



Door to Door recyclables' collection programs: willingness to participate and influential factors: A case study in the city of Xanthi Greece

S. Amarantidou¹, T. Tsalis¹, P. Calabró², I. Nikolaou¹, D.Komilis¹

**1: Department of Environmental Engineering,
Democritus University of Thrace, Greece**

2: University of Reggio-Calabria, Calabria, Italy

INTRODUCTION

The most successful recycling method for **packaging and organics** is considered to be the separation at the source.

Forms of application of this method are:

- ▶ Curbside Collection (typical in Greece)
- ▶ Door to door collection (Italy, Spain)
- ▶ Collection at Green points or drop-off systems (Europe)
- ▶ Collection of materials from special categories of sources of origin (Industrial, craft, mass catering) , and by particular population groups (Schools, Campuses)
- ▶ Other systems (home and community composting)

Criterion for the success

Citizens' participation
(participation rate)



Curbside recyclable collection scheme

The most typical recyclable collection systems worldwide that implements different colored bins for each of the different streams of dry recyclables and organics/biowastes

ADVANTAGES

- ▶ Flexible for users
- ▶ Does not require much experience or training

DISADVANTAGES

- ▶ Requires the permanent presence of containers in public places
- ▶ Collection of materials of moderate purity



Curbside system with an access key



Door to door solid waste recyclable collection scheme

Residents place their recyclables in special bins on specific days and hours to be collected by special vehicles

ADVANTAGES

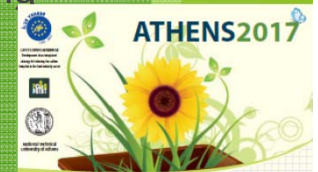
- ▶ Quality control of recyclable materials
- ▶ Higher recovery rates
- ▶ No requirement to place permanent containers in public places

DISADVANTAGES

- ▶ Requirement for increased equipment-staff
- ▶ Organized collection day planning

SITUATION IN EUROPE

- ▶ It has been successfully implemented in Central Europe (Italy, Germany)
- ▶ Not implemented in Greece (pilot system in Chalandri).
- ▶ It is thought to highly increase citizens' participation rate in recycling





Green points – Drop-off points

Residents bring their own recyclables by car to specific locations

ADVANTAGES

- ▶ No municipality collection
- ▶ It is directed towards conscientious citizens

DISADVANTAGES

- ▶ Participation rate?

SITUATION IN EUROPE

- ▶ Popular in parts in Europe



SCOPE OF THE STUDY

- ▶ Social study
- ▶ Investigation of the factors that affect recycling and the citizens' intentions to participate in a door-to-door collection program
- ▶ Correlate potential influential factors (various economic and socio-demographic factors) with the intention to recycle and willingness to pay (WTP).



METHODOLOGY

▶ Data collection

- ▶ 150 questionnaires
- ▶ Personal interviews
- ▶ Quotation around 25% Muslims, 72% Christians

▶ Data analysis

The statistical analysis of the results to investigate statistical differences was performed with SPSS®. Application of non-parametric statistical tests (Mann-Whitney U-test), the χ^2 test as well as by developing empirical models using categorical variables



METHODOLOGY

First section

Nine (9) closed-ended questions to examine the degree of public participation in recycling and to elicit respondents beliefs and attitudes toward recycling and to explore their recycling behavior.

Second section

Two (2) questions designed to record the attitude towards recycling and to explore the recycling behavior .

Third section

Seven (7) closed-ended questions to investigate the willingness to participate in a door-to- door recyclable collection program (and home composting program for organics), as well as the willingness to pay for such recycling programs and their agreement with “pay as you throw systems

Fourth section

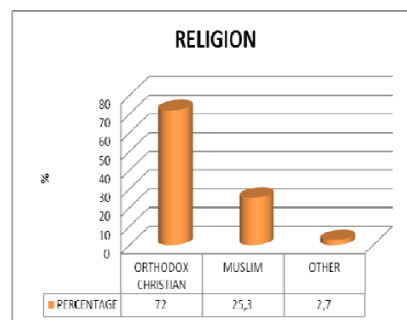
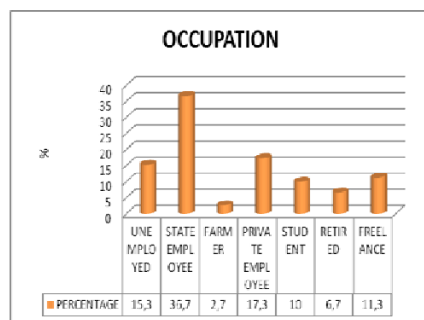
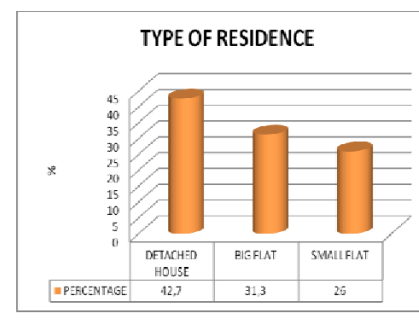
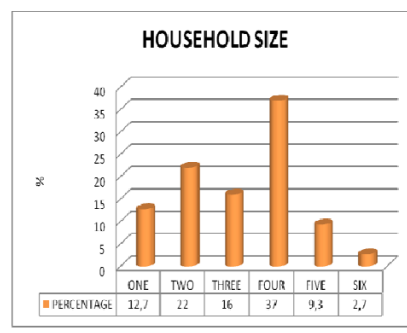
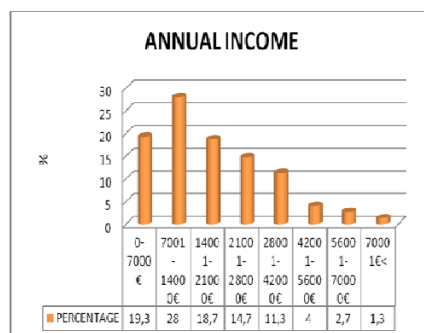
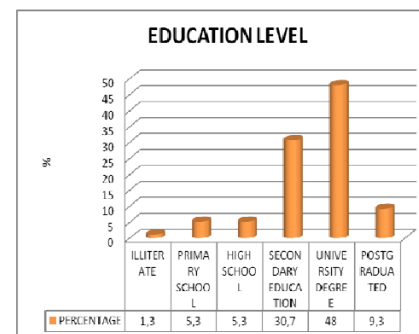
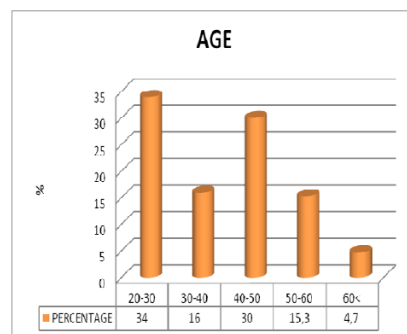
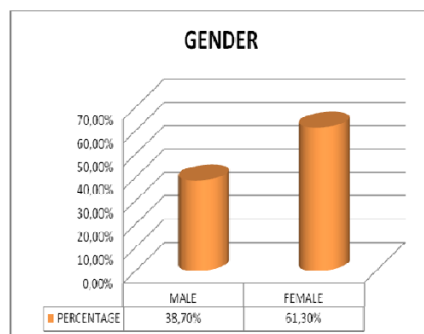
Economic and social-demographic information of respondents (gender, age, occupation, income, number of family members, type of residence and religion).



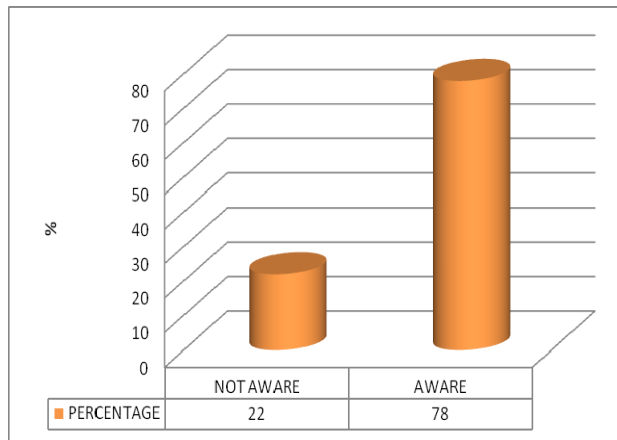
RESULTS AND DISCUSSION



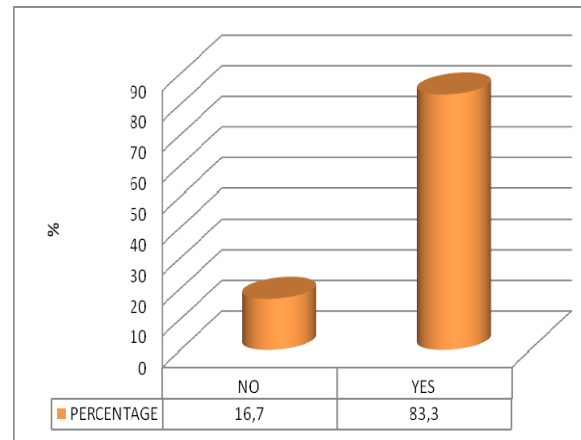
Economic and socio-demographic factors



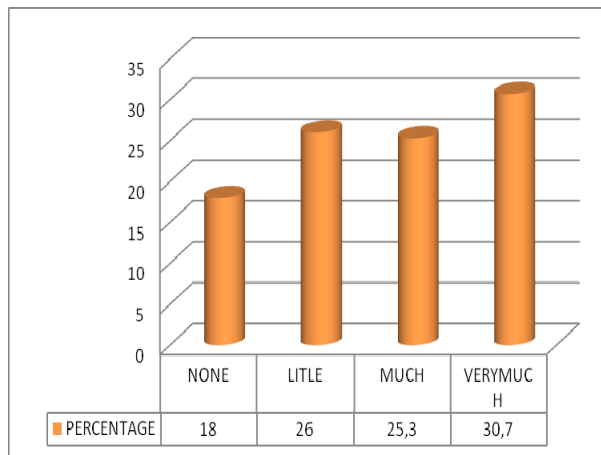
STATISTICAL ANALYSIS



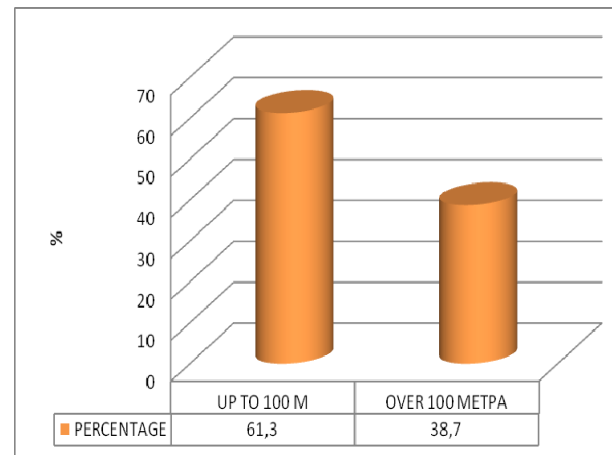
Awareness over existing recycling system



Current participation in the existing curbside system



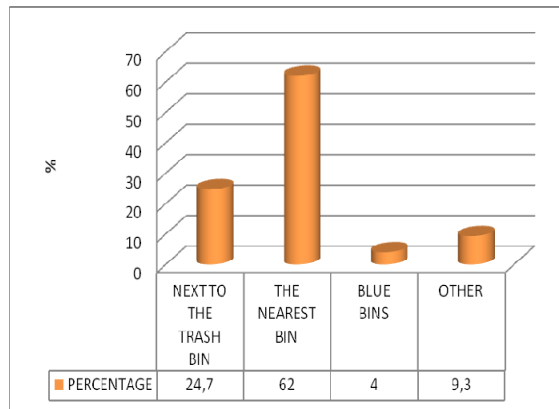
Satisfaction over the existing recycling system



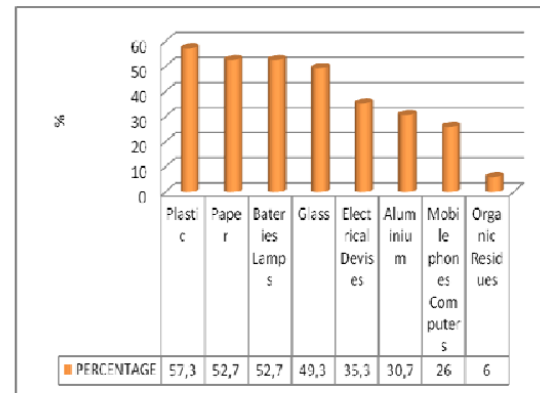
Distance for disposal of recyclables



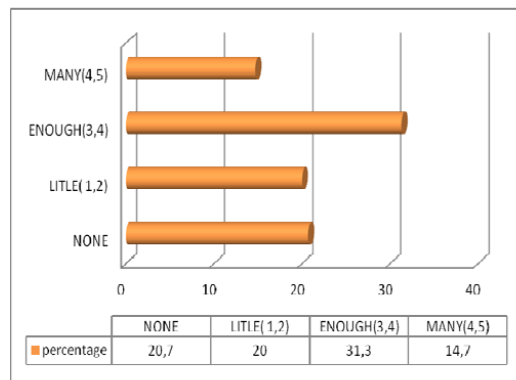
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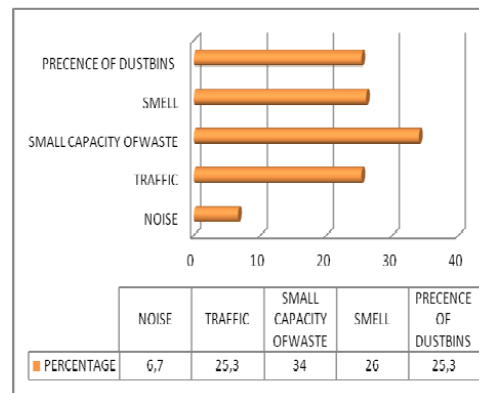
Behavior in waste management



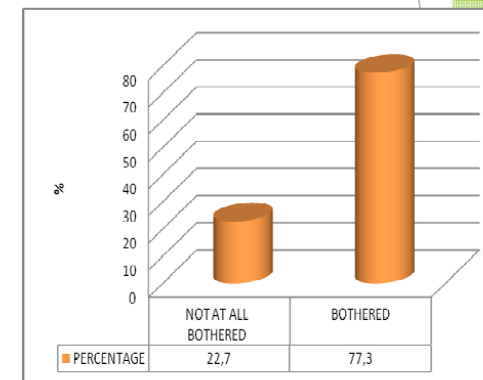
Recycling rates per materials



Components Recycled



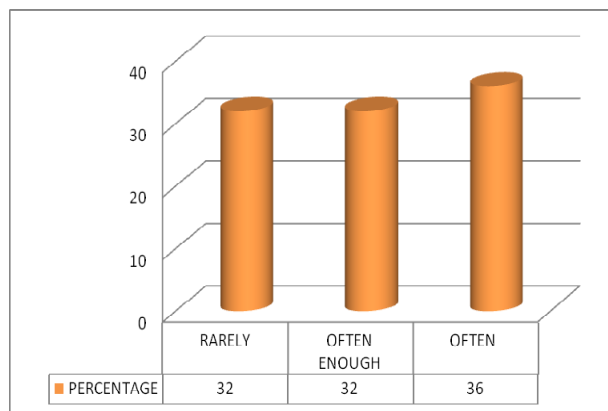
Nuisance of existing recycling system



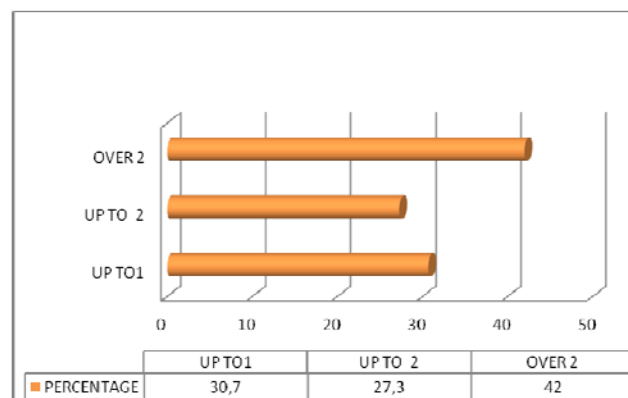
Respondents perception that current system is problematic



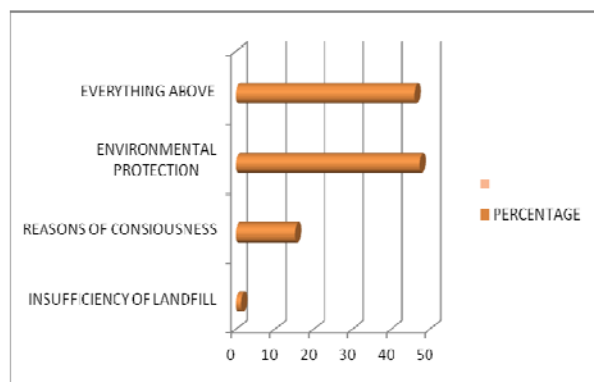
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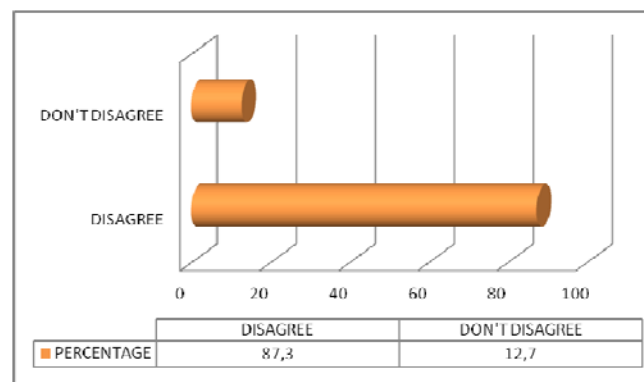
Frequency of disposal of recycling bags



Quantity in recycling bags placed to the blue bin

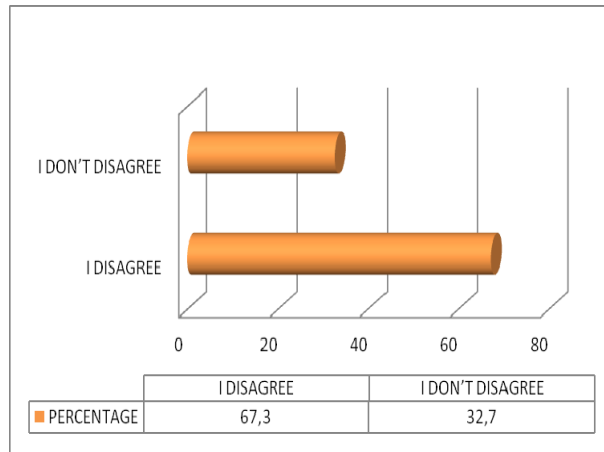


Reasons to ensure recycling

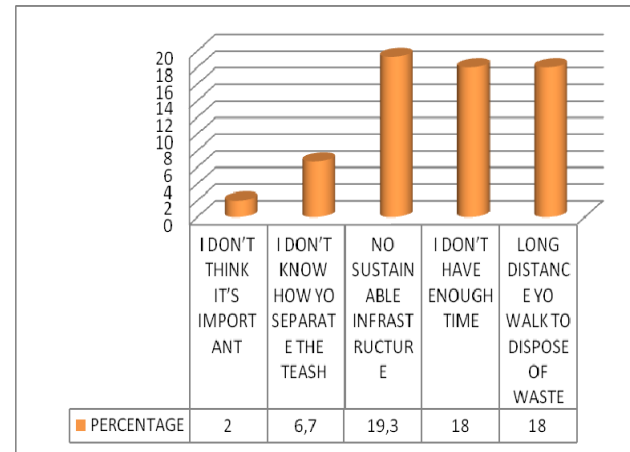


Disagreement with the opinion that the recycling is a waste of time

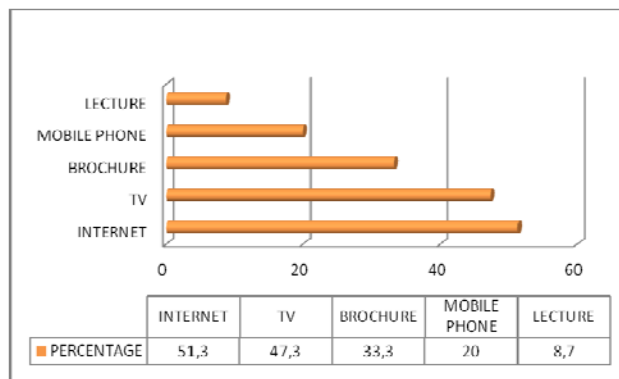
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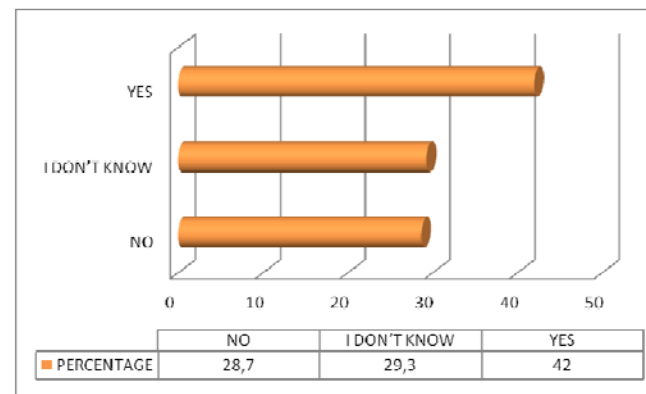
I don't trust the agents responsible
For recycling



Reasons for no participation in recycling



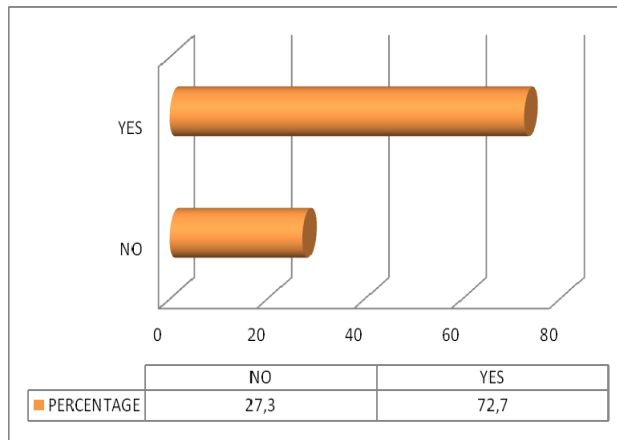
Preferred means to learn about recycling



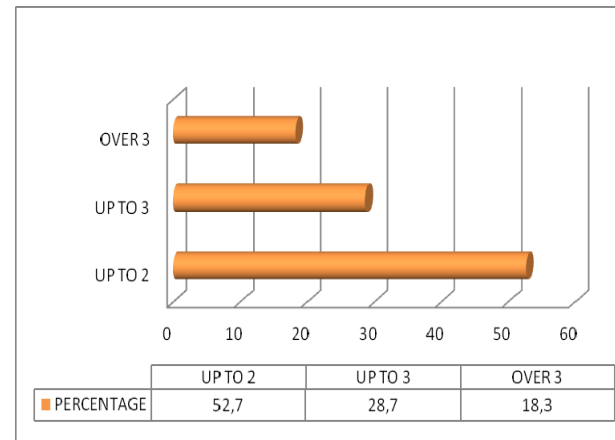
Willingness to participate in home
composting program



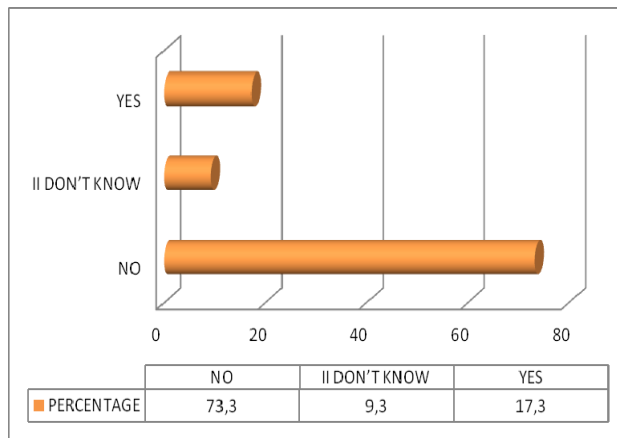
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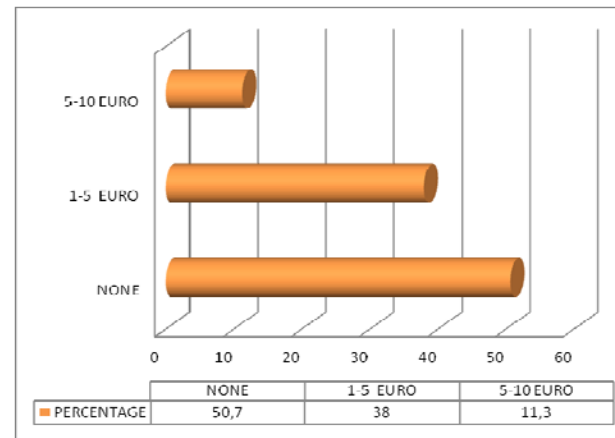
Willingness to participate in a door to door Collection program



Number of bags that could be stored by respondents in their houses



Agreement with " pay as you throw system"



Willingness to pay exclusively for recycling and home composting system



CONCLUSIONS

- ▶ The individuals who were bothered from the current recycling system were more willing to participate in a door to door collection (and home composting for organics).
- ▶ The individuals who had a university degree were more willing to participate in a door to door collection program.
- ▶ The individuals who had adopted positive attitude on recycling issues were more willing to participate in a door to door collection and home composting program.
- ▶ The individuals who were aware of the operation and utility of a waste recycling were found to recycle in a higher frequency (more components and higher mass separated) compared to the ones that were not.
- ▶ The individuals who considered the access distance to the waste recycling location non-satisfactory, recycled with a smaller frequency compared to the ones that consider it satisfactory.
- ▶ In particular, the ones that could walk to a distance greater than 100 m to dispose of their recyclables, recycled to a higher extent (larger number of recyclable components) compared to the ones that could not walk higher distances
- ▶ The individuals who claimed that they have positive attitude towards recycling of wastes, recycled to a higher degree compared to the ones that had a negative attitude



CONCLUSIONS (CONT.)

- ▶ The individuals who had a basic university degree recycle to a higher extent compared to the ones that had a high school education or lower. In addition, those who were over thirty years old recycled to a higher degree than the younger ones.
- ▶ The individuals who had an annual income over €21000 recycled to a higher degree compared to the ones with a lesser income.
- ▶ The individuals who declared that are Christian Orthodox recycled to a higher degree compared to individuals that declared to follow the Islamic religion. However, this finding may not be attributed to religious orientations, since the Muslim individuals in this study had an average income lower than €21000 and an average education at the level of high school or lower.



