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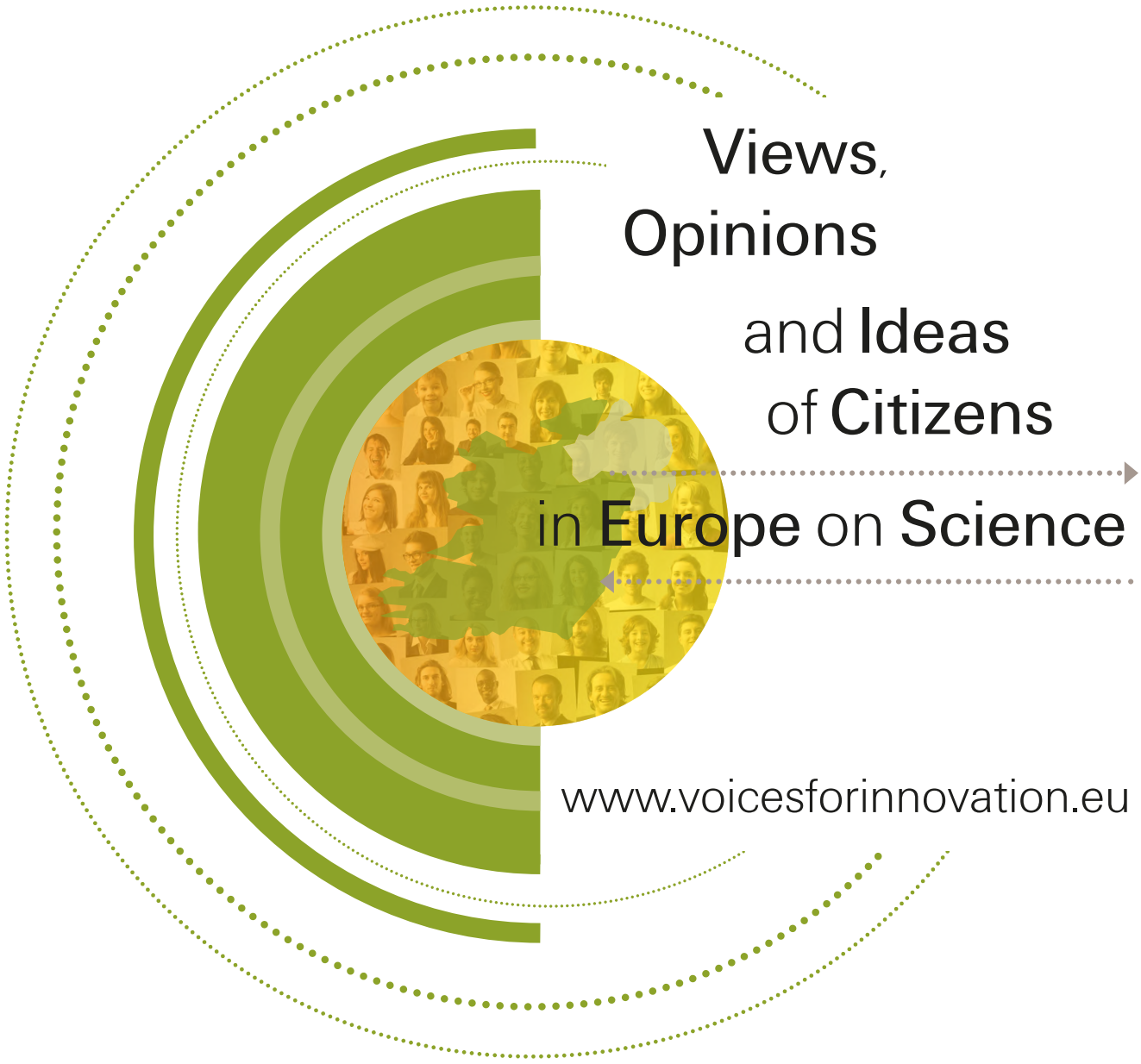
COUNTRY REPORT IRELAND



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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).

CONTENTS

1. Introduction

1.1 The VOICES project

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

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

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

1.2 Citizen participation in social innovation

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

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

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

1.3 The process

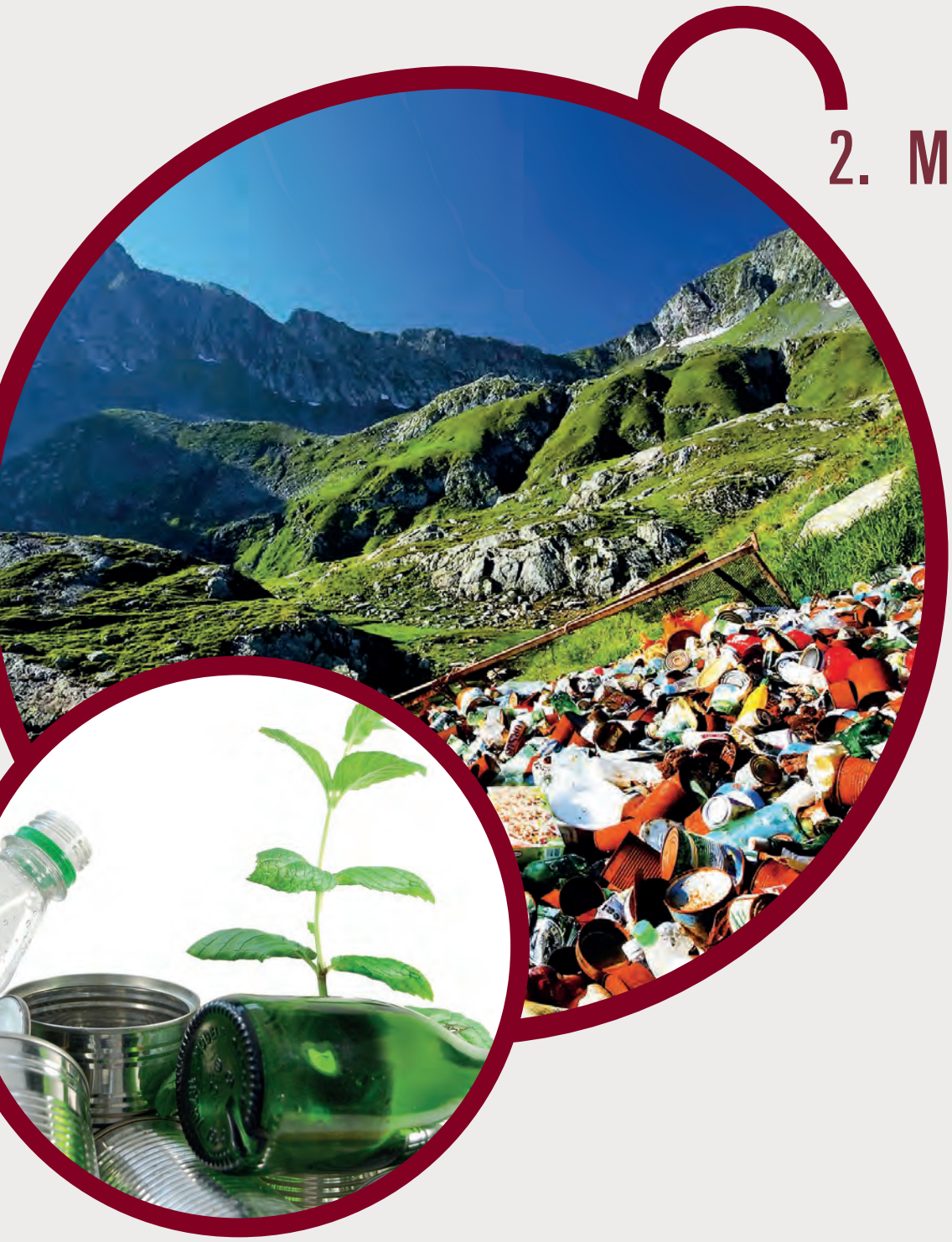
One thousand European citizens participated in focus group discussions about 'Waste as a resource' using a structured VOICES methodology which spans training, implementation and analysis. The methods, infrastructure and results of VOICES are fully documented on an open access portal (www.voicesforinnovation.eu)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

VOICES engaged citizens in 33 locations covering all 27 EU countries. 28 Ecsite network institutions make up the Third Party task force which organized 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 Ireland, 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 prioritized 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

IRELAND

3. Country relevant data - Ireland

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

Ireland is one of the smaller EU countries with more than 4.5 million inhabitants. The majority of the participants (73%) live in rural areas, while others reside in urban areas (27%).

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

		2011	
Population at 1 January		4 570 727	
Population as percentage of EU27		0.9%	
Gross Domestic Product (PPP)		32 500 Euro	
Population urban-rural typology	Urban	1 201 000	27%
	Intermediate		
	Rural	3 280 000	73%

3.2 Factsheet on waste

The amount of municipal waste generated and treated in Ireland is above the average amount of waste treated in the EU27. Ireland ranks 9th of the EU27 ranking list on Municipal Solid Waste Recycling (MSW). The majority of MSW generated in Ireland is sent to landfill, although it reduced significantly from 77% in 2001 to 57% in 2010. Recycling (material and organic) of MSW increased dramatically over the same period, peaking in volume in 2007. Ireland is on its way to reach the EU recycling MSW target of 50% by 2020.[9]

Table 3.2 Municipal Waste[10,11]

		Ireland		EU27 average	
Municipal waste generated (kg per person)		636 kg		502 kg	
Municipal waste treated (kg per person)		586 kg		486 kg	
	Landfilled	334 kg	57%	185 kg	38%
	Incinerated	23 kg	4%	107 kg	22%
	Recycled (material recycling)	205 kg	35%	122 kg	25%
	Composted (organic recycling)	23 kg	4%	73 kg	15%

3.3 Composition of the focus groups

The three focus groups (FGs) in Ireland took place in the weekend of the 6th and 7th of April 2013 in Dublin at the Science Gallery, Trinity College Dublin. The FGs were moderated by Jane Chadwick, Lead Researcher on European Projects.

In total, 30 people (14 male and 16 female) participated in the three FGs. The age of the participants ranged from 23 to 64 years old: 10 participants were aged between 18 and 35 years, 10 of them were between 36 and 50 years and 10 were aged 51 or higher. Most participants (n=16) had a medium level of education, while 8 participants had a high level of education and 6 others had a low education level. Of all participants, 17 were employed, 11 were unemployed and 2 were retired. The large majority of the participants live in a house (n=27), while 3 others reside 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	4	14
	Female	5	5	6	16
Age	18 - 35	10	0	0	10
	36 - 50	0	10	0	10
	50+	0	0	10	10
Education	High	3	3	2	8
	Medium	4	7	5	16
	Low	3	0	3	6
Employment	Unemployed	4	4	3	11
	Employed	6	6	5	17
	Retired	0	0	2	2
	Student	0	0	0	0
Housing	Flat	1	1	1	3
	House	9	9	9	27

[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 Ireland. 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 directions, 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 organized.

4.1.1 Waste separation

All participants mentioned having access to facilities for separating their waste. They typically described five or six waste streams (a waste stream is defined as one type of waste that is collected separately, covering the majority of their household waste): usually paper, glass, plastic, tin cans, food/garden waste and residual waste. The exact organization varied from one household to the next. Flats often have facilities for recycling downstairs, while family houses are allocated a certain amount of bins. A household generally has two or three waste bins of different colours: one for recyclables (plastics, papers, cardboard, cans), one for general/residual waste, and one for garden and food waste. Each waste stream has its own bin colour assigned, although the colours vary according to the municipality.

Many participants also separate food waste for purposes such as feeding to their dogs, burying in the garden, or personal composting. One participant burnt most waste material himself. Some others said that they used paper to burn in their fireplace. Almost all participants separate old clothes and shoes that are fit to be worn again with various purposes such as selling them, swapping them with friends or for charity donation. Many participants also dispose of chemical waste, large waste items (e.g. old furniture) and electrical appliances separately in various ways.

[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

The bins for a specific waste stream are collected from the house by the municipality or a private waste management company, usually once a week or fortnightly. For some bins, people have to pay a fee, while others are free of charge, although this varies according to the municipality. Bins are also collected regularly from flats. Participants also indicated that people living in flats generally pay a standard waste charge every year as a part of their service charge.

With the exception of one participant, glass is not collected separately from the house and needs to be brought to a recycling centre or bottle bank (a container where bottles can be deposited for recycling). One participant brings part of her recyclable waste (tin cans, egg cartons and milk bottles) to be used for craft lessons at the primary school where she teaches.

Separated clothes and shoes are disposed of in several ways, such as bringing them directly to charity shops, using bins or using special bags that are collected from their homes. Some people also bring other unwanted items, including old schoolbooks, games and toys to charity shops.

Participants deal with their large waste items, like old furniture or washing machines, in various ways. Unwanted items that are in relatively good shape might be reused by family members or friends. In some counties, it is possible to place large waste items outside the house on specific days (monthly or annually) to be picked up by the county council. In other cases, participants take large items to central recycling centres themselves, where they generally have to pay a fee for disposal. Chemical waste and batteries can also be deposited here. Old electrical appliances can also be returned to the shop when buying a new one.

4.1.3 Knowledge about waste pathways

In general, participants expressed a considerable uncertainty about what happens to waste after it is collected from the home. Many of them explicitly mentioned that they have no clue about where their waste goes and what is done with it. Other participants guessed or knew that their general waste and food waste went to landfill. Some knew that food waste is also used for making compost or manure. One participant mentioned that papers and cardboard goes into pulp and will be recycled as paper or cardboard boxes. Another participant stated that glass gets recycled into new glass items.

Many people disputed whether recycling actually takes place. This idea arose from the fact that all recyclable materials are mixed into one bin, so people wonder if and how these are actually being separated in the end. Some participants even think that the recyclables are possibly recombined with other waste types and sent to landfill all together, because they observed bins of different colour being emptied into the same truck. Those people consider this as a 'money-making scam' because they believe that the system with different coloured bins is just a way to charge people for more than one collection.

4.1.4 Waste management behaviour and convenience

The majority of participants use the bins that are provided for them and are generally satisfied with this set-up. However, several inconveniences were identified. Participants most frequently complained about the charge they have to pay for bin collections. Other inconveniences included the bad smell of bins for food and garden waste, the space it takes around the house, and insufficient collections.

Some people admitted that they do not use particular bins as much as they should or do not use them at all, mainly because of practical or financial barriers or the belief that separating waste does not really make a dif-

ference. Sometimes it is unclear where the waste should go, for example chemical waste (like paint). In such a case it is generally put down the drain or into the residual bin, even though this is not correct.

Small local centres for waste disposal are generally considered to be practical and very convenient. They are located nearby and are well maintained. Disposing of larger items is, however, less convenient for most participants. Loading large items into a car is a hassle for many. Moreover, the recycling centres are often far away and accessibility is also a problem, especially at weekends. A few participants said that they, or their children, are 'recycling freaks' who do their utmost to separate household waste and promote reuse of certain waste items.

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 three 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

Concerns around packaging of (food) products were repeatedly mentioned in all focus group discussions. People generally feel that a lot of packaging is irrelevant and that too much packaging is used:

> *"I think there's just too much, you know! Like, you go to buy four oranges in the supermarket and there's a little tray underneath it, and there's... a plastic wrapped around it. You don't need that, you know." (Ireland FG 1, P4)*

Participants particularly expressed concerns about plastics. They felt that, compared to years ago, many more products are packed in plastic:

> *"Even broccoli comes in plastic!" (Ireland FG2, P 10)*

Some participants are worried that the plastic leaks into the food and the environment, which might lead to health problems or pollution. Some participants believe that the amount of plastic packaging has increased since large retail chains came to Ireland. These chains import products from all over the world and the hygiene rules for shipping food result in an excessive amount of packaging. According to participants, another reason behind excess packaging is the need for manufacturers and advertisers to make attractive packaging that persuades consumers to buy their products.

Most participants feel 'forced' to buy all these over-packaged products because supermarkets do not offer alternatives for them to be able to limit waste. However, some of them admitted that it is not only the producers or retailers who are to blame but that they live in a 'lazy society' where grocery shopping should be easy and quick. Participants tend to go to a large supermarket and do their weekly groceries all at once, rather than dropping by various local shops where you only get one bag instead of every product being packed separately. One participant explains:

> *"It's really stupid that I drive by two vegetable stores [on the way to the supermarket] where you only get one bag as opposed to doing your weekly shopping tearing everything apart [...] It wouldn't be a price thing because it wouldn't be a whole lot of difference in the price per se ... But it's just that I'm in one ... It's convenience more so than a cost thing." (Ireland FG3, P6)*

Furthermore, participants had concerns about living in a 'disposable' society. Many products such as televisions or mobile phones are produced in a way that once one part is gone, it has to be thrown away; it cannot be repaired. Participants considered that it is in the interest of companies if consumers dispose of objects because companies will make more money.

Finally, a few participants were of the opinion that the large amount of junk mail, such as advertising leaflets, that comes into their letterbox was also responsible for more waste. One participant indicated that he has a sticker on his letterbox to prevent junk mail but the sticker is often ignored. Participants considered that junk mail is a waste of paper because they do not read it anyway.

4.2.2 Waste management in the household

Although almost all participants indicated that they separate and recycle their waste according to plan, they still face many barriers and concerns with respect to handling their waste properly. First, participants experienced several practical barriers. Many think it is a hassle to go through all their waste and separate it. In addition, it takes a lot of time to do this. Furthermore, collecting waste at home takes up a lot of space and looks untidy, as the following participant explained:

> *"The glass can be a bit of a pain because no one likes to have to look at glass in the house, you know what I mean, you have to find a place until you have enough to go to it [the recycling centre]." (Ireland FG 1, P2)*

Participants also mentioned issues concerning food waste and composting. Food bins in the kitchen are inconvenient because they attract flies and they spread a bad smell. Personal composting is also not very appealing because it is known to attract vermin.

Another important barrier for separating and recycling waste is lack of knowledge. Some participants indicated that they have limited knowledge about how to deal with waste properly. There are labels for this, but these are often unclear. For example, when participants do not know what to do with their used batteries or old paint, it might end up in the general waste bin.

> *"Well, I asked two or three people 'What do you do with paint?' And everyone's saying 'What do you do with paint? I dunno'." (Ireland FG 1, P2)*

Another participant expressed concerns about people disposing of chemical waste, like poisonous herbicides for gardening, down the drain because they might be reluctant to bring it back to the shop to dispose of it:

> *"They don't want to see you coming in the door with it because it's a headache for them." (Ireland FG 1, P3)*

According to many participants, people's 'plain ignorance' and laziness might play a role in them not separating and recycling waste. Participants considered that there are many people in society that do not have the motivation to recycle and just put all their waste in the same bin. Participants believed that the financial costs of waste separation prevent many citizens from 'doing the right thing'. They would rather put everything in the same bin so they are charged for one bin instead of two or three.

Finally, some issues were raised regarding the management of household waste for residents of flats. Sometimes there are no facilities for separating waste at all. One of the participants used to live in an apartment and explained that he was not able to recycle there because there was only one communal bin for all different types of waste. According to some participants, residents of flats also seem less motivated to separate and recycle due to a lack of ownership of their waste. They pay a standard charge each year and, as long as the waste is regularly collected, they do not seem to bother much.

4.2.3 Waste disposal and pathways

Participants made a number of remarks regarding the waste management system. In all focus groups, financial issues were repeatedly mentioned. Many of them complained about the high charges of refuse collection and disposal of large waste items, and expressed the belief that this is part of the reason why people dump waste in public spaces.

"[P5] I went up with a rug there [recycling centre] recently and they were looking for twelve euros!
[P 1] Twelve? [amazed]
[P5] Yeah!...Well if I wasn't as good as I was, I would have dumped it out over a hedge somewhere, do you know?" (Ireland FG3)

Other participants were disappointed by the fact that bring-back systems for glass do not exist anymore, which enabled them to leave empty milk bottles on their doorstep and get full milk bottles in return. They considered that such systems would be a quicker way of recycling.

Furthermore, participants mentioned barriers related to bringing old items to a recycling centre. Participants in certain areas have to invest a significant amount of time, sometimes driving 20 to 60 minutes, to such a centre, which discourages them from dealing with waste responsibly. The opening hours of recycling centres were also considered to be problematic. Some participants felt that they are too limited. The recycling centres are often very busy on Saturdays, resulting in a queue of cars. In some counties, the centres are not open at all on Saturdays, which is especially a concern for people with a full-time job. It is often easier to put waste outside on the streets and let it be collected by waste management companies.

When participants have to take waste somewhere, they are reluctant. Moreover, one participant pointed out that it is not very (cost) efficient if everybody is driving a long distance to bring their waste to recycling centres.

"I'd wonder about ... you start thinking that if we're all driving somewhere to get rid of stuff how much are we ultimately doing?" (Ireland FG2, P9)

Some participants pointed out that the recycling bin gets full very quickly and is not collected often enough, discouraging recycling and making them throw everything in the bin that is collected that week. Others experienced barriers with regard to general bins and bottle banks being full all the time, resulting in bottles thrown everywhere around them.

Many concerns were raised about what happens to the waste after collection or disposal, and the need for adequate and transparent information was particularly emphasized. Participants often do not believe what is being told to them by the waste management companies. They referred to rumours about waste management companies that do not deal with the waste properly. Such companies lead people to believe that the waste is being recycled but many participants doubt that and tend to believe that in the end it all goes to landfill. As a consequence they feel cheated because they put much effort in separating their waste and are being charged for it as well. Others are suspicious regarding the charity bags for used clothing:

"I would be so happy to put it in the [charity] bag and put it outside. But then you hear about all these different conflicts about it being sold on, and that they're just making money out of it and it's not going to charities at all ...It stops me putting the clothes in the charity bags." (Ireland FG3, P7)

During the focus groups, participants expressed several worries about the environmental impact of waste pathways, for instance about the consequences of foul-smelling gases released by landfills and the kind of gases that are released back into the atmosphere when incinerating waste. Some think that these gases contribute to the depletion of the ozone layer, which in turn affects our climate. Participants considered that the public should not only be informed about the negative side of incineration but also about the benefits, including, for example, heating houses through incineration.

4.3 Citizens' ideas on how to realize 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 prioritized by the participants are described in this section. Ideas that were not prioritized are included in the full list of research ideas which is provided in Annex 1.

4.3.1 Environmental sciences and technology

TECHNICAL, PHYSICAL, CHEMICAL, ENGINEERING

The first category in the domain of 'environmental sciences and technology' groups technical, chemical, physical and engineering ideas together (see Table 4.3.1). Many ideas that fit into this category came up during the focus groups, although relatively few of them were prioritized.

Among the ones that were given priority, effective use of waste was an important aim for participants. The concept of using waste as a source for heating homes, schools or factories by burning waste received very high priority in all three focus groups. This idea requires the development of small incinerators that are suitable for personal use. One participant explained:

> *"Come up with a design that can manufacture a stove that is partially giving out heat into your home but maybe at the side of it or behind it... You're burning your waste, your packaging, your whatever and it's giving you heat and heat to your home and it's also getting rid of the rubbish." (Ireland FG3, P6)*

In a simpler application of this idea, combined with some chemical engineering, it would also be possible to use one's own fire or stove:

> *"[P9] A chemical would be manufactured in the future that would reduce all the waste you had to pellet size.*
> *[M] What would happen to those pellets?*
> *[P6] You put it in your stove." (Ireland FG3)*

A comparable system was proposed that would create waste disposal factories, powered by their own output. With such a system, the waste would be destroyed properly and, at the same time, the steam produced would power the turbines of the factory but might also power homes.

Another idea for effective use of waste that came up was to harvest methane gas from food waste or landfills so it can be used as a fuel, for powering cars, for example.

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	Development of personal incinerators, in order to use waste as a source for heating homes, schools or factories by burning the waste and use the produced energy for heating	Effective use of waste	Consumers	☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆
	A waste disposal factory that is powered by its own output. So the waste is destroyed properly and at the same time powers the factory	Effective use of waste	Waste management companies	☆☆☆
	Methane harvesting from food waste or landfills to use it as a burnable fuel	Effective use of waste	Waste management companies/ Consumers	☆☆☆
	A chemical spray that would reduce all the waste to pellet size and then put those pellets into one's own fire or stove	Effective use of waste/ Convenience in the home	Consumers	☆

MATERIALS

A second category related to the domain of 'environmental sciences and technology' groups ideas that focus especially on the 'material' dimension (see Table 4.3.2). These ideas generally involve research into or development of new materials with certain characteristics that are thought to reduce waste production.

Packaging material surfaced as an area of attention in all focus groups. A solution for this, mentioned a few times during focus groups, is the use of biodegradable packaging material instead of plastic. The development of such a material would also involve research into the cost-effectiveness.

> *"Research like what's cheaper... to recycle plastic or, something that you can throw into your composting?" (Ireland FG 1, P4)*

In another focus group, a similar idea was focused on the products themselves rather than the packaging. It was suggested to develop products that are completely biodegradable.

> *"It's not even packaging, it's actually goods on a whole, so it's actually new materials like if it was a washing machine that the whole thing would just disappear you know." (Ireland FG2, P2)*

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

Category	Idea	Aim	Target Group	Priority
Material	Develop products that are completely biodegradable. Needs research into materials that are biodegradable	Less waste production	Producers	☆☆
	Developing biodegradable packaging plus research into the cost effectiveness of using such materials	Less waste production	Producers	☆

BIO(TECHNO)LOGY

The third category in the domain of 'environmental sciences and technology' is concerned with bio(techno)logical ideas (see table 4.3.3). These, however, received little attention during the focus groups. The only prioritized idea that can be grouped into this category was the manufacturing of a 'magic food pill' that people could take instead of eating solid food. According to participants, this would dramatically reduce food waste and packaging. This idea was however not warmly received by other participants:

"It would take the pleasure out of eating." (Ireland FG3, P3)

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	Manufacture a 'magic food pill': food in tablet form to reduce food waste and packaging	Less waste production	Consumers	☆

ICT

The notion of developing a recycling app (an app is an abbreviation for application which is software for electronic devices) for mobile phones was fairly popular and fits in the final domain of 'environmental sciences and technology' on ICT (see Table 4.3.4). Such an app could, for instance, be provided by the county councils or waste management companies to make recycling a bit easier and more convenient for the public. According to participants, the app should provide different kinds of features. First, it should offer information about what and how to recycle, and ideas about how to reuse. Furthermore, it should include calendars for bin collection and the location of recycling centres in the neighbourhood.

To prevent the inconvenience of facing full bins or bottle banks, the app should also include an option to check beforehand whether bins are full or when they were last emptied. This information could be kept up to date by the waste management companies but citizens might also provide feedback themselves. When users, for example, go to the bottle bank and find it full, they could report that on the app. According to participants, this app would not only be beneficial for citizens but also for the county councils or waste management companies, as the following participant explains:

"It wouldn't just be for consumers like, that's convenient for county councils and then upwards. Because that means they wouldn't have to be on site constantly; they'd get alerted when this bottle bank is full. So they're not doing a thing. What they usually do is they check it every, whatever. But what happens if it gets full on Tuesday, that kind of thing? They get alerted, so they only need to go when it's full." (Ireland FG 1, P8)

Participants were also excited about ideas to improve recycling. In one of the focus groups, the issue of not knowing what to recycle was addressed by the suggestion to develop a smart bin that can warn consumers when they put something in the wrong bin or even reject it. Besides some technical research and engineering this requires important developments in the field of ICT. Such smart bins should have a built-in system that is able to scan and recognize barcodes on various common products and, based on the codes, would determine whether the product is in the correct bin or not.

An appealing extra feature would be the possibility to extract a list of what has been thrown away so people know what to re-order. The smart bin would also enhance the ownership of waste and make people accountable for separating incorrectly. The bins would be developed with built-in sensors to weigh and scan the waste. Using the sensor, the content of the bin could be traced to the owners of the waste:

"So to stop people putting general waste into recycling bins. Obviously if all that gets dumped into one

big massive skip at a recycling plant, then you don't know who are good recyclers and who are bad recyclers. So if there was a way of scanning the waste and … you know if you see the waste coming out of one bin there's a lot of non-recyclable stuff in it and then that gets marked. So you can track back to where that bin came from." (Ireland FG 1, P 10)

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

Category	Idea	Aim	Target Group	Priority
ICT	Developing a recycling app that provides different kinds of features, including the location of recycle centres, calendars for bin collection, ideas how to reuse, information about what and how to recycle, option to check beforehand whether bins are full or when they were last emptied	Convenience in the home/ Improve recycling	Consumers	☆☆☆☆☆
	Research and development into smart bins with barcode recognition system that reject the wrong stuff (so people cannot recycle incorrectly)	Improve recycling	Consumers	☆☆☆☆☆
	Development of bins with built-in sensors that weighs and scans the waste that's inside. Through the sensor the content of the bin can be traced back to the owners of the waste (in case of incorrect separation)	Improve recycling/ Behaviour change	Waste management companies/ Consumers	☆☆

4.3.2 Policy, management and communication

POLICY

Most ideas that were grouped into the category 'policy' (see Table 4.3.5) were aimed at local production/self-sufficiency for consumers and stimulating behavioural change among producers.

In one of the focus groups, many participants thought it would be an appealing idea to reserve space for allotments or community greenhouses in environmental/urban planning. This would allow participants to grow their own food. Producing vegetables is thought to greatly reduce packaging waste for a household.

"If every community has their own land or green, just to produce enough food for them, then you wouldn't have to be packaging it and sending it out on planes around the world." (Ireland FG3, P 10)

Many participants agreed that it is very important to allocate space for this in advance, in the planning phases of land use. Otherwise, especially in urban areas, there might not be enough space left to put the idea in place. One participant suggested that other countries might provide a good example, such as Canada where this is actually being done already.

"Their theory, I think, is very good insofar as before a brick is laid on a house you see the facilities you have. And they would include something like that [allotments]." (Ireland FG3, P6)

Within the 'policy' category, two ideas were prioritized that target producers. The first is to tax manufacturers that use 'bad fuels' and non-recyclable parts in their products and the second, to give tax breaks to those who use renewable energy sources. Participants explicitly opted for financial measures because they think this would have the greatest impact on manufacturers.

"[P 10] If you're gonna penalise them or give them money, ah...
[P8] If you make it about money for manufacturers, they're gonna listen to you...
[P 10] Yeah... all they care about is the bottom line [money]." (Ireland FG 1)

According to participants, this policy measure should be maintained by an especially established organisation, to be known as the Green Police:

"Obviously if someone says they are green they have to be audited on a regular basis to make sure they are, so that's where the Green Police comes in." (Ireland FG 1, P9)

In another focus group, participants suggested that the government should introduce incentives for entrepreneurship, which uses waste as resource.

"[P3] It's a bit like years ago trying to [copy] Charlie McCreevy [an Irish politician] with the savings thing and he said you save for five years and the government will give you 'x' at the end of it. It's based on that idea that somebody gets more for doing it this way.
[P8] For making an effort." (Ireland FG2)

A final idea in this category that targets consumers is giving incentives to use certain products for a longer period of time. For instance, if you keep your phone for two or three years you get a discount next time or when you keep a car for a certain length of time you get so many years' free road tax. Introducing such incentives was thought of as a measure against people's 'throw-away' attitude.

"Something that's worth doing and something that would make kids and parents say no, hang on, another [telephone] few months. It's kind of like slowing things down a little bit... Rather than always immediate gratification." (Ireland FG2, P9)

According to participants, this demands a cultural shift in our current consumerist society and would involve social research into consumer norms and values.

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

Category	Idea	Aim	Target Group	Priority
Policy	Community greenhouses as allotments of the future to produce all food locally	Local production	Consumers	☆☆☆☆☆
	Allocate space for community greenhouses in advance in urban/ environmental planning	Local production	Consumers	☆☆☆☆☆
	Financial incentives to use certain products for a longer period of time. For instance if you keep your phone for two or three years you get a discount next time	Behaviour change	Consumers	☆☆☆☆
	Tax manufacturers that use 'bad fuels' and non-recyclable parts in their products and give tax breaks on those who use renewable energy sources. This should be maintained by an especially established organisation, to be known as the Green Police	Behaviour change	Government/ Producers	☆☆☆
	Incentives for entrepreneurship, which uses waste as resource	Behaviour change	Producers	☆☆

MANAGEMENT AND LOGISTICS

Ideas in the group 'management and logistics' (see Table 4.3.6) aimed at improved recycling, effective use of waste and reducing the amount of packaging.

The idea of introducing in-store recycling centres where consumers can return their used glass bottles, tin cans etcetera was mentioned several times.

> *"Rather than having loads of depots for recycling, why not, like, you're going to the supermarket anyway, bring them back, drop them off, the truck that delivers everything to the supermarket is going back empty, takes it back to the depot and then everything is taken from the main depot then." (Ireland FG2, P 7)*

This would reduce costs to consumers because they would not have to pay for packaging. Participants also felt this would be more environmentally friendly because delivery trucks would not be returning empty anymore, reducing fuel costs and consequently the emission of greenhouse gases.
Other versions of this idea added financial incentives for consumers, because participants generally believe

that people would be more likely to recycle when they receive a reward. In general they think this is much more effective than charging people.

"For example you've done your shopping and you go home and you take all your packaging, you've emptied all your bottles, you're going back to do your next week's shopping, you've everything washed, cleaned and you bring it back to the shop, and they have a certain area at the back of the shop and you bring everything in. There's my receipt from last week. There's my returned packaging. And they issue you with a voucher. [...] It would mean that recycling would be done properly, but that you're given an incentive to bring it all back." (Ireland FG3, P 1)

Many participants know this system from other European countries or remember it from the past and suggested re-introducing such a system in Ireland.

"But if you go back to years ago, and they're saying that recycling is something new, it's not. If you go back to my day when I was young you got so much back on your bottles when you brought them to the shop a milk bottle or a big bottle or whatever but you got two pence or two old pence for a bottle. Those bottles were being reused. Now people are saying it's not hygienic. But sure it has to be because there are much more ways of cleaning things nowadays. So why can't they do something like that?" (Ireland FG3, P3)

Another proposed way to motivate people to recycle more was to reduce the size of residual waste bins and collect those less regularly and, at the same time, provide bigger bins for recycling and composting free of charge.

"Well we're kinda thinking in the short term, hardly that far into the future, by like forcing people to change their habits. So let's say ... the green bin [for recyclables] and the composting bin, let's say they're free of charge and they're pretty big. But by reducing the big black [for residual waste] that we have, smaller, a less regular collection and charging them for that, that's gonna force them..." (Ireland FG 1, P4)

Another popular idea that requires some sort of managerial and/or logistical changes aims at the effective use of food leftovers from restaurants or supermarkets. Several participants think it is a shame to throw away large amounts of food each day, while it can be used for other purposes, including the production of farm feed or fertilizer.

"Especially in restaurants. Like, years ago, my parents had a restaurant and we always had buckets like for the pig farms and then there would be chicken farms would come and take all the bread away, and I mean it was always that." (Ireland FG3, P 7)

One participant added that the government should give some kind of grant to farmers taking the stuff.

Furthermore, participants mentioned ideas concerned with bulk sales in supermarkets aimed at reducing the amount of packaging. Supermarkets should be redesigned to allow customers to bring their own container and buy directly from a bulk stock. Food and other wares should be offered in a convenient way for customers to take the amount they need, pay for it and take it home in their own reusable 'packaging'.

"Like a Tupperware, or a box, whatever, and you take it to the supermarket with you. You do it with your bags, so you do it exactly the same way and you've created a box that will be recycled in your own house, washed, put back in your car, go back down, you buy your meat, put it back into it, and so forth." (Ireland FG2, P6)

A variation of this idea concerns the introduction of reusable bags in shops that would replace plastic ones:

"Clothes shops seem to go through an awful lot of bags so they could start using, I know Penneys [a chain of clothes shops, also known as Primark] have started selling reusable bags for a euro. The other shops should start doing that as well." (Ireland FG2, P3)

A final idea in this category relates to participants' feeling that they live in a 'disposable' society. Some think it would be a good idea to promote the development of particular standardized products that are interchangeable between different brands. For example, mobile phone chargers that fit every type or brand of mobile

phone so the charger never needs to be replaced. This would give the charger a longer life span and thus reduce the use of new resources.

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

Category	Idea	Aim	Target Group	Priority
Management/ Logistics	Introducing in-store recycling centres where consumers can return their used glass bottles, tin cans etcetera. Optionally in combination with incentives for consumers	Improve recycling	Producers/ Consumers	☆☆☆☆☆
	Systematic reuse of food waste from restaurants or supermarkets as farm feed or fertiliser	Effective use of waste	Other	☆☆☆☆☆
	Development of more standardized products (instead of product differentiation) to make it easier to replace any broken parts or make it easier to fix products in general	Less use of resources	Producers	☆☆☆
	Consumers bring their own reusable box to the shop and buy from a bulk stock	Less packaging	Consumers	☆☆
	Smaller bins or less regular collections for residual waste bins, and at the same time, provide bigger bins for recycling and composting free of charge	Behaviour change/ Improve recycling	Consumers	☆
	Introduction of reusable shopping bags that would replace plastic ones	Improve recycling	Consumers	☆

COMMUNICATION AND EDUCATION

Several ideas focused on providing information. These ideas have been grouped in the category 'communication and education' (see Table 4.3.7). Raising awareness and bringing about behavioural change (mostly increased recycling) are the most common aims in this category. Quite some change is expected when the public at large is better informed and educated about issues related to the topic of waste management.

Ideas for campaigns, targeting both the general public and children specifically, were put forward. In one of the focus groups, participants suggested developing a general awareness campaign that would be incorporated into the app that was reported previously (see paragraph ICT). The campaign should include information about what and how to recycle but also feedback about what actually happens to household waste after dis-

posal and how recycling is carried out. The latter addresses concerns many participants have about not knowing what happens to their waste after collection.

"The bins are outside the house and they go away and I haven't a clue where they go or what's done with them. […] Just having a bit of feedback for people, you know like this stuff is being recycled. This is what's happening to it. So just general awareness." (Ireland FG 1, P8)

Some participants raised the idea that the public should also be educated about *why* they should recycle, not only *how* they should do it. This might be done by showing people 'worst case scenarios' to increase awareness about the negative consequences of not recycling.

"Showing them 'worst case scenarios'... say you're contributing to this when you don't recycle. So making a conscious decision like, oh, no, for the sake of just doing this for five minutes I could..." (Ireland FG 1, P2)

In two of the focus groups, suggestions were made for educational campaigns targeting children, mostly through (primary) schools. Some participants who are raising children themselves said that when children are taught to recycle at an early age, they will adopt this as a norm and the practice will come naturally to them. Moreover, through the children, the parents are affected as well:

"It is really interesting, the impact it's had on children in schools. And how an awful lot of my information would come from my kids. Even when they were very small, taking things out of the bin I was putting in. You know, so really got me thinking... I didn't have that sort of education going to school." (Ireland FG2, P9)

"It's really with the kids that keep it going in the house because they you know green schools. If they see anything going into the green bin that shouldn't be there, they go mental, or if I throw anything out that shouldn't be, you know, that could be recycled, they go berserk." (Ireland FG2, P4)

Some participants suggested including practical components in children's education programmes as well, for example, by providing lessons about how to grow your own vegetables or how to refurbish old furniture.

"[P9] I suppose it's education that kids know that they would like think of, say, painting a chair to make it different... simple things that totally change something.

[P2] I'll give an example of that, I was saying to a friend of mine I wanted to change my bedroom. I'd love a white dressing table. And she said, well you have one, why don't you paint it. Hadn't dawned on me. And I painted it and I got a lovely French dressing table grand, so that kind of thing, put the idea in your head." (Ireland FG3)

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	General awareness campaign (linked with the App, see ICT category)	Awareness	Consumers	☆☆☆☆☆☆
	Education programs for children in (primary) school	Awareness	Consumers	☆☆

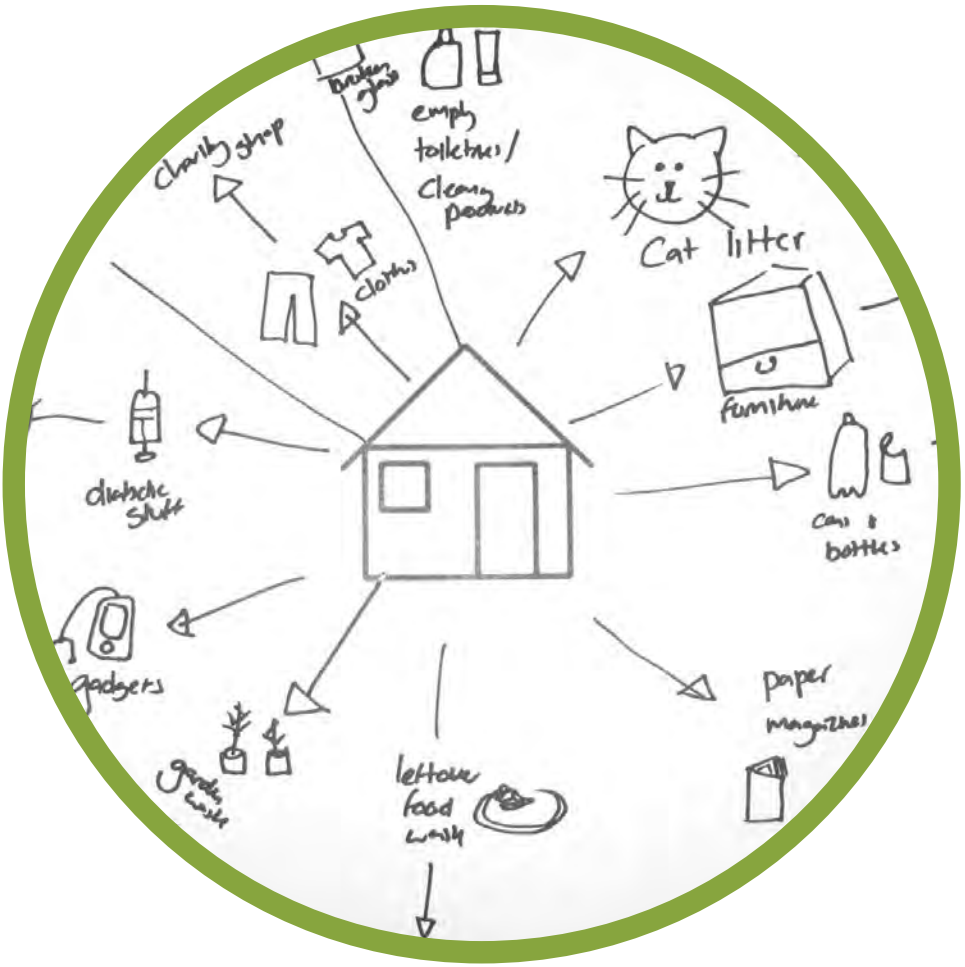
LOCAL INITIATIVES

Some ideas that were put forward in the focus groups do not need much research, but merely some organization and someone to start it. The category 'local initiatives' captures these ideas (see Table 4.3.8). One such idea that was prioritized concerns a 'local initiative' to set up a community cooperative market where people can share materials and skills locally, give workshops and share old methods for reuse and self-sufficiency, such as growing your own vegetables.

"...even with the paint and things like that, a place to go and somebody else can reuse it. And that also addresses culture because all communities are buying into that at some level. If it's an attractive place to go, teenagers are going to want to hang out there and see what's going on there. You start changing, it's kind of education by osmosis by what you're telling them." (Ireland FG2, P9)

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

Category	Idea	Aim	Target Group	Priority
Local initiatives	Community cooperative market to share materials and skills and share old methods for reuse and self-sufficiency	Local production/ Less use of resources	Consumers	☆☆



5. Conclusion, discussion and evaluation

This country report presents country-specific findings from citizen focus groups in Ireland. It is part of a wider consultation process called VOICES, which involves almost one thousand European citizens across all 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 total, held across two different locations. In Ireland, 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 Ireland. 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

Ireland ranks 9th on the EU27 ranking list on Municipal Solid Waste Recycling (MSW). It has managed to reduce landfill by 20% over the last 10 years. Recycling increased dramatically over the same period, indicating that Ireland is well on its way to reach the EU recycling target of 50% by 2020.[13] This trend is clearly visible in the management of waste at the household level, as described by the participants of the focus groups. It seems that all participants have access to the facilities needed for managing waste according to the regulations. This is consistent with findings from the Flash Eurobarometer survey 'Attitudes of Europeans towards resource efficiency'[14] in which 96% of all respondents from Ireland indicated they separate at least some waste for recycling or composting (see Annex 2).

The results of the VOICES focus groups show that most participants know what is expected from them at the household level. However, knowledge about what happens to waste after collection is very limited. Some assume waste is handled appropriately, while others express the concern that after separating waste, everything still goes to landfill.

During the focus groups, some large clusters of barriers and concerns for managing waste appropriately could be distinguished. With respect to production and prevention, concerns about the amount of packaging on products and the lack of alternatives for consumers who are obliged to buy over-packaged items, were repeatedly mentioned in all focus groups. Business strategies are thought to contribute to the high waste generation. Participants particularly highlighted the manufacture of products that are not meant to last, and the lazy attitude of people in our current society.

With respect to dealing with waste in the household, several practical barriers were identified, most of which have to do with the inconvenience of separating waste at the home. Another important barrier for separating and recycling waste is participants' limited knowledge about how to deal with waste appropriately. This relates to findings from the Flash Eurobarometer survey showing that three-quarters of respondents from Ireland think that more information on how and where to separate waste would convince them to separate more. Participants felt that the financial costs of waste separation and ignorance prevent many people from dealing with their waste properly.

Furthermore, the disposal of waste involves some challenges. The majority of participants do not want to pay high charges for refuse collection or disposal of large waste items. In addition, many participants would like to get more reliable information about how waste is treated, to see whether their efforts really do make a difference. When talking about the disposal of waste, participants also expressed some long-term concerns: they particularly worry about the environmental impact of waste disposal and possible negative public health effects.

5.2 Ideas for achieving a 'zero waste society'

The results are divided into two main research domains, 'environmental sciences and technology' and 'policy, management and communication', which are each further divided into four categories. In the first domain, ideas focus mainly on technologies to increase recycling, to improve the management of waste in the household and to use waste for generating energy. Enhanced public knowledge about recycling and using waste

[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 Organization (2011)

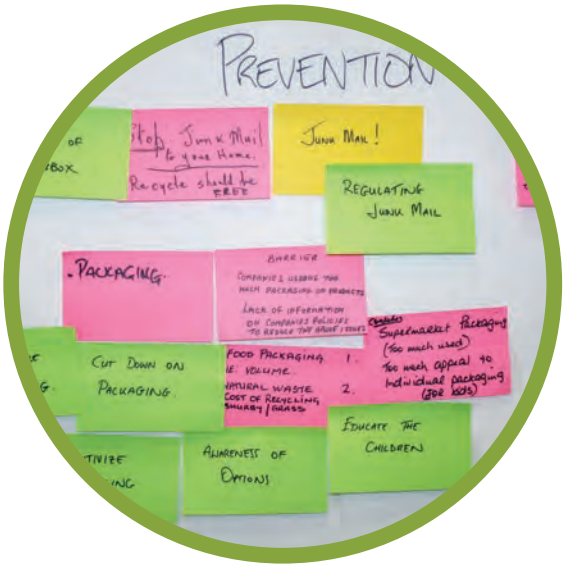
as a resource were the main reasons behind the majority of ideas. Consumers were the most prominent target group, followed by producers and waste management companies. In this domain, many ideas relate directly to waste management. The proposed technologies help to sort or process waste at household level, with emphasis on increasing recycling and generating energy for example by developing small incinerators that are suitable for personal use. Other ideas relate to the original product (before it becomes waste) and aim to reduce waste production by making the (packaging) material biodegradable, more durable or making the product easier to repair. The single prioritized idea within the ICT category targets the gaps in knowledge on recycling by providing all kinds of relevant information for dealing with waste appropriately by developing a special recycling app.

Ideas in the second domain 'policy, management and communication' focused mainly on incentives, taxes, self-sufficiency, education, communication and behavioural change. Consumers were the main target group; just a few ideas targeted producers and/or government. This indicates that focus group participants consider consumers to be largely responsible for the proper disposal of waste. Opportunities to grow food locally, incentives for recycling and the sustainable use of products, educational programmes and readily available information on local practices regarding recycling and/or reuse would improve consumer behaviour related to waste. However, this would demand a cultural shift in our current consumerist society, involving social research into consumer norms and values. Other parties, including manufacturers, supermarkets and entrepreneurs, must also play their part. Taxes or financial incentives are considered to have the greatest impact on these stakeholders.

Of the three most highly prioritized ideas, the first is development of personal incinerators, in order to use waste as a source for heating homes, schools or factories by burning the waste and use the produced energy for heating. The second priority is shared between two ideas that received the same number of priority stickers: developing a recycling app that provides different kinds of features, including the location of recycle centres, calendars for bin collection, ideas how to reuse, information about what and how to recycle, option to check beforehand whether bins are full or when they were last emptied; a general awareness campaign (linked with the app, see ICT category).

5.3 Reflection

Participants enjoyed the group activities and thought the process was educational as well. The process shed light on an issue that many identified as one they had not thought about or talked about much before. Participants reflected that participation in the focus group made them more aware of waste management and may even affect how they deal with waste at home. Some explicitly stated that they would recycle more and ask more questions about what happens to their waste.



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	Development of personal incinerators, in order to use waste as a source for heating homes, schools or factories by burning the waste and use the produced energy for heating	Effective use of waste	Consumers	☆☆☆☆☆ ☆☆☆☆☆ ☆☆☆☆☆ ☆☆☆
	A waste disposal factory that is powered by its own output. So the waste is destroyed properly and at the same time powers the factory	Effective use of waste	Waste management companies	☆☆☆
	Methane harvesting from food waste or landfills to use it as a burnable fuel	Effective use of waste	Waste management companies/ Consumers	☆☆☆
	A chemical spray that would reduce all the waste to pellet size and then put those pellets into one's own fire or stove	Effective use of waste/ Convenience in the home	Consumers	☆
	Building cars out of plastic	Effective use of waste	Consumers/ Producers	
	Research into making it easier to extract valuable materials from products for reuse	Less use of resources	Producers	
	Development of electronic devices that run on green energy in order to reduce the use of batteries	Less use of resources	Producers	
	Development of a waste powered rocket that could fly rubbish to the moon	Eliminate waste	Waste management companies	
	Development of a waste extractor that separates waste into component parts and takes what it needs for making a new product and stores material not needed yet	Improve recycling/ Less use of resources	Consumers	
Material	Develop products that are completely biodegradable. Needs research into materials that are biodegradable	Less waste production	Producers	☆☆
	Developing biodegradable packaging plus research into the cost effectiveness of using such materials	Less waste production	Producers	☆
	Developing packaging that is reusable as it is	Less use of resources	Producers	
Bio(techno)-logical	Manufacture a 'magic food pill': food in tablet form to reduce food waste and packaging	Less waste production	Consumers	☆

ICT	Developing a recycling app that provides different kinds of features, including the location of recycle centres, calendars for bin collection, ideas how to reuse, information about what and how to recycle, option to check beforehand whether bins are full or when they were last emptied	Convenience in the home/ Improve recycling	Consumers	☆☆☆☆☆
	Research and development into smart bins with barcode recognition system that reject the wrong stuff (so people cannot recycle incorrectly)	Improve recycling	Consumers	☆☆☆☆☆
	Development of bins with built-in sensors that weighs and scans the waste that's inside. Through the sensor the content of the bin can be traced back to the owners of the waste (in case of incorrect separation)	Improve recycling/ Behaviour change	Waste management companies/ Consumers	☆☆
	Use of virtual goods, because then you only have virtual waste	Less waste production	Consumers	

POLICY, MANAGEMENT AND COMMUNICATION

Category	Idea	Aim	Target Group	Priority
Policy	Community greenhouses as allotments of the future to produce all food locally	Local production	Consumers	☆☆☆☆☆
	Allocate space for community greenhouses in advance in urban/environmental planning	Local production	Consumers	☆☆☆☆☆
	Financial incentives to use certain products for a longer period of time. For instance if you keep your phone for two or three years you get a discount next time	Behaviour change	Consumers	☆☆☆☆
	Tax manufacturers that use 'bad fuels' and non-recyclable parts in their products and give tax breaks on those who use renewable energy sources. This should be maintained by an especially established organisation, to be known as the Green Police	Behaviour change	Government/ Producers	☆☆☆
	Incentives for entrepreneurship, which uses waste as resource	Behaviour change	Producers	☆☆
	Government should pay people for bringing back their large appliances rather than charging them	Improve recycling	Consumers	
	Legislation to oblige companies to put recycling labels/stickers on electrical products. Companies must be subsidised by government for doing this	Improve recycling	Producers	
	Subsidized grant system to incentivize people to bring back their bottles (for instance 20 cent a bottle)	Improve recycling	Consumers	

Policy	EU wide regulations to increase the ownership of waste, especially for people living in apartments that only have communal bins	Improve recycling/ Awareness	Consumers	
	Reduction in property taxes for recycling	Improve recycling	Consumers	
	Lower the V.A.T. on totally recyclable goods for shops, to incentivise shops to stock more recyclable products	Improve recycling	Producers	
	Make recycling centres free. People shouldn't be charged to go into them	Convenience/Improves recycling	Consumers	
	Charging producers on the amount of packaging they use, without that being passed on to the consumer	Less waste production	Producers	
Management/ Logistics	Introducing in-store recycling centres where consumers can return their used glass bottles, tin cans etcetera. Optionally in combination with incentives for consumers	Improve recycling	Producers/ Consumers	☆☆☆☆☆
	Systematic reuse of food waste from restaurants or supermarkets as farm feed or fertiliser	Effective use of waste	Other	☆☆☆☆☆
	Development of more standardized products (instead of product differentiation) to make it easier to replace any broken parts or make it easier to fix products in general	Less use of resources	Producers	☆☆☆
	Consumers bring their own reusable box to the shop and buy from a bulk stock	Less packaging	Consumers	☆☆
	Smaller bins or less regular collections for residual waste bins, and at the same time, provide bigger bins for recycling and composting free of charge	Behaviour change/ Improve recycling	Consumers	☆
	Introduction of reusable shopping bags that would replace plastic ones	Improve recycling	Consumers	☆
	Giving food leftovers from supermarkets to charity	Effective use of waste	Consumers	
	Creating possibilities to buy stuff loosely rather than in packaging	Less waste production	Consumers	
	Personal landfills. It was also suggested to put the owner on top after death to be buried with one's own waste	Convenience	Consumers	
Communication and education	General awareness campaign (linked with the App, see ICT category)	Awareness	Consumers	☆☆☆☆☆ ☆
	Education programs for children in (primary) school	Awareness	Consumers	☆☆

	Education (both children and adults) towards developing different attitudes and creating a behavioural shift in the current consumerist society	Behaviour change	Consumers	
	Information labels on products (e.g. washing machines, mobile phones) with what to do with it once the product is finished	Awareness of possibilities	Producers/ Consumers	
	Label what is recyclable so people go "oh look, I'll take that home, it's recyclable"	Awareness of values	Consumers	
Local initiatives	Community cooperative market to share materials and skills and share old methods for reuse and self-sufficiency	Local production/ Less use of resources	Consumers	☆☆
	Industrial sized swap shop	More recycling/ Less use of resources	Consumers	

Annex 2: Attitudes of citizens from Ireland towards resource efficiency

The data in this annex is based on the Flash Eurobarometer No. 316 - The Gallup Organization (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.

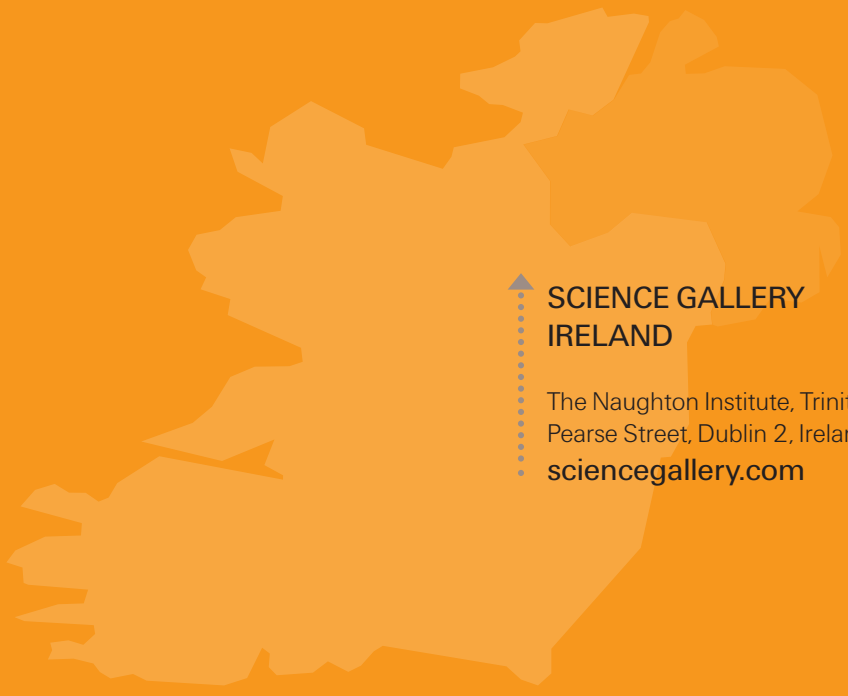
The survey obtained interviews - fixed-line, mobile phone and face-to-face - with nationally representative samples of EU citizens (aged 15 and older) living in each of the 27 Member States. The target sample size in all countries was 1,000 interviews. Below we give the results from Ireland.

Question	Answer	%	EU27 Average
Do you think Europe could be more efficient in its use of natural resources?	Yes	89%	87%
	No	4%	5%
	DK/NA*	7%	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	96%	89%
	No	4%	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	85%	76%
	Improve separate waste collection at your home	81%	67%
	More information on how and where to separate waste	77%	65%
	Legal obligation to separate waste	68%	59%
	Taxes for waste management	56%	39%
What initiatives would improve waste management in your community?	Better waste collection services	83%	70%
	Stronger law enforcement on waste management	79%	65%
	Make producers pay for collection and recycling of waste	77%	63%
	Make households pay for the waste they produce	58%	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	10%	14%
	To pay proportionally to the quantity of waste you generate	85%	75%
	DK/NA*	5%	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	26%	25%
	Include the cost of waste management in the price of the products you buy	69%	59%
	DK/NA*	5%	16%
Can you estimate what percentage of the food you buy goes to waste?	None	2%	11%
	15% or less	68%	71%
	16% to 30%	22%	13%
	More than 30%	8%	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	74%	62%
	Better information on food product labels, e.g. how to interpret "best before" dates, information on storage and preparation	71%	61%
	Better shopping planning by my household	72%	58%
	Smaller portion sizes available in shops	73%	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	38%	41%
	Rather not important	11%	12%
	Not at all important	10%	6%
	DK/NA*	0%	2%
Are you willing to but second-hand products?	Yes	68%	68%
Base: all respondents, % of yes			
Would you buy the following products second hand?	Furniture	57%	56%
Base: all respondents, % of yes	Electronic equipment	42%	45%
	Textiles (clothing, bedding, curtains, etc)	28%	36%
What reasons prevent you from buying second-hand products?	Quality/usability of the product	79%	58%
	Health and safety concerns	75%	50%
	Less appealing look of the product	53%	25%
	Afraid of what others might think	11%	5%
Would you buy products made of recycled materials?	Yes	93%	86%
	No	6%	11%
	DK/NA*	1%	3%
What would be the most important factors in your decision to buy products made of recycled materials?	Quality/usability of the product	62%	51%
	Environmental impact of the product	20%	26%
	Price of the product	16%	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	66%	44%
	Quality/usability of the product	65%	42%
	No clear consumer information on the recycled product	64%	32%
	Less appealing look of the product	49%	17%
	Afraid of what others might think	20%	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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