



#ForkToFarm

Manon Jourdan, Implementation Officer
| Zero Waste Europe

www.zerowasteurope.eu

How to best collect bio-waste from households?

Manon Jourdan, Implementation Officer | Zero Waste Europe

Zero Waste Europe | *Who are we ?*



NGOs, local groups and
communities

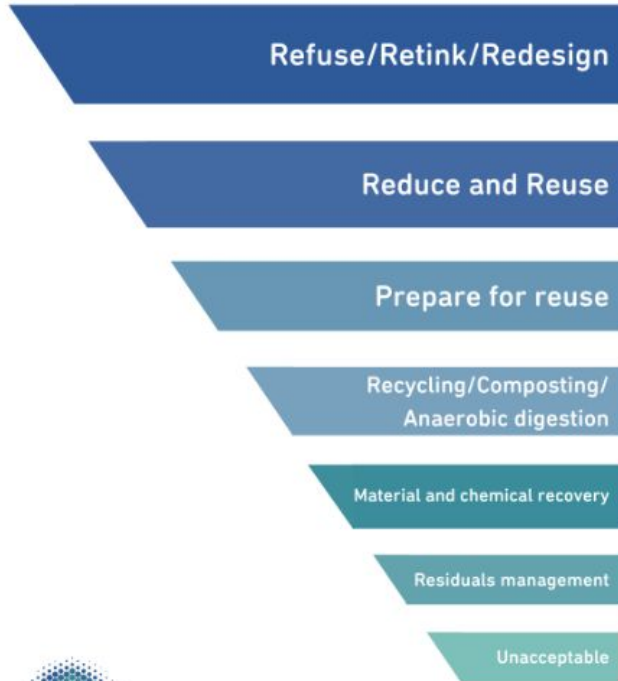


Change European policies



Mentor Cities towards a Zero
Waste transition

What's our approach?



1. Food loss & waste prevention from farm to fork
2. Optimised bio-waste collection system
3. Quality composting and digestate production + biogas
4. Biological stabilisation of the BW fraction in residuals for safe landfilling (MRBT)





The importance of separate collection of bio-waste

The key role of organics

- ❖ **QUANTITATIVE:** fundamental to achieve highest material recovery rates
- ❖ **OPERATIONAL:** minimising organics in residual waste makes it possible to cut collection rounds and optimising the system as a whole



EU Political context

Revised Waste Framework Directive, 2018

- Obligation for EU Member States to **collect bio-waste separately or ensure recycling at source;**
Yes but...
 - ✗ *No BW targets, no performance obligations*
 - ✗ *Trend from municipalities opting for the cheapest and easiest options to comply with this requirement → Large open street bins out for bio-waste*
- **60% by 2030 and 65% by 2035 targets** for the preparation for reuse and recycling of municipal waste
- **+ 10 % landfill targets** for municipal waste - *unlikely to be met without proper management of bio-waste*

Did you know that....

- Between **118 and 138 million tons of bio-waste generated annually** = **Half of MSW**
- **Less than 40 million tonnes** of municipal bio-waste are separately collected and processed into high-quality compost and digestate in Europe (ECN, 2022) **≤ 17% of bio-waste**
- The **majority** of municipal waste generated in Europe is **still disposed of through landfilling** (24%) or **incineration** (27%), with less than half recycled (31%) and composted (17%)



Best practices and examples of European frontrunners

Free distribution of "CCC - Clean Comfortable Compact" collection tools



The starter kit



120 lt. cart

Or a smaller 35 lt bucket



Kitchen caddy 10 lt.

25 compostable bags



Compostable bags or biodegradable liners

- ❖ European Union's **EN-13432** standard *[certified compostable bags, guarantee to decompose entirely during composting, without producing any toxic elements.]*
- ❖ Ensure the quality of bio-waste captured for composting through **low levels of contamination**
- ❖ **User friendliness** → compact, reduced odours
- ❖ Allow **visual inspection** and the **detection of poor sorting or excessive contamination** within the food waste fraction

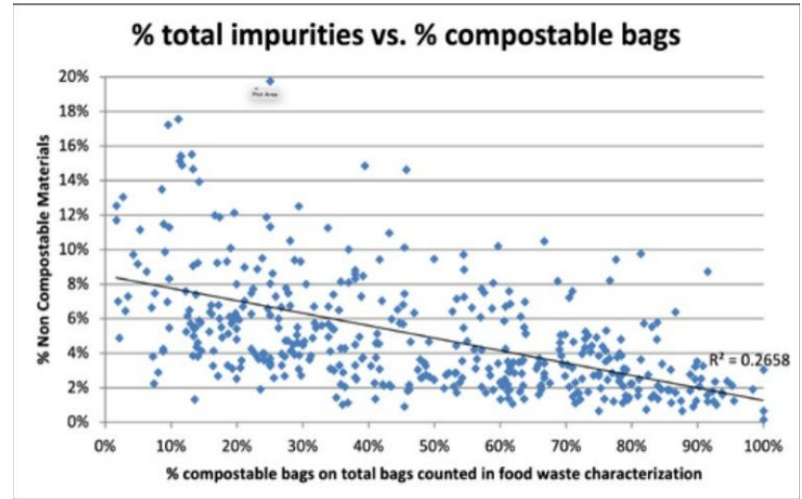


Image 9: Correlation between the purity/type of bag, as assessed by CIC: average purity in the municipality vs. percentage of compostable bags in the municipality.

**Door-to-Door systems deliver
the best performance**

(Quantity & quality)



Door to door collection of kitchen waste

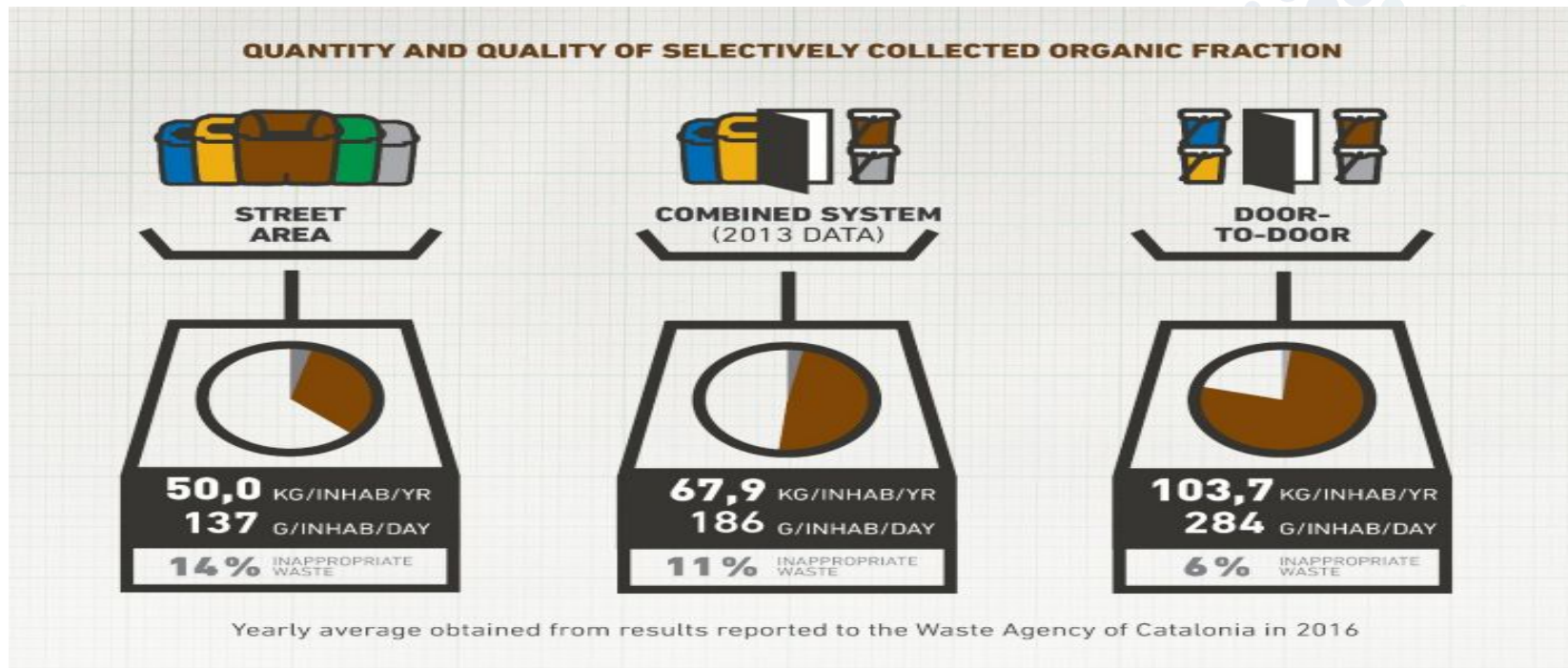
- ✓ Enable identification of the waste producer
- ✓ Enable quality and compliance control
- ✓ High diversion rate

Door to door collection: success factors

The objects (*bins or caddies*) used for kitchen-waste collection must be **unique** to this specific waste fraction and **recognisable**

- ★ The **size of the bin/caddy must be defined according to specific aspects** (*urban typology, density, seasonality, building typology, the number of dwellings, and the presence of internal open or community spaces*).
Example: small enough to fit in small kitchen, vented to avoid bad odours
- ★ The **capacity** of the bins and the frequency of collection must also be determined according to both the volume of waste generated by a household/apartment block

Comparison of systems



Comparison of 3 different systems regarding quantity and quality results of bio-waste separate collection, Waste Agency of Catalonia

Comparison of systems

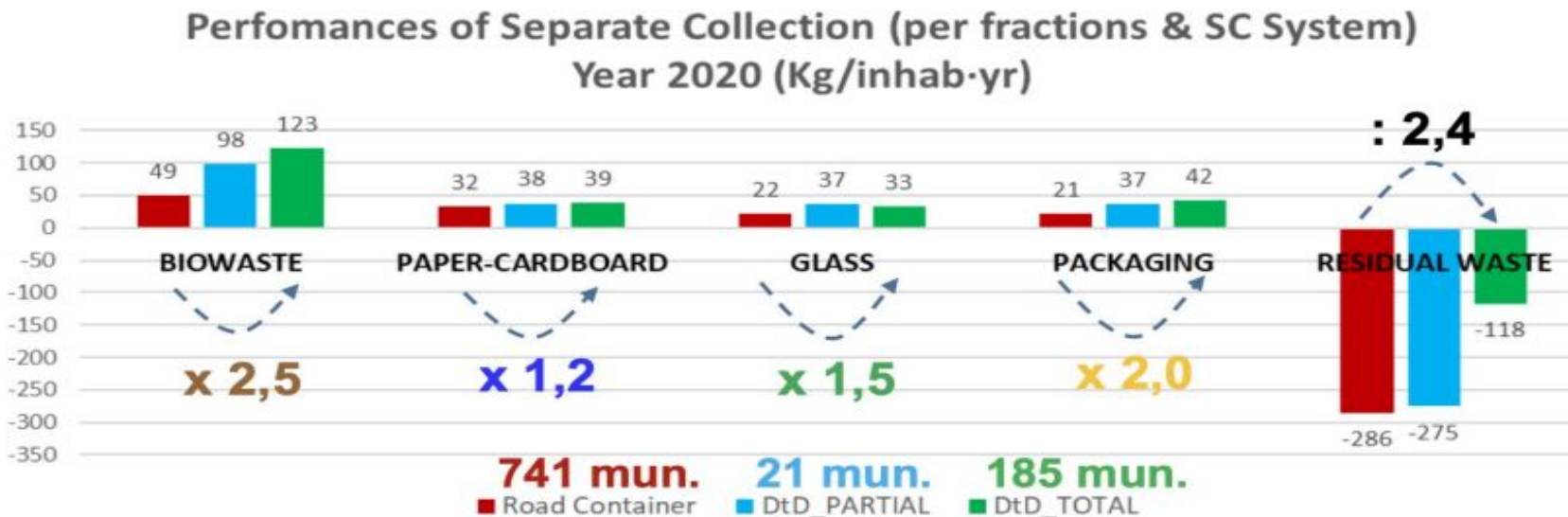


Image 11: Comparing the performance of door-to-door or road container collection systems , Francesc Giró i Fontanals, Director of Strategic Planning of the Waste Agency of Catalonia

Best performance: door-to-door collection with *Pay-as-you-throw*-system

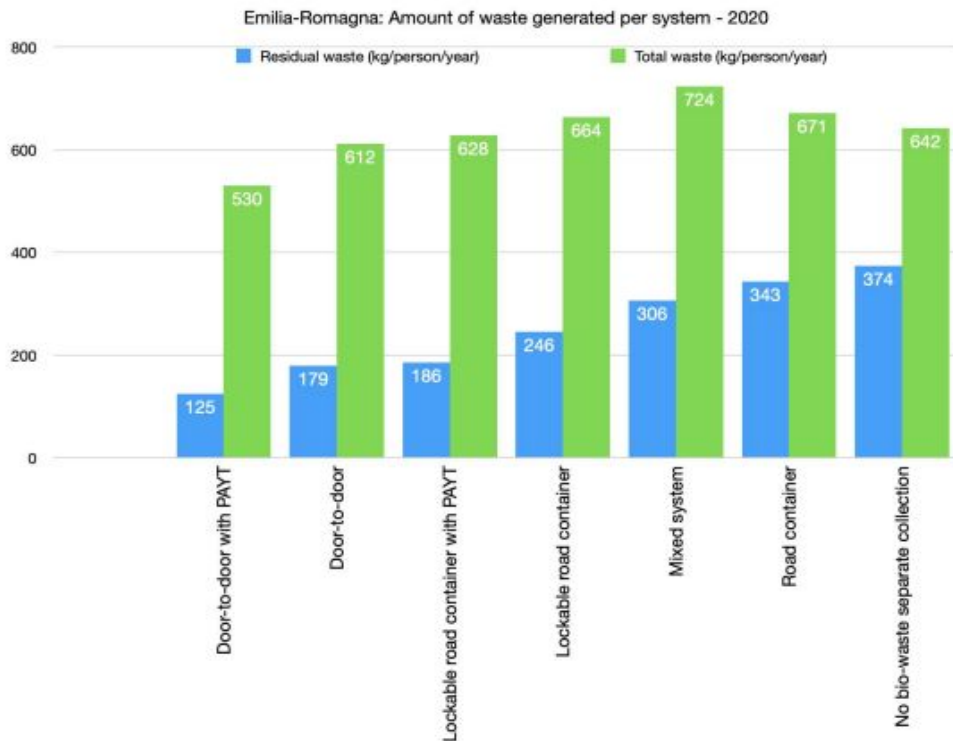


Image 13: Comparing the performance of different collection systems in Emilia-Romagna ATERSIR, CIC published by Ecodallecittà

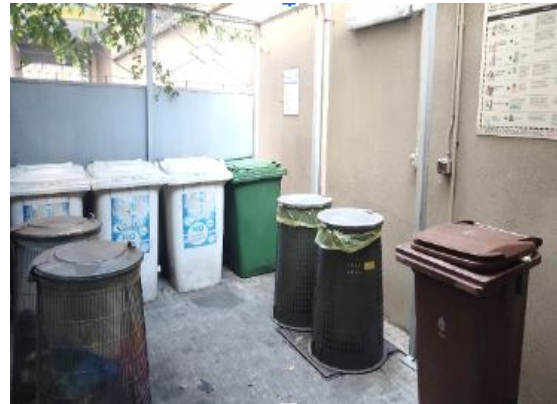
Best-practice: Milan

- ❖ **Characteristic:**
 - **1.4 million inhabitants** - densely populated
 - **80%** of the population living in **high-rise buildings**
 - High population density (**7518 inhabitants per km²**)
- ❖ **Previous situation:** Milan's food waste collection rate was stuck at around **35%**.



Best-practice: Milan

- ❖ **Commercial activities such as canteens, bars & restaurants:** door to door collection, 120 liter bin, daily collection from Monday to Sunday at night
- ❖ **Households :** D2D collection
 - > 10-litre vented kitchen bin for collection at the source (*kitchen*) + secondary bin (*35-litre for single-family households or 120-litre for a building complex*) + compostable bags
 - > Collection twice a week in the early morning.
- ❖ **Food waste fraction in open markets**
 - > Special compostable bags with a bag holder
 - > Collection everytime the market ends.



Best-practice: Milan

- ❖ 5-stream kerbside collection
- ❖ **103 kgs/person/year of food waste collected** *(800k daily commuters) - 100% of the population*
- ❖ Overall MSW separate collection rate reaching **62.6% in 2020;**
- ❖ Low level of contamination **(5%)**
- ❖ **87,5%** of total bio-waste generated by the city is **captured and sent to AD plant**
- ❖ **Production of 11,200,000 m³ of biogas & 26,000 tons of mature compost** *(20% of the compost distributed free of charge to households & farmers to promote its use & 80% is sold)*

Incentive schemes & financial incentives



PAYT - What's the most effective system ?

- ❖ **Fixed fee** for every household, biz, or individual, covering the core operational costs of waste collection and treatment. *(around 60-70% of the previous existing waste fee)*
- ❖ **Remaining 30-40%** is **variable** and is calculated depending on the volume of waste generated *(those who generate below average paying less than the average household fee).*
- ❖ **PAYT systems** should be flexible and continue to be updated with the **goal of reducing waste generation.**

=> The story of Besançon

Pay-as-you-throw-system (PAYT) saves costs

WHY?

- ❖ **Smaller amount of residuals incurs savings on disposal**, balances the initial higher costs of collection infrastructure;
** BUT the costs of collection and treatment of bio-waste must be lower than the costs of disposal in landfill or incineration;*
- ❖ Municipalities can **receive higher revenues from the dry recyclables they collect and sell on.**

Financial incentives

High-performing systems = bio-waste collection and treatment are cheaper than disposal into landfill or incineration

- ❖ **High taxes and gate fees** mandated for residual waste treatment by municipalities or regional authorities, where possible: landfill tax;
- ❖ **Ensure the economic viability of the operation of bio-waste treatment facilities:** Savings by using biogas created to feed into the local energy systems or by selling on the produced compost;
- ❖ **Financial penalties** can be introduced to improve compliance with the system : Fines when impurities are found;
- ❖ **Financial incentives** given to compliant citizens: vouchers with discounted offers in local biz, discount on their annual waste fee.

The landfill tax in Catalonia

Incentive scheme managed by the Waste Agency of Catalonia.

- **The tax is increasing** (for landfill it is **€47.1/t in 2020**, planned to increase to **€70/t in 2024**) to encourage separate collection of biowaste; municipalities that don't present an implementation plan pay a higher tax.
- **50%** of the revenue generated by disposal tax allocated to biological treatment of bio-waste and mechanical-biological treatment of residual;
- **Remaining revenue** is refunded to local authorities according to their performance on separate collection of biowaste.
 - > **coefficients** to account for the quality of bio-waste collected - mandatory set of waste composition analyses are carried out, using part of the funds from the landfill tax.

Communication & awareness raising activities



Prerequisites for success

- ❖ **TEASE:** Start before the new collection system is introduced
- ❖ **INCLUDE:** Clear informations, targeting all citizens (*diff. Languages, diff. tools and channels? Digital & non-digital*)
- ❖ **REPEAT:** Continuous communication activities
- ❖ **ASK FOR FEEDBACK:** Regular consultation programs with citizens / feedback systems

Comparison of pilots with different strategies of waste collection in Slovakia

Activity / tools	S1	S2	S3	S4	S5	S6	S7
Waste Analysis	✓	✓	✓		✓		
Roadmap / project, external consultancy	✓	✓					
Free vented caddies for residents	✓	✓	✓	✓		✓	
Free compostable bags for residents	✓	✓	✓	✓	✓	✓	
Bin max. 240 l for bio waste	✓	✓		✓			
Short delivery distance	✓	✓	✓	✓	✓		
Optimal capacity (250 l / resident per year)	✓	✓		✓	✓		
D2D collection	✓						
Collection frequency 2 times a week	✓		✓	✓	✓	✓	✓
Passportization, monitoring	✓				✓		
Financial motivation - PAYT							
Communication campaign	✓	✓	✓	✓	✓	✓	✓
Flyers	✓	✓	✓			✓	✓
Caddy and bag labels/printing			✓			✓	
Special web			✓				
Social media	✓	✓	✓	✓	✓	✓	✓
Extended campaign	✓						
Education D2D	✓	✓					
Communication of benefits	✓	✓	✓	✓	✓		
Free compost	✓				✓	✓	
Local activists and groups	✓		✓				
Collected food waste / inhab. / year	81,80	46,00	36,80	36,00	32,50	2,20	8,80



Thank you!

Check out www.zerowastecities.eu & lifebiobest.eu
for further information

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zerowasteurope.eu

Resources

- [The ZWE guidance on biowaste collection](#)
- [ZWE: The story of Milan](#)
- [ZWE: The story of Besançon](#)
- [European Environmental Agency: Bio-waste in Europe – turning challenges into opportunities \(2020\)](#)
- [ZWE: Unwrapping the biowaste potential](#)
- [Bio-waste generation in the EU: Current capture levels and future potential](#)
- [lifebiobest.eu](#)