Unlocking the full potential of biowaste in the circular bioeconomy

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The EU Bioeconomy Strategy plays a critical role in the future stability of the EU economy by promoting the sustainable use of natural resources to deliver food, energy and materials while strengthening European resource independence and competitiveness. However, the current state of the bioeconomy reveals significant challenges: climate change, resource depletion, insufficient investment in composting and biogas installations and unsustainable land management practices are threatening Europe's ability to transition to **a circular, regenerative and competitive bioeconomy**.

In response to these challenges, the European Commission has proposed an update to the EU Bioeconomy Strategy as part of the EU's Clean Industrial Deal. **Municipal Waste Europe (MWE),** the **European Compost Network (ECN)** and the **European Biogas Association (EBA)** support this proposal, which represents an important step towards achieving a circular bioeconomy in Europe.

A notable gap in the 2018 version of the EU Bioeconomy Strategy was the absence of biowaste as a key component. **The full potential of biowaste to contribute to the EU circular economy is still untapped today. The 2025 update of the Bioeconomy Strategy** needs to include a dedicated section on biowaste management aimed at **speeding up the installation of infrastructure for proper separate collection and treatment capacity in the EU, fully realising the potential of biowaste to serve as a critical feedstock for circular bioeconomy solutions.**

Concentrating biowaste for anaerobic digestion and composting can help Europe tackle several pressing issues. First, it would reduce the environmental impacts of landfilling and incineration. Second, it would provide an increased **supply of renewable energy and circular organic fertilising products**, i.e. recycled organic fertilisers and organic soil improvers, contributing to the **EU's energy and fertiliser autonomy**, while producing valuable bio-based fertilising products such as digestate and compost. These products can replace energy intensive chemical fertilisers, improve soil health and reduce Europe's reliance on imported resources.

Scaling up the **circular bioeconomy based on biowaste** in Europe would also generate significant economic and social benefits. It would foster job creation across multiple sectors, including waste management, renewable energy production and agriculture, while strengthening Europe's position in the global green economy. Realising this potential requires collecting additional high-quality data on biowaste, driving investments, addressing market barriers, establishing a list of best practices and establishing a supportive policy environment that enables biowaste-to-bioeconomy pathways.

To unlock the full potential of biowaste within a circular EU bioeconomy, MWE, ECN and EBA present four recommendations:

1. **Directing separately collected biowaste towards the production of fertilising products and biogas**
2. **Enabling the market for circular organic fertilising products and their associated benefits**
3. **Facilitating the market for biogas and biomethane derived from biowaste and their associated benefits**
4. **Mobilising European funds and investments for the production of biogas and organic fertilising products from municipal and non-municipal biowaste**

1. Directing separately collected biowaste towards the production of fertilising products and biogas

Biowaste management activities encompass mandatory separate collection, treatment and supply operations, which lead to the production of high value biowaste-derived products (compost, digestate and biogas). By improving the efficiency of biowaste management, EU Member States could reach the recycling targets set in the Waste Framework Directive (WFD), as well as the maximum target of 10% of municipal waste going to landfill. For this reason, we recommend taking the following measures to address the challenges of biowaste management:

- Enforcing the implementation of the separate collection of biowaste across the EU, which is mandatory since 1 January 2024, and encouraging Member States to put in place national separate collection schemes that have proven to be effective in best practice examples.
- Including a dedicated chapter for municipal biowaste management in the new Strategy with specific actions to guide municipalities and the waste management sector to implement EU waste legislation.
- Cascading national biowaste recycling targets down to the municipal level, with each municipality being responsible for achieving their part of the target set at national level.
- Implementing effective economic instruments such as pay-as-you-throw systems and separate collection systems, enabling measures such as facilitation of permitting and access to funding for the installation of treatment plants.
- Requiring Member States to monitor the total amount of biowaste generated, the amount of biowaste separately collected at regional and national level, and the amount of biowaste left in the residual waste, reporting the data for food waste and green waste separately.
- Addressing the lack of data on the economic and social benefits of biowaste management, given the enormous potential of this sector in terms of employment (collection, transport, treatment) and wealth creation (local and EU security of food supply, flood management, local jobs).

2. Enabling the market for circular organic fertilising products and their associated benefits

When correctly collected and treated (by composting or anaerobic digestion), biowaste can be transformed into **high-quality fertilising products** (i.e., compost and digestate) which can **replace mineral fertilisers** and peat, and reduce the EU's dependence on imported raw materials and nutrients. In addition, these circular organic fertilising products **can deliver key environmental and climate benefits** when regularly applied on soils by increasing soil organic matter (which is at risk in a large part of European agricultural land), reducing soil erosion, increasing soil biodiversity, increasing soil water holding capacity, and storing carbon. The specifications for a balanced plant fertilisation with compost and digestate apply accordingly.

By incentivising the production and market uptake of circular organic fertilising products from efficient biowaste management, together with regenerative and carbon farming practices, we could make an important contribution to bring our soils back to a healthy condition while mitigating climate change, increasing water resilience and improving soil productivity.

With this in mind, we recommend the following measures:

- Recognising the contribution of biowaste management for the production of circular organic fertilising products as part of the EU actions on climate and soil degradation.

- Establishing achievable requirements for compost and digestate to obtain the CE mark under the EU Fertilising Products Regulation (FPR), including the revision of the nutrient content requirements and the inclusion of sludges or liquid comparable waste from the food and feed processing industry as input materials.
- Harmonising the End-of-Waste criteria under the WFD and requiring Member States to establish clear and operational national legislation providing national End-of-Waste status and legal certainty for compost and digestate.
- Lifting the regulatory barriers in the Animal By-Products Regulation (ABPR) which hinder the EU market for biowaste-derived products by imposing strict and impracticable requirements since biowaste may contain animal by-products.
- Assessing the introduction of nutrient recycling targets with a minimum recycled content of biowaste-derived nutrients in all circular organic fertilising products sold.
- Addressing the next revision of the Nitrates Directive to assess circular organic fertilising products according to their fertilisation/nutrient availability in an adequate manner and by considering their contribution to keep soil organic carbon in the soil Shaping the upcoming Delegated Acts under the Certification Framework for Carbon Removals and Carbon Farming (CRCF) to make sure that farmers can be rewarded for the application of circular organic fertilising products on their soil.
- Foreseeing the introduction of mandatory measures under the EU standards for Good Agricultural and Environmental Conditions of Land (GAECs) and promoting eco-schemes and regenerative practices in the Common Agricultural Policy that encourage farmers to use compost and digestate produced from biowaste.

3. Facilitating the market for biogas and biomethane derived from biowaste and their associated benefits

In addition to producing digestate, the anaerobic digestion of biowaste generates biogas — **a renewable gas suitable for use in transport, buildings, power generation and industry**. When upgraded to biomethane, which is chemically identical to natural gas, it can integrate into existing gas infrastructure and **replace all natural gas end-uses**. In Europe, there is a clear shift toward using feedstocks with the highest greenhouse gas savings potential, particularly organic municipal and commercial waste. By 2023, organic municipal waste had become the second largest source of biomethane production.

Biogases have the potential to substantially replace future gas demand, supporting the **EU's climate neutrality goals** while **reducing reliance on imported natural gas** through a renewable, locally produced alternative. They also play an important role in the energy transition by complementing other renewables, **offering much-needed flexibility to the energy system**. As a clean and dispatchable energy source, biogases are essential for maintaining power supply during periods of low solar and wind generation.

Recognising the strategic importance of biogases, the European Commission's REPowerEU Plan has set an ambitious target of producing 35 billion cubic meters (bcm) annually by 2030. Achieving this goal requires unlocking the full potential of biogas, particularly from the organic and high-energy fraction of biowaste, through the following measures:

- Establishing a binding biogases target of 100 billion cubic meters (bcm) by 2040
- Encouraging Member States to establish national biomethane targets and support them with effective support schemes that make biogases cost-competitive with natural gas.
- Streamlining, accelerating and digitalising permitting procedures for the construction of biogas facilities processing biowaste.

- Ensuring timely implementation of the Gas Package to improve access to the gas grid.
- Facilitating cross-border biogas trade by harmonising certification systems and clarifying rules for their use.
- Ensuring Member States consider the wider potential arising from the production of biomethane, in particular the production of fertilising products and biogenic CO_2, and take this into account in their biomethane and biogas strategies and target setting.

4. Mobilising European funds and investments for the production of biogas and organic fertilising products from municipal and non-municipal biowaste

Financing biowaste management in the EU, whether for biogas production or composting, faces major challenges. Available EU funding is often too large in scale to suit local biowaste projects, making instruments like the Public Sector Loan Facility inaccessible to many municipalities. Additionally, regional and local authorities struggle to access EU funds, such as Structural and Cohesion Funds, as national priorities and governance structures often divert resources toward other sectors. At the same time, private investment in municipal biowaste remains limited due to regulatory barriers, feedstock variability and permitting delays, leaving many municipalities without the means to cover upfront infrastructure costs.

To scale up the circular bioeconomy from biowaste, we recommend:

- Creating a dedicated EU funding programme under Horizon Europe to support public and private waste managers and municipalities, encouraging private investment and public-private partnerships in local initiatives focusing on recycling biowaste and recognising the value of derived fertilising products.
- Reviving the Circular Bioeconomy Thematic Investment Platform with a thematic area on biowaste.
- Aligning funding from the Just Transition Mechanism, the European Climate, Infrastructure and Environment Executive Agency (CINEA) or the Circular Cities and Regions Initiative (CCRI) with the actual costs of local biowaste management.
- Enhancing support for biowaste within the Circular Bio-Based Europe Joint Undertaking and the BIOEAST Initiative.
- Boosting funding and awareness for knowledge-sharing and capacity-building projects such as the HOOP project, TAIEX-EIR Peer-to-Peer funding tool, Interreg Europe projects or LIFE programme projects (e.g., the BioBest Project).

List of references

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- European Biogas Association. (March 2024). *Exploring digestate's contribution to healthy soils.*
- MWE Biowaste Connection Campaign which explains the positive impact of biowaste on Regenerative Farming, Climate Mitigation and Healthy Soils.
- MWE TAIEX EIR Peer–to–Peer Case Study between Ljubljana and Évora (2018–2019).

Co–signatories

Municipal Waste Europe represents European public responsibility for municipal waste management. Our members are municipalities and public waste management companies that play a crucial role in providing this Service of General Interest and in delivering a circular economy in Europe. We support the waste hierarchy, resource efficiency and the exchange of good practices to develop environmentally sound and efficient waste management systems in Europe.
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The **European Biogas Association** 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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The **European Compost Network** is the leading European membership organisation promoting sustainable recycling practices through composting and anaerobic digestion of organic resources and safeguarding the quality and safe use of recovered organic fertilisers and soil improvers. With 67 members from 27 European countries, ECN represents more than 4,500 professionals and operators with more than 45 million tons of biological waste treatment capacity.
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