BIOGASES:

A TOOL FOR A FUTURE-PROOF EU LIVESTOCK SECTOR

EBA
European Biogas Association

Livestock is a central component of EU agriculture, and all future pathways involve trade-offs between climate impact, biodiversity, and animal welfare. There is no one-size-fits-all solution: strategies such as reducing meat consumption, promoting extensification and improving livestock efficiency must be considered in light of local contexts. In this regard, biogas/biomethane production represents a versatile tool that can deliver multiple benefits and deserves further attention within the framework of the upcoming **EU livestock strategy**.

Biogases contribute to:

Sustainability and circularity

Anaerobic digestion is a key technology for reducing greenhouse gas emissions (GHG) in agriculture[1], as it captures methane from manure, that would otherwise be released into the atmosphere. The recovered methane in biogas and biomethane can also displace fossil gas in various end uses. Thanks to the circularity of the technology, the digestate produced in addition to the captured methane replaces synthetic and imported fertilisers, reducing GHG emissions associated with their production.

Competitiveness and resilience

Biogases production enhances on-farm energy self-sufficiency and can generate additional revenue through the sale of renewable energy, biogenic CO_2, or value-added digestate products. It also lowers reliance on fossil fuels and synthetic fertilisers, reducing vulnerability to price volatility. Biomethane fosters European competitiveness and sovereignty by enabling the local and independent production of energy and agronomic inputs, supported by a fully European value chain encompassing nutrients, technologies, manufacturing, materials, expertise, and employment.

Environment, health and fairness

Digestate offers higher nutrient availability than raw manure, supporting more efficient fertiliser use. This environmental benefit is maximised when storage and application is carefully managed, highlighting the importance of good agronomic practices in anaerobic digestion systems[2]. Due to its content in stable organic carbon, digestate also contributes to restoring or increasing soil organic carbon when applied to the soil, unlike synthetic fertilisers[3]. Anaerobic digestion also reduces odour compared with raw manure, an important factor for social acceptance of livestock farming. Additionally, it improves sanitation by mitigating risks associated with pathogens and antimicrobial resistance in manure. Beyond environmental and health benefits, biogases systems can enhance the attractiveness of farming for younger generations and create green jobs in rural areas, contributing to social and economic resilience.

[1] Amon, B., & Borghardt, G. (2024). Fostering win-win farming practices to reduce nitrogen pollution and mitigate greenhouse gas emissions: A case study from Germany. German Environment Agency.
[2] If not properly managed, ammonia (NH_3) emissions from digestate can exceed those from raw manure. Proper storage and soil incorporation or injection are therefore essential to minimise emissions (Biomethane Industrial Partnership Task Force 2. (December 2025). Use and valorisation of digestates: A practical review).
[3] EBA position paper 'Recommendations on the Soil Health Law', June 2023.

Debunking common myths about livestock and biogases

1 Biogas production does not inherently lead to more intensive livestock farming

Intensive livestock farming generally refers to systems where animals are kept at high densities, production is maximised through controlled (often imported) feed, animals are housed indoors most or all of the time, and output per animal is prioritised.

Biogas/biomethane projects are frequently associated with medium to larger herd sizes because anaerobic digestion involves significant capital expenditure[4]. However, **a larger herd size alone does not necessarily equate to intensive or industrial livestock farming**. Stocking density, feeding strategy, housing system, pasture access, and overall farm management remain the defining criteria of intensification. A farm with a large herd can still operate under pasture-based, mixed, or agroecological principles[5].

Moreover, biogases systems do not necessarily rely on manure from a single large farm. **Collaborative or territorial models** — whether farmer-owned or involving other stakeholders — can aggregate feedstocks from several farms, distribute responsibility across holdings, or integrate diversified inputs such as crop residues, cover crops, or even biowaste. While transport costs and logistics must be considered, these models demonstrate that **scale does not automatically mean animals concentration**.

The perceived risk of intensification stems from the fact that biogas/biomethane production requires stable feedstock supply. Yet this supply can be diversified and locally organised rather than concentrated within a single large industrial operation. In short, biogases systems can operate within medium-scale and diversified structures; they do not inherently drive livestock intensification **but rather adapt to the organisation and governance of the agricultural model in place**[6]. In some cases, biogas/biomethane can even have the opposite effect: by providing greater financial stability, it can reduce reliance on volatile milk prices and alleviate the economic pressure to expand herd size.

[4] From €360,000 to €480,000 for a small on-farm installation aimed at energy self-sufficiency (excluding gas grid injection, which requires much higher investment starting at around €4.5 billion), Hervé Gorius et al., La méthanisation en élevage bovin : un éventail de possibilités (Paris: Institut de l'Élevage, INOSYS Réseaux d'élevage, 2023).
[5] See various examples of livestock-based biogas integrated in agroecological systems such as SARL AGRO-ECO, GAEC des Charmes, SAS Biométhadour.
[6] For more information (in FR): Couturier, C. (2014). La méthanisation rurale, outil des transitions énergétiques et agroécologiques. Solagro.

2 Biogas can be a cost-effective option for livestock farmers

Biogas can be an affordable option for livestock farmers when supported by appropriate policy frameworks, primarily because it enhances **on-farm self-sufficiency**. By converting manure into renewable energy, farms can reduce dependence on external electricity, heat, and fossil fuels, while digestate decreases the need for synthetic fertilisers, improving cost stability and resilience against price volatility. Cooperative models can further reduce individual investment burdens.

Biogas/biomethane producers can **generate additional revenue** by selling biomethane, electricity or heat. Revenue opportunities can also arise from selling carbon credits, biogenic CO_2, or value-added digestate products, further improving the economic attractiveness of biogas installations.

Perez-Dominguez et al. (2021)[7] identify anaerobic digestion as **one of the cost-effective GHG mitigation measures in EU agriculture**, offering significant emissions reductions at relatively low cost. In an EU committed to climate neutrality, this highlights the potential for biogas to be further incentivised for its role in reducing livestock-related GHG emissions. In Denmark, the **carbon tax** in the agricultural sector recognises anaerobic digestion as a means of offsetting emissions from livestock manure management.

Mixed farms that integrate livestock, pasture, and on-farm crops present one of the most synergistic pathways for biogases deployment. Growing crops on-site reduces reliance on external, GHG-intensive feed. Intermediate crops and crop residues from the main crop can provide valuable input for biogas production, increasing the energy yield per farm, while providing ecosystemic services such as carbon storage in soils, and without negative impact on food production. The resulting digestate can then be applied back to both pastures and crop fields, improving nutrient recycling, soil fertility, and crop productivity. This creates a fully circular nutrient loop, enhances the overall sustainability of the farm, and strengthens economic and environmental resilience by combining energy self-sufficiency with optimised feed and fertiliser management. Where single-farm integration is not feasible, exchange or cooperative systems can be established between livestock farmers and feed producers.

[7]Perez Dominguez, I., et al. Economic assessment of GHG mitigation policy options for EU agriculture. EUR 30164 EN. Publications Office of the European Union, Luxembourg, 2020.

Policy recommendations for a sustainable livestock–biogases transition

1. Scale up investment support for livestock farmers installing anaerobic digesters, low-emission machinery and storage, including through cooperative models, by strengthening funding under future **National and Regional Partnership Plans** and the **European Competitiveness Fund**.

2. Allow the substitution of synthetic fertilisers by digestate, beyond the current 170 kg N/ha/year limit, up to the actual crop nitrogen requirement, under the **Nitrates Directive**[8].

3. Ensure that the pilot livestock methodology under the **Carbon Removals and Carbon Farming Regulation** does not result in the creation of a new or parallel calculation methodology for manure-based biogas, given that robust and well-established accounting rules already exist for the manure bonus under the **Renewable Energy Directive**.

4. Support integrated crop–livestock systems by introducing a default value for intermediate crops under the **Renewable Energy Directive**[9] and increasing per-hectare or lump-sum support under the **Common Agricultural Policy** for farmers combining livestock and biogas production.

5. Recognise digestate climate and circularity benefits by setting workable criteria for certification as organic fertiliser under the **Fertilising Products Regulation**[10], recognising digestate application as a carbon farming practice under the **Carbon Removals and Carbon Farming Regulation**[11], including 'manure recovery via anaerobic digestion' as an activity contributing to the transition to a circular economy under the Environmental Delegated Act of the **EU Taxonomy**[12], and investigating the introduction of a mandatory recycled content requirement in fertilisers under the **EU Fertiliser Action Plan**[13].

6. Strengthen advisory services and knowledge exchange on integrated livestock–biogases systems under the **Common Agricultural Policy**.

7. Develop regional circular economy plans to scale up anaerobic digestion and anticipate digestate valorisation, including solutions for nutrient use and transport logistics, investment in equipment to process recycled nutrients into high-quality bio-based fertilisers (where direct local land application is not feasible), promotion of best agronomic practices, skills development, and biorefinery development under the **Circular Economy Act**[14].

8. Maintain and expand **national support schemes** for manure-based biogas/biomethane, following the examples of Sweden, Norway, Germany, France and Finland[15].

9. Ensure the implementation of enabling grid connection frameworks across Member States, including: (i) gas grid connection rights implemented by August 2026 under the **EU Gas Package**; (ii) investment cost-sharing with grid operators; and (iii) mobile pipeline distribution pathways recognised in support schemes – thus supporting centralised injection for plants located far from gas grids.

[8] EBA response to Call for evidence 'Protecting waters from pollution caused by nitrates from agricultural sources – Evaluation', 7 March 2024.
[9] EBA position paper on RED Annex VI revision, 23 January 2026.
[10] EBA response to the Call for Evidence 'Fertilising Products Regulation – evaluation', 19 September 2025.
[11] EBA response to the Call for Evidence 'Carbon removals and carbon farming – methodologies for certifying carbon farming', 18 February 2025.
[12] EBA response to the Call for Evidence 'Sustainable investment – review of the EU taxonomy environmental delegated act', 5 December 2025.
[13] EBA position paper 'Biogases systems as circular bioeconomy hubs – Four key pathways', June 2025.
[14] EBA position paper 'Biogases systems as circular bioeconomy hubs – Four key pathways', June 2025.
[15] European Biogas Association. (2 June 2025). Support schemes for biogas and biomethane. European Biogas Association.

About the European Biogas Association (EBA)

EBA fully believes in the future potential of renewable gas in Europe. Founded in February 2009, the association is committed to the deployment of sustainable biogas and biomethane production and use throughout the continent. EBA counts today on a well-established network of nearly 300 national associations and other organisations covering the whole biogas and biomethane value chain across Europe and beyond.

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