



10% binding target for renewable gas and future-proof gas infrastructure crucial to achieve cost efficient decarbonisation

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- New study describes gas decarbonisation pathways from 2020 to 2050 and identifies the required investments to scale-up hydrogen and biomethane.
- Large scale production of biomethane and green and blue hydrogen – transported, stored and distributed through existing gas infrastructure – is important to achieve 55% emission reduction by 2030 in a smart combination with renewable electricity.
- Coupling the electricity, gas and heat sectors – by linking their markets and their respective infrastructure in a better-coordinated and integrated way – provides the greatest overall benefits for the European energy system.
- The European Green Deal can accelerate the transition by (i) mandating 10% gas supply from renewable sources by 2030, by (ii) enabling EU-wide trade and transport of biomethane and hydrogen, and by (iii) strengthening the EU ETS.

Today, the Gas for Climate consortium published the Gas Decarbonisation Pathway 2020-2050 study by Guidehouse (formerly called Navigant), analysing the transition towards the lowest cost climate neutral system by 2050. Such a fully integrated energy system was described in the Gas for Climate study published in 2019.

This new study highlights that additional EU climate and energy policies are needed to position Europe on the road to net zero by 2050. Its central and aspirational *Accelerated Decarbonisation Pathway* examines which investments and innovations have to take place in order to achieve a 2030 greenhouse gas reduction target of minus 55%, and climate neutrality by 2050. The European Green Deal can facilitate these developments, which will accelerate emission reductions, create sustainable EU jobs, and create first mover advantages for EU industry by:

1. Adapting the EU regulatory framework to make gas infrastructure future proof in an integrated energy system. It will be a key asset for the sustainable and cost-efficient decarbonisation of the European economy.
2. Stimulating the production of biomethane and hydrogen by a binding mandate for 10% gas from renewable sources by 2030.
3. Fostering cross-border trade and transport of hydrogen and biomethane and clarifying market rules for green and blue hydrogen including for hydrogen transport. A well-functioning Guarantee of Origin system will be crucial in this.
4. Incentivising demand for hydrogen and biomethane by strengthening and broadening the EU Emissions Trading System (ETS) combined with targeted and time-bound Contracts for Difference.

The CEOs of the twelve Gas for Climate members said: “In this time of unprecedented public health challenges and economic pressure, climate change mitigation and economic recovery must go hand in hand. In the aftermath of the current health crisis, the required EU and national stimulus packages should also be seen as a three-fold opportunity for Europe. Beyond creating economic growth, stimulus packages can drive forward the energy transition and create sustainable jobs”



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“Our new study offers a pathway towards cost-effective and resilient energy system integration. We support the transition to a fully renewable energy system in which biomethane and green hydrogen play a major role in a smart combination with renewable electricity and Europe’s well-developed existing infrastructure. We also recognise that blue hydrogen can accelerate decarbonisation efforts and highlight the ability of biomethane combined with CCS to create negative emissions.”

Download *Gas Decarbonisation Pathways 2020-2050* at: <https://www.gasforclimate2050.eu/publications>



Notes for Editors

Gas for Climate was initiated in 2017 to analyse and create awareness about the role of renewable and low carbon gas in the future energy system in full compliance with the Paris Agreement target to limit global temperature increase to well below 2 degrees Celsius. To this end, the entire economy has to become (net) zero carbon by mid-century.

The Gas for Climate group consists of ten leading European gas transport companies (Enagás, Energinet, Fluxys Belgium, Gasunie, GRTgaz, ONTRAS, OGE, Snam, Swedegas and Teréga) and two renewable gas industry associations (European Biogas Association and Consorzio Italiano Biogas).

The CEOs of the twelve members are; Piero Gattoni (Consorzio Italiano Biogas), Harm Grobrügge (European Biogas Association), Marcelino Oreja Arburúa (Enagás), Torben Brabo (Energinet), Pascal De Buck (Fluxys), Han Fennema (Gasunie), Thierry Trouvé (GRTgaz), Ralph Bahke (ONTRAS), Jörg Bergmann (Open Grid Europe), Marco Alverà (Snam), Hans Kreisel (Swedegas), Dominique Mockly (Teréga).

The Pathways study shows that already in the 2020s, biomethane production can be accelerated by increased investments in production facilities and by thousands of farmers implementing innovative concepts of sustainable agriculture to produce biogas through double cropping and by adopting organic fertilization and precision farming. Also, during the 2020s the first large blue hydrogen projects emerge while a solid business case for green hydrogen develops. Energy renovations of buildings ramp up fast, and hybrid heating solutions are actively propagated towards 100 million hybrid heat pumps by 2050. Heavy industry uses natural reinvestment cycles to convert facilities into net-zero emissions sites using hydrogen and biomethane alongside renewable electricity. Heavy road transport is decarbonised with a rapidly growing role for hydrogen fuel cell and electric trucks, and trucks running on bio-CNG and bio-LNG. Ocean shipping increasingly uses liquefied natural gas (LNG), paving the way for bio-LNG. Aviation starts taking up biokerosene and synthetic kerosene based on green hydrogen. The share of renewables in electricity generation increases from 35% in 2019 to 60%-70% by 2030. Gas-fired power plants will complement this, increasingly running on renewable gases. The future energy system will need a better integration of electricity, heat and low carbon gases and their respective infrastructures. In order to facilitate the transition existing gas grids will be made ready for renewable and low carbon gas, including the creation of a



European hydrogen backbone infrastructure largely based on retrofitted existing gas infrastructure. The proposed policy measures support and accelerate these developments.

The current study is a follow-up of a study published in 2019 by Navigant, now Guidehouse. That study analysed the 2050 net zero emissions EU energy system and concluded that using a smart combination of renewable electricity and renewable gas, transported stored and distributed through gas infrastructure, can deliver climate neutrality at the lowest societal cost. A scenario with an optimal quantity of biomethane and hydrogen achieves about €217bn in cost savings each year by 2050 across the EU compared to a 'minimal gas' scenario.

Ensuring a smart combination of renewable gas and electricity will be the optimal way to decarbonise the EU energy system, with the system becoming fully renewable. Renewable and low carbon gas, transported in existing grids, provides cost effective solutions for heating of buildings in case of cold spells, delivering high temperature heat and feedstocks in heavy industry, providing high density fuels in heavy transport, as well as enabling dispatchable power for periods with limited variable renewable electricity supply.

Renewable gas is all gas produced from renewable sources. This includes biomethane in the form of upgraded biogas produced by anaerobic digestion of agricultural biomass and organic wastes, biomethane produced from thermal gasification of woody residues, hydrogen produced from renewable electricity, and synthetic methane produced from renewable hydrogen.

For more information, please contact the Gas for Climate member organisations:

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About CIB - Consorzio Italiano Biogas

CIB aggregates and represents the agricultural biogas and biomethane value chain in Italy. Formed in March 2006, CIB provides information to its members to improve, optimize and innovate biogas production processes, fostering greener and efficient low carbon farming practices through its flagship initiative Biogasoneright@.

CIB brings together farmers that run biogas plants, industrial companies that supply equipment and technology, companies operating in the fields of agriculture, consultancy, mechanization and transports; research centers and agricultural associations that supply data and promote anaerobic digestion in agriculture. CIB is also a founding member of EBA -the European Biogas Association. For more information, go to www.consorziobiogas.it

About Enagás

Enagás is an international midstream gas company with infrastructures in Spain, Mexico, Chile, Peru, the United States, Greece, Italy and Albania. With a 50-year history, Enagás has more than 12,000 km of gas pipelines and 9 LNG terminals. It is certified as an independent TSO (Transmission System Operator) by the European Union and a listed company on the Spanish stock market, Ibex 35.

In Spain, Enagás has developed the key infrastructures for the Spanish Gas System, transforming it into an indicator for security and diversification of supply. The company is the main carrier of natural gas in Spain and also the Technical System Manager. Enagás is also a benchmark in sustainability, committed to the fight against climate change through initiatives to promote the use of renewable gases, such as biomethane and hydrogen, and through the development of actions for energy efficiency and sustainable mobility. For more information, go to www.enagas.es

About Energinet

Energinet was founded in 2004 as an independent public enterprise owned by the Danish Ministry of Climate, Energy and Utilities. Energinet owns, operate and develop the transmission systems for both electricity and natural gas in Denmark. Energinet's aim is to enable a cost-effective transition of the energy system to 100 % renewable energy while maintaining the high level of security of supply. For more information, go to www.energinet.dk.

About European Biogas Association

Founded in February 2009, EBA is the leading European association in the field of biogas and biomethane production covering the anaerobic digestion and gasification industries. Committed to the active promotion of the deployment of sustainable biogas and biomethane production and use throughout Europe, EBA has created a wide network of established national organisations, scientific institutes and companies. In 2018, the association counted more than 90 members from all over Europe and has established co-operation with biogas associations from outside Europe. For more information, go to european-biogas.eu

About Fluxys Belgium

Fluxys Belgium is the independent operator of both the natural gas transmission grid and gas storage infrastructure in Belgium. Through its wholly owned subsidiary Fluxys LNG, the company also operates the Zeebrugge liquefied natural gas (LNG) terminal. Fluxys Belgium is a subsidiary of Fluxys, the gas infrastructure group based in Belgium and active across Europe. We are committed to continue building a greener energy future for the generations to come. People, industry and societies all need energy to thrive and progress. Fluxys Belgium accommodates this need: we put energy in motion through our infrastructure. We move natural gas while paving the way to transport in our infrastructure hydrogen, biomethane or any other carbon-neutral energy carrier of the future. For more information, go to www.fluxys.com/belgium.



About Gasunie

Gasunie is a European energy infrastructure company. The company provides the transport of natural gas and green gas via its subsidiaries Gasunie Transport Services B.V. (GTS) in the Netherlands and Gasunie Deutschland in Germany. The company also offers other services in the energy infrastructure field, including hydrogen, heat, CCS, gas storage and LNG. Gasunie commits itself to accelerating the energy transition and to the realization of a climate neutral energy supply. For more information, go to www.gasunie.nl.

About GRTgaz

GRTgaz is a world expert in gas transmission networks and systems and a leading European gas transmission system operator. In France, GRTgaz owns and operates more than 35,000 km of buried pipes and 26 compression stations used to ship gas between suppliers and consumers. GRTgaz is committed to ensuring security of supply to consumers, connecting territories and communities with great care for the environment. GRTgaz delivers innovative and accessible solutions to accelerate and secure a successful energy transition by connecting the energies of tomorrow, driving the growth of renewables and new uses for gas while fostering synergy between electricity and gas systems. For more information, go to www.grtgaz.com

About ONTRAS

ONTRAS Gastransport GmbH is a German gas transmission system operator in the European gas transport system based in Leipzig. ONTRAS operates Germany's second-largest gas transmission system, with approximately 7,000 km of pipelines and about 450 interconnection points. The green side of ONTRAS has been at the heart of our company culture for many years. Our goal is to reach a 100% carbon-neutral gas supply by 2050. There are currently 22 biogas plants connected to the ONTRAS transmission network injecting 180 million cubic meters of biomethane every year – approximately 17% of the total German biomethane in the gas network. Furthermore, two power-to-gas facilities are currently connected to the ONTRAS network converting electricity generated by wind turbines into hydrogen which is then injected into our grid. We work together with a variety of partners to examine the possible application of hydrogen and explore the massive potential of our own infrastructure for the transport of renewable energy. For more information, go to www.ontras.com.

About OGE

With a gas transmission system spanning 12,000 kilometres, OGE, seated in Essen, is among Europe's leading transmission system operators. Two thirds of natural gas consumed in Germany flows through our pipeline system, comprising about 100 compressor units and about 1100 exit points. All over the country, our approximately 1,450 staff ensure safe, environmentally friendly and customer-oriented gas transmission. We also offer the technical and commercial services to go with it, and we provide commercial, technical and IT services for other companies on the basis of third-party arrangements. Moreover, we actively support the European gas market and work together with the European distribution network operators to create the prerequisites for transnational gas transportation and trading. For more information, go to <https://oge.net/en>.

About Snam

Snam is one of the world's leading energy infrastructure operators and one of the largest Italian listed companies in terms of market capitalization. The company's sustainable and technologically advanced network guarantees security of supply and promotes development in the areas in which it operates, while also contributing to promote the energy transition. Through its international subsidiaries, it operates in Albania (AGSCo), Austria (TAG, GCA), China (Snam Gas & Energy Services Beijing), France (Teréga), Greece (DESFA) and the United Kingdom (Interconnector UK). Snam is also one of the main shareholders of TAP (Trans Adriatic Pipeline), the final section of the Southern Energy Corridor. The company has the most extensive transmission network among European peers (over 41,000 km including international activities) and greatest natural gas storage capacity (ca. 20 billion cubic meters, including



international activities). It is also one of the main regasification operators in Europe, an activity it carries out through its Panigaglia terminal and its stakes in the Livorno (OLT) and Rovigo (Adriatic LNG) plants in Italy and in the Revithoussa (DESFA) plant in Greece, with a total pro rata regasification capacity of around 8.5 bcm per year. As part of its new €6.5 billion plan to 2023, Snam will invest €1.4 bn in the SnamTec (Tomorrow's Energy Company) project, which aims to reduce the environmental impact of its activities by promoting innovation and contribute to decarbonisation. Through this project, Snam aims to reduce methane emissions by 40% by 2025 and direct and indirect CO₂ equivalent emissions by the same amount by 2030 and to invest in new energy transition businesses. These include sustainable mobility (compressed – CNG and bio-CNG – and liquefied – LNG and bio-LNG – natural gas distributors, Small Scale LNG), infrastructure for biomethane from organic waste and agricultural and agro-industrial waste, and energy efficiency services tailored to apartment buildings, the public administration and industry. Promoting the use of renewable gases, Snam was also the first European company to test the introduction of hydrogen blended with natural gas in its network. For more information, go to www.snam.it

About Swedegas

Swedegas owns and operates the gas grid in Sweden, which extends from Dragör in Denmark to Stenungsund in Sweden. Swedegas transports energy to distributors and customers with direct links. The gas grid supplies natural gas to 33 municipal areas and several combined heat and power plants. Natural gas is also used in 34,000 households and in the transport sector. Swedegas is the hub of the gas market. We assume full responsibility for the long-term development of the gas grid and for ensuring the market has safe, effective and assured access to gas. For more information, go to www.swedegas.com.

About Teréga

Teréga has a network of more than 5,000 km of pipelines and two underground storage facilities, representing 16% and 24% of national capacity respectively. Teréga (Transport et Infrastructures Gaz France) is a major player in energy and has been located in South-West France for over 70 years. As part of its public-service obligations, Teréga transports natural gas to more than 400 delivery stations in the most secure, cost-effective, and reliable conditions. Teréga enjoys a strategic position in Europe, where it provides interconnections that guarantee security of supply. Teréga is aware of the vital role of natural gas in the energy transition. Teréga wants to help accelerate the green revolution through increasing involvement in biomethane, natural gas for vehicles, and Power to Gas. For more information, go to www2.terega.fr.

For questions about the study, please reach out to: Daan Peters – daan.peters@guidehouse.com

About Guidehouse

Guidehouse is a leading global provider of consulting services to the public and commercial markets with broad capabilities in management, technology, and risk consulting. We help clients address their toughest challenges with a focus on markets and clients facing transformational change, technology-driven innovation and significant regulatory pressure. Across a range of advisory, consulting, outsourcing, and technology/analytics services, we help clients create scalable, innovative solutions that prepare them for future growth and success. Headquartered in Washington DC, the company has more than 7,000 professionals in more than 50 locations. Guidehouse is led by seasoned professionals with proven and diverse expertise in traditional and emerging technologies, markets and agenda-setting issues driving national and global economies. For more information, please visit: www.guidehouse.com.