How PAYT can contribute to improve waste separate collection

Workshop of the LIFE RETHINKWASTE project

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OUTLINE

- **Main types of PAYT schemes**
- **Constitutive elements of a PAYT scheme**
- **Discussion on weight-based vs volume-based schemes**
- **Potential risks and prevention**
- **Steps in the design of a PAYT charge**
- **Resources**
- **Conclusions**

MAIN TYPES OF PAY-AS-YOU-THROW

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IDENTIFICATION

Street containers with user identification

Door-to-door (with or without individual identification)

- Individually assigned bins
- Collectively assigned bins

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MEASUREMENT OF THE GENERATION OR SERVICES PROVIDED

Street containers with user identification		Door-to-door (with or without individual identification)	
Volume based accounting	Weight based accounting	Volume based accounting	Weight based accounting
Chamber system (volume chamber)	Chamber system with weighing	Identification system	Identification weighing system
According to the number of uses		Individual scheme (tags)	
		Routine schemes (pre-agreed frequencies)	
		Pre-paid system	
		Pre-paid sack/bag (with or without ID)	

Adapted from: Bilitewski et al. (2005) Handbook of implementation of Pay-as-you-throw. The series of the Institute of Waste Management. Dresden University of Technology – European Union.

ELEMENTS

- **Selection of the PAYT model:**
  - Present and future separate collection model (DtD vs street containers)
  - Investment
  - Risk of leakage to other areas
  - Etc.
- **Structure of the charge:**
  - % of cost coverage and distribution between general and variable.
  - General part (flat rate or not).
  - Variable part
- **Selection of the waste fractions subject to PAYT**:
  - Residual waste (+)
  - Packaging waste (+)
  - Biowaste (+/-)

PAY PER BAG

Main pre-payment PAYT scheme

Characteristics:

- Two different sizes recommended (households / commercial activities)
- Recommended volumes (10-20 litres and 50-70 litres for HH and commercial residual waste; 30-50 litres and 90-110 litres for packaging waste, respectively).
- Logo.
- Translucid
- Biowaste, PC and glass not normally charged in this model.

Procurement and storage:

- Difficult to produce low quantities / Stocks need to be controlled

Distribution:

- Municipality directly or through collaborators
- No payment is needed to commercial activities who distribute bags

PAY-PER-BIN

- Characteristics of the bin:
  - **With tag (or sticker)**
  - **Variety of volumes**
- Pay-per-weight vs pay-per-volume.
- In pay-per-volume, the greater the variety of volumes, the greater the correspondence between generation and payment.
- Biowaste: payment according to predetermined frequencies.
- Residual waste and packaging: scheme to be chosen considering investment / risk of leakage to other areas / desired correspondence between payment and generation.
- PC / Glass: not charged.

SMART CONTAINERS

- Payment according to **weight, volume** or **number of uses**.
- Possible discounts/reductions for the use of the biowaste containers.
- Closing residual waste containers is the crucial step, but waste tourism or impurities in other containers can increase.
- White and black lists.
- Possibility to use containers only some limited days and hours.
- **Compulsory or voluntary identification:**
  - **Compulsory (closed containers):** Users feel more monitored than in voluntary schemes, so higher participation, but also higher risk of fraud and increased impurities.
  - **Voluntary (open containers):** Users identify themselves reading a NFC tag or a QR code with their smartphone when depositing their waste. In general, participation is lower, but less illegal dumping (bags around containers) and higher quality in the collected waste.

WEIGHT-BASED VS VOLUME-BASED SCHEMES

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- **Volume-based**
  - Traditional approach.
  - The vast majority of experiences are volume-based.
  - It induces compaction.
  - **Bins/receptacles tend to be handed in full for collection – in door-to-door collection this makes collection faster.**
  - Volume more related to collection costs.
  - Some schemes have no technological requirements (e.g. routine based) -> lower costs.
  - In any case, less technological requirements, compared to weight-based.
- **Weight-based**
  - **More direct relation with generation.**
  - Weight more related to treatment costs.
  - Less experience.
  - More technological requirements.

POTENTIAL RISKS AND PREVENTION

POTENTIAL RISKS

- **Main potential risks:**
  - Illegal dumpling / fly tipping (in waste street bins, emergency areas, around street containers or in open spaces)
  - *Waste tourism*
  - Increased impurities

RISK PREVENTION

- In the case of DtD collection, **increase the number of waste fractions collected DtD prior to the implementation of PAYT**.
- Define **minimum and maximum thresholds in the use of certain services**: e.g. no discount for average participation in the separate collection of biowaste below once per week or any user will pay at least 12 collections per year of residual waste.
- **Consider leaving most complex zones aside from the application of PAYT**.
- **Remove or increase control in emergency areas**.
- **Reduction in the number of street bins**.
- **User identification in recycling centres** if they admit waste fractions under PAYT.
- Adopt translucid bags for the free-of-charge collection of nappies.
- **Dialogue with nearby municipalities** to prevent waste *tourism*.
- **Regulatory regime and dissuasive penalties**.

STEPS IN THE DESIGN OF A PAY-AS-YOU-THROW CHARGE

HOW TO DESIGN A PAYT CHARGE 1/2

HORIZONTAL ASPECTS

- Define the cost of the service
- Disaggregate costs related to households and commercial activities.
- Decide cost coverage both for HH and commercial activities (for commercial activities 100% is recommended).
- Define approximately the weight of the general and variables parts.

GENERAL PART

- Define the main elements of the general part (base/structure, tax credits related to income or other specific situations, etc.).
- Obtain an updated version of the database of taxpayers with the required information to calculate the tariffs.
- Simulation of the different tariffs that comply with the desired structure and achieve the target revenue.

HOW TO DESIGN A PAYT CHARGE 2/2

VARIABLE PART

- Choosing the type of PAYT considering collection model, existing technology, affected waste fractions, min and max thresholds, etc.
- Estimate the charge base (number of uses, weight, etc.).
- Define the structure of the charge (e.g. proportionality in the price of bags according to their volume or reduced price per litre as bins get larger).
- In the case of more than un municipality, forcing the same variable part.
- Define possible discounts in the charge (e.g. for low income HH).
- Simulation of the tariffs in the database of taxpayers to ensure the target revenue.
- Building the legal architecture (economic report, fiscal ordinance).

RESOURCES

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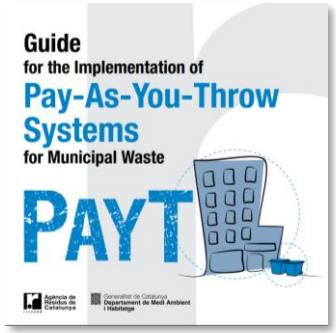

Guide for the Implementation of Pay-As-You-Throw Systems for Municipal Waste

http://residus.gencat.cat/web/.content/home/lagencia/publicacions/centre_catala_del_reciclatge__ccr/guia_pxg_en.pdf

User identification for municipal waste collection in high-density contexts

https://ent.cat/wp-content/uploads/2019/07/User-identification-for-municipal-waste-collection_4.pdf

CONCLUSIONS

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- Waste charges are used to finance waste collection and management services at local level. Traditionally these charges are conceived as flat rates or depend on criteria which are independent from waste generation (i.a. residents, area, etc.).
- Pay-as-you-throw (PAYT) schemes represent the translation of the “polluter pays” principle into waste charges. Households and commercial activities are charged according to the actual volume or weight of waste generated by them, thereby creating an economic incentive.
- Both waste reduction and selective collection can be incentivized if the generation of residual fraction is taxed. There is also the possibility of charging other fractions with a high reduction potential, as packaging, or of incentivizing with discounts the separate collection of biowaste.
- Very different options depending on scope, collection system, etc.
- Application of PAYT leads to: net reduction of MSW generation, increase in the percentage of separate collection, and quite significant reduction of refuse.
- Common in some countries, but still with a lot of potential in others.

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Thanks for your attention!