




Short-, mid- and long-term strategies to speed up biomethane deployment in Europe

	 PLAN FOR RAPID EXPANSION OF BIOMETHANE CAPACITY	 PROMOTE EASY MARKET ACCESS	 FINANCE	 SUSTAINABLE FEEDSTOCK MOBILISATION
2022	<p>Stimulate the demand side by anchoring the 35 bcm target to binding legislation, implementing green gas blending obligations and connecting biomethane production to the EU ETS sectors.</p> <p>Faster approval of support schemes by the EC, such as the Italian Recovery and Resilience plan which was submitted to DG Competition on 17 November 2021.</p> <p>Allow for higher production volumes than what is currently included in subsidy contracts.</p>	<p>Facilitate the physical injection of biomethane into the gas grid by installing reverse flow facilities, prioritising gas grid injection for biomethane and increasing cooperation between adjacent gas grid operators.</p> <p>Speed up permit-granting processes by establishing one-stop shops, regulated review times and transparent communication to the actors requesting permits.</p>	<p>Development of national biomethane targets and strategies which include faster provision of investment support, incentives for switching biogas-CHP plants towards biomethane plants.</p> <p>Establish a European guarantee fund to prevent long lead times of biomethane equipment while mitigating the risks linked to raw material price volatility.</p> <p>Mobilise investment capital by setting up a public-private cooperation and encouraging commercial banks to provide debt financing for biomethane projects.</p>	<p>Maximise mobilisation of sustainable feedstocks such as waste and wastewater by, for example, implementing a ban on incinerating and landfilling food wastes and organic wastes and the obligatory subsequent treatment of organic wastes.</p>
2023 – 2025	<p>Disseminating best practices across European regions.</p> <p>Award biomethane sustainability recognition compared to fossil alternatives.</p> <p>Establishment of spatial planning by local governments indicating zones which are suitable for renewable gas production.</p>	<p>Further facilitate cross-border trading of biomethane in all EU member states by establishing a European-wide straightforward and transparent Guarantees of Origin system that integrates sustainability information.</p> <p>Advance the EU wide digestate market by updating regulations to consider existing technical advancements in digestate upgrading, developing standards for digestate (CE standard) to allow for EU wide trade and implementing the RENURE criteria.</p>	<p>Exempt operational aid for biomethane production from state aid rules, as per the General Block Exemption Regulation (GBER)</p> <p>Diversify the incomes of biomethane producers by valorising the positive externalities and synergies of biomethane production.</p>	<p>Allow for the addition of sustainable sequential cropping by including sequential cropping in the list of advanced feedstocks (Annex IX of the Renewable Energy Directive).</p>
2026 – 2030	<p>Improve the AD image to improve political and public acceptance by launching an EU-wide image campaign.</p>	<p>Implement the preferred use of biogenic CO₂ compared to fossil-based CO₂.</p>	<p>Increase research funds to ensure the market entry of new technologies such as gasification and innovative biomass pretreatment steps.</p>	<p>Increase the EU biomethane potential by converting CO₂ effluents to additional biomethane. This can be done by increasing the number of research and pilot projects for demonstrating and promoting this conversion.</p>

35 bcm by 2030

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2022: SHORT-TERM STRATEGIES

1. Speed up permit-granting processes

Obtaining permits is currently the toughest hurdle for investors, suppliers, and project developers. It can take as long as 5 to 8 years for a project permit to be granted. When addressing the administrative complexity surrounding investment projects, the case for biomethane is particularly relevant because of the interdependencies with a variety of economy sectors and actors. Indeed, biomethane projects are subject to a multitude of legal requirements because they overlap with areas such as agriculture, waste disposal, recycling, the energy industry, fertilisers and soil amendment production.

Permit-granting processes can be sped up by establishing **one-stop shops** (combining both environmental and building permits), **regulating review times** with time limits and promoting **transparent communication to the actors requesting permits**. Furthermore, the processes can be sped up by reinforcing the administrative teams and reducing the costs of the permit-granting process. In addition, extending the validity of existing permits can reduce the administrative burden for both the project developers as well as government administrations. Finally, **the permits for converting a biogas-CHP plant towards biomethane production should be fast-tracked with minimal requirements**.

2. Stimulate the demand side

Increasing biomethane demand in Europe, and thus creating demand-driven market signals, can greatly increase European production. The advantage of demand-driven market signals is that they raise awareness of the actual product, which in turn further increases its value. For example, the use of biomethane in transport, stimulated by renewable fuel obligations, creates additional perceived value for the use of biomethane as it motivates consumers to share information about biomethane use.

Biomethane demand can be boosted by anchoring the 35 bcm target into binding legislation, implementing **green gas blending obligations** and **connecting biomethane production with the EU ETS sectors**. Binding targets and blending obligations, irrespective of what the gas is used for (for example mobility, but also for heating, industrial use, etc.), give investors and project developers a sense of certainty. Connecting with EU ETS sectors means that companies purchasing biomethane to replace their natural gas consumption are exempt from their emission allowances for the use of natural gas, which thus drives the demand for biomethane. EU-ETS prices are increasing, which allows the EU ETS market to compete against voluntary markets.

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3. Development of national biomethane targets and strategies

While the 35 bcm target is established on the European level, national sub-targets alongside national strategies are necessary to make sure all EU Member States work together to reach this target. Biogas-CHP support schemes are ending in several EU countries. This is a huge opportunity to switch those plants towards biomethane production. Making sure the right incentives are in place to avoid stranded assets and to increase biomethane production instead will be of the utmost importance.

In particular, **national strategies** should include the **faster provision of investment support, incentives for switching biogas-CHP plants towards biomethane plants** and the **reinforcement and/or creation of national support schemes**. Support schemes based on tenders should organise at least two tenders per year with a minimum accepted capacity. Funding periods of at least 15 years are recommended. In addition, the validity periods of existing feed-in tariff contracts can be extended.

4. Swifter notification of support schemes by the EC

The Italian Recovery and Resilience Plan (RRP) was submitted to DG Comp on 17 November 2021. The plan includes measures to support biomethane production and to convert existing biogas-CHP plants into biomethane production plants. Investments in the country are being delayed since DG Comp has not yet notified the NRRP of its decision (May 2022).

Swifter notification of proposed support schemes by the EC is therefore required to speed up production.

5. Establishment of a European guarantee fund to prevent long lead times of biomethane equipment

Delays in delivery impact lead times and, ultimately, costs. The chip shortage has slowed down operations. While delivery times can be mitigated by increasing stock, the decision to do so is high risk, especially in these times of buoyant components and raw materials pricing. Finally, amid the current market uncertainties, delayed projects add to the investment risks.

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The risk of long lead times of biomethane equipment can be mitigated by establishing a European guarantee fund for renewable technologies, such as biomethane, to de-risk investments. This will **allow technology providers to stock up and decrease delivery times** but also mitigate the risks linked to the price volatility of raw materials.

6. Allow for higher production volumes than what is currently included in subsidy contracts

In some countries, biomethane production is limited on the plant level by the subsidy contract, although it is well known that a significant number of plants could indeed increase their production if the limits were lifted.

Considering current gas markets and the increased need for energy independence, **the biomethane production limits included in subsidy contracts should be lifted.**

7. Mobilisation of investment capital

According to EBA estimates, a capital investment of 83 billion euro needs to be mobilised to make sure that we reach the 35 bcm target by 2030, meaning an approximate investment of 10 billion euro per year.

To mobilise this investment capital, first, the political prioritisation of the biomethane capacity roll-out should send a strong message to the market. This can be achieved, inter alia, through the immediate set-up of a **public-private cooperation between the biomethane value chain, the EC and Member States.** In addition, sustainable **biomethane production should qualify as an enabling activity in the Taxonomy**, which also contributes to the circular economy objective. Finally, both the EIB and the EBRD should be involved in providing debt financing for biomethane projects.

8. Facilitate the physical injection of biomethane into the gas grid

Now that larger volumes of biomethane are being injected into Europe's gas grids, a transition is taking place from centralised gas production towards a more decentralised approach. Reverse flow facilities now exist to support the gas grid when distributing decentralised biomethane production by allowing bidirectional flow between distribution and the transport grid. In addition, there is need for priority access for biomethane and for sharing the cost burden of introducing this biomethane.

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To facilitate the physical injection of biomethane into the gas grid, **biomethane should be granted immediate and priority access**. The cost burden of connection and injection shall be shared between the gas grid operator and the biomethane producer, with limited costs for the biomethane producer. **Gas grid operators should be supported and encouraged to install grid reinforcement measures such as reverse flow facilities** and to optimise the grid to allow for an increased, decentralised biomethane injection. In addition, the grid would benefit from **increased cooperation between adjacent gas grid operators** (especially between distribution and transport operators). Lastly, **unified requirements for biomethane injection into the grid Europe-wide**, which would balance the efforts between the biomethane producer and the end user, should be put in place.

9. Maximise mobilisation of sustainable feedstocks such as waste and wastewater

The upcoming revision of the Waste Framework Directive and the Urban Waste Water Treatment Directive is an opportunity to include regulatory drives to maximise energy production potential in the waste and wastewater sectors. Moreover, some countries classify landfill gas as not sustainable, which prohibits the immediate implementation of biomethane.

A ban on the incineration of organic wastes and a **ban on the landfilling of food waste and organic waste** should be implemented. Food and organic waste should be mobilised as feedstock for anaerobic digestion, and subsequently composted. This would **help close the nutrient cycle, supplying EU-made sustainable soil amendments**.

2023–2025: MID-TERM STRATEGIES

10. Further facilitate cross-border trading of biomethane

The cross-border trade of biomethane in Europe has taken off in recent months. More EU countries are establishing national biomethane registries and on top of this, national biomethane registries are connecting via the ERGaR trading platform. Traceability and transparency are essential to the energy transition and to promote consumer empowerment.

The immediate establishment of a **Europe-wide Guarantees of Origin system** is needed to further facilitate cross-border trade. The system should be **straightforward and transparent and should integrate sustainability information**. Biomethane production must be certified and valued in order to provide customers with accurate information about its merits.

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11. Award biomethane sustainability classification compared to fossil alternatives

Improvements to EU and national legislations are required to remove legal barriers for the use of biomethane in transport and industry, clearly define biomethane within the legislations and regulations and to procure measures to incentivise biomethane consumption instead of natural gas.

The reduction of biomethane emissions compared to natural gas or other fuels should also be accounted for in sectoral demand-side policies.

- The current Tank-to-Wheel (TtW) approach in CO₂ Performance Standards does not account for the emissions caused by producing the actual fuel or electricity used. Therefore, it does not recognise the climate performance of biomethane production on a life cycle basis, but rewards electricity produced from fossil fuels. **When calculating CO₂ Performance Standards, the approach should be switched to a more comprehensive and science-based Well-to-Wheel (WtW) approach.** This will ensure **technological neutrality**, a level playing field between technologies and avoid serious climate shortcomings. This is urgently needed **to guide carmakers correctly in their production chain decision-making over the next 10-15 years.**
- **European standards on building materials should recognise the life cycle performance of biomethane in accounting for emissions.** This would reward producers of these materials for choosing an alternative to natural gas.

The recast **Energy Taxation Directive** as proposed by the European Commission fails to set a level playing field for minimum taxation values and does not accurately reflect the environmental performance of different fuels. **The lowest minimum taxation level should be granted to biomethane wherever sustainable production is ensured**, without any discrimination among the sustainable feedstock types. This would send **a positive and coherent price signal to consumers.**

12. Establishment of spatial planning indicating which zones are suitable for renewable gas production

Delays in biomethane projects might occur because the location proposed by investors is rejected by the local government. Biomethane investors are then required to look for an alternative location and restart the process.

The establishment of spatial planning by local governments in which zones for renewable gas production are already indicated would greatly speed up new investments.

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13. Disseminating best practices across European regions

Several EU countries and regions are already well advanced in terms of biomethane production and biomethane regulations, while other parts of Europe could learn from those good practices and experiences.

Clear frameworks and guidelines based on good practices and return of experiences, together with establishing **European collaboration platforms**, can facilitate the policy-making process in all parts of Europe. Where possible, the EU should allow for standardisation, such as **unified permit-granting processes** across Member States.

14. Advance the EU-wide digestate market

An increased valorisation of waste via AD means increased volumes of digestate. Anaerobic digestion reduces the volume of waste, avoids GHG emissions associated with waste management and creates a co-product digestate. Digestate offers an alternative to the energy-intensive, environmentally-damaging production of chemical fertilisers. This reduces EU dependence on fertiliser imports and helps farmers bring down production costs, limiting food price volatility. Digestate offers proven advantages in soil restoration and carbon retention.

To safeguard the competitiveness of those operations, advancements should be made in the EU digestate market. This can be done by **updating regulations while taking into consideration existing technical advancements and the possibilities of upgrading digestate, developing digestate standards (CE standard)** to allow for EU-wide trade, **implementing the RENURE criteria** which will allow digestate to be applied as a replacement for fertilisers created by the Haber-Bosch process, and increasing investments in R&I for digestate upgrading technologies. In summary, these measures will **increase the European demand for digestate**, which in turn will support the biomethane production business model.

15. Exempt operational aid for biomethane production from state aid rules, as per the General Block Exemption Regulation (GBER)

Automatic approval of state aid for renewable gases (with a sunset provision linked to a pre-defined market maturity signpost or date) would significantly speed up the development of supply. The **size threshold should be high enough** to accommodate all Member States and biogas-to-biomethane conversions. There should be no discrimination between the different sustainable feedstock types.

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16. Allow for the addition of sustainable sequential cropping

The sustainability of agricultural systems in Europe can be enhanced by sustainable sequential cropping. In this agricultural practice, two crops instead of one are produced on the existing agricultural land within any given year. The implementation of sequential cropping schemes results in soil enhancement (C-farming and soil biodiversity), as well as a significant amount of sustainable feedstock for biomethane production. Ghent University calculated a minimum realistic biomethane potential of 46 bcm biomethane/year if the sequential cropping practice were to be applied on 15% of the arable land in Europe.¹

Sequential crops should be included in the list of advanced feedstocks (Annex IX of the Renewable Energy Directive) in recognition of the multiple environmental benefits they offer. This would allow sequential crops to count towards the advanced biofuels target.

17. Diversity incomes for biomethane producers

Currently, biomethane producers only get rewarded for the renewable energy they produce either via subsidies or the market mechanism. However, the production of biogas brings a range of other benefits to our society. Those additional benefits, or positive externalities, are undervalued in current markets in terms of economic value.

The translation of all societal benefits biomethane production brings along into market signals would allow biomethane producers to compete on fairer terms with other types of energy supply while at the same time further stimulating production plants to achieve the highest level of societal benefit.

¹ The role of sequential cropping and Biogasdoneright™ in enhancing the sustainability of agricultural systems in Europe, Ghent University

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2026–2030: LONG-TERM STRATEGIES

18. Improving the image of Anaerobic Digestion

Despite the huge environmental and societal benefits of biomethane production, biomethane technology still suffers from NIMBY issues.

Good communication with local stakeholders is key to avoiding NIMBY issues, especially in densely populated areas. The **launch of an EU-wide image campaign** can support this by studying and communicating the positive impacts of biomethane plants, such as job creation, creating economic value in rural territories, avoiding chemical fertilisers and treating waste.

19. Implementing the preferred use of biogenic CO₂

Carbon dioxide is a by-product of the purification of biogas to biomethane. This carbon dioxide stream can be valorised in several industry sectors such as the food, beverage or cement industry, or can be used in agriculture to, for example, to maximise the photosynthesis potential in greenhouses or as a raw material for ammonia production. This carbon dioxide is called biogenic as it originates from biomass. As it grows, this biomass captures a certain amount of CO₂ from the atmosphere for photosynthesis. Therefore, we are talking about biogenic CO₂, as opposed to fossil-based CO₂, which is released after millions of years of storage underground and was previously not accessible.

Biogenic CO₂ should be preferred for industrial and agricultural uses compared to fossil-based CO₂ because it brings an initial level of climate benefit by avoiding and diminishing CO₂ emissions. It offers a secure supply and stable prices for industrial uses, and at the same time it indirectly incentivises positive externalities such as job creation and social benefits. For this reason, **the European Union should adopt clear standards for CCU, negative emissions technologies such as BECCS and Biochars as well as carbon farming.**

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20. Increasing the EU biomethane potential by converting CO₂ effluents to additional biomethane

CO₂ effluents and other intermediate products from AD or gasification can be combined with renewable hydrogen or renewable electricity directly to increase the overall biomethane yield. If all CO₂ effluents from biomethane were converted to additional biomethane production, the biomethane potential in Europe would increase by 66%. Using renewable hydrogen to increase biomethane yield in AD plants is promising, for instance, when large quantities of excess renewable electricity become available in areas with a high penetration of non-dispatchable renewables (or in future power system scenarios dominated by intermittent renewables), and where the development of a dedicated hydrogen infrastructure is not cost-effective. In fact, green hydrogen can be produced from excess renewable electricity using an electrolyser. Next, hydrogen is integrated in AD and combined with the CO₂ naturally present in the biogas to increase biomethane yield.

Research and pilot projects for demonstrating and promoting this conversion of effluent CO₂ to biomethane using green hydrogen will greatly facilitate the integration of electrolysers at biomethane plants.

21. Increase research funds to ensure the market entry of new technologies

While biomethane production is a mature technology ready to be scaled up, its potential can be even further increased by bringing technology currently at the research stage towards higher TRL levels. New technologies increase biomethane potential, on the one hand, by untapping new feedstock types that were previously not accessible for anaerobic digestion such as wood processing residues (via gasification), seaweed and algae. On the other hand, biomass pretreatment innovations can improve the efficiency of the AD process by increasing its yield and providing new possibilities for automation or faster digestion. Faster digestion leads to lower retention times which enables the use of smaller reactors and will thus lower investment costs.

Increased research funds will ensure the market entry of new technologies such as gasification and new biomass pretreatment steps. This will in turn enable a wider range of feedstocks to be used for biomethane production and thus increase its long term potential as well as decrease investment costs. Special focus should be given to the fulfilment of pilot and demonstration projects across Europe.