydrogen into the distribution system without operational or commercial constraints.*

Facilitate hydrogen market development

- Offer access to hydrogen for consumers
- Offer hydrogen producers a route to market
- Build confidence in hydrogen

Transform our networks

- Complete network repurposing & undertake targeted new-build to ensure capacity
- Continue to make our networks digital and smart
- Convert our networks to net zero based on detailed roll-out plans

Deliver at scale

- Deliver pilots in communities and targeted industry clusters
- Attract and retain qualified workforce, upskill for hydrogen
- Prepare for additional roles and responsibilities

www.ready4h2.com/reports

In 2024 a survey of members' progress along the Roadmap was conducted.

This year we are making deep dives into some of the areas to assist DSOs progress.

***All DSOs can use this Roadmap**

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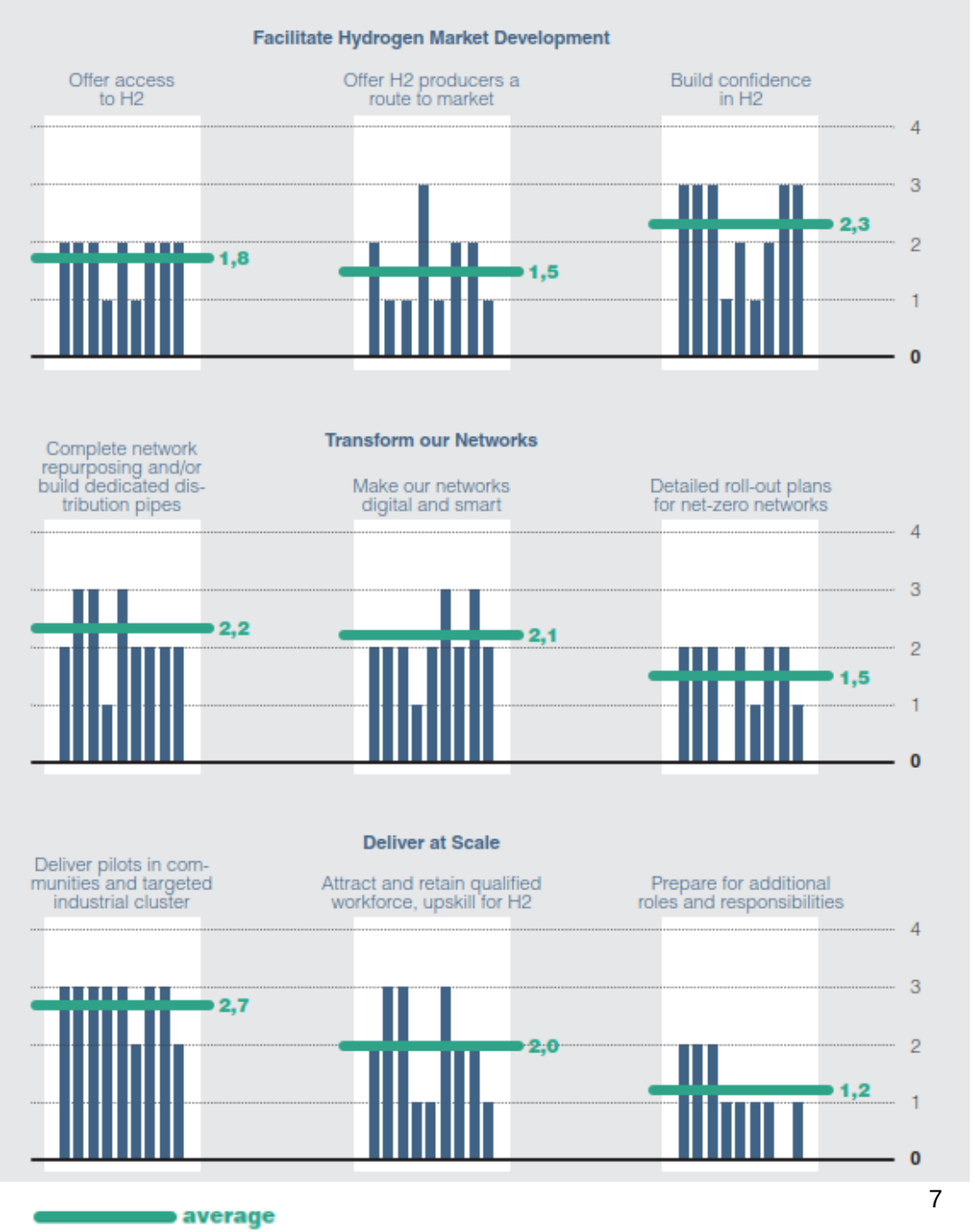
Transformation Roadmap Survey results

- **Ready4H2 members actively support the transition to hydrogen.**
- **Members' transformation is being advanced** through collaboration on Ready4H2 project.
- The prerequisites for gas DSO transformation to hydrogen are in place but **supporting regulatory and financial frameworks are needed** to enable the transformation.
- **Gas customers are unaware** of the full suite of decarbonisation options.

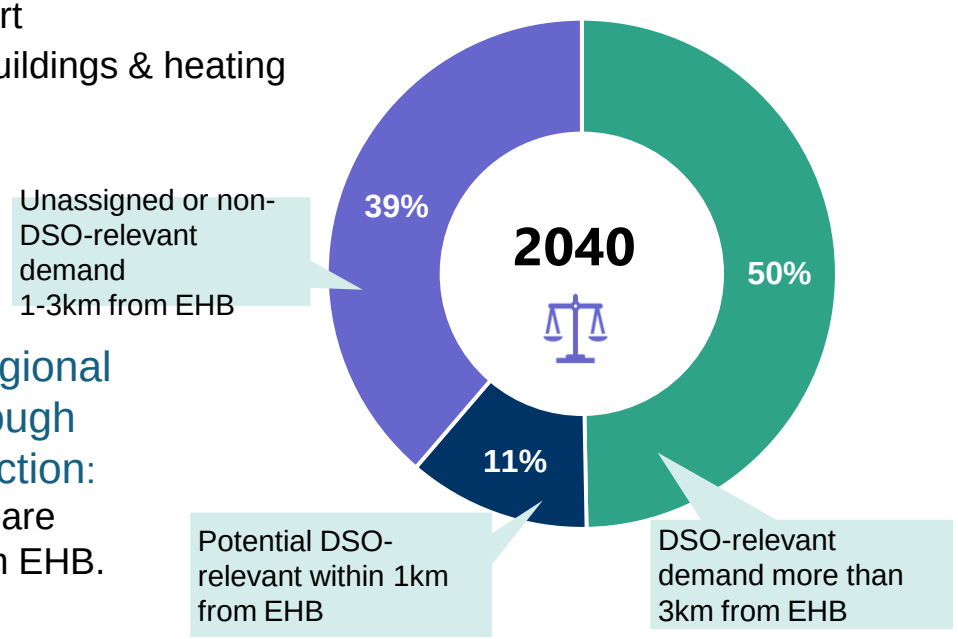


Geospatial study on role of DSOs to deliver hydrogen (Frontier Economics)

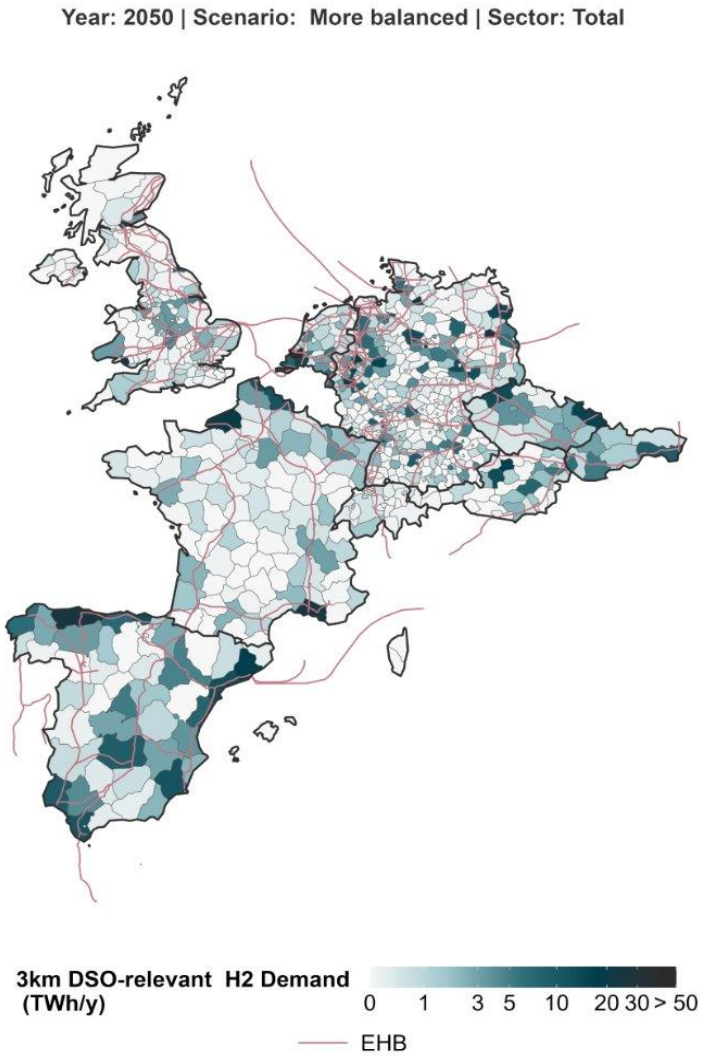
H2 supplied by DSOs essential to meet demand, driven by geographical dispersion of consumers

At least 44-50% of H2 demand (in the 2 scenarios) in the small & large industry, transport and household & buildings sectors will be supplied hydrogen by a distribution pipeline in 2040.

- 71% industry
- 32-46% transport
- 100-200 TWh buildings & heating



Enables faster regional development through remote H2 production:
>75% electrolysers are more than 3km from EHB.



Country	DSO-relevant demand (TWh/yr)
DE	318
UK	122
NL	107
ES	72
FR	50
AT	48
CZ	27
SK	19
CH	6

More Balanced scenario, volumes based on TYNDP Global Ambition (exceptions: France source GRDF, Spain source New Deal)

Disclaimer: This analysis is not intended to reflect and may deviate from network development plans. It is based on national hydrogen demand predicted by TYNDP and public regionalisation data, such that it may not reflect actual future regional hydrogen consumption or current natural gas consumption.

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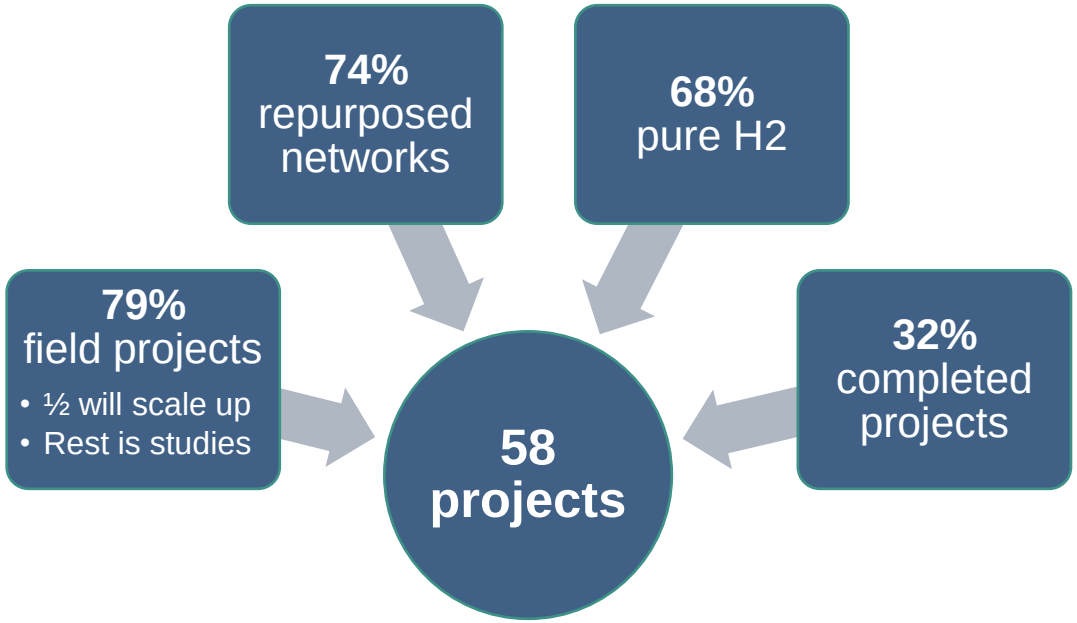
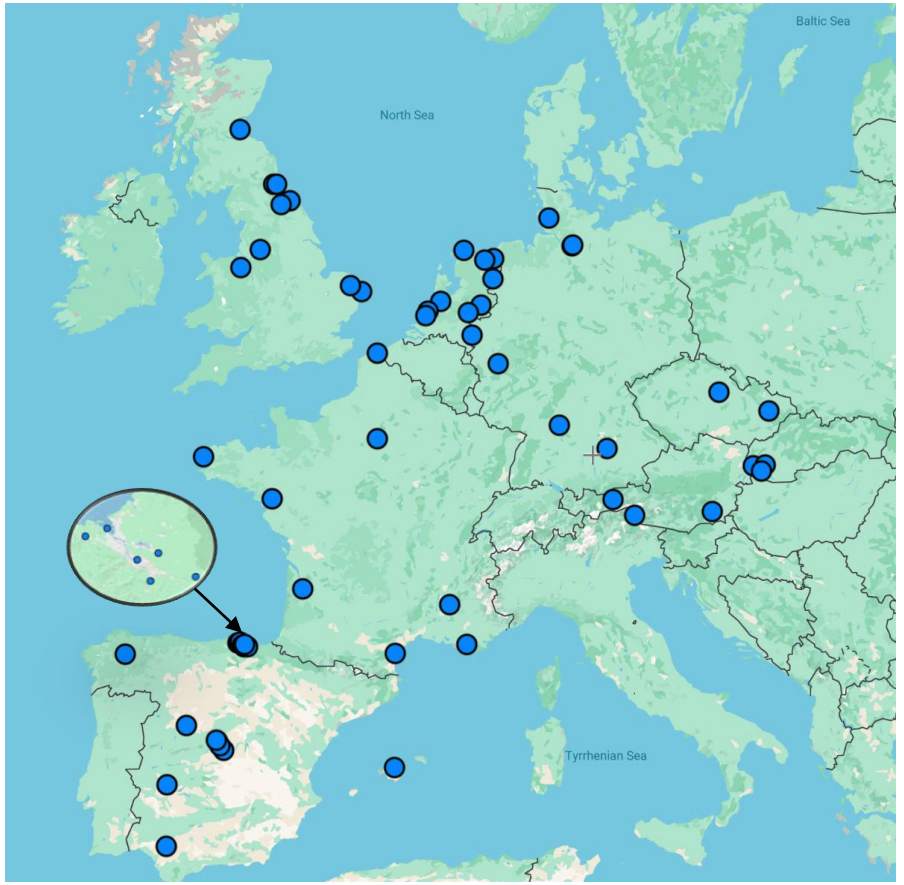
Ready4H2 project database - sharing lessons learned and demonstrating feasibility of full-scale hydrogen delivery via distribution grids





Hydrogen distribution projects in Ready4H2 countries

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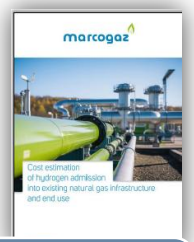
Cost study on repurposing gas grids for hydrogen (DBI)

Financially attractive and technically feasible

Objectives

- **Update distribution part of 2023 Marcogaz report** "*Cost estimation of hydrogen admission into existing gas infrastructure and end use*".
- **Produce updated & more robust data** to evaluate the role of gas distribution grids with



AT CH CZ DE ES FR NL SK UK

Results

- Wide range of costs between countries.
- Repurposing gas distribution grids in areas where biomethane is not forecast is a financially attractive option in macroecomic terms – in all countries assessed:
  - **Grid pipeline system 9% compared to new-build**
  - **Gas Pressure Reduction/Metering Station 50% compared to new-build**
- Total repurposing cost split **60%-40% grids and GPRMS** resp.

Conclusions

- **Technically feasible to repurpose gas distribution grids.**
- **Significant savings can be made** by repurposing the gas grids for hydrogen and expanding grids for all green gases.

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Conclusions

- The Ready4H2 consortium has **increased the visibility and common understanding** of the role of DSOs in the energy transition.
- Ready4H2 **collaboration has clarified** that the energy transition in Europe is not achievable without the use of gas distribution grids.
- **Ongoing collaboration is essential** in helping Europe's DSOs transform to hydrogen.

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Thank you