URBAN AGENDA FOR THE EU
Circular Economy
Action 12:
Develop a “Pay-as-you-throw” TOOLKIT WITH COACHING

Brussels 21 November 2018

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Better Knowledge - Action : Develop a “Pay-as-you-throw” toolkit with coaching

Introduction of the objective of the workshop and the work of the Partnership

Gianluca Tapparini

ACTION'S TARGET

Develop a **"Pay-as-you-throw" (PAYT)** toolkit as support for cities, connecting stakeholders in need of knowledge with experts with experience in a taskforce that can provide support and coaching to municipalities.

Through the implementation of this action, the Partnership aim to make it easier for cities to set the right price level and monitoring systems so PAYT can be installed for maximum effectiveness.

The Workgroup

The work will be carried out by a team of experts composed mainly by the Operate association staff (https://www.operate.it/) which is a permanent observatory on the subject of Measurement and Punctual Waste Tariff.

Working group:

- Coordinator
- Legal experts
- Technical experts
- Communication
- Operational secretary

Contributors:

- Other European Associations and Institutions operating on PAYT
- European cities with experience in PAYT

Toolkit scheme (1/2)

1. Current Status and cases analysis
    i. Current Law Status
        - European Law analysis
        - EU Directives and Programs
    ii. Current Status in Europe
        - Technical-methodological framework
        - Best practices
2. SWOT analysis
    i. Key Factors
    ii. Criticality of current systems
3. Technical-Law proposals
    i. Regulatory Proposal

Toolkit scheme (2/2)

ii. Technical-methodological proposal
   - Minimum conditions of application
   - Identification of PAYT management system cost items and revenue opportunities not deriving from the users revenue
   - PAYT Calculation Model

iii. Model Reference case study

iv. Information and measuring system
   - Management, measurement and conservation
   - Infrastructures supporting the information system

v. Conditions of application of the model (infrastructures, collection models, EPR, etc.)

vi. Social involvement, communication, training and information to citizens

4. Toolkit - Example sheet excel

Timeplan

Task	Deadline
Toolkit First draft – delivered to stakeholder	15th November
Workshop with stakeholder	21st of November
Presentation of the draft during 10th Partnership meeting in Bruxelles	21th of November
Pre-final release of PAYT Toolkit	15st January
Public consultation and stakeholders' feedback	Jan/Feb 2019
PAYT Toolkit's Final release	28th of february 2019
Presentation of the PAYT Toolkit in Oslo Seminar	April 2019

Stakeholder's Workshop

Agenda:

9.00 - 09.30 Introduction of the objective of the workshop and the work of the Partnership (Gianluca Tapparini, City of Prato/Urban Agenda)

9.30 - 11.00 Presentation of the draft of Toolkit about "Pay-as-you-throw"

Workgroup – OPERATE

- Current Law Status
- The application of PAYT in the European countries
- Technical-methodological proposal
- Information and measuring system
- Communication and information to citizens
- Case history

11.00 - 11.30 Workshop discussing experiences and further work

11.30 - 12.00 Discussing the outcome and steps forward

Current law status

Lidia Flocco – Maurizio Lovisetti

Article 4 of Directive 2008/98/CE

"Member States shall make use of economic instruments and other measures to provide incentives for the application of the waste hierarchy such as those indicated in Annex IVa to Directive 2008/98/CE or other appropriate instruments and measures".

ANNEX IVa Directive 2008/98/CE

EXAMPLES OF ECONOMIC INSTRUMENTS AND OTHER MEASURES TO PROVIDE INCENTIVES FOR THE APPLICATION OF THE WASTE HIERARCHY REFERRED TO IN ARTICLE 4

2. "Pay-as-you-throw" schemes that charge waste producers on the basis of the actual amount of waste generated and provide incentives for separation at source of recyclable waste and for reduction of mixed waste;

Market-based instruments for waste management

PAY-as you throw schemes

As EU law currently stands, there is no legislation adopted on the basis of Article 192 TFEU imposing a specific method upon the Member States for financing the cost of the disposal of municipal waste, with the result that the cost may, in accordance with the choice of the Member State concerned, equally well be financed by means of a tax or of a fee or in any other manner.

By referring to the fee as an instrument, among others, "*to provide incentives for the application of the waste hierarchy referred to in Article 4, paragraph 3*", as laid down in the heading of Annex IVa, Directive 2018/851/EU, on a discretionary level, aims to replace the traditional model of a "waste tax" (or whatever its name is in each country), characterized by merely presumptive criteria to calculate and charge the price to the individual user.

Tax model

Whatever the relevant parameters are in order to calculate the “tax” intended as such, if the actual amount of waste produced and presented for collection by the individual user is not taken into consideration, but the tax is based on an average fee scheme, however adjusted to the characteristics of users (e.g. as regards household utilities, the number of people living in the house), the good practices of honest users would not be properly rewarded and incentivized.

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“Fee” model

On the contrary, the “fee” model intends to determine the due amount “on the basis of the actual waste generated”. As it will be further explained, this does not mean that this is the only relevant data in order to reward those who generated less waste or contributed more to the separate collection of waste.

Waste fee

The fee as referred to in Directive 2018/851/EU – which is the first European legal document that introduces it with regard to waste disposal – is characterized by the following elements:

-**it's discretionary,** because it is mentioned in the Directive as one of the possible economic instruments Member States can adopt to meet the objectives of the Directives. Member States, therefore, can choose whether applying it or not, on the basis of their own legislation;

-**it's pay-as-you-throw**, because it charges "*waste producers on the basis of the actual amount of waste generated"*

-**it's incentivizing**, because it provides "*incentives for separation at source of recyclable waste and for reduction of mixed waste*".

As previously noted, recital 10 of Directive 851/2018/EU classifies as municipal waste:
"*waste from households* ";
"*waste from other sources, such as retail, administration, education, health services, accommodation and food services, and other services and activities, which is similar in nature and composition to waste from households*".

It is then necessary that each national law preliminarily defines the criteria to classify "waste from other sources", as it will be the object of the public service of municipal waste management and subject to a fee. In parallel, extra-domestic waste, "waste from large commerce and industry which is not similar to waste from households" (recital 10 Directive 851/2018/EU) cannot be delivered to public service and, therefore, cannot be taken into account in determining the fee.

Since the Directive, as mentioned before, refers to "household waste" and to "waste from other sources" (as long as it is similar to the former), and then to "households" and "places different from households", it is evident that the premise for the fee must be based on the existence of properties for residential and non-residential purposes which can generate municipal waste and be jointly defined as "utilities".

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Structure of the fee

As explained above, the fee must ensure the financing of the service, and then be calculated so as to cover, through its yearly revenue, waste management costs, as determined by the rules of the relative financial plan. At the same time, the fee must be based on a pay-as-you-throw scheme and provide incentives, with the meaning examined above.

Drawbacks

-it fails to considers that even utilities which generate zero waste (which are capable of generating waste and can be used, but are not actually used) entail costs to prepare the service, which must be available for those who may use it, but do not do it in practice;
-the costs to measure all the waste fractions to be delivered to public service (as well as to manage and store data) are not irrelevant or marginal. Measuring everything would not be economically sustainable and, in addition, could be operationally complex;
-it does not take into account that the global price for the urban hygiene service includes activities (such as street sweeping) which are not proportional to a specific amount of waste delivered by the individual user;
-if the fee must “provide incentives” for “separation at source of recyclable waste and for reduction of mixed waste”, the prices related to the fractions of separately collected waste must be significantly lower than the price of mixed waste. This is not always true, especially when the prices mirror the actual costs of the various delivered fractions.

Structure of the fee

Although Directive 851/2018/EU states that pay-as-you-throw schemes charge "*waste producers on the basis of the actual amount of waste generated* ", **it does not require the fee to be entirely based on them.** Being calculated "*on the basis of the actual amount of waste generated"* does not mean that the fee must strictly and exclusively be "*proportional to the actual amount of waste generated";* nor should each delivered waste fraction be measured and counted.

Structure of the fee

A more realistic approach to the fee could be translated in the following formula including:

a fixed part, that does not depend on the amount of measured waste but on other parameters (shown below as a,b… m) highlighting the average waste generation practices for specific categories of users, relating to the type of property that the users occupy, its surface area and use, the number of people occupying the property (for households), the volume of the containers provided to the users, etc. If the fee is also aimed at financing the costs related to external waste, it is evident that these will have to be taken into consideration in determining the fixed part;

a variable part, related to the actual amount of waste delivered.

Structure of the fee

Although the polluter-pays principle seems to preclude a fee not entirely based on the pay-as-you-throw scheme, it is worth remembering that the amount of the pay-as-you-throw fee does not necessarily correspond to the amount of work needed to manage the waste generated by the subjects responsible for the payment.

The legal costs of creating and maintaining waste management facilities (recycling – reuse and disposal) and of waste collection schemes do not directly depend on the actual amounts of waste generated. If the amounts of waste decreased considerably, but the built facilities still needed financing, the gap between costs and amounts of waste could be even wider.

presumptive and calculated variable quota, aimed in principle at covering those costs which are attributable to non-measured fractions, which are usually made up of non-measured deliveries (e.g. batteries, medicines, textiles, etc.) and shared among users in manners similar to those provided for the fixed portion;

A variable, PAYT ad-hoc quota, aimed in principle at covering those costs which are attributable to measured fractions (residual urban waste, bio-waste, paper and cardboard, glass, plastic, metals, bulky waste, green waste, etc.), compared to the measured quantity of waste delivered to the public service; each type of waste is associated with a unit value expressed, for example, in €/kg or €/l, which determines the related ad-hoc component.

Structure of the fee

From this point of view, a **flexible approach** to the polluter-pays principle gives the opportunity to weigh advantages and disadvantages of various alternatives and, at the same time, **to avoid including in the fee costs which are clearly not proportional to the volumes or nature of the generated waste.**

Structure of fee

It is fundamental to determine:

-**the cost components** which must be covered by the revenue derived from the fixed quota of the fee;

-**the factors and parameters** that can be used as a reference to calculate the fixed quota of the fee and to what extent they influence its calculation.

On the other hand, ***residual costs*** (especially those related to waste collection, transportation, treatment and disposal) ***must be covered by the revenue from the variable part of the fee, determining the average price per unit of waste delivered.***

Obviously, there are other possible to devise other rewarding mechanisms (when only mixed waste is counted), such as fee reductions or bonuses to reinforce positive behavior of users: for example, those who compost household bio-waste or who deliver valuable waste to controlled collection facilities.

Technical-methodological proposal

Giovanni Montresori
Mauro Sanzani - Andrea Valentini

"Pay-as-you-throw" systems, as required by EU directives (2018/851), must encourage:

- penalties for the production and delivery of mixed waste;
- separation at source of recyclable waste and the development of separate collection;
- waste reduction at source;
- the establishment of indicators related to efficiency when using resources and to the reduction of greenhouse gas emissions

The different application methods provided in the TOOLKIT WITH COACHING take into account the different standards existing in Europe.

The PAYT fee applied to individual users, regardless of the degree of coverage, needs to be structured into two main components:

- a component to cover costs that do not depend on the production of waste, called "fixed" (fixed fee as "subscription" for the availability of the service) and distributed to users on the basis of defined specifications - TF;
- a component related to the waste produced, structured by type of waste, called "variable", based on the quantification of production and recognition of virtuous behavior - TV.

Determination of the fixed component

with the modes defined in each member state assuming for example:

- for households: criteria on the number of inhabitants/occupants and/or criteria that also take utility size into account;
- for productive users the waste of which is "assimilated to municipal waste": elements determining the propensity to produce more or less waste, such as activity type and settlement size.

The fixed component is included in all the models identified and proposed

A SCALE OF APPLICATION MODELS is identified for the variable component

each model is characterized by type and number of waste quantified, by method of determining the amount due and with increasing characteristics based on the level of compliance with the objectives of the directive.

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Determination of the variable component

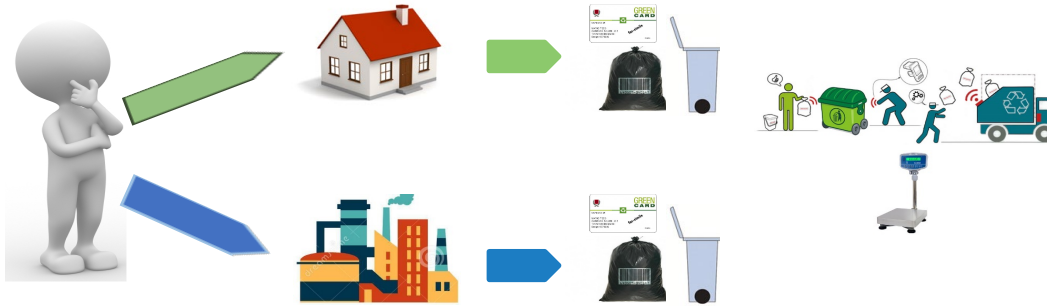
Bearing in mind that the minimum conditions are:

A. quantification of at least undifferentiated waste;

B. the unambiguous identification of the waste production utility;

C. association of the quantities delivered with the utility;

D. acknowledgement of virtuous behaviour.



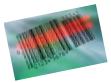
USER UTILITY CONTAINERS THE DELIVERY

UNEQUIVOCAL RELATIONSHIP USER – USER – WASTE PRODUCTION

Bags delivered with registration or prepaid

Containers a empowerment inspected

Bags with etiquette



Scramblers with weighing

Bags with transponder

Delivery in platform with weighing

Bins with transponder

«Ad personam» services

The simultaneous presence of different methods of delivery with quantification must not invalidate the identification of the total quantities of the individual waste per utility.
Then need to relate to a single unit of measurement.

It can be predicted:

- Conversion of volumes into weight (kg), with identification of the "specific weight" for the type of waste;
- Conversion of weights into volume (lt), with identification of the coefficient of "specific litre";
- Other modalities of correlation.

The first method is better certified.

The "MINIMUM" Model envisages, at least by different means of conferment, at least the quantification of the undifferentiated waste, with the application of a tariff for the quantity conferred and a quota calculated to cover the costs not attributable to the measured fraction and acknowledgement of virtuous behaviour.

MINIMUM MODEL
variable component
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Type of costs		Repartition
Fixed costs		Coefficients or other methodologies
Variable costs	Unquantified waste	Coefficients or other methodologies and recognition of virtuous behaviour
	Quantified waste	Unit cost for quantities delivered (a cost for each quantified waste)

BEST PRACTICE MODEL
variable component
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A presumptive and calculated variable quota, aimed in principle at covering those costs which are attributable to non-measured fractions, which are usually made up of non-measured deliveries (e.g. batteries, medicines, textiles, etc.) and shared among users in manners similar to those provided for the fixed portion;

A variable, PAYT ad-hoc quota, aimed in principle at covering those costs which are attributable to measured fractions (residual urban waste, bio-waste, paper and cardboard, glass, plastic, metals, bulky waste, green waste, etc.), compared to the measured quantity of waste delivered to the public service; each type of waste is associated with a unit value expressed, for example, in €/kg or €/l, which determines the related ad-hoc component.

ADVANCED BEST PRACTICE MODEL
variable component
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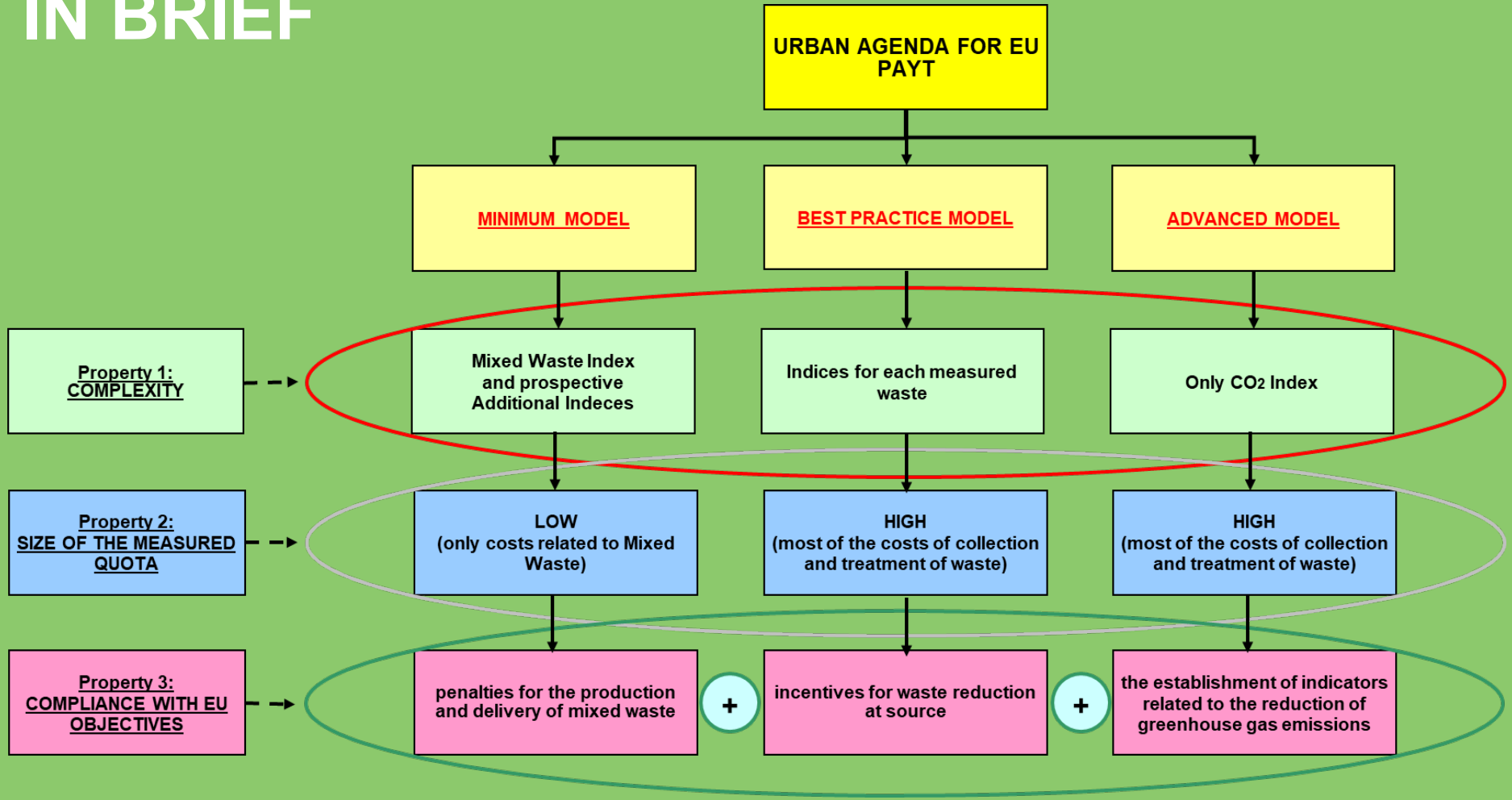
The variable, PAYT ad-hoc quota, is related to the measured quantity of waste delivered to the public service; each type of waste is associated with a production of CO_2, determined by **emission factors** expressed in **$kgCO_2/kg_{waste}$**, or through the application of innovative methods such as ***Carbon WastePrint***, **methodology certified** in Italy according to UNI EN ISO 14064-2:2012.

In this way, the variable PAYT ad-hoc quota, determines the cost applied to the user on the basis of the **actual environmental impact generated** and, above all, makes it possible to take into account various waste management actions (*prevention activities, separate collection, reuse and preparation for reuse*).

IN BRIEF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PAYT
MINIMUM MODEL
BEST PRACTICE MODEL
ADVANCED MODEL
Property 1:
COMPLEXITY
Mixed Waste Index and prospective Additional Indeces
Indices for each measured waste
Only CO_2 Index
Property 2:
SIZE OF THE MEASURED QUOTA
LOW
(only costs related to Mixed Waste)
HIGH
(most of the costs of collection and treatment of waste)
HIGH
(most of the costs of collection and treatment of waste)
Property 3:
COMPLIANCE WITH EU OBJECTIVES
penalties for the production and delivery of mixed waste
+
incentives for waste reduction at source
+
the establishment of indicators related to the reduction of greenhouse gas emissions

Information and measuring system:

Systems for the management, measurement, storage and redistribution of information to users

Luca Moretti

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SYSTEMS FOR THE MANAGEMENT, MEASUREMENT, STORAGE AND REDISTRIBUTION OF INFORMATION TO USERS, IN SUPPORT OF A PROPER APPLICATION OF THE PAYT DIRECTIVE.

INDEX OF TOPICS AND METHODOLOGY.

A. GENERAL CONCEPT AND GUIDELINES.

For the correct application of the information system PAYT the following elements must be considered:

PAYT: Information System requirements

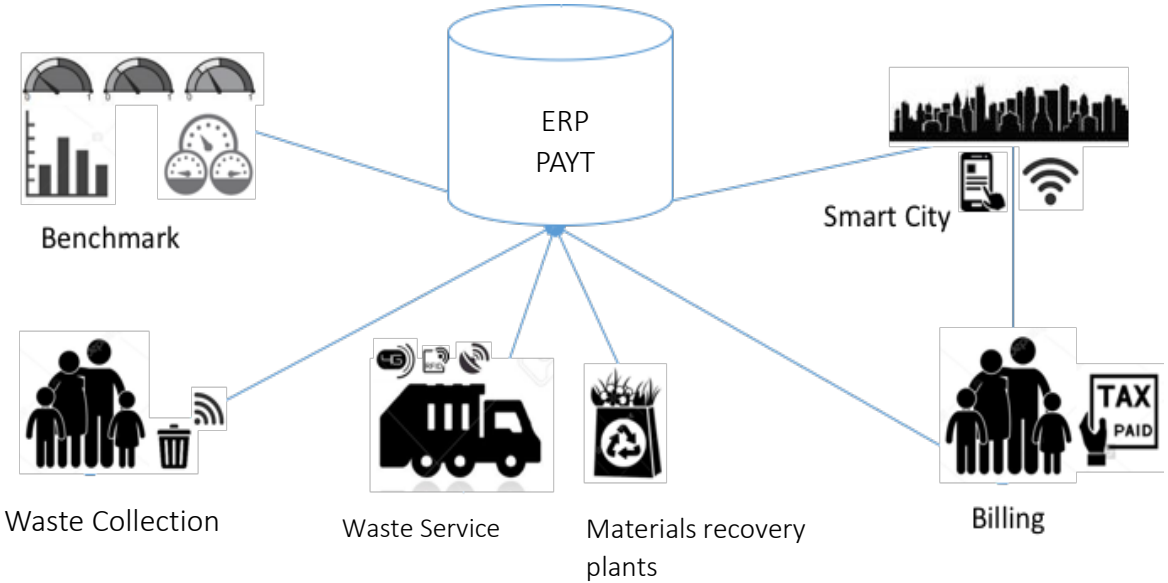
- Infrastructures with a suitable capacity to provide IT services,
- Proper management of the general processes covering the management activity of the institution responsible for user billing, of companies that provide collection and environmental services, of citizens and businesses (users).
- Measurement of services and, in general, of the amounts of waste delivered by users; monitoring of the service and precise metering.
- Substitute digital preservation, to be used as a proof of service and user delivery.
- Active participation and redistribution of information to citizens and applications, for the improvement of the services provided.

B. THE INFORMATION SYSTEMS: ERP PAYT.

OPERATIONAL PROCESSES AND CENTRALIZED DATABASES

The multiple experiences have determined the need to implement a single and centralized ERP PAYT.

PAYT: Information System requirements



B1. APPLICATION SCENARIOS.

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OPERATIONAL PROCESSES AND CENTRALIZED DATABASES

The multiple experiences have determined the need to implement a single and centralized ERP PAYT.

ERP PAYT: possible choices.

IOT measurement system & Smart City

ERP Process management

CLOUD Infrastructure

1. **One** ERP & IoT PAYT system information
2. **Highly Integrated** ERP & IoT PAYT system information

B2. SYSTEM ARCHITECTURE

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OPERATIONAL PROCESSES AND CENTRALIZED DATABASES

The multiple experiences have determined the need to implement a single and centralized ERP PAYT.

CORRECT DATA ARCHITECTURE

ACCESS TO INFORMATION VIA THE WEB AND MOBILE APP

HIGH LEVEL TO SYSTEM INTEGRATION

IT SYSTEMS COST REDUCTION

RELIABILITY AND MAXIMUM FUNCTIONAL COVERAGE OF THE ERP SYSTEM

B2. SYSTEM ARCHITECTURE

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OPERATIONAL PROCES MANAGEMENT AND CENTRALIZED DATABASES

The multiple experiences have determined the need to implement a single and centralized ERP PAYT.

CORRECT DATA ARCHITECTURE

PROCESS E DATA INFORMATION

BIG DATA OPTIMIZATION

ONE CLOUD DATABASE ERP & IOT PAYT

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OPERATION PROCESSES AND CENTRALIZED DATABASES

The multiple experiences have determined the need to implement a single and centralized ERP PAYT.

FUNCTIONAL COVERAGE ERP PAYT SYSTEM

CONTACT CENTER

WASTE COLLECTION KIT

WASTE COLLECTION SERVICES

WASTE COLLECTION METERING

WASTE COLLECTION MONITORING

WASTE RECOVERY E DISPOSAL PLANTS

BILLING WASTE TAX

SMART CITY INFORMATION

FINAL RULES.

The document reports the best pratices in the ERP System for the correct application of the PAYT directive

BEST PRACTICES FOR SUCCESSFUL IMPLEMENTING THE ERP PAYT SYSTEM

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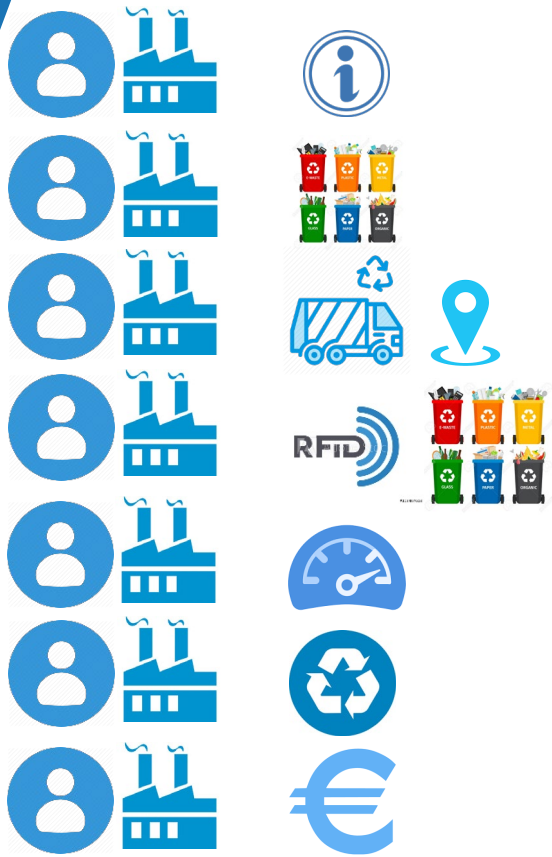


ACCESS TO INFORMATION VIA THE WEB AND MOBILE APP

USER DISTRIBUTION WASTE COLLECTION KIT

EINVIRONMENTAL SERVICES

WASTE COLLECTION METERING

WASTE COLLECTION AND ENVIRONMENTAL SERVICE MONITORING

WASTE DISPOSAL E RECOVERY PLANT

WASTE TAX BASED ON SYSTEM PAYT

The rsult the technical document.

Information and measuring system:

PAYT regulations suitable instruments

Gianni Barzaghi

PAYT REGULATIONS NEED OF SUITABLE INSTRUMENTS

'.. since the measurement of the differentiated collection and the manner in which it is carried out becomes the central element of the whole system, we deduce that the methods and tools of computer measurement and management are therefore fundamental elements for the success in the application of systems of punctual pricing !..'

What could be the technological solution to be equipped with, better in terms of performance, reliability and short/long-term maintenance?

PAYT REGULATIONS NEED OF SUITABLE INSTRUMENTS

the primary objective is to guarantee a correct measurement for the different types of containers that can now be foreseen in a more or less complex collection system: bags or bags, masters or containers, possibly trucks, bins

'...foresee different application scenarios and different measurement methodologies in reason:
... of the operating mode of widespread collection in the area of application of the system

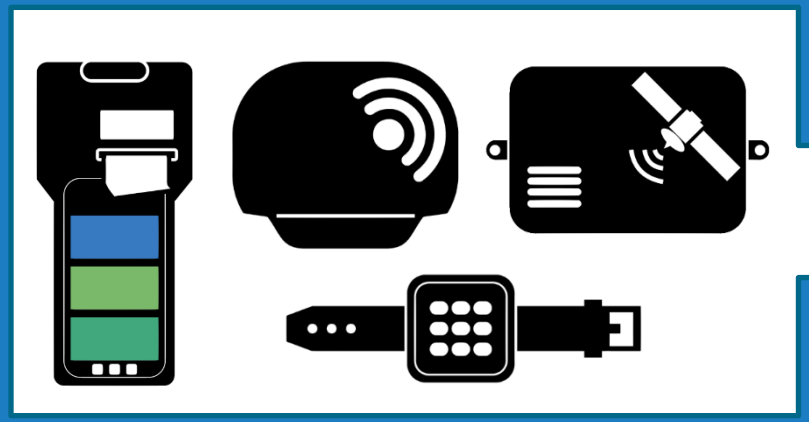
... of not obliging the managers to upset these usual activities

... to evaluate the territorial and morphological peculiarities of the area involved in the application of the system

... of the analysis of the fleet of vehicles involved in the services in order to evaluate the appropriate set-up with metering equipment (timely measurement)

... of the possibility of offering direct access to service operators through wereable devices, high-tech rugged devices.."

PAYT REGULATIONS NEED OF SUITABLE INSTRUMENTS



RFID-based identification technology (RFID) is the ideal tool for applying system models that meet the described requirements

PAYT REGULATIONS NEED OF SUITABLE INSTRUMENTS

But… in wich application scenario … and for which technology?

to date, the only scenario able to guarantee the certainty of carrying out collection or emptying services that require the reading of RFID TAGs placed in the containers (labeled bags, bins, tubs, etc.) is

the joint adoption of the various operating methods and of the same supporting technological instruments

portable devices (also wereable) suitable to be able to manage a large number of readings in a simple and rapid, possibly equipped with systems for the identification and reporting of 'non-compliance'	antennas for reading RFID tags placed on vehicles, in sufficient numbers to be able to guarantee reading in all the normal collection methods provided with possible integration of systems for identification and reporting of non-compliance’	smartphones or similar, equipped with UHF readers, through which to ensure the efficiency of the metering service, eventually providing the readings with qualitative-quantitative information
		
introduces a definitely improving element in certain operating areas (eg in the impossibility of bringing the vehicle closer to the container) but in fact making the goodness of the measurement operation linked in part to the collector	rewards an approach linked to a lower impact of the application of the metering system to the collection activities, avoiding in fact to modify (at least in the first case) the modus operandi of the employees involved in the collection	the execution of the metering operation is strongly conditioned by the actions of the operator which, on the other hand, guarantees a result, in terms of metering data collection, of high quality, having the employee the total control of the operation

PAYT REGULATIONS NEED OF SUITABLE INSTRUMENTS

it is clear that the different technologies, even if they can be adopted in a single or joint way, allow the achievement of a result that is even more qualitatively high how much they turn out to be interconnected to an IoT-type network, where the data are conveyed to the central cloud structures of consolidation, conservation and analysis: the non-functioning of one or more devices rated for metering must not be able to condition the measurement activity to the detriment of the collection of punctual data

PAYT REGULATIONS NEED OF SUITABLE INSTRUMENTS

finally, a final analysis on the issues related to the control and maintenance of these measurement systems, whose full operational efficiency is, as already underlined several times, a fundamental importance in the operational phases:

it is necessary that the same have remote monitoring systems, managed 24 hours that give timely reporting of potential or determining malfunctions, so that due to the chosen management model an immediate alternative can be prepared to the reading system no longer operational

PAYT REGULATIONS NEED OF SUITABLE INSTRUMENTS

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summary scheme of the different models and scenarios of application of the metering technologies, reporting them to the guidelines described in the introduction

REQUIREMENTS	FULL	BEST	MINIMAL	NOT
MEASUREMENT CARRIED OUT WITH SYSTEMS NOT TRACEABLE OR NOT ASSOCIATED WITH THE UTILITIES				
MEASUREMENT WITH TRACEABLE SYSTEMS BUT NOT ASSOCIATED WITH THE UTILITIES				
MEASUREMENT ON THE 'PREPAID' CONCEPT				
MEASUREMENT OF NON-RECOVERABLE FRACTIONS THROUGH UTILITY DEVICES				
MEASUREMENT OF ALL FRACTIONS THROUGH UTILITY DEVICES				
MEASURING ALL BREAKDOWN BY DEVICES ASSOCIATED WITH THE UTILITIES THAT ALSO MEASURE TO MEASURE THE QUALITY OF THE SAMPLE WASTE AND SIGNAL THE NON CONFORMITY				
MEASUREMENT OF ALL FRACTIONS THROUGH DEVICES ASSOCIATED WITH THE UTILITIES WHICH ALSO MAKE THE MEASURING OF THE QUALITY OF THE WASTE OF THE SAMPLE AND SIGNALING THE NON-CONFORMITY OF INTERCONENNES TO AN IOT NETWORK				

Information and measuring system:

Digital storage and securityof data and documents

Cristian Javier Valeri

Digital Storage of Data and Documents

how it is possible to identify, guarantee and manage, in the best possible way digital documents over time, by means of models, requirements and standards that ensure the effective preservation of information and its evidential value

Cloud Infrastructure

The cloud, according to an old way of saying, is just someone else's computer...probably better managed, more often updated and safer.

You haven't had to pay for it, you can rent it for as long as you want.

It offers services that allow you to work at a much higher level than you would be able to achieve by turning on a server and installing software on it.

On-Premises

Ongoing Costs

- Apply patches, upgrades
- Downtime
- Performance tuning
- Rewrite customizations
- Rewrite integrations
- Upgrade dependent applications
- Ongoing burden on IT (hardware)
- Maintain/upgrade network
- Maintain/upgrade security
- Maintain/upgrade database

Cloud Computing

Ongoing Costs

- Subscription fees
- Training
- Configuration
- System Administration

Shared Responsibility Model for Security in the Cloud

Main advantage of cloud-based services is that your vendor or partner is responsible for what happens in the cloud. In other words, cloud-service providers and users are responsible for problems associated with the functions under their control

More inclusive the service offered by the provider is, lower is the responsibility of the customer’s company

GDPR effects:

Privacy by Design

Security by Default

Accountability Principle

GDPR requires that controllers implement **appropriate procedural and technical measures** to protect personal data

They need to be able to show that they have taken concrete measures within their capacity to meet their obligations

Communication and information to citizens

Enzo Vergalito

“

COMMUNICATION +
AWARENESS =
RESPONSIBILITY

”

URBAN AGENDA FOR THE EU

CONTAINER DELIVERY NEEDS COMMUNICATION

- Create database
- Interact with users
- Explain how it works

URBAN AGENDA FOR THE EU

CONTAINER DELIVERY NEEDS METHOD

- Door to door
- Delivery points
- Mixed system

COMMUNICATION CAMPAIGN

QUESTIONS

- ❑ Why I have to separate my waste?
- ❑ How the collection of waste works
- ❑ What is the right container?
- ❑ How much does all this cost?

URBAN AGENDA FOR THE EU

COMMUNICATION CAMPAIGN

TOOLS

Physical vectors
(made by recycled or recovered materials)

URBAN AGENDA FOR THE EU

COMMUNICATION CAMPAIGN

TOOLS

Direct vectors

- Public meetings
- Info points
- School meetings

URBAN AGENDA FOR THE EU

COMMUNICATION CAMPAIGN

TOOLS

Media vectors

Applications

CASE STUDIES

Case History n°1

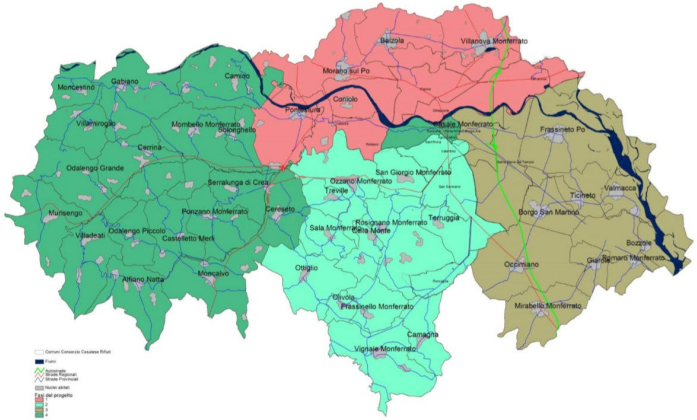
Two years experience in PAYT principle
COSMO S.p.A. – Casale Monferrato

Marco Peretti

URBAN AGENDA FOR THE EU

COSMO S.p.A.- Casale Monferrato

It is a small public “in house” company of the 44 municipalities of the Monferrato area.



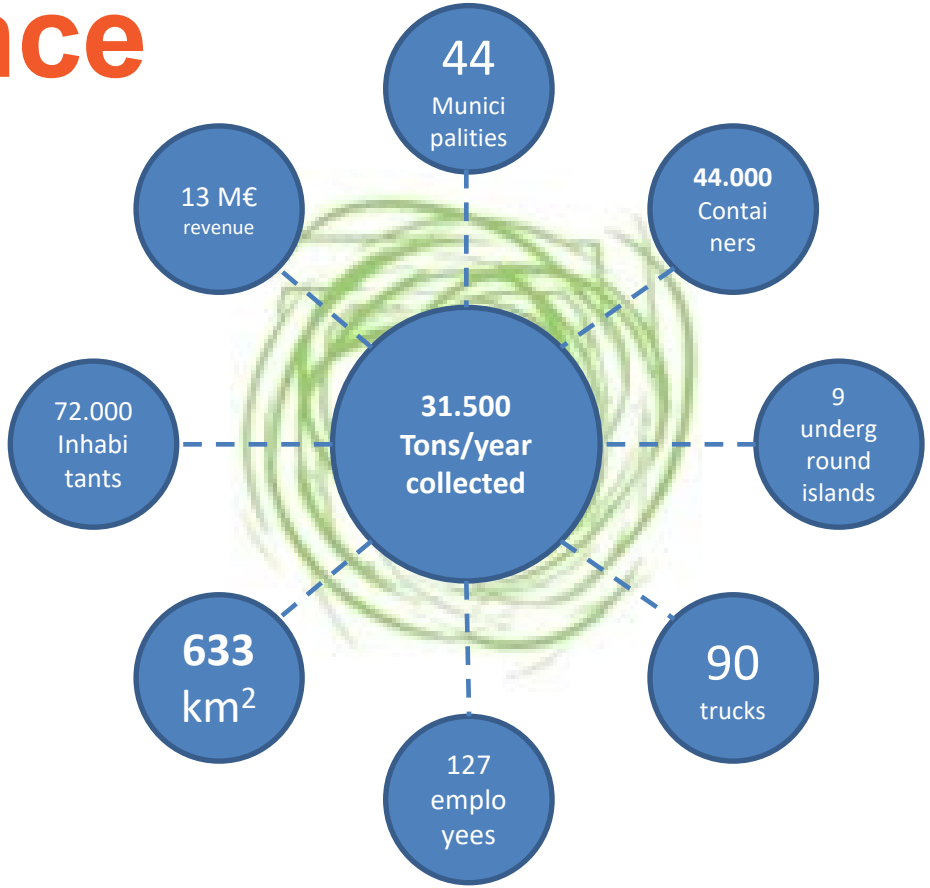
COSMO at glance

Collection and Disposal Service Provider

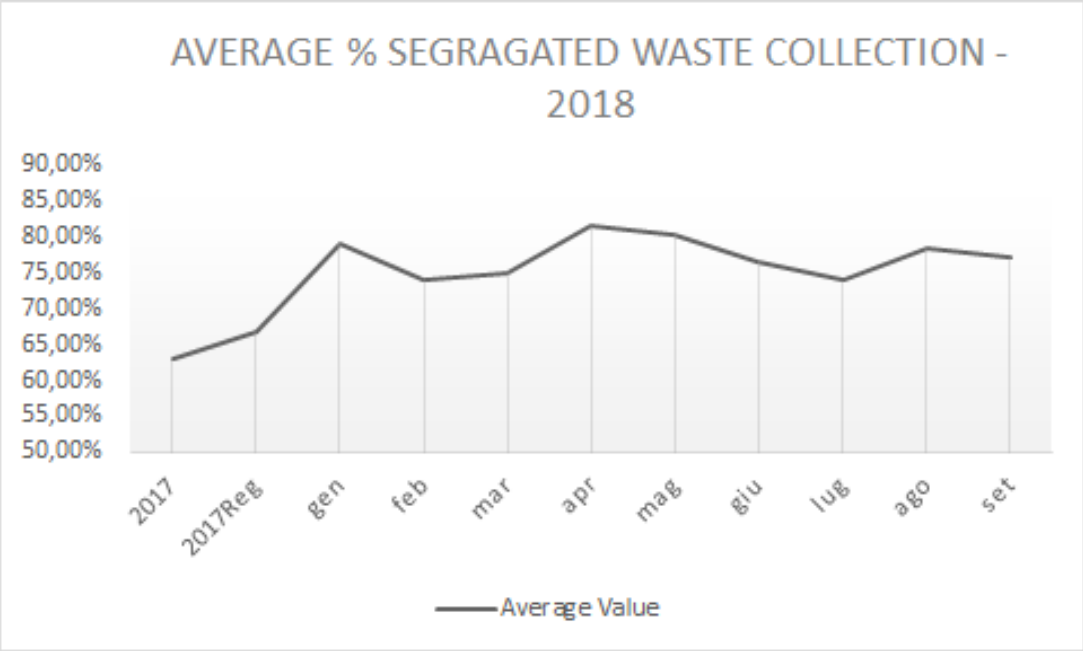
Doghouse Mngmt.

Small taxes

Man/Mech Sweeping



Segragated Waste Collection Trend in Monferrato Area - 2018



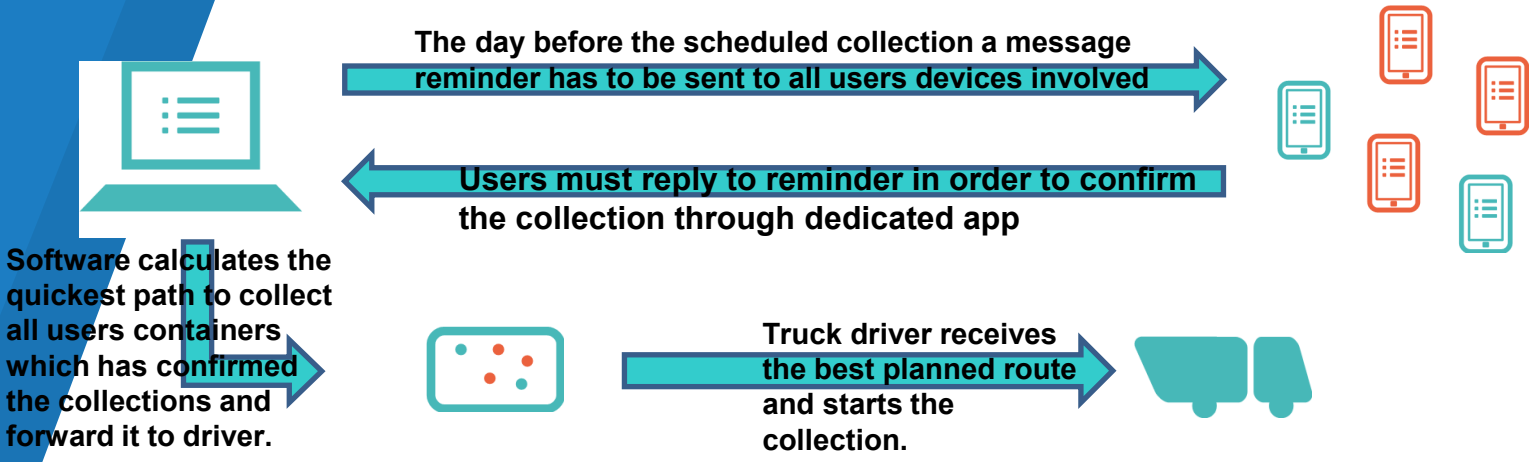
PAYT principle encourages people to reduce waste production and to increase waste segregation.

Lessons Learned

- Main contractor sometimes is the right choice for small organizations.
- Relationship between customer and supplier has to evolve to partnership.
- Goodness of data is a key point for a succesfull PAYT project, as well as to appoint a PM.
- UHF technology more reliable than LF one; redundancy of detection is even better if both technologies are already available on containers.

Next Steps

- Ecopark sw management with citizen threshold alerts.
  - Double detection system implementation.
- “On demand” system development exploiting already available hardware owned by citizens and company.

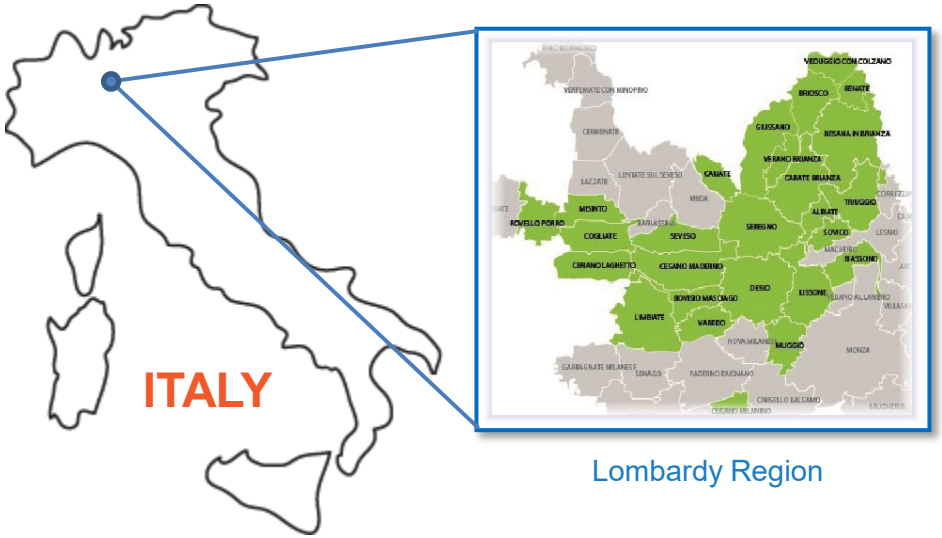


Case History n°2

The BLUE iBAG project
Gelsia Ambiente

Antonio Capozza

Gelsia Ambiente (AEB-Gelsia Group) is a public-private company whose 70% of shares is controlled by local municipalities and the remaining 30% belongs to A2A Group that is an Italian utility company listed on the Italian Stock Exchange.



Lombardy Region

TOWNS WE WORK IN	26
INHABITANTS WE MANAGE	460.000
EMPLOYEES	380

OBJECTIVE

TO REACH A POSSIBLE MAXIMUM OF ABOUT 80% SEPARATE WASTE COLLECTION

URBAN AGENDA FOR THE EU

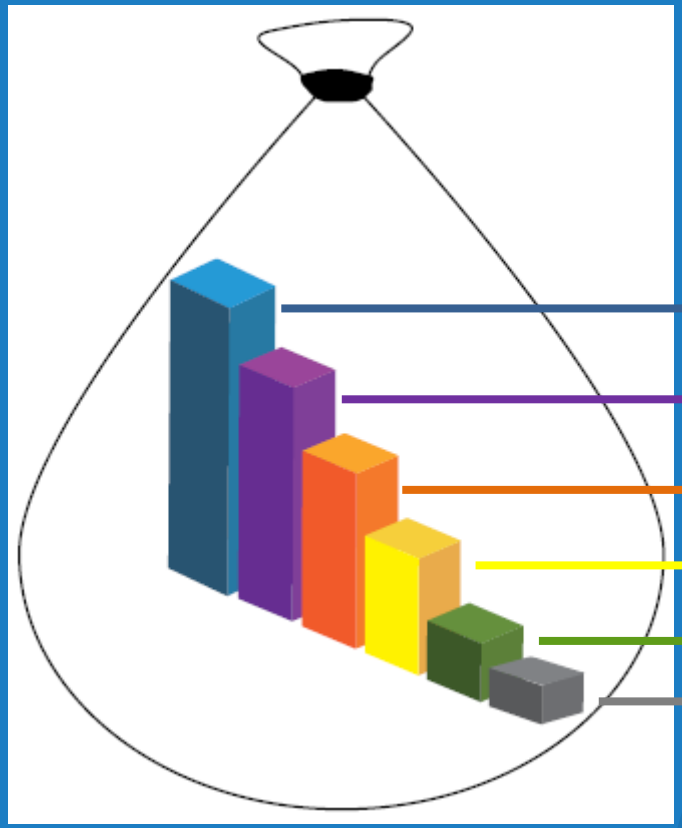
The BLUE iBAG project

- **Technology**
  Blue iBags (intelligent bags with integrated RFID transponder, identifying each user) for the residual waste fraction
- **Information and communication**
- **Data management**

URBAN AGENDA FOR THE EU

Statistics & Economics

MORE THAN 60% OF MIXED WASTE CAN BE RECYCLED…



Gelsia Ambiente statistical data

38% mixed waste

21% paper/cardboard

18% organic waste

12% plastic and tins/cans

8% glass

38% other materials that can be recycled

€

…AND POTENTIALLY COST-EFFECTIVE

BEFORE AND AFTER THE iBLUE BAG

	Annual data before the use of the blue iBAG	Annual data after the use of the blue iBAG (annual estimate)
SEPARATE WASTE RATE	+ 65,8%	+ 76%

Gelsia Ambiente statistical data

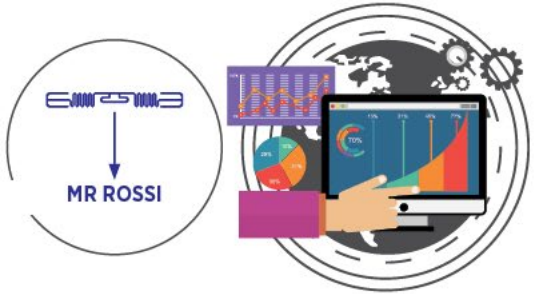
REPLICABILITY

today	INHABITANTS USING THE BLUE iBAG	270.000	TOTAL 390.000
2019	INHABITANTS THAT ARE GOING TO USE THE BLUE iBAG	120.000	

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 688995.

The dissemination of results herein reflects only the author's view and the European Commission is not responsible for any use that may be made of the information it contains.

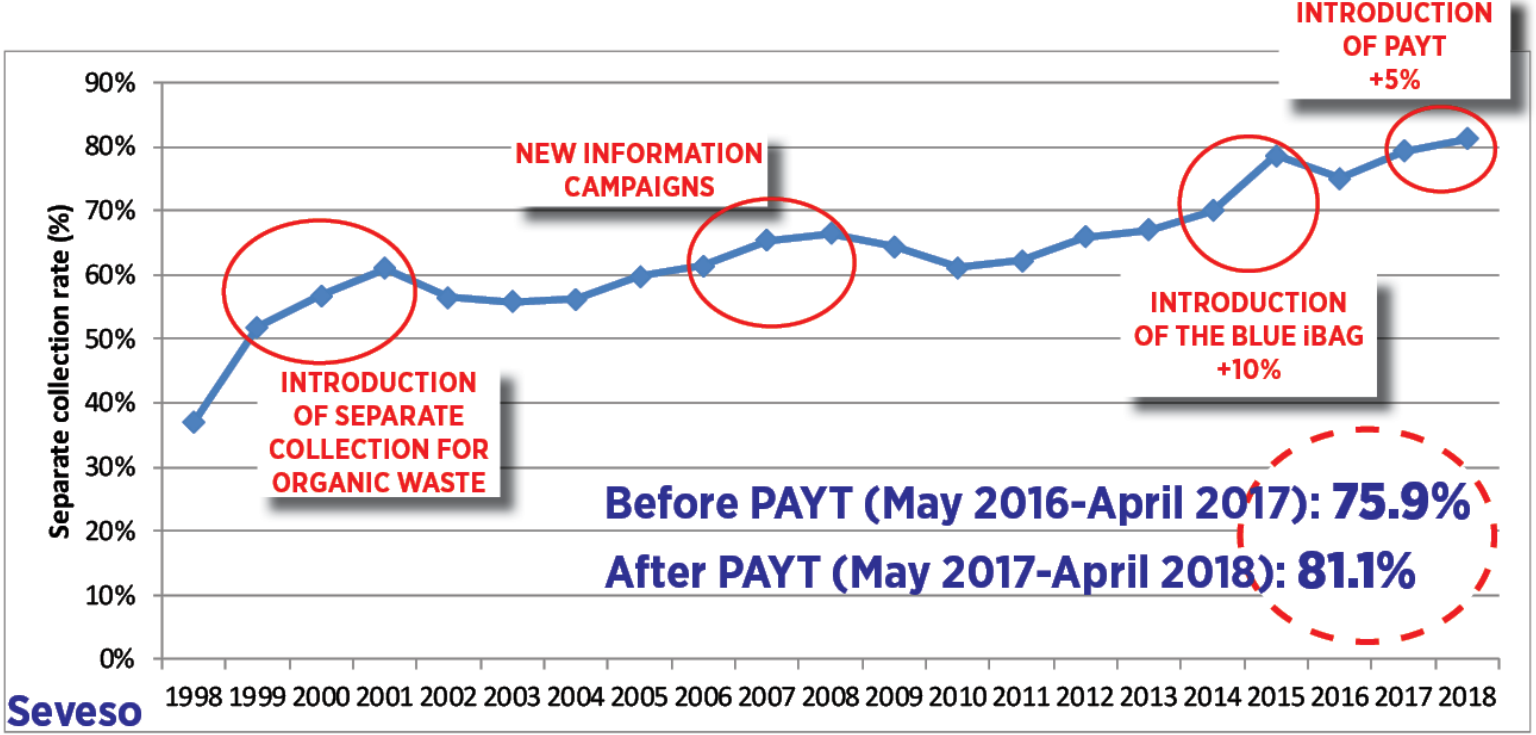
CASE HISTORY: THE BLUE iBAG BY GELSIA AMBIENTE AND "PAYT" IN THE TOWN OF SEVESO



1 BLUE iBAG = € 2.30

AVERAGE WEIGHT OF A BLUE iBAG = 6 Kg

TREND OF SEPARATE WASTE RATE DURING THE YEARS



Gelsia Ambiente statistical data

GOALS ACHIEVED

Environmental benefits:

- Increase in separate waste collection
- Reduction of gas emissions

Economical benefits:

- Fairer taxation
- Cost reduction

NEXT STEPS

- “PAYT” will be introduced in all municipalities
- Citizens will be more involved through the use of ICT tools (App…)