

ECOFRIENDLY MULTIPURPOSE BIOBASED PRODUCTS FROM MUNICIPAL WASTE



LIFE19 ENV/IT/000004

“ Before burning everything up, consider saving what is valuable: municipal biowaste contains valuable organic matter and the real waste is dismissing to landfills or burning it ”



BIOWASTE

The estimated European production of **municipal biowaste** ranges around **100 million tons** per year. The two major streams of this waste are:
- park & garden
- kitchen waste



WATER

Municipal organic waste contains **50-80% of water**. This water, due to the destination of this type of waste and the treatments currently in use, is mostly dissipated.



LANDFILL

The most common destination for municipal biowaste is **landfilling** or, alternatively, **incineration**, due to the limitations of current treatment technologies.



SUSTAINABLE

With the **LIFE EBP** process it is possible to **reduce** the production of **ammoniac** (-100%) and **CO2** (-20%), **recover water**, **eliminate** the **incineration** or **landfill** of **municipal biowaste**.



BUSINESS

Municipal organic waste can be used to produce **new bio-products** capable of stimulating the development of a **green economy**, in accordance with the paradigm of the **circular economy**.



POLICY

LIFE EBP aims to stimulate communities, municipalities and private investors to **implement** specific **environmental EU policies** and to **update legislation** in this field.



CURRENT
CONTEXT

LIFE  EBP

LIFE EBP Project

Ecofriendly multipurpose Biobased Products from Municipal Waste

SUMMARY

INTRODUCTION.....	1
CONTEXT AND RATIONALE.....	2
PROJECT OBJECTIVES.....	2
WHY LIFE EBP??.....	3
Because it directly addresses the EU's strategic priorities.....	3
Because it significantly reduces public waste management costs.....	3
Because it creates new industrial supply chains and green jobs.....	4
Because it reduces the EU's dependence on imports of raw materials.....	4
Because it offers replicable and scalable solutions in all EU's countries.....	4
Because it tackles environmental issues that generate costs and regulatory penalties.....	5
Because it supports the agricultural transition to more sustainable fertilizers.....	5
Because it meets citizens' expectations on sustainability.....	5
Because it transforms waste treatment plants into local biorefineries.....	6
Because it enables data-driven policy-making.....	6
Conclusions and recommendations for policymakers.....	6

INTRODUCTION

The aim of this document is to present an innovative project for the treatment of municipal bio-waste that reduces environmental impact and creates added value in the perspective of sustainable development.

*This document is addressed to **political stakeholders** at local, regional, national and European level.*

The increasing production of **municipal biowaste** requires the adoption of innovative technologies for its valorisation.

The **LIFE EBP Project** has demonstrated the feasibility of **converting such waste into high-value bioproducts**, with reduced production costs and significant environmental benefits. The use of soluble bio-organics improves the efficiency of anaerobic digestion, **increases biogas production, and reduces ammonia content** in the digestate through advanced

technologies. While these processes require regulatory adjustments and market assessment, they offer economic advantages and allow treatment plants to evolve toward more sustainable and competitive production models.

The **LIFE EBP project** validates these solutions at full scale, involving European partners and promoting innovative recycling models that contribute to emission reductions, lower dependence on fossil resources, and the creation of low-impact industrial value chains.

Relevance for Public Authorities and Policymakers

For public institutions, the project represents a strategic opportunity as it directly contributes to national and European goals on circular economy, emission reduction, sustainable waste management, and decarbonisation. It enhances service sustainability, reduces treatment costs, supports ecological transition, and activates new economic sectors.

LIFE EBP offers a concrete, scalable, and replicable model—based on scientific and operational evidence—capable of guiding environmental policies, regulation, and financing tools toward innovative solutions for organic-waste recovery, with positive environmental, economic, and social impacts.

CONTEXT AND RATIONALE

Municipal biowaste production in Europe is steadily increasing.

Current technologies – such as composting and conventional anaerobic digestion – face limits in terms of:

- greenhouse-gas emissions,
- management costs,
- disposal of ammonia-rich digestates,
- missed economic valorisation of biomass.

LIFE EBP has demonstrated that **municipal biowaste can be converted into high-value bioproducts** with low production costs.

PROJECT OBJECTIVES

LIFE EBP has demonstrated – under real operating conditions and in five European countries (Italy, Spain, Greece, Cyprus, France) – that converting municipal biowaste into bioproducts is technically feasible, economically advantageous, and environmentally beneficial.

The project aims to:

- replicate **bio-based product** production **from biowaste** in real plants.
- validate their use as fertilizers, biostimulants and anti-pathogen agents for **agriculture**, biopolymers for **plastics**, and biosurfactants for **detergents**.
- verify **compliance with EU regulations**.
- assess **marketability**.
- promote post-project **joint ventures** in the waste, agriculture and chemical sectors.
- support industrialisation and uptake of **biobased products** across Europe.

WHY LIFE EBP??

Because it directly addresses the EU's strategic priorities

LIFE EBP provides operational solutions aligned with major EU agendas:

- **European Green Deal,**
- **Circular Economy Action Plan,**
- **Zero Pollution Strategy,**
- **Farm to Fork Strategy,**
- **EU Climate Action,**
- **Fit for 55,**
- **Climate Law** (-55% emissions by 2030).

Its integration of waste management, chemical industry, and agriculture makes it an effective example of EU policy implementation.



Supporting LIFE EBP allows public authorities to demonstrate progress in priority political areas..

Because it significantly reduces public waste management costs

The treatment of municipal biowaste is one of the **most expensive items in local public services**.

LIFE EBP introduces technologies that:

- **reduce** plant **operating costs,**
- **reduce** digestate **disposal costs,**
- reduce emissions – and therefore **costs associated with ETS systems** and environmental offsets,
- **generate revenue** through the production of high commercial value bioproducts.



Result for public administrations: a management model that costs less and generates local economic value.

Because it creates new industrial supply chains and green jobs

The ecological transition requires the creation of **green jobs** and new industrial skills.

With this in mind, LIFE EBP:

- creates opportunities for **agricultural, chemical, energy, and waste management companies**,
- stimulates the creation of **public-private joint ventures**,
- activates **production chains** for surfactants, biopolymers, and new-generation fertilizers,
- enhances **local and European know-how**, making it exportable.



Public administrations can present LIFE EBP as a driver for competitiveness, investment, and new employment.

Because it reduces the EU's dependence on imports of raw materials

EU countries are heavily dependent on fossil raw materials, such as:

- synthetic fertilizers (highly exposed to energy crises),
- plastics and chemical precursors of fossil origin,
- industrial surfactants.

LIFE EBP produces **bio-based, local, and renewable alternatives**.



This contributes to the economic and strategic security of Europe and individual EU countries, reducing vulnerability and instability in global markets.

Because it offers replicable and scalable solutions in all EU's countries

The technology developed in LIFE EBP:

- works in **plants of any size**,
- is economically sustainable even for **small municipalities**, in **rural areas** or on **farms**,
- can be **integrated into existing plants** at relatively low cost,
- is suitable for **both urban waste and livestock waste** (a very sensitive issue in many regions).

Its flexibility makes it suitable for municipalities, consortia, multi-service companies, and private operators, facilitating the widespread adoption of circular economy practices throughout the territory.



For public authorities: a technology that can be replicated anywhere, thus having a high impact on national and regional policies.

Because it tackles environmental issues that generate costs and regulatory penalties

LIFE EBP helps solve environmental problems that directly affect **public administration budgets**:

- reduction of emissions from composting and landfills,
- reduction of leachate,
- reduction of ammonia and nitrates in soil (in line with the Nitrates Directive),
- lower risk of European infringements.



A public administration can use LIFE EBP to improve environmental compliance, avoiding penalties and improving the image of the territory.

Because it supports the agricultural transition to more sustainable fertilizers

The **agricultural sector** is under pressure due to its environmental impact.

LIFE EBP:

- produces natural fertilizers and biostimulants that can also be used in organic farming,
- offers alternatives to synthetic nitrogen fertilizers,
- improves soil fertility by reducing the loss of organic matter.



A key element in regional strategies for agricultural sustainability and combating climate change.

Because it meets citizens' expectations on sustainability

Citizens are calling for:

- fewer landfills,
- less incineration,
- more reuse and recovery,
- less odor and local impact,
- safer and less polluting products.

LIFE EBP offers concrete and measurable answers and helps build a positive narrative: waste not as a problem, but as a resource and an opportunity for development.



For public authorities and decision-makers: a project that generates public consensus and reduces territorial conflict.

Because it transforms waste treatment plants into local biorefineries

This is a decisive strategic point: LIFE EBP shows how a waste plant can become a **productive industrial hub**, reducing the negative perception of waste.



The narrative changes: from “a problem to be managed” to “a resource to be exploited”.

Because it enables data-driven policy-making

Thanks to the project activities:

- real-world testing,
- LCA analysis compared with traditional technologies,
- regulatory validation,
- market studies of bioproducts,
- socio-economic assessments.



Decision-makers can base reforms and new regulations on concrete data and not just on theoretical models.

Conclusions and recommendations for policymakers

Recommended actions:

- Encourage the adoption of technologies for the treatment of urban organic waste, at local and national level, that are truly sustainable from an environmental, technological, and economic point of view, such as those developed with the LIFE EBP project.
- More generally, integrate technologies for bioproducts into regional and national waste management strategies.
- Support investments in plants with reduced business risk.
- Encourage the creation of public-private partnerships.
- Update guidelines and standards for the use of bioproducts in agriculture and industry.
- Include the production of bioproducts among the indicators of the circular economy.
- stimulate fiscal measures and incentives for the replacement of fossil products with bio-based alternatives.

For more information, visit the project website: www.lifeebp.eu