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For more information on the report, the results of the VOICES project, please contact Marzia Mazzonetto (mmazzonetto@ecsite.eu).

CONTENTS

1. Introduction

1.1 The VOICES project

VOICES (Views, Opinions and Ideas of Citizens in Europe on Science) is a year-long, Europe-wide citizen consultation exploring the concept of waste as a resource. It represents an innovative method of integrating public opinion into the 'Climate action, resource efficiency, raw materials' dimension of the Horizon 2020 Work Programmes beginning in 2014.

Funded by the European Commission and led by Ecsite, the European network of science centres and museums, the VOICES project is a response to the Science in Society 2013.1.2.1-1 call on citizen participation in science and technology policy. Citizens are invited to give input to the Consolidation Group that will define the priorities for the next work programme on 'Urban Waste' (call SiS.2013.1.2.1-2).

The main aim of VOICES is to yield valuable insight on methods and procedure for engaging citizen participation to help set the research agenda for Europe's Responsible Research and Innovation framework. The knowledge gained through VOICES will be put to use in similar participatory actions across Horizon 2020.

1.2 Citizen participation in social innovation

A national and European capacity-building initiative, VOICES unites science communication practitioners and academics, and, as such, will result in an effective method through which to consult the public on science and technology related issues.

Compared to many other consultation initiatives, VOICES represents a breakthrough because of its scale (covering all of Europe) and because of the methodological approach used on this wide scale: an approach which makes use of a qualitative methodology, which allows a harvesting and deep understanding of citizens' views, fostering real governance processes and social innovation.

VOICES is also very innovative in its commitment to formally include the results of the citizens' consultations in the main policy document that will shape the priorities of European research. Another unique element is that the knowledge gained with this pilot, in terms of methodology, infrastructure and results, can be used to organise similar participatory actions across Horizon 2020.

1.3 The process

One thousand European citizens participated in focus group discussions about 'Waste as a resource' using a structured VOICES methodology which spans training, implementation and analysis. The methods, infrastructure and results of VOICES are fully documented on an open access portal (www.voicesforinnovation.eu) designed for similar participatory actions occurring throughout Horizon 2020.

VOICES engaged citizens in 33 locations covering 27 EU countries. 28 Ecsite network institutions make up the Third Party task force which organised the 100 focus groups, with approximately ten citizens each, in their respective countries.

Ecsite Project Managers and researchers from the Athena Institute, VU University Amsterdam, were responsible for conducting the focus groups, analysing public consultations, writing the country and synthesis reports and disseminating their outcomes at public events.

1.4 Structure of the report

In this country report on the VOICES outcomes from Cyprus, the VOICES research methodology is further detailed in the following chapter. In Chapter 3, some specific data is provided on the country's population, on national urban waste figures and on specificities of the participants of the focus groups. Chapter 4 presents the results of the citizens' consultation on waste management at household level, barriers and concerns experienced in prevention and management of waste, and ideas for research and innovation, policy, management and communication. The report ends with a summary and discussion of the findings.

2. Methodology

This section provides general information about the focus group method, and in particular about the VOICES approach. It also describes the structure of the VOICES focus groups and the process of data analysis.

As a qualitative research method, the focus group is increasingly used in political and social sciences, and can be defined as "a carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, non-threatening environment".[1] An important advantage of focus groups in comparison to other research methods is that participants can respond to and build on the views expressed by the other participants. Because of this interaction, focus groups generate a large variety of opinions and ideas which provide insightful information, while maintaining a specific focus during the discussion. The method provides the opportunity to gain in-depth insight into ideas, values, wishes and concerns of participants and stimulates shared creative thinking. A specific characteristic of the focus group method is that it seeks understanding of a research topic from a particular perspective; in the case of the VOICES project, the perspective of European citizens.

2.1 The VOICES focus group approach

In the VOICES project, a total of 100 focus groups were held, each of them with approximately 10 citizens. Participants were selected by local recruitment agencies, according to predefined selection criteria. The selection criteria were applied in order to obtain diversity in focus group participants, and to represent society at large. General selection criteria with respect to demographic information included: sex (50% men and 50% women), education (low, medium and high levels of education)[2] and employment (employed, unemployed, retired and student). The focus groups were stratified by age using the following categories: 18 to 35 years of age, 36 to 50 years of age and 50+. Other criteria addressed elements relevant to the VOICES project's specific topic, including: participants from urban and non-urban areas[3], diversity of types of municipality (at least five different municipalities, including bigger towns and smaller villages), and diversity of housing situation (flat or house). These selection criteria were applied in all EU member states. Because of the local context and the availability of participants there are minor differences between member states in the resulting composition of focus groups.

In most EU member states, three focus groups were conducted, all in one location. However, all member states with a population of above 25 million (Germany, France, Spain, Poland, Italy and the UK) had two sets of three focus groups each in two different locations, resulting in six focus groups in total in these countries.

The focus groups lasted 3 hours and followed a semi-structured script consisting of an introduction, four main exercises and an evaluation part (see box 2.1). During the focus groups, specific attention was paid to keeping the environment noise-free and providing enough space to relax, walk around and engage in the conversation. Each focus group was led by a moderator, who was in charge of stimulating and guiding the discussion. The moderator's role was also to maintain the focus of the discussion by ensuring that key themes were covered, while managing group dynamics.

Moderators facilitated the discussion by following the focus group script, which was provided to them in advance and contained questions and exercises to guide their work and ensure equal individual input as well as group discussion. Because of their crucial role in the focus groups, all moderators involved in the VOICES project followed a specific 2.5 day training course. The training focused on specificities of the VOICES focus group script as well as on refining important competencies of the moderators' role, including interpersonal communication, process management and understanding of the topic addressed.

In order to capture the data generated during the process, audio and/or video recordings were made of all focus groups. A note taker was also required to be present for the entire duration of the focus groups, in order to record additional data and to assist the moderator. All visual data generated by the participants, for example, individual drawings or collective mind maps, were collected at the end of each focus group and photographed.

BOX 2.1 SUMMARY OF VOICES FOCUS GROUP SCRIPT

INTRODUCTION

The moderator introduces himself/herself, the note taker and any observers and asks the participants to introduce themselves. The moderator then explains the aims and topic of the focus group using a PowerPoint presentation.

EXERCISE 1

The goal of Exercise 1 is to raise the focus group participants' awareness of household waste and related waste management systems. It also identifies what people know and do with respect to their household waste. Participants are asked to draw on an A3 sheet of white paper how they think the waste streams are managed around their house. When they have finished, the papers are collected and taped to the wall. The moderator then asks the participants to explain their drawings and encourages them to elaborate.

EXERCISE 2
Exercise 2 aims to identify barriers and concerns of the participants with respect to current urban waste pathways (including prevention) and to go into more depth on the causes and underlying reasons for the reported barriers and concerns. The moderator shows the participants PowerPoint slides about the four most common pathways of waste and prevention. After this, participants are asked to think about barriers and concerns they experience regarding waste, waste management and prevention of waste and to write two examples of these barriers or concerns down on Post-Its. The Post-Its are collected and for each, the moderator asks the participants to explain what they wrote down and why.

EXERCISE 3
The objective of Exercise 3 is to stimulate creative ideas for improvement and solutions for problems and possibly to translate ideas and solutions into research topics or questions. The moderator introduces the concept of a 'zero waste society' to the participants using PowerPoint slides. The participants are then asked to work in groups and brainstorm about ideas for achieving the aims of a 'zero waste society', focusing especially on what research and innovation would be needed for this. Participants are then asked to present their ideas to the entire group, while the moderator uses a flip chart to list all concrete ideas for research and innovation suggested by the participants. The moderator then asks the participants to reflect further on possible futuristic technical solutions and 'wild' ideas regarding waste management and prevention.

EXERCISE 4
The aim of Exercise 4 is to attribute a level of priority to the research topics formulated in Exercise 3.
Participants are given three stickers, which represent money (1 million each) that they can spend on ideas written down during Exercise 3. They are asked to assign one or more stickers to the ideas that they feel should be prioritised because of the importance of the problem it addresses and/or the quality of the solution it provides. Once the participants have assigned their stickers, a plenary discussion is held to talk about which ideas got the most stickers and why.

EVALUATION
The moderator ends the sessions and asks the participants to share feedback on their experience taking part in the VOICES focus group. Participants are also asked to fill in an evaluation questionnaire.

2.2 The VOICES approach to urban waste

In the focus groups, citizens of Europe were consulted on the topic 'Waste as a resource'. Urban waste is defined as solid waste collected by or on behalf of municipal authorities and disposed of through the waste management system. Most of this waste is produced by households, although similar waste from sources such as commerce, offices and public institutions are included. Consumer products disposed of by citizens, like clothes, electronics and furniture etcetera, are also considered urban waste. Industrial waste is not considered urban waste and is outside the scope of this project. On average, each of the 500 million people living in the EU throws away around half a tonne of household rubbish every year.[4] This amounts to 70 million truckloads of household rubbish for the EU as a whole every year (one truckload is considered to be 3500 kg, the maximum weight for a truck). All this waste has a huge impact on the environment, resulting in pollution and greenhouse gas emissions that contribute to climate change, as well as significant loss of materials - a particular problem for the EU, which is highly dependent on imported raw materials. Current EU policy aims to reduce both the environmental impact of waste and the use of raw materials needed for production processes. Nowadays, the challenge of urban waste is approached from two perspectives; the waste hierarchy and the life-cycle approach. These combined approaches are the building blocks of the current thematic strategy on waste.[5]

In order for the results of the focus groups to be translated into outcomes which are relevant and beneficial for European research, the VOICES focus group design explicitly uses these same two approaches in presenting the topic of urban waste and in structuring the exercises. The vision of a 'zero waste society' is used as a

focus for the participants while thinking about possible innovations and the techniques and knowledge necessary to develop them.

The waste hierarchy is initially depicted as a pyramid with a wide base representing disposal in a landfill, a second layer representing recovery of energy through incineration, a third layer representing recycling, a fourth representing reuse and the top (and smallest one) representing prevention. This reflects the current situation of waste management in Europe. In order to achieve a 'zero waste society', this pyramid should be turned around and its top, prevention, should become very wide while its base, landfill, very narrow.

The five-step waste hierarchy can be used as a rule of thumb when choosing between options of waste management, with prevention as the most preferred and disposal in landfill as a last resort. However, all products and services have environmental impacts in various stages of their existence. To avoid shifting negative impact from one stage to another, the life-cycle approach is also considered. Life-cycle thinking involves looking at all stages of a product's life - from the extraction of raw materials for their production to their manufacture, distribution, use and disposal - to find out where improvements can be made to reduce environmental impacts and use of resources.

2.3 Analysis of the focus groups

After each focus group, a summary report was written by the moderators based on the note taker's notes and the information on the flip charts. A draft of this summary report was sent to the focus group participants who were asked to comment on it. Moderators collected any feedback and included it in the final version of the summary report as an annex. The audio recording of each focus group was transcribed word-for-word and translated into English for analysis. The translated transcripts were coded and analysed using MaxQDA, a programme for qualitative data analysis. For the analysis of the data, both structured analysis as well as open coding were used. Structured analysis was carried out by using a predesigned coding sheet based on preliminary research. This type of analysis allows for all relevant outcomes to be extracted from the raw data. Open coding runs parallel to the structured analysis and allows for insights unforeseen by preliminary research to emerge. The summary reports of the individual focus groups have been used to validate and complement the analysis.

2.4 Ethical issues

At the beginning of the focus groups, all participants were asked to sign an informed consent form providing information on the topic and aims of the focus group. It was explained that participation was voluntary and participants were free to withdraw at any time, without giving reason. The form obtained participants' approval for audio and video-recording of the focus group, for the use of the resulting data for research purposes, including the use of anonymous quotes, and for data storage for five years. All data were processed anonymously.

[1] Krueger R.A. (1994). Focus Groups: A Practical Guide for Applied Research. Sage: Thousand Oaks, California

[2] The typology of low, medium and high education level is based on the International Standard Classification of Education (http://en.wikipedia.org/wiki/International_Standard_Classification_of_Education)

[3] The urban-rural typology is based on the new urban/rural typology developed by the European Commission (http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Urban-rural_typology)

[4] Questions and Answers, Thematic Strategy on the prevention and recycling of waste and the proposal for the revision of the Waste Framework Directive (Available at: http://ec.europa.eu/environment/waste/pdf/faq.pdf)

[5] Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee of the Regions on the Thematic Strategy on the Prevention and Recycling of Waste, Brussels, 19.1.2011, COM (2011) 13 final; EU Waste Policy - The Story behind the strategy, 2006

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3. Country relevant data - Cyprus

This chapter of the report presents relevant data about the country and local focus groups. This includes demographic data, data related specifically to local waste management and information concerning the setting of the local focus groups.

3.1 Demographic country data

In terms of population, Cyprus is one of the smaller EU countries with over 800,000 inhabitants. All inhabitants (100%) live in intermediate areas according to the urban-rural typology.

Table. 3.1 Population Data[6,7,8]

		2011	
Population at 1 January		839 751	
Population as percentage of EU27		0.2%	
Gross Domestic Product (PPP)		23 700 Euro	
Population urban-rural typology	Urban		
	Intermediate	804 000	100%
	Rural		

3.2 Factsheet on waste

The amount of municipal waste generated and treated in Cyprus is considerably higher than the average amount of waste treated in the EU27. Cyprus has high levels of MSW generation and focus on minimisation is a priority for the country.

Cyprus ranks 18th on the EU27 ranking list on Municipal Solid Waste Recycling (MSW). The total recycled MSW as a percentage of generated MSW doubled in the decade between 2001 and 2010, increasing from around 10% to 20%, with a sharp increase from 2009 to 2010. According to existing trends and tentative projections, Cyprus will need to make an exceptional effort in order to fulfil the 50% recycling target of the EU Waste Framework Directive by 2020.[9]

Table 3.2 Municipal Waste[10,11]

		Cyprus		EU27 average	
Municipal waste generated (kg per person)		760 kg		502 kg	
Municipal waste treated (kg per person)		760 kg		486 kg	
Municipal waste treated	Landfilled	608 kg	80%	185 kg	38%
	Incinerated	0 kg	0%	107 kg	22%
	Recycled (material recycling)	122 kg	16%	122 kg	25%
	Composted (organic recycling)	30 kg	4%	73 kg	15%

3.3 Composition of the focus groups

In Cyprus three focus groups (FGs) took place on the weekend of 30th March 2013. They were held at CYMAR Market Research, in Nicosia, moderated by Christos Marangos, Senior Research Executive.

In total, 30 people (13 male and 17 female) participated in the three FGs. 10 participants were aged between 18 and 35 years, 10 between 36 and 50 years and 10 were aged 51 or older. With respect to education, 12 participants had a high level of education, 15 a medium level and 3 had a low level of education. 17 participants were working, while 10 were unemployed and 3 were retired. 16 participants live in a house and 14 in a flat. Details of the composition of these focus groups are presented in the table below.

Table 3.3 Composition of the Focus Groups

		FG1	FG2	FG3	TOTAL
Participants	Total	10	10	10	30
Gender	Male	4	5	4	13
	Female	6	5	6	17
Age	18 - 35	10	0	0	10
	36 - 50	0	10	0	10
	50+	0	0	10	10
Education	High	4	5	3	12
	Medium	6	4	5	15
	Low	0	1	2	3
Employment	Unemployed	6	2	2	10
	Employed	4	8	5	17
	Retired	0	0	3	3
	Student	0	0	0	0
Housing	Flat	5	5	4	14
	House	5	5	6	16

[6] Eurostat Statistics Database Online (http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database)
[7] Eurostat Newsrelease (http://europa.eu/rapid/press-release_STAT-12-51_en.pdf)
[8] The urban-rural typology is based on the new urban/rural typology developed by the European Commission (http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Urban-rural_typology)
[9] European Environment Agency (2013). "Managing municipal solid waste - a review of achievements in 32 European countries" EEA Report No 2/2013 (http://www.eea.europa.eu/publications/managing-municipal-solid-waste)
[10] Eurostat Newsrelease (http://europa.eu/rapid/press-release_STAT-12-48_en.pdf)
[11] The reported quantities of waste *generated* and *treated* do not always match exactly due to one (or more) of the following reasons: Estimates for the population not covered by collection schemes; Weight losses due to dehydration; Double counts of waste undergoing two or more treatment steps; Exports and imports of waste; Time lags between generation and treatment (temporary storage)

4. Results

This chapter describes the overall results of all focus groups held in Cyprus. The chapter includes three sections, which are structured according to the exercises of the focus groups. The first section provides insight into what people think and do with respect to waste management at the household level. The second section provides an overview of barriers and concerns of the participants about current urban waste prevention and management, and identifies underlying reasons for the reported barriers and concerns. The third section presents participants' ideas for research and innovation needed in order to achieve a 'zero waste society' including concrete information on the research category, the aim of the research, the proposed target group and the perceived priority of the research idea. Participants' ideas for policy, management and communication are included as well. Throughout the results, quotes of focus group participants are provided for illustrative purposes.[12]

4.1 How is waste managed at household level?

This section describes what people know and do with respect to household waste. It includes four parts. First, an overview is given of the types of waste that are generally collected separately and those that go in the general bin. The second part provides insight into how the waste is collected, while the third part describes what participants think happens to the waste after it is collected. The fourth part describes whether people deal with waste as they are supposed to and to what extent they think waste management is conveniently organised.

4.1.1 Waste separation

Most participants stated that there are separate waste bins available in the neighbourhood or in their apartment building, with a different colour for each waste type:

> *"Below the apartment building there are specific bins for recycling, I put them in a plastic bag and take them myself." (Cyprus FG2, P7)*

Few participants indicated that no recycling facilities were available to them. The bins for separate waste are mainly for paper and glass; some participants mentioned that only bins to recycle paper are available to them. Participants stated that there are also bins available for aluminium, tetra packs and plastic. However, the majority of the participants put these items together in refuse bags and put them on the street for collection. All other household waste goes together into one refuse bag, including leftover food.

Garden waste are also separated, according to the majority of the participants, as well as batteries and chemicals. Household appliances, electronic appliances and furniture are mainly brought to landfill, charity organisations (such as churches) or recycling centres. A few participants said that, in their living area, the municipal authorities inform the residents that this type of waste will be collected and people can put it on the street. However, there is no regularity in this type of service. In some cases, old clothing is brought to charity organisations; other participants state that there are special bins available for old clothing.

[12] Abbreviations used in quotes: FG# = number of focus group, P# = number of specific focus group participant, PX = number of focus group participant unknown, M = Moderator.

4.1.2 Waste collection

There are two common methods of waste collection that emerged from the focus groups. Most commonly, waste is put outside the house in refuse bags, which are collected by the municipality once a week. The second way to collect waste is by putting the refuse bags with common waste in special bins in the neighbourhood. These bins are emptied by the municipality once a week:

> *"There is a bin for plastics, paper, glass, and the municipality comes once a week for recycling, for recyclable materials, and there is also the usual individual bin outside each house which is emptied twice a week by the municipality." (Cyprus FG 1, P4)*

This is different for people who live in apartment complexes: they bring the waste to a general container below the apartment, from where the municipality collects the waste.
Specific types of waste, such as chemicals, garden waste and large items (such as furniture) are usually collected separately by the municipality. According to some participants this is done once a month, while others state that the frequency of collection is three times a year or only on appointment.

Several participants mentioned that they have to go to the landfill themselves to dispose of larger appliances such as furniture, metal and garden waste. Some participants mentioned that they also bring their general waste here in refuse bags. Batteries can be brought to special boxes, which are made available at specific locations, such as supermarkets and other stores. Some participants stated that they burn their garden waste or make compost of it. The waste that goes to charities is brought there by the participants themselves (such as used household appliances), except clothing which may be put into special bins and collected by the charities themselves.

4.1.3 Knowledge about waste pathways

Most participants have limited knowledge about the pathways after disposal of general waste. Most participants assume that the municipality brings it to landfill or incineration sites, but they claim not to know exactly what happens with the waste. Participants assume that the waste that is separated, such as glass, paper and sometimes plastic, is "probably recycled". They say this because they think that otherwise, the different bins would not have been made available. However, they do not know if, how or where recycling is done:

> *"[M] And where does this [separated waste] end up?*
> *[P7] I don't know.*
> *[M] And what happens to it then?*
> *[P8] Recycling, I imagine.*
> *[M] But they are incinerated?*
> *[P8] I believe yes...*
> *[...]*
> *[M] So, plastic bottles are put outside the house in a plastic bag and they go for recycling?*
> *[P5] I don't know where they go.*
> *[M] Oh?*
> *[P5] Recycling. That's all I know. We don't know anything else." (Cyprus FG2)*

4.1.4 Waste management behaviour and convenience

It was not completely clear from the focus groups whether people separate and recycle correctly. People mentioned their opportunities to separate waste; sometimes indicating that they take these opportunities, and sometimes not indicating whether they do or not. Some participants mentioned reasons not to separate waste. For instance, one person mentioned that it can be easier not to separate. Another person mentioned

that recycling is not done because of 'the greater good' but in order for people who are in the waste management business to make money. Since he believes this is not fair and nobody deserves to make profit on people's waste, he would see this as a reason not to separate waste. One participant mentioned not always complying, even though waste separation is made available in the area:

"We throw them all together, to be honest." (Cyprus FG2, P4)

4.2 Barriers and concerns regarding urban waste

This section provides an overview of the participants' barriers and concerns with respect to current urban waste and identifies underlying reasons for the reported barriers and concerns. The section consists of four parts. The first part, 'Waste prevention and production', focuses on barriers and concerns related to goods in the phase before they enter the household including both waste prevention and production. The second part, 'Waste management in the household', addresses goods and waste in the phase while they are in the household. The third part, 'Waste disposal and pathways', describes barriers and concerns related to the phase in which waste is disposed. Relevant issues related to urban waste management that could not specifically be related to the three parts mentioned before are described in the fourth section, 'Other urban waste issues'.

4.2.1 Waste prevention and production

Two concerns emerged from the focus groups regarding waste prevention and production. One of the participants expressed a concern about consumer society, meaning that nowadays people buy many things they do not need, resulting in more waste.

A second concern is that people do not bring their own bags when shopping and use plastic bags instead. This contributes to the production of plastic waste. The participants did not elaborate further on these concerns.

4.2.2 Waste management in the household

Participants mentioned several barriers and concerns they have while dealing with waste in the home. In general, they stated that it is difficult to get citizens to start separating their waste because this is still a relatively new concept to them. The participants believed this is easier in other EU countries, because there, citizens have been used to it for many years or even since they were born, while in Cyprus, people have never thought about waste:

"[P7] The fact that for many years they didn't recycle and now it is hard to start this process.
[M] The right culture for it is not there, then?
[P7] Yes, because for many years we didn't have recycling, OK, there was less rubbish, fewer people, now it is very hard to get into this habit." (Cyprus FG 1)

Participants in all focus groups said that separating waste is time-consuming. They explained that when they, or their family members, are in a hurry, they would rather put all the waste together. Furthermore, sorting waste like paper and plastics requires a lot of space in the house, as was indicated by several participants. One stated that:

"You even need space in your house to make this division. With the plastics, over here your paper, over there... [...] It is a barrier, because if you don't even have the space to separate..." (Cyprus FG2, P5)

Participants in all three focus groups also mentioned several barriers related to the cost of waste management. For example, participants mentioned that, in some areas, the municipality used to provide the refuse bags for

different types of waste, whereas nowadays residents in those areas have to buy them themselves. Participants considered these extra expenses to be a barrier to separating waste, especially considering the current economic crisis.

"Now we buy the bags, while in the past, when we started recycling, the municipality gave them to us. [...] So now with the financial crisis, it's even more difficult to buy them..." (Cyprus FG2, P4)

Another problem concerning costs that was mentioned in several focus groups is that recycling costs money and municipalities do not always have extra budget for it. For example, some municipalities do not have enough money to make recycle bins available for each home. One participant, however, stated that people working in the waste management business make profit from recycling. He therefore believed that recycling is not promoted for the greater good but for those people's wealth. This participant stated that he would rather put all waste together than help these people make money with his waste.

A general barrier that was mentioned in all focus groups is that people do not have enough knowledge about recycling and what this implies. Furthermore, they do not understand its importance. People do not know why they should recycle, how they should recycle, how they can prevent creating more waste and where the waste goes.

"Generally, people cannot understand the importance of waste management." (Cyprus FG 1, P4)
"It concerns me that some people do not fully understand the meaning of recycling." (Cyprus FG 1, P 1)

Most participants agree that people are not given the motivation to separate waste. For instance, there are no incentives - such as financial reimbursement - for people who sort and recycle their waste. If people are not encouraged by the authorities, they are less likely to comply with the available recycling system.

Participants stated several times that there are not enough recycle bins in apartment complexes. Furthermore, it is stated that some bins are not emptied regularly by the municipalities. As a result, the bins get full and can start to smell. Therefore the people living in these apartments decide not to use those bins but put all their waste together instead:

"Let me tell you, let's say for example where I live, there are two apartment blocks with approximately 15 families and we have only one bin. [...] And they come once a week or once every one and a half weeks and the bins get full, and you can't even pass from there." (Cyprus FG 1, P2)

Finally, one participant explained that more waste is created in Cyprus than in other European countries, because it is not allowed to throw toilet paper down the toilet. This was a concern to this participant since this way Cyprus generates more waste.

4.2.3 Waste disposal and pathways

Participants in all focus groups mentioned a number of flaws in the waste management system that form a barrier for them to easily and properly dispose of their separated waste.
The first of these barriers has to do with a lack of facilities for separated waste. Some participants mentioned that they have heard there are several bins in the neighbourhood for different types of waste; however, they do not know where they are and therefore cannot use them:

"I heard people here saying that there are different colour bins, I haven't seen any yet." (Cyprus FG2, P3)

Other participants stated that they do know where the bins are located, but that there are an insufficient number of bins in the neighbourhood. Some participants think that the lack of bins in a neighbourhood and the lack of waste management sites are due to financial problems of municipalities.

Several participants pointed to another problem within the waste management system that constitutes a barrier for them to properly dispose of their separated waste. The issue that participants perceive as a barrier is that citizens have to bring larger materials, such as furniture and electronic appliances, to a landfill or recycle centre

themselves. They argue that driving to these places costs them money (for fuel) and costs them time. It is also difficult to lift and move these larger objects. People are dissuaded from sorting used batteries as special boxes for batteries are not available in all neighbourhoods and people have to go to a different area for recycling:

"For us it it's the lack of bins in the area: the fact that we have to take our rubbish and separate it, put it in the car and take it to Nicosia [a landfill], or we give it to someone who is going there. And because there are also no bins for batteries in our village, we need to go to another area for that too." (Cyprus FG 1, P9)

A final concern was mentioned with regard to waste disposal, about reuse. Two participants were concerned about the safety of reusing materials. They wondered whether recycling waste into new materials poses a health threat.

In two focus groups, several concerns were mentioned about waste pathways. In one focus group, participants stated that people do not know what the results of recycling are, because the factories do not share these results. According to the participants, this lack of awareness creates a general concern for the future. In addition, they think that the authorities are not aware of the issues at stake and do not take the waste problem seriously:

"[M] This note says: 'I am concerned because they do not take this issue of waste seriously.' What do you mean, is it public authorities that do not take it seriously?
[P2] Those who give orders in this area." (Cyprus FG 1)

In general, it was stated that dealing with waste is new for municipalities and the country as a whole. Therefore the setting-up of waste pathways is still in its infancy. This is a general barrier to waste separation in Cyprus. Furthermore, participants in one of the focus groups said that currently they are not aware of what happens to waste at a landfill and this makes them worry about possible health threats posed by landfills. An example is that they are concerned about the capacity of the landfills. They were worried about what will happen with waste once the landfills are 'full':

"And how far can landfills go when we keep on putting stuff there? It is a concern." (Cyprus FG 1, P7)

Participants went on to discuss that they find it important to reduce landfills, by burning waste, for instance. However, they are concerned about health issues, which arise when burning waste from landfills. According to participants the fumes from the incineration can be toxic when inhaling them:

"They should start cleaning [the landfills]. If they are to be reduced, they should set them on fire and burn them. It means that they are reduced but all that pollution..." (Cyprus FG 1, P9)

The problem of pollution and the effect on the environment due to fumes from incineration of waste was also mentioned in the other focus groups as a concern.

Although the participants are concerned about their health when waste is burned, in two focus groups concerns were also raised about the impact of landfills on their health if they are *not* incinerated. Since people sometimes bring waste to the landfill themselves, they are worried about the lack of hygiene at landfill sites, as landfills are considered by many focus group participants to be a source of germs and infection. Landfills are also considered a source of soil contamination. Most participants are worried about the future environment, since people will keep generating waste, while no safe means of disposal is currently available in Cyprus.

"[M] 'I am concerned about the future if we do not improve recycling.' Can you explain this to us a bit more?
[P10] [...] there isn't anywhere where we can take everything [all waste] to the same place, and if this continues in the future, what is going to happen?" (Cyprus FG 1)

4.2.4 Other urban waste issues

Most participants agreed that their culture causes a lack of awareness; dealing with waste is not in the culture of Cyprus, people are not used to this and therefore it is difficult to get people to start caring.

4.3 Citizens' ideas on how to realise a 'zero waste society'

This section presents participants' ideas for achieving a 'zero waste society'. A distinction is made between ideas related to environmental sciences and technology, and ideas related to policy, management and communication. Below, these ideas are described separately in tables. For each idea in the table, the research category is mentioned as well as the aim of the research and the proposed target group. In addition, the priority of the research idea as perceived by the participants is indicated in the tables, using stars to indicate the number of stickers assigned to a specific idea by the participants. Only ideas that were prioritised by the participants are described in this section. Ideas that were not prioritised are included in the full list of research ideas which is provided in Annex 1.

4.3.1 Environmental sciences and technology

TECHNICAL, PHYSICAL, CHEMICAL, ENGINEERING

The first category related to the domain of 'environmental sciences and technology' involves ideas that focus on 'technical, physics, chemical, engineering'. These ideas generally involve machines and devices that can effectively use waste and improve recycling. Participants find this important, because they:

"....do not want to waste the waste." (Cyprus FG 1, P2)

The target group for these devices and machines are above all the consumers who will need to use them.

In this category, the idea ranked highest priority is to make a car that can run on waste. This idea was mentioned in two of the focus groups, with a slight difference concerning the details on how the car would work. In the first focus group, participants proposed that the consumer would put organic household waste directly into the car, making it literally run on waste. In the other focus group, participants imagined that different types of waste would be combined to make biofuel, which then could be bought by the consumer to fuel cars:

"Well, the waste we take out of the house, apples, bones, other things, I don't know, we should build a car and put this waste in the place where you put fuel or petroleum, to melt them and use them in the car as combustible material." (Cyprus FG2, P 10)

Participants ranked this idea as high priority, first, because this new type of fuel would reduce costs, and second, because the fumes from this type of fuel would be less hazardous to the environment and inhalation of fumes would be less harmful to health.

The second idea to which the participants gave priority combines three ideas. Generally, the idea is to have a machine that can turn organic household waste into either fertiliser, food for pets or energy. These ideas were sometimes mentioned separately and sometimes together. Making fertiliser from waste was chosen as important. Making fertiliser from waste would be financially beneficial for consumers because it would be much cheaper than standard fertiliser due to lower production costs. Converting waste into food for pets was also prioritised for financial reasons. The machine that makes energy from waste would reduce waste and make use of existing waste.

Another idea aims to retrieve water from organic household waste, which can then be purified and used for drinking water to relieve water shortages in Cyprus. This idea was mentioned in only one of the focus groups but it did receive high priority from the participants of that group. In order to make this idea possible, every household would need a machine for all their organic household waste. The machine then crushes waste together, the solids and liquids are separated and water is harvested. Reasons to prioritise this idea mainly concerned the fact that water is a source of life and finding a way to make more water available seems to the participants as highly important:

"Because water is the Alpha and Omega in a person's life [...] if you don't have water, you can't live. Anything that lives on Earth needs water, whether it's a person or an animal." (Cyprus FG3, P 10)

The next two ideas both concern ways to make people recycle more by improving the convenience of waste separation. One idea was a machine that can separate waste automatically. This would mean that people can throw all their waste together in one bin, but the machine would sort it by waste type. The other idea is also a way to improve people's convenience in waste separation, by giving them easy access to the waste disposal system. Here, an underground sewage system has to be put in place that can transfer recyclable items into a central location for collection. The underground waste management system could be accessed by every house or apartment building. These ideas are prioritised because they save time, since the waste does not need to be taken anywhere; they save space in people's homes because no bins are needed; and they are more convenient because waste can be thrown away at any time instead of having to wait for the municipality to collect it.

Another idea proposed a machine in every home to harness energy from non-biological waste, such as plastic, glass and paper. The machine then melts the materials and somehow turns them into energy for the house, both recycling and effectively generating energy. There was no further elaboration on this idea.

The next idea aims to improve the recycling of waste by motivating people to recycle more. The idea particularly focuses on plastic, glass and paper. For this idea, a system has to be introduced that weighs the amount of waste and dispenses cash, according to the weight and type of waste. This system has to be made available at recycling bins for glass, paper and plastic in neighbourhoods. According to the participants, a financial reward is a good incentive to encourage citizens to recycle:

"To gain from the work that I do [to recycle]. [...] I'll give paper, I'll give plastic, I'll take it to them and earn money." (Cyprus FG3, P2)

The next idea was mentioned in two focus groups and involves the distribution of various drinks (milk, fruit juices and fizzy drinks) from taps in the home, similar to the way water is provided. This would mean that packaging like bottles, boxes and cans are no longer needed. The other drinks could come from big tanks in the neighbourhoods. This way less waste is created:

"I prioritised this idea, because if you have a machine like that in your house, whatever liquid you want, you would not have to buy. Rather than throw all those boxes away, you just turn on whatever liquid you want to get." (Cyprus FG2, P2)

The next four ideas concern effectively reusing waste by converting it into a new or improved usable item. First, there was an idea of a machine that converts old clothes and other fabrics into carpets, quilts, pillows and blankets. Second, the construction of a machine for clothes and shoes was proposed to change the colour or the print in order for them to be reused. Third, a machine was envisaged which crushes paper and makes it into plasterboard, to be used as a building material. Lastly, the participants said that a machine should be made to convert wooden waste, such as furniture, into fuel that can be used in fireplaces. All these ideas would make it possible and convenient for people to recycle or reuse waste in their own homes. Moreover, these ideas would reduce household expenses because the machines would allow people to reuse their own waste.

The last two ideas which received priority ranking aim to reduce the resources used to make household appliances and, at the same time, reduce the number of appliances that need to be bought. The first idea is to create a multifunctional appliance, such as a cooking pot that can also be used as a plate. The second idea is to make electrical appliances with multiple uses, such as a washing machine that is also a television.

"Here we thought of a structure which will have multiple uses. For example instead of having a spoon, knife and fork we could have one thing that does all three. Saving on materials, for example, and chemicals." (Cyprus FG 1, P 7)

Table 4.3.1 Ideas within the category 'technical, physics, chemical, engineering' that received priority, ranked accordingly

Category	Idea	Aim	Target Group	Priority
Technical/ Physics/ Chemical/ Engineering	Car which runs on biological household waste	Effective use of waste	Consumers	☆☆☆☆☆☆☆☆☆☆☆☆
	Machine which can make organic household waste into either food for pets, fertiliser or energy	Effective use of waste	Consumers	☆☆☆☆☆☆☆
	Create a machine which can retrieve and purify water from biological household waste	Effective use of waste	Consumers	☆☆☆☆☆☆
	Machine which automatically separates waste at home	Improve recycling/ Convenience in the home	Consumers	☆☆☆☆
	Underground sewage system which can send recyclable items from a home into a central location for collection	Improve recycling/ Convenience in the home	Consumers	☆☆☆☆
	Machine which can harness energy from non biological waste (plastic, paper, glass) in the home	Improve recycling/ Effective use of waste	Consumers	☆☆☆
	Machine at recycling bins which dispenses cash according to the inserted weight of waste	Improve recycling	Consumers	☆☆☆
	Drinks come from taps in the home	Less waste production/ Less packaging	Consumers	☆☆☆
	Machine which processes used fabrics into carpets/ quilts/ pillows/ blankets	Effective use of waste	Consumers/ Producers	☆
	Machines which changes colour or print of used clothes and shoes	Effective use of waste/ Less use of resources	Consumers	☆
	Machine which crushes paper and converts it into plasterboard	Effective use of waste	Producers	☆
	Machine that processes wooden waste and converts it into domestic fuel	Effective use of waste	Consumers/ Producers	☆
	Manufacture of household appliances with multiple uses	Less use of resources	Consumers/ Producers	☆
	Electrical appliances with multiple functions	Less use of resources	Consumers/ Producers	☆

BIO(TECHNO)LOGY

A second category of prioritised ideas within the domain of 'environmental sciences and technology' is 'bio(techno)logical'. In this category, participants mentioned two ideas, both of which are targeted at consumers.

The highest ranked idea in this category deals with the effective use of biological household waste. Special fertiliser or soil should be created from vegetable and fruit peelings and leftovers for the cultivation of vegetables. This would be more convenient than going to the supermarket for fruits and vegetables, while dealing with the problem of food going to waste:

"However difficult it is for this idea to happen, it should happen because one time I bought 20 kilos of potatoes, […] I wasted ten kilos…" (Cyprus FG3, P7)

The second idea is to manufacture a pill that can replace all types of food. People can either take the pill, or the pill has to be put in a microwave and it will change into a certain food product. The first aim of this pill is to reduce waste production; participants stated that they often have leftover food or food gone bad that they have to throw away. With food pills, they argue, this would not happen. Furthermore, the waste that normally comes from food packaging will no longer be a problem:

"[P2] To feed people there should be special pills.
[P1] So there won't be waste.
[P3] Because it is parallel to feeding… me for example, one head of lettuce, half I'll throw away […] and if I have five potatoes to peel my basket is full. […] these things create a lot of trash, in one day you can fill a bag." (Cyprus FG3)

Table 4.3.2 Ideas within the category 'bio(techno)logical' that received priority, ranked accordingly

Category	Idea	Aim	Target Group	Priority
Bio(techno)-logical	Create fertiliser or soil which allows cultivation of vegetables and fruits from their waste or peelings	Effective use of waste	Consumers	☆☆☆☆☆
	Create a pill which can replace food	Less waste production/ Less packaging	Consumers	☆☆☆

4.3.2 Policy, management and communication

POLICY

The first category in the domain of 'policy, management and communication' involves ideas that focus especially on 'policy'. These ideas aim to produce less waste and to enable more recycling. The ideas are aimed at consumers and producers.

The highest priority idea within the policy category aims to increase the number of consumers that recycle, by introducing a new policy that provides an incentive. Participants proposed a system such that when people bring their waste to recycling bins in the neighbourhood, they insert a card, which is then credited according to the weight and type of waste:

"We can say many things about how the consumer is rewarded, for instance to be given credit for recycling: 'Oh I brought these items, how much do I get for it?' […] Based on quantity, waste type etcetera, his card will be credited. So in the end, if I say I brought glass then I should get this amount of credit and I brought food waste so I should get that amount." (Cyprus FG2, P6)

The second highest priority idea targets producers. Here, the participants argue that scientists do come up with 'greener' ideas, such as ideas to produce less waste, but that these ideas are financially less profitable for companies and therefore not used. The participants want legislation to ensure that companies have to use these 'green' ideas even though they might not be financially optimal.

The third and fourth highest priority ideas both propose policies to reduce waste production and are targeted at producers. The first of these ideas concerns a policy measure that ensures that packaging materials, such as plastic and paper, are replaced by glass. Glass can be reused several times, while paper and plastic are thrown away as waste. This idea was prioritised because participants considered plastic to be one of the most problematic waste materials. The second idea aims to reduce waste production by introducing a policy measure that ensures that factories (producers) only use materials that can be recycled or reused.

Table 4.3.3 Ideas within the category 'policy' that received priority, ranked accordingly

Category	Idea	Aim	Target Group	Priority
Policy	Policy which introduces a financial incentive (by means of a credit card) for using recycling bins	Improve recycling	Consumers	☆☆☆
	Legislation which enables the usage of scientists' 'green ideas'	Other	Producers	☆☆☆
	Replace paper and plastic packaging with glass, because this is a material that can be recycled	Less waste production	Producers	☆
	Factories (producers) can only use materials that can be recycled or reused	Less waste production	Producers	☆

MANAGEMENT AND LOGISTICS

The second category related to the domain of 'policy, management and communication' that contains prioritised ideas is 'management and logistics'. Related to this category, three ideas were assigned priority by the participants.

The highest ranked idea in this category mainly aims to increase the reuse of plastic as a production material. For instance, participants argued that recycled plastics can be used in construction, for example as doors, doorframes or window frames. The participants argued that with this idea, less wood would be needed, which has a positive effect on the problem of deforestation. In the argumentation for prioritising this idea, it was also mentioned that it would be less expensive for construction companies to reuse materials, since they would not have to buy expensive new materials. This would reduce the price for certain products for consumers as well.

The second idea was mentioned and prioritised in all focus groups, with slight differences in the details of the idea. The idea targets consumers in order to reduce waste production, and consists of two parts. The first part of the idea is to make plastic bags unavailable at supermarkets, in order to encourage consumers to use wicker baskets instead. This would support local production (because these baskets are made in several provinces of the country), reduce unemployment and, at the same time, clean the local rivers:

"[P7] Because I come from a province which made and manufactured wicker baskets, the idea is to have a steady reduction in plastic bags and replace them with wicker baskets. So people can work and live with the resources in the rivers. In other words, to go back sixty years, what they took from us. [P6] Yes, and we gave a solution so people will come, we have unemployment, in basket weaving. It's also a tourist product. And the rivers get cleaned. [P2] Going to the supermarkets carrying a wicker basket!" (Cyprus FG3)

In another focus group, this idea was mentioned as well, this time with respect to the use of leather bags instead of wicker baskets, since leather is a material that lasts a long time without needing replacement.

As part of the same idea, the participants suggested bringing glass bottles to the supermarket and refilling them there with milk, juice, lemonade and other liquids. People can also bring boxes, which can be filled with products such as cereal. According to the participants, this idea is relatively easy to set up and can be done for many more products. Participants want all shop owners throughout the country to set up the possibility for consumers to carry out this idea. This way, less packaging of products is needed, resulting in less waste production.

Another idea within the category of management and logistics was raised in all focus groups. Participants found that too many books, magazines, flyers, newspapers, letters etc. are distributed. A lot of this is never read and creates a lot of extra waste:

"...the zero use of paper. [...] Such as all those letters, I don't know, they should be sent electronically. Is it necessary for the bank to send you five letters a week?" (Cyprus FG3, P9)

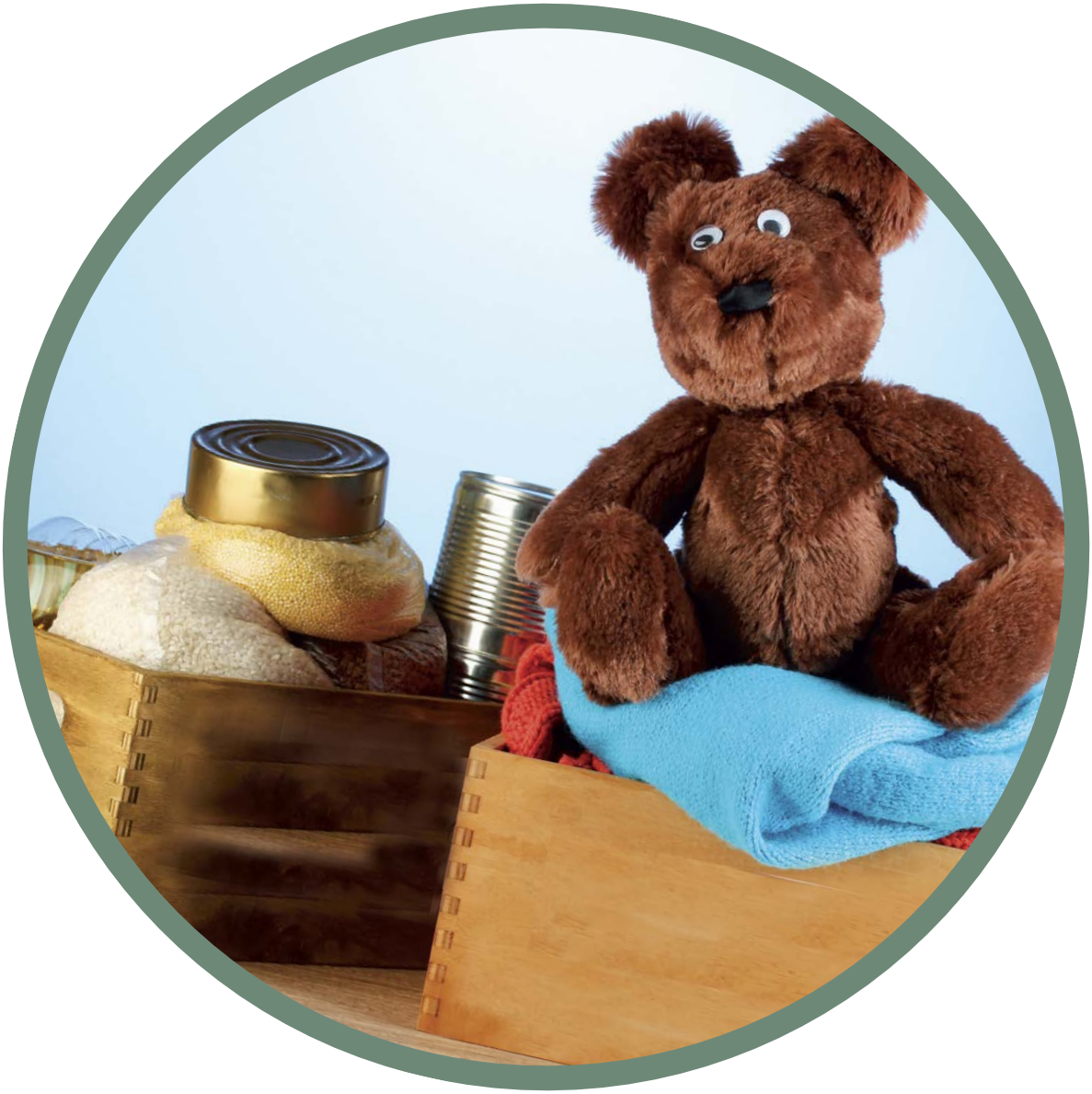
The idea is to replace all printed information with digital information, thus producing less waste.

The last idea within this category aims to reduce waste production in the form of batteries. The idea is to make appliances which do not work on batteries but, instead, use either solar or kinetic energy. An example of the latter was children's toys that can charge themselves when in motion:

"Rechargeable items: there could be something like in toys where instead of using batteries we could use the energy from motion, like winders on toys, there should be something similar so that there is no need for batteries. Kinetic energy should be used." (Cyprus FG 1, P9)

Table 4.3.4 Ideas within the category 'management and logistics' that received priority, ranked accordingly

Category	Idea	Aim	Target Group	Priority
Management/ Logistics	Reuse of plastics in construction work	Effective use of waste/ Effect on planet	Producers	☆☆☆☆☆☆☆
	Usage of wicker baskets or leather bags instead of plastic bags and replace product packaging with people's own boxes and bottles	Less waste production/ Less packaging/ Effect on planet	Consumers	☆☆☆☆☆☆
	Replace all printed information with digital information	Less waste production	Producers	☆☆☆
	Appliances charged with kinetic or solar energy instead of batteries	Less waste production	Consumers	☆



5. Conclusion, discussion and evaluation

This country report presents country-specific findings from citizen focus groups in Cyprus. It is part of a wider consultation process called VOICES, which involves almost one thousand European citizens across 27 EU member states in discussing the European research priorities for the theme 'Waste as a resource'. In most member states, three focus groups were conducted. The bigger member states had six focus groups in two different locations. In Cyprus three focus groups were held.

The overall aim of the VOICES project is to identify citizens' preferences, values, needs and expectations with respect to research priorities for the theme 'Waste as a resource'. This provides input for the Consolidation Group that will define the actual priorities for the next work programme on 'Urban Waste' (call SiS.2013.1.2.1-2). In addition, it provides the methodology, the tools, the know-how and recommendations that can be adapted and used in coming years for similar initiatives.

Below, we present the main findings of the focus groups in Cyprus. First, we focus on waste management, barriers and concerns. Next, we go into the ideas identified and prioritised by the focus group participants. We close with a short reflection on the methodology of the study.

5.1 Waste management, barriers and concerns

Cyprus ranks 18th on the EU27 ranking list on MSW (Municipal Solid Waste) recycling. In the decade between 2001 and 2010, the total recycled MSW as a percentage of generated MSW doubled, from around 10% to around 20%.[13] The sharpest increase was seen from 2009 to 2010. In Cyprus, there is a very slow but steady increase in recycling, although the overall recycling is at a relatively low to medium level. These findings are consistent with the focus groups in Cyprus. Although Cypriots are generally a little more aware of waste problems and the importance of recycling in comparison to previous years, actual recycling is still not a habitual action in Cyprus. The participants felt that recycling culture is becoming more normal in Cyprus, but the new generation will be the first to actively adopt this culture.

Findings from the Flash Eurobarometer survey 'Attitudes of Europeans towards resource efficiency'[14] show that 80% of the Cypriots separate at least some of their waste for recycling or composting. This is in line with the findings in the focus groups, where the majority of the participants stated that they separate at least some materials, mainly glass, paper or plastics.

However, the results of the focus groups also show that the participants do not separate many types of waste, due to perceived barriers. The majority of the perceived barriers to waste separation are situated within the home. In all three focus groups, participants mentioned that separating waste costs more time, takes up too much space in the house and costs money, because they often have to take their waste themselves to be recycled. The other barriers that were mentioned in all focus groups concern the lack of opportunity for waste separation: there are not always enough bins available in apartment complexes and in neighbourhoods. When recycling bins are made available, they are not always clean or emptied by the municipality on time, causing foul smells which puts people off using them, putting their waste in the general bin instead. Another important barrier is the lack of incentive for people to sort waste. Cypriots are not culturally used to recycling and the participants supposed that they therefore need financial incentives to convince them to recycle.

Barriers within the category of the disposal of waste and waste pathways were not mentioned much. However, the participants had many questions about this. For instance: where does the waste go; what is the effect of landfills and incineration on the environment and on people's health; what type of waste generates what kind of pollution; and what will happen when the landfills are full? This indicates that participants had limited knowledge about waste disposal in Cyprus. They also expressed concerns about the hygiene of landfills and incineration sites. Participants stated that they have to bring waste to landfill themselves, while they believe this is a source of infection. This is in line with findings from the Flash Eurobarometer survey 'Attitudes of Europeans towards resource efficiency', where it is stated that 88% of Cypriots believe that waste management can be improved by having better waste collection services.

5.2 Ideas for achieving a 'zero waste society'

The results are divided into two main research domains, 'environmental sciences and technology' and 'policy, management and communication', which are each further divided into four categories. However, ideas were not ranked as high priority within all of these categories.

In the first domain, ideas focus mainly on the category of technology (machines and processes) and aim to use waste more effectively, to improve recycling and to make less use of resources. The vast majority of these ideas are targeted at consumers and can be divided into two groups: the first group proposes new technolo-

[13] European Environment Agency (2013). "Managing municipal solid waste - a review of achievements in 32 European countries" EEA Report No 2/2013

[14] Flash Eurobarometer No. 316 - The Gallup Organisation (2011)

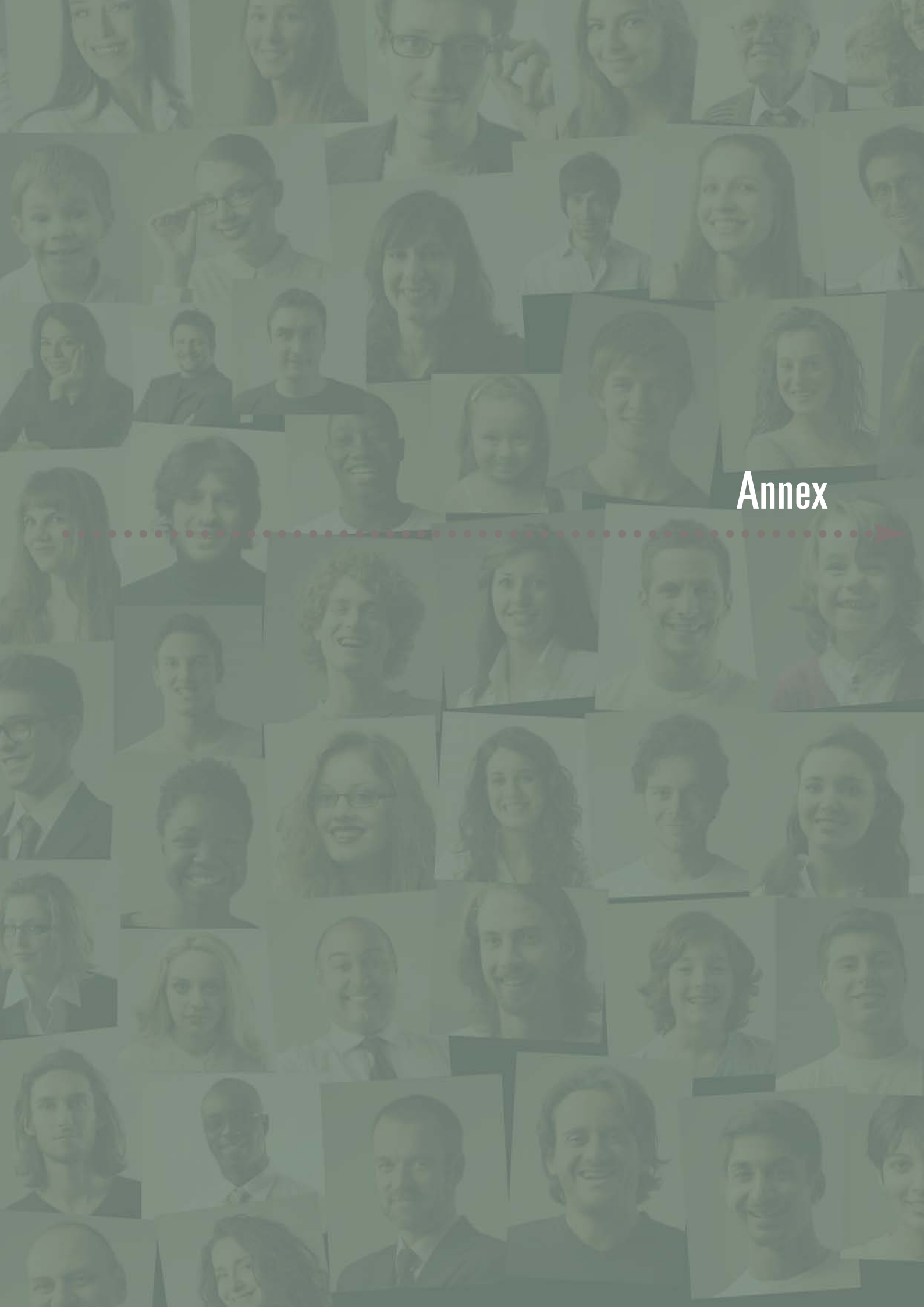
gies that enable the reuse of all sorts of products, for example a machine that turns household waste into fertiliser, food for pets or energy. The second group consists of technologies that make the sorting process of waste easier for people at home, for example a machine that sorts waste automatically, ideally connected to an underground waste transportation system. The latter is in line with findings from the Flash Eurobarometer survey 'Attitudes of Europeans towards resource efficiency', where it is said that 87% of Cypriots see an improvement in waste collection in their homes as something that would convince them to separate more waste. Two ideas were mentioned in the category of bio(techno)logical ideas, creating fertiliser or soil from organic waste and a pill to replace all types of food. These are also targeted at consumers and aim to use waste effectively and produce less packaging waste.

In the second domain (policy, management and communication) four ideas were assigned high priority within the category 'policy'. These mainly target producers and focus on reducing waste production and increasing recycling. Legislation and policy is needed to ensure companies use recyclable materials for production, and include "green ideas" in their business practices. Participants also ranked the idea of financial incentives or rewards for people who separate their waste as high priority, for example by a card to collect credits by sorting waste correctly. The second category with ideas which received priority rankings within this domain is 'management and logistics'. These ideas were ranked highly, particularly the ideas to increase the reuse of plastics in construction work and to reduce the use of packaging material in shops.

Of the three most highly prioritised ideas, the first is a car which runs on biological household waste. The second priority is shared between two ideas that received the same number of priority stickers: re-use of plastics in construction work; a machine which can make biological household waste into either food for pets, fertiliser or energy.

5.3 Reflection

The participants found the focus groups interesting, constructive and informative. Several participants mentioned that participating in the focus group raised their awareness of waste management issues and the environment. Some participants were already aware of such issues but enjoyed this opportunity to share their thoughts and ideas. Participants also started thinking about how they can change the waste separation in their own homes, leading to more effective recycling. The participants hoped that some of their ideas would be taken seriously and might be implemented at some point in the future, not only for the benefits of an efficient waste management system, but also because their ideas can yield financial benefits as well.



Annex

Annex 1: Full list of ideas for research and innovation, policy, management and communication

This table includes all ideas for research and innovation, policy, management and communication that emerged from the focus groups. For each research idea the research category is mentioned, as well as the aim of the research and the proposed target group. In addition, the priority of the research idea as perceived by the participants is indicated in the tables, using stars to indicate the number of stickers assigned to a specific idea by the participants.

ENVIRONMENTAL SCIENCES AND TECHNOLOGY

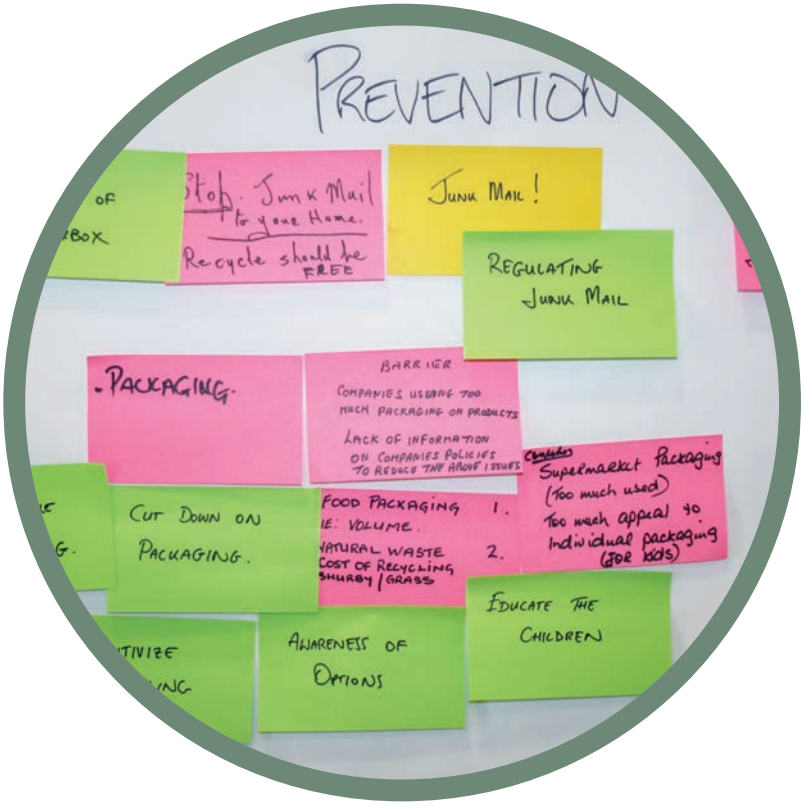
Category	Idea	Aim	Target Group	Priority
Technical/ Physics/ Chemical/ Engineering	Car which runs on biological household waste	Effective use of waste	Consumers	☆☆☆☆☆ ☆☆☆☆☆ ☆
	Machine which can make biological household waste into either food for pets, fertiliser or energy	Effective use of waste	Consumers	☆☆☆☆☆ ☆☆
	Create a machine which can retrieve and purify water from biological household waste	Effective use of waste	Consumers	☆☆☆☆☆ ☆
	Machine which automatically separates waste in a home	Improve recycling/ Convenience in the home	Consumers	☆☆☆☆
	Underground sewage system which can send recyclable items from a home into a central location for collection	Improve recycling/ Convenience in the home	Consumers	☆☆☆☆
	Machine which can harness energy from non-biological waste (plastic, paper, glass) in the home	Improve recycling/ Effective use of waste	Consumers	☆☆☆
	Machine at recycle bins which dispenses money according to the inserted weight of waste	Improve recycling	Consumers	☆☆☆
	Drinks come from taps in a home	Less waste production/ Less packaging	Consumers	☆☆☆
	Machine which processes used fabrics into carpets/ quilts/ pillows/ blankets	Effective use of waste	Consumers/ Producers	☆
	Machines which changes colour or print of used clothes and shoes	Effective use of waste/ Less use of resources	Consumers	☆
	Machine which crushes paper and converts it into plasterboards	Effective use of waste	Producers	☆
	Machine that processes wooden waste and converts it into combustion material	Effective use of waste	Consumers/ Producers	☆
	Creation of structures that have multiple uses in household	Less use of resources	Consumers	☆

	Electrical appliances that have multiple functions	Less use of resources	Consumers	☆
	Develop technology that can melt garden trimmings and furniture into 'balls' that can be used for the fire place	Effective use of waste	Consumers/ Waste management companies	
	Develop a chemical that can convert plastic into paint	Effective use of waste	Consumers	
	Make cars out of plastic waste	Effective use of waste	Consumers	
	Built-in shafts in new apartments which routes waste into downstairs bins	Improve recycling/ Convenience in the home	Consumers	
	Development of a machine where plastic is inserted and any other plastic items can be made (cups, plates)	Effective use of waste	Consumers	
Material	Toilet paper out of a new material that can be reused after filtering and cleaning	Less waste production/ Effective use of waste	Consumers	
Bio(techno)-logical	Create fertiliser or soil which allows cultivation of vegetables and fruits from their waste or peelings	Effective use of waste	Consumers	☆☆☆☆☆
	Creating a pill which can replace food	Less waste production/ Less packaging	Consumers	☆☆☆
	Production of a substance which can dissolve gardening products into fertiliser	Convenience in the home/ Effective use of waste	Consumers	
	Producing food which does not have expiry dates	Less waste production	Consumers	

POLICY, MANAGEMENT AND COMMUNICATION

Category	Idea	Aim	Target Group	Priority
Policy	Policy which introduces a financial incentive (by means of a credit card) for using recycling bins	Improve recycling	Consumers	☆☆☆
	Legislation which enables the usage of scientists' 'green ideas'	Other	Producers	☆☆☆
	Replace paper and plastic packaging with glass, because this is a material that can be recycled	Less waste production	Producers	☆
	Factories (producers) are not allowed to make anything out of materials that cannot be recycled or reused	Less waste production	Producers	☆
	Legislation which requires the return of plastics and glass for recycling	Improve recycling	Consumers	
	New system where each household gets reduction in municipality expenses each year, according to the amount of separated waste that has been handed in	Improve recycling	Consumers	
Management/ Logistics	Reuse of plastics in construction work	Effective use of waste/ Effect on planet	Producers	☆☆☆☆☆ ☆☆
	Usage of wicker baskets or leather bags instead of plastic bags and replace product packaging with people's own boxes and bottles	Less waste production/ Less packaging/ Effect on planet	Consumers	☆☆☆☆☆ ☆
	Replace all printed information with digital information	Less waste production	Producers	☆☆☆
	Appliances charged with kinetic or solar energy instead of batteries	Less waste production	Consumers	☆
	Electric appliances should be taken back by factory, where they can be reconstructed and sold again	Effective use of waste	Producers	
	The butcher should only give meat without bones	Effective use of waste/ Less waste production	Producers	
	Waste that will not pollute the environment should be thrown into the sea in containers making new land owned by the state	Effective use of waste/ Eliminate waste	Waste management companies	
	Chemical waste should be transported to dead zones, such as areas where nuclear tests take place	Other	Waste management companies	
	Lids of products should be given to organisations that can use them to make wheelchairs	Effective use of waste	Producers	

	Better management and distribution of food: do not produce more than is being used, send left over food to third world countries	Less waste production	Producers	
	Construct a larger sewage system, enabling toilet paper to be thrown away down the toilet	Less waste production	Consumers	
	More recycle bins have to be made available	Improve recycling	Consumers	
	Constructing centres where all waste can be brought, with a social function as well	Improve recycling	Consumers	
	Underground landfill	Effect on planet	Waste management companies	
Communication and education	Notifications for citizens concerning waste pathways	Awareness	Consumers	
	Seminars in schools about waste pathways	Awareness	Consumers	
	Setting up signs in neighbourhoods indicating which recycle bins are located where	Improve recycling	Consumers	
Local initiatives	Printing fewer schoolbooks by means of reuse	Less waste production/ Effective use of waste	Consumers/ Other	
	Municipality should use reusable materials for local initiatives (i.e. playgrounds)	Improve recycling	Government	



Annex 2: Attitudes of citizens from Cyprus towards resource efficiency

The data in this annex is based on the Flash Eurobarometer No. 316 - The Gallup Organisation (2011). The primary objective of the Flash Eurobarometer survey 'Attitudes of Europeans towards resource efficiency' (Flash No. 316) was to gauge EU citizens' perceptions, attitudes and practices concerning resource efficiency, waste management and recycling. In detail, the survey examined:

- citizens' perceptions of Europe's efficiency in its use of natural resources
- the amount of waste EU households produce and whether they separate that waste for recycling or composting
- preferred actions to improve EU households' and communities' waste management
- citizens' views on how to pay for waste management
- EU households' food waste production and preferred ways of decreasing that waste
- citizens' perceptions of the importance of a product's environmental impact when making purchasing decisions
- citizens' willingness to buy second-hand products and products that are made of recycled materials.

The survey obtained interviews - fixed-line, mobile phone and face-to-face - with nationally representative samples of EU citizens (aged 15 and older) living in 27 Member States. The target sample size in all countries was 1,000 interviews. Below we give the results from Cyprus.

Question	Answer	%	EU27 Average
Do you think Europe could be more efficient in its use of natural resources?	Yes	86%	87%
	No	5%	5%
	DK/NA*	9%	8%
Do you think that your household is producing too much waste or not?	Yes	57%	41%
	No	43%	58%
	DK/NA*	0%	1%
Do you separate at least some of your waste for recycling or composting?	Yes	80%	89%
	No	20%	11%
	DK/NA*	0%	0%
What initiatives would convince you to separate (more) waste?	More and better drop-off points for recyclable and compostable waste	90%	76%
	Improve separate waste collection at your home	87%	67%
	More information on how and where to separate waste	84%	65%
	Legal obligation to separate waste	62%	59%
	Taxes for waste management	54%	39%
What initiatives would improve waste management in your community?	Better waste collection services	88%	70%
	Stronger law enforcement on waste management	66%	65%
	Make producers pay for collection and recycling of waste	62%	63%
	Make households pay for the waste they produce	39%	38%
Which one would you prefer: to pay taxes for waste management or to pay an amount related to the quantity of waste your household generates?	To pay taxes for waste management	12%	14%
	To pay proportionally to the quantity of waste you generate	80%	75%
	DK/NA*	8%	11%

Which one would you prefer: to pay taxes for waste management or to include the cost of waste management in the price of the products you buy?	To pay taxes for waste management	31%	25%
	Include the cost of waste management in the price of the products you buy	55%	59%
	DK/NA*	14%	16%
Can you estimate what percentage of the food you buy goes to waste?	None	7%	11%
	15% or less	46%	71%
	16% to 30%	30%	13%
	More than 30%	13%	4%
	DK/NA*	4%	1%
What would help you to waste less food?	Better estimate portion sizes (how much food you cook) to avoid excess food	83%	62%
	Better information on food product labels, e.g. how to interpret "best before" dates, information on storage and preparation	75%	61%
	Better shopping planning by my household	87%	58%
	Smaller portion sizes available in shops	57%	58%
How important for you is a product's environmental impact - e.g. whether the product is reusable or recyclable - when making a decision on what products to buy?	Very important	56%	39%
	Rather important	27%	41%
	Rather not important	8%	12%
	Not at all important	7%	6%
	DK/NA*	2%	2%
Are you willing to buy second-hand products?	Yes	46%	68%
Base: all respondents, % of yes			
Would you buy the following products second hand?	Furniture	36%	56%
Base: all respondents, % of yes	Electronic equipment	34%	45%
	Textiles (clothing, bedding, curtains, etc)	13%	36%
What reasons prevent you from buying second-hand products?	Quality/usability of the product	55%	58%
	Health and safety concerns	66%	50%
	Less appealing look of the product	23%	25%
	Afraid of what others might think	9%	5%
Would you buy products made of recycled materials?	Yes	82%	86%
	No	11%	11%
	DK/NA*	7%	3%
What would be the most important factors in your decision to buy products made of recycled materials?	Quality/usability of the product	56%	51%
	Environmental impact of the product	23%	26%
	Price of the product	17%	18%
	Brand/brand name of the product	2%	2%
	DK/NA*	2%	3%
What prevents you from buying recycled products or products containing recycled materials?	Health and safety concerns	72%	44%
	Quality/usability of the product	35%	42%
	No clear consumer information on the recycled product	30%	32%
	Less appealing look of the product	16%	17%
	Afraid of what others might think	8%	5%

*Abbreviation DK/NA = Don't know / No Answer

NOTES

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VOICES, CITIZEN PARTICIPATION IN SOCIAL INNOVATION

VOICES is a Europe-wide citizen consultation process, led by Ecsite, the European network of science centres and museums, which helps set the agenda for the environmental research dimension of Horizon 2020 - the European Union's strategy to advance research and innovation.

VOICES represents a valuable insight on methods and procedure for engaging citizen participation to inform Europe's Responsible Research and Innovation framework. Focus groups, academic analyses of public consultations and dissemination of results will lead to an effective method through which to consult the public on science and technology related issues.

VOICES is engaging citizens in 27 EU countries through science centres and museums - all of which are expert, impartial and powerful partners in public engagement with science as members of Ecsite.

One thousand European citizens have joined VOICES focus group discussions on innovative uses and solutions for urban waste. The outcomes of this European consultation process are presented in the VOICES Reports Collection.

VOICES for innovation

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