

## RECOMMENDATIONS

# Electricity Market Design Revision

The European Biogas Association (EBA) welcomes the European Commission's proposal to reform the EU's Electricity Market Design and applauds its determination to accelerate the green transition of the power sector while aiming at reducing consumers exposure to prices volatility.

The proposed measures incentivising clean flexible solutions into the system, such as demand response and storage are timely and welcome. The proposal, however, fails to focus on long-term flexibility solutions while considering only the short-term perspective. For this reason, the text should be improved to ensure system resilience and the fundamental role that easy to store renewable sources such as biogas and biomethane can play to this end.

Renewables are fast-growing in the electricity sector, however, in the aftermath of multiple economic shocks' recovery (COVID-19 pandemic and energy crises), the GHG emission intensity of the EU electricity sector worsened by 20%. In 2021, almost half (41.9 %) of the net EU electricity came from combustible fuels, such as natural gas, oil and coal. In the setting of high gas costs, renewable production increased by a mere 1% in 2021, while the energy generated from coal grew by 20%. This demonstrates the need to improve resilience of the EU energy system, investing in renewable flexibility solutions.

The share of variable renewable sources, despite the short term set back, is rapidly growing and the electrification of end uses including heating is creating new consumption patterns. For these reasons, flexibility in the electricity market is high in demand.

Thanks to their dispatchability and versatility, biogas and biomethane offer reliable and renewable flexibility capacity, either by dynamic electricity production or by its direct use in hybrid system, both contributing to accommodate the fluctuations in electricity demand and promoting grid stability and affordable seasonal energy storage.

**To capitalize on biogas and biomethane's essential role as long-term flexibility solutions for ensuring the energy system resilience and decarbonization, it is of paramount importance that the Electricity Market Design revision:**

- **Ensures coherence with policy landscape:** To avoid legal uncertainty and accelerate the total decarbonization of EU energy system thanks to already available solutions, the Electricity Market Design revision **must provide consistency with the Net Zero Industrial Act and the Energy Efficiency Directive.**
- **Recognizes biogas and biomethane contribution to energy system flexibility:** To provide a fully decarbonised flexibility before 2050, the revision must consider in Chapter III A the increasing **need to manage long duration flexibility, while reducing energy costs and increase system efficiency.**
- **Recognizes need for complementarity in the power system:** To accelerate the production and deployment of renewable gases and renewable electricity, the EU legislation must **avoid a silos approach** and combine **sector integration from production to user's level.**

## EU electricity system

Combined with the 2021 increased energy consumption, the ongoing geopolitical crisis caused a significant decrease in gas supply, which triggered a considerable surge in energy prices in 2022. This price volatility quickly impacted EU households and industries, and unprecedented high energy prices are still weighing heavily on the EU's economy.

To achieve carbon neutrality by 2050, the EU's energy sector must stop using fossil sources in power production, while lowering electricity bills and improving energy security. To accomplish this, the EU must increase sector coupling via efficient dispatchable renewable energy generation and hybridisation of uses.

All of this will not be possible without an effective resource adequacy mechanism, always ensuring the balance between demand and supply across the electric system and beyond. The most efficient way to accomplish this is to store large volume of energy in the form of molecules and biogas and biomethane is the most effective form for long duration storages (seasonal).

## Biogas and biomethane: renewable solutions for the energy system integration

Europe is the world's largest producer of biogas and biomethane, which combined production in 2021 amounted to 18.4 bcm (196 TWh), an energy volume comparable to 4.5% of the total EU gas consumption for 2021. With the right policy and market conditions, EU biomethane production can achieve the REPowerEU target of 35 bcm in 2030 and could reach 151 bcm in 2050. As such, biomethane can play an important role in decarbonizing the energy system: 27% of the 2050 estimated potential, i.e., circa 40 bcm of biomethane (approx. 395 TWh), would be sufficient to cover 100% of EU households gas needs<sup>1</sup> for heating in 2050<sup>2</sup>.

Biogas and biomethane provide flexibility to the energy system, contributing to all energy outputs, including electricity, and can further expand the integration of variable renewables via three main pathways:

1. **Cogeneration:** Biogas cogeneration plants allow simultaneous very efficient production of electricity and heat. Power can be used on-site or injected into the grid, while the heat can be valorised by local corporate consumers or in district heating.
2. **Bio-methanation:** Biogas systems can operate as a biological battery, and coupling power and gas grids using surplus electricity from variable renewables to produce hydrogen, which can be introduced to increase the output of biomethane.
3. **Biomethane:** Produced by biogas upgrading, biomethane is a flexible and sustainable energy carrier that can be a renewable substitute to natural gas and use without changes the low costs large gas storage and transport capacities.

Storability is undoubtedly one of biomethane key benefits as it provides for energy storage without the need for investments in costly batteries or hydrogen infrastructure. The European gas storage is well-developed and biomethane-ready, these energy storage units can already collect an amount of methane sufficient to cover up to

<sup>1</sup> Guidehouse (2022). Decarbonisation pathways - For the European building sector

<sup>2</sup> Guidehouse study elaborates two decarbonation pathways for the building sector: A and B, one based on full electrification and one on green gases respectively. According to the report, by 2050, gas demand will be much lower for both pathways and will only consist of green gas. The gas demand for pathway A is 85 TWh, while pathway B has a larger demand of 395 TWh.

2-3 months of today's EU gas consumption, providing for the inter-seasonal storage required for building heating and security of supply.

Cogeneration (CHP) is a highly efficient form of energy conversion yielding superior primary energy savings compared to the separate production of electricity and gas. When running on renewable sources, such as biogas or biomethane, electricity and heat from CHP is highly sustainable, and, over the last decade, biogas use in a CHP engines became a fundamental source of dispatchable power and heat.

Aside from the well-established benefits of lowering emissions and strengthening EU circular bioeconomy, biogases can reduce Europe's reliance on energy imports and avoid EU dependency on external providers. Especially considering today's gas price volatility and the geopolitical uncertainty, it is essential to promote and preserve the EU strategic autonomy in the energy sector by implementing policies that support the power sources produced and technologies developed in the EU, all activities creating jobs in the internal market.

## Recommendations

In the run for EU's climate neutrality, electrification will be a milestone for the decarbonization of EU economy, alongside other technologies. Energy complementarity will be key to ensure a fast, resilient, and affordable transition, and biogases are readily available vectors truly capable of accelerating the sector decarbonization and greatly contributing to its security. To unlock the valuable role of biogas and biomethane as a flexible and cost-effective solution capable of decarbonizing the sector while simultaneously responding to the issue of electricity demand-supply mismatch, EU policy must be consistent and capable of valorising this fundamental energy.

### Ensure coherence with policy landscape

As part of its **REPowerEU plan**, the European Commission set in 2022 a historical step forward for the biogas and biomethane sector: a 35bcm target for the EU yearly production of biomethane by 2030. This fundamental steppingstone towards the achievement of climate-targets, circular bioeconomy and supply security also implied the clear recognition of biomethane as a green vector necessary to achieve the EU clean energy transition.

More recently, biogas and biomethane production technologies were accounted among the "net-zero technologies" (Article 2) and "strategic net-zero technologies" (Annex I and Article 10) in the **Net Zero Industrial Act**, which gives primacy to the supply of clean technologies.

The **Energy Efficiency Directive** recognises the need for sector integration and puts demand flexibility at its core to ensure the efficiency and resilience of the energy system. Both cogeneration and hybrid solutions are recommended practices in the Energy Efficiency first guidelines.

In its position on the **Energy Performance of Buildings Directive**, the European Parliament clearly recognized the decarbonization potential of heating technologies certified to run on renewable gases, such as biogas and biomethane, and, hopefully, the final text will provide a level playing field for the further deployment of heating technologies running on renewable fuels.

### Recognize biogas and biomethane contribution to energy system flexibility

Renewables in power networks are fast expanding as the EU strives to improve its energy security and achieve emission reduction commitments.

As variable renewables increase in proportion to generation, and the need to manage seasonal demand brought by electrification of heating, system level surpluses and periods of lower generation will eventually extend beyond hour-to-hour or daily variations to seasonal timescales, requiring the efficient use and integration of flexibility resources, ranging from stronger grids coupled with peak capacity production to demand-side measures, affordable storages, and dispatchable energy vectors. Because of the climatic unpredictability of renewables and seasonal variation of demand, flexibility resources will be required to variable degrees throughout the year.

There will be thus the need for the integration of renewables able to allow for long duration flexibility. Biogas and biomethane can provide for this flexibility, as well as efficiently contribute to the electricity system balance either via co-generation or hybrid solutions. Moreover, biogas and biomethane can concretely help in the reduction of energy costs and to increase the system efficiency as these green vectors are easy to store and can be directly incorporated in renewable gas-ready appliances, in order to provide a fully decarbonised flexibility before 2050.

### Recognize need for complementarity in the power system

Renewable gas and renewable electricity are natural complement that must be smartly combined to ensure a fast, resilient, and affordable transition. That implies a less siloed approach, fully considering the sector integration at the production and user's levels. Renewable gases are and will increasingly bridge the gap between production and demand, and thus to cap the electric price variability. Use of biomethane for efficient power generation (cogeneration) or to reduce the electric demand when required (hybrid solutions) must be fully considered in the Electric Market Design, solutions assessment, planification and tariffs.

Contact: **Anna Venturini**, EBA Policy Officer, End-uses Lead

[venturini@europeanbiogas.eu](mailto:venturini@europeanbiogas.eu)

### About EBA

*The European Biogas Association is the voice of renewable gas in Europe since 2009. EBA advocates the recognition of biomethane and other renewable gases as sustainable, on demand and flexible energy sources that provide multiple knock-on socio-economic and environmental benefits. Supported by its members, EBA is committed to work with European institutions, industry, agricultural partners, NGOs and academia to develop policies which can enable the large-scale deployment of renewable gases and organic fertilisers throughout Europe, supported by transparent, well-established sustainability certification bodies to ensure that sustainability remains at the core of the industry. The association counts today on a well-established network of over 200 national organisations, scientific institutes, and companies from Europe and beyond.*