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Views, Opinions and Ideas of Citizens in Europe on Science

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

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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, analyzing 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 Greece, 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

GREECE

3. Country relevant data - Greece

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, Greece is one of the larger EU countries with approximately 11 million inhabitants. Most participants live in urban (47%) or rural areas (43%).

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

		2011	
Population at 1 January		10 815 197	
Population as percentage of EU27		2.3%	
Gross Domestic Product (PPP)		20 100 Euro	
Population urban-rural typology	Urban	5 281 000	47%
	Intermediate	1 198 000	11%
	Rural	4 831 000	43%

3.2 Factsheet on waste

The amount of municipal waste generated and treated in Greece is below the average amount of waste treated in the EU27. Greece ranks 20th on the EU27 ranking list on Municipal Solid Waste Recycling (MSW). Recycling of MSW in Greece has increased by more than 10% over the last 10 years, however in 2010 still more than 80% of MSW was landfilled. Greece will need to make an exceptional effort in order to fulfil the 50% target of the EU Waste Framework Directive by 2020.[9]

Table 3.2 Municipal Waste[10,11]

		Greece		EU27 average	
Municipal waste generated (kg per person)		457 kg		502 kg	
Municipal waste treated (kg per person)		457 kg		486 kg	
	Landfilled	375 kg	82%	185 kg	38%
	Incinerated	0 kg	0%	107 kg	22%
	Recycled (material recycling)	78 kg	17%	122 kg	25%
	Composted (organic recycling)	5 kg	1%	73 kg	15%

3.3 Composition of the focus groups

In Greece, three focus groups (FGs) took place on the weekend of 30th March 2013. They were held at the Heraclitus Institute in Athens and were moderated by Dimitra Lelingou, Head of Communication and Development Department of the Hellenic Physical Society, Athens.

In total 30 people (15 male and 15 female) participated in the three FGs. The age of the participants ranged from 19 to 62 years. 10 participants were aged between 18 and 35, 11 between 36 and 50 and 9 were aged 51 or over. Educational levels were diverse with 9 participants of a high level of education, 12 middle and 9 of a low level. 14 participants were working, while 12 were unemployed and 4 were retired. 7 participants live in a house and 23 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	5	5	5	15
	Female	5	5	5	15
Age	18 - 35	10	0	0	10
	36 - 50	0	10	1	11
	50+	0	0	9	9
Education	High	4	3	2	9
	Medium	5	4	3	12
	Low	1	3	5	9
Employment	Unemployed	5	4	3	12
	Employed	5	6	3	14
	Retired	0	0	4	4
	Student	0	0	0	0
Housing	Flat	8	8	7	23
	House	2	2	3	7

[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 Greece. 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 of the participants indicated that they separate at least some of their waste. They mostly separate glass and paper at home and to some extent plastic. The municipality does not provide facilities for the separation of waste in the household, only at communal places; separate bins are available on the street or in stores. When people do not have the facilities or the knowledge to separate, they throw all their waste in the municipal bin.

Batteries, clothes, electrical appliances and large waste are separated by some of the participants. The same goes for garden and food waste: this is separated by some of the participants, because they use it for making compost, to feed chickens or to burn in the fireplace.

One participant mentioned using oil from the frying pan to make soap.

4.1.2 Waste collection

All participants said they bring their waste to bins provided by the municipality. Those bins are often located near the houses. Residual waste is thrown into a specific bin and recyclable materials are thrown in a separate bin for all recyclable materials.

> *"I take the waste, food and such to the municipality's bin. Glass, paper, wood and all that we take to another bin that is for recycling." (Greece FG3, P3)*

[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.

Special bins are also provided for clothes, although they are more scarce.

Many participants bring their batteries, light bulbs and electrical waste to shops or special points for collection. One participant mentioned not really recycling electrical appliances, but leaving them outside. Others said they bring those to a shop, maybe for others to use if they still function. Special rehabilitation units for electrical appliances exist, where they can be repaired. It is also mentioned in all focus groups that companies can be informed and they will come to collect them.

Large waste and electrical appliances might be collected by a municipal vehicle, via a phone call. One participant said there is a recycling centre where you can bring your bulky waste and electrical appliances. Another participant had heard from other people that this type of waste was collected from the doorstep by individuals. Other participants confirm this. It is also mentioned that there are people, foreigners, who pick up waste from the bin and take it somewhere by car. They take it to companies to be sold.

Clothes are often reused. Many participants mentioned that they give them away. There are associations and organisations that collect clothes and there are also special bins. However, those bins are very hard to find.

"There are also some bins, of course... it is very hard to find such bins, they only have them in very few areas. It is not easy." (Greece FG2, P4)

Food waste might also be brought to church. But many people throw this in the municipal waste bin, if it is not recycled at home. Some participants mentioned that supermarkets have special containers for collecting oil.

4.1.3 Knowledge about waste pathways

Most participants did not know what happens to waste after it is collected in bins. Participants believe that paper, glass and plastic are recycled and the rest goes to landfill.
Many participants did know how to reuse garden and food waste, but had no facilities available for separate collection.

One participant said that in Greece, paper is recycled properly, because it is financially viable. Most other waste is not recycled on a large scale and often goes to landfill.

Another participant mentioned that there is no expertise for incinerating waste and extracting energy. Other participants responded with some facts about incineration in Greece:

"[P3] Yes indeed, they are trying to make some biomass burners. Simply from what I've heard they are running into problems concerning the combustion chamber. There already exist some experimental models but which belong to private individuals and are for private use. They have been trying, it's just that they haven't found a way where it could be incinerated right away.
[P10] The way they are today, they can't comprise a source of heating. They are burned with other raw materials to achieve this." (Greece FG1)

4.1.4 Waste management behaviour and convenience

Many participants mentioned that the recycling process is difficult for citizens. The waste management system is not well organised. The procedure for separating waste and bringing it to the right bin requires great effort. One participant expressed disappointment with the municipal services and for that reason does not separate waste.

However, another participant found it convenient that the bins are right outside the house; it is not difficult to dispose of waste.

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

Few barriers and concerns were mentioned in respect of waste prevention and production. A barrier for prevention voiced in one of the focus groups is the overconsumption in society. People buy too many things they do not need, thereby creating a lot of waste. This includes the consumption of technological products. There are so many people who buy items that they throw away very soon afterwards. Society encourages this behaviour.

Another issue that was discussed in the focus groups is the role of producers in the prevention of waste. Since producers benefit from the current situation, they will not make an effort to change it, because they have an economic interest.

4.2.2 Waste management in the household

During the focus groups, few barriers and concerns about managing waste in the household were mentioned. An issue that came up was the lack of information about waste and how to deal with waste properly. As a citizen, you have to get involved yourself and search for information.

One participant experienced another barrier to recycling batteries, which is that batteries only rarely need to be replaced and then it is easily forgotten.

> *"Even in the remote control, the battery dies after two years so it is very rare for me and that's why I don't think about it." (Greece FG 1, P2)*

4.2.3 Waste disposal and pathways

Most of the barriers and concerns that came up during the focus groups are related to the facilities that are provided by the municipality. Bins, in particular, are a recurring theme: in some municipalities the bins for recycling are too far away or not available at all. For this reason, all the waste goes into the general bin. Other participants experienced a lack of bins and bins that are often too full. Bins for clothes are available but very difficult to find. For food and garden waste, there are no facilities at all. The participants complained that facilities for waste management in general are lacking, for not only the collection but also the processing of waste in Greece.

In two focus groups, participants expressed doubts that the municipalities are able to arrange the facilities for waste management. There seems to be no organisation and no information from the municipality:

> *"I mean if there was the right information from municipalities [...] I think people would be able to follow this and recycle." (Greece FG2, P4)*

It was suggested that the lack of organisation and information might be because the municipalities are lacking the competencies and/or the financial resources. However, this leads to a lack of awareness in society about the options for managing waste properly. This lack of organisation is also visible in the summer period. In some areas, the population doubles or triples and so does the amount of waste. The collection of waste is not adapted to this change.

Various participants expressed concerns about the waste pathways and the procedures used by the municipalities. Participants did not believe recycling is done properly, because they have seen that all bins are emptied in the same truck. In many places there are no bins for separating recyclable waste at all.

"The fact that we gather all the garbage in one bin and throw them away is wrong. I believe we should have separate bins for each like in the other countries." (Greece FG 1, P8)

Some participants expressed the concern that old furniture and electrical appliances are not disposed of properly by the waste collectors in the village. They often dump them in other people's fields. For that reason, they would like to have companies take the old items with them when they deliver a new one.

Participants were also concerned about the current strikes by waste collectors. Concerns were also expressed about the possible health risks associated with landfill.

A barrier for managing waste better is the effort that is needed to dispose of the waste properly. The disposal procedure is, by some participants, seen as difficult and requiring a great deal of effort:

"[...] will have to load them in the car, to have them on your balcony for many days in order to gather a significant amount." (Greece FG3, P9)

Some participants considered this too much effort and therefore did not recycle their waste.
Furthermore, some participants were concerned about the attitude of people regarding the disposal of waste. They see that many people do not dispose of their waste properly:

"A truck driver in Greece throws a piece of paper in your face, literally. He empties the ashtray on the street. (...) And the most tragic part is that tourists behave exactly like we do." (Greece FG3, P7)

Other participants expressed concerns about the improper management of waste on the environment:

"Urban waste is not managed properly, always at the expense of nature." (Greece FG2, P1)

4.2.4 Other urban waste issues

Participants in the focus groups agree that there is a lack of awareness in society about the effect of their waste management on the environment. Participants also indicated that there is a general lack of concern about the environment. One participant worried that people are becoming less attached to nature:

"That we...are increasingly more and more detached from our real place. We are not the rulers of the planet. But simply a part of it." (Greece FG2, P2)

In line with this, some participants complained that there are no incentives or legislation for better waste management, neither for consumers nor for producers. Even the state and the municipalities are not in control when it comes to waste management. In one focus group, participants worried that the state has made collection of waste a 'sideline profession' and does not care about its citizens. They also experienced profiteers as a problem: people that make money from the current waste management system and who will block change.

Other participants pointed to the lack of education and information about waste management:

"I believe that we should be educated on how to dispose of our waste properly and the state should be educated on how to utilise it properly." (Greece FG3, P2)

It is considered especially worrying that there is no proper briefing on waste management in schools. Children do not learn how to recycle. They receive no information at all. If people do not set the right example, children will never learn.

"Because if parents throw things on the ground instead of putting them in the bin, then children will do the same." (Greece FG2, P4)

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.

Most ideas that come up in the focus groups are in the category 'technical, physics, chemical, engineering', followed by the category 'policy'. Waste management companies seem to be the main target groups, followed by consumers. Many of the ideas aim to use waste more effectively. When looking at the priorities, it is clear that the technical ideas are ranked highest, followed by management and policy.

4.3.1 Environmental sciences and technology

TECHNICAL, PHYSICAL, CHEMICAL, ENGINEERING

The category 'technical, physics, chemical, engineering' had the most prioritised ideas. The main aim is focused on effective use of waste and also often behaviour change. The idea that was ranked highest priority aims to improve convenience in the household and increase recycling of waste. Participants envisioned a system in every household that separates waste automatically. This way, no effort has to be put into separating waste at household level. After separation, the machine will send the waste to the appropriate collection site.

"Ours is a very unconventional idea. I've thought of a subterranean system for managing waste, where anyone from their house, like water running out of a faucet, you'll throw whatever type of trash and it will automatically separate into recyclable material." (Greece FG3, P2)

To make effective use of waste, participants in all focus groups thought up a machine that could use waste to generate something useful. One of those machines was broadly supported: the participants would like to have a machine that turns waste into energy.

"We've thought of a machine that takes waste and changes it into a unit of energy production." (Greece FG3, P4)

Furthermore, participants came up with the idea of developing a machine that transforms plastic into textiles or other types of waste into recyclable or reusable products.

"[P5] The recycled products, plastic, with mechanical intervention, changes it into fabric.
[M] A machine that turns plastic into fabric.
[P5] Aluminium, paper, mechanical intervention, recycled products. Glass, mechanical intervention, reuse." (Greece FG3)

In another focus group, participants went even further and came up with a machine that can turn waste into anything we want:

"I am thinking of something which I don't know if it's similar. We said that, if we all have a lot of money, we can have a machine at home, where we can put in whatever we like and it will make what we need." (Greece FG2, P6)

And finally, a machine that can turn waste into building materials is thought to be an effective way to use waste.

Participants also would like to see a plant that can turn waste into water that can help people in Africa.

"A plant for collecting waste and turning it into water for Africa. And areas which don't have any water. It can be done in Africa...it can also be done in the Thessaly valley where there is a problem with water." (Greece FG2, P8)

Another way to use waste more effectively is to develop a technology that will support interplanetary travel by converting waste into organic substances that will help to make planets inhabitable.

"[P8] a factory that will turn waste into organic matter which can be used in interplanetary travel...
[P9] ...as fuel..
[P8] ...for creating the right conditions...
[M] Just wait for me to write it down... Create organic matter which can be used in interplanetary travel...
[P9] ...for creating the right atmosphere on planets so that they can be...
[P7] ...inhabited." (Greece FG2)

The last idea on this priority list is to develop a technology that will help to use waste to create means of transport.

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	A system in the house that automatically separates waste and sends it to the write collection site	Convenience in the home/ Improve recycling	Consumers/ Waste management companies	☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆
	A machine that turns waste into energy	Effective use of waste	Waste management companies/ Consumers	☆☆☆☆☆☆☆☆☆☆☆☆☆☆
	A plant that turns waste into water for Africa	Effective use of waste	Waste management companies	☆☆☆☆☆
	Machines that convert plastic into textiles, aluminum and paper into recyclable material, and glass for reuse	Effective use of waste	Waste management companies/ Consumers	☆☆☆☆
	A machine that transforms waste into anything we want	Effective use of waste	Consumers/ Producers	☆☆☆☆
	A machine that turns waste into building materials	Effective use of waste	Waste management companies	☆☆☆☆
	Develop a technology that can produce an organic substance from waste which can be used for interplanetary travel	Effective use of waste	Waste management companies	☆☆
	Create means of transport from waste	Effective use of waste	Producers	☆

MATERIALS

The second category in the domain of 'environmental sciences and technology' contains ideas concerning the production and development of materials. In the focus groups in Greece, only two ideas in this category were prioritised. The first aimed at reducing the use of plastic and the second aimed at using fewer resources. To reduce the use of plastic, participants proposed the development of a new type of plastic made from plant-based materials. This new plastic could replace the current plastic we use.

Not using petrochemicals and producing plastic from plant-based materials. [PX] is telling us here that we can produce plastic from plant-based materials." (Greece FG2, P5)

The second idea is to develop packaging that is pliable, meaning it can be transformed into something different and then used again. If scientists could develop this it would reduce the amount of packaging thrown away, because people would use the packaging again for different purposes.

"[M] So when this material finishes it will turn into something else?
[P 1] We will make something else with it at home.
[P 10] This way we can also have a kind of supermarket without any packaging... Which means that with just one packaging for everything we go to the supermarket...and we put water, milk or anything else there.
[...]
[P9] ...Multipurpose packaging then...
[P 1] Scientists should find another material, which is pliable." (Greece FG2)

Table 4.3.2 Ideas within the category 'material' that received priority, ranked accordingly

Category	Idea	Aim	Target Group	Priority
Material	Produce plastic from plant based materials	Less plastic	Producers	☆☆
	Make packaging pliable, so it can be transformed into something else	Less use of resources	Consumers	☆

4.3.2 Policy, management and communication

POLICY

In all focus groups, ideas related to the rules and regulations in the country were discussed. This is also visible in the high level of priority assigned to these ideas. These ideas are grouped in the category 'policy' and all have to do with positive or negative reinforcement that influences the behaviour of producers and consumers.

It is thought that there should be subsidies that make recyclable and ecological products more affordable for everybody. These products will prevent waste but are currently too expensive for most people. If they are affordable, it is expected that consumers will change their current behaviour, which will result in less waste.

"Recycled materials and, in general, ecological products should be more economical so more people can buy them." (Greece FG 1, P8)

The idea that is ranked second in this list is the creation of utility projects from the income of urban waste management. An example of these projects is the creation of a public park, financed by profit from the waste management system. These projects will serve as an incentive for correct recycling by residents.

"[P6] For me, the best machine is a folder from the authorities which will give, as an incentive, the results of proper waste management. In other words, the folder will have from a responsible authority that

will be held accountable and they will come and tell me the reason that I should care so that the recycled things should go some place.
[M] What would you like the incentive to be?
[P6] Good causes which will benefit people. Namely, when I know that this park was built from recycling proceeds, I'll do this process." (Greece FG3)

And the last idea on this list is targeted at both producers and consumers and concerns the development of laws that will change the behaviour of companies and consumers regarding proper waste management.

"Clearly defined prohibitive laws which are relative to citizens and community groups. For example, the prospective mayoral candidate in Nicaea last year filled the entire area with paper for his own purposes and he didn't arrange for anyone to pick them up afterwards. That person should be punished." (Greece FG3, P5)

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

Category	Idea	Aim	Target Group	Priority
Policy	Make recyclable and ecological products more affordable	Less use of resources/ Behaviour change	Producers/ Consumers	☆☆☆☆☆
	Creation of utility projects from the income of urban waste management that will serve as an incentive for proper recycling for residents	Behaviour change/ Improve recycling	Consumers/ Government	☆☆☆
	Laws to have companies and consumers act properly	Behaviour change	Producers/ Consumers	☆

MANAGEMENT AND LOGISTICS

The third category in the domain of 'policy, management and communication' is 'management and logistics'. Most policy ideas require a certain amount of managerial and/or logistical changes, but only some ideas have this as their primary focus. Four different ideas were prioritised in this category, with various aims and targeted at various target groups.

The first idea is targeted at producers and aims to reduce the use of plastic, by replacing plastic with biomass:

"[…] biomass. Use it as a raw material so frequently just like plastic today. If you don't have plastic you have no waste. Up to now, the biggest catastrophe to the environment is caused by plastic. It takes thousands of years before it decomposes." (Greece FG 1, P8)

The participants in one of the focus groups come up with an idea to improve recycling by waste management companies: after collecting the waste from the household, waste can be transported to a factory that then separates waste and makes sure that the waste is dealt with in the most effective way.

"Instead of going to the landfill, that trash could also go to a factory for special processing where there would be many workers and all the waste will pass in front of them and they will separate those that can be recycled. The rest will go to a storage facility and from there incineration. But proper incineration in specially modified furnaces, which won't produce gases or solid waste. It will create steam which will be channelled to homes as heat and for cooling." (Greece FG 1, P7)

The third idea in this category is focused on using waste effectively in the household or in the neighbourhood. The idea is to develop a system for organic waste, to ensure that it will be used as compost for green spaces.

"In each household, each house, whether it is a house or an apartment block and especially for apart-

ment blocks there should be a system, so that each apartment can have its organic waste in a central bin, which can then be composted and then used in green spaces which belong to either the apartment block or […] a central composting system which… the compost that is produced can be used in green spaces as fertiliser." (Greece FG2, P4)

The last idea in this category involves a reward system that aims to change the behaviour of consumers. Currently there is no incentive for consumers to deal with their waste properly. A new system would change this.

"[P9] There are some places where you can leave bottles. I've seen plastic. Where you can get some money back or donate it to [non-profit child welfare organisation] Smile of the Child. That is a reward and an incentive for people to do it.
[M] Would that satisfy you too or would you like something more tangible like money?
[P4] No, it's enough for me that the trash is useful. From the moment they are given to a children's charity, I'm OK with that." (Greece FG2)

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

Category	Idea	Aim	Target Group	Priority
Management/ Logistics	Use biomass instead of plastic	Less plastic	Producers	☆☆☆☆☆☆
	A factory that collects and separates all the recyclable waste	Improve recycling	Waste management companies	☆☆☆☆☆
	Have a special bin in apartment blocks for organic waste that can be used as compost for green spaces at the block	Effective use of waste	Consumers	☆☆☆☆
	A reward system for consumers to make them manage waste properly	Behaviour change/ Improve recycling	Consumers	☆☆☆

COMMUNICATION AND EDUCATION

Although in all focus groups issues and ideas concerning 'communication and education' were discussed, only one idea received priority from the participants. Some participants thought it was important for consumers to become more aware of the possibilities within the waste management system. For that reason, they came up with the idea to have more information provided about waste and waste management to increase the knowledge of the consumers.

"[P6] Correct information and knowledge.
[M] Tell us what you mean by that.
[P6] If there is information there will be knowledge. Those go together." (Greece FG3)

Table 4.3.5 Ideas within the category 'communication and education' that received priority, ranked accordingly

Category	Idea	Aim	Target Group	Priority
Communication and education	Provide more information about waste in general and how to deal with it	Awareness of the possibilities	Consumers	☆☆☆☆

OTHER

In one of the focus groups, there was any idea that did not fit into any of the other categories. The participants in this focus group were thinking about ways to dispose of waste very effectively and permanently. To do that they would like to invite aliens who eat all our waste. The idea kept on returning into the conversation as something of a joke, but it did receive priority from some participants:

"We said that we will invite aliens who eat rubbish. Tightening of interplanetary relations... [a lot of laughing]." (Greece FG2, P5)

Table 4.3.6 Ideas within the category 'other' that received priority, ranked accordingly

Category	Idea	Aim	Target Group	Priority
Other	Invite aliens to eat the waste	Eliminate waste	Other	☆☆☆☆☆

5. Conclusion, discussion and evaluation

This country report presents country-specific findings from citizen focus groups in Greece. 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 Greece 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 Greece. 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

Greece ranks 20th on the ranking list on Municipal Solid Waste Recycling (MSW). Although efforts have been made in the last ten years and recycling has increased by 10%, Greece will have to make a large effort in order to meet the target set by the EU by 2020.[13] From the focus groups it can be concluded that many people do have some possibilities to separate their waste in bins provided by the municipality. This is in line with findings from the Flash Eurobarometer survey 'Attitudes of Europeans towards resource efficiency'[14] in which most respondents from Greece indicated that they separate at least some waste (see Annex 2). The VOICES focus group results show that the knowledge of the participants about what is expected from them at the household level and the convenience of the waste management system could be improved considerably. Furthermore, knowledge about what happens to waste after collection is very limited.

During the focus groups, some large clusters of barriers and concerns for managing waste appropriately could be distinguished. When talking about production and prevention, one of the main concerns is the overconsumption in society. People buy too many things they do not need and throw them away too quickly, thereby creating a lot of waste. Also the role of producers is mentioned as a concern; as long as they benefit from the current situation they will not be willing to change their behaviour. Concerning convenience in the home, not many barriers and concerns were discussed. One concern that came up is the lack of information about waste and how to deal with waste, which prevents people from managing waste properly.

The disposal of waste faces some challenges: in some municipalities, the bins for recycling are too far away or not available at all. Several participants indicated that the bins are often full or too far away. As a result, participants find the waste management process difficult and a great deal of effort. For food and garden waste, there are often no facilities at all. As well as those barriers, participants expressed doubts that the municipalities are able to arrange the facilities for waste management effectively. There seems to be no organisation and no information from the municipality. This lack of organisation also makes participants believe that recycling in Greece is not done properly. Due to the lack of organisation and the use of landfill, participants are concerned about health risks. The results in this part of the focus group relate well to the findings of the Eurobarometer Survey, where 70% of the respondents indicated they would like 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 categories. In the first domain, ideas focused mainly on technology (machines and processes) to improve the effective use of waste. Waste management companies are the most prominent target group, followed by consumers. Most ideas in this domain focused on developing machines to make more effective use of waste. For instance, machines that turn waste into energy or that transform waste into other useful materials. The highest ranked idea in this category aims to improve convenience in the home by developing a system that automatically separates waste and sends it to the appropriate collection site. In the focus groups, the possibilities of creating new materials that could replace plastic and reduce the use of resources were discussed. Participants would like to have plant-based materials and also suggest the development of pliable materials that can be easily reused.

Ideas in the second domain 'policy, management and communication' focused mainly on regulations, incentives and communication to change behaviour and to raise awareness. It is thought that a punishment and reward system will help to change the behaviour of producers and consumers to start producing less waste and to deal with waste properly. These ideas also come forward in the Eurobarometer Survey in which a large part of the respondents indicate the need for stronger law enforcement on waste management. Furthermore participants would like to reduce the use of plastic by providing alternatives. They would also like an automatic system in a factory that improves recycling. Finally, they would like to use green waste more effectively by developing a composting system.

Of the three most highly prioritised ideas, the first involves a system in the house that automatically separates waste and sends it to the right collection site (15 stickers). The second is a machine that turns waste into energy (14 stickers), followed by the use biomass instead of plastic (6 stickers).

5.3 Reflection

All participants were very satisfied with their participation in the focus groups. Some participants indicated that for them it was an interesting and unique experience. They were pleased with the topics and the exercises that enabled them to share and discuss opinions. And they even indicated that they had learned a lot about waste and waste management. Many participants were pleased with the facts that their views and opinions are heard in Europe. However some expressed doubt that the citizens' views and opinions will really affect the actions taken by the European Union.

[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)

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	A system in the house that automatically separates waste and sends it to the right collection site	Convenience in the home/ Improve recycling	Consumers/ Waste management companies	☆☆☆☆☆ ☆☆☆☆☆ ☆☆☆☆☆
	A machine that turns waste into energy	Effective use of waste	Waste management companies/ Consumers	☆☆☆☆☆ ☆☆☆☆☆ ☆☆☆☆
	A plant that turns waste into water for Africa	Effective use of waste	Waste management companies	☆☆☆☆☆
	Machines that convert plastic into textiles, aluminum and paper into recyclable material, and glass for reuse	Effective use of waste	Waste management companies/ Consumers	☆☆☆☆
	A machine that transforms waste into anything we want	Effective use of waste	Consumers/ Producers	☆☆☆☆
	A machine that turns waste into building materials	Effective use of waste	Waste management companies	☆☆☆☆
	Develop a technology that can producing an organic substance from waste, which can be used for interplanetary travel	Effective use of waste	Waste management companies	☆☆
	Create means of transport from waste	Effective use of waste	Producers	☆
	Develop a technology to convert waste into organic cigarettes	Effective use of waste	Producers	
	A factory that transforms waste into organic material that can help make other planets inhabitable	Effective use of waste	Waste management companies	
	Develop a technology to use waste as anti-seismic protection: it absorbs the vibrations	Effective use of waste	Other	
	Incineration which won't produce harmful gases or solid waste. It will create steam which will be channeled to homes as heat and for cooling	Effective use of waste/ Effects on planet	Waste management companies	
Material	Produce plastic from plant based materials	Less plastic	Producers	☆☆
	Make packaging pliable, so it can be transformed into something else	Less use of resources	Consumers	☆
	Edible packaging	Less packaging	Consumers	
	Extend the production of biodegradable products to e.g. clothes	Less waste production	Producers	
Bio(techno)-logical	No ideas came forward in this category			
ICT	No ideas came forward in this category			

POLICY, MANAGEMENT AND COMMUNICATION

Category	Idea	Aim	Target Group	Priority
Policy	Make recyclable and ecological products more affordable	Less use of resources/ Behaviour change	Producers/ Consumers	☆☆☆☆☆
	Creation of utility projects from the income of urban waste management that will serve as an incentive for proper recycling for residents	Behaviour change/ Improve recycling	Consumers/ Government	☆☆☆
	Laws for companies and consumers to act properly	Behaviour change	Producers/ Consumers	☆
	Taxes according to the amount of waste a household produces	Behaviour change	Consumer	
	Have an incentive at supermarkets to buy ecological products with less packaging like a bonus	Less packaging/ Behaviour change	Consumers	
	Restrict mining of raw materials - stimulate recycling	Less use of resources/ Improve recycling	Producers	
Management/ Logistics	Use biomass instead of plastic	Less plastic	Producers	☆☆☆☆☆ ☆
	A factory that collects and separates all the recyclable waste	Improve recycling	Waste management companies	☆☆☆☆☆
	Have a special bin in apartment blocks for organic waste that can be used as compost for green spaces at the block	Effective use of waste	Consumers	☆☆☆☆
	A reward system for consumers to make them manage waste properly	Behaviour change/ Improve recycling	Consumers	☆☆☆
	A company that manages all the unrecyclable waste	Effective use of waste	Waste management companies	
	Make recycling the only possible way to dispose of waste	Improve recycling	Consumers/ Government	
Communication and education	Provide more information about waste in general and how to deal with it	Awareness of the possibilities	Consumers	☆☆☆☆
	Education in schools about how to manage waste	Awareness of the possibilities	Consumers	
	Provide information about the effects of the efforts as incentive	Behaviour change/ Awareness of effects	Consumers	
	Interactive toys that will teach children about dealing with waste	Awareness of values and possibilities	Consumers	
Local initiatives	Organise a day where people can exchange unwanted items	Less use of resources	Consumers	
	Use waste to create art	Effective use of waste	Consumers	
Other	Invite aliens to eat the waste	Eliminate waste	Other	☆☆☆☆☆ ☆

Annex 2: Attitudes of citizens from Greece 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 each of 27 Member States. The target sample size in all countries was 1,000 interviews. Below we give the results from Greece.

Question	Answer	%	EU27 Average
Do you think Europe could be more efficient in its use of natural resources?	Yes	87%	87%
	No	7%	5%
	DK/NA*	6%	8%
Do you think that your household is producing too much waste or not?	Yes	44%	41%
	No	55%	58%
	DK/NA*	1%	1%
Do you separate at least some of your waste for recycling or composting?	Yes	78%	89%
	No	22%	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	92%	76%
	Improve separate waste collection at your home	81%	67%
	More information on how and where to separate waste	81%	65%
	Legal obligation to separate waste	52%	59%
	Taxes for waste management	53%	39%
What initiatives would improve waste management in your community?	Better waste collection services	93%	70%
	Stronger law enforcement on waste management	69%	65%
	Make producers pay for collection and recycling of waste	62%	63%
	Make households pay for the waste they produce	28%	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	14%	14%
	To pay proportionally to the quantity of waste you generate	74%	75%
	DK/NA*	12%	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	30%	25%
	Include the cost of waste management in the price of the products you buy	56%	59%
	DK/NA*	18%	16%
Can you estimate what percentage of the food you buy goes to waste?	None	12%	11%
	15% or less	59%	71%
	16% to 30%	23%	13%
	More than 30%	6%	4%
	DK/NA*	0%	1%
What would help you to waste less food?	Better estimate portion sizes (how much food you cook) to avoid excess food	81%	62%
	Better information on food product labels, e.g. how to interpret "best before" dates, information on storage and preparation	74%	61%
	Better shopping planning by my household	85%	58%
	Smaller portion sizes available in shops	48%	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	53%	39%
	Rather important	30%	41%
	Rather not important	6%	12%
	Not at all important	6%	6%
	DK/NA*	5%	2%
Are you willing to buy second-hand products?	Yes	57%	68%
Base: all respondents, % of yes			
Would you buy the following products second hand?	Furniture	44%	56%
Base: all respondents, % of yes	Electronic equipment	38%	45%
	Textiles (clothing, bedding, curtains, etc)	21%	36%
What reasons prevent you from buying second-hand products?	Quality/usability of the product	48%	58%
	Health and safety concerns	70%	50%
	Less appealing look of the product	13%	25%
	Afraid of what others might think	4%	5%
Would you buy products made of recycled materials?	Yes	82%	86%
	No	14%	11%
	DK/NA*	4%	3%
What would be the most important factors in your decision to buy products made of recycled materials?	Quality/usability of the product	43%	51%
	Environmental impact of the product	37%	26%
	Price of the product	18%	18%
	Brand/brand name of the product	1%	2%
	DK/NA*	1%	3%
What prevents you from buying recycled products or products containing recycled materials?	Health and safety concerns	69%	44%
	Quality/usability of the product	36%	42%
	No clear consumer information on the recycled product	29%	32%
	Less appealing look of the product	8%	17%
	Afraid of what others might think	6%	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

ecsite
EUROPEAN NETWORK
SCIENCE CENTRES & MUSEUMS

European Commission

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