



Biomethane's role in decarbonising gas supply



‘Scaling up biomethane on the pathway to a net-zero future’
WBA Webinar, 13th October 2021

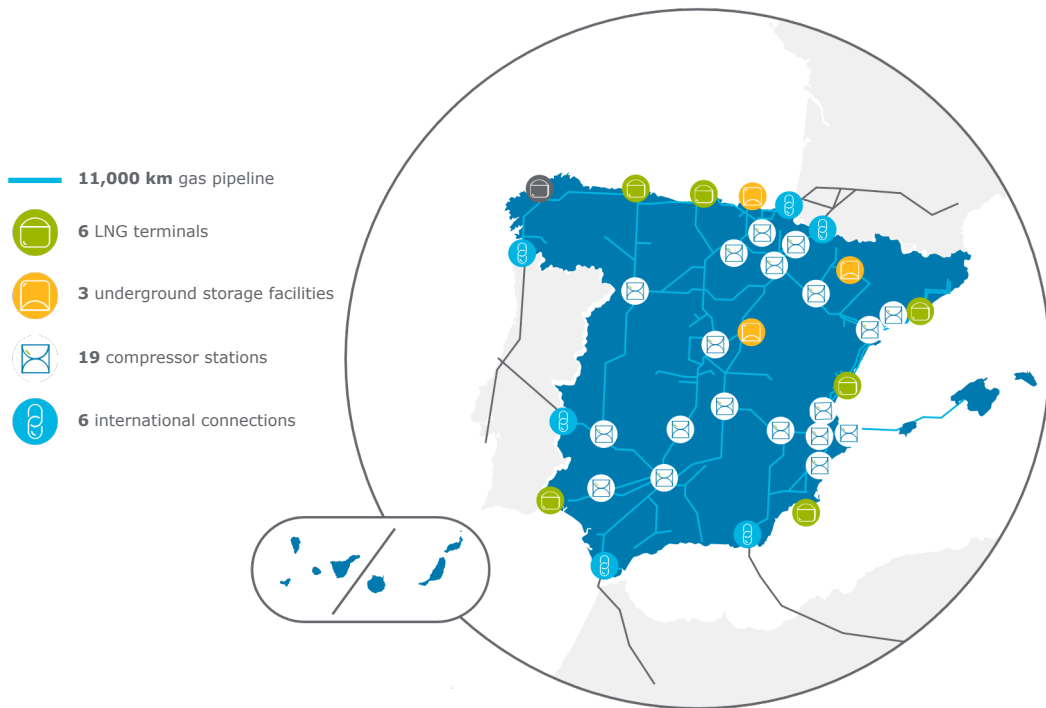
Overview



- 1. About Enagás**
- 2. Decarbonised gases needed to meet long term climate goals**
- 3. Biomethane: a solution for today and the long term**
- 4. Wide ranging efforts needed to scale up the biomethane industry**
- 5. Conclusions**

About Enagás

A midstream company at the forefront of the development of renewable gases



A leader in energy infrastructures

(transmission, storage, regasification) with over 50 years experience

- EU accredited **independent TSO**
- **Technical Manager** of Spain's gas system
- Operating in **8 countries**

Committed to decarbonisation:

- Commitment to **carbon neutrality by 2040**, >50 **energy efficiency** projects
- GHG emissions over 2014-20 reduced **63%**
- Driving the development of **>50 renewable gas projects** alongside numerous partners.
- Leader in **corporate sustainability**

Sustainability Award
Gold Class 2021

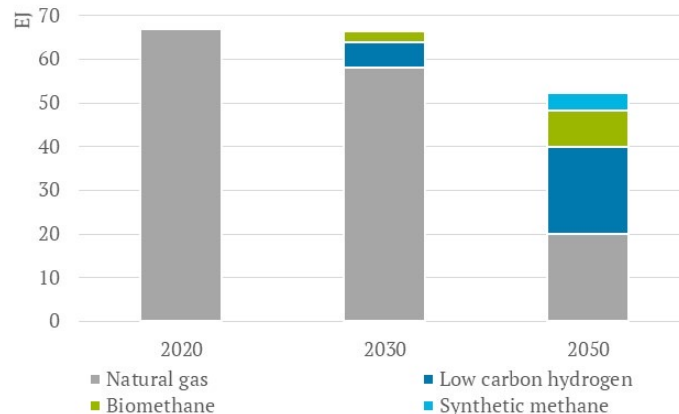
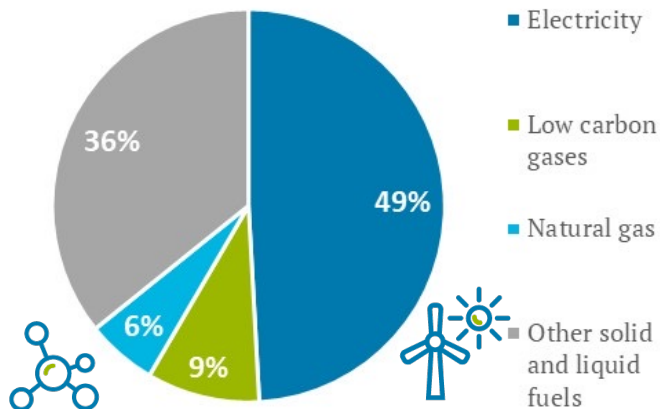
S&P Global

Member of
Dow Jones
Sustainability Indices
Powered by the S&P Global CSA



Decarbonised gases needed to meet long term climate goals

Energy Demand by Fuel 2050 (left) & Consumption of Gases (right) in the IEA NZE scenario



Source: data from IEA (2021), Net Zero by 2050 roadmap; Notes: energy demand refers to consumption in industry, transport, buildings, agriculture and other non-energy uses; NZE = Net Zero Emissions Scenario, EJ = Exajoule. Natural gas refers to both abated (with CCUS) and unabated consumption.

- To meet *Net Zero* direct electrification will grow, with consensus that its contribution in 2050 could be around half of demand (Spain 52%, EU 45-50%, World \approx 50%)*, leaving **a valuable role for low carbon gases** where electricity can't reach.
- Low carbon gas consumption will be across end uses** such as hard to electrify demand in **industry** and certain modes of **long haul transport**, as well as supporting the **resilience of the power sector** and **energy access** in developing economies.
- Even as natural gas consumption gradually declines, there's an important **long term role for infrastructures to transport and store low carbon** (e.g. abated natural gas & blue H₂) **and renewable gases** (e.g. biomethane and & H₂).
- There is **no golden bullet to reach net zero**, biomethane and low carbon H₂ are **complementary** and both will be needed.

Notes:*Spain according to MITECO (2020) *ELP 2050*, EU based on European Commission (2020) *Impact Assessment - Stepping up Europe's 2030 climate ambition*, world according to IEA (2021) *Net Zero by 2050 roadmap* and IRENA (2021) *World Energy Transitions Outlook: 1.5°C Pathway*.

Biomethane: a solution for today and the long term

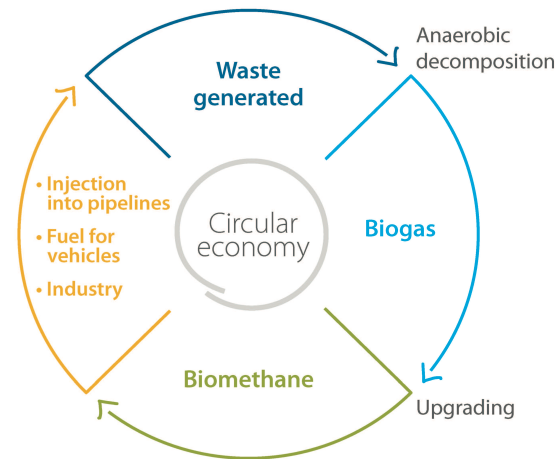
Producing biomethane from sustainable feedstock is technically mature and

delivers multiple benefits:

- ✓ Produces a **low carbon energy source**
- ✓ **Compatible** with existing gas pipelines and end user equipment
- ✓ Facilitates **enhanced waste management**
- ✓ Can **reduce methane emissions** from feedstock decomposition
- ✓ Supporting **rural development** and a just energy transition
- ✓ Provides **co-products** which can be valorised (digestate and CO₂)

However, many of these wider societal benefits are **either difficult to or not monetized** by producers, presenting a project development challenge.

Therefore, growing the industry needs **effective policies and market design**.



Enagás is **supporting the development of the biomethane industry** with investment in a portfolio of **>20 projects** (both biogas production & upgrading and upgrading only) with project partners, representing **€362m of investment**. A key focus of project development is the proximity of biomass **waste and residues** to **gas pipeline infrastructures** that connect **sustainable feedstocks and energy demand**. We are also active in supporting biomethane R&D, startup companies and projects facilitating consumption in new markets (e.g. through the development of CNG/LNG fuelling infrastructures for sustainable mobility and marine bunkering).

Wide ranging efforts needed to scale up the biomethane industry

Policy support A complete **package of measures** is needed to establish a national biomethane industry. Areas for consideration include:

- Measures to **boost sustainable feedstock supply**
- Financial **de-risking measures** to facilitate investment in production
- Setting renewable gas **targets or quotas** e.g. for grid injection
- Supply/demand side policies to **support cost competitiveness**
- Technology neutral policies based on **lifecycle GHG emissions**

Technical considerations

Anaerobic Digestion is technically mature, but there are further opportunities for biomethane **R&D** e.g. biomass gasification.

In addition, there are technical considerations associated with the **optimization of gas networks** for biomethane e.g. facilitating connections, shared upgrading infrastructure between producers, reverse flow in high injection/low demand areas.

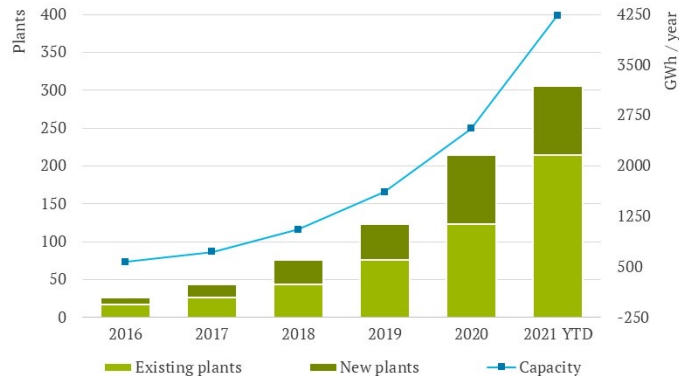
Scaling up demand

A system of **Guarantees of Origin** to balance biomethane consumed with volumes injected in gas networks is needed, as is establishing the **necessary quality standards and specifications** to ensure end user confidence e.g. EN 16723.

Market opportunities include replacing a share of natural gas in its **existing uses**, but also growing new **niche applications** e.g. Bio-LNG in heavy duty road and marine transport, hybrid heat pumps etc.

A comprehensive package of support measures saw **France's biomethane capacity increase 7 fold since 2016**. Spain is consulting on its biogas roadmap, which outlines **over 40 measures with the aim of quadrupling supply by 2030**.

Biomethane development in France



Source: Open Data Réseaux Énergies (ODRÉ), data up to 09/21

Conclusions

- Enagás is at the forefront of the development of renewable gases, with biomethane and low carbon hydrogen key elements of our future business.
- Decarbonisation of the energy system means a key role for renewable gases, as well as the infrastructures to transport and store them, much of which is already available.
- Biomethane production represents a circular economy solution which can deliver a low carbon fuel and a wide range of associated benefits for society and the environment.
- Scaling up biomethane needs effective policies to unlock sustainable feedstocks, stimulate investment in production and ensure competitiveness with competing fuels.
- Upgrading to biomethane and pipeline injection offers wider market access for biogas e.g. by decoupling the need for consumers to be located near feedstock supply.

Thank
you

