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New circular business models for urban solid biowaste valorisation

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General context

- Collection and treatment of urban solid biowaste is challenging: volumes and heterogeneity of biowaste, the organisation of logistics for the waste collection, separation from other waste.
- In Europe, about 86 million tonnes of biowaste produced in 2017 (60% food waste and 40% garden waste), but only 43% collected separately (Brusselaers & Van Der Linden, 2020).
- In France, most of the biowaste consists of garden waste, collected in waste disposal centres.
- For households' food waste, currently, only 175 municipalities representing only 6% of the French population offer separate collection schemes (ADEME, 2022).

Legal context for bio-waste treatment in France

Deadline	Biowaste	Edible oil waste
1st January 2016	10 tonnes/year	60 liters/year
1st January 2023	5 tonnes/year	60 liters/year
1st January 2024	Obligation for all (incl. households)	

ENVIRONMENTAL CODE

Article R543-225 (2011)

+

Arrêté du 12 juillet 2011

+

Article L541-21-1 (2020)

On-site valorisation

OR

Separate collection

Research objective

- As urban biowaste treatment and valorisation remains a major challenge, several private start-up businesses have emerged in this domain.
- **Objective**: to identify the different types of these new business models and their value propositions, and to understand the enablers and barriers of their development.

Methodology

- Case studies on 18 start-up businesses dealing with urban biowaste, and located in different cities across France.
- Semi-structured interviews conducted mainly with the enterprise managers in June and July 2022.
- Analysis according to their business model types, value propositions, enablers and barriers.

Results 1 - four different business model types

1. Most common type: main activity is the collection and valorisation of biowaste via composting;
2. A second type: biowaste valorisation as central value proposition (vermicomposting or biogas production by anaerobic digestion);
3. A third type: focus on the support of composting activities for example with trainings or awareness creation campaigns;
4. A fourth type: sales of technical solutions (software tools, composters, micro-biogas plants) for the management of biowaste.

Results 2 – value propositions

- Most of the companies are dealing with biowaste of professionals, as at present, the management of household waste is still a competence of local authorities.

- Local, small-scale and customer-oriented value propositions are important, such as:

- waste collection within a limited geographical area, often by bikes or e-vehicles,
- collection schemes corresponding to the individual customers' needs,
- transformation close to the city centres.

Results 3 - enablers and barriers

Enablers	**Barriers**
Need for soil amendment and energy production	Difficult to convince customers to pay for collection
Awareness of environmental issues leading to increased demand	Compost that is not financially valuable
Quality of the product or service	Investment costs, difficulties to find fundings
Legal obligation for biowaste treatment	Competition from major market players

Conclusion

- Most of the recently developed small-scale business models dealing with urban biowaste in France still have difficulties to enter the market or are not yet financially viable.

- In the future, the regulation for biowaste separation and collection of individual households will most probably create more demand but also more competition.

- Developing partnerships might be a solution for jointly responding to future calls for tenders from communities.

Thank you very much for your attention!

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