Bin2Bean

D5.2 – Training guidelines

Training guidelines to support Business Models and market uptake of biowaste-derived soil improvers

Consorzio Italbiotec (ITB)

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Index

List of Acronyms

AD (Anaerobic Digestion): Process that breaks down organic waste without oxygen, producing biogas and digestate.
BMC (Business Model Canva): Management framework that visually describes how an organization creates, delivers, and captures value through nine interconnected building blocks.
CAGR (Compound Annual Growth Rate): The measure of the mean annual growth of a market value over a specified period of time, assuming the value grows at a steady rate each year
CAP (Common Agricultural Policy): EU framework supporting farming, including eco-schemes for soil health.
CEAP (Circular Economy Action Plan): EU strategy promoting waste reduction and recycling as part of the Green Deal.
LL (Living Labs): real-world innovation environments to test project innovations
PDCA (Plan–Do–Check–Act): Iterative cycle used in the BIN2BEAN project to design, test, and improve solutions.
RED III (Renewable Energy Directive III): EU directive promoting renewable energy, including biogas valorisation.
TEA (Techno-Economic Assessment): Method to evaluate technical feasibility and economic viability.
WFD (Waste Framework Directive): EU directive setting rules for waste management and separate biowaste collection.
WP (Work Packages): a structured unit of the project that brings together a group of related tasks, partners and resources.

Executive Summary

The BIN2BEAN project addresses one of Europe's **pressing challenges**: how to turn the large amounts of organic waste generated in mainly in cities into a resource for healthier soils and a more circular economy. Its main objective is to **demonstrate how bio-waste can be transformed** into high quality **soil improvers** that can restore fertility and close nutrient cycles. Working within the framework of the EU Mission *A Soil Deal for Europe*, the project operates through Living Labs in Amsterdam (NL), Hamburg (DE), and Egaleo (GR), where different technical solutions are tested according to the specific local context and needs.

Combining policy considerations with a review of business trends, while presenting new training opportunities within the BIN2BEAN project, these **guidelines** places **entrepreneurs and innovators** at the centre of the transition towards regenerative soil systems. In particular, this document combines tools and recommendations to enhance market potential of circular innovation in the biowaste-to-soil improver value chain, identifying key success factors for their industrial scaling and effective city-level adoption. This report starts from a brief review of the European **policy framework** that enables the soil improvers' market uptake, including the Waste Framework Directive and the Fertilising Products Regulation, and also analyses current **market trends**, which point to growing demand for bio-based soil inputs driven by the rapid expansion of organic farming and the EU target of bringing 25% of agricultural land under organic management by 2030. At the same time, the work acknowledges the barriers that still limit wider adoption, from **uneven waste collection systems** to concerns about product quality and a lack of farmer awareness. It also identifies strong drivers of change, such as EU incentives, the urgent need to restore degraded soils, and new opportunities linked to carbon farming and climate services. Finally, after including an **analysis of training needs** of solutions providers, the document presents the **BIN2BEAN training series** with practical guidance to benefit of public funding, strengthen financing strategies, and communicate with potential partners involved at different level of the value chain.

The guidelines extend their relevance to a broad community of stakeholders, including **policymakers** and **municipalities** developing strategies for waste management and soil restoration, **farmers** and land managers seeking sustainable alternatives to chemical fertilisers, **waste operators** and innovators experimenting with new models of composting, and **researchers**, educators, and community organisations that play a role in knowledge transfer and awareness raising.

1. Introduction

Soil is one of Europe's most vital resources, underpinning food production, biodiversity, climate regulation, and human wellbeing. Yet **more than 60% of soils in the EU are in poor condition** due to degradation, erosion, loss of organic matter, and unsustainable land use. Reversing this trend requires **systemic action** that addresses both the way we manage soils and how we handle organic resources that are too often wasted.

The BIN2BEAN project responds to this challenge by **exploring** how urban and regional bio-waste can be transformed into high-quality soil improvers that restore soil health and support the transition toward regenerative, circular systems. By supporting the development of innovative interventions at different level of the biowaste-to-soil improver system (i.e. solutions), the project demonstrates pathways to close nutrient loops, manage biowaste efficiently, and contribute to soil restoration. Adopting a co-creation approach, the project demonstrates its approach in three Living Labs (LLs) covering different pedo-climatic regions and local needs: Amsterdam (NL), Hamburg (DE), Egaleo (GR). These LLs act as testbeds where innovative business models, technical processes, and social engagement strategies are being co-developed with local stakeholders. Their experiences provide concrete insights into how diverse contexts can implement bio-waste-to-soil-improver systems that are technically robust, socially inclusive, and economically viable.

This **report** is part of Work Package 5 (WP5) of the project, which focuses on developing go-to-market strategies for different solutions, including guidelines, training, and capacity building for entrepreneurs to enhance market potential of circular innovation. It provides a **practical reference** for solutions providers, extending its relevance to policymakers, waste managers, farmers, and community actors, to develop or scale cost-effective and market-enhanced solutions that link waste management with soil regeneration. The resulting recommendations are designed as a practical report to support entrepreneurial capacity, enabling the industrial scaling of bio-waste-based soil improvers and their integration into circular bioeconomy markets. The approach is closely aligned with the objectives of the EU Mission "A Soil Deal for Europe", which calls for 100 Living Labs and Lighthouses to lead the transition to healthy soils by 2030.

To **support the wider uptake of soil improvers** derived from bio-waste across Europe, these guidelines synthesise current knowledge, policy frameworks, and market trends, while also drawing on lessons learned from and for the LL experimentation. Their purpose is:

- **To inform** decision-making by clarifying the benefits, risks, and regulatory context of using soil improvers, while highlighting the specific opportunities and challenges entrepreneurs face in navigating these frameworks.
- **To build capacity** by offering practical insights that strengthen the ability of entrepreneurs and stakeholders across the value chain to develop viable

business models, access funding, and enhance the market potential of circular soil innovations
- **To inspire innovation** by showcasing business models and engagement strategies that demonstrate how waste valorisation can deliver soil, climate, and social benefits simultaneously, and by identifying the key success factors for pre-market development and commercialisation.

A concrete output of these guidelines is the **BIN2BEAN training series**, which translates the insights presented here into targeted learning opportunities for entrepreneurs, innovators, and other stakeholders seeking to scale solutions.

In doing so, the guidelines aim to bridge the gap between policy ambitions and local practice, equipping entrepreneurs and actors at multiple levels with the tools and evidence they need to turn bio-waste into a cornerstone of sustainable soil management and market-ready circular products.

2. What Are Soil Improvers?

Soil improvers, also known as soil amendments or soil conditioners, are organic materials applied to soil with the primary objective of enhancing its physical, chemical, or biological characteristics, thereby increasing fertility, water retention, aeration, and microbial activity. They are designed to improve the condition and structure of the soil, leading to healthier plants. Unlike fertilizers, which primarily provide nutrients, soil improvers work holistically to improve soil structure, resilience, and long-term productivity. They play a critical role in sustainable agriculture, land restoration, and urban greening initiatives, especially in the context of climate resilience and circular bioeconomy strategies.

They may work through **different mechanisms**; some soil improvers enhance the soil's structure by promoting the **aggregation of soil particles**, which creates a crumb-like texture. This improves aeration and water infiltration, especially in compacted or heavy clay soils. Many soil improvers, particularly organic types, **increase the organic matter** content in the soil, helping optimize the water balance, allowing soil to retain water better and reducing the need for frequent watering.
Soil improvers can increase the **availability** of nutrients to plants. Some types, rich in humic substances, bind with essential nutrients like iron, magnesium, and calcium, making them more accessible to plant roots, and by improving soil life, they create a better environment for symbiotic relationships between root systems, mycorrhizal fungi, nematodes, and worms, reducing disease and root rot. They also enhance the air balance within the soil, which supports root development, leading to stronger, more resilient plants.
While compost and digestate remain the most known and adopted at large scales, other types of soil improvers are currently emerging, including biochar and vermicompost (Liu et al., 2024; Wenliang et al., 2021).

2.1 Types covered: Compost, Digestate, Biochar, Vermicompost

Compost

Compost is a natural, nutrient-rich soil amendment created through the controlled aerobic biological decomposition of organic waste materials. It forms when materials such as food scraps, garden trimmings, crop residues, or manure are decomposed by microorganisms (mostly bacteria and fungi) in the presence of oxygen.
This process, known as aerobic composting, transforms raw organic waste into a stable, dark, crumbly compound that returns valuable nutrients to plant crops.
The composting process occurs in **distinct stages**, starting with the *mesophilic phase* that, adopting a temperature approximately around 20-40 °C, favours bacteria and fungi that consumes simple compounds such as sugars, amino acids, and lipids to release metabolic energy. As temperatures rise, the process enters a *thermophilic phase* (40-70 °C), during which thermophilic microorganisms degrade major structural molecule of the organic matter, including protein, cellulose and lignin. The high heat also helps sanitise the compost by inactivating many pathogens and weed seeds. Eventually, as the microbial activity slows, the composting process enters the *cooling and maturation phase* where the material is refined into a stable form that is safe and has high agronomic value for the soil (Ho et al., 2022).
Mature compost is **rich in organic carbon** and contains key plant nutrients such as nitrogen, phosphorus, and potassium. It usually has also a low moisture content and low bulk density. When added to soil, it improves physical properties such as porosity, aggregate stability, and water-holding capacity, while reducing bulk density and erosion. Beyond its physical benefits, compost supports a diverse and active microbial community, which contributes to soil fertility and resilience against disease (Lin et al., 2018; Ho et al., 2022). Because of these properties, compost is **widely valued** in agriculture, horticulture, and land restoration, as it reduces the need for synthetic fertilisers, recycles organic waste that might otherwise be incinerated or even worse go to landfill, and plays a role in carbon sequestration by stabilising organic matter in soils. It has been estimated that compost application as a sequestration potential of approximately 160 kg of C per year (Razza et al., 2018).
Despite the many advantages, the emissions of compounds such as ammonia during the thermophilic phase is the largest contributor of emissions from composting, accounting for about 50% of initial total N, and also contributes to odour emissions that should be carefully controlled during these procedures (Li at al., 2018).
Effective composting also demands careful control of the entire process, from

feedstock mix to temperature and emissions, to avoid odour, pests, incomplete decomposition or anaerobic conditions that may disrupt the entire process. The length of the process, especially for feedstocks that decompose slowly, can also be seen as a limitation for larger scale adoption (Prempeh et al., 2022).
In the EU, compost derived from source-separated bio-waste is subject to quality standards under the **Fertilising Products Regulation (EU) 2019/1009**, which ensures safety and uniformity for agricultural use. When properly managed, composting can therefore be considered effective both for waste management solution and as a tool for sustainable soil health. For this reason, composting remains the most widely used method for treating separately collected biowaste. According to a report of the European Compost Network, in 2022 there were **3,800 composting facilities** in Europe[1].

Digestate

Digestate is a valuable by-product of the **anaerobic digestion** of organic substances, such as food waste, agricultural residues, sewage sludge, or livestock manure, and it is characterised by a nutrient-rich composition that balances macro and micronutrients essential for plant growth (Czekała et al., 2020).
Anaerobic digestion (AD) is a biological process that converts organic matter in oxygen-free conditions that involve four metabolic steps: hydrolysis, acidogenesis, acetogenesis and methanogenesis. The interactions between microorganisms involved in these steps is extremely complex and may affect AD performance and stability. The process results in two main outputs: **biogas**, a renewable energy source primarily composed of methane and carbon dioxide, and **digestate**, the nutrient-rich residual byproduct (Lin et al., 2018).
The nutrient content of digestate varies depending on the feedstock used, but typically it contains significant amounts of nitrogen, phosphorus, potassium, and organic matter. One of the distinguishing features of digestate compared to compost is its **higher nitrogen content** in mineral form, meaning nutrients are more immediately accessible to plants. It also contains phosphorus, potassium, trace elements, and residual organic matter. However, it has a higher moisture content than compost and usually require solid-liquid separation to reduce this parameter (Viancelli et al., 2023; Lin at al., 2018).
Anaerobic digestion plays an important role in the circular economy and is recognised in European Union policies for both agricultural value and energy recovery, such as the **Renewable Energy Directive III (RED III).** The use of anaerobic

[1] https://www.compostnetwork.info/wordpress/wp-content/uploads/ECN-rapport-2022.pdf

digestion process for treating biowaste is increasing with around 2,000 plants mapped in Europe in 2022 according to a European Compost Network report. However, despite its increasingly recognised value, lack or uncertain legislation for byproduct utilisation may hinder its further large-scale development as a sustainable waste management practice (Lin et al., 2018).

Biochar

Biochar is a stable, carbon-rich material obtained from biomass, such as crop residues, wood chips, manure, using thermal combustion in an oxygen-deficient condition (Yaashikaa et al., 2020). **Pyrolysis**, a thermal decomposition process using temperatures typically between 350°C and 700°C, is the most common process to produce biochar alongside syngas and bio-oil. Other processes include hydrothermal carbonization, gasification, flash carbonization, and torrefaction (Amalina et al., 2022). Unlike combustion or incineration, pyrolysis prevents complete oxidation, thereby producing a porous substance similar to charcoal that retains much of the original biomass's carbon content.

The structure of biochar is highly porous, with a large surface area characterised of essential functional groups such as carboxylic, hydroxylic, amine, giving it exceptional physical and chemical properties that benefit soil health. When incorporated into soil, biochar enhances water and nutrients retention, which is particularly useful in sandy or degraded soils. Its pores also provide habitat for **beneficial soil microorganisms**, supporting a diverse and active soil food web, and its high capacity for cation exchange allow gradual nutrients realise in the soil (Yaashikaa at al., 2022; Amalina et al., 2022; Leng et al., 2021; Haider et al., 2022).

Unlike compost or digestate, which decompose relatively quickly, the carbon in biochar **resists microbial decay**, allowing it to persist in soil for centuries. This makes biochar an effective tool for carbon sequestration, contributing to climate change mitigation especially when produced from waste biomass. It has been estimated that each year biochar could effectively capture from 1 to 35 gigatons (GtCO2) of CO2 and 78 to 477 GtCO2 over this century (Shoudho et al., 2024).

Beyond soil fertility and carbon storage, biochar can also reduce nutrient leaching, especially of nitrates, and decrease emissions of nitrous oxide (N_2O), a potent greenhouse gas. It can buffer soil pH, improve aeration in compacted soils, and in some cases, even bind harmful substances such as heavy metals or organic pollutants, thus reducing their mobility and toxicity (Haider et al., 2022).

The exact properties of biochar, such as pH, nutrient content, and adsorption capacity, depend heavily on the feedstock used and the pyrolysis conditions (temperature, duration, and oxygen availability). This variability offers opportunities

to tailor biochar but also highlights the need for quality standards. Furthermore, despite its advantages, biochar production is depending on reactor design and feedstock moisture content and may show an unfavorable energy balance (Ahmed et al., 2019). Large-scale economic feasibility also remains uncertain: some researchers have observed that the projected advantages of biochar are insufficient to justify its high price. Incentives for CO2 sequestration may, however, increase the economic feasibility of this solution (Shoudho et al., 2024).
All considered, in some context biochar may represent a promising approach to transforming organic waste into a long-lived resource that enhances food security and environmental resilience, although technology optimisation and policy and incentives review are needed to ensure a wider adoption.

Vermicompost

Vermicompost is a finely textured, nutrient-rich organic fertiliser prodcued through the non-thermophilic biological **processing of organic waste by earthworms** and associated microbes (Manzoor et al., 2024). In this process, known as vermicomposting, species such as *Eisenia fetida* (red wigglers) or *Lumbricus rubellus* consume decomposing organic matter like food scraps, manure, and plant residues (Van Groenigen et al., 2014).
As the material passes through the worms' digestive tracts, it is digested and enriched with mucus, enzymes, and beneficial microbes, resulting in a dark, crumbly substance known as worm castings or vermicast (Blouin et al., 2019).
What distinguishes vermicompost from traditional compost is both its biological complexity and nutrient availability. In vermicomposting, not only the digestion process is faster, but also the resulting products shows better nutrients and microbial properties. Vermicompost is particularly high in **plant-available nitrogen, phosphorus, potassium, and micronutrients**, while also containing a broad array of beneficial microorganisms that support soil health and suppress harmful pathogens (Blouin et al., 2019).
Scientific studies have consistently shown that, when applied to soil, vermicompost lowers its pH, improves porosity and water retention capacity, enhances microbial activity, and overall soil health, leading to better germination, growth, development, and, potentially, crop yield although limited studies are available on this topic. Furthermore, vermicompost protects plants from oxidative stress caused by various abiotic factors as it supports the antioxidative defense system of the plants (Manzoor et al., 2024).

These attributes make vermicompost **highly suitable** for horticultural and high-value crops, where soil fertility and plant health are critical.
From a systems perspective, vermicomposting is an accessible and scalable waste management solution. It requires **relatively low infrastructure** and is often implemented in decentralized, small- to medium-scale settings such as farms, schools, community gardens, and even households. This makes it especially relevant for local or grassroots approaches to organic waste recycling, where food and garden waste can be diverted from landfills and converted into a valuable soil amendment at or near the source.

3. Policy and market landscape

3.1 EU Policy and Regulatory Context

The European Union has progressively established a comprehensive regulatory framework aimed at fostering the transition to a circular economy, in which bio-waste is recognised as a critical resource for soil regeneration. The legislative landscape combines binding directives, regulations, and strategic policy documents that provide both obligations and guidance for Member States in developing biowaste collection, processing, and valorisation systems.

Waste Framework Directive (WFD)
At the core of EU waste legislation is the Waste Framework Directive (Directive 2008/98/EC, amended by Directive 2018/851), which sets the fundamental principles of waste management, including the waste hierarchy and the polluter-pays principle. The WFD mandates that by 31 December 2023, Member States must

ensure separate collection of biowaste or ensure it is recycled at source. This provision is essential for producing high-quality feedstock for soil improvers such as compost and digestate.
Furthermore, the WFD establishes recycling targets of 55% by 2025, 60% by 2030, and 65% by 2035 for municipal waste. Achieving these goals necessitates effective bio-waste valorisation strategies, especially as biowaste represents a significant fraction of municipal solid waste across the EU.

Landfill Directive
The Landfill Directive (Directive 1999/31/EC, amended by Directive 2018/850) imposes strict limits on the landfilling of biodegradable waste. By 2035, only 10% or less of total municipal waste should be sent to landfill, and separately collected biowaste is already prohibited from being landfilled. This regulation aligns with the broader objective of redirecting bio-waste away from disposal and towards productive uses, particularly in soil improvement applications.

Circular Economy Action Plan (CEAP)
The European Circular Economy Action Plan (CEAP), adopted in 2020 under the European Green Deal, provides the overarching policy framework for transforming waste into value-added resources. CEAP promotes actions along the entire life cycle of products and explicitly highlights the role of biowaste valorisation in sustainable agriculture. It calls for enhancing recycling systems, encouraging secondary material markets, and promoting regenerative approaches that maintain soil health.

Fertilising Products Regulation (EU) 2019/1009
The Fertilising Product Regulation, in force since 2022, creates a harmonised legal framework for placing fertilising products on the EU internal market. It introduces quality and safety requirements for fertilisers, including those derived from bio-waste, and enables producers to affix the CE marking to compliant products. Among other provisions, it sets limits on contaminants such as cadmium and provides labelling rules to ensure transparency and safe use. The regulation is essential for enhancing trust and uptake of compost, digestate, and other soil improvers derived from organic waste streams.

End-of-Waste Criteria and Product Quality
The concept of “end-of-waste” (Article 6, WFD) is particularly relevant for bio-waste-derived products. Once bio-waste is processed into a compliant soil improver (e.g. meeting the standards under Regulation 2019/1009), it ceases to be classified as waste, thereby facilitating its trade and application. This is critical for reducing administrative burdens and enabling market entry for recycled soil inputs. At the national level, Member States may also develop quality assurance systems for compost and digestate. For example, countries such as Germany, France, and Italy

have implemented QA/QC systems to ensure the consistent quality and safe use of biowaste-based products.

Recent and Emerging Policy Developments

In February 2025, a provisional agreement was reached to revise the **WFD**, marking a significant step forward in the Union's ambition to transition toward a more circular, climate-resilient bioeconomy. Central to this revision are new binding targets for food waste reduction, which include a 10% cut in the food processing and manufacturing sectors, and a more ambitious 30% per capita reduction in food retail, food service, and household sectors, all to be achieved by 2030.

These targets have profound implications for the bio-waste and soil improver sectors, as member states scale up measures to reduce food waste across the value chain (through prevention, redistribution, and improved separation at source) there will be a **significant increase in the volume and quality of separated bio-waste** entering the collection system. This upstream improvement is critical for ensuring a consistent and contamination-free feedstock for the production of high-quality compost, digestate, and vermicompost.

For the scope of this project, which focuses on unlocking the potential of bio-waste-derived soil improvers, this policy shift is not only timely but **strategically aligned**. Improved supply of clean organic material will enable more efficient and scalable production of soil amendments that meet regulatory standards under the **Fertilising Products Regulation (EU) 2019/1009**, while also meeting sustainability criteria for carbon sequestration and soil regeneration. Moreover, the integration of these food waste targets into national and local waste management strategies is likely to stimulate investments in decentralised composting, anaerobic digestion, and vermicomposting infrastructure, in particular in urban and semi-urban settings. This opens the door for more inclusive and community-based solutions that contribute to both resource recovery and local soil health restoration.

However, it is important to note that EU policies can act both as an **incentive** and, in some cases, as a **limitation** to the transition towards the circular use of biowaste as soil improvers. On the one hand, the regulatory framework provides clear targets, quality standards, and market instruments that stimulate the valorisation of organic waste. On the other hand, the significant differences between Member States, regions, and even individual cities often result in **uneven implementation** of directives and a **fragmented policy landscape**. This heterogeneity can create uncertainty for producers and users of soil improvers, slow down market development, and generate additional administrative burdens. These challenges, as explored in BIN2BEAN's IR2 analysis, highlight the importance of **addressing policy diversity** not only at the EU level but also through tailored national and regional strategies that can enable more consistent and effective pathways for biowaste valorisation.

3.2. Market dynamics

The development of soil improver markets in Europe is deeply shaped by regional differences in policy enforcement, waste infrastructure, farming practices, and environmental pressures. Although EU-level frameworks such as the Waste Framework Directive, Fertilising Products Regulation, and CAP eco-schemes aim to harmonise objectives, **readiness and adoption patterns remain uneven**. This divergence offers both challenges and opportunities: while some countries are already engaged in market refinement and innovation, others are building foundational systems to enable future growth.

The following chapter describes the dynamics of the soil improvers market, which is segmented by product function: **soil conditioners**, which improve physical properties such as aeration and water retention and **soil amendments**, which enhance nutrient balance, pH, and microbial activity. The analysis is aimed at providing insights into the distinct dynamics and opportunities within these regions and highlighting key factors influencing market growth and adoption.

According to the Business Research Company, the global **soil conditioners market** is expected to see strong growth in the next few years, starting at 6.68 billion $ in 2025 and reaching 8.81 billion $ in 2029 at a Compound Annual Growth Rate (CAGR) of 7.1%[2]. When looking at **global soil amendments market**, a similar trend is registered: currently valued at 5.09 billion $, the market is expected to reach 7.57 $ in 2029 at a CAGR of 10.5%[3]. This steady growth can be attributed to technological advancements and an increased number of organic producers and processors that prioritise soil health and fertility, answering a rising demand for organic products and sustainable practices from the public. Enhanced government support, especially in **Western Europe**, further guides the market expansion. For example, in December 2021, the German government launched a soil protection initiative aimed at assisting smallholders. In Germany, where one of the highest market values in EU for both the soil conditioners and the soil amendments market are recorded, compost plays now a crucial role in regenerative agriculture and green infrastructure, with certified products regulated under both national schemes and EU Fertilising Products Regulation 2019/1009. These initiatives underline the importance of government funding in promoting sustainable farming techniques. On the contrary, the expansion of the soil conditioners market in **Eastern Europe** is projected to be more marginal in the upcoming years, while a rising demand for these products in urban areas, where industrialization has affected soil health, has been recorded and I expected especially to drive the soil amendments market growth.

[2] https://www.thebusinessresearchcompany.com/report/soil-conditioners-global-market-report
[3] https://www.thebusinessresearchcompany.com/report/soil-amendments-global-market-report

Although still a niche product in terms of volume, **biochar** is a promising innovation in climate-resilient agriculture, which is reflected in a high project market value. According to the **European Biochar Industry Consortium (EBI)**, the EU biochar market is projected to grow from approximately **€100 million in 2023** to **over €1 billion by 2035**, driven by carbon credit schemes and soil health policies.

Focusing on BIN2BEAN LLs, **Germany** is among the most advanced Member States in terms of soil improver market development. The country has implemented robust frameworks for separate bio-waste collection, quality certification for compost and digestate, and a well-developed anaerobic digestion industry. As of 2023, Germany hosted over 9,500 biogas plants, many of which supply digestate directly to nearby farms, allowing Germany's organic soil conditioners market and soil amendments market to scale significantly. The consistent supply of source-separated bio-waste has supported a **mature composting sector**, supplying inputs to conventional and organic farmers, municipalities, and landscape managers. Demand is also shaped by policy incentives at both federal and Länder levels. Programmes promoting **humus-building practices**, reduced tillage, and cover cropping explicitly encourage the use of compost and biochar. In urban and peri-urban zones soil improvers are used in brownfield redevelopment, public parks, and roadside planting. Germany's evolving bioeconomy strategy increasingly frames compost and digestate not as waste-derived products, but as **functional biogenic resources**.

In the **Netherlands**, circularity and export efficiency are tightly intertwined. Despite limited land area, the country maintains one of the most intensive and technologically advanced agricultural sectors in Europe. Recent government initiatives aimed at reaching wider EU sustainability goals are supporting a shift in agriculture practices that can further support the expansion of the market for biowaste-derived soil improvers: for instance, according to USDA, in 2020, approximately 72,000 hectares in the Netherlands were designated for organic farming, reflecting an increase of 3,500 hectares compared to 2019. This accounts for four percent of the total agricultural land in the country[4].
Notably, biochar is gaining momentum here, not just as a soil amendment, but as a component in climate adaptation strategies and green infrastructure. In agriculture, compost is widely used in organic horticulture and glasshouse operations, and there is also a growing uptake in buffer zone restoration, especially in areas under pressure from nitrate restrictions. The Netherlands' strong emphasis on nutrient recycling, traceability, and product certification makes it a testing ground for premium soil improvers, including CE-marked products and those aligned with carbon certification schemes.

[4] https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=The%20Organic%20Market%20in%20the%20Netherlands_The%20Hague_Netherlands_12-06-2021

Greece is catching up, driven by rising agricultural demand and government incentives promoting organic fertilizers. However, the limited development of organic waste management systems, both in terms of collection and processing, is expected to slow down progress compared to Western countries. Nevertheless, the growing awareness of environmental and soil degradation caused by rapid urban expansion has begun to set in motion a shift towards more sustainable agricultural practices, where biowaste-based soil improvers can find a promising market.

Beyond BIN2BEAN's pilot countries, several other Member States offer instructive models:

- **France** has introduced ambitious food waste collection targets and maintains a large municipal composting network. With CAP-aligned agroecology incentives, the demand for compost and digestate is expanding, though regulatory barriers for digestate valorisation persist.
- **Austria** has one of the highest per-capita composting rates in the EU and has integrated compost use into public procurement for landscaping and slope restoration.
- **Italy** achieves one of the highest biowaste collection rates in the EU, providing significant potential for conversion into high-quality soil improvers. Recent investments in separate collection systems and composting infrastructure further strengthen its role as a key player in advancing circular bioeconomy practices.
- In **Sweden** and **Denmark**, anaerobic digestion dominates. Digestate is used extensively on arable land, supported by nitrogen efficiency standards and strong farmer cooperatives. Denmark is also piloting field-scale use of acidified digestate to reduce ammonia emissions.

3.3 Barriers and drivers for adoption

As highlighted by the market trends described above, the uptake of bio-waste-derived soil improvers in Europe is gaining momentum, supported by environmental priorities, evolving regulations, and advances in organic waste processing. However, progress varies across regions, with challenges such as outdated infrastructure, concerns over product quality, and limited awareness, particularly where waste systems or agricultural support networks are less developed.

Barriers to adoption

Despite policy momentum, many regions (particularly in Southern and Eastern Europe) lack the collection and treatment infrastructure needed to generate high-quality feedstock. Where biowaste is collected, it is often contaminated with plastics or improperly sorted, reducing its suitability for compost or digestate production. According to the JRC (2023), more than 40% of municipal bio-waste in the EU is still not separately collected, while in rural areas, distance from treatment sites can make transport of bulky materials like compost economically unfeasible without subsidy support. This reflects the uneven implementation of EU obligations under the Waste Framework Directive (Directive 2008/98/EC, revised 2018) and the Landfill Directive

(Directive 1999/31/EC), which require separate collection and diversion of biodegradable waste but remain inconsistently enforced.

One of the most frequently cited adoption barriers, particularly for digestate, is **uncertainty around product quality and legal status**. While compost has widely recognised quality frameworks in countries like Germany, France, and Austria, digestate remains subject to divergent interpretations under waste and fertiliser laws in many EU countries. In several Member States, digestate is still legally classified as "waste" rather than a fertilizing product, which limits its agricultural application and reduces farmer confidence. Even under Regulation 2019/1009, stakeholders report challenges with compliance due to variability in nutrient content, pathogen risk, and heavy metal threshold. This fragmentation creates market hesitancy and complicates cross-border trade.

For many farmers, particularly those not receiving targeted subsidies, **cost still remains a barrier**. Even when soil improvers are available at low or no cost (for example, for community compost), the associated labour, logistics, or application efforts are often perceived as inconvenient. In some Member States, large-scale compost or digestate producers still face high OPEX due to stringent monitoring and post-processing requirements. Moreover, organic soil improvers are often less cost-competitive than synthetic fertilizers in the short term, despite their long-term benefits for soil structure and water retention.

Additionally, **lack of monetisation options for co-benefits** (like carbon storage) reduces financial attractiveness of high-value products like biochar, especially in the absence of stable carbon markets. In several regions, both conventional and smallholder farmers express scepticism about the agronomic effectiveness of compost and digestate; this is often tied to lack of local demonstrations, conflicting guidance, or historical experiences with low-quality material. Agricultural advisors may also lack training in circular input use, especially in countries where composting was previously seen primarily as a waste disposal activity. Concerns over microplastics and heavy metal contamination, especially in case of soil improvers coming from polluted urban areas, exacerbate farmer reluctance.

Consumer-facing sectors, like horticulture and landscaping, also suffer from weak awareness and limited commercial packaging or certification of soil improvers. The lack of harmonized labelling standards and marketing channels constrains market penetration outside agriculture.

Drivers of Adoption

EU legislation is a major enabler of market growth. Regulations such as the Fertilising Products Regulation (EU) 2019/1009 and amendments to the Waste Framework Directive create incentives to separate and valorise bio-waste, establishing a supply base for compost and digestate. CAP eco-schemes, particularly under Pillar II, reward the application of organic matter to soils, supporting farmer uptake of compost and biochar for carbon-rich, regenerative practices. The **recently agreed revision of the WFD** includes mandatory food waste reduction targets (10–

30%) by 2030 which is expected to increase the availability of clean, source-separated bio-waste, thus expanding feedstock for high-quality soil improvers.
Across Europe, **soil degradation**, organic matter loss, and water retention decline are growing concerns, and according to the European Soil Observatory (2022), over 60% of EU soils are in poor health. Soil improvers derived from organic waste offer a direct response by enhancing structure, retaining moisture, and restoring biological activity, benefits increasingly prioritised under the EU Soil Strategy for 2030 and the Biodiversity Strategy. The environmental co-benefits of applying soil improvers (carbon sequestration, biodiversity enhancement) strengthen alignment with Green Deal and Farm-to-Fork target.
Circular economy strategies, both at EU and municipal levels, are repositioning waste not as a disposal problem but as a resource stream. Composting and digestate production are now integrated into broader **urban circularity strategies**, particularly in Western Europe and Nordic cities.
The expansion of **organic agriculture**, supported by the EU's 25% land target by 2030, is creating structural demand for certified soil inputs. Products like compost and vermicompost, compliant with Regulation (EU) 2018/848, are favoured due to their compatibility with organic standards. Likewise, farmers under nitrate reduction obligations are increasingly turning to organic matter-based alternatives as synthetic inputs face regulatory constraints.
Adoption is also driven by the emergence of **small-scale, locally rooted composting and vermicomposting systems**. These models are particularly important in municipalities where large-scale biowaste infrastructure is lacking or politically constrained. However, their contribution remains marginal compared to industrial-scale processing. Small-scale composting or anaerobic digestion facilities typically operate alongside centralized treatment plants but do not have sufficient capacity to significantly reduce municipal food waste volumes or produce compost at a scale relevant for agriculture. In practice, the outputs are mostly used in non-agricultural contexts such as landscaping, community gardening, or urban green infrastructure, rather than being applied to farmland.
Community composting and urban farming initiatives are also increasingly promoted as part of municipal climate action plans.

The below scheme summarises both drivers and barriers to biowaste-derived soil improvers in terms of Political, Economic, Social, Technological, Environmental, Legal (**PESTEL**) factors.

Figure 1 - PESTEL analysis Bio-waste Supply Sector

4. Business Models review

4.1. Overview of dominant business models

Across Europe, the production and application of soil improvers from bio-waste is enabled by a range of distinct business models, shaped by local governance structures, market demand, available infrastructure, and regulatory incentives. While technical processes such as composting, anaerobic digestion, and pyrolysis are well established, their economic and operational models vary considerably. Based on the analysis of existing cases and further documented examples, three broad business model categories currently dominate the sector. The case studies reported below are accompanied by further references in *Table 1*, while the business models reported in categories A and B are summarised in the business model canvas (BMC) of *Annex 1*.

A. Valorisation plants managed by commercial enterprises

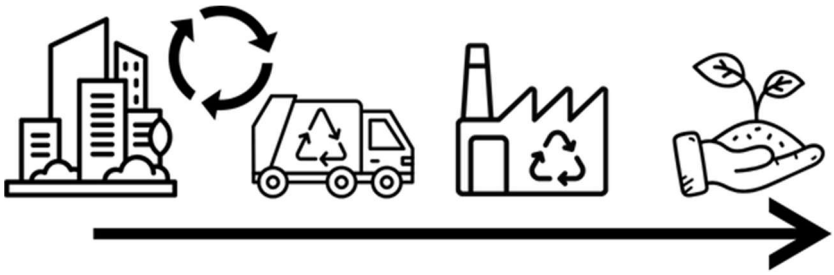
This model involves medium- to large-scale treatment facilities that receive organic waste from farms, food industries, and/or municipalities, converting it into compost or digestate. These plants often operate with **multiple revenue streams**, including gate fees (for accepting waste), the sale of compost or fertilising products, and in the case of AD, revenues from **biogas, biomethane, or electricity** generation.

In Belgium, **AM-Power BVBA**, operating since 2011, exemplifies a highly integrated AD-based model. It processes up to **150,000 tonnes/year** of agricultural waste and manure to produce **30 million m³ of biogas**, which is used for electricity generation (sold to Luminus, the second largest electricity producer and energy supplier on the Belgian energy market) and upgraded to biomethane. The digestate is treated further into liquid and solid fractions. The dried solid fraction of digestate, rich in phosphorus and ammonia, is marketed under the trademarked name **OrgaNutri** as high-quality fertiliser concentrates. The product is largely exported to France and sold directly to French clients where the demand for nutrient recovery is higher. The final product has a lower price compared to conventional fertilisers, but a higher price for product handling and field application (Herman et al., 2021).

Another clear example of this model is **Calabra Maceri e Servizi S.p.A.** operating in Italy since 2018. The company processes approximately **50,000 tonnes/year of organic municipal waste**, in a dry anaerobic digestion plant that produces approximately **4.2 million Sm³/year of biomethane**, which is injected into the national gas grid (SNAM) for low-carbon energy use. The resulting digestate is mixed with structuring material before maturing and being transformed into **8,000 tonnes**

of high-quality compost per year, sold with the name of Terrasana Bio. The facility is also equipped with ammonia-stripping technology to manage nitrogen-rich residues and avoid groundwater pollution.
Similarly, **Compostal Ltd.** in Hungary operates one of the country's largest composting systems, treating food and green waste under semi-permeable membrane technology. Their facilities serve **over 44 regional waste utilities**, transforming approximately **400,000 tonnes/year** of biodegradable waste into stable compost used in agriculture and land reclamation.
These models benefit from economies of scale, allowing them to manage quality and regulatory compliance more efficiently. However, they also rely on consistent feedstock flows and often require significant upfront investment and complex logistics to maintain a viable stream.

B. Public–private municipal waste partnerships



In urban contexts, compost and digestate production is frequently integrated into **municipal waste management systems**, operated either by local authorities or contracted service providers. These models leverage existing infrastructure for **separate bio-waste collection**, enabling the production of compost as part of a city's circularity and climate strategy.
A notable example is the **City of Milan**, which operates one of Europe's most successful urban food waste collection systems. Through subcontracting to **AMSA** (part of the A2A Group), the city effectively collects 62% of its biowaste via a door-to-door collection system. The organic waste is then transported and processed at the **Montello AD plant**, which handles over **130,000 tonnes/year of organic waste** (around 110 kg/inhabitant). The facility produces around **26,000 tonnes of compost annually** from the AD digestate fraction, 20% of which is given for free to farmers and citizens to promote its use, as well as **11.2 million m³ of biogas**, much of which, after being transformed in biomethane, is used to fuel the city's waste collection vehicles. This vertically integrated model is enabled by high public participation, digital waste tracking, and an incentive-based collection scheme. The facility is engineered to handle 200,000 tons of moist waste annually, potentially yielding 16 million cubic meters of biomethane and 40,000 tons of compost per year. However, its operational capacity has yet to be fully realized.
These models demonstrate how **policy mandates** (like separate biowaste collection) and public sector engagement can stimulate the development of viable soil

improver markets, especially when waste management and soil health are addressed as part of integrated urban sustainability strategies.

C. Decentralised and community composting systems

In regions where large-scale infrastructure is lacking, or where circularity goals target citizen engagement, smaller-scale composting or vermicomposting models are emerging. These are often community-driven or product-based, relying on modular systems and low-cost logistics, and are especially well suited to urban settings and peri-urban agriculture.

Compocity, a Hungarian circular economy startup, exemplifies this trend. It provides IoT-enabled composting units designed for shared use in buildings, offices, or schools. The units are connected to a digital platform that tracks waste input, compost quality, and user engagement. The compost is either returned to users or distributed to nearby green projects. Compocity's model illustrates how digital tools can lower barriers to participation, enhance transparency, and support localised soil improvement while reducing food waste.

In Italy, the **FertiSele Operational Group** in the Sele Plain demonstrated a farm-centric version of this model. It collects ready-to-eat vegetable waste from processing firms and channels it into vermicomposting systems, producing a high-quality, cost-effective soil amendment for local horticultural use. This model emphasises agro-industrial symbiosis and circularity within local food systems.

These decentralised models are gaining momentum for their potential to foster behavioural change, local ownership, and education, making them important complements to larger-scale systems.

4.2 Technology-driven business models

While traditional composting and anaerobic digestion continue to form the foundation of Europe's bio-waste valorisation sector, a wave of **emerging business models** is expanding the potential for soil improver production. These models are distinguished not only by their technological innovation like advanced thermal conversion, IoT-enabled composting, and decentralised biowaste logistics, but also by the **value chains** they create across sectors such as food processing, urban planning, climate services, and regenerative agriculture. Some of the most promising models operate at the intersection of **waste collection, soil health, and carbon management**, offering new ways to link local feedstocks with

marketable soil inputs and environmental services. The case studies reported below are accompanied by further references in Table 1.

The European projects funded under the Mission Soil, such as **Waste4Soil**[5] and **bioSOILUTIONS**[6] exemplify models where waste producers (olive mills, wineries, slaughterhouses, fruit processors) become key actors in decentralised soil improver production. Instead of viewing waste as a liability to be exported or landfilled, these systems valorise high-volume, high-moisture organic residues through tailored technologies such as pyrolysis, anaerobic digestion, electrodialysis, protein hydrolysate recovery, and composting, to generate **custom soil amendments**.
These business models emphasise local loops; feedstock is sourced regionally, processed near-site, and the resulting product is applied within the same agricultural zone, which also reduces transport costs and aligns with rural development and zero-waste goals.

Projects such as **FENIX** (Horizon Europe)[7] and **Agrocomposit** (EJP SOIL)[8] are piloting value chains that combine **biochar with digestate or compost**, leveraging synergies in nutrient retention, water use efficiency, and carbon storage. Biochar is in fact central to several emerging business models thanks to its dual role as a soil improver and carbon sink. In FENIX, technology providers and farmers collaborate to co-apply digestate and biochar on crops ranging from cereals to vineyards. The goal is both agronomic and economic; by improving soil resilience and unlocking carbon credits through EU carbon farming schemes, the model aims to create **a new revenue layer** for soil improver application. The inclusion of Life Cycle Assessment (LCA), remote sensing, and digital monitoring tools ensures that products meet both regulatory thresholds and climate reporting needs. These business models position bio-waste valorisation within climate markets, making them attractive to investors and public funders alike.

Several emerging companies are developing modular, mobile, or on-site **pyrolysis and composting units** that allow waste producers, particularly farms or small municipalities, to convert bio-waste into soil improvers without needing access to centralised facilities. For example, **Biochar Europe sp. z o.o.** (Poland)[9] offers scalable pyrolysis reactors tailored for agricultural and forestry residues. Their systems are designed for **farm-scale deployment**, enabling users to create and apply biochar on-site, avoiding the high logistics costs associated with bio-waste transport.

[5] https://waste4soil.eu/
[6] https://www.soilutions-project.eu/
[7] https://project-fenix.eu/
[8] https://projects.au.dk/ejpsoil/soil-research/second-external-call-international-call/agrocomposit
[9] https://biochareu.com/en/

Similarly, **Woodtek Biochar Ltd.** (UK)[10] markets biochar units for horticulture and estate management, targeting the niche of peat replacement and high-carbon compost formulations. These equipment-based business models generate revenue not from compost or fertiliser sales directly, but from **hardware, service contracts, and after-sales support**, shifting the business logic from output-driven to asset-driven operations.

In urban and semi-urban environments, business models are emerging that merge technology with decentralised composting, making bio-waste valorisation more accessible to schools, hotels, apartment buildings, and coworking spaces. A standout case is **Compocity** (Hungary)[11], also mentioned in paragraph 4.1 within the category C models, which supplies IoT-integrated composters for shared indoor or sheltered locations. The devices monitor waste input, compost process parameters, and user engagement, creating a gamified feedback system that encourages participation. Compost is either distributed back to users or sent to municipal greening projects. Their model prioritises **engagement and behavioural change**, making circularity tangible while supplying quality soil inputs for small-scale urban growing systems. These kinds of platforms also generate data services, tracking compost use, GHG reduction, and community participation, creating additional value for cities and sustainability programmes.

Projects such as the now-completed **FERTIPLUS** (FP7)[12] and **FertiSele** (EIP-AGRI, Italy)[13] illustrate how agricultural, or food-industry actors can become **co-producers of soil improvers**. In FertiSele, mentioned also as an example for category C of business models in paragraph 4.1, vegetable waste from salad-processing plants was fed into **vermicompost systems**, generating amendments used locally in protected cropping. Though the project concluded in 2023, it offers a replicable model where farmers and processors can co-own vermicomposting operations, sharing inputs and benefits in closed supply loops.

4.3 Collection-driven business models

While much of the attention in bio-waste valorisation is placed on the processing technologies, like composting, anaerobic digestion, or pyrolysis, the upstream element of **waste collection** often defines whether a soil improver value chain can be viable. Clean, consistent, and efficiently sourced bio-waste feedstock determines not only product quality and cost but also compliance with EU fertiliser standards and sustainability goals.

[10] https://www.woodtekbiochar.com/
[11] https://www.compocity.help/en
[12] https://cordis.europa.eu/project/id/289853
[13] https://eu-cap-network.ec.europa.eu & https://www.fertisele.it/

Across Europe, a growing number of business models are **integrating collection systems** into their operational core. These models either build their own feedstock supply chains, partner with municipalities or food system actors, or develop decentralised networks where collection and valorisation happen in close proximity. Some of the most structurally integrated models are those embedded within **urban waste collection systems**. In **Milan**, the city's door-to-door bio-waste system, coordinated by AMSA (A2A Group), enables one of Europe's most advanced urban composting loops. More details on this business model are reported in paragraph 4.1 (category A).

In **Amsterdam**, the **BIN2BEAN Living Lab**[14] is exploring an innovative model where households in selected buildings are equipped with kitchen-sink grinders, allowing food waste to be ground at source. The liquid fraction is discharged into the sewage system, while the dewatered solids are stored in a dedicated bin and collected through regular municipal waste services. These streams are then directed to anaerobic digestion plants in the Amsterdam region. This innovation is expected to reduce odour, improves hygiene, and significantly **reduces contamination**, while also streamlining logistics for high-quality bio-waste valorisation. This example, if successful, will show how technology at the collection interface can upgrade the entire value chain, both for end-users and operators.

A second type of model involves businesses that **directly manage the collection of their own feedstocks**, often to maintain quality and traceability.
In **Greece**, **BIOSOLIDS S.A.**[15] is another notable example. Active since 2012, the company processes **biosolids**—that is, treated sewage sludge (stabilized through digestion and dewatering) alongside organic residues from gardens, breweries, wineries, and food processing—with strict quality control to ensure contamination (e.g. heavy metals such as Fe, Zn, Mn) remains well below EU-mandated thresholds (Directive 86/278/EEC. They have implemented advanced aerobic composting techniques and hold ISO 9001:2008 and ISO 14001:2004 certifications for quality and environmental management, which support structured operations but do not alone assure sustainable or agronomic excellence in the final product. Their compost is effectively used by regional farmers and contractors engaged in land restoration, highlighting a vertically integrated enterprise model that unites waste valorization with soil regeneration.

Vegware's "Close the Loop" programme[16] (UK and Scotland) provides another branded example. The company collects used compostable packaging and food waste from clients (restaurants, caterers) and delivers it to industrial composting facilities. This closed-loop model ensures **input compatibility**, compliance with

[14] https://www.bin2bean.eu/amsterdam/
[15] https://biosolids.gr/
[16] https://www.vegware.com/uk-en/page/close-the-loop/

waste regulations, and clear sustainability metrics for clients. It also allows Vegware to tie product design to waste valorisation, demonstrating how upstream and downstream integration can be both a service and a brand value proposition ().

As noted in Section 4.1 and 4.2, the Hungarian startup **Compocity** exemplifies a hybrid business model that blends tech-enabled composting units with micro-collection and redistribution systems.
In rural and low-density regions, where waste infrastructure is often limited and the cost of centralised logistics is prohibitive, decentralised collection and composting systems have emerged as practical and socially embedded alternatives. These models are typically characterised by **community engagement, low-capital investment, and proximity between waste source and end use**. They demonstrate how soil improver value chains can function at micro or medium scale, especially when supported by municipal coordination or community mobilization.
The **CORE project**[17] promotes collection-integrated models in **low-density, rural areas**. It supports municipal-led efforts to establish shared drop-off points for food and garden waste, which are composted at small-scale community plants. The resulting compost is returned to citizens, farmers, or public landscaping. This model is particularly effective where household participation is strong, and infrastructure investments must remain modest.

In the UK, the **BATCOM project**[18] in **Thrupp (Stroud)** is a composting initiative where a group of residents created a micro-compost site on common land. Unable to receive regular council collections, they developed a volunteer-run, locally funded system to collect green waste, compost it on-site, and return it to the village's community garden, reducing the use of bonfires and landfill. This is a case of **citizen-led feedstock recovery** evolving into a functioning soil amendment loop.

New startups are also beginning to build **waste-valorisation systems around specific feedstock types**, tailoring collection logistics to their value proposition.
In Austria, a circular partnership between café+co[19], a leading coffee vending and service company, and the sustainability startup BeResilient, has led to the development of an innovative bio-based product: BeanSaver®, a 100% natural, odour-free fertiliser derived from spent coffee grounds. This business model begins with the targeted collection of organic residues, specifically, used coffee grounds from café+co's dense commercial network of office and retail coffee machines.

These residues are collected using specially designed drying containers that minimise spoilage, then the collected material is processed and stabilised to create a clean, peat-free soil improver suitable for home and professional use. BeanSaver®

[17] https://www.interregeurope.eu/core-0
[18] https://www.batcom.org.uk
[19] https://www.cafeplusco.com/

is now marketed through garden centres, showing how urban organic residues can be transformed into branded, consumer-facing soil enhancement products (cafeplusco.com).

4.4 Success factors and lessons learned

The diversity of business models observed across Europe for the valorisation of bio-waste into soil improvers reveals several important insights. While each system responds to a unique local context, several common patterns emerge that help explain why some initiatives succeed, scale, or endure, while others encounter limitations. These lessons cut across technical design, social engagement, policy integration, and economic strategy, offering a valuable knowledge base for future replication and support.

A first and recurring lesson concerns the **critical role of feedstock availability, quality and proximity**. Models that are built around a specific, abundant waste stream, such as spent coffee grounds in the case of the **BeanSaver® fertiliser** (café+co and BeResilient, Austria) tend to show stronger operational resilience. They benefit from predictable input flows and can design their logistics and treatment processes to match the specific material characteristics of those residues. Similarly, initiatives like **Waste4Soil** and **bioSOILUTIONS** reinforce the value of sourcing feedstock regionally. By keeping collection loops short and tightly linked to processing and end use, they reduce transport costs, improve traceability, and ensure better control over input quality.

In many successful cases, **value chain integration** also emerges as a key enabler. When a business or partnership can control or strongly coordinate both collection and treatment, as seen in **BIOSOLIDS S.A.** in Greece or in the **Milan–Montello municipal partnership**, they are more likely to deliver a reliable and certifiable product. Integration not only simplifies quality assurance but also allows for more flexible business planning, as gate fees, product sales, and secondary revenues can be managed strategically. Similarly, **Vegware's Close the Loop** system shows how upstream product design (compostable packaging) and downstream waste treatment can be tied together into a cohesive and marketable sustainability proposition.

Another important dimension is **community engagement**, particularly in decentralised and small-scale models. Examples like **Compocity** in Hungary, the **CORE project** in rural Europe, or the citizen-led **BATCOM initiative** in the UK illustrate that waste valorisation is not only a technical challenge, but also a behavioural one. Where citizens feel ownership over the composting process, whether through app-based engagement or volunteering at a local site, contamination rates fall, participation increases, and the resulting compost is more likely to be accepted and used locally. These models demonstrate that low-tech

solutions, when coupled with strong social infrastructure, can rival more capital-intensive systems in both performance and acceptance.

Technology, however, plays a valuable role in improving performance, especially where scaling and data tracking are priorities. Smart systems like **Compocity's IoT composters** help optimise composting conditions while gamifying participation. In parallel, modular pyrolysis technologies developed by companies like **Biochar Europe** and **Woodtek Biochar** enable small farms or municipalities to produce biochar on-site, closing the nutrient loop with minimal logistical burden. These solutions reduce the need for centralised infrastructure while opening access to carbon farming revenues and traceable sustainability outcomes.

Equally important are **business models that diversify revenue streams**. Initiatives like **FENIX**, **AM-Power**, or **Montello** show how combining outputs like energy, soil improvers and carbon credit, creates greater economic resilience. These models are less vulnerable to market fluctuations in compost or fertiliser prices and can often benefit from public incentives across multiple sectors (waste, energy, agriculture, and climate).

Finally, many of the successful cases studied are underpinned by a strong **policy and regulatory foundation**. Whether it is the EU Fertilising Products Regulation, local mandates for separate collection of bio-waste, or funding from CAP eco-schemes and Horizon Europe, supportive frameworks have played a vital role in enabling both pilot projects and commercial scale-up. When businesses and public actors align their operations with these frameworks, as in the case of compost certification, digital waste tracking, or carbon credit methodologies, they are better positioned to access funding, partnerships, and market recognition. The emerging landscape of soil improver business models in Europe reflects a broader capacity to coordinate materials, actors, incentives, and social engagement. The most resilient models are those that align environmental goals with economic logic, that match technology to context, and that treat waste not only as a resource, but as a gateway to **circular cooperation**. These lessons will be essential in guiding future investments and policy interventions, especially in the context of the EU Green Deal and Mission Soil objectives.

Table 1 - Examples of business models for soil improvers

Category	Example / Project / Company	Description	Reference / Link
Cat. A	Calabra Macerie Servizi SpA	Large-scale treatment facility for biowaste	https://www.calabramaceri.it

		treatment operate with multiple revenue streams	
Cat. A	AM-Power BVBA	Highly integrated AD-based model	https://www.ampower.be/ More info from the SYSTEM project[20] [21]
Cat. A	Compostal Ltd	Largest composting system in Hungary	https://www.compostal.eu/
Technology-driven models	Waste4Soil (EU Mission Soil, 2023–2027)	Valorisation of olive mill, winery, slaughterhouse residues via tailored technologies.	https://waste4soil.eu
Technology-driven models	bioSOILUTIONS (Horizon Europe IA)	Converts agro-industrial residues into custom soil amendments.	https://www.soilutions-project.eu
Technology-driven models	FENIX (Horizon Europe)	Combines biochar with digestate/compost; links soil health with carbon credits.	https://project-fenix.eu
Technology-driven models	Agrocomposit (EJP SOIL)	Biochar–compost synergies for nutrient efficiency and carbon storage.	https://projects.au.dk/ejpsoil/soil-research/second-external-call-international-call/agrocomposit
Technology-driven models (Cat. C)	Biochar Europe sp. z o.o. (Poland)	Modular pyrolysis units for farm-scale biochar production.	https://biochareu.com/en
Technology-driven models	Woodtek Biochar Ltd. (UK)	Biochar units for horticulture and peat-free substrates.	https://www.woodtekbiochar.com
Technology-driven models (Cat. C)	Compocity (Hungary)	IoT-enabled decentralised composters for buildings and communities.	https://www.compocity.help/en

[20] https://edepot.wur.nl/572620
[21] https://systemicproject.eu/plants/demonstration-plants/ampower-flanders-belgium/

Technology-driven models	FERTIPLUS (FP7, completed)	Valorisation of agricultural by-products into soil amendments.	https://cordis.europa.eu/project/id/289853
Technology-driven models (Cat. C)	FertiSele (EIP-AGRI, Italy, completed)	Vermicomposting of salad industry residues for local cropping.	https://www.fertisele.it/
Collection-driven models (Cat. B)	Milan – AMSA & Montello Plant (Italy)	130,000 t/y food waste → compost & biogas loop.	https://www.gruppoa2a.it/en/our-business/waste-cycle More info from the ZEROWASTECITY project[22]
Collection-driven models	BIN2BEAN Amsterdam Living Lab (NL)	Kitchen-sink grinders + vacuum-sealed tanks for clean collection.	https://www.bin2bean.eu/
Collection-driven models	BIOSOLIDS S.A. (Greece)	Collects sewage sludge & organics → compost, ISO certified.	https://biosolids.gr/
Collection-driven models	Vegware "Close the Loop" (UK & Scotland)	Collects compostable packaging & food waste for industrial composting.	https://www.vegware.com/uk-en/page/close-the-loop/
Collection-driven models	CORE Project (Interreg Europe)	Rural drop-off points + community composting.	https://www.interregeurope.eu/core-0
Collection-driven models	BATCOM (Thrupp, UK)	Citizen-led micro-composting initiative.	https://www.batcom.org.uk
Collection-driven models	BeanSaver® (café+co & BeResilient, Austria)	Fertiliser from spent coffee grounds.	https://www.cafeplusco.com/

[22] https://zerowastecities.eu/wp-content/uploads/2021/11/Milan-Case-Study-1.pdf

Gender perspectives in the soil improvers sector

In examining the market landscape for this report, it became clear that soil improver businesses led by women are limited, although the percentage of female representing board members in these companies is increasing.

This absence reflects long-standing structural challenges: the bio-waste valorisation and soil improver industry are still highly technical and very capital intensive, relying on processes such as anaerobic digestion, composting, and pyrolysis. These require substantial infrastructure, engineering expertise, and investment, areas in which women are still underrepresented. As a result, female entrepreneurship tends to concentrate more on **small-scale**, **community-driven** sustainability ventures, where barriers to entry are lower and the alignment with social and environmental values is clearer.

An example of how the EU is responding to these imbalances is **WEgate**, the European Gateway for Women's Entrepreneurship (https://www.wegate.eu/). WEgate provides women with access to mentoring, training, finance, and networks, helping to raise visibility and dismantle barriers to entry in male-dominated sectors. Similar initiatives, such as the Enterprise Europe Network's *Women in Business* programme and EIT's support schemes for female-led start-ups, further broaden the toolbox available to women entrepreneurs, particularly in green and circular economy markets.

Despite the current lack of women-led companies in soil improvers, there is a growing recognition that female leadership is vital to diversify innovation and strengthen resilience in the circular bioeconomy. With targeted support from EU initiatives, women could increasingly find entry points into this sector, for instance through decentralised composting, digitalised bio-waste solutions, or urban soil regeneration hubs. Building these bridges is not only a matter of equity but also a pathway to more inclusive and effective solutions for Europe's transition to regenerative soil systems.

5. Summary of survey findings

As part of the **BIN2BEAN initiative**, a targeted survey was conducted to gather stakeholder perspectives on current practices, needs, and bottlenecks across the bio-waste value chain, particularly with the aim of identifying training needs, related to technological transfer and innovation management. The 15 responses, drawn from practitioners, innovators, and local authorities across the project LLs and networks, offer valuable insight into strategic priorities in this emerging sector, while supporting the shaping of peer-learning and training workshops to provide entrepreneurs with advanced tools for the market enhancement of circular innovations (*paragraph 6*).

5.1 Key challenges and opportunities for the sector

Notably, **only 40%** of respondents indicated that their organisations are currently engaged in processing bio-waste into soil improvers. This suggests a high level of interest from adjacent actors, such as waste managers, researchers, or early-stage businesses, who may be exploring entry into the sector but are not yet operational.
Among those already involved, the most common processing methods were composting and anaerobic digestion, that together covered the 80% of respondents.
When asked about the key challenges affecting their role in the bio-waste value chain, respondents pointed most frequently to **market-related** and social barriers. Over half (**53%**) cited limited market demand or poor customer acceptance as a pressing issue, while an equal proportion pointed to a lack of public awareness or engagement in proper waste sorting, a persistent obstacle to generating clean, usable input streams.
Other frequently mentioned challenges included **regulatory compliance** (40%), **operational costs** (40%), and **insufficient knowledge** about bio-waste quality, quantity (33%), or utilisation options (33%). These insights are aligned the adoption barriers identified in *paragraph 3.3*).

Despite these difficulties, respondents also identified **concrete opportunities** for improving the sector. Two-thirds (**67%**) highlighted the potential for increased collaboration between municipalities and other stakeholders, while just over half called for better public awareness campaigns and the adoption of digital tools to benchmark or manage value chain performance. Financial levers were also mentioned by the 47% of respondents, including the need for more targeted grants, subsidies, and support for short, regional value chains. Interestingly, the adoption of innovative tools, such as benchmarking frameworks or scoring systems was also identified by 47% of respondents as an area of opportunities for the biowaste-to-soil improver sector.
Finally, when reflecting on the factors most likely to enable successful market entry, stakeholders pointed to a **combination of quality assurance**, **awareness-building,** and **policy alignment**. The most frequently cited priorities were ensuring high

product quality and third-party certification, increasing stakeholder understanding of the agronomic benefits of soil improvers, and securing a stable regulatory framework.

5.2 Key gaps and expectations in training and support

The survey revealed a clear interest for capacity-building, particularly in non-technical dimensions of the bio-waste value chain. While just under half of respondents (47%) explicitly expressed a high interest in participating in training or peer-learning programmes, qualitative responses suggested that others might be interested if offerings were **tailored** to their specific time constraints, technical background, or business model. Indeed, another 40% of respondents expressed a low-medium level of interest for these activities, while only the 13% stated not to be interested. Among those open to training, the one on EU and national regulations on biowaste management was considered the most beneficial (3.9 on average out of 5), followed by the training on access to funding and financing (3.7 on average out of 5) and the one community engagement techniques (3.7 on average out of 5). Respondents called for clearer guidance from the BIN2BEAN project on how to access funding and investment (7 respondents out of 15) and for creating networking opportunities (9 respondents out of 15), while identifying increased financial resources and greater awareness across the value chain as priority needs for the sector.

Another recurring theme was the need for training on regulatory frameworks, including how to navigate compliance with the EU Fertilising Products Regulation, secure compost certification, or engage with national support schemes. Respondents also sought support in preparing for grant applications and accessing public or private financing mechanisms.

The survey results were instrumental in shaping the three training modules presented below in *section 6*. In particular, combining key challenges and opportunities with training needs, the BIN2BEAN training series focus on providing **targeted guidance** on public financing opportunities, such as EU grants, and practical training on how to prepare competitive proposals. It also addresses a complementary **need for knowledge** on private and corporate financing mechanisms, since innovators and SMEs often face difficulties in attracting investment beyond grants. Together, these two training activities will provide entrepreneurs with essential tool to **support business strategy and market development**.
Adding to that, a recurrent theme was the need for **improved communication** and public engagement. Respondents underlined that even the most technically sound projects struggle in contexts where bio-waste is poorly sorted or where awareness and acceptance remain low. To meet this need, the third training was designed around awareness raising and community engagement, equipping stakeholders

with strategies to build trust, mobilise participation, and integrate social dimensions into waste-to-soil-improver systems.

Regulatory aspects, another crucial aspect when talking about the needs and challenges of the biowaste-to-soil improver sector, will be briefly discussed in the third training. However, to allow a more in-depth discussion on the topic, including possible country or regional specificity, the regulatory topic will be further explored with the policy work carried out in Work Package 6 of the BIN2BEAN project.

6. Training and capacity building resources

6.1 Overview of the training activities and expected impacts

The BIN2BEAN training and capacity building activities have been developed as a direct response to the findings from the stakeholder survey (see *Section 5*), which highlighted both the potential and the current barriers to market expansion for soil improvers from bio-waste. Respondents emphasized the need for practical, targeted guidance on financing options, community engagement, and investment readiness, all areas that often determine whether innovative ideas achieve industrial readiness and commercial success.

In line with these findings, the BIN2BEAN consortium has designed a set of training resources aimed at strengthening the skills, knowledge, and confidence of entrepreneurs and SMEs active in the circular bioeconomy with a focus on the bio-waste into soil improvers value chain. The objective of this activity is clear:

BIN2BEAN trainings are designed to give entrepreneurs advanced tools to **bring circular innovations to the market**, transforming bio-waste into valuable products that enhance soil health and sustainability.

Entrepreneurs will be able to access **three dedicated training courses**; each addressing a key challenge to market entry and scale up:

- **Training #1: How to access and apply for public funding and grants**. This training will focus on relevant European and national funding opportunities and grants for the bioeconomy sector with a focus on biowaste-to- soil improver value chain. Entrepreneurs will learn how to navigate into the EU funding mechanisms and how to write competitive project proposals as an effective tool to enhance the market readiness and scalability of biowaste-derived soil solutions across Europe. Funding matters for innovators because it reduces risk, accelerates market readiness, enables scaling, and builds credibility, helping turn promising ideas into impactful, market-ready solutions.
- **Training #2: How to secure corporate financing for new and existing SMEs.** This training will complement public funding by equipping entrepreneurs with the knowledge and tools to secure corporate financing. The training covers the fundamentals of business finance, key capital structures, financial planning, and the full spectrum of funding sources (from self-financing to venture capital) alongside guidance on how to leverage support structures such as incubators and development agencies.
- **Training #3: How to raise awareness and engage communities around biowaste-to-soil solutions**. This training is built on the awareness that the effectiveness of biowaste-to-soil solutions usually relies on the engagement of all the stakeholders alongside the value chain. Therefore, this training focuses on the motivation of waste producers for waste sorting, provides advice on how to deal with impurities in bio-waste, and which target groups are of considerable interest. The legal frame for waste, soil improvers, and fertilizers is also presented because this is an indispensable part of the business.

All training courses follow a **coherent and accessible format** designed to meet the needs of a diverse, pan-European audience and to lower participation barriers. Each course is organized into a series of short (around 5 minutes) thematic video modules, a format chosen to keep content focused and easy to integrate into daily routines. Furthermore, courses are delivered asynchronously, ensuring that participants can engage with the content regardless of their location and time zone. This microlearning approach places a particular emphasis on time-constrained entrepreneurs, allowing them to learn and acquire targeted skills in short sessions that fit easily into their work schedules.

While the video modules are deliberately concise, they still deliver a variety of valuable information, supported by optional materials such as glossaries, checklists, slide decks, and curated reference links. These resources allow participants, wishing to deepen their knowledge, to explore each topic in more detail. In addition, participant surveys will be used to assess both the need and the interest in organizing complementary webinars or training sessions for the three courses, which will only be implemented if there is sufficient demand.
Finally, to encourage active participation and knowledge consolidation, each training offers the possibility to take a final quiz. Successful participants will be also able to receive a certificate of participation.
BIN2BEAN training poses a particular attention in maximizing inclusivity, providing all the video scripts, both in English and in the LL languages, to overcome language barriers and ensure comprehension for participants from different Member States.

By integrating targeted, practice-oriented content with a flexible delivery model, BIN2BEAN's training initiative not only addresses the specific capacity gaps identified in the survey but also supports the wider objectives of the **EU Soil Mission** to strengthen the entrepreneurial ecosystem around bio-waste-to-soil solutions, by enabling innovators to secure financial resources, build social acceptance, and form strategic partnerships. In doing so, these training course contribute to accelerating market readiness, scaling, and long-term adoption of sustainable soil improver solutions across Europe.

At the time of this deliverable, the content of the three training courses has been confirmed, and it is described in the following paragraphs. Furthermore, a short video trailer, launching the activity has already been published on YouTube to start the promotion of the BIN2BEAN training series. Furthermore, training course #1 has been fully recorded. All training will become openly available on the BIN2BEAN project website by the end of 2025.

6.2 Training #1: How to access and apply for public funding and grants.

General information

Title: Unlocking EU funding for soil improver innovations: a practical guide for entrepreneurs

Objective: The objective of this training is to equip entrepreneurs and SMEs operating in the biowaste-to-soil improvers value chain with the knowledge and practical tools needed to access and apply for relevant European and national funding opportunities and grants. Through short, targeted learning modules, the course focuses on understanding EU funding mechanisms and developing competitive project proposals as an effective tool to enhance the market readiness and scalability of biowaste-derived soil solutions across Europe.

Target audience: Entrepreneurs and SMEs operating in the biowaste valorization sector, specifically those producing soil improvers.
Partners managing the content: ITB – Sara Daniotti
Partner managing the recording and video making: ITB

Content of the online training course

Module 1 – Why Funding Matters
Objective: Introduce the course and its relevance to the biowaste-to-soil improvers value chain.

- Role of public funding in market innovation
- How the course is structured and how to use the materials

Support material: Terminology glossary

Module 2 – Introduction to EU Funding Landscape
Objective: Provide an overview of relevant EU programmes and instruments.

- Horizon Europe, LIFE Programme, Circular Bio-based Europe JU
- Topics, funding rates and eligibility

Support material: Funding programme factsheet

Module 3 – Finding the Right EU Calls
Objective: Teach how to find and understand open EU funding opportunities.

- How to use the EU Funding & Tenders Portal
- Tips for reading calls: scope, expected outcomes, TRLs
- Thematic focus on soil, biowaste, and circular economy

Support material: Guided portal walk-through, current call examples

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Module 4 – Writing a Winning Proposal (Part 1): Excellence & Relevance
Objective: Focus on the technical and scientific part of the proposal and how to write the Excellence section

- Key sections of a typical EU proposal (excellence, impact, implementation)
- Aligning your idea with the call scope
- Drafting objectives and methodology
- Highlighting innovation and EU-added value
- Success factors and common mistakes

Support material: Excellence writing checklist

Module 5 – Writing a Winning Proposal (Part 2): Impact
Objective: Focus on how to write the impact section

- Market uptake, scalability, and socio-environmental impact
- Measures to maximise the impact
- Success factors and common mistakes to avoid

Support material: Impact and implementation writing checklist

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Module 6 – Writing a Winning Proposal (Part 3): Implementation
Objective: Focus on how to write the implementation section

- Work packages, roles, timelines, and risk management
- Success factors and common mistakes to avoid

Support material: Implementation writing checklist

Module 7 – Financial Planning in EU Projects
Objective: Introduce the basics of budgeting and eligible costs.

- Budget categories: personnel, travel, subcontracting, etc.
- Tools and templates

Support material: Link to AGA and other resources for budget planning

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Module 8 – National and Regional Funding: Where and How to Look
Objective: Provide a strategy for navigating national/regional funding.

- Overview of where to look: NCPs, regional innovation agencies, Enterprise Europe Network
- EU-cofinanced national programmes (e.g. CAP, ERDF)
- Tips to stay informed: newsletters, platforms, intermediaries

Support material: List of relevant links and resources

Module 9 – EU Programmes & Calls for Soil Health
Objective: Present EU initiatives specifically supporting soil-related innovation.

- EU Mission "A Soil Deal for Europe"
- Horizon Europe Cluster 6
- LIFE projects on soil restoration and circular bioeconomy

Support material: Links to the mentioned programme, possible relevant calls (if available)

Scripts: available in Annex 2

6.3 Training #2: How to secure corporate financing for new and existing SMEs.

General information
Title: Securing corporate financing of new and already existing SMEs
Objective: The objective of this training is to to strengthen the financial literacy and capacity of entrepreneurs and SMEs active in the biowaste-to-soil improver value chain, enabling them to access, structure, and manage corporate financing for both newly established and existing businesses. The training will help participants gain a clear overview of financing pathways available for both new and existing businesses in the sector.
Target audience: Entrepreneurs and SMEs operating in the biowaste valorization sector, specifically those producing soil improvers.

Partner managing the content: N3 – Daniel Wolfmeyer
Partner managing the recording and video making: ITB

Content of the online training course

Module 1 - Basics on Corporate Financing
Objective: Provide an introduction to the role of finance in business growth, highlighting its importance for competitiveness and long-term sustainability in the biowaste-to-soil improver sector.

Module 2 - Corporate Capital
Objective: Explain the differences between equity and debt capital.

Module 3 - Financial Planning
Objective: Demonstrate how to translate business strategy into financial planning, with a focus on cash flow management and capital budgeting relevant to SMEs in the sector.

Module 4 - Main Sources of Capital
Objective: Present the main financing options available (self-financing, banks, public and private investors, family and friends).

Module 5 - Startup Financing
Objective: Introduce specific instruments for early-stage companies, including bootstrapping, business angels, venture capital, and crowdfunding.

Module 6 – Support Structures
Objective: Explore the role of development agencies, technology centres, founder/startup platforms, incubators, and accelerators in supporting access to finance and business scaling in the biowaste-to-soil improver value chain.

Scripts: not available yet

6.4 Training #3: How to raise awareness and engage communities around biowaste-to-soil solutions

General information

Title: Awareness raising and community engagement - a practical guide for entrepreneurs
Objective: The objective of this training is to support the work of entrepreneurs and SMEs who are engaged in the value chain from bio-waste to soil improvers with regard to awareness raising for waste and soil issues and how to communicate with potential partners, i.e. private households and municipalities as producers of bio-waste or farmers, and industry. Through short, targeted learning modules, the course focuses on the motivation of waste producers for waste sorting, provides advice on

how to deal with impurities in bio-waste, and which target groups are of considerable interest. The legal frame for waste, soil improvers, and fertilizers is also presented because this is an indispensable part of the business.
Target audience: Entrepreneurs and SMEs operating in the bio-waste valorization sector, specifically those producing soil improvers.
Partner managing the content: N3 – Henning Friege
Partner managing the recording and video making: N3 and ITB

Content of the online training course

Module 1 – The value chain – from organic waste to valuables
Objective: Introduce the course and its relevance to the value chain from organic waste to soil improvers and other valuables

- Introduction to the value chain
- Steps of the value chain – who is engaged? What is the outcome?
- How the course is structured and how to use the materials

Support material: Terminology glossary

Module 2 – Legal frame I - introduction to EU regulation
Objective: Provide an overview of most important waste and soil protection directives

- Waste framework directive, landfill directive
- Fertilizer regulation: Definitions of fertilizers and soil improvers, quality requirements
- Soil protection

Support material: Table of relevant European legislation with links

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Module 3 – The (hidden) value of compost
Objective: Understand the role of organic waste and compost for hygiene, soil, and climate

- Waste wisely, keep waste fractions separate from each other!
- Soil is life – how compost supports the functions of soil: traditional and modern forms of use
- The role of organic waste and compost for the climate

Support material: Sources for more scientific information, regulation, status of the political discussion

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Module 4 – Motivations of your clients I
Objective: Understand the thinking of potential clients.

- Recycling behaviour of individuals – theoretical background
- Motivation of private households
- The mind-set of municipal administrators

Support material: Bin2Bean publication "Collection of Organic Waste: Guidelines for Communication and Awareness Raising"

Module 5 – Motivations of your clients II
Objective: Understand the thinking of potential clients.

- Motivation of commercial waste producers
- Motivation of industrial processors of organic waste
- The expectations of farmers: high quality, low price
- Carbon sequestration – a potential business case

Support material: Bin2Bean publication "Collection of Organic Waste: Guidelines for Communication and Awareness Raising"

Module 6 – Enhancing the quantity and quality of compost and other products
Objective: Focus on options for intervention along the value chain.

- Increasing quantity, decreasing quality – the big challenge in organic waste business
- How to ensure good quality in the value chain? View from the product
- How to manage the intervention points?

Support material: QA/QC guidelines from Bin2Bean, links to QA associations, Bin2Bean publication "Collection of Organic Waste: Guidelines for Communication and Awareness Raising"

Module 7 – Technical tools aiming at better quality along the value chain
Objective: Provide a short overview on instruments to ensure quality during collection and processing

- Separation at source: Empirical evidence from "traffic light" campaigns
- Controlling the tipping process: Automated detection of misthrows in bio bins
- Processing of organic waste: Pre- and post-sorting techniques

Support material: List of important associations for the valorisation of bio-waste, environmental agencies

Module 8 – Legal frame II - EU regulation and national implementation - examples
Objective: Learn about potential problems for your business due to different national implementations

- Example #1: Quality requirements with respect to bio-waste
- Example #2: Prohibition of the application of liquid products from digestion
- Example #3: "Animal by-products" – a potential impediment for certain composting techniques

Support material: ./.

Scripts: Available in annex 2

References

Ahmed M., Ahmad S., Qadir G., Hayat R., Shaheen F.A., Raza M.A. (2019). Innovative processes and technologies for nutrient recovery from wastes: a comprehensive review. Sustainability, 11. DOI:10.3390/su11184938

Amalina F., Abd Razak A.S., Krishnan S., Sulaiman H., Zularisam A.W., Nasrullah M. (2022). Biochar production techniques utilizing biomass waste-derived materials and environmental applications – A review, Journal of Hazardous Materials Advances, https://doi.org/10.1016/j.hazadv.2022.100134

Amuah, E.E.Y., Fei-Baffoe, B., Sackey, L.N.A. et al. (2022) A review of the principles of composting: understanding the processes, methods, merits, and demerits. Org. Agr. 12, 547–562. https://doi.org/10.1007/s13165-022-00408-z.

Blouin, M., Barrere, J., Meyer, N. et al. (2019). Vermicompost significantly affects plant growth. A meta-analysis. Agron. Sustain. Dev. 39, 34. https://doi.org/10.1007/s13593-019-0579-x.

Czekała W., Lewicki A., Pochwatka P., Czekała A., Wojcieszak D., Jóźwiakowski K., Waliszewska H. (2020) Digestate management in polish farms as an element of the nutrient cycle. J. Clean. Prod.

Haider, F. U., Coulter, J. A., Cai, L., Hussain, S., Cheema, S. A., Wu, J., & Zhang, R. (2022). An overview on biochar production, its implications, and mechanisms of biochar-induced amelioration of soil and plant characteristics. Pedosphere, 32(1), 107–130. https://doi.org/10.1016/S1002-0160(20)60094-7

Hermann, L., Hermann, R., Tanzer, J., Schoumans, O. F., & Regelink, I. C. (2021). *Development of business models for six large-scale anearobic digesters : a product from the H2020 project SYSTEMIC*. Wageningen Environmental Research. https://doi.org/10.18174/572620

Ho, T. T. K., Tra, V. T., Le, T. H., Nguyen, N.-K.-Q., Tran, C.-S., Nguyen, P.-T., Vo, T.-D.-H., Thai, V.-N., & Bui, X.-T. (2022). Compost to improve sustainable soil cultivation and crop productivity. *Case Studies in Chemical and Environmental Engineering, 6*, 100211. https://doi.org/10.1016/j.cscee.2022.100211

Leng, L., Xiong, Q., Yang, L., Li, H., Zhou, Y., Zhang, W., Jiang, S., Li, H., Huang, H. (2021). An overview on engineering the surface area and porosity of biochar. Sci. Total Environ. 763, 144204. https://doi.org/10.1016/j.scitotenv.2020.144204

Lin, L., Xu, F., Ge, X., & Li, Y. (2018). Improving the sustainability of organic waste management practices in the food–energy–water nexus: A comparative review of anaerobic digestion and composting. *Renewable and Sustainable Energy Reviews, 89*, 38–57. https://doi.org/10.1016/j.rser.2018.03.009

Liu, Z., Hou, C., Zhao, H., Wu, Y., & Zhang, X. (2024). Soil organic carbon, carbon fractions, and microbial community under various organic amendments. *Scientific Reports*, 14, 25431. https://doi.org/10.1038/s41598-024-75771-w)

Manzoor A., Naveed M.S., Ali R.M.A., Naseer M.A., UL-Hussan M., Saqib M., Hussain S., Farooq M. (2024). Vermicompost: A potential organic fertilizer for sustainable vegetable cultivation, Scientia Horticulturae, 336, https://doi.org/10.1016/j.scienta.2024.113443

Prempeh, T. T., et al. (2022). A review of the principles of composting: understanding the processes... *Journal of Composting Principles*, [Springer], 1–15

Razza F., D'Avino L., L'Abate G., Lazzeri L., Designing sustainable technologies, Prod. Pol. (2018) 133–143, https://doi.org/10.1007/978-3-319-6698-6-16

Shoudho K.N., Khan T.H., Ara U.R., Khan M.R., Shawon Z.B.Z., Hoque M.E. (2024). Biochar in global carbon cycle: Towards sustainable development goals, Current Research in Green and Sustainable Chemistry, https://doi.org/10.1016/j.crgsc.2024.100409

The Business Research Company (2024). Soil Conditioners Market Report 2024. *Data not available for publication*.

The Business Research Company (2024). Soil Amendments Market Report 2024. *Data not available for publication*.

Van Groenigen, J., Lubbers, I., Vos, H. *et al.* (2014) Earthworms increase plant production: a meta-analysis. *Sci Rep* **4**, 6365. https://doi.org/10.1038/srep06365

Van Midden, C., Harris, J., Shaw, L., Sizmur, T., Pawlett, M. and Shaw, L. (2023) The impact of anaerobic digestate on soil life: a review. Applied Soil Ecology, https://doi.org/10.1016/j.apsoil.2023.105066

Viancelli A., Schneider T.M., Demczuk T., Delmoral A.P.G., Petry B., Collato M.M., Michelon W. (2023). Unlocking the value of biomass: Exploring microbial strategies for biogas and volatile fatty acids generation, Bioresource Technology Reports, https://doi.org/10.1016/j.biteb.2023.101552

Wenliang, W., Chenghui, H., Zhiyue, J., & Shutang, L. (2021). Long-term organic amendments improved soil carbon sequestration to support crop production. *Journal of Plant Nutrition and Soil Science*, 184(5), 647-657. https://doi.org/10.1002/jpln.202100128.

Yaashikaa P.R., Senthil Kumar P., Varjani S., Saravanan A. (2020). A critical review on the biochar production techniques, characterization, stability and applications for circular bioeconomy. Biotechnology Reports, https://doi.org/10.1016/j.btre.2020.e00570

Annex 1 – Business Model Canvas

Business Model Canvas – Valorisation plants managed by commercial enterprises

Key Partners

Bio-waste provider:
- Cities nearby
- Municipal contractor that take care of biowaste collection
- Farms
- Food industries

Bio-waste transportation:
- Same of bio-waste provider
- Specific contractor

Contractor for solid waste disposal (after the anaerobic digestion)

Providers of specialized equipment materials and maintenance services

Testing and certification bodies

Local municipalities and policy makers to obtain permission documents

Key Activities
- Securing continuous and quality feedstock flows
- Pre-treatment (removing contaminants, improving feedstock quality)
- Anaerobic digestion (AD) and/or composting
- Nutrient recovery and upgrading of digestate into soil improvers/fertilisers
- Compliance with environmental and product standards
- Marketing and sales of energy and soil improvers

Key Resources
- Infrastructure and advanced treatment equipment
- Reliable feedstock supply agreements
- Skilled workforce for technical and administrative operations
- Financial capital to sustain high upfront investment

Value Propositions

Diversified products from bio-waste valorisation:
- Renewable energy (biogas, biomethane, electricity, heat)
- Soil improvers (compost, digestate fractions, fertiliser concentrates)

High-quality and standardised products meeting regulatory and market requirements

Contribution to circular economy and substitution of mineral fertilisers -> soil improvers obtained from biowaste can be adapted to the soil needs depending on different recovery and reuse technologies

Customer Relationships

B2B: contracts and tailored services for energy utilities, fertiliser distributors, large farms

B2C (rare): selling soil improvers to farmer cooperatives or distributors

Channels
- Direct contracts and business networks
- Commercial partnerships and distributors
- Trade fairs, professional associations, and sector platforms

Customer Segments

Energy companies and utilities

Fertiliser distributors and agricultural businesses

Export markets demanding nutrient recovery products

Cost Structure
- Feedstock purchase or transport costs
- Infrastructure and technology investment
- Maintenance and operational costs
- Logistics (transport of feedstock and final products)
- Costs of managing residues (non-usable fractions of digestate)

Revenue Streams

Revenues are linked to product sales:
- Renewable energy, including electricity, biomethane and heat (main source of revenue)
- Soil improver (compost, biomethane)

Possible gate fees from waste acceptance

Business Model Canvas – Public/private municipal waste partnership

Key Partners

Feedstock provider:
- Citizens/households
- Commercial activities (canteens, restaurants, ..)
- Markets

(e.g Door-to-door collection)

Municipalities and local waste authorities

Contractors for waste collection and transport

Technology providers (AD/composting systems) and maintenance services

Farmer organisations and cooperatives

Communication/awareness partners (NGOs, local associations)

Key Activities
- Collection and sorting of source-separated bio-waste
- Anaerobic digestion and/or composting at municipal or contracted facilities
- Distribution of compost and digestate to farmers and citizens
- Public communication and awareness campaigns on waste separation
- Monitoring and quality assurance of the feedstock and final products
- Promoting local value chains for the collection of feedstock

Key Resources
- Infrastructure and equipment for waste treatment
- Source-separated biowaste streams from citizens and businesses
- Skilled workforce (plant operators, waste collectors, communication staff)
- Public funding and municipal contracts

Value Propositions

Improve the management of bio-waste in urban area by adopting a comprehensive approach to separately collect and valorize food waste.

Improve citizens awareness to increase the quality of the separate collection of bio-waste and towards contribution to city climate and circularity strategies

Biogas production used for municipal services (e.g., fuelling waste trucks, powering facilities)

Customer Relationships

B2B: collaboration with farmers and cooperatives for compost/digestate use

B2C: direct engagement with households (awareness campaigns, free compost distribution)

Long-term service contracts with municipalities

Channels
- Communication campaigns (awareness, education, digital tools)
- Direct distribution of compost to farmers and citizens
- Local events and municipal communication platforms

Customer Segments

Farmers (for compost/digestate application)

Households (waste providers and compost users)

Municipalities (as contracting authorities)

Urban gardens and community projects

Cost Structure
- Infrastructure investment and maintenance costs
- Transport and collection costs for feedstock
- Labour costs (plant operation, waste collection)
- Operational costs (reduced if biogas is used internally)
- Awareness campaigns and citizen engagement tools

Revenue Streams
- Municipal contracts for waste management services/households waste fees
- Biogas/electricity revenues (partly self-consumed for municipal operations)
- Sale of compost and digestate (mainly local markets)

Annex 2 - Video scripts

This Annex reports the scripts for training course #1 and #3. Since training #3 has not been recorded yet, the scripts may be slightly changed to accommodate the text to the recording (duration and format).

Trailer

Hello and welcome!
I'm Sara Daniotti, coordinator of the BIN2BEAN project, and I'm excited to introduce you to our BIN2BEAN training series.
BIN2BEAN is a European project co-funded by the Horizon Europe programme. It aims to support European cities by promoting innovations that valorise biowaste and optimise its recycling into soil improvers, through innovative and economically viable value chains.
With this initiative, we want to give entrepreneurs like you advanced tools to bring circular innovations to the market, helping transform biowaste into valuable products for soil health and sustainability.
In our training series, you'll find three practical learning paths:

- How to access and apply for public funding and grants
- How to raise awareness and engage communities around biowaste-to-soil solutions
- And how to secure corporate financing for both new and existing SMEs

Join us to discover how to turn your innovative ideas into market-ready solutions, connect with partners, and grow your business sustainably.
Let's build a circular future together!

Training #1

Module 1 – Why Funding Matters

Hello and welcome to the BIN2BEAN training series, designed specifically for entrepreneurs and small businesses working in the biowaste-to-soil improvers value chain.
My name is Sara Daniotti, and I'm pleased to guide you through this learning journey on accessing and applying for public funding and grants.
But why does funding matter for innovators?

- First, it reduces risk. Innovating in the biowaste sector can be expensive and uncertain. Public funding helps share that risk, so you don't have to shoulder it alone.
- It accelerates market readiness. Funding allows you to test, validate, and improve your solutions so they're ready for customers and investors across Europe.

- It enables scaling up. Many small businesses have excellent innovations but lack resources to grow. Public funding can provide the support you need to reach wider markets and achieve greater impact.
- It builds credibility. Securing EU or national funding signals that your project is innovative and solid, making it easier to attract partners and investors.

And that's exactly why this training exists—to help you navigate the funding landscape and make the most of these opportunities to grow your business.
Throughout this course, you'll learn:

- How European funding mechanisms work
- How to find funding opportunities relevant to your business
- How to write strong, competitive proposals
- How to plan financially for funded projects

To make the most of this training:

- Watch each video module. They're concise and practical, so you can fit learning into your daily schedule.
- Download the support materials. Slides, glossaries, checklists, and helpful links are all provided to deepen your knowledge.
- Explore translations. Scripts are available in different languages if you prefer to study in your native language.
- Take the final quiz. Completing the quiz will earn you a certificate of participation—a valuable asset for your professional journey.

For this module, we've also prepared a terminology glossary. It explains key funding terms that you'll encounter during the training. I encourage you to download it and keep it handy as you progress.
Thank you for joining me in this journey! Let's begin.

Module 2 – Introduction to EU Funding Landscape

Welcome back to the BIN2BEAN training series on accessing and applying for public funding and grants! In this module, we'll explore the European funding landscape and help you understand the main programmes that could support your biowaste-to-soil improver innovations.
Before we dive into specific programmes, it's important to understand that public funding in the EU comes from many different sources, each designed to support particular policy goals, sectors, and types of innovation. In this module, we'll focus on the main European-level programmes that are most relevant for the biowaste-to-soil improvers sector. A dedicated module later in this course will show you how to search and navigate national funding opportunities that match your business.
Let's now look at some of the main EU programs that fund projects in the biowaste-to-soil improvers value chain:

Horizon Europe
One of the most important programmes you should know about is Horizon Europe, the biggest research and innovation programme in the world, with a budget of

nearly €95 billion for the period 2021-2027. It's directly implemented by the European Commission and funds projects across many fields of science, technology, and innovation.
The programme is organised into three main pillars, each supporting different aspects of research and innovation. For businesses working in biowaste-to-soil improvers, the most relevant part of Horizon Europe is Pillar II - Global Challenges and European Industrial Competitiveness. It has the largest share of the programme's budget, around €52.7 billion and funds cross-European collaborative projects that bring together industry and research organisations. It focuses on creating new technologies and solutions that help achieve the EU's policy goals and the Sustainable Development Goals.
Within Pillar II, the work is organised into six main Clusters. The most relevant for our sector is Cluster 6: Food, Bioeconomy, Natural Resources, Agriculture, and Environment. Cluster 6 covers topics like sustainable agriculture, circular bioeconomy, resource efficiency, and environmental protection—all crucial areas for turning biowaste into soil solutions.
Another unique feature of Horizon Europe is the concept of Missions. Missions focus on tackling major societal challenges with specific, measurable targets for 2030. They're not separate from the Clusters—instead, they're integrated into them. For example, the Mission "A Soil Deal for Europe" aims to establish at least 100 living labs and lighthouses to improve soil health by 2030.
So, if your project relates to soil health, you might find opportunities both under Cluster 6 calls and under calls labelled as part of the Soil Mission.

Horizon Europe offers different types of funding actions:

- Research and Innovation Actions (RIA): These support projects exploring new knowledge and developing early-stage technologies. Funding can cover up to 100% of eligible costs for all participants.
- Innovation Actions (IA): These support projects closer to the market, such as testing, piloting, or demonstrating new solutions. For businesses, funding usually covers around 70% of eligible costs, while non-profit organisations can receive up to 100%.
- Coordination and Support Actions (CSA): These fund activities like networking, policy analysis, or sharing best practices, but not direct research or product development. CSAs can be funded up to 100% of eligible costs.

Finally, participation in Horizon Europe is open to any legal entity, regardless of where it is established—even outside Europe—unless specific restrictions are mentioned in a call. However, only legal entities established in EU Member States or in countries associated to Horizon Europe are eligible for funding. Additionally, for most collaborative projects, you'll need a consortium of at least three independent organisations, each based in a different EU Member State or Associated Country. At least one must come from a Member State.

CBE-JU

Another important programme for your sector is the Circular Bio-based Europe Joint Undertaking, or CBE JU. CBE JU is a public-private partnership between the European Union and the Bio-based Industries Consortium**.** Its goal is to support the development of a competitive and sustainable bio-based economy in Europe.

The programme has a budget of around €2 billion for 2021 to 2027. It funds projects that transform biological resources—including biowaste—into new products, materials, and solutions, building innovative circular value chains that can reduce dependence on fossil resources and lowering environmental impacts. To reach this objective, it encourages collaboration between academic and industrial partners.

The peculiar aspect of CBE JU projects is that they can target flagship projects that can bring new bio-based solutions close to market, with relatively high budget.

Funding rates ad eligibility conditions under CBE JU are similar to Horizon Europe, often covering between 70% and 100% of eligible costs.

If you aim to develop soil improvers from biowaste as part of a bio-based value chain, and you're ready to work with partners from different sectors, CBE JU can be an excellent funding opportunity.

LIFE Programme

Finally, I would like to highlight the LIFE Programme. LIFE is the EU's funding instrument dedicated to environment, climate action, and nature conservation, running since 1992.

For 2021 to 2027, LIFE has a budget of about €5.4 billion. It funds projects that help:

- Protect the environment and biodiversity
- Improve air and water quality
- Reduce greenhouse gas emissions
- Promote the circular economy

What makes LIFE interesting for biowaste-to-soil improvers is that it supports:

- Demonstration and pilot projects that test innovative environmental solutions
- Projects that can be replicated or scaled up in other regions or countries
- Actions directly related to soil protection, restoration, and sustainable land use

Unlike Horizon Europe, LIFE often supports smaller projects and even single applicants, although partnerships are also welcome. It's well-suited if you have an innovative solution that offers environmental benefits like improving soil health, reducing pollution, or enhancing biodiversity and that is ready to be demonstrated or deployed on a real scale.

Funding rates in LIFE vary, but generally cover up to 60% of eligible costs, and sometimes more for priority projects.

In the next module, we'll look at how to find the right calls within these programmes to discover opportunities that fit your business.

Thank you for joining me and see you in the next video!

Module 3 – Finding the Right EU Calls

Welcome back to the BIN2BEAN training series on accessing and applying for public funding and grants! In this module, we'll focus on how to find the right funding opportunities for your business.
Even the best project idea needs to fit the right funding opportunity. Applying to the wrong call can waste time and resources or simply result in a rejection because your project doesn't match what the European Commission is looking for.
Let's start with the main tool for finding EU funding opportunities: the **EU Funding & Tenders Portal.** This portal is the official platform where all European Commission calls for proposals are published. You can search for open or upcoming calls, find details about rules, deadlines, and documents and eventually submit your proposals online. The portal is available in English, and it's completely free to use.
To use the portal effectively, you should first:

- Go to the **Funding & Tenders Portal website.**
- Then click on Funding > Call for proposals
- You can now look for calls that match your project by using keywords related to your sector. If you're working in the biowaste-to-soil improvers field, there are some keywords that are especially useful when searching for funding opportunities., such as:
  - Soil health and soil restoration
  - Circular bioeconomy
  - Sustainable agriculture
  - Waste valorisation and recycling
  - Nature-based solutions
  - Biowaste
- You can also filter by:
  - Programme name, like Horizon Europe or CBE-JU
  - Type of action, such as RIA or IA
  - Status: open, closed, or forthcoming calls

When you find a call, click on it to read the full details.

Once you've opened a call on the EU Funding & Tenders Portal, you'll see quite a lot of information. Taking the time to read and understand the call text in detail is one of the most important steps in preparing a successful application.
Let's go through the key sections you should focus on and what they really mean.
In the topic description, the first thing you'll see is the "**expected outcomes**" section. It describes what the EU expects the funded projects to achieve. It's not just about your activities—it's about the results and impacts your project will deliver.
When reading expected outcomes, ask yourself:

- Can my project deliver these results?
- How can I demonstrate my solution's benefits in measurable ways?

Your proposal should explicitly show how it will contribute to these expected outcomes, affecting the score you will received under the "impact" section, as we'll see in the upcoming modules.
Just after the "expected outcome", you can find the "**scope**" which explains exactly what the European Commission wants to fund under this call. Think of it as the problem statement or the area where the Commission wants new solutions and ask yourself:

- Does my idea fit this topic precisely?
- Am I addressing the challenges described in the scope?

If your project only partially fits the scope, it might not be a good idea to apply, because your proposal could be rejected as out of scope or, in the best-case scenario, it can affect negatively your score in the Excellence section, as we'll see in the upcoming modules.
Additionally, look for **keywords** in the call text. Terms like "circular economy," "soil health," "bioeconomy," or "climate-neutral solutions" are clues about what reviewers expect. Use similar language in your proposal to show alignment with the call.
Another critical aspect to check within each call is the **Technology Readiness Level** (or TRL) that the innovation is supposed to reach at the end of the project. TRLs describe how advanced your technology or solution is, ranging from basic research to market-ready products. This may not always be mentioned explicitly in the text of the call, but it is usually implicit in the type of action that we saw in the previous module. For example, RIA projects should achieve a TRL around 5, while IA projects should achieve 7. Flagship projects, which are more characteristics of CBE-JU, should achieve 8-9. Make sure your project is at the right TRL for the call you're targeting. Otherwise, it can be considered out of scope or receive a lower evaluation.
Finally, always note the deadline for submission and plan backwards. It is usually included in the "general information" for each call. Do not forget to download the **official documents** linked to the call, like the Work Programme or specific guidelines. They often contain crucial details, such as the expected budget for each project under a specific call and possible variations from funding rates or eligibility conditions.
In the next videos, we'll move forward and learn how to write a winning proposal. See you in the next module!

Module 4 – Writing a Winning Proposal (Part 1): Excellence & Relevance

Hello and welcome back to the BIN2BEAN training series on accessing and applying for public funding and grants. In this module, we'll start exploring how to write a winning proposal.
Writing a good proposal is not only about describing your idea. It's about convincing evaluators that your project is the best choice for EU funding. For this reason, it's important not to underestimate the time and effort this takes. Ideally, you should start working on your proposal about two months before the call deadline and even earlier if you need to build your consortium from scratch.

Most EU proposals are made up of two main parts.

- **First, there's Part A.** This is the administrative section. It's a series of online forms in the Funding & Tenders Portal. Here, you'll enter details about your organisation, the people involved, budgets, and other formal information.
- **Then there's Part B,** which is the narrative part of your proposal. This is the most important section and will take the most time and effort to prepare. Even though the structure of Part B is similar across many EU calls, always download the specific template for each call from the Funding & Tenders Portal. Part B also has a page limit, which usually depends on the type of action. You'll find the exact limit in the instructions at the start of the template. Be careful: if your proposal is too long, any extra pages will automatically become invisible after the deadline and evaluators won't read them. Finally, remember that Part B must be uploaded as a PDF in the F&T portal, following the template exactly for the specific topic or call you're applying to.

Part B is organised into three main sections, which correspond to the key evaluation criteria used by EU evaluators. These are:

- **Excellence,** which describes the scientific and technical quality of your project.
- **Impact,** which shows how your project will benefit society, the economy, or the environment.
- **Implementation,** which explains how you'll carry out the project, including timelines, partners, and budget.

In this module, we'll focus on how to build the **Excellence section** of your proposal, which is where you show:

- Why your project matters
- How it fits the call you're applying for
- What makes your solution innovative and relevant for Europe
- And that the proposed methodology, including the concepts and assumptions, is sound.

Let's break this down further.

In the excellence section, first, you'll need to clearly define your **project's objectives**. Ask yourself: What exactly do you want to achieve? Usually, you'll have one main project objective that summarises your overall concept and several specific objectives that break it down further. Make your objectives measurable, with clear, realistic, and verifiable indicators or KPIs. And always link them to the goals of the call. You will also need to demonstrate what makes your project innovative: What new knowledge, technologies, or solutions are you developing? How does your project go beyond the current state of the art?

Following project objectives, you will need to explain your **methodology.** This is where you show how you'll achieve your objectives. Describe:

- Your scientific and technical approach
- Methods and tools you'll use

- And why these methods are the best choice to achieve your results

It's also important to show how your project will include interdisciplinary approaches, appropriate gender considerations in research and innovation content, high-quality open science practices, like sharing data and research outputs, and, where appropriate, the engagement of citizens, civil society, or end users.
Summing up, writing the Excellence section can be challenging. Here are a few **common mistakes** to avoid:

- Being too vague or generic. Avoid buzzwords without explaining what they mean.
- Not clearly linking your project to the specific scope of the call.
- Failing to explain how your solution improves on what already exists.
- Forgetting to highlight the European dimension of your project and how it benefits Europe as a whole.
- Ignoring the requests in the official template. Always read it carefully and answer every question it includes.
- Not checking if the template has been updated for your specific call. Always download the latest version from the Funding & Tenders Portal.

For this module, we have prepared a writing checklist to guide you through the key points you need to cover. I encourage you to download it and keep it handy as you work on your proposal.
In the next module, we'll continue with the Impact section, see you in the next video!

Module 5 – Writing a Winning Proposal (Part 2): Impact

Hello and welcome back to the BIN2BEAN training series on accessing and applying for public funding and grants. In this module, we'll continue learning how to write a winning proposal, focusing on the Impact section.
Writing a strong proposal isn't only about technical innovation—it's also about showing how your project will make a real difference. Let's have a look at how this can be achieved within the Impact section, where you explain how your project's results will make a difference beyond the immediate scope and duration of your work.
A good place to begin is with the expected outcomes listed in the call text. Look at those outcomes and describe how your project will contribute to achieving them.
Then, go further and talk about wider impacts in the longer term, as specified in the destination part of the Work Programme. For example, how will your project help Europe achieve goals like the Green Deal, the circular economy, or soil health targets?
When describing impact, don't focus only on the scientific side. Evaluators also want to see:

- Economic and technological impacts. For example, how your innovation might bring new products or services to the market, reduce costs, or improve efficiency in industry.

- And societal impacts. Such as improving environmental protection, reducing greenhouse gas emissions, creating new jobs, or supporting rural communities.

It's important to quantify your impact wherever possible. Use numbers, forecasts, or concrete examples, defining your Key Performance Indicators, or KPIs. KPIs help evaluators see how you'll measure the success of your project. They show that you've thought through how to track progress and results. For instance, you could estimate the number of hectares of soil that could be restored with the innovation you are proposing or the percentage reduction in biowaste going to landfill.

Another key part of the Impact section is explaining your **measures to maximise impact.**

This means describing how you'll:

- Disseminate your results, for example by publishing scientific papers, attending conferences, or engaging with networks and stakeholders.
- Communicate your project to the broader public. Explain in simple terms what your project does, why it matters, and who benefits from it. Plan communication from the start and tailor your messages for different audiences.
- Exploit your results, which is about how you or your partners will use the project outcomes after the funding ends. This could involve launching new products, licensing technology, or filing patents. Even if your project isn't purely commercial, evaluators want to know how your work will create value and continue beyond the project's lifetime.

Rember: also in this case, quantifying the outputs and using KPIs are key!

Before closing this module, let's quickly review **common mistakes** people make in the Impact section:

- Writing statements without numbers or evidence. Be as quantitative as possible!
- Focusing only on scientific impacts and overlooking social, economic or environmental contributions
- Forgetting about the importance of a solid and quantitative plan for dissemination, exploitation, and communication
- Not showing how the project connects to broader EU policies and goals, including work programme destinations
- And, finally, forgetting to check the call requirements and proposal template and answer all its specific questions

In the next module, we'll continue with the Implementation section. Do not forget to download our writing checklist before moving on. See you in the next video!

Module 6 – Writing a Winning Proposal (Part 3): Implementation

Hello and welcome back to the BIN2BEAN training series on accessing and applying for public funding and grants. This module will close our session on how to write a winning proposal with a focus on the Implementation section.

A strong Implementation section shows evaluators that your project is feasible and well planned. You need to prove that your project idea can be turned into reality. Evaluators look at how your work is organised, who will do what, how long it will take, and whether you've thought through potential risks. Let's go through the main parts you'll need to include.

First, you'll need a clear **work plan.** Your project should be broken down into **work packages.**

A work package is a group of related tasks that help you unfold your project methodology and achieve your project objectives. It describes the practical steps you'll take, while the theories and techniques behind the activities belong to the Excellence section. Work packages are indeed more operational and shows:

- Which activities, or tasks, you're going to carry out.
- Who will be responsible for that
- How long each task will take. The use of a GANTT chart to show when different tasks and work packages will be carried out is also recommended.

Make sure also that your work packages cover the entire scope of your project and connect logically to one another. An initial representation on how WPs fit together (PERTT chart) is requested at the beginning of the Implementation section.

Each work package should clearly state:

- The overall objective of the WP
- When it starts and when it ends
- The effort in terms of Person Months
- Who is going to lead it. WP leaders are responsible for the implementation of their WP and are the main contacts in case of problems/questions or decisions to make within the WP. They are supported by task leaders which are responsible for organising activities within their task and ensuring that outputs are delivered on time. Assigning the right partner for the right role is essential to guide the future project and to show evaluators that you have the right skills and capacity to deliver the project.

For each WP, you'll also need to define **milestones** and **deliverables.**

Let's clarify the difference:

- Milestones are control points in your project. They help you check progress and decide if you're ready to move on to the next phase—for example, completing a prototype or finishing field trials.
- Deliverables are tangible outputs you produce during the project. These might include reports, technical documents, software, prototypes, or policy recommendations. Deliverables are specific results you submit to the European Commission as proof of your progress.

So, in short, milestones mark significant points along the way, while deliverables are the concrete results you produce. Both are used by the funding agency and by the reviewers to check your advancements through the project. Make sure that they are realistic and achievable by the set deadline!
An important part of Implementation is also showing how you'll handle risks.
Every project has risks, and evaluators expect you to identify them.
For each significant risk, explain:

- What might go wrong
- How likely it is to happen
- And what steps you'll take to reduce the impact if it does

For example, you might have technical risks, like challenges in scaling up your biowaste processing technology, or external risks, such as changes in regulations.
Finally, do not forget to highlight the role and capacity of each participant and how the consortium as a whole brings together all the necessary expertise.

Let's finish with some **common mistakes** in the Implementation section:

- Structuring your work plan in an illogical or incohesive manner that it is not aligned to the project methodology.
- Describing the theories and techniques behind your activities. This should be described in the Methodology section, don't mix the two!
- A common mistake is also spending too much time describing the Implementation section in great detail, while neglecting the Excellence and Impact sections.
- Other mistakes include: Creating overlapping tasks without a clear indication of roles and responsibilities.
- Defining milestones and deliverables that are not realistic or aligned with the project structure
- Ignoring the need for a clear risk assessment
- Forgetting to show how your partners complement each other

With this video, we've completed our journey through Part B of the proposal, covering Excellence, Impact, and Implementation. In our next video, we'll move into the financial side.
See you in the next module!

Module 7 – Financial Planning in EU Projects

Hello and welcome back to the BIN2BEAN training series on accessing and applying for public funding and grants. This module will focus on how to plan your project budget and understand eligible costs.
Once you've defined your project idea and planned your activities, you'll need to translate all of that into numbers.

The budget isn't just a formality, it's how you prove that your project is affordable, feasible, and compliant with EU rules. A well-prepared budget can make your proposal stronger and help avoid surprises during the project.
So, let's have a quick look at how to build a clear and credible budget for your EU project.

Personnel costs are often the largest part of your budget. They cover salaries for the people working on the project, including employees, natural persons working under a direct contract, SME owners not receiving a salary, volunteers. Depending on the type of personnel cost, they must be declared as actual, meaning costs actually incurred by the beneficiary during the action duration, or unit costs. In EU projects, personnel time is measured in **person-months.** But what does that mean? A person-month represents one person working full-time for one month on the project. So, for example:

- If a researcher works full-time for 3 months on the project, that equals 3 person-months.
- If someone works half-time for 6 months, that's also 3 person-months.

This way of calculating effort helps evaluators understand how much time each partner plans to dedicate and whether your resources are sufficient for the tasks you've proposed
Then we have **Subcontracting costs**. These are used when you need to outsource specific tasks to external partners who are not part of your consortium. For instance, specialised lab tests or independent evaluations. Remember, however, that subcontracting should only cover tasks that your consortium cannot do internally. The core work of the project should stay within the partners. When choosing a subcontractor, it is important to apply the principles of best value for money.
Next are **purchase costs**, which include travel, equipment and other goods, works and services. Travel costs cover expenses like transport, accommodation, and daily allowances for meetings, conferences, or site visits. Always make sure the purpose of the travel is clearly linked to the project activities.
For equipment, you can usually only claim part of the cost that matches how much you actually use it for your project, taking into account both the depreciation period and the percentage of time it's used specifically for your project work.
Finally, other goods, works and services (OGWS) include consumables and supplies, dissemination and communication costs (such as publication fees and conferences fees), and costs related to intellectual property rights.
Finally, the beneficiaries/affiliated entities may charge costs under 'Other cost categories', including Financial Support to third parties and internally invoiced goods, but the eligibility of these costs will vary depending on the call.
All the above-mentioned costs, excluding subcontracting and other cost categories, contribute to **indirect costs** which are calculated as a flat rate of the direct eligible cost. The flat rate is usually fixed at 7% or 25% depending on the program.

If you think that these names are too many and overwhelming, the good news is you don't have to figure everything out on your own. The European Commission provides several tools to help you, including the **Annotated Grant Agreement (AGA)** which explains the rules in detail, with examples and practical guidance. It can be used when preparing the proposal but also for reporting once the project is funded. I strongly recommend downloading the AGA and keeping it as a reference during both proposal preparation and project management. You can find it as a supplementary material for this module.

When preparing your proposal, remember that your budget must be entered directly into the Funding & Tenders Portal.
However, there's also a more detailed budget breakdown in the Implementation section of Part B of your proposal.
There, you'll find tables where you should:

- Allocate costs to different work packages
- Show how many person-months are planned for each partner
- Provide explanations for significant costs, like subcontracting or large purchases

These details help evaluators see whether your budget matches your work plan and whether your resources are sufficient for the project.

Before closing this module, it's also important to understand how **cost reporting works.**
In traditional projects, you report your actual costs. This means:

- Declaring the real expenses you've paid, such as salaries, invoices, and travel tickets
- Keeping detailed records to prove that your costs were necessary and linked to your project activities

However, many EU programmes are now moving towards the lump sum model.
In a lump sum project:

- Instead of reporting every individual cost, you receive a fixed amount for completing specific project tasks or deliverables
- You don't have to provide invoices or financial proofs for every expense, but you must show that the work was truly carried out

Lump sums reduce administrative burden but require careful planning so that your fixed payment covers all real costs.
Within the Funding & Tenders portal, each call will provide indications on whether the project will follow a standard or lump sum reporting to allow you to plan the budget accordingly.

After discussing how EU proposals work, in our next video, we'll explore how to find **national and regional funding opportunities** that could also support your biowaste-to-soil innovations.

See you in the next module!

Module 8 – National and Regional Funding: Where and How to Look

Hello and welcome back to the BIN2BEAN training series on accessing and applying for public funding and grants. In this module, we'll explore how to find funding opportunities at national and regional levels—an important complement to EU funding, especially for businesses working in the biowaste-to-soil improvers sector.
While EU programmes are significant sources of funding, they're not the only options available.
National and regional funding programmes can:

- Provide smaller but faster grants
- Support projects that are not yet ready for large EU calls
- Fund activities tailored to your country's specific priorities
- And finally help businesses test innovative solutions locally before scaling up to EU level

So, where should you start looking for this funding? Although we will not be able to explore in details all the available national and regional funding, let's look at a few key sources that will help you navigate through these opportunities!
National Contact Points, or NCPs, are one of your first stops.
Every EU country has NCPs who can:

- Explain national programmes and how they connect to EU funding
- Help you navigate application processes
- Provide updates about local opportunities

Especially if you're new to public funding, NCPs can save you time and help you avoid mistakes.
Another great resource is **regional innovation agencies.**
Many regions across Europe have dedicated agencies that:

- Manage funding programmes aligned with local economic and environmental goals
- Provide guidance on writing applications
- Support connections between businesses, researchers, and local authorities

For example, if your region has a strong focus on circular economy or sustainable agriculture, these agencies might have funding specifically for projects like transforming biowaste into soil improvers.
The **Enterprise Europe Network, or EEN** may also come in help. EEN is a vast network that helps small and medium-sized enterprises to:

- Find partners for research or business collaborations
- Learn about both EU and national funding opportunities
- Understand market trends and regulations

Many EEN advisors focus on sustainability, environmental technologies, and the bioeconomy—all relevant to biowaste-to-soil innovators.

Apart from purely national or regional funding, there's also funding that combines **EU money with national management.** These are called **EU-co-financed programmes.**
A few examples relevant for your sector include:

- The **Common Agricultural Policy (CAP),** which funds sustainable farming and soil health initiatives. Many Member States run rural development grants that could support new soil improvers derived from biowaste.
- And the **European Regional Development Fund (ERDF),** which funds projects that boost regional competitiveness, including environmental technologies and circular economy solutions.

These programmes are managed locally, but they connect directly to European priorities—so they're a great opportunity if your project has both local and EU-level benefits.

However, one challenge with national and regional funding is that calls can open and close quickly, and they're often not as visible as big EU programmes. So, staying informed is key.
Some practical tips include:

- Signing up for newsletters from your national ministries, regional development agencies, and NCPs.
- Checking the websites of regional innovation agencies regularly, especially if your region has policies focused on sustainability, soil health, or waste management.
- Staying connected to networks like EEN or bioeconomy industry associations—they often share funding alerts and partner searches.
- And finally, attending local events, workshops, or info days. These are excellent places to hear about new calls and meet people who could become partners in your project.

To help you start your search, we've prepared a **list of useful links and contacts** where you can explore national and regional funding opportunities relevant for the biowaste-to-soil sector. Make sure to download these resources—they're a great starting point.
Before closing our course, in our next video, we'll focus on specific EU calls and programmes dedicated to **soil health**, which is a key innovation area for biowaste-to-soil projects. See you in the next module!

Module 9 – EU Programmes & Calls for Soil Health

Hello and welcome to this final module of the BIN2BEAN training series on accessing and applying for public funding and grants.
Today we'll close our journey together by focusing on EU calls and programmes dedicated to innovations in the biowaste-to-soil improvers sector, with a focus on soil health.

Throughout this course, we've talked about how public funding can help you transform innovative ideas into market-ready solutions. Now, we'll look at where you can specifically find opportunities if your work involves converting biowaste into soil improvers—an area that sits at the heart of Europe's strategies for sustainability, circular economy, and soil health.

The European Union places increasing importance on:

- Soil health, because healthy soils are essential for food security, biodiversity, and climate resilience.
- Circular economy, to reduce waste and transform by-products into valuable resources.

For businesses working on biowaste-to-soil improvers, this creates a unique funding opportunity. Your projects are perfectly positioned to:

- Reduce landfill waste
- Restore degraded soils
- Create sustainable products for agriculture and environmental protection

Many EU funding programmes now explicitly target these objectives.

Earlier in this course, we introduced key programmes like Horizon Europe and the LIFE Programme.

In this final module, we won't repeat those general explanations. Instead, we'll dive deeper into how these programmes connect specifically to biowaste-to-soil projects, and how you can position your innovations to align with these funding priorities.

A particularly relevant programme is the **Mission "A Soil Deal for Europe."**

This Mission aims to ensure healthy soils across Europe by 2030, through innovation, new business models, and practical solutions that can be implemented in real-world contexts.

And it's important to know that BIN2BEAN itself was funded under this Mission Soil context.

Our project was selected because it contributes to:

- Transforming biowaste into sustainable products
- Improving soil health and fertility
- Demonstrating solutions that can be scaled up across Europe

This shows how soil health is not just a political priority—it's an area where concrete funding decisions are already supporting real projects.

If you're looking for calls that focus on biowaste-to-soil projects:

- Check the Work Programmes of Horizon Europe Cluster 6 for calls linked to soil health, waste valorisation, and circular bioeconomy.
- Explore the LIFE Programme for topics on soil restoration, landfill reduction, and pilot projects demonstrating environmental benefits.
- Look into the CBE JU for funding bio-based value chains where biowaste is transformed into innovative products like soil improvers.
- Don't forget national or regional programmes under CAP or ERDF that support sustainable soil management and circular economy solutions.

When reading call texts:

- Pay close attention to the expected outcomes
- Check the required TRL
- And make sure your project fits precisely into the scope

Remember: the EU is particularly interested in projects that combine environmental impact with economic viability. That's a perfect match for the biowaste-to-soil sector.

With this video, we're concluding our BIN2BEAN training on how to access and apply for public funding and grants.
But keep in mind, public funding is only one part of your financing journey.
That's why, in the BIN2BEAN series, we'll also have a dedicated training on **Corporate Financing for New and Existing SMEs.**
Combining public and private financing can give you the resources you need to bring your biowaste-to-soil innovations to the market and scale them successfully.
So, I invite you to continue your learning journey with us.
And one last thing—don't forget to take the quiz at the end of this course! Completing it will give you a certificate of participation, a great way to demonstrate your commitment and strengthen your professional profile in the biowaste sector.

Thank you for following this training series on accessing and applying for public funding and grants.
I wish you great success in turning your biowaste-to-soil innovations into market realities.
See you in the next BIN2BEAN training!

Training #3

Module 1 – The value chain – from organic waste to valuables

Hello and welcome to the BIN2BEAN training series, designed especially for entrepreneurs and small businesses working in the biowaste-to-soil improvers value chain.
My name is Sara Daniotti, and together with Dr. Henning Friege, we'll guide you through this new course focused on awareness raising and community engagement.
In this training, we'll explore how to communicate effectively with different partners—from private households and municipalities as biowaste producers, to farmers and industry as potential users of your products.
When starting your business, it's essential to be well-informed not only about your product and the market, but also about your customers' needs and the regulatory framework.
Ideally, you should have a clear understanding of the entire value chain—where you fit, who the other stakeholders are, and how processes work both upstream and downstream.
This knowledge is a strong foundation for your business success.

Many people have a general idea of what compost is. But when it comes to running a business, it's not that simple.
Compost is used as a soil improver, but there are different ways to produce it, and many factors influence its quality and properties. The business framework, the steps in the value chain, and the roles of the different stakeholders are more complex than they might first appear.

Although everyone has an idea about compost, this is not an easy task. Compost is used as a soil improver, but there are different ways to produce it and influence its properties.
Let's take a quick look at the process:
Organic waste comes from households and businesses and is collected by many people—most of whom you'll never meet.
This waste goes to specialised facilities, where it's pre-sorted to ensure consistent quality. Operators there create optimal conditions for either anaerobic or aerobic processes, depending on the desired outcome.
But even after composting, the output needs post-processing to become a soil improver that meets market standards and customer needs.
As you can see, there are many different steps, and each involves different stakeholders with their own interests.
This entire sector operates at the delicate interface between waste management and product creation—a space that requires careful coordination and communication.

The aim of this course is to support you as an entrepreneur. You'll learn how to add value to organic waste, identify your place in the value chain, and communicate effectively with other stakeholders.
Throughout the course, we'll cover:

- The value of compost when applied to soil
- How to ensure quality at various stages of the value chain
- The overall structure of the value chain and how it's managed
- The legislative framework and how it influences the valorisation of organic waste
- The different stakeholders involved, from citizens to farmers, and what motivates them

To make the most of this training:

- Watch each video module. They're concise and practical, so you can fit learning into your daily schedule.
- Download the support materials. Slides, glossaries, checklists, and helpful links are all provided to deepen your knowledge.
- Explore translations. Scripts are available in different languages if you prefer to study in your native language.

- Take the final quiz. Completing the quiz will earn you a certificate of participation—a valuable asset for your professional journey.

For this module, we've also prepared a terminology glossary. It explains key terms that you'll encounter during the training. I encourage you to download it and keep it handy as you progress.

Thank you for joining us in this journey! Let's begin.

Module 2: Legal frame (part 1) - introduction to EU regulation

Hello and welcome back to the BIN2BEAN training series on awareness raising and community engagement. In this module, we will explore European legislation along the entire value chain from bio-waste to soil improvers.
To understand it clearly, we need to consider four main types of legislation:

- Waste management
- Legal conditions for operating processing plants
- Requirements for the quality of products made from bio-waste
- And soil protection

Let's start with the first one: **waste management**.

The Waste Framework Directive, or WFD, is the EU's flagship waste regulation. It defines bio-waste as *"biodegradable garden and park waste, food and kitchen waste from households, offices, restaurants, wholesale, canteens, caterers and retail premises, and comparable waste from food processing plants."* In this training, we will focus on bio-waste from households and restaurants. But remember: there are also many other types of biodegradable waste from food production that could be relevant for certain business models. We'll look at some of those in Module 5.

Beyond simply defining bio-waste, EU legislation has clear goals:

- Preventing food waste – covered in Article 9 of the WFD.
- Diverting biodegradable waste from landfills – covered in the Landfill Directive.
- Promoting the utilisation of bio-waste – covered in Article 22 of the WFD.

There are also ambitious targets: by 2035, Member States must take the necessary measures to ensure that no more than 10% of municipal waste by weight can go to landfill. Also, it is important to remember that it is already illegal to landfill separately collected bio-waste.
Furthermore, since 31 December 2023, the separate collection and treatment of bio-waste has been mandatory across the EU. According to Article 22 of WFD, bio-waste that cannot be prevented (Art. 9 Par. 1 g) must either be separated and recycled at source or collected separately and not mixed with other waste.
Composting and digestion are encouraged, but with two clear goals:

- Protect the environment at a high level

- Produce high-quality outputs

These materials must be safe to use and should promote the use of products derived from bio-waste waste (Art. 22, Par. 2, WFD).
Now, there are some possible **derogations** from separate collection (cf. Art. 10, Par. 3), but only if:

- It doesn't lead to the best environmental outcome (letter b)
- It's not technically feasible (letter c)
- Or it would result in disproportionate economic costs (letter d)

The details of how collection is organised, and how waste charges are applied, are left to each Member State.
And there's a strong incentive for separate collection in order to meet EU's recycling targets: organic waste makes up about 35% of municipal waste, while EU targets aims to reach 55% by 2025 and 60% by 2030. Incentives on the national and the municipal are therefore crucial to make this happen!
In some regions in South and Southeast Europe, mechanical and biological treatment of mixed waste is still used, but this produces poor-quality compost full of contaminants which is mostly landfilled or used to fill former quarries. From 2027, such compost will no longer count as *recycled bio-waste*. This highlights the potential for business models that focus on **kitchen and green waste from households or commercial premises**.

Let's move on to what happens after collection.
Bio-waste can be processed in two main ways:

- **Anaerobic digestion**, where air is excluded, producing biogas and digestate rich in nutrients
- **Aerobic composting**, where air is actively supplied to create compost

Soil improvers can only be made from compost. However, in many anaerobic digestion facilities, the solid residues from the biogas process are **composted afterwards** to produce soil improvers.
Though there are no definitive regulations, except for large digesters which are covered by the European Industrial Emissions Directive, 'Best Available Techniques' for biological processes are published by JRC and are available as supporting material of this module. One crucial aspect of processing is hygienisation, protecting both workers and end-users from health risks. EU Directive 2000/54/EC requires hygienisation during processing, which in practice means maintaining a temperature of 70°C for more than three days. Operators aim to keep temperatures at this level, without going much higher, to protect beneficial microorganisms essential for the process.

Once the material is ready to be marketed, we move into **product quality requirements**. Hygienisation is also a fundamental prerequisite for using products from biological processes.

In its "product function categories" (PFC), the EU Fertilising Products Regulation 2019/1009 (or FPR) sets out requirements for fertilisers (PFC 1(A)), soil improvers (PFC 3) and growing media (PFC 4). For bio-waste products, the most relevant component material categories are: i) **CMC 3** – Compost from aerobic treatment; ii) **CMC 4 and CMC 5** – Products from anaerobic treatment. Furthermore, the regulation's annexes specify:

- Minimum nutrient concentrations with detailed tables that can be found within the supporting materials of this module
- Thresholds for contaminants, such as glass or tar derivatives
- And limits for plastic contamination: no more than 2.5 g/kg of dry matter for plastics above 2 mm, effective from 16 July 2026.

And what about the soil itself?
At EU level, there is currently no dedicated legislation for soil protection. The Soil Monitoring and Resilience Directive is still under discussion. Because soils vary so much, it's not considered practical to set EU-wide limits for contaminants or nutrient targets. If you plan to work with soil improvers, you must therefore check your **national legislation**. Additionally, the **European Soil Observatory (EUSO)** provides information on the status of soils in each Member State.
If you want to follow upcoming developments in EU legislation on bio-waste and soil improvers, consult:

- The Circular Economy Action Plan
- The Bioeconomy Strategy – currently under revision, likely to emphasise material recovery from waste biomass
- And the European Soil Strategy – which sets a vision for 2050 and specific targets for 2030.

This concludes our initial overview of European legislation across the bio-waste to soil improvers value chain which will be deepened in the final module of this course. In the next video, we'll learn about the hidden value of compost. See you in the next module!

Module 3: The (hidden) value of compost

Hello and welcome back to the BIN2BEAN training series on awareness raising and community engagement. In this module, we'll learn about the properties of compost and why understanding them also means understanding soil itself.
Soil is not just a mixture of minerals such as clay and sand, or stones covered by a dark surface. The top layer of soil also contains **humus**, the result of the biochemical decomposition of plant residues by millions of organisms, of which less than ten percent are well known to science. Soil scientists define humus as the totality of organic substances in soil: remains of plants, animals, fungi, and bacteria that are broken down into molecular and mineral components by microorganisms in the upper soil layer. The humus content of a soil is best described by its **organic carbon**

content (SOC), since analysing single components would not be meaningful. Harvesting always removes carbon and nutrients, which is why fields often show a low SOC content. By contrast, grassland has around ten percent SOC, and swamps or marshes show the highest concentrations of organic matter. To maintain soil fertility, it is therefore necessary to add materials that compensate for these losses. Besides ploughing in plant residues, more material is needed that can be broken down into humus. Compost made from waste biomass is well suited because it contains a high proportion of organic carbon together with nutrients such as nitrogen and phosphorus. For this reason, compost from organic waste is considered a **soil improver**, as we already saw in the legal background in Module 2.

Humus can be characterised by how accessible it is to organisms and plants. Some humic substances are easily available, and microorganisms use them as nourishment. These disappear quickly. Others, known as refractory humus, remain in the soil for years.

This second fraction is responsible for many important soil properties. It increases water-holding capacity, stores nutrients, and immobilises heavy metals or other soluble compounds that could harm plants.

Compost contains humic substances and therefore acts as a true soil improver. A striking example can be seen in the comparison of two neighbouring fields after heavy rainfall. One field, managed conventionally without compost for several years, became almost flooded. The other, managed ecologically and enriched with compost, absorbed the water thanks to its higher humus content. This shows how a high SOC level increases the resilience of soils, protecting them from erosion and from drought.

Let's continue with the role of compost in climate protection. If organic waste is landfilled, it decomposes into methane and other gases over time. Methane is a very potent greenhouse gas, with a global warming potential around twenty-five times that of carbon dioxide. This is why the landfilling of biodegradable waste is to be completely prohibited in Europe.

Incineration of residual waste also produces carbon dioxide. In contrast, recovering organic matter through composting decreases greenhouse gas emissions. The refractory part of humus even stores carbon in soils, helping to mitigate climate change by slowing down emissions. This process of **carbon sequestration** is already recognised in European climate protection policy as one way of compensating for unavoidable emissions.

Maps from the **European Soil Observatory** highlight large areas of Europe suffering from a lack of organic carbon. For 6% of all soils, the loss of organic carbon is already considered critical. To prevent further losses, it is important to apply compost and other soil improvers (see supporting material [Pravalie et al. 2024]). According to the European Environment Agency, repeated applications of good-quality compost can improve the soil's ability to retain water and nutrients, to store carbon, and to increase fertility [EEA, 2020]. Findings from the LIFE SoilCom project confirm these benefits. The project showed that applying twenty percent more compost reduced

the use of water, pesticides, and mineral fertilisers by seven percent per farm, while increasing productivity by ten percent [Kristensen 2023].
Despite the high demand for soil improvers across Europe, there is a shortage of good-quality compost. Increasing the collection and processing of bio-waste is therefore a major opportunity to improve soil resilience. Mixed waste can also be treated biologically, as in MBT facilities, but the result is compost that is contaminated and unusable on soils. It usually ends up in landfills or in quarries. For this reason, it is essential to separate bio-waste at source. Kitchen and green waste must be collected separately, and the input quality must be high. Separately collected bio-waste should not contain more than three percent impurities such as plastics, glass, or dust.
In summary, compost made from bio-waste is essential to maintain the fertility of European soils. It improves the soil's capacity to store and filter water, reduces the mobility of harmful substances, and contributes to climate protection through carbon sequestration.
But this is only possible if households, restaurants, hotels, markets, and the food industry carefully separate bio-waste at source so that it can be processed into safe and effective soil improvers.
In the next video, we will learn about how to motivate to separate and recycle biowaste. See you in the next module!

Module 4 – Motivations of your clients (part I)

Hello and welcome back to the BIN2BEAN training series on awareness raising and community engagement. In this module, we will explore how to understand and motivate different stakeholders along the value chain, starting with private households and local administrations.
When you design a new business model, it is natural to think first about your potential clients. But in the bio-waste sector, you must also consider all the other stakeholders.
Bio-waste is not a standardised material. Unlike raw materials in a factory, its composition varies depending on the source, whether it comes from households, supermarkets, or restaurants, and it also changes with cultural habits and the season.
Since soil improvers and fertilisers must meet strict quality requirements, such as minimum humus content, particle size, contaminant limits, and the absence of visible impurities, reaching these standards is only possible if both the organic waste and the processing methods are of high quality.
For this reason, the cooperation of households and businesses is essential. They must separate the organic fraction of their waste, or even pre-sort it. This means asking people to do extra work, so it is crucial to understand what motivates them.
Scientific studies have identified four main factors that shape waste-sorting behaviour: people's attitudes towards environmental protection, the influence of

social norms, their perceived control over the behaviour, and their experiences with local waste management services [Stoeva & Alriksson 2017].
People who are already aware of environmental issues are often intrinsically motivated. They will be open to messages about how separating organic waste improves soil resilience. That is why it helps to develop a clear and simple narrative: explain the state of regional soils, show the benefits of compost, and connect their behaviour to local improvements. The European Soil Observatory maps, presented in Module 3, are useful for this purpose.
You can also appeal to common sense. Reducing the waste that needs to be disposed of makes sense for everyone and is also required by EU law. Remind people that methane from landfills is a climate killer, about twenty-five times stronger than carbon dioxide, and that incinerating food waste wastes valuable organic matter. Recycling is the better alternative. In fact, one tonne of bio-waste can yield about 350 kilograms of compost, saving carbon dioxide, or around 100 cubic metres of biogas with an energy content of 600 kilowatt hours.

Sorting waste is more likely to spread when it becomes a visible social norm. If many citizens already participate, others will follow. Campaigns can build on this by using messages such as *"We all separate our waste – why don't you?"*
Behaviour can also be encouraged through external motivation. Some municipalities offer financial rewards for bio-waste collection. In Module 6 we will look at examples of successful experiences from cities and companies.
Motivation, however, is only one part. Households also need clear and accessible information. They must know what belongs in the bio bin, what containers they can use, where the nearest bio bin is located, what the rules are, and what benefits they will gain from correct separation. This information should be available in simple forms such as flyers, posters, social media content, or websites. In areas with large migrant populations, translations are essential so that everyone can participate.

A business model based on home or community composting requires providing people with equipment and instructions. Composting can take place in gardens or parks and is often supported by municipalities or associations. In these cases, you will work with highly motivated individuals, which allows for more technical communication and closer collaboration. In most cases, however, entrepreneurs will not interact directly with households. City administrations usually organise collection, sometimes through a contractor, and are also responsible for informing citizens. For your business, it is important to understand their motivations. Are they introducing the bio bin to improve soil? Are they aiming to reduce waste management costs? If composting reduces the volume of residual waste, municipalities can save money, which is a strong argument. But if administrations are not directly responsible for the quality or quantity of collected bio-waste, their motivation may be weaker. In these cases, entrepreneurs must invest time in convincing councils and administrations of the wider benefits of bio-waste

valorisation, including job creation and improved soils. Municipalities also often underestimate the workload of introducing separate collection. That is why maintaining close contact with administrations and waste companies is essential. Work with them on strategies to motivate citizens. In addition, engaging NGOs or citizen groups committed to environmental issues can help. Farmers who already use soil improvers from bio-waste can also provide powerful testimonials.

Once citizens are motivated, they must also be supported in taking action. This means reliable and transparent waste services, fair charges, and trust in the system. When households are satisfied with local facilities, they are more likely to continue separating waste. Pre-sorting at home is extra work, so convenience is critical. Behavioural research shows that people are more likely to adopt behaviours that are easy, attractive, social, and timely [Behavioural Insights Team[23]]. This principle applies directly to bio-waste separation. Households should be equipped with small containers for kitchen waste and with suitable bags to avoid leakage and smell. An example comes from Hamburg, where the municipal company provides free biodegradable paper bags for food waste. These bags reduce odours in kitchens and can be collected from recycling centres or shops with a downloadable coupon. Waste bins or underground containers are then available close to homes for convenient disposal.
Of course, bio-waste can produce unpleasant odours because of bacteria and fungi that start decomposition quickly. To address this, several measures are recommended:

- Containers should be emptied more often in hot weather.
- Lids with charcoal filters can reduce smells.
- And specialised companies can provide cleaning services for bins, helping to keep the system pleasant for households.

Taking these steps makes waste separation easier, more attractive, and more reliable for households, which is the foundation for producing high-quality compost.
In the next video, we will build on this by exploring how commercial stakeholders, beyond households, can be engaged and motivated to contribute to the collection of clean bio-waste. See you in the next module!

Module 5 – Motivations of your clients (part 2)

Hello and welcome back to the BIN2BEAN training series on awareness raising and community engagement. In this module, you will gain an understanding of the motivations of commercial clients along the value chain. It is important to distinguish between waste producers, waste processors, and clients who use compost directly as a soil improver or as part of a specialised mixture for well-defined applications.

[23] Behavioural Insights Team (2014) EAST. Four simple ways to apply behavioural insights. Revised edition, 2024

Let's begin with the major waste producers. The food industry, breweries, slaughterhouses, and fruit drink producers are among the most significant generators of organic waste.
When working with them, it is essential to know the **final destination of their waste**. This may include incineration, anaerobic digestion, or even its use as livestock fodder. Each option has its own costs and revenues, and because organic waste is a substantial part of their profit and loss accounts, financial aspects are often the key driver for these enterprises. If a more profitable and reliable option for valorising organic waste is presented, they will be ready to follow. However, strict compliance with legal restrictions is non-negotiable, especially for hygienic reasons. For instance, the EU Regulation on animal by-products forbids mixing residues from meat production with residues from the plant-based industry. Kitchen waste from restaurants is classified as Category III material and must be hygienised, but this does not apply to household waste.
Because investment in animal waste treatment facilities is so high, only a few large companies dominate this market, often developing innovative ways to valorise both animal waste and restaurant kitchen waste. Documentation and transparency are crucial: compliance with regulations is not only a legal obligation but also an important reassurance for industrial producers of organic waste.
A motivating message for clients could be as simple as: *"Don't worry about your waste – we have found an environmentally sound method for its valorisation, in full compliance with European law."* At the same time, collection and transport must also respect hygiene standards and occupational safety rules. Containers should be closed and locked when stored outside, which also prevents them from being misused for littering.

Let's now turn to the processors. Anaerobic digestion and composting facilities convert organic waste streams into useful materials, but their flexibility depends on the type of facility. This might be open compost piles, industrial composting, or anaerobic digestion in wet or dry systems. Each facility's licence specifies not only emission thresholds, but also which input materials can be processed. A plant will only accept inputs that can be turned into marketable products. Even when waste is sieved and pre-sorted, some contaminants such as plastic or glass cannot be completely removed. For this reason, operators often define their own stricter quality requirements. If input material varies in composition or shows hotspots of contamination, it may only be accepted at a higher gate fee.

A step further in the value chain are bio-refineries. Unlike composting or digestion, these facilities aim to produce higher-value materials. Examples include chemical intermediates such as fatty acids, or molecules extracted from fruit peels and kernels, which can be used in a wide variety of consumer products. Their motivation

is therefore to secure input materials suitable for **biochemical transformation** into specialised, high-value products.

Finally, let's look at the end-users, the farmers. Farmers who purchase compost are usually interested in a clean, cost-effective product that is available right after harvest, to increase the humus content of their soils. Visible plastics or glass make compost unacceptable.
To match their needs, soil conditions should be checked with local experts such as chambers of agriculture. Compost should not only increase carbon levels but also contribute nutrients in line with local requirements. Ideally, the compost will comply with the EU Fertiliser Regulation and carry a recognised quality label.
Many countries already have associations dedicated to quality assurance of compost and digestate. These associations bring transparency to the market, which builds trust with farmers. For organic farming, soil improvers from bio-waste are particularly valuable because only a limited number of fertiliser products are permitted. Organic farmers are even more sensitive to contamination risks, so it is vital to keep them fully informed with analytical data and to guarantee stable quality year after year.
Establishing quality circles with farmers can also be a useful approach. This shows transparency and a willingness to exchange views openly.

Beyond all these stakeholders, we must also consider the broader policy framework. The EU has not only committed to reducing greenhouse gas emissions but also to **removing carbon from the atmosphere** through plants and soils. The upcoming Carbon Removal Certification Framework is expected to create standardised, tradable carbon credits, which could attract new investment.
As discussed in Module 3, carbon sequestration in soil can be assessed using model calculations. Yet, in practice, achieving the predicted values is challenging. For this reason, carbon sequestration is not yet formally included in the certification framework. Nevertheless, research continues at both European and national levels to make measurement more reliable. A good example is the Netherlands, where farmers can use the BodemC or BodemCarbon tool to evaluate the carbon balance of their fields over a 10 to 15-year period, taking into account crop rotation and management practices. Tools like this may offer future opportunities to add yet another step of value to the bio-waste-to-soil chain.

Understanding the motivations of commercial clients along the value chain allows you to better design your business model and anticipate the needs of producers, processors, and users of compost.
In the next video, we will learn how to **enhance both the quantity and the quality of compost and other products**, so that the value chain delivers consistent benefits for soils, farmers, and the environment. See you in the next module!

Module 6 – Enhancing the quantity and quality of compost and other products

Hello and welcome back to the BIN2BEAN training series on awareness raising and community engagement. In this module, we will focus on how to enhance both the quantity and the quality of compost and other products. This means looking at how much material is produced and, just as importantly, at the standards of the final output.

Focusing on **quantity**, The amount of compost produced depends directly on the quantity of kitchen and garden waste collected. During processing, part of the mass is lost. In anaerobic systems, this happens through the production of methane, carbon dioxide, and hydrogen, while in aerobic systems, it happens through the release of carbon dioxide, water, and other compounds.
Whatever the system, about **40 to 60 percent of the initial mass is lost**, mostly as water vapour. Anaerobic digestion facilities aim for a high yield of biogas because of its economic value, while composting facilities are usually optimised for time and space. In either case, this mass reduction is unavoidable.
Industrial units typically process between 10,000 and 100,000 tonnes of input material each year. Within that capacity, the overall quantity of bio-waste can be increased by simple means:

- Include more households or city districts in the bio-waste collection.
- Decrease charges for bio-waste compared to residual waste, to encourage citizens to sort correctly at source.

However, as many cities have experienced, lowering charges can sometimes lead to a **decline in quality**, with more residual waste, plastics, and other impurities ending up in bio bins. This is why controlling quality along the process is crucial. The value chain includes several control and intervention points that can help ensure a good final compost.
Community composting is one effective approach. It is easier to manage quality at a smaller scale, and successful community models often attract more citizens if their achievements are publicised, for instance on social media. The main limitation is usually the availability of space for composting and land where the compost can be applied.

Moving on, enhancing **quality** starts with the collection system itself. Pay attention to the quality of new bins, and keep in close contact with city administrations. Whenever a collection area is expanded, communication with citizens should begin before the new bins are installed.
For quality control, some national compost associations already provide practice guidelines. If these are not available in your country, it is recommended to follow the guidelines of the European Compost Network or the Bundesgütegemeinschaft Kompost in Germany. These include procedures for quality assurance of compost and digestate, as well as for rapid detection of impurities.
Quality control can be carried out at several points:

- **QC No. 1** – The quality of the waste in bins can be checked directly by rubbish collectors or waste advisers. This does not need to happen all the time, but it helps to identify areas that need intervention. By opening lids and checking the surface, it is usually clear whether visible impurities are present.
- **QC No. 2** – When new areas are added to the collection system, it is useful to check several truck deliveries at the facility to see the general level of contamination. This provides a first overview before focusing on problem areas.
- **QC No. 3** – In facilities, pre-sorting is done before waste enters digesters or composters. Operators control this step, and their information can guide communication campaigns. Citizens should focus on avoiding impurities that cannot be managed in the facility.
- **QC No. 4** – The final quality check takes place after post-sorting and sieving of mature compost. This stage confirms compliance with regional or national quality labels. If the compost is used to make added-value products like peat substitutes or potting soil, additional parameters are checked. At this stage, it is always helpful to keep in mind the requirements of the end product.

Compost should also be made available to citizens, which strengthens their involvement. There are several options:

- Citizens can collect compost free of charge from the facility, bringing their own containers.
- They can rent a bucket from the facility at a low annual cost, and refill it at any time.
- Compost can be packaged in bags and sold at municipal recycling centres or DIY stores, which works well in large cities.

Whatever the system, quality labels should be clearly visible, either at the delivery point or on packaging. Labels such as “Quality compost made from bio-waste collected in our city” help build trust.

The results of occasional quality checks, such as QC No. 1, and the quality labels confirmed at QC No. 4 should be shared with citizens, ideally together with messages of appreciation. There are some events that represent excellent opportunities to do this, such as:

- TheEuropean week for waste reduction (22-30 November, 2025)
- The International compost awareness week (each year in the first week of May)
- The World Soil Day (each year on December, 5)

Slogans like *“Be proud of your compost – thank you for carefully separating your bio-waste!”* work well. Contests for the best bio-waste quality are another effective idea, encouraging cities to share their experiences and motivating citizens by creating a sense of achievement and competition.

When problems arise, particularly in newly included collection areas, communication should be open and direct. Publishing photos of contaminated bins compared to clean bio-waste can make the message very clear. At the same time, it

is important to reassure citizens by showing that other city districts are doing well and by reminding them that the soil in their region depends on their contribution of clean organic waste. If these measures are not enough, further actions described in Module 7 can be applied, which include more detailed awareness campaigns.
Finally, remember that **end users of compost, such as farmers, are your strongest allies**. They can be included in communication campaigns as credible advocates for soil health. Their direct experience with compost in the field adds weight to your message and motivates citizens to continue separating bio-waste correctly.

To conclude, increasing the quantity of compost and ensuring its quality requires coordinated action: from citizens separating their waste correctly, to facilities applying strict quality control, and to end users confirming the value of compost for soil health.
In the next video, we will continue with tools aiming at better quality along the value chain. See you in the next module!

Module 7 – Tools aiming at better quality along the value chain

Hello and welcome back to the BIN2BEAN training series on **awareness raising and community engagement**. In this module, we will focus on one essential message: **quality is key!** There are many ways to improve the quality of compost and soil improvers. These can be grouped into four main areas:

- separation at source,
- input screening during collection,
- pre-sorting at the facility,
- and optimisation of the output.

The last two points – pre-sorting and output optimisation – are mainly questions of intelligent engineering. But the first two, separation at source and input screening during collection, rely heavily on communication. Contaminants such as stones, glass, plastic bags, diapers, or dust are very costly to remove at the facility. And small plastic particles or glass fragments cannot completely be removed. This makes it even more important to raise awareness among citizens from the very beginning.
To do this effectively, remember what we discussed earlier about the motivations of citizens and commercial clients in Modules 4 and 5, and about general recommendations in Module 6. Those modules covered how to introduce bio bins and how to organise regular awareness activities.
But what happens if bio bins are contaminated with residual waste or plastic bags? In that case, special campaigns are needed. And in this module, I will present one very practical tool: the **traffic light procedure**.

The traffic light system is simple, familiar to everyone, and easy to understand. Green means everything is fine. Yellow means there is a problem. Red means the bin is contaminated and will not be collected.

The steps are straightforward:

- First, identify the areas where contaminated bio-waste is being produced. This can be done by screening the waste at the drop-off point of the facility.
- Second, inform the inhabitants of these areas. Explain the problems caused by contaminated bio-waste and appeal for their cooperation. Use the right communication channels to reach them.
- Third, prepare traffic light stickers to give quick feedback. A green sticker could say: *"Thank you for sorting bio-waste correctly – we will yield good compost!"* A yellow sticker could say: *"Be careful when sorting waste! This bin should only contain kitchen and garden waste."* And a red sticker means the bin will not be emptied until it is sorted properly.
- Finally, monitor the bins before or during collection. This should be done at least twice, and ideally three times during a campaign. Use green stickers for clean bins, yellow for slightly contaminated ones, and red for bins that fail the quality check.

Waste producers who receive a red sticker can be asked to sort their waste again. Depending on local regulations, they may also be fined to reimburse the cost of an extra tipping tour, or even excluded from bio-waste collection altogether.
Today, these inspections can be supported by AI detection systems. These use cameras and trained software to identify contamination in real time. Some systems analyse the waste as the bin is tipped into the truck, while others check the material as it falls inside.
The traffic light procedure is most useful when only a few bins are heavily contaminated while most are filled correctly. But if many households are not separating waste at all, the first step should always be a broad communication campaign, as described in Module 4.
If there is still no improvement, then bio-waste collection in that area may need to stop, except for households that consistently receive a green sticker. This reduces the overall quantity of waste collected, but it guarantees the necessary quality.
It is important to make such decisions transparent and, just as importantly, to **reward households that participate correctly**. Positive reinforcement builds trust and encourages long-term commitment.

In conclusion, enhancing the quality of compost starts with clear communication and effective monitoring. The traffic light system is a simple but powerful tool to guide citizens and maintain high standards. In the next video, we will close the training by discussing potential problems arising from different national implementation of EU legislation.

Module 8 – Legal frame II - EU regulation and national implementation - examples

Hello and welcome back to the BIN2BEAN training series on **awareness raising and community engagement**. This is our **final module**, and in it we will look at some

potential problems that can arise due to different national implementations of European legislation. To make this clear, I will walk you through three practical examples.

As we saw in Module 2, soil improvers and other products made from bio-waste must meet the requirements of the EU Fertilising Products Regulation, or FPR. Threshold values for contaminants are provided in your support material, and these are a hot topic because changes are expected in the near future.
One key issue is contamination by plastic particles. From 16 July 2026, the EU will introduce a new limit of 2.5 grams per kilogram of dry matter for plastics larger than 2 millimetres.
Some Member States are even stricter. Germany, for instance, has introduced limit values for the bio-waste itself, not just for the final product. Bio-waste from commercial sources may contain no more than 0.5 percent plastic particles, while household bio-waste may contain up to 1 percent. Deliveries with more than 3 percent foreign material can be rejected, and the authorities must be informed. These strict rules are in place because small plastic particles cannot be eliminated during pre- or post-sorting.
When speaking to farmers or city administrators, citing such regulations — and showing how they are enforced — can help to build trust in the quality of compost and soil improvers.

Let's move on to residues from anaerobic digestion. When organic waste is digested, it produces both a solid material, which can be composted, and a liquid residue rich in nutrients. In regions where soils already suffer from over-fertilisation, such as from heavy manure application, this liquid residue cannot be used. In fact, in the Netherlands it is illegal to apply it to fields. To address this, some Dutch companies produce a solid fertilizer by dewatering the residues. The fertilizer can be transported to countries with nutrient-poor soils. Germany also has strict rules. Farms must not exceed an average of 170 kilograms of nitrogen per hectare per year, regardless of the source. For compost, the limit is 510 kilograms per hectare within three years. In addition, compost application is prohibited on rural soils between 15 December and 31 January, in order to protect groundwater after thawing.
These examples show that nutrient management varies across Europe and must be carefully taken into account in any business plan.

Our third example concerns the treatment of animal by-products, or ABPs, as defined in Regulation 1069/2009. This regulation aims to prevent contaminants and pathogens from entering the recycling chain.
ABPs are divided into three categories according to their hygienic risk. Catering residues from restaurants, for example, are classified as Category 3 material. Before such waste can be composted, it must undergo thermal treatment at 70°C for 60

minutes. This requirement creates challenges for composting and dry digestion processes.
In many Member States, food waste from restaurants, hotels, or butchers is collected separately from household bio-waste and hygienised before further treatment. By contrast, household bio-waste can be processed directly.
Community composting projects face particular difficulties. For example, in “worm hotels” where compost worms process kitchen waste, the Animal By-Products Regulation prohibits mixing food scraps with worms unless the material has been hygienised first. Although exemptions can sometimes be requested from local authorities, the 70°C hygienisation requirement makes it hard for community-driven initiatives to operate.

These three examples highlight how national differences in legislation can affect the bio-waste value chain, and why entrepreneurs must always check both European rules and national interpretations.

With this, we conclude our training on awareness raising and community engagement. Thank you for following this learning journey with us. We hope these modules have broadened your understanding of the organic waste value chain and inspired you with practical ideas for your own business.
On behalf of the BIN2BEAN project, we wish you every success in starting or developing your business in this exciting and fast-growing field. Let’s continue working together towards healthier soils, stronger communities, and a truly circular economy.

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