Europe’s Local Hydrogen Networks

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The Ready4H\textsubscript{2} alliance is united and committed to support net zero for Europe

The Ready4H\textsubscript{2} alliance unites 97 European gas distribution companies from 21 countries, all dedicated to deliver the hydrogen transformation in practice. We are convinced about the role hydrogen and other green gases will play in achieving net zero. Our joint goal is to become the leading European hydrogen distribution infrastructure.

**MEMBER COUNTRIES** (September 2022)

- Austria
- Belgium
- Bulgaria
- Czech Republic
- Denmark
- England
- France
- Germany
- Greece
- Ireland
- Israel
- Italy
- Poland
- Portugal
- Romania
- Slovakia
- Spain
- Sweden
- Switzerland
- The Netherlands
- Ukraine
Our networks are ready to adopt green molecules

Currently, **96% of the pipelines** of Ready4H2 members are from a material that **allows conversion to pure hydrogen**.

Biomethane is already used in gas grids to deliver climate friendly energy.

Local gas distribution networks are **flexible** and can distribute and manage **varying blends** of green molecules from different sources, depending on the local mix of supply and demand, substantially reducing fossil fuel use.
The gas distribution infrastructure is crucial to supply Europe with energy. Transforming this existing infrastructure helps transform its customers.

INDUSTRY & COMMERCE

Over 99%

of industrial and commercial premises connected to gas infrastructure are served by local gas networks.

HEATING HOMES

Up to 50%

of homes are heated with gas in our members’ countries. Ready4H2 Alliance members alone keep 64 Mio households warm and supply gas to 12 000 CHP plants for district heating systems.
Transformation of the local gas distribution networks will enable Europe to achieve net zero by 2045

Become climate-neutral by 2045

- Local gas networks aim to be the leading hydrogen distribution infrastructure to achieve net-zero in Europe:
  - Connecting producers and consumers to enable a big hydrogen market.
  - Transforming our networks to operate with 100% hydrogen.
  - Delivering at scale through pilots, major workforce training and taking on new roles and responsibilities.

- Local gas networks can also help to convert millions of homes to hydrogen faster than a full electrification retrofit, speeding up the transition.

Local gas networks are ready to enable a big hydrogen market, helping achieve net zero in 2045.
The transformation of the gas infrastructure enables significant advantages for reaching net zero

<table>
<thead>
<tr>
<th>TRANSFORM CHEAPER</th>
<th>ENSURE SECURITY OF SUPPLY</th>
<th>BALANCE FLUCTUATING POWER</th>
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</thead>
<tbody>
<tr>
<td>€41 billion annual savings</td>
<td>Up to 3 months</td>
<td>300% increase</td>
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<td>in Europe by 2050 when investing in combined gas and power infrastructure instead of a power dominant infrastructure</td>
<td>of increased heat demand even during the coldest winters can be reliably supplied by gas storage and local gas networks</td>
<td>In solar and wind capacity estimated by 2050. Resulting increase in power supply can be managed (Hydrogen storage facilities can equalize seasonal production patterns and absorb surplus renewables) by the gas infrastructure</td>
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Infrastructure and technology for hydrogen 2045

Societal drive to decarbonise: European and national net zero targets

We commit to action in 3 areas

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 and 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

Enablers that help local gas distribution networks to make the transition

Now
- We have various starting points:
  - Over 2500 DSOs in Europe - supplying a variety of customer groups
  - Different gas demand profiles in different countries
  - Varying future biomethane availability in different countries

But we share common values:
- Trustworthy and reliable supply, with very few interruptions
- Flexible hubs connecting distributed supply and demand
- Providing seasonal scale to deliver winter heating

2045
- One achievable goal:
  - Be the leading hydrogen distribution infrastructure to achieve net-zero across Europe

The Ready4H2 Roadmap
- Our key actions towards net zero in 2045
- Fit for purpose policy & regulatory framework
- Supply from H2 backbone, storage and local production
- Conversion of existing end users and new end users
- National hydrogen strategies and enabling regulation
- EU policy framework
- Ready4H2
The Ready4H2 hydrogen roadmap shows actions and milestones for European local gas distribution networks from today’s various starting points until the common 2045 net zero goal.

Although exact timings will vary between local gas networks and countries, there are three key stages:

**Early/mid 2020s**
Complete the main knowledge elements to prepare for conversion, including 100% hydrogen safety case and new billing arrangements.

**2020s**
100% hydrogen trials and larger pilots in buildings and industry, building confidence in hydrogen.

**Late 2020s and 2030s**
Roll out and deliver hydrogen, including blending with natural gas as a stepping stone, and blending with green methane in some areas as a net zero solution.
Benefits from a large-scale hydrogen transformation

**EU SECURITY OF SUPPLY**

No more fossil gas imports
From 2045 only renewable gas (including a substantial share of H2) will be distributed in the European gas grids

**JOB CREATION**

Nearly 1 million
direct and supply chain jobs in Europe by 2050, including in green hydrogen production, operations and maintenance, and the electricity needed for green hydrogen

**CO₂ EMISSION REDUCTION**

540 million tonnes
of annual CO2 equivalent abatement by 2050 if industry, buildings, transport and power across the EU switch to
Allowing local gas distribution networks to manage the transition to hydrogen is the fastest way to achieve climate neutrality

**European Coordination**
Local gas distribution networks need to have a role in the strategic planning of future European energy infrastructure through the creation of an independent European DSO entity for natural gas and hydrogen, ensuring a strong and fair representation.

**Continuity & Authority**
Local gas distribution networks should be able to use their existing organization and customer data to convert from operators of natural gas grids to hydrogen grids.

**Flexibility**
Local gas distribution networks need to be allowed to operate pure hydrogen grids, with the flexibility to distribute hydrogen based on supply, demand and network readiness.

**No further unbundling**
Proposed strict unbundling of hydrogen distribution networks will not help the energy transition – a unified organization needs to manage the conversion.
Phase 2 of ready4H₂ has started and has three key objectives:

1. Implementation of the ready4H₂ Roadmap across Europe
2. European knowledge sharing platform
3. Impactful communication