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COUNTRY REPORT SLOVENIA

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

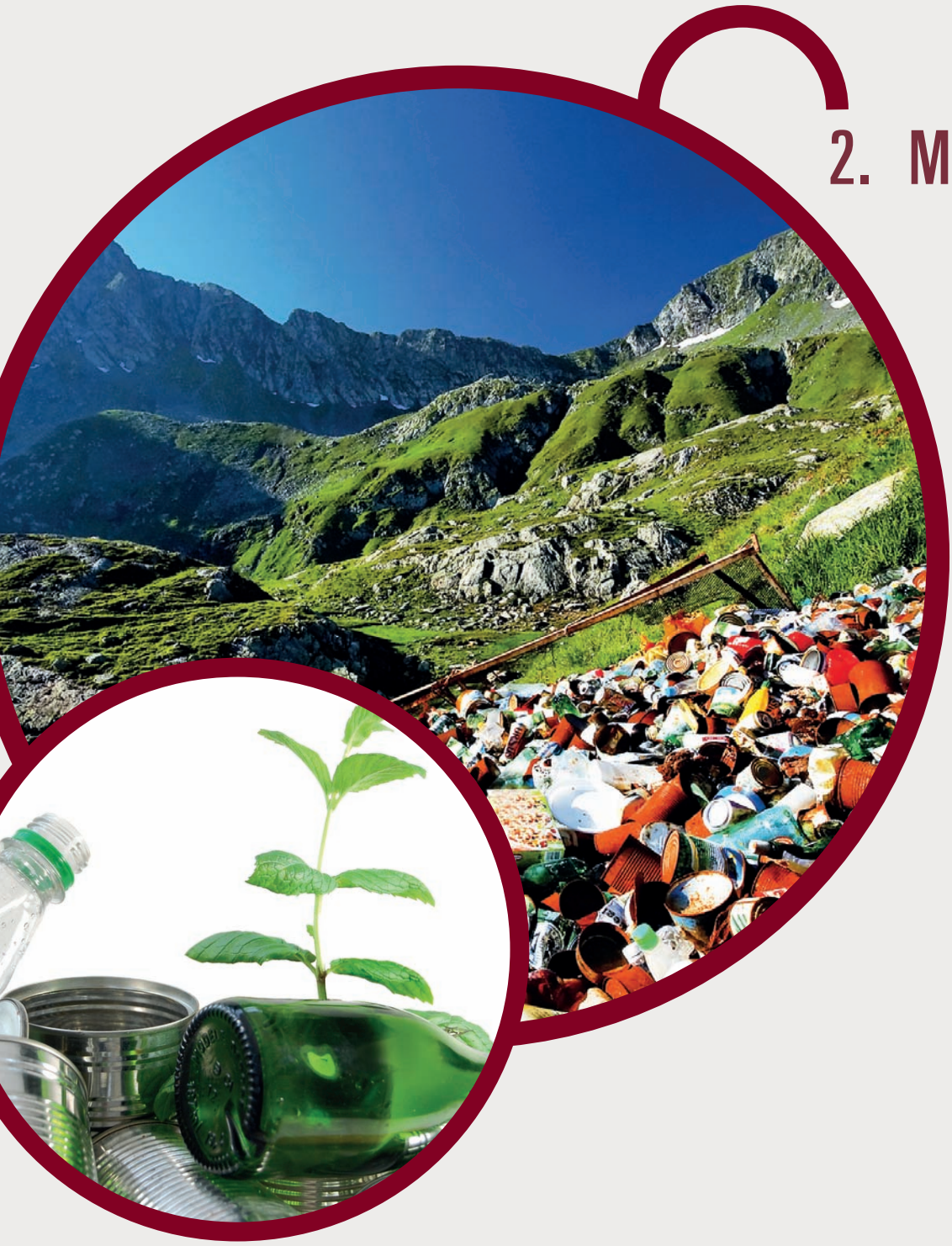
One thousand European citizens participated in focus group discussions about 'Waste as a resource' using a structured VOICES methodology which spans training, implementation and analysis. The methods, infrastructure and results of VOICES are fully documented on an open access portal (www.voicesforinnovation.eu)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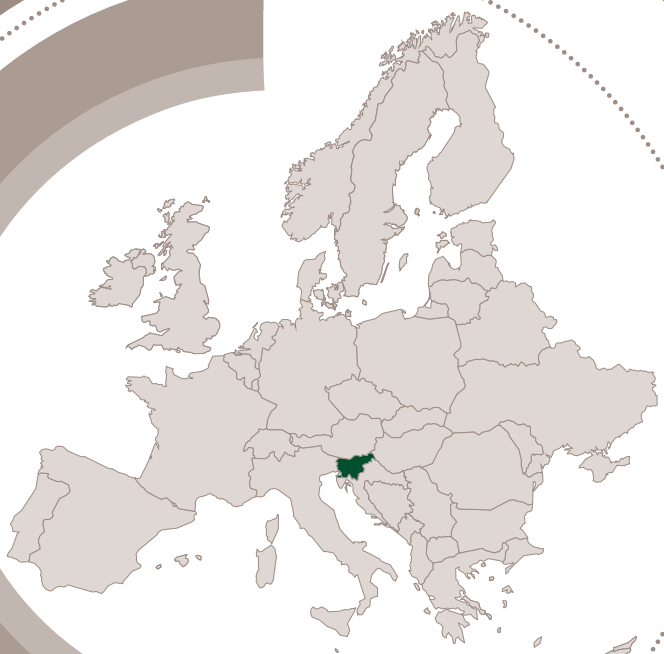


3. Country relevant data - Slovenia

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, Slovenia is one of the smaller EU countries with just over 2 million inhabitants. The inhabitants are spread over rural areas (43%), while others live in intermediate areas (31%) and urban areas (26%).

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

		2011	
Population at 1 January		2 050 189	
Population as percentage of EU27		0.4%	
Gross Domestic Product (PPP)		21 000 Euro	
Population urban-rural typology	Urban	533 000	26%
	Intermediate	637 000	31%
	Rural	880 000	43%

3.2 Factsheet on waste

The amount of municipal waste generated and treated in Slovenia is lower than the average amount of waste treated in the EU27. Slovenia ranks 14th on the EU27 ranking list on Municipal Solid Waste Recycling (MSW). The total reported recycling rate of MSW has increased from 11% in 2002 to 30% in 2009. According to present trends, Slovenia is on track to fulfil the 50% recycling target of the EU Waste Framework Directive by 2020.[9]

Table 3.2 Municipal Waste[10,11]

		Slovenia		EU27 average	
Municipal waste generated (kg per person)		422 kg		502 kg	
Municipal waste treated (kg per person)		471 kg		486 kg	
	Landfilled	9 kg	58%	185 kg	38%
	Incinerated	184 kg	1%	107 kg	22%
	Recycled (material recycling)	5 kg	39%	122 kg	25%
	Composted (organic recycling)	273 kg	2%	73 kg	15%

3.3 Composition of the focus groups

In Slovenia, three focus groups (FGs) took place on the weekend of 16th March 2013. They were held in Ljubljana at The House of Experiments science centre, moderated by Vesna Pajić, Project Manager.

In total 30 people (14 male and 16 female) participated in the three FGs. The age of the participants ranged from 18 to 60 years; 10 participants were aged between 18 and 35, 10 between 36 and 50 and 10 were aged 51 or higher. Educational levels were diverse with 11 participants of a high level of education, 9 middle and 10 of a low level. 17 participants were working, while 8 were unemployed, 3 were retired and 2 were students. 19 participants live in a house and 11 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	4	5	14
	Female	5	6	5	16
Age	18 - 35	10	0	0	10
	36 - 50	0	10	0	10
	50+	0	0	10	10
Education	High	4	4	3	11
	Medium	2	3	4	9
	Low	4	3	3	10
Employment	Unemployed	3	3	2	8
	Employed	5	7	5	17
	Retired	0	0	3	3
	Student	2	0	0	2
Housing	Flat	4	4	3	11
	House	6	6	7	19

[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 Slovenia. 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

The majority of participants in all groups reported that they separate waste in their homes. The most frequently mentioned waste streams, respectively, included plastic, paper, glass and organic waste. Other often mentioned streams were old household appliances and furniture, clothes and batteries and notably, a distinction was made by some participants between car batteries and general use batteries. Less frequent waste streams included hazardous waste, medicines, light bulbs and old tyres.

Interestingly, a couple of the participants living in rural areas made specific mention of further separating biological waste streams: food is kept for pets, what was termed 'completely natural' for compost and citrus fruit is separated in organic waste bins:

> *"For biological waste we also have 3 ways, right. One is compost, it is completely natural. Then food waste can be for certain animals, because we have a dog, rabbits and so it is used on. Then the citrus fruit waste we put in the organic waste bins of course." (Slovenia FG 1, P6)*

In addition to referencing waste separation in terms of content, separation was referred to in terms of size, specifically bulky household waste and matter such as old cars.

Mention was made of ways in which various households separate their waste. These included coloured bags and bins, as well as specially designated boxes. Some of these are coded bags or boxes, which are kept within their homes, others are communal and used by residents in blocks of flats.

[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

A number of different means were mentioned for waste collection and there was a distinction between those living in rural and urban areas, with urban residents generally finding collections easier and better organised, as there are often focal collecting points close by to residential areas. Others mentioned that they recycle quite often at home and a number, specifically rural residents, collected biological waste for their own composting purposes. A few participants made mention of special collections of paper and bottle caps (it was not stated if they were plastic or metal) for schools that use them for fundraising purposes.

Participants also mentioned that large household appliances and some building materials were collected by sellers. A significant group mentioned, in reference to waste collection, were Roma people. They are believed to be very well organised and pre-emptive in terms of distributing flyers advertising that they will be coming, as described in the quotes below:

"Yes. First I wrote over there iron or household appliances or whatever is um, collected twice a year by the municipality... but we have very active Roma people, who give us their flyer, so that they are a bit quicker." (Slovenia FG 1, P 10)

"The municipality used to pay for it back then, but I can say we were better off even before when it was collected by gypsies. [...] There were never any problems, no [...] car batteries to small bits, everything." (Slovenia FG2, P3)

Aside from the mention of regular weekly collections in urban areas, mention was made of annual collections for larger solid waste such as old furniture, building materials and hazardous waste.

Some participants agreed that separate waste collection contributes to better living conditions in their residential areas. Aside from a few exceptions, the majority of participants reported no difficulty with separating waste, and significantly it was also mentioned as contributing to improving social relations, as waste collection centres served as a meeting point.

4.1.3 Knowledge about waste pathways

A number of residents stated that they knew what happened to waste after it was collected, however, explanations were generally very limited, with a few guessing that it goes to a landfill or is thrown somewhere arbitrarily in nature.

For those participants living in flats, some mentioned that they leave some waste, such as glass or paper, as well as old household appliances, in the apartment corridor for collection by anyone that needs it. In one apartment block it was mentioned that there is a 'common shelf' allocated specifically for the purpose of leaving old clothing for whoever wants it. Some mentioned that some exchange and trade have been established in certain places where old goods such as computers or electronics can be traded in for new or swapped with other old products.

Some stated they knew that certain waste was taken to a landfill where it was later incinerated. Another talked of the fact that one of the collection points had a well organised system for separating, sorting and stacking paper waste, that is later brought elsewhere, but the participant did not know exactly where or for what purpose. Yet another participant said plastic material is granulated to be used again by manufacturers.

A few participants admitted having no knowledge whatsoever about what happens to waste after it is collected by a waste company.

4.1.4 Waste management behaviour and convenience

Most participants said they separated waste and reported that this was a fairly new mind set in Slovenia, with one reporting that around five to ten years ago there was no sorting of waste, but now that it is happening the situation at home has improved, specifically in relation to the reduction of foul smells:

"I think that, if we compare how it was for instance 5 or 10 years ago, there was more of a chaos with all this, because everything went into one bin. And now, if nothing else, I have noticed at home that our rubbish doesn't smell as bad, which is good, because organic waste is in its own place and we empty it more often and we also probably do something good for the environment." (Slovenia FG3, P9)

Another reported how satisfied they were with the opportunity, given once a year, to bring up to four tyres to a specific waste company that would pay them for the tyres.

Satisfaction with services provided by waste management companies was quite divided, with some participants reporting high levels of satisfaction. Specific mention was made of how appreciative they were that most services were free of charge and they found it particularly convenient that the opening times were long and frequent. Other participants, however, voiced dissatisfaction about the unreliability of some trucks, and another was upset that there were discrepancies between different areas. One participant stated that bins in one area were too full and another participant replied to say at least they had bins, whereas in their area there were no bins at all.

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.

4.2.1 Waste prevention and production

The most frequently cited concern in terms of waste being brought into the household related to the excessive packaging used by both producers of products as well as some retailers. It was widely felt by participants that packaging is overused and in particular the packaging of vegetables as well as household appliances were mentioned, as is evident in the following statements:

"There is also a lot of packaging material and what I find extremely aggravating is when you go to big supermarkets to buy vegetables." (Slovenia FG 1, P5)

"It's not allowed to put carrots, peppers, onions all in one bag. Everything must be separate. Can you imagine the number of bags needed! It doesn't even matter! Those are the rules of the supermarket." (Slovenia FG 1, P5)

"The packaging material, for example if you buy a household appliance [...] there comes so much Styrofoam with it and plastic and paper you don't need or use. You must simply throw it away." (Slovenia FG 1, P3)

Additionally, a number of participants believe there is far too little availability of cloth bags, so most bulk shopping has to come into the house in plastic bags. Others expressed concern about the lack of opportunity to buy biodegradable bags. The lack of opportunity was not only in relation to the availability of biodegradable bags, but also in terms of the expense and limited size of bags. Additionally, it was stated they are undervalued.

The following was said in relation to this:

"[P5] Biodegradable bags are really small, maybe one, two, three, three meters probably.
[P6] They come in different sizes. And they are also quite expensive.
[P5] Well, [...] we get them.
[P6] Oh, we buy them. I have them [...] as well. There are not many options and it is also not very valued, I think." (Slovenia FG 1)
"Another [...] concern, I mean, which I have [...] found out concerning the organic waste that there exist biodegradable bags, so now we have an additional concern, because we need to buy them, you know, but you don't know where..." (Slovenia FG 1, P3)

Furthermore, on a similar note, a barrier was identified in relation to the way in which products are packaged and the perceived unnecessary diversity of materials making it difficult to separate waste into designated streams:

"Let's say that a bottle with oil has a plastic upper part, which you can't remove, right. I mean that the manufacturers themselves should produce packaging which can be easily separated." (Slovenia FG 1, P 7)
"Let's say, I can take for example my mother and a tea bag... she makes tea, she puts the little paper on the bag in the paper bin, the little string in the... I don't even know where, and the tea bag in the organic waste, right." (Slovenia FG 1, P6)

Another concern was expressed in terms of the belief that generally there is an overuse of plastic with too many products being sold in plastic bottles.

4.2.2 Waste management in the household

In regard to concerns about management of waste in the home, a few concerns were expressed, mostly to do with lack of space as well as lack of time to sort waste. The issue of lack of space and the barrier of stairwells were more significant for those participants living in apartment blocks, as is evident in the following quotes:

"There are not enough bins considering the number of occupiers, you know." (Slovenia FG 1, P 1)
"[...] It is too far away for me to take the waste. I live on the fourth floor and um I find it to be too long of a way to carry every piece of waste." (Slovenia FG 1, P9)

Furthermore, the problem of lack of space within the house was exacerbated by the infrequency of collections and resulted in a number of participants disposing of waste incorrectly in order to create more space within the house. Another participant expressed frustration at the complexity and resulting space that is occupied in houses due to the diversity of waste streams and pointed to other countries being able to do this more efficiently as the separate containers were outside. These sentiments were expressed as follows:

"[...] Then you don't have the space to put them somewhere, in order to collect this organic waste separately, you know." (Slovenia FG 1, P3)
"Yes, in other countries, for example, they also have coloured glass, for example they have white, green, brown glass all separate. But they have this on the recycling points. They don't have ten bins in their house." (Slovenia FG3, P 10)
"I have the same thing, too much waste and one bin." (Slovenia FG 1, P9)
"The storage space for storing the waste collected only twice a year." (Slovenia FG 1, P6)

One other barrier to efficiently handling waste in the home was related to lack of knowledge about where to place some streams of waste. This concern generated quite some discussion in the groups, as is clear in the conversation excerpts below:

"[P 1] I have something similar probably. For example bones, chicken bones...
[P9] Yes, they can't go...
[P 1] They're waste, right. Many people throw away bones, right, the same as banana peels.
[P2] But why aren't they? Is it not organic, biodegradable... I mean that it decomposes?
[P9] Yes, because bones aren't decomposable. Or they are, but in the long run and if you're composting,

the temperature doesn't destroy the bones. They still remain." (Slovenia FG3)
"I would point out [...] packaging for toxins, as there's nowhere to dispose of them, except in shops, right." (Slovenia FG2, P2)

It seemed apparent that the issue of waste separation was more problematic for those living in flats, than those living in their own houses. One of the participants put it this way:
"If you live in a house it's a different matter, you know, there's always an option, but in a flat there is no other option where to put it." (Slovenia FG 1, P9)

4.2.3 Waste disposal and pathways

There were a number of barriers and concerns related to the disposal and pathways concerning removing waste from households. Most were to do with the fact that bins and containers fill up too quickly. Apparently, this is a fairly recent phenomenon and was associated by some with the requirement to sort waste. These concerns were expressed as follows:
"I think that all of us who separate waste have a big problem, because all of a sudden the bins for packaging are completely full, while the ones we use for regular waste are much less full." (Slovenia FG 1, M)
"Glass and batteries have to be driven everywhere. And I am a mother of three small children, how can I also carry 10 bags to throw... to have to throw them... to be honest [...] I simply dispose of them." (Slovenia FG3, P3)

Some participants were clearly frustrated by the lack of bins and the long distance to the bins that are available. There was also considerable frustration about the infrequency of collecting or emptying bins:
"For example, they collect it on Monday, well... on Wednesday it's already full..." (Slovenia FG 1, P 1)
"If they would collect it more frequently, you know, like two or three times a week... right now we take away the rubbish, after we keep it in our flat for some time, or we put it in some other bin that is nearest, but then we fill up their bin you know." (Slovenia FG 1, P 1)

Other participants expressed frustration and disillusionment at taking the time and effort to separate waste and then finding out that others did not do so. Furthermore, it was obvious to some that the value of separating waste is not broadly shared and this reduced their motivation to continue with separating their own waste:
"Across the street you can see through the window the residence hall for single persons, and the people there take a bag of rubbish and drop it on the floor, while my mother spends lots of time separating her waste. And I can also see how time consuming it is for me, this separating business. And on top of everything it's not very valued, one person does it this way and another way, you know." (Slovenia FG 1, P6)

Costs that are incurred for waste management were also clearly a sore point for some of the participants:
"And no one pays you for it. And I also have to say that we find all bills for contribution too high. [...] These are issues for which we can get fined by the municipality, while they haven't lifted a finger about it, but they already fine us for it, and burden the environment. [...] I don't know why I would have to pay someone [...] for burdening the environment. [...] But we get fined quite a lot." (Slovenia FG 1, P2)

For some participants, the lack of access to transport, or more specifically, access to appropriate forms of transport for bulky waste posed a signficant barrier:
"[M] Oh, yes, the remoteness of a landfill from your house, so the transportation [poses a problem].
[P3] It's like that, right. You have to get a van to take it away [the waste... a passenger car is no good...
[M] [...] so you can't get a utility service... you can't arrange them...
[P3] No, no, no. It used to be like that... they cancelled it two years ago, so now we have to do it ourselves." (Slovenia FG2)
"Bulky waste, I've put this down as well, right. Bulky waste... is a concern, but if it's large bulky waste, then it's a barrier." (Slovenia FG2, P2)

One participant expressed frustration that some waste containers did not have holes that were big enough to put the waste through into the bins. Another participant voiced frustration about problems encountered in winter and especially on snowy and wet days as it was clearly problematic for the participant to make use of a card that has been given to enable access to a container. The problem was described as follows:

"When there's snow and everything is wet, you have to use a card, and it doesn't work, because you have to place it [...] properly. But your hands are all wet. And when the container opens up, everything is wet and dirty, and you have to ... have a handkerchief [...] to wipe [...] hands." (Slovenia FG2, P10)

Finally, the arbitrary disposal of some large waste was expressed as a particular concern for one of the participants, see below:

"I have a barrier and also a concern. People like us who have houses, we often have solid waste, which is like only collected once a year, right. And that [...] becomes a very big concern, when people start dumping their stuff in the surrounding forests and just leave stuff wherever they want." (Slovenia FG3, P7)

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

A few technical solutions were brought forward by the groups and many of these ideas included the proposal to convert waste generated at an urban level into alternative energy sources. There was also the aspect of space saving which is relevant for urban waste reduction. The technical innovations related to the conversion of waste into forms of energy received high priority (see Table 4.3.1). One specific idea related to chimney filters. The suggestion was that waste produced at household level could be used for fuelling furnaces. These furnaces in turn would be used for central heating and the boiler houses that would contain them have an in-built ventilation system. The suggestion was proposed as follows:

"[P] Yes [...] we would like to add something here, we've put down. Chimney filters...
[M] Mhm, that's an innovation, isn't it?
[P2] Yes. That's...
[M] Chimney filters. Go ahead, finish what you were saying.
[P2] Yes, in this way we would be able to burn certain types of waste at home in furnaces for central heating and other types of furnaces. Especially, in large boiler rooms filters or a ventilation system of a sort should always be used
[M] So we would use the produced waste to generate energy [for domestic use]. We use the waste we produce.
[P4] Heating and electricity..." (Slovenia FG2)

Another idea that received priority is the development of a fluid that can decompose hazardous waste:

"[P1] Well, we have I-fluid then.
[M] I-fluid. What's that?

[P1] You pour it over toxic waste, right, and...
[P9] It decomposes.
[P1] It decomposes immediately.
[M] It decomposes immediately.
[P1] Not in 450 years. So there." (Slovenia FG3)

The group coming up with these ideas were the youngest participants and one of the interesting aspects of the above ideas is that they capture the idea of 'hijacking' brand names that are significant for this age group.

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	The use of green energy drawing on urban waste (different types of power plants the assistance of experts)	Less use of resources/ Effect on planet	Government/ Other	☆☆☆☆☆☆☆☆☆☆
	I-fluid (you pour it on hazardous waste and it disappears)	Eliminate waste	Other	☆☆☆☆

MATERIALS

A second category in the area of 'environmental sciences and technology' concerned ideas that focus on development or promotion of 'materials'. These ideas primarily focused on the suggestion of developing material that was longer-lasting or could be reused or used in a multifunctional way. Ideas in this category were quite limited and three were prioritised, but despite this evaluation, ideas in this category generated quite some discussion.

A popular idea was that in general products should have a longer life-span and be made of less toxic material. The following statement was given by one participant and reflects this sentiment:

"We did. To get new materials with a shorter half-life or that are less toxic. Some biological films." (Slovenia FG3, P9)

Furthermore, a well evaluated idea was that of biological plastic, with the implication that more collaborative technical effort be put into the development of this material, see below:

"[P10] Or bio plastic.
[P1] Biomass.
[M] But is that the same, biomass?
[P9] No, it's not.
[M] That's right, it's not. Bio plastic. Let's say. Let's put shorter half-life in brackets, and healthier, so that we know. Okay, that's one idea. What do we need for this idea? How do we make it come true? What kind of knowledge do we need for it?
[P9] Biochemists, ecologists, chemists, engineers..." (Slovenia FG3)

The other prioritised idea related to the degradation and reuse of packaging:

"To start at the top. A world without PVC. The invention of biologically degradable material with the same characteristics. If it's necessary like packaging, we should find a different material, which is biologically degradable." (Slovenia FG3, P1)
"[P2] In particular, we also had degradable packaging in mind.
[M] So reusable and degradable packaging. Have any of the other groups put down something similar?
[P9] Yes. Here, packaging...

[M] The packaging made from corn-starch instead of petroleum oil. Is that right?
[P8] Yes. And from natural materials, for example, say... woven baskets, say, for fruit, instead of the plastic ones, we use now." (Slovenia FG2)

Category	Idea	Aim	Target Group	Priority
Material	Develop products with an indefinite useful life and less toxic	Less use of resources	Producers	☆☆☆☆☆
	Creation of biological plastic	Effect on planet/ Effective use of waste	Producers	☆☆☆☆
	Biodegradable packaging made from corn starch	Effect on planet	Producers	☆☆

BIO(TECHNO)LOGY

The third category of 'environmental sciences and technology' is concerned with bio(techno)logical ideas. These ideas generated some priority points and were primarily focused on making effective use of waste.

The reuse of waste was proposed in one of the groups. The following discussion indicates this:
"[M] What if we had cars that ran on waste? Instead of fossil fuel.
[...]
[P6] That would be really great, yeah. You open the tank, toss in a banana peel and it goes.
[P2] That would be great yeah." (Slovenia FG 1)

Aside from waste generated directly by the remains of food it was also proposed that biological waste be used to generate electrical energy:
"Sewage, cleaned, and then it's burned. Biogas is used for fuel. And then electricity is generated." (Slovenia FG 1)
In line with this, the idea that dog faeces could be used to generate an energy source for heating was put forward:
"[P 10] Dogs' droppings.
[M] Yes. What about dogs' droppings?
[P 10] We could...use them for heating for example." (Slovenia FG 1)

Overall, it was clear from the participant responses that there was quite some enthusiasm for this category and considerable value was given to the development of bio(techno)logy.

Table 4.3.3 Ideas within the category 'bio(techno)logical' that received priority, ranked accordingly

Category	Idea	Aim	Target Group	Priority
Bio(techno)-logical	Cars running on biological waste generated in households	Effective use of waste/ Less use of resources	Producers	☆☆
	Developing more technology into conversion of biological waste into alternate forms of energy	Effective use of waste/ Less use of resources	Producers	☆
	Use dog droppings for fuel	Less use of resources/ Effect on planet	Producers	☆

ICT

Very few ideas were raised in the domain of 'environmental sciences and technology' on ICT (see table 4.3.4). One idea that was welcomed with enthusiasm concerned the idea of "smart-recycle", involving a kind of smart bin.

"We were very futurist and we developed the smart-recycle. If everything today is smart phones, smart this, smart that, right, we can have smart-recycle. It's basically putting underneath the sink, where we already have these sorting bins, right, an electronic one, that would be capable of recognising the type of waste and would throw it into its own hole, would press it, right, so that we save space. And when it would be completely developed, right, this recycle would open like a drawer and would say, 'well John, your plastic is full, take it to the blue bin'... Or the smart-recycler could actually be the central heating, where it would decompose and the house would generate heat with that, right." (Slovenia FG3, P7)

Table 4.3.4 Ideas within the category 'ICT' that received priority, ranked accordingly.

Category	Idea	Aim	Target Group	Priority
ICT	Smart Recycle - machine in the kitchen to sort waste	Convenience in the home	Other	☆☆☆☆

4.3.2 Policy, management and communication

POLICY

Ideas relevant to policy were discussed in all focus groups, but only two of these ideas received priority points. The most highly evaluated idea related to people being incentivised to reduce the amount of waste they generate, so that when they reach a recycling centre, there is a mechanism in place that controls the quantity of waste they bring. Basically, the idea proposes that people bringing waste to a waste management centre are controlled according to the amount they bring in and the amount they pay the centre is proportional to the amount of waste they generate. The idea was developed as follows:

"[P2] [...] what I've noticed, is this. People bring [waste] from other places, they bring it to [...] these [recycling] stations, and fill them all up; and these people are strangers, so you don't even know who it all belongs to. And everything is piled up. And actually, you pay for it [...] you end up paying for something that's not even yours.
[P10] And it's you who pays the fine for it.
[M] Pay-by-use. No, pay-by-[waste] generation, not by...
[P1] By disposal.
[P8] By generation.
[P2] Yes, by generation.
[P10] Pay-by-quantity...
[P1] By generation. By quantity of disposed of waste." (Slovenia FG1)

This basic idea was toyed with and modified as the discussion continued and some more participants came up with similar ideas:

"[P9] You go inside and throw the material in. For example plastic, a plastic stick that comes out of plastic packaging [...] a metal stick, you bring it and they keep track of who brings what. They [...] have control, they know who brings what. And whoever brings more material has [...] pays less for municipal services... The plastic stick [...] you bring it to the collection point [...] when they collect the rubbish you have, some bins are too full, and some are half empty. [...] But in this collection point, they keep track of when it's full and they come and get it. And the more you recycle the less you pay. It's not like now, when some people separate their waste and some don't and then you gain nothing from it. [...] And if he

doesn't collect anything, if he goes directly to the landfill for example to sell, then inspection comes to his house, because everything is electronically monitored, who throws what away..." (Slovenia FG 1)

Other participants had the idea that management and control of waste needs to be at a higher level, and it was proposed that the European Union should be more actively engaged, as is evident in the following discussion:

"[P7] But the basis for this change in the way of life would have to be a waste management plan by the state or at an even higher level. Once you have a plan and goals, then...
[P6] And resources.
[P7] And resources, then you can find a way to realise them and that's when this comes in, right. If they offer you certain solutions, individuals will start to use them, they will change their way of life in the way they offer it.
[P6] And then my great-great-grandson...everything will seem normal to him, won't it.
[P7] Yes for sure.
[M] That's right.
[P6] He won't have problems, everything will be normal, just as I have a mobile phone and I can make calls.
[M] Yes. I will write this down as a European management plan..." (Slovenia FG 1)

Table 4.3.5 Ideas within the category 'policy' that received priority, ranked accordingly

Category	Idea	Aim	Target Group	Priority
Policy	Pay-by-quantity of waste generated system for encouragement - rewarding those who are meticulous in waste separation	Improve recycling/ Behaviour change	Consumers	☆☆☆☆☆☆
	EU waste management plan	Effect on planet/ Improve recycling	Government	☆☆

MANAGEMENT AND LOGISTICS

'Management and logistics' is another category of 'policy, management and communication' and is more related to ideas that require some managerial or logistical decisions for them to be realised.
A well-supported idea was that products such as vegetables and fruits be sold as individual items and not in pre-packaged plastic bags in larger quantities. There was quite some support for this idea and also to make more use of local markets and producers where this option is already available.

Other participants focussed on lengthening the life span of household appliances, particularly by making them easier to repair:

"[P6] Improving quality to a maximum. Lifelong warranty, free repair services or at minimum costs. So that it's worth getting it repaired instead of buying a new one.
[P7] Extending the useful life of a product.
[M] And we know what happens to these products.
[P10] If I refer to that, a person buys a car after two years to have a new one, the old one is still sold. In this case, the old one is cast away. Why should it be, the same principle could apply." (Slovenia FG 1)

There was also support for the proposal that people bring their own containers for shopping and facilitate the idea of refilling containers, rather than buying excessive packaging each time:

"First let's say we could very easily have a refill possibility in stores, right. Like there is for nuts now, like there is for well various things, there could also be for juice and water and such, right. You'd have your

own packaging, which you would refill and pay at a certain, lower price." (Slovenia FG3, P7)

Table 4.3.6 Ideas within the category 'management and logistics' that received priority, ranked accordingly

Category	Idea	Aim	Target Group	Priority
Management/ Logistics	Local markets sell as many food items as possible, as loose products	Less plastic/ Less packaging	Producers	☆☆☆☆
	Longer life span of household appliances, easier to repair	Less waste production/ Less use of resources	Producers/ Consumers	☆☆☆☆
	Consumers bring own container - shopping carts with compartments	Less packaging/ Less plastic	Consumers	☆☆

COMMUNICATION AND EDUCATION

A number of ideas were generated in regard to communication that had an emphasis on education and behaviour change. Interestingly, many of these ideas emerged from the group comprising participants in an age group that are actively parenting younger children and teenagers. Two ideas were highly prioritised by the participants.

The idea that was most highly evaluated was that there needs to be a change in the lifestyle and mentality of people in society, and it was thought that this is best achieved through education and awareness activities. This thought is apparent in the quote below:

"In the first place we have, of course, a change in life-style and thinking, which is done through education and awareness, OK. [...] Actually, it's a bit late for our generation, it should have been [...] from infancy on [...] it should be a taught subject in primary school [...] so that we all know what it's about and we know how to go about it and so on. That's the first thing." (Slovenia FG 1)

Participants placed quite some value on the idea that children can be agents of change. Furthermore, it was proposed that people be encouraged to develop a positive mind-set towards recycling and circulating goods. This proposition is reflected below:

"[...] educating people on separating waste, you know [...] we don't have enough information. We receive a brochure, which we then forget about, but this would be [educating] constantly in magazines, TV shows, where the waste should go, how to save, how to reduce waste and so on ... Then, for example, we also mentioned a positive attitude towards the circulation of goods, like second-hand clothes, giving away your old clothes, giving away your furniture, electronics as well. Telephones also, because some people can't afford them, they can't afford computers, instead of computers going to waste and polluting the environment." (Slovenia FG 1, P3)

Some participants were also convinced that it would be a good idea to present people with the consequences of waste management, particularly in relation to its impact on health and seemed to favour the idea of a more confrontational approach:

"[P7] Health education approaches.
[M] Health education... So, this is the method: what's in it for me, if I take care of... what's in it for me personally.
[P7] What does my water have to do with this... What does my environment [has to do with me], in what ways do we pollute the environment, why do I pollute, why was the ozone hole formed, what are we going to do about it, why is the temperature increasing every year, right. What causes drought...
[M] So to somehow raise awareness through personal perspective. How can I benefit...

[P7] That's why we have continuity.
[P7] Yes, that's right... A comprehensive approach, right." (Slovenia FG 1)

Table 4.3.7 Ideas within the category 'communication and education' that received priority, ranked accordingly

Category	Idea	Aim	Target Group	Priority
Communication and education	Change in consumerist lifestyle and encourage a positive attitude toward effective waste management	Behaviour change	Consumers	☆☆☆☆☆☆
	Nationwide education about impact of efficient waste management	Awareness of negative effects and possibilities	Consumers	☆☆☆☆☆

LOCAL INITIATIVES

The most highly evaluated ideas of all categories, of citizen's ideas on how to realise a 'zero waste society', were those that fit in the category of local initiatives.

The idea receiving the highest priority points was that self-sufficiency should be stimulated more actively. The idea was about encouraging people to repair own products as well as to engage in local production and trade, not only to stimulate local production but also reduce the amount of pollution that is generated in the current 'routes' that are involved in transportation of goods.

"[P9] We had ideas of self-sufficiency.
[M] Self-sufficiency. [...] Okay.
[P3] Basically the country provides for itself, right.
[P1] Yes. Exactly. If you see that there are enough grapes in the Vipava valley [SW part of Slovenia], I don't know, why do we need to get it from Spain or America ...?
[P5] It's cheaper.
[P1] It's cheaper.
[P8] It's cheaper.
[P9] It's cheaper.
[P1] Yes.
[P8] It's sad, but there it is.
[M] How can we solve that?
[P1] 4 euro for grapes from Spain, while they throw away the ones from Vipava valley.
[P10] So that the price for domestic products would be cheaper." (Slovenia FG3)

Furthermore, there was interest for the introduction of exchange and swap shops:

"Well, we've also put down [...] exchange shops. [...] You bring in something you don't need, for example, clothes, furniture, and you can take something." (Slovenia FG2, P10)

Several participants suggested that people should buy more directly from local producers without interference of retailers:

"[P3] [...] Agricultural products straight from their producers.
[P4] To consumers.
[P3] To consumers, right. From producers to consumers ... someone brings it all with a van, or we go there, take it, put it all in the bag and leave. And not [go] to a shop ...[...] I call a farmer, and he brings what I order; he comes twice a month [...] on the parking lot, so two vans bring apples, pumpkin oil, olive oil, kohlrabi, cabbage, everything. Home-grown products from his garden straight to my bag, I pay and I leave." (Slovenia FG2)

Table 4.3.8 Ideas within the category 'local initiatives' that received priority, ranked accordingly

Category	Idea	Aim	Target Group	Priority
Local initiatives	Stimulate self-sufficiency and encourage people to repair own products as well as buying as much as possible locally	Behaviour change/ Local production	Consumers	☆☆☆☆☆☆☆
	Exchange shops where used objects are repaired and resold or donated	Less use of resources	Consumers	☆☆☆☆☆☆
	Encourage locals to buy direct from local producers and cut out the 'middle man' thereby reducing unnecessary distance travel	Less packaging/ Less plastic/ Less use of resources	Consumers/ Producers	☆☆☆

OTHER

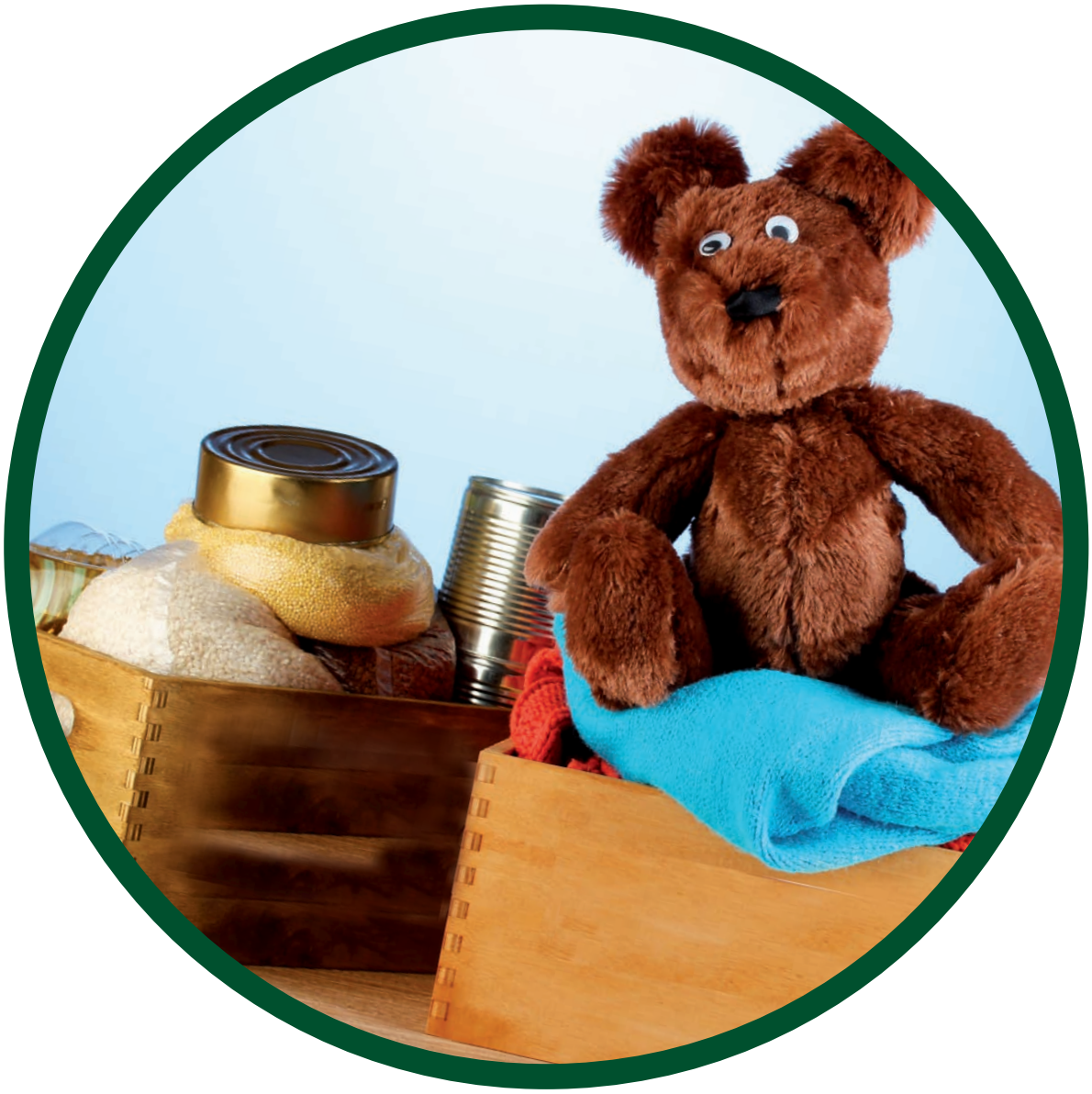
To conclude this section, a number of ideas raised were not specifically related to urban waste, but rather had a more global environmental concern (see table 4.3.9). The idea receiving the most priority points was that housing estates have communal boiler rooms, as opposed to individual boilers.

"The use of communal boiler rooms in housing estates that would replace individual fireboxes. We could use those filters, mentioned earlier by the gentleman over there. It would mean less pollution of the environment, right. What else do we have? We would reduce the use of public, the number of cars in urban traffic, put greater emphasis on public transport." (Slovenia FG2, P7)

The other prioritised idea in this category concerned the further development of electric cars.

Table 4.3.9 Ideas within the category 'other' that received priority, ranked accordingly

Category	Idea	Aim	Target Group	Priority
Other	Communal boiler rooms instead of individual ones	Less use of resources/ Convenience in the home	Consumers	☆☆☆
	Develop technology around electric cars	Less use of resources/ Effect on planet	Producers	☆



5. Conclusion, discussion and evaluation

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

Slovenia ranks 14th on the EU27 ranking list of Municipal Solid Waste Recycling (MSW). In 2002 MSW was at a rate of 11%, however, this rate increased to 30% in 2009. According to present trends, Slovenia is on track to fulfil the 50% recycling target of the EU Waste Framework Directive by 2020. The Slovenian landfill tax was introduced in 2001, and revenues from the tax were increasingly used to build up recycling infrastructure.

The results from the focus groups showed nearly all participants separate their waste at household level and even if they do not have ready access to the means of separating waste they make an effort to do so. This is in line with the findings from the Flash Eurobarometer survey 'Attitudes of Europeans towards resource efficiency'[13] in which 97% of Slovenian respondents indicated they separate at least some waste (see Annex 2). The results show that most of the participants know how to separate their waste correctly and a significant number of participants in focus groups had some knowledge about what happens to their waste afterwards.

During the focus groups, a number of barriers and concerns were identified as inhibiting factors for dealing with waste appropriately. In discussion about production and prevention, the participants in all focus groups were concerned about the amount of packaging and the type of packaging material, which is often not recyclable and reusable. Additionally, quite a number voiced concern that it was difficult to purchase fruit and vegetable products as single items.

Moreover, a number of participants stated that there needs to be a change in mentality and lifestyles of people, and in particular generating a positive attitude towards repairing and mending goods owned by people, in preference to buying more and more products. The underlying reasons for this were expressed as a concern for the impact of environmental waste caused by all the excessive packaging of new products. This concern was reflected in findings of the Flash Eurobarometer, which indicates that Slovenians are marginally more concerned about environmental impact of products than their European counterparts.

Regarding the disposal of waste, the participants also mentioned a few barriers and challenges. The major concern expressed by most participants is that bins that are available for waste fill up too quickly, as collection of bins is too infrequent. In relation to this, there was some irritation expressed about the perceived injustice of being fined by authorities if waste is not placed in the correct bin. Others expressed concern that there was not enough information available to let people know where certain streams of waste should go and in particular hazardous waste presented a challenge.

5.2 Ideas for achieving a 'zero waste society'

The results are divided into two main research fields, 'environmental sciences and technology' and 'policy, management and communication', which are each further divided into four categories.

In the first field, ideas focused mainly on technology to use waste more effectively, to improve the management of waste in the household and to use less resources. The Government, consumers and producers are the most prominent target groups. Most ideas in the technological category were related to the idea that waste should be converted to producing alternative energy sources for example, that waste produced at household level could be used for fuelling furnaces, and these furnaces in turn would be used for central heating. There was also a strong emphasis on the development of recyclable and decomposable materials for packaging.

Ideas in the second field 'policy, management and communication' were predominantly about developing communication strategies to raise awareness and change behaviour. Regulations should encourage manufacturers to use less packaging material or only use material that is recyclable. Citizens should incur costs at

waste management centres that are inversely proportionate to the amount of waste generated. This is related to the results from the Eurobarometer Survey where more than half of the respondents indicated stronger law enforcement on waste management is necessary. An interesting observation that was raised in the groups was connected to Roma people, also referred to as Gypsies, and participants commented that this group of people had been active in collection of waste prior to the inception of municipal waste companies, and the feeling was that the Roma were more efficient than the waste companies. They were also described as being proactive in terms of distributing flyers informing people of the services they had to offer.

There was also a strong belief among many participants that a lot of effort and emphasis should be placed on educating children, and in doing so engender new values and mind-sets for effective waste management and use of resources at an early age.

Of the most highly prioritised ideas, the first is to use green energy drawing on urban waste (different types of power plants; the assistance of experts). The second involves stimulating self-sufficiency and encourage people to repair own products as well as buying as much as possible locally, followed by three ideas that received the same number of priority stickers: pay-by-quantity of waste generated system for encouragement - rewarding those who are meticulous in waste separation; change in consumerist lifestyle and encourage a positive attitude toward effective waste management; exchange shops where used objects are repaired and resold or donated.

5.3 Reflection

All focus groups were actively participated in and there appeared to be a fairly even representation of people's views, opinions and ideas, with most participants actively contributing ideas as well as concerns. They stated that they found the discussions interesting and that time passed quickly. Many participants were impressed by the design of the exercises that enabled them to express their opinions, perspectives and visions. They communicated a hope that the outcome of these discussions would be translated into effective EU waste management related policy. Some participants were irritated by the restriction to limit discussion to urban waste only, and said they would have welcomed the opportunity to discuss wider environmental issues.

[13] 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	The use of green energy drawing on urban waste (different types of power plants the assistance of experts)	Less use of resources/ Effect on planet	Government/ Other	☆☆☆☆☆ ☆☆☆☆☆
	I-fluid (you pour it on hazardous waste and it disappears)	Eliminate waste	Other	☆☆☆☆
	Chimney filters in houses that enable the utilization of waste for thermal energy	Effective use of waste	Other	
	Waste collection shafts, the collected waste decomposes at the end of the shaft	Convenience in the home	Consumers/ Waste management companies	
	Development of a waste processing machine - producing raw material from waste	Effective use of waste	Other	
	Constructing a transcontinental sub-oceanic railway from energy generated by urban waste	Less use of resources/ Effect on planet	Government/ Other	
Material	Develop products with an indefinite useful life and less toxic	Less use of resources	Producers	☆☆☆☆☆
	Creation of biological plastic	Effect on planet/ Effective use of waste	Producers	☆☆☆☆
	Biodegradable packaging made from corn starch	Effect on planet	Producers	☆☆
	Reusable packaging especially for use in supermarket carrier bags and local stores - sustainable packaging	Less waste production/ Less packaging	Producers	
Bio(techno)-logical	Cars running on biological waste generated in households	Effective use of waste/ Less use of resources	Producers	☆☆
	Developing more technology into conversion of biological waste into alternate forms of energy	Effective use of waste/ Less use of resources	Producers	☆
	Use dog droppings for fuel	Less use of resources/ Effect on planet	Producers	☆
	Bacteria that eat waste	Eliminate waste/ Effect on planet	Other	
ICT	Smart Recycle - machine in the kitchen to sort waste	Convenience in the home	Consumers/ Producers	☆☆☆☆

POLICY, MANAGEMENT AND COMMUNICATION

Category	Idea	Aim	Target Group	Priority
Policy	Pay-by-quantity of waste generated system for encouragement - rewarding those who are meticulous in waste separation	Behaviour change/ Improve recycling	Consumers	☆☆☆☆☆ ☆
	EU waste management plan	Effect on planet/ Improve recycling	Government	☆☆
	State wide prohibition on the manufacture of disposable packaging and use of hazardous substances in packaging	Less waste production/ Effect on planet	Producers	
	Restricting the purchase of packaging	Less packaging/ Less plastic	Consumers	
	Compelling manufacturers to use "bio-packaging"	Less waste production/ Less packaging	Producers	
Management/ Logistics	Local markets sell as many food items as possible, as loose products	Less plastic/ Less packaging	Producers	☆☆☆☆
	Longer life span of household appliances, easier to repair	Less waste production/ Less use of resources	Producers/ Consumers	☆☆☆☆
	Consumers bring own container - shopping carts with compartments	Less packaging/ Less plastic	Consumers	☆☆
	Install waste shafts in apartment blocks	Convenience in the home	Waste management companies/ Consumers	
Communication and education	Change in consumerist lifestyle and encourage a positive attitude toward effective waste management	Behaviour change	Consumers	☆☆☆☆☆ ☆
	Nationwide education about impact of efficient waste management	Awareness of negative effects and possibilities	Consumers	☆☆☆☆☆
	Stimulate modest lifestyles in relation to excessive purchasing of products	Behaviour change/ Less waste production	Consumers	
Local initiatives	Stimulate self-sufficiency and encourage people to repair own products as well as buying as much as possible locally	Behaviour change/ Local production	Consumers	☆☆☆☆☆ ☆☆
	Exchange shops where used objects are repaired and resold or donated	Less use of resources	Consumers	☆☆☆☆☆ ☆
	Encourage locals to buy direct from local producers and cut out the 'middle man' thereby reducing unnecessary distance travel	Less packaging/ Less plastic/ Less use of resources	Consumers/ Producers	☆☆☆
	Communicators use electronic forms of communication in preference to information on paper	Less waste production/ Less use of resources	Producers	
	Selective collection of used local products articles by local manufacturers and part exchange	Less packaging/ Less use of resources	Producers	
	Collective cultivating fields	Local production	Consumers	
	Making your own organic cleaning products and cosmetics from waste	Effective use of waste	Consumers	
Other	Communal boiler rooms instead of individual ones	Less use of resources/ Convenience in the home	Consumers	☆☆☆
	Develop technology around electric cars	Less use of resources/ Effect on planet	Producers	☆
	Develop technology around hydrogen powered cars	Less use of resources/ Effect on planet	Producers	

Annex 2: Attitudes of citizens from Slovenia 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.

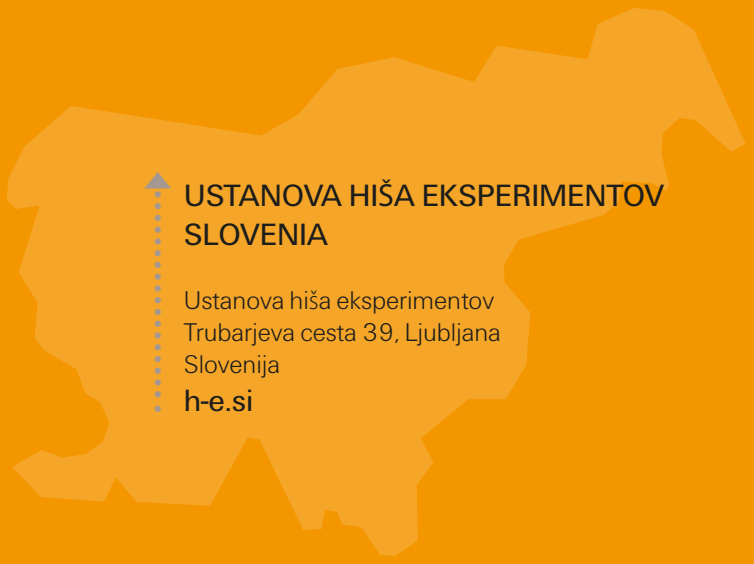
The survey obtained interviews - fixed-line, mobile phone and face-to-face - with nationally representative samples of EU citizens (aged 15 and older) living in 27 Member States. The target sample size in all countries was 1,000 interviews. Below we give the results from Slovenia.

Question	Answer	%	EU27 Average
Do you think Europe could be more efficient in its use of natural resources?	Yes	97%	87%
	No	2%	5%
	DK/NA*	1%	8%
Do you think that your household is producing too much waste or not?	Yes	47%	41%
	No	53%	58%
	DK/NA*	0%	1%
Do you separate at least some of your waste for recycling or composting?	Yes	97%	89%
	No	3%	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	84%	76%
	Improve separate waste collection at your home	70%	67%
	More information on how and where to separate waste	70%	65%
	Legal obligation to separate waste	64%	59%
	Taxes for waste management	48%	39%
What initiatives would improve waste management in your community?	Better waste collection services	73%	70%
	Stronger law enforcement on waste management	69%	65%
	Make producers pay for collection and recycling of waste	76%	63%
	Make households pay for the waste they produce	46%	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	17%	14%
	To pay proportionally to the quantity of waste you generate	71%	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	17%	25%
	Include the cost of waste management in the price of the products you buy	71%	59%
	DK/NA*	12%	16%
Can you estimate what percentage of the food you buy goes to waste?	None	14%	11%
	15% or less	73%	71%
	16% to 30%	11%	13%
	More than 30%	2%	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	61%	62%
	Better information on food product labels, e.g. how to interpret "best before" dates, information on storage and preparation	60%	61%
	Better shopping planning by my household	59%	58%
	Smaller portion sizes available in shops	46%	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	41%	39%
	Rather important	47%	41%
	Rather not important	7%	12%
	Not at all important	3%	6%
	DK/NA*	2%	2%
Are you willing to buy second-hand products?	Yes	72%	68%
Base: all respondents, % of yes			
Would you buy the following products second hand?	Furniture	57%	56%
Base: all respondents, % of yes	Electronic equipment	55%	45%
	Textiles (clothing, bedding, curtains, etc)	30%	36%
What reasons prevent you from buying second-hand products?	Quality/usability of the product	53%	58%
	Health and safety concerns	51%	50%
	Less appealing look of the product	22%	25%
	Afraid of what others might think	3%	5%
Would you buy products made of recycled materials?	Yes	88%	86%
	No	9%	11%
	DK/NA*	3%	3%
What would be the most important factors in your decision to buy products made of recycled materials?	Quality/usability of the product	51%	51%
	Environmental impact of the product	28%	26%
	Price of the product	17%	18%
	Brand/brand name of the product	1%	2%
	DK/NA*	3%	3%
What prevents you from buying recycled products or products containing recycled materials?	Health and safety concerns	48%	44%
	Quality/usability of the product	35%	42%
	No clear consumer information on the recycled product	30%	32%
	Less appealing look of the product	13%	17%
	Afraid of what others might think	9%	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.

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