July 2020

Newsletter

GAS FOR CLIMATE
A path to 2050

The first Gas for Climate newsletter, focusing on news around biomethane and hydrogen. Want to know more about Gas for Climate, visit our website!

Innovative biomethane planning framework in France – the zoning approach

read more

OGE head of strategy Daniel Muthmann on the European Hydrogen Backbone initiative

read more

Biogas done right gains momentum in Italy

A dominant part of Italian agricultural biogas plants is deploying the Biogas done right concept, as uncovered by a survey among 422 biogas producing farms in Italy, including a large number of members of the Italian Biogas Consortium (CIB).

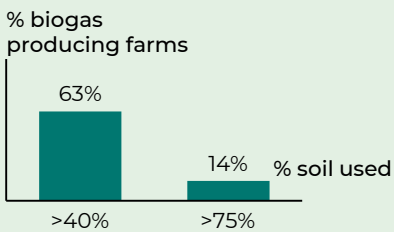
The concept of Biogas done right is built around the growth of a secondary crop that is used to produce biogas, without impacting yield of the primary crop (cash crop). This concept is aimed to overcome negative land change impact of the use of. energy and improve the soil use efficiency and farm sustainability.

72% of Italian biogas producing farms use the Biogas done right concept

In addition, the residue from biogas production, the digestate, is used as biofertilizer, improving soil fertility through its mineral nutrients and carbon content.

The survey results show double crop cultivation is a consolidated practice for Biogasdoneright farms. Of the sequential crop cultivations, over 70% are located in the Po Valley regions, which is where the concept was initially developed.

Linked to the growing potential of sustainably produced biomethane, Piero Gattoni, president of the CIB, adds that



Over half of the biogas producing farms apply sequential cropping on more than 40% of their soil

20 biomethane liquefaction plants are being developed on agricultural biogas plants, of which the first started operation in spring 2020. With a production capacity of 3 to 20 tons per day per single plant, these farms will be able contribute to the reduction of CO_2 emissions in heavy road vehicles across Italy.

More statistical information and project highlights on the role of renewable and low carbon gases in the European Union will be published this fall in a Market and Trend report by Gas for Climate.

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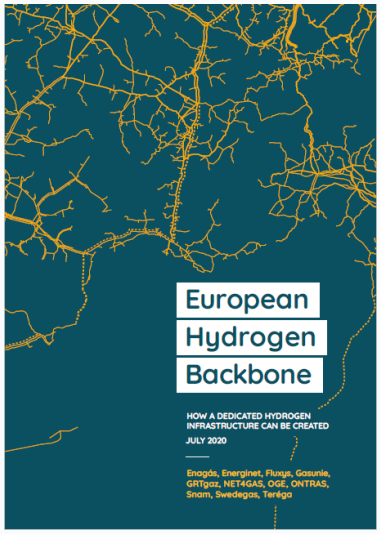
Interview with Daniel Muthmann - OGE

On July 17th 2020, the European Hydrogen Backbone (EHB) initiative has been launched by 11 European gas Transmission System Operators (TSOs): Enagás, Energinet, Fluxys Belgium, Gasunie, GRTgaz, NET4GAS, OGE, ONTRAS, Teréga, Snam and Swedegas. In our interview, Gas for Climate chairperson and OGE Head of Strategy Daniel Muthmann reflects on this important milestone.

As Chair of the Gas for Climate consortium, what achievements to date are you most proud of?
It is not just one thing. We have established Gas for Climate to actively contribute to showcase how gaseous energy can enable the energy transition. We are setting an example of a successful European cooperation in the energy business, cross border, with a joint ambition and understanding for our contribution to a future decarbonized energy system. I am really proud of the fact that green gases, biogas, hydrogen and synthetic methane, play an important role in the energy debate now in Brussels – and I think our work as "Gas for Climate" has significantly contributed to this.

Hydrogen is one of the key streams of the GfC decarbonization pathways towards 2050. How does this fit into the upcoming first outline of a European hydrogen backbone (EHB)?
Hydrogen is indeed one of the key decarbonization pathways. Hydrogen can play a vital role alongside renewable power for a full decarbonization of all energy sectors. The resulting demand for hydrogen will be substantial. The hydrogen economy will likely start with local or regional supplies and corresponding grids developing. But already in the next decade we will see more cross-border trade, interconnected grids and hydrogen transports across Europe. Our work on the EHB showcases that long-distance transport across Europe is possible at relatively low cost.



The European Hydrogen Backbone vision paper can be accessed through the websites of all participating TSOs.

"The future hydrogen market will be pan-European, just like natural gas today"

This will open-up new supply opportunities, e.g. producing hydrogen in sunny places like Spain and Italy or windy places like the North Sea all the way up to Scotland and transporting it to demand centers across Europe.

Why did OGE come together with other European gas TSOs to formulate a first outline of a EHB?
We share the same vision that the hydrogen market and corresponding transport will be a pan-European market in the future – just like the natural gas market is today. It will also trigger the future necessary imports into Europe. As experts in pipeline infrastructure we see it as our responsibility as TSOs to showcase that long-distance transport of hydrogen is tangible, technically possible and can be realized at relatively low cost. This is a crucial factor for the ongoing debate on Europe's energy future and one of the missing links in this debate so far. Because Europe has a vast hydrogen potential to be tapped. Once a EU hydrogen market emerges, imports from outside the EU will follow. Of course much more work is needed, but as always it is important to just start. Hydrogen is a promising and hot topic, but there seems to still be hesitation and indecisiveness in the market to kick-start large-scale developments.

What would be the role of a EHB and why would such a dedicated backbone be required in the European decarbonization strategy?
Establishing hydrogen as a new decarbonized energy carrier is a complex task. A multitude of stakeholders have to be taken into account and aligned. Many "chicken-and-egg"-situations have to be overcome. But the effort is justified because the objective is to come to a successful energy transition and fast reduction of CO_2-emissions. It is a matter of fact that infrastructure will be connecting new major sources in Europe and the arising demand areas.

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Interview with Daniel Muthmann - OGE

Transporting large quantities requires a dedicated H_2 transport system, many dimensions larger than anything that currently exists. This infrastructure can provide access to volumes, security of supply (also with storage tie-in) and be the basis for competition in the upcoming hydrogen market. Market participants want to rely on an open access infrastructure to be there when needed. It is wise and from societal cost consideration a necessity to consider the most efficient way to establish hydrogen infrastructure, in particular taking into account the re-purposing of existing gas infrastructure, an integral and cross border infrastructure approach. All of this is reflected in our EHB-idea.

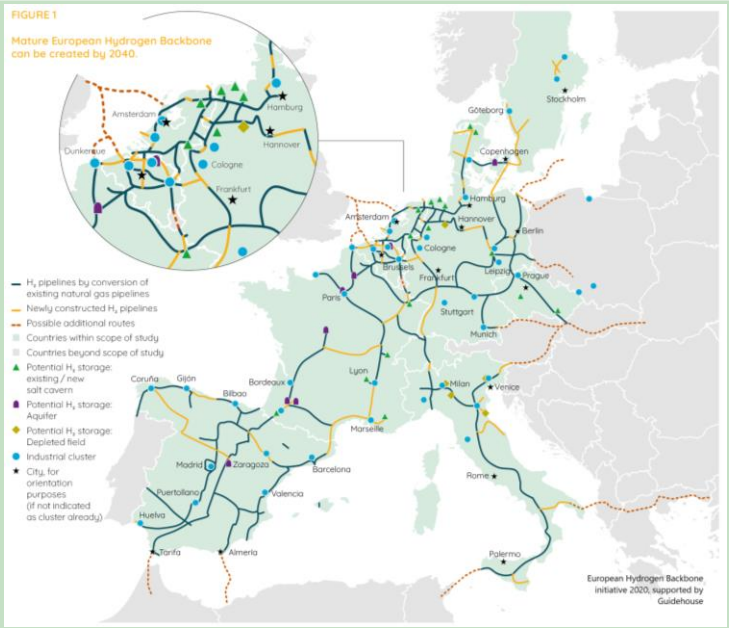
Do you see sufficient hydrogen supply and demand emerging in the market to support the need for such a dedicated hydrogen infrastructure?
Absolutely. Our Gas for Climate Study 2019 forecasts a hydrogen demand of 1710 TWh in 2050 and we currently see in the market that the hydrogen demand is rapidly increasing. Only small parts of that demand will be met locally. The largest part will be transported over mid- or long-distances. This will be possible with the EHB. Moreover, the EHB will allow to connect storage sites to the grid which will help to balance supply/demand fluctuations.

How affordable is a dedicated hydrogen backbone compared to using the existing natural gas grid for hydrogen transport?
It is possible to transport large volumes of energy through pipelines at comparatively low cost – no matter whether it is hydrogen or natural gas. Our initial estimates show that it is possible to transport hydrogen across Europe for a cost of an estimated 0.09 – 0.17 €/kg/1000km which is just a fraction of current hydrogen prices of above 5 €/kg. With the EHB it will be possible to produce hydrogen in the most economic places and transport it to the customers at low cost.

By when would such a hydrogen backbone be desirable in Europe? Why is it important to start taking steps to develop a EHB already today?
We currently see that first regional hydrogen grids are developing in Europe. In my view these regional grids will evolve in the coming decade and latest by 2040 we will have a connected hydrogen grid for long-distance transports. This may seem like a long-time in the future, but infrastructure projects have a relatively long lead-time, so we need to start planning now for pipelines that we want to have in place in 2030. Moreover, it is important to develop a joint long-term vision for the infrastructure to make sure that today's decisions point are in the right direction.

What would be the main barriers that still need to be overcome to start the development of a EHB and what steps would be required to overcome them?
We need a clear commitment from policy makers that hydrogen will play a role for the energy transition, ideally expressed in a hydrogen target. In addition, we need a clear and stable political framework that allows for large investments in the EHB. I am happy to see that the just released European Hydrogen Strategy points in the right direction. We will continue our close dialogue with policy makers to ensure it will be as effective as possible.

FIGURE 1
Mature European Hydrogen Backbone can be created by 2040.



Source Figure: Enagás, Energinet, Fluxys, Gasunie, GRTgaz, NET4GAS, OGE, ONTRAS, Snam, Swedegas, Teréga, 2020. European Hydrogen Backbone

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Innovative biomethane planning framework - the zoning approach

France shows a strong growth in biomethane production with a 20-fold capacity increase over the last 5 years. The 2020 multi-annual energy plan (PPE) of the French government sets an objective of between 14 and 22 TWh/year in 2028 compared to ~2.5 TWh/year today. To accommodate this growth in biomethane injection, adaptations of the French gas networks are required.

A regulatory framework is currently being established to allow for optimized planning of biomethane injection and gas network adaptations in France. Several regulatory changes have taken place throughout 2019 to ease the biomethane grid connection process and to set the "right to inject". The framework provides:

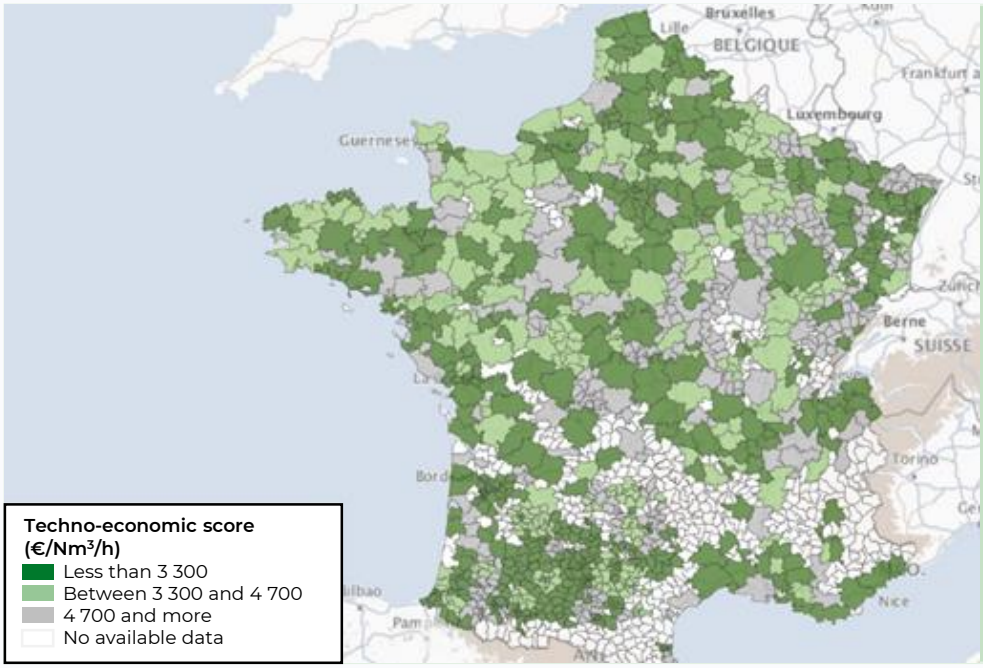
- regulatory, technical and financial structures for the biomethane injection sector in France with clear rules,
- a techno-economic optimisation for adaptation of the gas networks to control socialized costs, and
- a long-term and integrated planning view based on the full French biomethane potential.

The main objective of the framework is to have an integrated overview of the high-potential zones for biomethane injection through caps on socialized cost levels (see Figure). In an ongoing process, the framework identifies cost-efficient zones for gas networks adaptation in a common process between gas TSOs and DSOs, the French regulator and consultations with territorial stakeholders.

The French energy regulator (CRE) has tasked the network operators to develop a first techno-economic potential map for France, and a first version was published in March 2020. Mapping is targeted for ~500 zones regarding their biomethane production potential, their required costs for gas networks adaptation, and their identified best biomethane grid connection scheme. For each zone, CRE's approval is needed to validate the connection scheme and network adaptations. The recently published indicative map will be updated regularly to include the results of detailed studies led by operators and local players on the zones where biomethane projects materialize.

The French zoning approach could be an example for other countries to get a more complete picture of the quantities and costs for grid injected biomethane throughout the EU.

Further reading: CRE's Deliberation, https://www.cre.fr/Documents/Deliberations/Decision/mecanismes-encadrant-l-insertion-du-biomethane-dans-les-reseaux-de-gaz; Teréga biomethane connection offer: https://www2.terega.fr/nos-offres/biomethane.html; France biomethane open data: https://opendata.reseaux-energies.fr/; France gaz renouvelables: https://gazrenouvelables.fr/



Source Figure: Terega, 2020. Cartographie d'accès aux réseaux de gaz. https://www2.terega.fr/nos-offres/biomethane/acces-aux-reseaux-de-gaz.html

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