



# **3. WASTE COLLECTION CENTRE**

# 3.1. The key role of waste collection centres

A waste collection centre, also called recycling centre<sup>1</sup>, is a public facility where products and municipal waste are separately taken for their subsequent treatments: reuse, preparation for reuse, recycling, recovery, and final disposal. Therefore, it is a key facility to achieve the established targets for separate collection, recycling, reuse, and preparation for reuse (PxR).

It should be noted that when implementing waste collection schemes with individualization and/or user identification, the residual waste is restricted and the fraction 'Other waste' generally emerges, appearing the need to collect them mainly through waste collection centres.

To guarantee an adequate use of these facilities and to promote their use among citizens, it is recommended to control access and identify users, to establish discounts in the waste charge related to the use of these waste collection centres, and to establish allowances and charges associated with the disposal of some materials.



Waste composition in Catalonia. Data source: General programme of prevention and management of waste and resources of Catalonia PRECAT20

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<sup>&</sup>lt;sup>1</sup> Other terms for referring to 'waste collection centres' are 'déchetterie' in French, 'punto limpio' or 'punto verde' in Spanish, 'centro di raccolta' or 'centro di raccolta rifiuti' in Italian, or 'Recyclinghof' in German.





## 3.2. Access control and identification

To get enough information from waste collection centre users to implement discounts in the waste charge, specific technology is required to control access and identify users.

Users must be identified with a unique record in a <u>database</u> linked to the waste collection charge. In case there is not a unique identifier, it should be created at the time the materials needed for the logistics of the service (bins, RFID cards, etc.) are distributed to users.

However, technology should allow linking as many users as necessary to the unique identifier. For instance, a household might be unequivocally identified by a defined code, but all users living there would be associated to the same household.

It should be noted that there are <u>different kinds of users</u> in a waste collection centre that may be subject to different charges or discounts according to how they use the facility. Therefore, it is important that users are classified in one of these categories:

- Households: homes producing domestic or household waste.
- Commercial activities: shop, service, or industrial activities producing waste assimilated to household waste.
- Local Council services: services and departments of the local council using the waste collection centre.
- External users (households or commercial activities): users from other municipalities that may use a waste collection centre, if applicable.
- Social organisations: associations and organisations that may use a waste collection centre, particularly when they take part in some specific tasks such as the reuse of products and preparation of waste for reuse.

There are different methods and technologies for <u>access control and identification</u> in waste collection centres. Regarding technology used by waste collection centre workers when identifying and registering the user, we have:

- Smartphone or tablet (mobile terminal) with an App managed by the staff at the waste collection centre.
- Desktop or laptop PC software (or websites) managed by the staff. In this case, users may be identified by the address, the name of the commercial activity, the national identity document, the vehicle license plate, or by showing a user card with a unique code. All these identifiers must be linked to a particular household address or commercial activity within the database that can be accessed by the staff at the waste collection centre.
- (Used directly by the users) Touchscreen totems managed by the user. In this case, the user may be identified with any identifying element designated by the waste collection centre managing authority.

These technologies must allow user identification by means of the following identifying elements owned by the user:





- Reading a magnetic stripe card
- Reading a physical or virtual user card with a bar or a QR code
- Reading a user card with NFC or RFID technology
- Apps installed on users' mobile phones requiring a QR code or other identifiers
- Other systems linked to ID cards, name and surnames of the user, or vehicle license plate recognition systems. In this case, care must be taken to ensure that these systems are linked to the waste collection charge database.



Examples of different identifying elements

Some of these options may be associated as well to a physical access control system composed by barriers, traffic lights, cameras, and a license plate reading system, among other items.

In any case, the user registration process, including the data modification and the cancellation of the user registration, must be planned, particularly in case of users not included in the reference database (e.g., external users).

The used technology must also allow to <u>register inputs and outputs</u> including a variety of information such as date and time, user information (identifiers, kind of user, address), and waste fractions and amount (weight, volume, units...) of waste disposed by each user. This log should also specify the associated charge and discounts, if applicable.

Documentary justification may be provided physically (printing a ticket) or virtually (sending an email or a WhatsApp message, with a push or an in-app notification, or a message on a web platform).

However, in some waste collection centres manual identification systems still predominate, with paper or carboard cards where a stamp is placed every time the user visits the centre. This method requires much more administrative work and does not allow neither an automatic tax discount process nor an integration with other services.





#### 3.3. Economic incentives for using waste collection centres

Establishing economic incentives for using waste collection centres aims at promoting the use of these sort of facilities, as well as good practices on selective collection. Basically, there are two types of economic incentives for using waste collection centres:

- Discounts on the waste charge: Different ranks may be defined according to the number of visits or waste items disposed of, and these are translated into different discounts on the local waste charge.
- Accumulated points: By disposing waste to the recycling centres, users get points that may be exchanged for other services or discounts in shops.



Examples of economic incentives for using waste collection centres in Valls (Catalonia) and Garennes-sur-Eure (France)

Regarding discounts on the waste charge, different criteria may be used to define them:

- Kind of user: discounts may apply only to households, or to both households and commercial activities, but with different intensities.
- <u>Access vs use:</u> one option is to reward access to the waste collection centre, regardless of the amount of waste disposed. However, this sort of discount may lead to generate more trips to the centre than necessary, since users tend to access the centre just to capture the discounts. To avoid this, it is recommended to establish a discount system based on the number of items or on the weight being disposed of.





Tax discounts on the contribution / waste fraction: the waste disposal is rewarded depending on:

- The number of disposed fractions (more waste fractions, more discount). For instance, disposing 5 fractions would lead to a higher tax discount than disposing just 3 of them.
- The number of disposed fractions according to weighted factors. For instance, disposing special waste would lead to higher tax discounts than disposing non-special fractions. Besides, some waste fractions may be excluded from the discount system, such as those that are already included in the household waste collection service.
- The amount of waste disposed of (in terms of weight, volume, or number of items), establishing a minimum threshold to be considered for tax discount. For instance, the minimum amount might be 3 batteries, or 1 litre of used cooking oil.

Daily, monthly and/or annual thresholds may be considered when establishing economic incentives for using waste collection centres. In case of daily thresholds, just one access to the waste collection centre is considered for discount purposes, despite a user (or different users living in the same home) might visit a waste collection centre different times a day. An analogous criterion may be applied to monthly or annual thresholds, since once a user has reached the maximum discount, it is not possible to exceed it.

Economic incentives for using waste collection centres may be interesting to promote the use of this sort of facilities. However, before implementing these incentives, it would be recommended to evaluate their need based on a variety of indicators such as the number of users per inhabitant and year, the amount of waste disposed of per inhabitant and year, or the percentage of self-financing of the waste collection centre service.

In addition, it should be remarked that technology must allow to automatically apply discounts on the waste charge depending on the criteria and the thresholds previously established. It is also important to automatically integrate data from the use of mobile collection centres in the economic incentives.

Finally, in case the waste collection centre has specific spaces for reuse and preparation for reuse activities, additional economic incentives might be considered.

# 3.4. Thresholds and charges

Waste collection centres may establish thresholds on specific waste fractions that a user could dispose of during a specific period, as well as charges applied in case thresholds are exceeded. Different thresholds may be applied depending on the kind of user (household, commercial activities, etc.) and waste fraction, according to the municipal ordinance on waste collection or according to the regulation of the recycling centre. It is important to keep in mind which are the purposes for establishing these thresholds and charges:

- To avoid container overfill, mainly caused by some commercial activities. Since households do not generally cause these situations, thresholds are only recommended for commercial activities.
- To achieve the highest percentage of self-financing of the waste collection centre. In this case, it is important to differentiate between those fractions of waste that generate net revenues (paper and cardboard, batteries, metal, vegetable oils, etc.), and therefore user contributions may continue to be free, from those fractions that generate expenses (bulky waste, wood,





construction waste, garden waste, etc.) so their cost should be supported by users. Once again, differences should be established between households and commercial activities. In the first case, lower charges would be recommended to prevent abandoned waste (next to container areas or close to the waste collection centre). On the other hand, commercial activities are for-profit activities, and therefore they should be able to entirely support the cost of the public services they use.

Values may be cumulative during the established period (day, week, month, or a year). Once a particular waste fraction is disposed of by a specific user, the following situations may occur:

- The amount of waste (in weight, volume, or units) does not exceed the threshold to be collected free of charge for that specific kind of user.
- The amount of waste exceeds the threshold, so then a waste charge is automatically calculated.
- The amount of waste exceeds the threshold, and it is therefore not allowed to dispose of such amount of waste.

Once a new period starts, the registration process restarts. To ensure a correct record of the quantity of waste deposited (in terms of weight or number of items) and the correct payment, besides the possibility to enter data manually, connection (via cable, Bluetooth or Wi-Fi) with weighing devices (vehicle scale and/or digital scale) is required.

camples of chargeable items	AJUNTAMENT DE SANT BOI DE LLOBREGAT			Pre	us públics 2014
oncrete					
r example: hole paving slabs prorete posts and lintels/gravel boards	PREL	J PÚBLIC DEIX	ALLERIA MUNI	CIPAL	
Charge: £3 per slab, post or lintel.	BESIDIE	PROPOSTA PREU PÚBLIC (€/tona)		LÍMITS DIARIS D'ENTRADA	
	RE0000	Particulars	Comerciants i petits industrials	Particulars	Comerciants i pet industrials
	RESIDUS ESPECIALS Acids	0.00	300.00	2 kg	10 kg
Rubble/Hardcore	Aerosols	0,00	1.240,00	5 kg	10 kg
	Bases	0,00	300,00	2 kg	10 kg
example:	Bombones butà (estànder Bened)	0,00	0,00	3 ut	30 kg
ake (braken or uthole)	Bombones butà (estàndar Butair)	0.00	50,00	3 ut	3 ut
	Cosmètics	0,00	250,00	5 kg	20 kg
cks (broken or whole)	Dissolvents	0.00	760,00	5 kg	20 kg
ken paving slabs	Envasos contaminats	0,00	165,00	2 kg	10 kg
nd, gravel and pebbles	Extension	0.00	505.00	2 ut	40
ment mortar and rendering	Fitres d'oli i altres metalls contaminats	0,00	255,00	5 kg	10 kg
nac .	Fitosanitaris	0,00	1.495,00	5 kg	10 kg
140	Fluorescents i llums de mercuri	0,00	0,00	10 ut	60 ut
rae: 62 per bea (or pert bea)	Olis labricants	0,00	490.00	5 kg	20kg
inder mit heir nad for hair nadt.	Olis no regenerables (taladrines, vegetals o	0,00	490,00	0.02	10.00
	minerals contaminats, etc.)	0,00	185,00	2 kg	10 kg
	Piles i acumuladors	0,00	0,00	5 kg	10 kg
Ceramics and tiles	Preumatics Productes comburgets	0,00	No admés	4 ut/any	No admes
	Radiografies	0.00	0.00	<u>2 kg</u>	10 kg
	Reactius de laboratori i prod. no identificats	0,00	1.230,00	2 kg	10 kg
r example:	Sòlids/Pastosos	0,00	350,00	20 kg	50 kg
ramic wall / floor tiles	Toner i cartutxos de tinta	0,00	185,00	5 Kg	10 Kg
ites / roof tiles	ALTRES RESIDUS				
	Fusta neta	0,00	50,00	500 kg	2.000 kg
Charges C2 each or C2 per beg (or part beg)	Matalassos	0,00	250,00	2 ut	5 ut
onarge. Lo each or Lo per bag (or part bag).	EPS (Porexpan) Retrice (no resultionship its no second)	0,00	150,00	1 m3	1 m3
	Restes vegetals	0.00	220,00	500 kg	2.000 kg
	Terres i runes	0.00	26,00	500 kg	2.000 kg
actarboard and guncum producte	Textil	0,00	220,00	100 kg	500 kg
asterboard and gypsum products	SUBPRODUCTES I RESIDUS SENSE DESP	ESA REPERCUTIBLI			
	Altres aparells elèctrics i informàtica	0.00	0,00	5 ut	5 ut
example:	Cables	0,00	0,00	500 kg	2.000 kg
osum based products	Càpsules café	0,00	0,00	500 kg	2.000 kg
ring	Centro/paper	0,00	0,00	300 kg	2.000 kg
ster board sheets (whole or broken)	Electrodoméstica línia blanca	0.00	0,00	2 ut	5 ut
ling roses	Envasos ampolía de cava	0,00	0,00	500 kg	2.000 kg
used / nart have of plaster	Envasos Ecoembes	0,00	0,00	500 kg	2.000 kg
asou / pair bags of plaster	Erwasos de vidre	0,00	0,00	500 kg	2.000 kg
arge: \$8 per sheet (1800mm x 900mm / 6ft x 3ft sporex ) or	Metalls no contaminats	0,00	0,00	500 kg	2.000 kg
£8 per bag (or part bag).	Olis vegetals no contaminats	0.00	0,00	5 kg	20 kg
	Plástic dur (no envás)	0,00	0,00	500 kg	2.000 kg
	Televisors i monitors	0.00	0,00	2 ut	5 ut
		1.11		500 L -	0.000.0
	Vidre armat / barrejat	0,00	0,00	500 kg	2.000 kg

Examples of charges and thresholds in Nottingham City (United Kingdom) and Sant Boi de Llobregat (Catalonia).





## 3.5. Communication

To raise public awareness of the waste collection centre service, a website with general information (location, contact, opening hours, economic incentives, thresholds and charges, waste fractions accepted, etc.) about the service must be launched. In addition, this website may include a virtual shop showing the available products from the Reuse and PxR activities developed in the centre.

Beyond the awareness campaign to promote the waste collection centre and the reuse site, tools need to be established for users to have access to data related to their use of the service (number of contributions and quantities), including long-term data, all supporting documentation and discounts received, among other information. To do this, there are different options:

- A user area on the website where users can log in to access to their data
- A dedicated App (Android and iOS)

#### 3.6. Integration with other services

Economic incentives for using waste collection centres may be linked as well to other economic incentives for other services related to the waste collection service, allowing this to consider all data available to calculate a Fair Tax. For this reason, it would be necessary to assess the need to have an access control and identification system that could also be compatible with:

- User identification technology for locked containers
- User identification technology for emergency areas with restricted access in door-to-door collection models.
- User identification technology for community composting areas
- User identification technology for bins in door-to-door collection models
- Specific collection requests (bulky waste, garden waste, etc.)
- Visits and inspections to validate requirements to get discounts on the waste charge for those users doing home composting.
- Participation in waste prevention actions that may be considered for discounts on the waste charge, such as courses, conferences, repair workshops, shopping with reusable bags, etc.
  - In any case, synergies can be generated with communication tools (user area on the website or App) where bonuses for the use of various services may be consulted.