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Your Gas Network

Learnings from Europe 2

September 2026

Executive Summary

Gas continues to remain a critical part of Europe's energy mix. We see that European countries are committing to a long-term role for their gas infrastructure and green gases, to support a whole-system solution that provides affordable energy and energy security to homes and businesses.

For most comparable European countries to the UK, including France, Denmark, Spain, the Netherlands and Germany, the gas network and green gases (biomethane and hydrogen) form part of a holistic solution that meets all three pillars of the energy trilemma: security of supply, affordability and decarbonisation. Biomethane production is scaling rapidly, supported by coordinated policy frameworks across the European Commission, national governments, and regulators. At the same time, hydrogen is progressing from strategy into delivery. The Netherlands is injecting hydrogen into its emerging hydrogen network, Germany has accelerated plans for its own network and Portugal has begun blending hydrogen into its existing gas network.

Deployment of these green gases is enabling Europe to reduce emissions while reducing the cost and disruption associated with full electrification. Constraints on the electricity This is the second of our reports on Europe.network, and challenges to delivering upgrades to the network, are becoming an increasingly apparent barrier to growth. Consequently, hybrid heating systems, which combine gas boilers with a smaller heat pump, and green gases are gaining traction as pragmatic, whole-system solutions that reduce pressure on electricity grids while supporting decarbonisation. The Netherlands have deployed innovative measures to use their stock of hybrids to minimise the impact of peak load on electricity grid operations.

The learnings for the UK are clear: A balanced, whole-system approach across gas and electricity delivers greater energy and economic resilience, at lower cost and lower emissions. The UK could benefit from following this approach by taking steps to scale up biomethane and enable the first hydrogen infrastructure. It would also benefit from backing hybrid systems in support of system flexibility, particularly in regions facing electricity network constraints. Such actions are making energy systems in Europe more secure and reliable, making the best use of home-grown energy. And these actions would promote energy security in the UK too, with the benefits felt from not only home-grown energy but also a strong foundation for higher economic growth.

This is the second of our reports on Europe. In this report, we explore key topics around gas and the gas infrastructure, and learnings we can take from Europe:

- → Energy affordability and resilience
- → Biomethane
- → Hydrogen
- → Hybrid heating systems

What is happening on energy affordability and resilience?

Under the current cost of living crisis, UK policy makers have advocated for rapid electrification. This contrasts with some European countries who are using existing gas networks to avoid the need to build extensive new electricity infrastructure, maintaining affordability and delivering resilience. **France has reaffirmed its long-term commitment to maintaining the gas network as essential to security of supply.**[1] Meanwhile, the Danish network operator Evida has found that maintaining the gas networks to beyond 2050 is economically viable, particularly when aligned with growth in green gas production.[2]

This approach is based on the need to advance on each of affordability, security of supply, and decarbonisation – the energy trilemma. Electrification progresses across Europe (as in the UK). However, there is increasing recognition that a singular focus on electrification as the means to decarbonise increases system costs, increases pressure on grid capacity, and reduces consumer choice. As such, there is growing emphasis on maintaining optionality within the energy system, allowing consumers and industries to adopt solutions that best meet their needs. **European countries are increasingly adopting whole-system strategies that leverage both gas and electricity infrastructure** to deliver across all three elements of the trilemma.[3] This is particularly clear when driven by European operators who own both the gas and electricity networks (unlike the UK) and are therefore more technology agnostic on cost and resilience dimensions.

The recent heatwave across Europe highlights the value of retaining flexibility across the whole energy system. Higher temperatures increased electricity demand as air conditioning and cooling needs rose across Europe, while supply tightened at the same time.

Wind generation fell sharply during hot, still conditions, solar output faded into the evening peak, and parts of the nuclear fleet were constrained by high river temperatures and low flows. This pushed wholesale electricity prices materially higher, with Belgium reaching €1,000/MWh during the evening peak.[4]

Gas acted as the ultimate backstop during the heatwave. European gas generation rose 34% year-on-year in late June, with gas ramping from a midday low of 32.5GW to more than 80GW during evening peak windows as solar dropped away. Without this flexibility, electricity prices would likely have risen even further. This European example reinforces the importance of gas infrastructure as a resilience asset, particularly as air conditioning demand rises, and electricity systems face longer periods of low renewable output.[5]

Meanwhile, gas networks are also enabling economic growth, with some countries turning to gas as a reliable and scalable energy source. For example, Greece is expanding its Liquefied Natural Gas (LNG) infrastructure to power its economy,[6] and **Ireland is seeing data centres start to rely on gas to generate their own electricity,** overcoming long lead times for a grid connection.[7]

European policymakers are therefore starting to recognise that gas infrastructure is not a legacy asset, but a critical enabler of the transition to a low-carbon energy system. Green gases – biomethane and hydrogen – are a key enabler of this approach. By producing green gases domestically, Europe can reduce reliance on natural gas imports, enhance energy security, and lower emissions.

What is happening on biomethane?

Biomethane is a green gas produced through the anaerobic digestion of organic material such as food waste and agricultural residues. As it is chemically identical to natural gas, it can be transported through existing gas networks and used without requiring changes to consumer behaviour or appliances. Crucially, because it is made from biological sources, biomethane delivers very low or even net negative carbon emissions.

Across Europe, biomethane is seeing rapid growth. Europe now has 2,000 biomethane production sites,[8] in comparison to the UK's c.130, and this number continues to increase as governments, regulators, and industry work in close collaboration to scale deployment. The European approach is for strong alignment across policy and regulation, enabling long-term investment certainty. There is also extensive European collaboration to share best practices and unlock the sector's potential (Figure 1). As an example of this, the UK requires propane to be added to biomethane before it can be injected into the gas network, so that the biomethane's energy content can match that of the gas in the network already. European countries do not require this, to promote more biomethane injection, at minimal impact to the end user.

Country	Current biomethane production (TWh/year)	2030 biomethane production target (TWh/year)
1 UK	7	No target (2050 target 30-40 TWh/year)
2 France	13	50
3 Denmark	8	13
4 Italy	5	55
5 Netherlands	3	11
6 Finland	1	4
7 Spain	0.4	20
8 Czech Republic	0.2	5
9 Austria	0.1	7
10 Ireland	0.1	6
11 Hungary	<0.1	2
12 Romania	<0.1	4
13 Greece	<0.1	2

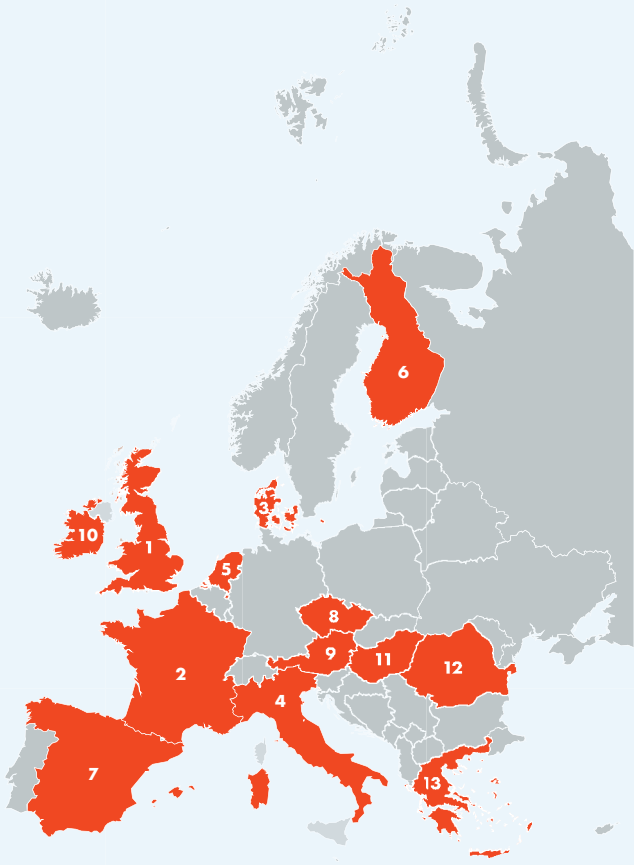


Figure 1: European countries are setting ambitious near-term targets for biomethane. The UK has no near-term biomethane target, and a long-term target that sits well below the proven potential.[9]

Beyond its role in decarbonising energy, biomethane is also delivering wider economic benefits. It supports circular economies by turning waste into energy, and provides additional income streams for farmers and rural communities. The European Biogas Association estimates that the European biomethane industry could support the creation of up to 1.8 million jobs by 2050.[10] It also offers a pathway to decarbonise that does not rely on significant behavioural change from consumers. This is a crucial consideration amidst the ongoing cost-of-living crisis.

Two countries are proving particularly successful at deploying biomethane. **Denmark has set an ambition to fully replace natural gas with biomethane by 2035,** demonstrating the potential for complete system transformation.[11] In France, the government has introduced streamlined permitting rights and funded the gas network to pre-emptively increase capacity for biomethane. Meanwhile, the gas network operator is proactively engaging with farmers and communities to create more support for biomethane. As a result, **France is adding two more biomethane sites a week and is aiming to grow production fourfold by 2030**.[3]

Italy also has huge ambition to scale, and is demonstrating rapid progress. GSE, the Italian energy agency, is actively involved in achieving this, supporting both the development of new plants and conversion of existing biogas plants that produce electricity to produce biomethane instead.[12] Six TWh of biomethane produced under the new incentive has recently sold.[13] With this, in a short space of time **Italy has doubled its current production capacity, and rocketed past the UK's own production capacity.**

The country is also actively involving farmers. Italy has pioneered the *Biogasdoneright* model which puts farmers at the forefront of the transition, enabling them to grow feedstocks for anaerobic digestion to boost income from their land, restore soil health and be more self-sufficient.[14]

Germany[15] and Ireland[16] are also strengthening their policy frameworks to scale biomethane. Both countries are moving towards mandating minimum shares of biomethane within their energy systems (a measure already adopted by France).

These countries are implementing effective policy and regulatory measures to create consistent, long-term demand signals that will unlock investment and lay the foundation for far more biomethane production in Europe. A summary of the policy measures adopted by these countries to solve biomethane-specific challenges is given below:

Problem facing biomethane	Policy / regulatory solutions adopted	Solution adopted by
It is currently more expensive than natural gas	Initially: Production subsidy / premium above gas prices	
	Increasingly: Production subsidies are being replaced by demand-side obligations to use biomethane instead of natural gas, to reduce the subsidy-burden on the taxpayer	
It should be recognised for being low-carbon	Emissions from use of gas are zero rated in the EU Emissions Trading Scheme if biomethane is used	
Gas networks don't always have capacity to accommodate more biomethane injection	Gas networks are permitted to recover some / most the cost of preparing the network for, and connecting to, a biomethane producer	
It has a lower energy content than natural gas	Ensure gas quality standards accept biomethane as-is, rather than requiring producers to add a fossil fuel such as propane	

Key: Ireland Denmark Germany France

Table 1: European countries are implementing effective policy and regulatory measures to promote more biomethane production.

What is happening on hydrogen?

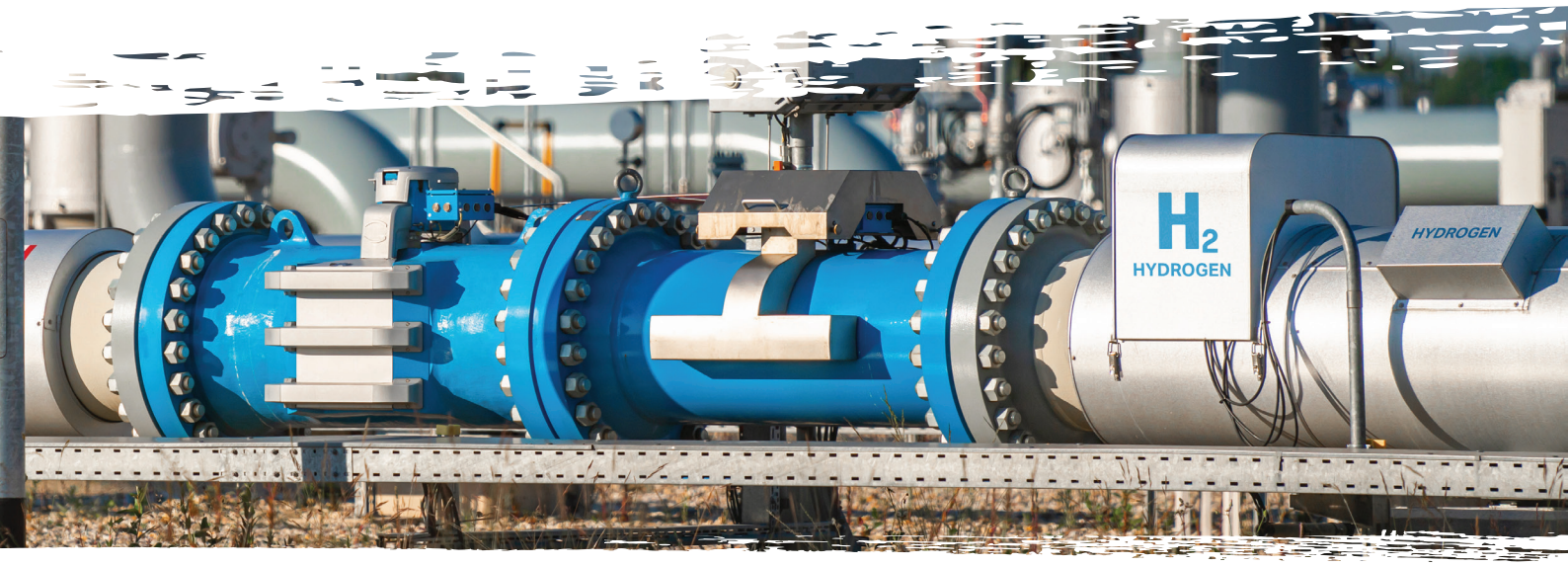
Hydrogen is a low-carbon gas that is ideally placed to decarbonise 'hard-to-abate' sectors including industry and processes needing high-temperatures. It is produced mainly through splitting natural gas into hydrogen and carbon dioxide, which must then be sequestered (blue hydrogen), or through the electrolysis of water with renewable electricity (green hydrogen). It can be blended into existing gas distribution networks (up to 20% by volume) or transported through purpose-built hydrogen networks.

The UK was an early leader in hydrogen development, but progress has slowed in recent years. Europe meanwhile is shifting from strategy to delivery. **Several countries are now actively building hydrogen infrastructure,** supported by clear policy frameworks and significant investment. It is expected that Europe will transport 1,350TWh of hydrogen through a 58,000km core network by 2040, of which approximately 60% of the network will come from repurposed natural gas pipelines.[17]

Germany is planning to build a 9,040km core network which should be completed by 2032, with 13 border crossing points for trade with European neighbours. It is expected to have a feed-in capacity of 101GW and a take-off capacity of 87GW. Already over 400km of the 1630km central hydrogen corridor has been completed and in operation since December 2025.[18]

Germany has accelerated its hydrogen plans through dedicated legislation,[19] while the **Netherlands has begun injecting hydrogen into its emerging hydrogen network.**[20] Portugal is piloting injecting hydrogen upstream of the distribution network and has already used blended hydrogen to supply homes and industries. The Third European Hydrogen Bank round selected nine projects for over €1bn, being the first round to loosen criteria around renewable electricity sourcing. Spain and Germany will also facilitate their own national support of hydrogen production, providing €440m and up to €1.3bn respectively.[21]

At a continental level, there is growing coordination around the development of a European hydrogen backbone, which will enable cross-border transport and support the creation of a competitive hydrogen market. The H2med project will create a green hydrogen corridor connecting the Iberian Peninsula (countries with abundant green hydrogen) to Northwest and Central Europe (major consumption centres), with pipelines from Portugal to Spain and from Spain to France (Figure 2).[22] Meanwhile the **Danish Hydrogen Backbone pipeline has opened for capacity bookings** and will eventually connect with the German demand market.[23] The coasts of Europe will provide clean energy to the centre of Europe.



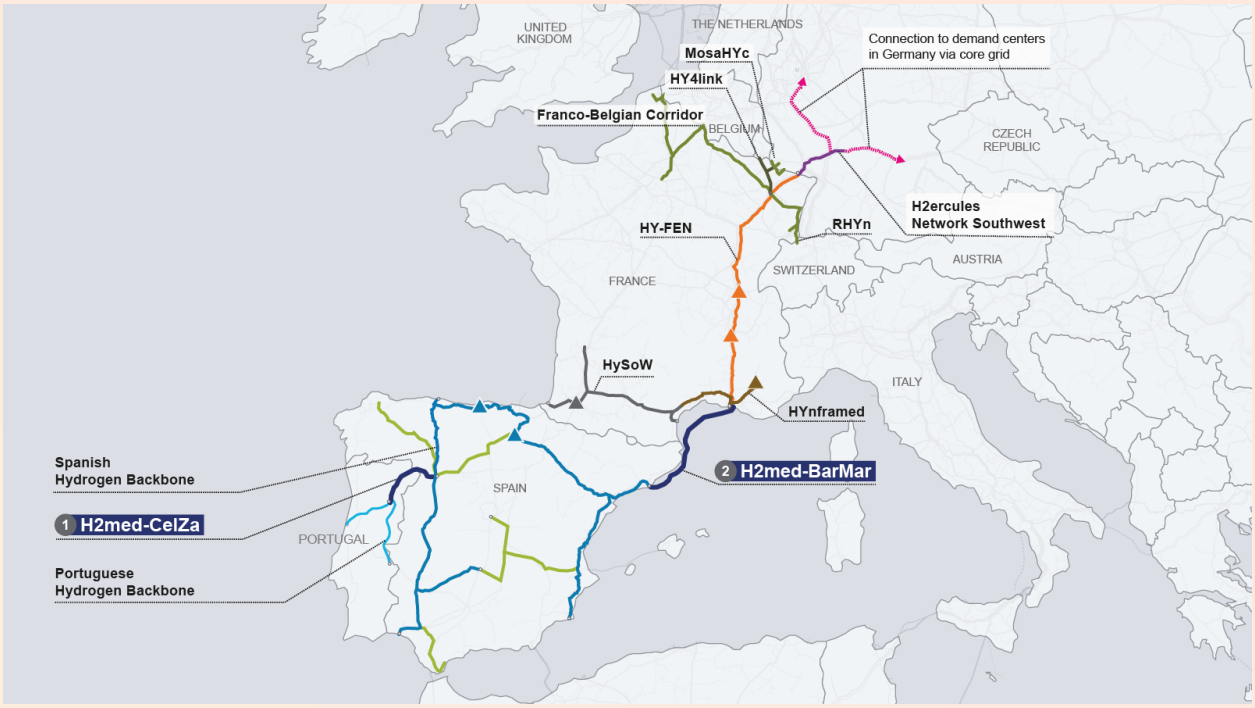


Figure 2: The H2med project will see countries collaborate on building a hydrogen network 'backbone' across Western Europe.[22]

These developments highlight a clear trend: that **hydrogen is transitioning from ambition to a present-day delivery priority.** Hydrogen production is a priority for energy systems to avoid curtailing wind production and to maintain resilience, and reliable hydrogen distribution is a priority for energy customers who need a low-carbon gas for their processes.

What is happening on hybrid heating systems?

Hybrid heating systems ('hybrids') combine electric heat pumps with gas boilers, offering a flexible approach to decarbonising heat. The heat pump provides most of the heating demand, while the gas boiler is used during peak periods or when electricity networks are constrained.

The Netherlands is leading the way in adopting hybrid solutions, The Government has such high ambition on hybrids that at one point it was even planning to make it mandatory to install hybrids when replacing a boiler.[24] The mandate ultimately did not come to pass, but despite this hybrids make up nearly half of heat pump sales in the Netherlands.[25] The Netherlands has taken this approach to limit the impact of electrifying heating on the country's electricity grid. Their grid is already highly constrained, and hybrids have a 40% lower impact on grid constraints at times of peak demand than fully electric heat pumps.[26] This immediately allows for more heat pumps to be installed despite the constraints on the grid, without long waits or additional costs. It also frees up grid capacity for new homes and industry, while reducing risks to energy security.

In Italy, several national incentive schemes support hybrids and other energy efficiency upgrades.[27] Tax deductions are provided by the Ecobonus scheme and the Conto Termico 2.0 offered direct grants for retrofits. Continuing in Conto Termico 3.0, performance-based grants are on offer for both electric-only and hybrid heat pumps. Grants are also determined by the climate zone of the building, reflecting that higher heating demand is expected in the Alps than in Apulia. Targeting the incentive to such metrics incentivises better installs, encourages electrification, and still rewards decarbonisation in any circumstance.

France offers a subsidy for hybrids so long as they meet set efficiency standards and heat demand targets.[28] **Germany offers a financial grant of up to 70% of the cost of the installation** with the highest grants available to low-income households replacing older functioning fossil fuel systems.[29] Likewise, **Poland offers grants for hybrids as parts of retrofits or for newbuilds;** and allows those who do not qualify for grants to obtain tax relief for costs associated with energy saving upgrades.[30]

As the electricity grid's capacity becomes increasingly constrained in many countries, hybrids are emerging as a practical and cost-effective low-carbon heating solution. The Netherlands is exploring how to stimulate and standardise the rollout of smart hybrids from 2029. By reducing peak electricity demand, this is alleviating the need for extensive and costly grid upgrades while still delivering significant emissions reductions. Analysis of smart-meter data from more than 6,000 Dutch homes found standalone heat pumps contribute higher coincident peak demand (2.8kW) than homes with hybrid heat pumps (1.7kW).[31] Consultancy Stonehaven has found that hybrids could save the UK £21bn on the capital costs associated with building an electricity system to meet peak demand.[26]

The growing adoption of hybrids reflects the value of whole-system thinking. Rather than focusing on a single technology, **countries are integrating gas and electricity solutions to optimise performance, reduce costs, and maintain reliability.** Network operators that are technology agnostic (i.e. they operate both gas and electricity networks), such as the Netherlands and Canada, appear particularly open to embracing whole-system solutions to reduce costs and optimise performance to best benefit consumers.

Learnings for the UK

There are four key recommendations for the UK government and regulators:

➔ Recognise biomethane as a low-carbon gas in the UK Emissions Trading Scheme (ETS), to ensure its emissions benefits are properly valued.

➔ Reform gas quality rules to support biomethane injection, including removing or reducing the requirement to add propane where this creates unnecessary cost and carbon impact.

➔ Accelerate hydrogen infrastructure delivery, by launching the Hydrogen Transport Business Model (HTBM) and by recovering lost time through additional legislation to accelerate delivery.

➔ Repurpose consumer support schemes, such as the Boiler Upgrade Scheme, to include hybrid heat pumps for lower-income households, colder regions, constrained areas and homes with new boiler systems.

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