Unwrapping the biowaste potential

Operational, environmental and economic benefits of reducing plastic pollution in biowaste, compost and digestate in the EU

The context

- Article 22
- No legally binding targets, nor any KPI
- Captures (and strategies to increrase them) addressed in another previous study (BIC)
- This one reports focuses on issues related to plastic contamination – and the need to minimise

Research commissioned by

EUROPEAN CIRCULAR BIOECONOMY POLICY INITIATIVE

This research is endorsed by

EEB European Environmental Bureau

EUROPEAN BIOECONOMY BUREAU

cré Composting & Anaerobic Digestion Association of Ireland

ZERO WASTE EUROPE

CONSORZIO ITALIANO COMPOSTATORI

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Methodology

- starting point: total **potential capture** of biowaste at EU level
- **presence of plastics**, as a percentage of biowaste,
- "**dragging factor**" included in the calculation, so as to ascertain the total amount of rejects (including biowaste and compost) stemming from plastics to be screened out
- total tonnages of rejects multiplied by the **disposal costs**, so as to bring up the total potential savings

The starting point: total potential captures

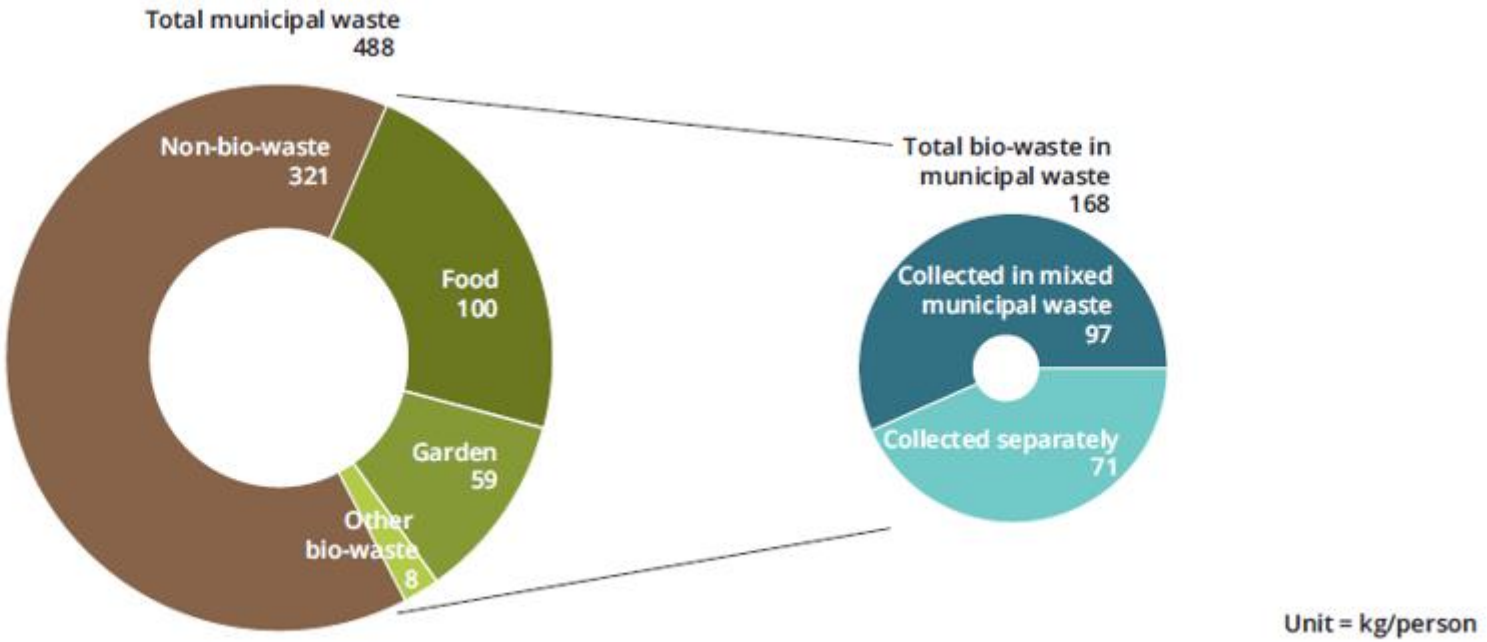

Figure 1: biowaste in MSW and current separately collected share according to EEA, 2020

Theoretical potential collection (generation) of food waste in EU27+	**59,936,725 t/year**

Influence of schemes

How?
Door to door

MODEL	Kg bioR/year	g bioR/day
Door to door (DtD)	112	306
Road containers (RC)	42	114.5
Mixed (DtD & RC)	68.5	188
AVERAGE	47	128

Source: ARC Data 2020

How?
Road containers

MODEL	% impurities
Door to door (DtD)	4.68
Road containers (RC)	13.48
AVERAGE	12

1,805 samples/year
Characterisation annual campaign

MODEL	Kg bioR/year	% impurities
Door to door (DtD)	112	4.68
Road containers (RC)	42	13.48

Type of scheme	Contamination % w/w
Door-to-door	4.5%
Hybrid	6.9%
Road containers	10.3%

Influence of using biobags/conventional plastic bags

Calculation of total contamination and difference (max-min)

59,936,725 t/y (total potential collection of food waste)
x
2-15% (min/max contamination rate)
x
59,62% (average share of plastics in contaminants)

Total potential plastic contamination at:	t/year
2%	714,685
15%	5,360,641
Difference	4.645.456

Assessing the impact of the «dragging factor»

Min/max plastic contamination
X
2,75 (dragging factor)

Total potential tonnage of rejects due to plastic contaminants:	t/year
2%	1,965,384
15%	14,740,378
Difference	12,774,994

Total value of potential savings incurred when moving from worst to best scenario

Total potential trending cost (@ Eur 150/t) of disposal of rejects due to plastic contaminants:	Eur/year
2%	294,807,600
15%	2,211,057,000
Difference	1,916,249,400

Recommendations / 1

1. adopt schemes that preserve the principle of individual responsibility. **Door-to-door systems** remarkably more performing than bring banks; also. education and communication should always supplement a good design of schemes
2. **Ban the use of conventional plastic bags**. When bags are used as a tool to make collection user-friendly, maximise participation and captures, **mandate that such bags be compostable or digestable in dedicated sites**. In regards to composting, they should be EN 13432-certified compostable bags (paper or compostable plastics); EU and CEN may wish to develop a similar standard more specific to AD.
3. Design out problem plastics that are more likely to be included in food waste. **Items that after use are inherently including, or attached to, food waste, should be made compostable** in accordance to standard EN 13432.

Recommendations / 2

4. Adopt operational lay-outs at compost and biogas sites, that may **minimise the "dragging factor",** hence may rid biowaste and compost of impurities, while having least losses of biowaste and compost. Operational arrangements may differ in compost and AD sites, depending on the type of AD technology and related pretreatments, and on typical level and type of impurities in the given context.
5. **make management of rejects** (and of unrecyclable waste in general) **significantly more expensive** so as to drive towards minimisation of impurities, optimisation of separate collection, and of operational lay-outs

Thanks

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