Biowaste collection strategies

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Contents

General Challenges

Per year each European throws away

200 kg of biowaste

75% of biowaste is landfilled

or incinerated

Left in landfill biowaste causes

emissions and pollution

€143 billion

annual costs associated with biowaste in EU

EU framework

- EU Directive 2018/852 aims to **reduce down to 10 % landfilling of separately collected waste**.
- Obligation for all EU Member States to **collect bio-waste separately or ensure recycling at source** from the end of 2023 onwards (WFD) (EU, 2008, 2018b)
- Recycling of bio-waste is key for meeting the **EU target to recycle 65 % of municipal waste by 2035.**
- Policies that aim to increase the share of **bio-waste captured from municipal waste might increase the risk of contamination**.
- The EU Fertilising Products Regulation (2019) and potential regulation on many other applications aim to **decrease EU's dependency on imports of mineral fertilisers and contributing to a circular economy for nutrients.**

Specific Challenges on Biowaste Collection

As Biowaste selective collection increases

=

Need of **more and optimized infrastructure**

Really **new waste stream** for some municipalities

=

Low quality

Proportion on Biowaste source (i.e. household, Horeca, mowing & prunning)

=

Heterogeneity on biowaste mix

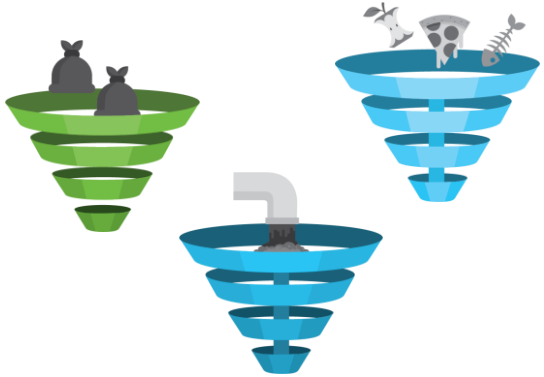
Climate conditions and operability may differ the quality of Biowaste (i.e level of degradation)

=

Potential use into high-value added applications

Solutions and opportunities

Improving biowaste collection



How?

Creating high value products from biowaste

Improving biowaste collection

Best practices for selective collection of food waste from homes and HORECA.

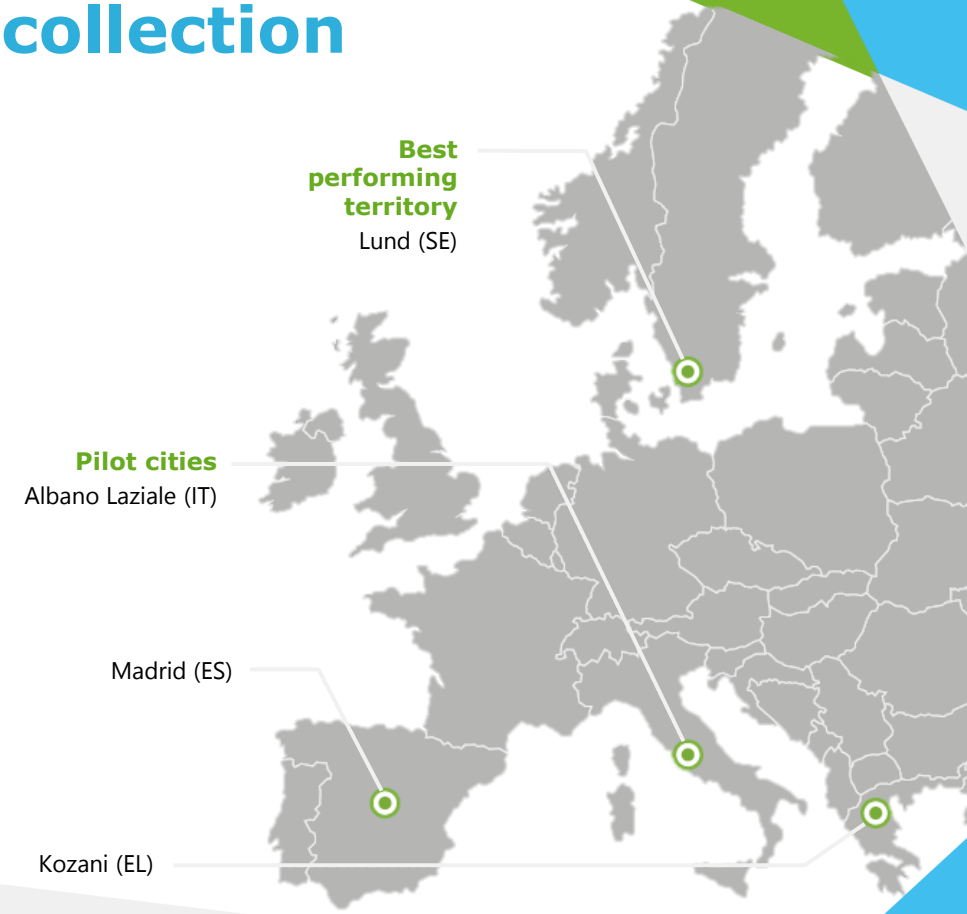
Develop enhanced methods for transport and logistics of urban biowaste.

Best practices for sorting and pre-treatment, including a monitoring system to detect contaminants.

Characterisation of biowaste fractions to find the optimal compositions for conversion into high value products.

Improving biowaste collection

Improved methods of selective collection, transport, sorting and pre-treatment will be implemented in three pilot cities.



Biowaste Best Practices

Analysis of Biowaste SoA and development of Best Practice Factsheets.

Some Examples:

Extra Best Practices with own developments within the project.

Use of biodegradable and biocompostable bags for collection

Best practice factsheet #5

Collection · Transport · Characterisation · Social awareness

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Challenge

Example

Action

Implementation

Results

Benefits

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Containers with chip to register filling levels

Best practice factsheet #4

Collection · Transport · Characterisation · Social awareness

SCALIBUR

Challenge

The current effects of a fast-local population increase, large and dense residential areas, tourist increase and a pressing demand for urban environmental protection create a challenge for waste and resource managers. In many cases, the overflowing of the containers is a problem for the municipality. However, in other cases, containers are in places where the filling occurs slower than in other areas which if not controlled, may result in inefficient collection routes. The information about filling level of containers allows waste resource managers to plan optimized collection routes for waste and recyclables collection.

Action

Implementation of a system to control filling level of containers to monitor collection rates and improve planning procedures.

Implementation

1. Find a company to design and build chips to install in containers to register filling levels and gases like CO_2, CH_4 or H_2S.
2. Filling sensors need to be assembled in the container and wireless connection is needed.
3. Train personnel on how to use it properly.
4. Perform periodic checks to verify proper functioning and periodic maintenance.

Results

Installation of sensors to measure temperature, CH_4, H_2S can be integrated in bins to track the degradation levels of biowaste. When it reaches a certain level, it can notify the company so a truck can collect it. The information about filling levels of containers allow waste resource managers to plan optimised collection routes for waste collection.

Benefits

	€		
Waste collection emits less CO_2		○	
Reduce collection costs by optimising routes and fuel	○	○	○
Real time filling levels of the containers	○	○	○
Improve government-to-citizens communication	○		○
Waste collection service settlement gets easier		○	○

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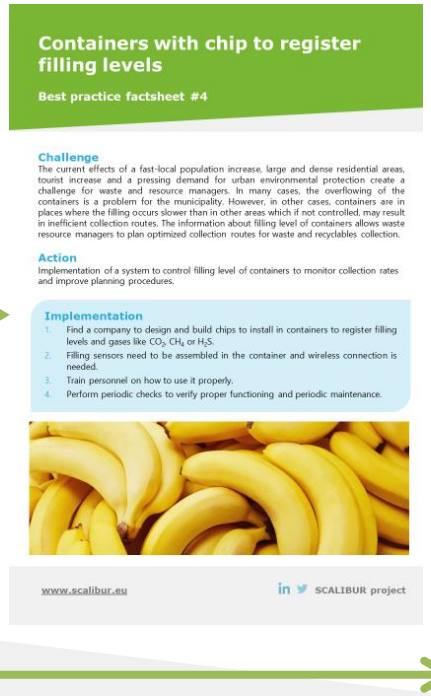
Biowaste Best Practices

Examples on Challenges/Limitations:

- Non-optimized transport for biowaste collection

- Plastic residue on biowaste (non-compostable bags)

Solutions provided by BBP:



Containers with chip to register filling levels

Best practice factsheet #4

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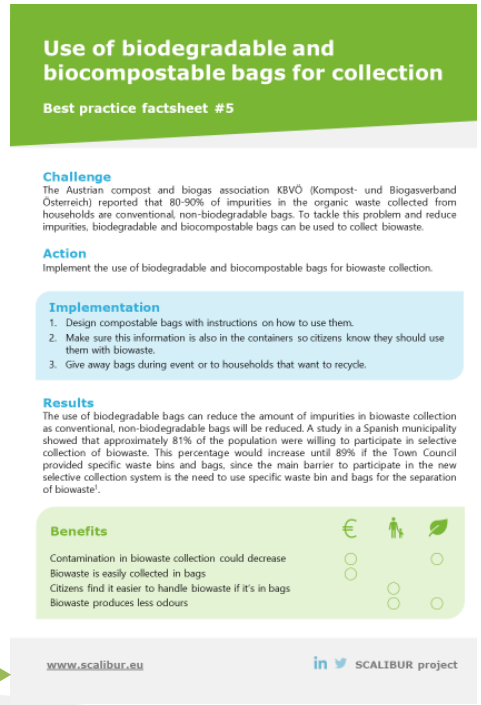

Use of biodegradable and biocompostable bags for collection

Best practice factsheet #5

Challenge

The Austrian compost and biogas association KBVÖ (Kompost- und Biogasverband Österreich) reported that 80-90% of impurities in the organic waste collected from households are conventional, non-biodegradable bags. To tackle this problem and reduce impurities, biodegradable and biocompostable bags can be used to collect biowaste.

Action

Implement the use of biodegradable and biocompostable bags for biowaste collection.

Implementation

1. Design compostable bags with instructions on how to use them.
2. Make sure this information is also in the containers so citizens know they should use them with biowaste.
3. Give away bags during event or to households that want to recycle.

Results

The use of biodegradable bags can reduce the amount of impurities in biowaste collection as conventional, non-biodegradable bags will be reduced. A study in a Spanish municipality showed that approximately 81% of the population were willing to participate in selective collection of biowaste. This percentage would increase until 89% if the Town Council provided specific waste bins and bags, since the main barrier to participate in the new selective collection system is the need to use specific waste bin and bags for the separation of biowaste[1].

Benefits

	€		
Contamination in biowaste collection could decrease	○		○
Biowaste is easily collected in bags	○		
Citizens find it easier to handle biowaste if it's in bags		○	
Biowaste produces less odours		○	○

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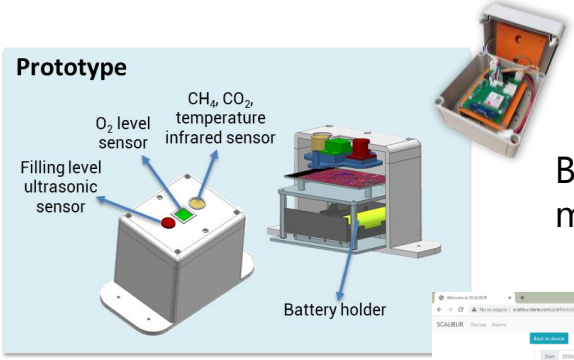
Biowaste Best Practices:

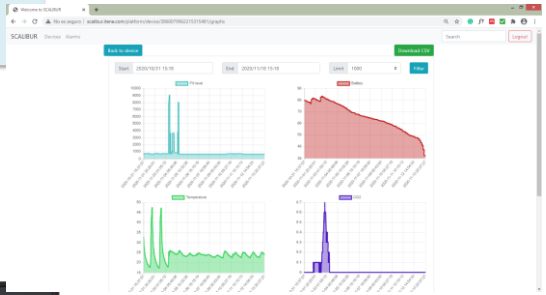
Scalibur pilot technologies for collection, transport & logistics of urban biowaste

Pilot cities are collaborating for the integration of advanced technologies to improve biowaste collection strategies.

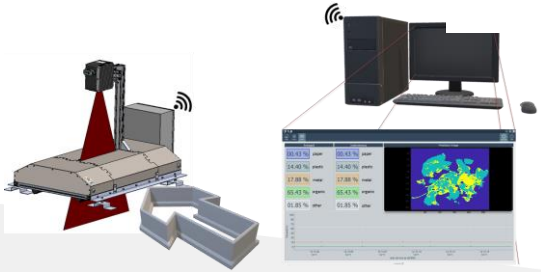
Some of SCALIBUR technologies on pilots:



Biowaste status monitoring



Parameters monitored for transport optimization



Biowaste quality monitoring on treatment plant via AI system

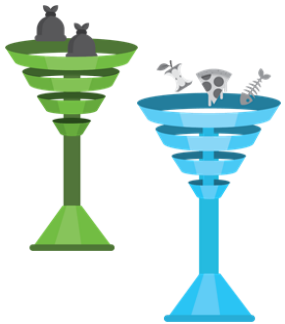
Pilot Study Cases: Albano, Madrid & Kozani

Pilot studies on biowaste collection

Source of Biowaste

Best Practices

Technologies implementation for biowaste collection



Get involved!

The SCALIBUR Stakeholder Platform will be the main tool to access the project results. The Platform will feature interactive user-oriented modules in order to give easy access to relevant information for different stakeholder groups.

Come and find us at events and follow us online:

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Thanks for your attention. Any question?

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