



Solid Waste Management through a modern innovative PAYT system

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Introduction

PAYT can mostly be found in Northern E.U. and in the U.S.A. In Greece, PAYT system has been implemented in a pilot project.

The majority of municipalities still adhere to other than PAYT schemes to redesign their waste management policies.

PAYT systems have been offered as a complete commercial product or service. This project was funded by a Greek founding agency.

Aspects and expected outputs:

- weighing and charging of waste,
- IT system integration and feedback information



Scope

Partners: 2 Universities and 3 Companies, a) IT company, b) Designer and manufacturer of plastic products for use in waste management and c) Environmental and waste management systems application company.

Overall Scope: Organization and implementation of a PAYT system in a Greek municipality as well as development of a novel and marketable infrastructure which can easily be adopted by municipal authorities.



Aim

- Provide organizations with know-how and develop a competitive advantage in the waste management sector.
- Establish a new collaborative network between Local Authorities and citizens for transparent and secure transactions.
- Develop an operational user-friendly system for recycling recording and rewarding.
- Incorporate automation techniques and procedures in the waste management chain (e.g. bin weighing).
- Incorporate SC technology and hardware/software tools for its application in the recycling process and logistics chain.
- Creation and Commercial Exploitation of a complete method for a more efficient Waste Collection and Billing system to serve (a) Local Authorities, (b) citizens - reward their recycling and (c) the community - reinforce recycling market.



Methodology

- PAYT project (<http://aix.meng.auth.gr/paytproject>) addresses two fields:
 - information technologies and
 - recycling operations

Top priority areas for EU policy & research and aims at the commercial exploitation by the incorporation of “smart” technologies within the recycling process and logistics, which will enhance the modernization and cost-effectiveness of related waste recycling activities, keeping citizens’ needs on the top.

- 3 research areas are analysed including
 - a) technical description of PAYT system,
 - b) structure of the questionnaire addressed to the community and analysis of the research followed and
 - c) analysis of the results regarding the level of use of the waste bins’ system installed in the municipality of Kifissia, Greece.



Stakeholders' research

Questionnaire structure and its objectives

- 3 three questionnaires aimed to explore the knowledge, attitudes, intentions and practices prevailing among the wider public and adopted by public and private institutions on issues related to waste management.

Objective:

Investigate both the knowledge of citizens regarding PAYT systems and their intention to participate in such programmes developed by local authorities.

Conducted from February to May 2014 and the target population for the first questionnaire was citizens from all Greek municipalities, while the second one addressed to local authorities and the third questionnaire to companies engaging to PAYT systems.



Stakeholders' research

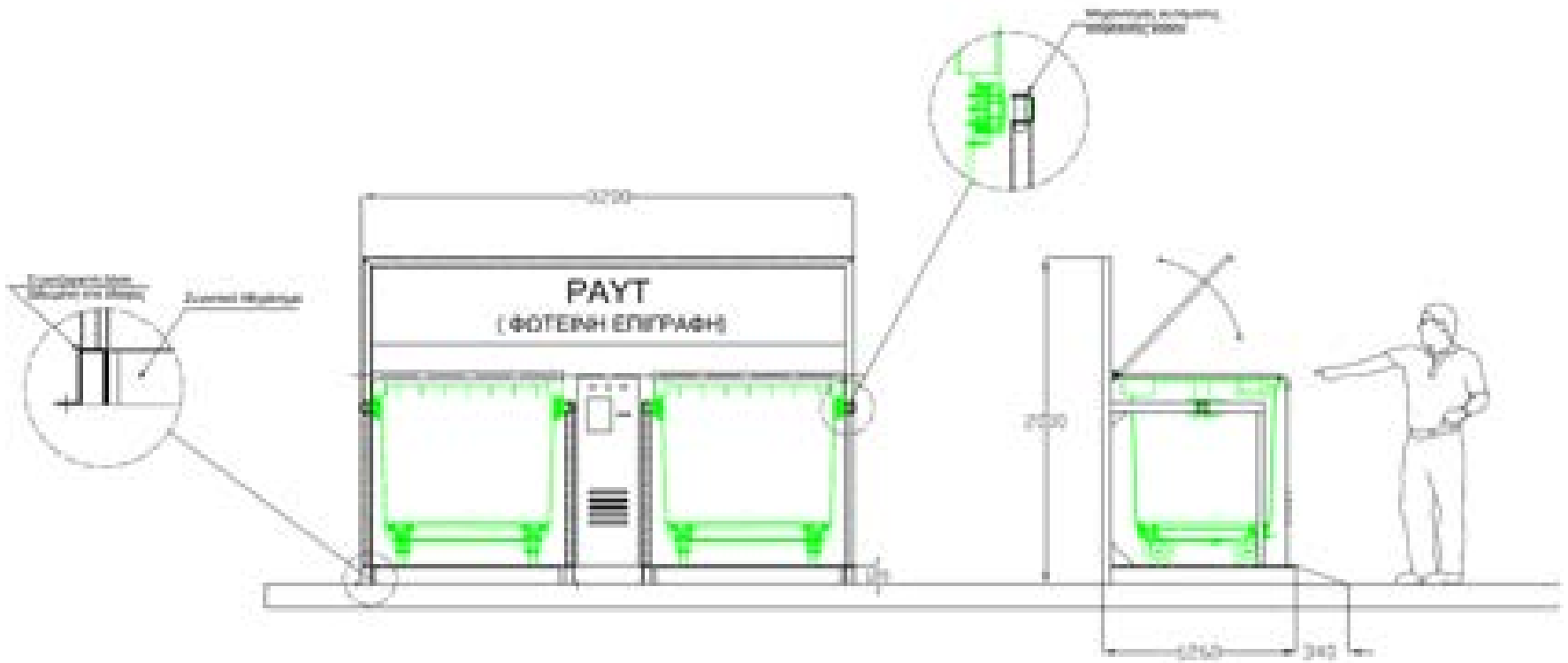
Identifying commonalities and differences among stakeholder groups

The analysis of the research results indicates common views between citizens, public bodies and companies briefly presented below:

- Institutions and citizens agree that environmental protection prevails over any other benefit.
- The level of knowledge is characterized as moderate regarding all three groups of the interviewees.
- Financial incentives are a key factor for a successful implementation of alternative municipal solid waste management schemes.



Stakeholders' research



Identification of PAYT system




The screenshot displays the PAYT software interface. At the top, there are two large orange boxes showing weight measurements: **4,5 KG** and **1,1 KG**. Below these, a central window titled "Καταγραφή Καρτών PAYT" (PAYT Card Registration) is open, showing a list of cards with columns for "Καρτέλα" (Card) and "Αριθμός" (Number). To the right, a box labeled "Card Serial Number" displays the value **080D58B062**. At the bottom, there are three main buttons: "Open/Close Manually" (green), "Close Door Manually" (orange), and "Reset" (red). Below these are several input fields for "Terminal Name", "Capacity Name", "New Capacity Value", and "Old Capacity Value".



Mobile Application

- <http://payt.selfip.com:3190/apex/f?p=214>



Software

Αρχική

Αποσύνδεση CHRIS

Refresh | Feedback | Print | Βοήθεια

Χρησιμότητες ▾ Διαχείριση ▾

Καλωσήρθατε

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Η εφαρμογή συστημάτων Πληρώνω όσο Πετώ (ΠΟΠ) για την διαχείριση δημοτικών αποβλήτων οδηγεί σε χρέωση αναλογικά με την ποσότητα των παραγόμενων αποβλήτων από το κάθε νοικοκυριό.

Κάθε σύστημα ΠΟΠ προσαρμόζεται στα τοπικά δεδομένα: την μέθοδο συλλογής αποβλήτων ή σύμφωνα τον τρόπο χρέωσης της διαχείρισής τους (συνολικό βάρος ή όγκος) και σημαντικό ρόλο παίζουν οι τοπικές οικονομικές και κοινωνικές συνθήκες.

Κατασκευάζεται απο την Πληροφορική Μηχανική Α.Ε. (Engineered Information Systems) και ανήκει στην οικογένεια εφαρμογών **ENIS Y**.

Κάποιες επιλογές είναι ανενεργές και δεσμευμένες για μελλοντική χρήση. Άλλες απαιτούν συγκεκριμένα δικαιώματα πρόσβασης. Πρόσθετη πληροφόρηση παρέχεται απο το κουμπι **Βοήθεια** που βρίσκεται στην γραμμή εργαλείων.

www.enel.com.gr

Home Application 104 Edit Page 1 Create Session Caching View Debug Debug Show Edit Links

2:36 πμ 28/05/14



Installation of 1st PAYT system in Kifissia municipality





Installation of 2nd PAYT system in Aigialia municipality



Installation of 3^d PAYT system in Aigialia municipality



Research analysis

Citizens:

- Generally satisfied with the current situation concerning waste management policy and its results.
- Willing to change habits and actively participate in promoting rational waste management schemes such as PAYT programme.
- Women appear to be better informed than men in this issue as well as the age group of 45-65 years among the other ones.
- A significant percentage of the interviewees set the protection of the environment and not the private profit as the initial priority for participating in a PAYT system.
- Households composed of 2 members appear to have the highest recycling percentage among the other households, while these composed of 4 members recycle more than 3 waste bags during the week.



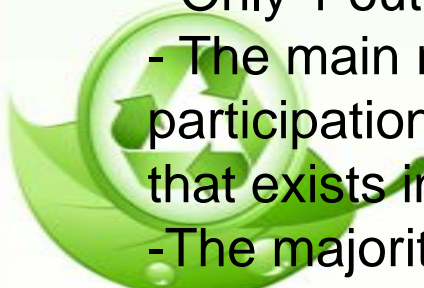
Research analysis

Public bodies:

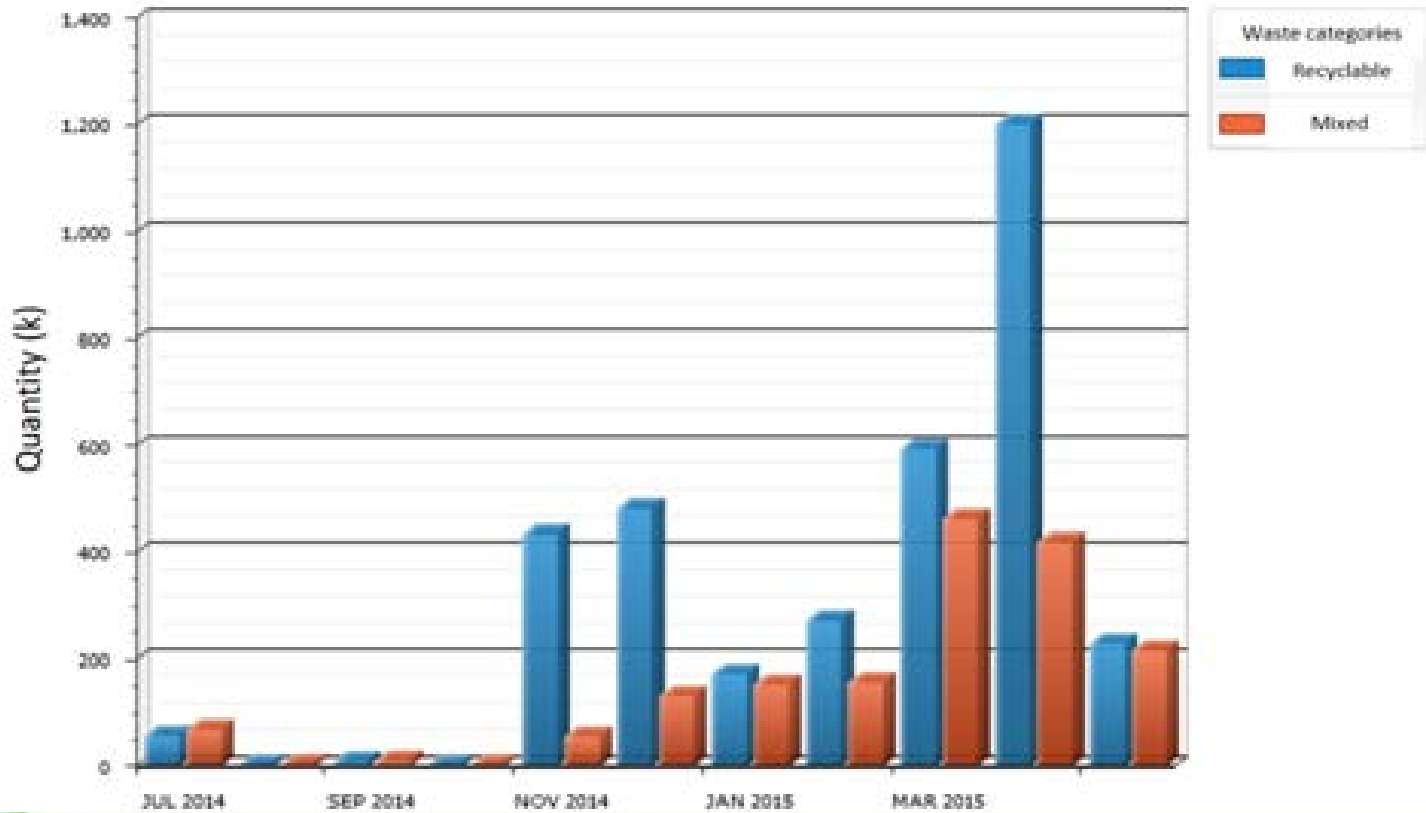
- More than half of the interviewees know the basics about recycling, whereas a small part of them are experts.
- A significant number of the participants believe that private companies and not public bodies should be responsible for waste management in municipalities because of the expertise they acquire.
- Set as priority the protection of the environment as well as the provision of incentives to participate in PAYT systems.

Private companies:

- Mostly small and medium enterprises
- Only 1 out of 4 of them implements PAYT programmes.
- The main reasons for not implementing a PAYT system are low participation due to the absence of incentives and the bureaucracy that exists in public authorities.
- The majority of the participants support the adoption of PAYT system.

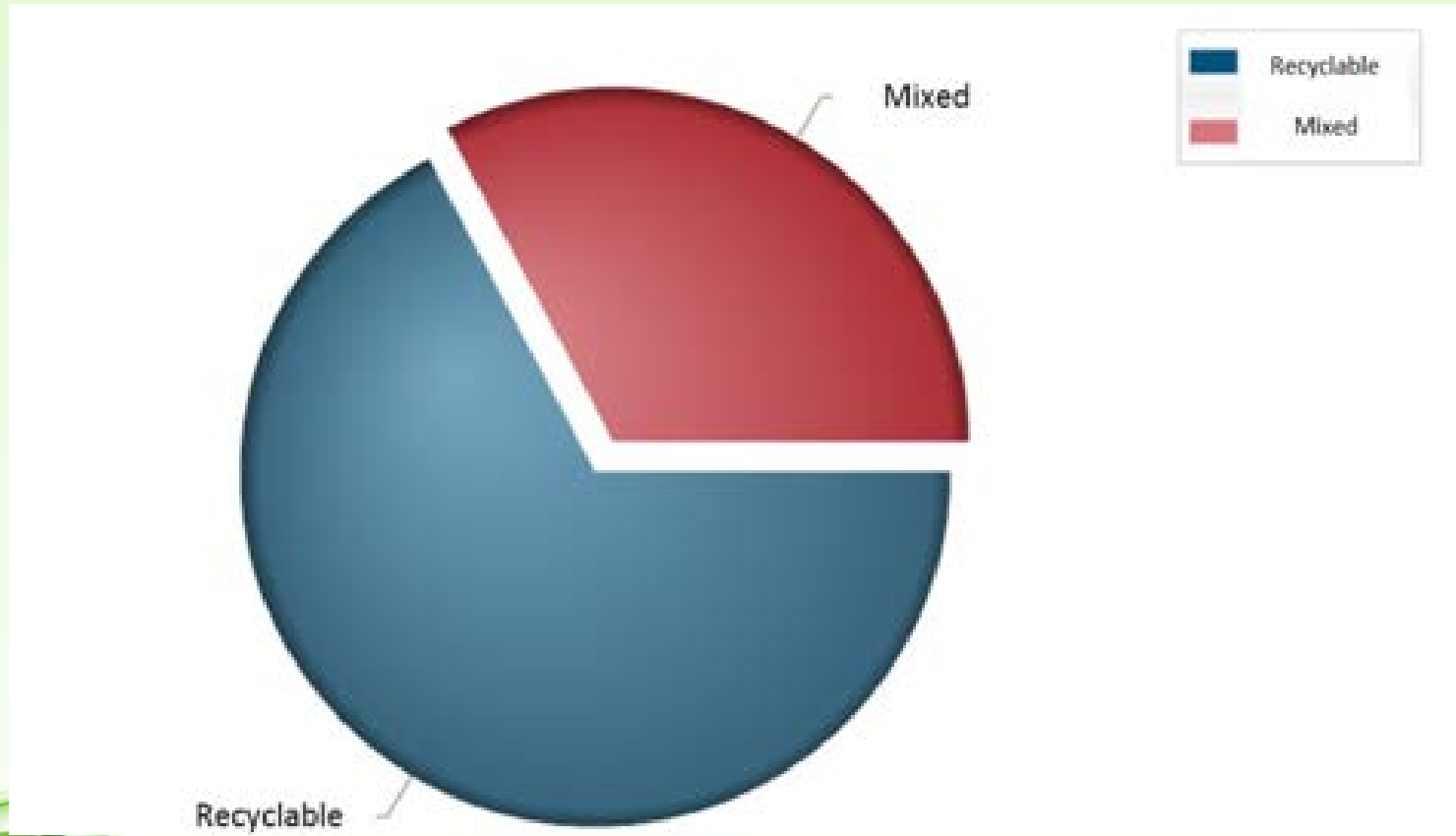


Public acceptance



Quantity of mixed and recyclable waste disposed monthly in PAYT system bins in Kifissia municipality.

Public acceptance



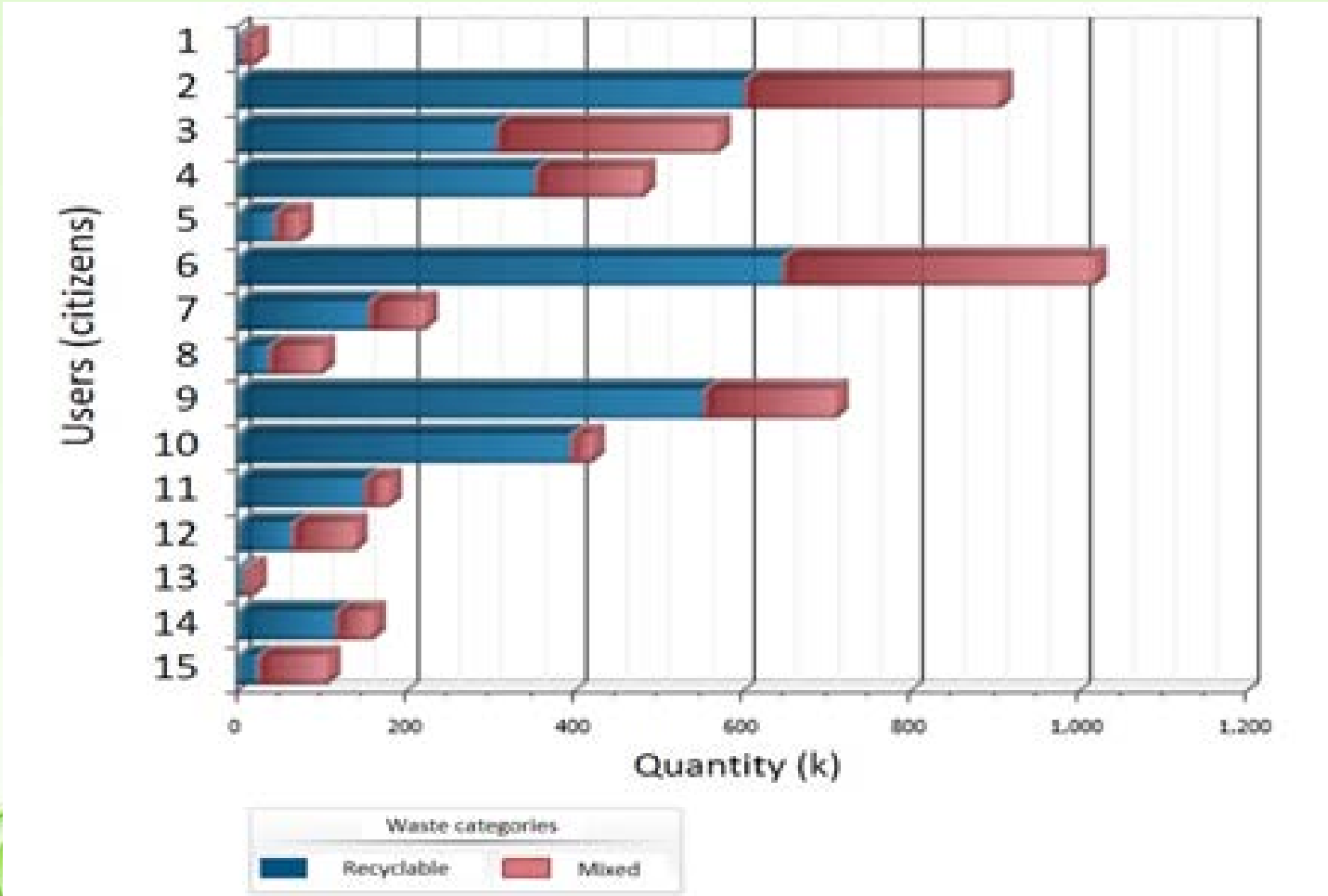
Recyclable

Mixed

Use of PAYT system bins per category of waste.



Public acceptance




Quantity of mixed and recyclable waste disposed in PAYT system bins per capita in Kifissia municipality.

Conclusions

The aim of PAYT project is to promote a rational waste management scheme, while establishing a new collaborative network between local authorities and citizens for transparent and secure transactions.

Developing an operational user-friendly system gives the opportunity to citizens to actively participate in recycling programmes getting a reward by being charged based on their waste production. Furthermore, PAYT project provides participant organizations with know-how in an innovative application and develops a competitive advantage in the waste management sector.



The research analysis showed revealed a significant participation of citizens in the PAYT system installed pilot in the municipality of Kifissia engaging at the same time local and regional stakeholders.

Thank you for your attention!

