Biomethane Vision Document:

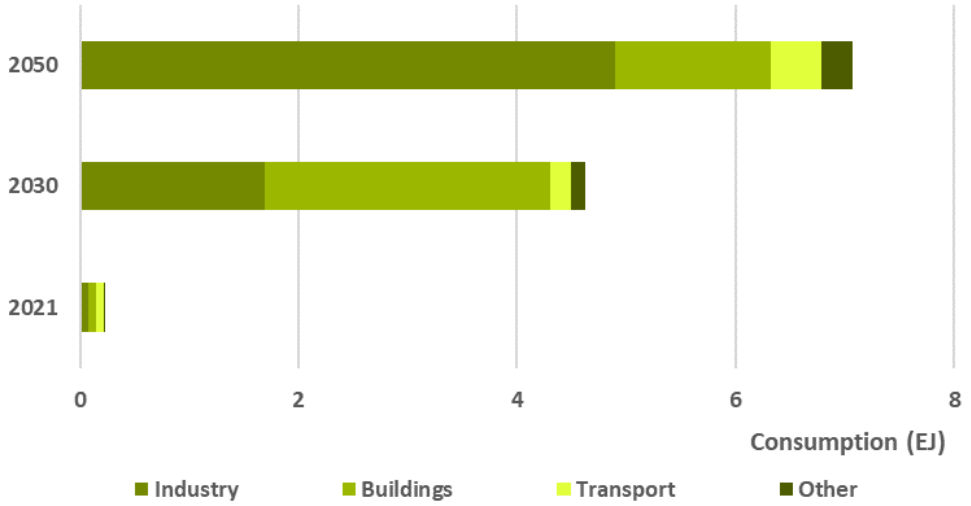
A 5-point plan to scale up biomethane globally

World Bioenergy Association Webinar, 14/03/2023

1. The conditions are coming together to drive a rapid scale up of biomethane

- **Increased climate ambition:** "Net Zero" commitments cover ≈85% of global energy related CO_2 emissions, requiring deeper decarbonisation across all sectors and the deployment of multiple technology solutions.
- **A "low hanging fruit" solution:** Biomethane is technically mature, can be cost competitive, widely applicable and offers additional social & environmental benefits.
- **European energy security drivers:** REPowerEU´s 35 bcm biomethane target is one solution to facilitate the phase out of Russian natural gas imports and reduces the EU´s growing exposure to the global LNG market.

Global biomethane Consumption, "Net Zero by 2050" scenario



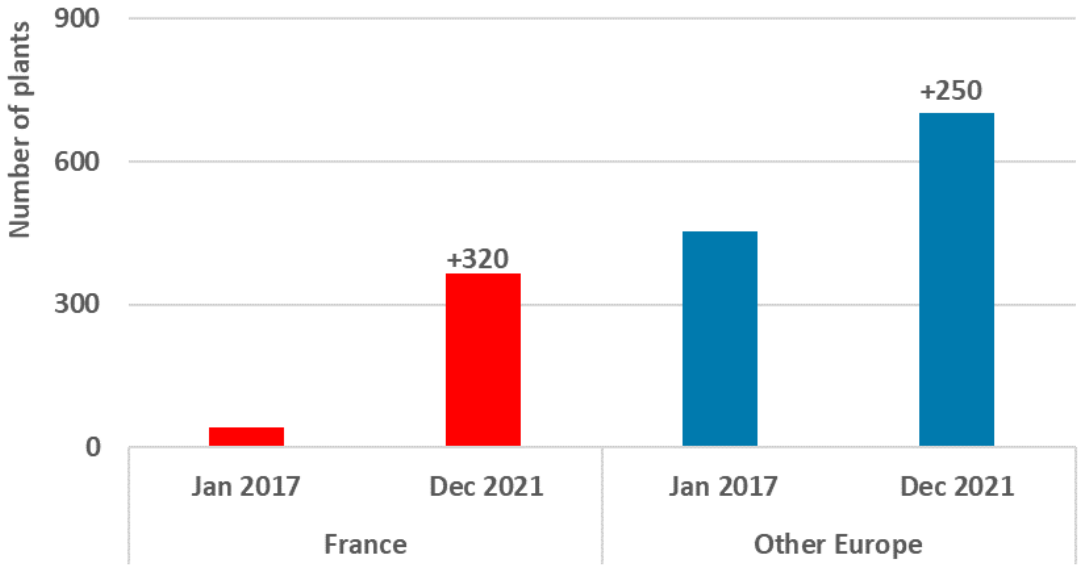
Source: adapted from IEA (2022), World Energy Outlook; EJ = exajoules

- **Given these drivers a significant scale up in demand is expected**: Biomethane consumption grows >30 times between 2021 and 2050 in the IEA´s "Net Zero by 2050" scenario, with a similar expansion in BP´s Energy Outlook.

2. The Biomethane Vision Document

- **Enabling biomethane´s potential requires a holistic approach across the whole value chain.** No one policy is sufficient, national (or regional) strategies are needed to bring together multiple actions to boost deployment.
- **With a comprehensive package of measures, rapid growth can be achieved.** Ambitious targets, production support, shared network connection costs etc., drove a doubling of biomethane plants in France in just two years (>500 by 12/2022). But too few similar cases in Europe and beyond.
- **The WBA´s ´Vision Document´ covers five key areas relevant to biomethane strategies.** Feedstocks, technology optimisation, gas networks, policies and regulation.
- **Based on extensive stakeholder input,** from >40 expert biomethane stakeholders.

Growth in biomethane plants in Europe, 2017-21



Sources: adapted from EBA (2022) EBA Statistical Report 2022; EBA/GIE (2018) European Biomethane Map; ODRE (2023).

3. Key recommendations : Feedstock, Technology and Gas Networks

Increasing access to sustainable feedstocks

- **Establish best practice waste management frameworks which ensure the segregation and valorisation of sustainable waste and residue feedstocks for biomethane.**
  - 1) Resource assessments 2) Put a cost on landfilling and incineration 3) Organic waste segregation.

Driving technology optimisation

- **Comprehensive action to reduce methane leakage to the greatest extent possible, comprising a. measurement, reporting and verification practices, and b. best available technology**
  - 1) Vigilant digestate storage/handling 2) Detection and repairs to halt fugitive emissions.

Injection into gas network infrastructures

- **The introduction of GoO certificate systems as a prerequisite for tracking and balancing biomethane injected into gas networks and subsequently consumed as well as enabling trade.**
  - 1) Target setting 2) Establish the EU Union database 3) Clear network cost sharing methodology.

4. Key recommendations : Policies and Regulation

Establishing a supportive policy landscape for supply and demand

- **Inclusion of a biomethane supply support mechanism and demand-pull policy levers within a wider policy framework aimed at stimulating biomethane market development.**
  - 1) Production support 2) Sectoral demand side quotas 3) Transport decarbonisation policies.

Regulatory considerations

- **Coordinated actions to reduce the time needed to obtain the necessary permitting approvals for biomethane plants to within predefined timescales.**
  - 1) Increased resources & competencies 2) digitalisation 3) streamlining (one-stop shops/go to areas)

BIOMETHANE VISION DOCUMENT

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INTRODUCTION

There has never been greater interest in biomethane than at the current time. Increased climate ambition, with net zero emissions commitments covering around 85% of global GHG emissions (IEA, 2022c), requires that all viable emissions reduction technologies are harnessed.

A significant scale up in biomethane production represents a "low hanging fruit" solution in this context. Its based on mature technology, provides a renewable fuel that is compatible with existing uses of natural gas in sectors where emissions are hard to abate, and is suitable to replace petroleum products in long haul transport. Wider benefits in aiding waste management, supporting rural development, offering an additional revenue stream for the agricultural sector and the production of co-products, further support expansion of the sector.

For these reasons long term outlooks for a decarbonised energy system project a strong increase in biomethane. For example, by 2050 global consumption grows 40-fold in the IEA's 'Net Zero by 2050' scenario (IEA, 2021).

In Europe, given the wide-ranging impacts arising from Russia's invasion of Ukraine, the importance of scaling up biomethane is further underlined by the energy security benefits it can offer as a domestically produced alternative to partially substitute natural gas imports from Russia. The EU's target of producing 35 billion cubic meters (bcm) of biomethane by 2030, represents 9% of its natural gas demand in 2021, a share which will be higher in 2030 given EU efforts to diversify energy supplies in line with the REPowerEU plan.

This publication focuses on biomethane . The WBA recognises that there are various beneficial end use applications for biogas electricity, heat and cogeneration; as well as small-scale biogas digesters to enhance energy access in developing countries. However, these are not covered within this document.

In addition, the outlook of the document and its recommendations are intended to be applicable globally. Although the basis for the recommendations often draws from the most mature markets, currently found in Europe and North America.

Figure: Biogas production technology (Source: Pixabay)

Current status: Promising biomethane markets are emerging in various European countries, with over 1000 plants operational in the Europe . Globally, several other bright spots for market development are evident, such as consumption in heavy duty transport in the United States and an emerging market in Brazil underpinned by vast feedstock potential and new policy incentives.

Nevertheless, biomethane output was around 5 billion cubic metres (bcm) globally in 2020 (Cedigaz, 2022) utilising only a small fraction of the feedstock available for production. Given current global natural gas consumption of over 4000 bcm, where favourable policies and market conditions are established there will be numerous ready-made opportunities to substitute biomethane into existing natural gas uses and grow demand.

Scaling up biomethane: Harnessing the full potential of biomethane requires the creation of holistic policy frameworks. No one policy will be sufficient to fully realise available feedstock potential and scale up biomethane markets to the extent needed in a low carbon energy system.

Figure: Global consumption of biomethane in a Net Zero outlook. Source: IEA (2021)
Notes: EJ = exajoules.

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