



Biowaste & waste charging systems in the EU: best practices, challenges and solutions

Summary of the workshop held on March 20th, 2025

The aim of the workshop on biowaste and waste charging systems was to share experiences among European cities, learn from best practices and discuss common challenges.

The rationale behind realising such a workshop is to learn more about external factors and financial motivation when it comes to waste separation which is crucial for the success of the collection of high-quality biowaste in the EU.

Presentations held during the workshop covered current waste charging systems in Germany, Austria, Italy, Spain and examples of PAYT practices in the EU, North America and Asia.

A generally rising trend towards improvements in separate waste collection, reduction of residual waste and implementation of differentiated charging systems was made visible.

Most countries enforce the existence of a waste charging system through legal requirements; however, the design of the system usually is left to the municipalities.

Experience has shown that there mostly is a need for region-specific solutions and no one-fits-all solution.

Nonetheless, common challenges and recommendations can be drawn from the workshop and its discussion and are described in the following.

1 Challenges

1.1 Waste quality in multi-apartment buildings

Throughout the workshop a topic emerged in which some cities claimed that there are significant decreases in biowaste quality and increases in misthrows and contaminations when it comes to multi-apartment or high-rise buildings. Some speakers felt that fee-based incentives reach their limit in such building structures since no direct relationship between the tenant and waste fees can be established, leading to reduced accountability.

Scientific literature and practical experience suggest that the sense of anonymity and no direct relation to imposed waste charges, often favours misbehaviour due to lack of (social) control. To address this, a clear link between the waste bin and its user should be installed. Increased control mechanisms could be a solution to disciplining users who misbehave. It was suggested that the usage of scanning technology and AI for waste containers may lead the way to less contamination. Furthermore, it was remarked that solidarity units (units of few households who share access to the same waste disposal site) such as those present in Dresden or Asian countries have shown overall high waste quality and therefore good sorting behaviour. Social control may be exerted within solidarity units, since less anonymity is offered, and households may communicate with each other in the case of dissatisfaction with waste separation.

Another thought was added that simply knowing that waste disposal is monitored often may already lead to improving waste sorting behaviour. Thus, occasional control of bins is often sufficient, since the loss of sense of anonymity is what is most important. Recommendations of speakers to address this issue involved to work with penalties for misbehaviour or to even revoke the offer of biowaste containers to such problematic areas or households. Another addition was the remark that architects should prioritise better-designed waste rooms in new buildings to encourage proper use.

To conclude, it may also be noted that not all speakers or cities felt that there are specifically only issues in multi-apartment buildings, but it was highly emphasised that there are usually only few single households or persons that spoil the quality of biowaste, regardless of housing structure.

1.2 False incentives

Another challenge, mentioned by speakers from Germany, is seen in so-called false incentives, where the financial incentive to minimise residual waste is too strong and may lead to littering or “waste tourism”. This issue calls for carefully designed waste charging systems which consider local conditions.

1.3 Public acceptance & open containers

In Spain, open containers on the road still form the main system of waste collection. The introduction of PAYT systems requires some sort of user identification, which is not possible with an open-container-system. Even though the usage of smart containers is increasing, it has not yet proven to be sufficient in terms of improved waste separation. Additionally, Spain has experienced issues in relation to public acceptance of user identification or PAYT, which must be addressed in the future.

1.4 Unregistered residents

While implementing a PAYT charging system some cities such as Albano Laziale were able to find unregistered citizens who did not pay any waste fees previous to the introduction of PAYT. The need to identify the users of waste bins, incurred by the introduction of PAYT, made it possible to identify those residents and thus increasing the rate of citizens who pay waste charges.

2 Recommendations

In general, it can be stated that it is important to implement differentiated waste fees in order to offer a fair and effective waste charging system to citizens. One step towards a differentiated waste charging system is to remove large containers with open access from the streets and introduce systems in which users may be identified and assigned to a certain waste container.

With the aim to increase collected biowaste quantity and quality, many municipalities focus on creating a significant difference between the fees for the biowaste bin and the residual waste bin. The way residual waste is charged has a clear impact on biowaste collection rates. For example, North Rhine-Westphalia in Germany shows that mandatory biowaste bins result in the highest collection rates while voluntary bins with fees lead to the lowest. Unfortunately, quality was not considered in this analysis. The history of Düsseldorf has shown that collection of biowaste is higher when there is no fee for biowaste, however in their case biowaste bin usage has been optional and there has been no measured decrease in quality of biowaste. This may at least indicate that charging no fee for the biowaste collection may lead to an increase in collected quantity. Still, municipalities should carefully monitor quality and consider offering charge-free biowaste bins only on a voluntary basis to prevent contamination. Some cities also incentivize home composting by incorporating discounts into residual waste fees.

The workshop also highlighted the increasing adoption of basic waste charges across Europe. The basic charge may cover a minimum amount of waste collections that are by default included in a waste bill. This does not only help to cover fixed costs for waste management and ensure cost recovery but also disincentivises littering. It also helps to prevent incorrect waste separation behaviour, thus having the potential to disincentivise misthrows into the biowaste bin.

For cities which are yet to introduce a differentiated waste charging system it may be recommended to always first start with a pilot area, since there is always the need to adjust systems to local circumstances and citizens' acceptance. Pilot areas often will become operating areas which can be expanded when desired. The same goes for introducing technological modifications f.ex. scanning technology and communication through apps or similar.

The dispersion of heterogeneous waste charging systems in the countries, participating in this workshop, showed the importance of carefully designing such systems according to region-specific characteristics by considering local conditions and defining incentives and penalties in a balanced way.

To conclude, it should be remarked that the importance of engaging citizens in the creation of waste management systems and raising awareness through practical examples should not be overlooked, as public participation plays a vital role in the success in waste management.

3 Future outlook

Current or future technology such as scanning technology in waste collection trucks or AI tools for analysing collected waste may become of significant importance in the future. A closer relationship of waste collection institutions and households through improved communication i.e. through the usage of apps, may lead the way to improved waste quality. Another keyword to name would be gamification with which learning strategies for children may be endorsed or citizens are encouraged to improve their waste separation behaviour in a playful way.

Moving forward, we hope to see a rise in fair and effective waste charging systems, that enhance waste separation, waste reduction and improve biowaste quality, which ultimately contributes to healthier soils in Europe.

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Project partners



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