Bin2Bean

Practice abstract 17

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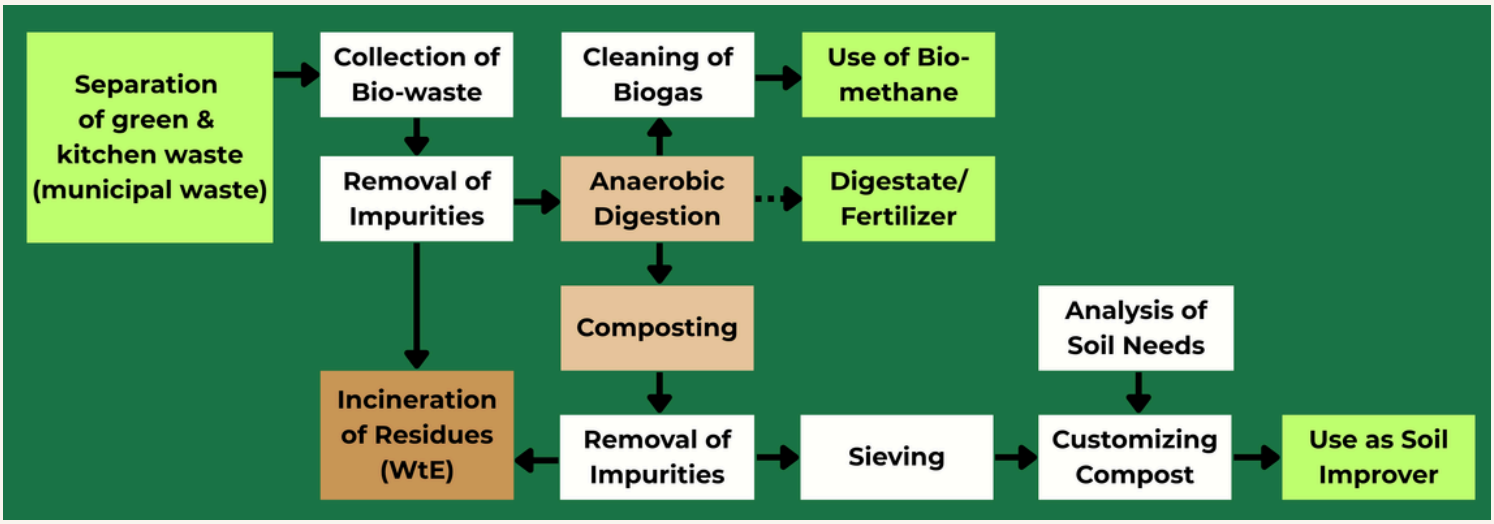
Value chain and organic-waste processing products

The value chain: a challenging business

Organic waste valorisation typically occurs within local or regional value chains, supplying products such as compost, digestate, and biogas to farmers, gardeners, and potting-soil producers (see Figure below). These products are derived from diverse sources, including households, public parks, restaurants, and commercial activities. Although the value chain is relatively simple, ensuring consistent product quality and reliable supply is challenging.
However, market opportunities are growing: the EU's CAP Strategic Plans (2023-2027) encourage replacing mineral fertilizers with organic alternatives like compost, increasing demand for bio-waste-based products.



Value chain from organic waste to products (Graphics: ETA-Florence Renewable Energies)

Compost, digestate, biogas, and by-products are **key outputs** of organic-waste processing:

- **compost**: solid product of aerobic treatment, rich in humus and nutrients (N, P, K, trace minerals). It improves soil structure and biology, supports beneficial microbes, and contributes to long-term carbon sequestration. Requirements fall under FPR PFC 3(A).
- **digestate**: liquid, nutrient-dense residue from anaerobic digestion. Classified as a fertilizer under FPR CMC3/CMC4.
- **biogas**: produced during anaerobic digestion and upgraded to biomethane by removing CO_2, H_2S, and moisture. Must comply with RED III sustainability criteria.
- **special chemicals**: certain food-industry wastes (e.g., fruit peels) can be refined into higher-value chemicals such as organic acids.
- **wood chips:** woody fractions can be used as fuel or sold as raw material.

Project partners

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originally published on

Co-funded by the European Union

EU CAP NETWORK

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