



NEW REPORT PROVIDES UNIQUE OVERVIEW ON LATEST DEVELOPMENTS IN RENEWABLE AND LOW-CARBON GASES. INDUSTRY IS READY FOR SCALE-UP.

16 December 2020

- New Gas for Climate report shows market overviews and trends related to the scale-up of biomethane and green and blue hydrogen in Europe.
- Biomethane is scaling up rapidly at decreasing costs. A wave of blue and green hydrogen projects is expected within the coming years.
- 15% growth in grid-transported biomethane in 2018 alone, with now 65% of biomethane produced from biowaste and bio-residues.

A new report published by the Gas for Climate consortium launched today. **This market state and trends report provides a unique review of current biomethane and green and blue hydrogen markets in Europe.** The report, developed by Guidehouse, describes key market trends and highlights leading project examples.

Biomethane production is scaling up rapidly, with an increased share of biowaste and bio-residues as feedstock, while production costs are starting to decrease, and grid injection levels are increasing. Many green and blue hydrogen projects are described in the report. These projects focus on scaling up hydrogen demand in new industrial sectors, exploring hydrogen use in heavy transport, or aim to decarbonise existing grey hydrogen demand. The report also highlights how existing gas infrastructure is increasingly being used to transport biomethane and is being prepared to transport hydrogen. Several showcase projects focus on enabling renewable and low-carbon gas transport; this is significant because it shows how gas infrastructure can accelerate the scale-up of hydrogen and biomethane.

All these developments provide a solid basis to achieve the EU 2030 decarbonisation target and show that industry is ready to scale up biomethane and hydrogen. Regulatory certainty would help to accelerate ongoing developments and spur investments. In January 2021, Gas for Climate will publish a policy paper which calls for a mandatory renewable gas target. Such a target would further boost the identified trends that are needed to stay on track for the decarbonisation of the European energy system.

Visit the interactive *Market State and Trends report* and download the full report here;
MSTreport.gasforclimate2050.eu





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 (OGE), Marco Alverà (Snam), Hans Kreisel (Swedegas), Dominique Mockly (Teréga).

The Market State and Trends report is the first in a series prepared by Navigant, now Guidehouse. The report places key trends related to biomethane, hydrogen and gas infrastructure in the light of required developments towards 2030 as identified in the Accelerated Decarbonisation pathway scenario which was published by Gas for Climate in April 2020.¹

The report shows that already now, key deployment trends for biomethane and green and blue hydrogen are starting the move in the right direction to achieve 2030 decarbonisation targets as analysed in the 2020 Gas for Climate pathways study. An increased deployment of biomethane and hydrogen will also create large numbers of jobs, as was analysed in a report by Gas for Climate in 2019².

On the biomethane supply side, production technologies are developing and being scaled up, and waste stream feedstocks are gaining momentum. Hydrogen technology developments are scaling up in size and early stage project developments are taking place. For both gases, acceleration is still required to increase cross-border trade and bring down production costs.

The report distinguishes between grey, green and blue hydrogen. Grey hydrogen is produced from natural gas and is being used at scale in EU industry today. Blue hydrogen adds carbon capture and storage to hydrogen production based on natural gas. Green hydrogen is being produced by splitting water into hydrogen and oxygen in an electrolyser, using renewable electricity and water as feedstock. Green hydrogen can also be produced by feeding biomethane in a steam methane reforming unit or an autothermal reforming unit.

Key demand sectors for biomethane and blue and green hydrogen developments in the 2020s are industry, transport and the built environment. Early investigations are ongoing with substitution of grey hydrogen in the refining and chemical industry, whilst in the iron and steel sector first demonstration projects and early deployment of new green hydrogen processes are being developed. In heavy road transport, bio-LNG/CNG and hydrogen uptake is increasing. In contrast, the shipping industry is only in an early stage of adoption. A renovation wave is starting in the built environment, but acceleration is required. Early adoption of hybrid heating technologies is enabling decarbonisation.

Biomethane grid injection levels are increasing and need to continue to accelerate to stay on the 2030 track. Early commercial deployment of centralised biogas upgrading and reverse flow installations are taking place to speed up biomethane uptake in the gas grid. Hydrogen infrastructure developments are

¹ Gas for Climate, Gas Decarbonisation Pathways 2020-2050 (2020), https://gasforclimate2050.eu/?smd_process_download=1&download_id=339

² Gas for Climate, Job creation by scaling up renewable gas in Europe (2019), https://gasforclimate2050.eu/?smd_process_download=1&download_id=275. This report concludes that scaling up biomethane and green hydrogen to 2900 TWh by 2050 can create 1.7 million to 2.4 million jobs by 2050, of which 600,000 to 850,000 direct jobs.



currently still less mature with early developments of dedicated hydrogen infrastructure and storage and pilots to increase blending levels.

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 or biomethane, 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 Biogasdoneright®. 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 a TSO (Transmission System Operator) with 50 years' experience in the development, operation and maintenance of energy infrastructures, operating in eight countries: Spain, the United States, Mexico, Chile, Peru, Albania, Greece and Italy. The company has more than 12,000 kilometres of gas pipelines, three strategic storage facilities and eight regasification plants. In Spain, it is the main natural gas transporter and the Technical Manager of the Gas System. Enagás is firmly committed to the decarbonisation process and therefore is bounded to the development of projects to promote renewable gases - green hydrogen and biomethane - sustainable mobility and energy efficiency, among other areas. The company is a world leader in its sector in the Dow Jones Sustainability Index (DJSI), according to the latest revision of this index. 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. Through its international subsidiaries, it also operates in Albania, Austria, China, France, Greece, India, UAE and UK. The company has the largest natural gas transmission network and storage capacity among European peers and is also one of the main operators in regasification. As part of a €7.4 billion plan to 2024, Snam invests to make its infrastructure hydrogen ready and develop new energy transition businesses such as sustainable mobility, biomethane and energy efficiency. Snam also aims to enable and promote the development of hydrogen to foster decarbonisation in the energy sector and industries. Snam's business model is based on sustainable growth, transparency, the promotion of talent and diversity and the social development of local areas through the initiatives of Fondazione Snam. For more information about the company, please visit www.snam.it.

About Swedegas

Swedegas, part of Nordion Energi, is specialized in gas infrastructure with the aim to drive the energy transition and becoming the first gas grid in Europe with 100% green gas. We operate the gas grid in Sweden, which extends from Dragör in Denmark to Stenungsund in Sweden and transports energy to distributors and customers with direct links. The gas grid supplies 33 municipal areas and several combined heat and power plants and is also used in more than 34,000 households and in the transport sector. Swedegas is the hub of the gas market and 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 or www.nordionenergi.se/en.

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 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 renewable gases 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 www.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.