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COUNTRY REPORT FRANCE

Views, Opinions and Ideas of Citizens in Europe on Science

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PUBLISHER

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Published in June 2013. The views expressed in this publication are those of the authors and not necessarily those of Ecsite Aisbl or the European Commission.

The VOICES project and the present publication have been funded with support from the European Commission (Grant Agreement No 612210), under the Science in Society Environment [Sis ENV] theme, Coordination and Support Action, of the Directorate-General for Research and Innovation (FP7-Adhoc-2007-13). This report reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

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

CONTENTS

1. Introduction

1.1 The VOICES project

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

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

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

1.2 Citizen participation in social innovation

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

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

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

1.3 The process

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

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

Ecsite Project Managers and researchers from the Athena Institute, VU University Amsterdam, were responsible for conducting the focus groups, 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 France, 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

FRANCE

3. Country relevant data - France

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, France is one of the largest EU countries with almost 65 million inhabitants. The same number of inhabitants are spread over urban areas (36%) and intermediate areas (36%), while 29% of them live in rural areas.

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

		2011	
Population at 1 January		64 994 907	
Population as percentage of EU27		12.9%	
Gross Domestic Product (PPP)		27 200 Euro	
Population urban-rural typology	Urban	23 022 000	36%
	Intermediate	23 099 000	36%
	Rural	18 573 000	29%

.

3.2 Factsheet on waste

The amount of municipal waste generated and treated in France is higher than the average amount of waste treated in the EU27. France ranks 11th on the EU27 ranking list for Municipal Solid Waste Recycling (MSW). Recycling has increased from 26% of MSW generated in 2001 to 35% in 2010. Significant efforts are required to meet the 50% MSW recycling target for household waste set by the EU for 2020.[9]

Table 3.2 Municipal Waste[10,11]

		France		EU27 average	
Municipal waste generated (kg per person)		532 kg		502 kg	
Municipal waste treated (kg per person)		532 kg		486 kg	
	Landfilled	165 kg	31%	185 kg	38%
	Incinerated	181 kg	34%	107 kg	22%
	Recycled (material recycling)	96 kg	18%	122 kg	25%
	Composted (organic recycling)	90 kg	17%	73 kg	15%

3.3 Composition of the focus groups

In France, three focus groups took place on the weekend of 16th March and three more focus groups on the weekend of 23rd March 2013: three of them in Grenoble at the Centre de Culture Scientifique, Technique et Industrielle (CCSTI), moderated by Kissia Ravanel, European Projects Manager; and three of them in Paris at the Cité des sciences et de l'industrie - Universcience, moderated by Laure Cassus, Events Producer.

In total, 60 people (32 male and 28 female) participated in the six focus groups. 20 participants were aged between 18 and 34 years; 20 between 35 and 50 and 20 were 51 or older. More than half of the participants (n = 38) had a medium education level, while there were 15 participants with a high level of education, and 7 participants with a low level of education. Forty-two participants had a job, while 4 were unemployed, 12 were retired and 2 were students. Of the participants, 32 live in houses and 28 in flats. Details of the composition of these focus groups are presented in the table below.

Table 3.3 Composition of the Focus Groups[12]

		P FG1	P FG2	P FG3	G FG1	G FG2	G FG3	TOTAL
Participants	Total	10	10	10	8	11	11	60
Gender	Male	4	6	5	5	7	5	32
	Female	6	4	5	3	4	6	28
Age	18 - 35	10	0	0	10	0	0	20
	36 - 50	0	10	0	0	10	0	20
	50+	0	0	10	0	0	10	20
Education	High	4	2	3	2	3	1	15
	Medium	4	8	5	6	7	8	38
	Low	2	0	2	0	1	2	7
Employment	Unemployed	0	0	2	2	0	0	4
	Employed	8	10	4	6	11	3	42
	Retired	0	0	4	0	0	8	12
	Student	2	0	0	0	0	0	2
Housing	Flat	8	6	1	3	5	5	28
	House	2	4	9	5	6	6	32

[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)
[12] P = Paris; G = Grenoble; FG = focus groups

4. Results

This chapter describes the overall results of all focus groups held in France. 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.[13]

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

Nearly all participants indicated they separate their waste at household level. They describe the following four waste streams: glass, plastic, residual waste and paper and cardboard. Some participants mentioned they bring their garden waste to collective green containers in the neighbourhood, while other participants throw their garden waste in the residual bin. In addition to the four waste streams mentioned above, the participants also separate clothes, medicines, batteries, electronics and bulky waste like furniture.

A household generally has several waste bins with different colours. Each colour represents a waste stream.

> *"Glass in a bottle bank, and in the green bin I put paper and cardboard, in the grey one everything I should." (Grenoble FG3, P2)*

The amount of waste bins in the house, and the colour assigned to each bin, varies according to the municipality. Citizens who live in a flat often have collective containers placed at the ground floor.

One participant who lives in a flat in Paris mentioned he uses a rubbish chute to dispose of waste. The caretaker of the flat separates the waste afterwards. Another participant mentioned separating waste and the landlord takes the waste to the communal bins. Two participants from Grenoble explained they do not put a lot of effort in separating waste. One of them lives in the countryside and uses one general waste bin, taking glass to the bottle bank and using food waste to feed the animals. The other participant has two bins at home but puts all the waste together, preferring not to separate waste.

[13] 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

Participants indicated that bins and containers are regularly emptied by garbage trucks. The frequency by which this is done seems to vary between municipalities.

Participants put their furniture or large household waste like electronic appliances on the street. Some participants call the town council to come and pick it up, while others leave the furniture on the street for other citizens to take. Two participants, one from Grenoble and one from Paris mentioned the town council comes and picks up their furniture on a fixed date, once a month. One participant brings bulky waste and electronic devices to landfill. When the participants buy a new fridge or washing machine, the producer delivers it and takes the old one. The same applies for mobile phones. When you buy a new mobile phone, the shop takes the old one.

Clothes are often brought to charity organisations like the Red Cross or put in containers on the street. Some participants mentioned they sell their clothes on the internet, in flea markets or give them to friends or family. One of the participants sends clothes and furniture to Africa. Batteries, bulbs and small electronic waste are brought to shops or bins in the supermarket. Medicines are often brought back to the pharmacies.

One of the participants from the focus groups in Grenoble mentioned bringing his bulky waste, clothes and batteries to a collection point or recycle centre. Another participant mentioned taking residual waste to a collection point where a badge is scanned for the container to open. The badge contains a barcode, which indicates a two person household. A two person household is allowed to bring 36 bags of rubbish to the collection point per year.

4.1.3 Knowledge about waste pathways

Most of the participants had no knowledge about what happens to their waste after disposing of it. Some of them knew that sorting is the first step in recycling materials; however they had no idea how the process of recycling waste continues from there. The level of knowledge on waste pathways differs among the participants. While several participants mentioned that food and garden waste can be recycled into compost, another participant believed garden waste is incinerated. Several participants thought all residual waste goes to the incinerator. Participants indicated that mobile phones are recycled and sold to developing countries as second hand phones. One of the participants mentioned putting clothes in a container but has no idea to which charity it goes.

4.1.4 Waste management behaviour and convenience

Many of the participants indicate they have to make an effort to separate their waste. They explained there is a difference in rules regarding waste management in and between towns and cities, which makes waste management more complicated. In addition, they often become discouraged by the fact that not everyone separates their waste. One participant mentioned that his neighbour does not sort correctly and puts all his waste in one bag. According to the participant all the benefit of what has been sorted by others is then lost. Another inconvenience mentioned by two participants is the piling up of waste at the waste management centre.

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

In all the focus groups, barriers and concerns regarding packaging were mentioned. Many participants stated that products are over-packaged with plastic and cardboard, which they perceived as unnecessary.

"It all depends on the product, here I am talking about packaging that is pointless, sometimes you see cardboard packaging covering plastic packaging, what's that even for?" (Paris FG 1, P5)

In one focus group, the participants worried about the amount of plastic bags being provided in supermarkets. One of the participants was in particular concerned about the amount of packaging material used for medication, mentioning an example in which a course of medication was prescribed. From a box of forty pills only twenty were needed. The material of the box could not be recycled. One participant thought it would save money to use less packaging material. Several other participants stated that excessive packaging will lead to more waste. In one focus group, the participants were concerned about the effects on the environment.

"The problem of pre-packaged products. [..] Afterwards they can't be destroyed, that is to say, they are not made for, they don't have an environmental recycling side." (Paris FG2, P5)

Some of the participants worried about the amount of waste we produce as consumers. One of them believed more consumption leads to more demand, which equals the amount of waste. Another participant stated there is so much waste because consumers want to go shopping in a supermarket where the shelves are full. Another participant mentioned consumers are encouraged to buy new products instead of having old ones repaired. This is due to the fact that products are being made with a certain time frame; they are programmed to stop at a given time.

4.2.2 Waste management in the household

An important barrier that came up during the discussion on waste management in the household is the number of bins. The participants perceived the amount of bins in the house as inconvenient because they take up too much space. In one focus group, the participants mentioned that there is little waste in each of the bins. When this amount of waste stays in the bin it gives an unpleasant smell and you are forced to take the bins out more often. Another participant, however, mentioned the bin gets full very quickly. Furthermore, some participants said you also have to pay close attention to when to bring the bins outside for waste collection.

"And then you need to make sure that you don't miss the day when you have to put the bins out, or make sure that you don't take out the yellow bin on the day for collection of the green bin." (Grenoble FG2, P9)

Several concerns and barriers related to sorting waste in the household were raised. A number of participants mentioned that separating waste is difficult and takes a lot of time. In case of a food product, you need to separate the food residue from the packaging. In addition, it takes a lot of time to look for labels stating whether a product can be recycled or not. Not all participants know exactly which products can be recycled. For instance, they do not know where to go with paint pots or medication.

"For example, I'm diabetic, I have to give my finger a small prick every morning, you see, I take the needle and all that, so what do I do with it?" (Paris FG3, P 1)

Two participants mentioned that separating waste can become a source of conflict when you live together as a couple. At last, four participants thought the tax on waste is too expensive.

In all focus groups, the participants extensively discussed the issue that not all citizens are separating their waste correctly. The participants wondered why they should spend time and effort to separate their waste, while others do not. One participant would like to know what the effect on global scale is, if we sort on an individual level. Seeing others who do not bother to separate is perceived by the participants as discouraging.

"[P5] Today in my green bin I see plenty of things that go in the grey bin, so I wonder what I'm doing today, what's the point of it?
[PX] Me too, I wonder the sorting I do, that I worry about doing, is it actually used?
[P6] Why am I doing it if others aren't doing it?
[P9] It is a bit demoralising." (Grenoble FG 1)

The participants believed citizens need to be motivated to recycle. One of the participants explained:

"When it comes to prevention, namely motivating people into recycling, I feel that when people recycle, they don't feel like they've contributed to something. It doesn't actually feel like it you know, when they recycle they don't think, 'I've helped save the planet.'" (Paris FG 1, P5)

In three focus groups, there were participants who worried about the lack of knowledge on recycling among citizens. According to them the lack of knowledge starts at childhood, which is illustrated by the following quote:

"Kids don't know what happens to something as simple as paper, that they use to draw on, it's such a simple thing. I have a five-year old little girl and she doesn't even know where a sheet of paper comes from, well it comes from a tree and when you tell kids that, they had no idea, and it's shocking." (Paris FG 1, P6)

4.2.3 Waste disposal and pathways

The participants mentioned a number of barriers regarding the waste management system that hindered them from separating waste correctly. Two participants experienced the distance to the containers as a barrier. One of them explained there are many citizens who do not have a vehicle to bring their bulky waste to the recycling centre. Another participant mentioned the bottle banks are placed too far from his house.

In one focus group in Paris, the participants talked about the inconvenience of rubbish chutes. Citizens throw all sorts of waste in the chutes, and they often become a breeding ground for cockroaches and give off an unpleasant smell. Another concern, which was raised in five focus groups, is the difference in rules regarding waste management between and within cities and towns. One of the participants indicated there are differences between living in the city and in the south of France. According to him citizens in the south of France do not separate their waste but throw all the rubbish outside. One participant mentioned that the waste collectors in his neighbourhood check whether the waste is placed in the correct bin. If the waste is not sorted correctly, they do not collect the bins. In addition, another participant said that the waste in their street is not collected if it is placed outside the bin. According to one of the participants, the bins are not collected often enough. This was agreed upon by another participant, who mentioned the waste collectors have stopped collecting bulky baste in his street. As a result, citizens are now dumping all their bulky waste in the surrounding countryside.

In several focus groups, the participants worried about litter. For instance, waste on the beaches or citizens who leave washing machines next to the container. Two participants were concerned about pollution. One of them explained that they were not allowed to burn waste in the garden anymore because it has a negative effect on the environment. However, he still worries about the effect of incinerations on the environment, because they release unpleasant fumes into the atmosphere.

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

In general, technical innovations related to the effective management of waste in the household received high priority (see Table 4.3.1). Most of the envisioned devices help sorting, recycling or compressing waste in the house.

In four focus groups, the participants discussed the programmed obsolescence of products nowadays. The participants proposed more research on durable and non-toxic materials and designs to increase the quality and lifespan of products, reducing the use of resources and waste production. They believed products, like mobile phones, printers, clothes and household appliances used to have a longer lifespan and better quality.

> *"[P7] That's the problem, making clothes and household items that lasted for much longer before and now last for 5-10 years whilst you can still find a fridge made 25-30 years ago which is still working. So we need raw materials which are high quality.*
> *[PX] They are programmed to last for less time.*
> *[P9] Today things are not made to last!" (Grenoble FG2)*

A few participants blamed the manufacturers for programming products to break down at a given moment. In one focus group in Grenoble, the participants believed that we as consumers are to blame because we have become used to buying new items instead of repairing them. One participant mentioned the example of the habit of buying a new mobile phone each year as consumers want to have the newest cell phone available on the market.

In two focus groups the participants talked about reducing and eliminating waste. As shown in paragraph 4.2.2 the participants often complained about the number of bins in the house. In two focus groups, they discussed the possibility of a machine in the house that could compress packages. Moreover, they would like the machine to reduce waste to a microscopic level, like dust. Other participants proposed to disintegrate non-recyclable waste with a laser. In one of the focus groups in Grenoble, the participants talked about eliminating waste. They came up with the idea to send waste to space and destroy it, for instance with antimatter. The participants did not elaborate on this idea any further.

In two other focus groups the participants discussed how to make effective use of waste. In one focus group, the same idea was mentioned by several participants and received high priority. They would like the researchers to develop a car engine, which runs on waste. They think some innovative research is necessary, however, to achieve this. In another focus group, they came up with the idea to develop a boiler or machine that burns your waste and in return you receive non-polluting electricity. All kinds of waste could be thrown into the boiler, even kitchen waste. Another idea to make effective use of waste was to install an incinerator at each block or flat and a smaller one for individual houses. Citizens can throw all their waste in the incinerator

and the incinerator should have the features to produce heat in the winter and air conditioning in the summer. One of the participants was worried that citizens would throw polluting products in the incinerator like batteries. Another participant proposed to hire a caretaker to make sure no polluting waste is thrown in the incinerator. In another focus group the participants would like to use the incineration of organic waste to produce energy.

> *"And everything that is organic, everything that goes in the green bin, everything that is incinerated, increase the focus for research to reuse all this energy content that is in the rubbish." (Paris FG3, P8)*

Another participant in the same focus group mentioned incinerators also produce waste. The participant would like to find other ways than incineration to produce energy from waste.

In one of the focus groups, the participants came up with the idea of a self-sorting bin in which you can throw all kinds of waste and the bin would sort it for you. One of the reasons why the participants prioritised this idea is shown in the following quote:

> *"[P3] We don't have to wonder, we don't have to think [...] and we can't make any mistake. [P 1] And also, we don't have to bring everything to the other side of town to sort it out, carry it and so on." (Paris FG 1)*

Besides the fact that a self-sorting bin could make life easier, the participants also believed the implementation is not very complex. One of the participants stated the bin should also keep track of what citizens throw in. Two other participants would like to make the bin mandatory, so that every citizen would use the self-sorting bin. Landlords and house owners should install the bin and receive tax reduction or bonuses.

Another technical idea that was aimed at less packaging and more convenience in the house was to create a food tap in your home. The tap would be linked to a digital system.

> *"For food or products [...] instead of going to buy your pack of detergent, well you type in on your computer, I want 100 grams of detergent, and it brings your 100 grams of detergent straight to you in a little cup at home instead of buying your pack." (Paris FG3, P 11)*

A distributor would bring the products via the tap directly at your home. Another participant mentioned the system could also be set up with one tap per neighbourhood. The main idea is to eliminate the need for packaging.

Several other ideas for new machines came up in the various focus groups. The ideas mainly focused on transforming one waste product to another or transforming waste into a useful product. One example was the development of a machine that converts paper into notebooks. Another participant came up with an incentive to motivate citizens to bring paper to the machine.

> *"Or maybe it would give you a voucher, if you have three kilos of paper for instance, it would give you a piece of paper that says, go to this shop, you will be given, I don't know, let's say two books worth ten Euros or whatever, and the shop would be in a partnership with the programme or only use recycled stuff." (Paris FG 1, P4)*

The participants agreed that the town council should buy the machine.

Another idea of one of the participants was to build a machine to promote recycling near the rubbish bins. The machines should have a card and a deposit system. When citizens bring back their bottles either glass or plastic, they put their card in the machine and receive points in return. The aim of this idea was to change the behaviour of citizens and improve recycling as illustrated by the following quote:

> *"But if people were encouraged, or concerned about putting this into machines, we could use a points system for recycling. We could buy things with these points. I think people would be much more motivated because they would say to themselves that after twenty-five bottles, I don't pay, well that would motivate them." (Paris FG 1, P8)*

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	Strengthen the quality and lifespan of electronic and household appliances. Increase the lifetime of products by doing research on durable and non toxic materials and designs	Less use of resources	Producers/ Consumers	☆☆☆☆☆☆☆☆☆☆☆☆
	A machine that would compress packages and reduce waste to a microscopic level	Eliminate waste/ Convenience in the home	Consumers	☆☆☆☆☆
	A self sorting bin	Improve recycling/ Convenience in the home	Consumers	☆☆☆☆
	Send waste into space and use antimatter to destroy it	Effective use of waste/ Eliminate waste	Consumers/ Waste management companies/ Produces	☆☆☆☆
	Develop a car engine that runs on waste	Effective use of waste	Consumers	☆☆☆☆
	Disintegration of non-recyclable waste with a laser	Eliminate waste	Waste management companies	☆☆☆
	Use the incineration of organic waste for the production of energy	Effective use of waste	Waste management companies	☆☆☆
	Create a food tap in house. You fill in on the computer what products you need and how much. A food distributor brings it via a tap directly in your house	Less packaging/ Convenience in the home	Consumers	☆☆☆
	A boiler or machine that burns waste and gives back electricity	Effective use of waste	Consumers	☆☆
	For each block or flat, an incinerator for waste which produces heat in the winter and air-conditioning in the summer	Effective use of waste	Consumers	☆☆
	A machine in which you put paper and notebooks will come out	Effective use of waste	Consumers	☆
	A machine to transform a product or waste into another product	Less use of resources/ Effective use of waste	Consumers	☆
	A machine with a card and deposit system. Citizens who return glass or plastic bottles, put their cards in and receive points. With the points they can buy something free of charge	Improve recycling/ Behaviour change	Consumers	☆

MATERIALS

A second category related to the domain of 'environmental sciences and technology' contains ideas that focus especially on the 'material' dimension. These ideas generally involve research into, or development of, new materials with certain characteristics that are thought to reduce waste. Lessening the use of plastic is an important aim, often paired with effective use of waste and reduction of waste.

The development of new packaging material was elaborated upon extensively in five focus groups. The research idea that received the highest priority was developing new packaging material, which is recyclable and reusable, with the aim of having less packaging and more recycling:

> *"So we, we focused a bit on packaging, […] manufacturing with the thought of reusing the packaging such as it is so that partly avoids remaking." (Paris FG3, P8)*

In two other focus groups, the participants came up with another highly prioritised idea: 100% recyclable, biodegradable packaging. They found biodegradable packaging very convenient, because it breaks down by itself and you do not have full bins in your house anymore. A few participants mentioned the packaging should also be edible.

Another general idea, which came up related to packaging material was to find packaging that can also be used for other purposes.

> *"[P7] When you see the tyres and rubber, you can see very clearly that children's playgrounds are fitted with this surfacing. Now can our packaging products be used for other purposes? Provided that the reprocessing of the rubbish does not produce more pollution.*
> *[P8] I have always wondered about that.*
> *[P7] So that recycling doesn't become a source of pollution either." (Grenoble FG3)*

The participants of this focus group believed the recycling industry pollutes the environment and therefore they proposed to do more research on finding other purposes for waste, instead of recycling or eliminating waste. The last idea prioritised in this category was to develop packaging material that becomes soap once it comes into contact with water. The aim was to have less packaging and make more effective use of waste.

> *Yes, in the end, the packaging becomes the product that one buys. For example, for detergent, the packaging is really hard like cement and when one is finished with the packaging, one puts the bottle in the machine and it becomes soap." (Paris FG2, P8)*

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

Category	Idea	Aim	Target Group	Priority
Material	Develop new packaging material, instead of plastic, which is recyclable, reusable and can be used for all kind of purposes	Less plastic/ Improve recycling/ Less packaging/ Effective use of waste	Producers/ Consumers	☆☆☆☆☆☆☆☆☆☆☆
	Create 100% recyclable, biodegradable and edible packaging	Less packaging/ Improve recycling/ Eliminate waste	Consumers	☆☆☆☆☆☆☆☆☆☆
	Packaging that becomes soap	Effective use of waste/ Less packaging	Consumers	☆

Do research on how you can use packaging for other purposes. Because recycling is also a source of pollution	Effective use of waste/ Effect on planet	Other	☆

BIO(TECHNO)LOGY

The third category in the domain of 'environmental sciences and technology' is concerned with bio(techno)logical ideas. These ideas focus on biological processes and organisms. The ideas in this category were mainly focused on how to make effective use of waste.

One of the ideas that received high priority was to grow bacteria that consume waste and produce energy. However this idea was not extensively elaborated upon.

In three focus groups the idea of developing food pills was discussed with the aim to reduce and eliminate packaging and produce less waste.

> *"[P5] I don't know if that's even feasible, but there wouldn't be any packaging, actually, there would just be a countless amount of pills…*
> *[M] Freeze-dried food pills…*
> *[P5] Exactly, and as soon as you put them inside some machine, they'd be turned into a cooked meal."*
> *(Paris FG 1)*

The participants thought of pills that would turn into a baked chicken or vegetables once you have put them in the microwave. Although this idea was discussed in three focus groups there were some concerns about the feasibility. One of the participants mentioned for instance that we would no longer enjoy eating when we only have pills.

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	Grow bacteria which consume waste and produce energy	Effective use of waste	Consumers	☆☆☆☆☆
	Food pills that become a meal	Less packaging	Consumers	☆☆

ICT

The category ICT in the domain of 'environmental sciences and technology' is concerned with information and communication technology. The ideas in this category mainly focused on improving recycling, but also addressed convenience in the house and behaviour change (see Table 4.3.4).

In several focus groups, participants raised the idea of some sort of 'smart bin' to help you recycle. In one focus group in Grenoble, they came up with the idea to develop a bin which tells you whether you separate your waste correctly or not. The bin is thought to increase awareness on the value of separating waste among citizens. If citizens separate their waste correctly, they receive tax credit in return, which will work as an incentive to separate waste more often. In a slightly different variation participants suggested a bin that scans the barcodes of the products. Based on the barcode of the product, the bin should tell citizens how they should sort it.

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

Category	Idea	Aim	Target Group	Priority
ICT	Develop a bin with a marker that states whether you separate your waste correctly or not. When you separate it correctly you receive tax credit	Improve recycling/ Behaviour change	Consumers	☆☆☆☆☆☆☆☆
	Develop a bin that can talk and explain citizens how they should separate their waste	Improve recycling/ Convenience in the home	Consumers	☆☆☆☆

4.3.2 Policy, management and communication

POLICY

Ideas related to regulations and incentives were abundant in all focus groups. These are grouped in the category 'policy' (see Table 4.3.5). In general, ideas were related to regulations in the form of incentives or sanctions to motivate consumers and producers to change their behaviour.
One of the ideas that came up in two focus groups was to act on the behaviour of producers and distributors in order to stop buying products from China. In one of the focus groups, participants believed Chinese products are manufactured in a way that produces pollution and is not environmentally friendly. In the other focus groups, they mentioned they would not like to buy products from China because the quality and durability is lower.

"[P4] We said stop products made in China, stop all that, only work with businesses in the EEC.
[P3] More production and manufacture of everything that is made that is to say everything that is from Korea and China and all that, no.
[M] And in terms of waste, that changes what?
[P5] Well it would be materials that would be better quality you know.
[P4] Better quality." (Paris FG3)

Even though the participants mentioned that products from China are cheaper they are willing to pay extra for products with a higher quality and durability from Europe. Furthermore, they mentioned importing products from China has a negative effect on the environment because of the transportation. One of the participants provided an example of a Chinese product, which he bought, that was delivered with a lot of packaging. The participants concluded that the producers and distributors should stop importing and buying products from China to save the environment.

Participants in another focus group believed producers should be forced to reduce the amount of waste and packaging through taxes or bonuses. Because exercise three in this focus group was not recorded properly, there are no results on how this policy should be implemented in practice or why the participants assigned high priority to this idea.

Another idea that came up was related to developing new material that is recyclable and reusable (see table 4.3.2). The participants suggested developing a policy which forces producers to only use material that is recyclable and reusable with the aim to improve recycling. In line with this, participants prioritised the idea to establish policies that stop manufacturers producing products with a short life span. In two focus groups, the participants believed that introducing policies on ending the programmed obsolescence of products will be most effective.

In five focus groups, ideas regarding the provision of financial incentives to change the behaviour of consumers

and producers and to motivate them to recycle were mentioned. One of the ideas was to provide a tax incentive for consumers who recycled correctly. One of the participants explained why this is necessary:

"[...] Because I've seen that some people I know, they have a yellow bin on one side and another regular one, but later when they have bin bags, they usually toss them into the same bin and they don't worry about it. There are a few people who separate them, but people usually don't." (Paris FG 1, P4)

One of the participants proposed an eco-friendliness card. When a consumer executes certain actions, like taking the trouble to sort waste or bring the waste to landfill, he will get special offers and discounts at shops. The participants believe this will motivate the public to put more effort in separating waste. Besides it is an opportunity for companies to show they care about the environment by giving discounts in return. Another idea was to provide discount coupons distributed by supermarkets or shopping malls to reward an eco-attitude. The participants in the focus group did not discuss what an eco-attitude entails.

Although these ideas are all related to bonuses and incentives, there were also participants who believed the public needs to be punished. One of the ideas was that sanctions should be provided in the form of community service for citizens who harm the environment.

"No, but if you're penalised because you don't sort, you're going to sort the next time. If you're fined." (Grenoble FG3, P 1)

One of the participants would like to introduce fines for dropping litter on the ground. Another participant stated:

"Yes, even for leaving their bin bags outside the bin. [...] There are a lot of citizens who do that, who don't respect the law, or don't respect it on the pretext that the container is full, so they leave their bin bags next to it." (Paris FG 1, P6)

The participants believed that introducing fines and sanctions will change the behaviour of the consumer and help improve the environment.

A few participants expressed their worries about how, in general, the public consumes too much, which leads to a large amount of waste.

"Well yes, that's what we put, you have the basic product that comes in ten metres of shelves, do you need all that consumption?" (Paris FG3, P3)

The participants proposed a policy to lower overconsumption by letting the producers reduce the choice in the supermarket.

In one of the focus groups, the participants discussed the tax they pay on every device to recycle it. They mentioned they have no idea where this tax goes to. They would like to receive more information on what happens to the tax they pay for each device they buy.

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

Category	Idea	Aim	Target Group	Priority
Policy	Act on behaviour of producers/distributors. Stop importing and buying products which are manufactured in China because they are polluting and not environment friendly. Produce locally on European scale	Effect on the planet/ Behaviour change	Producers/ Consumers	☆☆☆☆☆☆☆☆☆☆
	Encourage and force manufactures to reduce the amount of waste and packaging through taxes	Less packaging/ Less waste production	Producers	☆☆☆☆☆☆☆☆

Policy	A policy which forces manufacturers to only use recyclable and reusable material	Improve recycling	Producers	☆☆☆☆
	Providing a tax incentive for waste separation	Behaviour change/ Improve recycling	Consumers	☆☆☆
	An eco friendliness card which will provide you with a discount in certain supermarkets	Behaviour change	Producers/ Consumers	☆☆☆
	Lower overconsumption by reducing choice in the supermarkets	Less waste production	Producers	☆☆
	Discount coupons to reward eco friendly gestures in supermarkets	Behaviour change	Consumers/ Producers	☆
	Put an end to programmed obsolescence of equipment for consumers	Less use of resources	Producers	☆
	Sanctions in the form of community service for people who harm the environment	Effect on planet/ Behaviour change	Consumers	☆
	Find out what happens to the eco participation tax on new household appliances			☆

MANAGEMENT AND LOGISTICS

'Management and logistics' is another category in the domain of 'policy, management and communication'. Many of the aforementioned ideas require a certain amount of managerial and/or logistical changes, but only some ideas have this as their primary focus (see Table 4.3.6).

The two highest prioritised ideas that were mentioned in four focus groups were aimed at reducing packaging by developing a system which makes it possible to shop for the exact amount of food you need. Several participants were very enthusiastic about it. Two of them explained how it should work:

> *"[P4] We wrote down that you should encourage bulk distributors. This happens in organic stores for cereals and it could be useful for pasta, rice, it stops waste [...]*
> *[P7] For the first visit, you buy the milk with the bottle, and then afterwards you go along with the same bottle." (Grenoble FG2)*

In addition, the participants believed this system increases local production, avoids transportation and benefits the taste of products. Participants in another focus group came up with a quite similar idea. They thought of bringing universal containers to the supermarket to be able to buy individual amounts of food and drinks. The participants believed this would lead to a reduction in packaging. According to the participants this idea can

easily be implemented, however manufacturers might have to be forced to put this idea in practice.
Another idea, which was proposed in one focus group, was about increasing the amount of bins on the streets. They specifically wanted to have more bi-functional bins. One of the participants mentioned they already exist for newspapers like '20 minutes' and other waste:

> *"I have seen that there are two bins on RER trains now, there is a bin for 20 minutes and stuff, and another one for the rest, and well, this could be implemented everywhere, even in town." (Paris FG 1, P4)*

The bins should have two compartments for different kinds of material, for instance, one compartment for plastic bottles and the other for glass bottles. The participants believed this idea would be easy to implement in the near future, because the bins already exist and are being used.

> *"Then it's up to municipalities, they need to invest, because there are already some in shopping centres [...] The bins have a yellow side and a blue side, for recyclable and non-recyclable waste, and it's really great, cause people in shopping centres do it." (Paris FG 1, P6)*

The participants believed the bins should be distributed more broadly in the towns because it increases recycling behaviour.

Another idea, which was mentioned in one focus group, was to feed animals with food waste and use their manure to produce heat. One of the participants explained this already happens in certain places in France, but can be expanded more broadly.

In two focus groups, the participants would like to set up locations in urban areas where citizens could throw away their waste. In one focus group, they talked about a collective eco-compost, with the aim to recycle food waste. Especially for citizens who have no garden, this might be useful. In another focus group, the participants would like to set up compost heaps in parks to avoid accumulating waste. They thought this might be very effective, especially for citizens who live in flats. However, they believed you should also provide an incentive in return.

> *"You can deposit items in the compost heap and you are given a token. Depending on the number of tokens you can then exchange these for a bag of compost." (Grenoble FG2, P4)*

They believed this would lead to more convenience in the house and improve recycling.

The last idea prioritised in this category, which was briefly touched upon, was the possibility to repair a garment or a pair of shoes instead of throwing it away immediately when it is broken. This would lead to less waste production. The participants did not explain how they would like to put this idea into practice.

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

Category	Idea	Aim	Target Group	Priority
Management/ Logistics	Encourage bulk distributors so citizens can come with their container or trolley and fill it up with food products	Less packaging/ Improve recycling	Producers/ Consumers	☆☆☆☆☆☆☆
	Universal containers for the purchase of pasta, rice, beverages and detergent	Less packaging	Producers/ Consumer	☆☆☆☆☆☆
	Bi-functional bins for different kinds of waste should be placed in every street	Improve recycling	Consumers	☆☆☆

Management/ Logistics	Create a circuit for the remnants of foodstuffs to feed animals and create heat	Local production	Consumers	☆☆
	Put a compost heap in parks and receive a token in return	Improve recycling/ Convenience in the home	Consumers	☆☆
	Providing locations, like collective eco compost, in big cities where people could throw away their food waste	Improve recycling	Waste management companies	☆
	Be able to repair a garment or pair of shoes piece by piece	Less waste production	Consumers	☆

COMMUNICATION AND EDUCATION

Many ideas focused on education, information and marketing. These ideas have been grouped in the category 'communication and education' (see table 4.3.7). The participants believed information and education could raise awareness about waste among citizens and eventually change their behaviour.

The two highest prioritised ideas were aimed at education and were discussed in four focus groups. The participants believed education is necessary in schools, workplaces and in the media. In schools, education should be aimed at teaching children the value of sorting and their responsibilities. Participants believed children should learn about waste as soon as possible.

"So, I think it's a question of education [...] however, the majority of people, since we really haven't been made aware of all of this, I think that to succeed in reducing all of the waste, we have to start at the foundation." (Paris FG2, P8)

"It is good to start at school while they are very young, because afterwards it stays fixed in their minds and we have to follow suit." (Grenoble FG3, P1)

One of the participants mentioned that, in primary school, children receive lessons on sustainable development and are taken to farms. However, another participant's children never received lessons about waste. This participant believed the education system should be harmonised in this context. They mentioned education should be focused on showing what we have achieved by sorting waste over the years.

"[P8] It is also important to look at the situation now, it has been 10 years since we started sorting, at least for me. And take stock today to see where we are and what has been achieved. Be concrete as to the achievements.

[P4] Be encouraged at work, you have worked hard and have sorted waste, let's see what you achieved." (Grenoble FG2)

The second idea was aimed at teaching citizens how to reuse products as illustrated by the following quote:

"[P11] Yes, we also put reducing food waste at home and consuming differently and knowing how to reuse.

[P10] There are people who don't know how to consume, they buy and throw away, they don't know how to limit. I know quite a few who throw away things of ham and everything.

[P11] Consuming bread from the day before, for example, learning to manage that." (Paris FG3)

They talked about this idea mainly in the context of young adults who were, according to the participants, not aware of how to manage food products. The participants of one focus group proposed a media campaign to

encourage reuse of products. In another focus group, the participants would like to change consumer mentality, because nowadays consumers are eager to keep on buying new products.

Another way to inform the public is to set up an awareness campaign to show how to sort and what the value of sorting is. Awareness campaigns can be done by placing billboards in the city or providing information via the radio or television or by advertisements. However, one of the participants mentioned that a lot of paper is thrown out due to advertisement campaigns, which leads to more waste. One participant believed we should develop a campaign to scare citizens and show them the impact of dealing with waste incorrectly.

In one focus group the participants would like to see all products with a sticker or label on how to dispose or recycle the product. They believed this would lead to more recycling.

"If people are instructed, they will follow." (Grenoble FG2, P6)

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	More education in schools, at the workplace and in the media on the value of sorting and responsibilities of citizens. Show the progress of sorting over the years. Focus on achievements	Awareness	Consumers	☆☆☆☆☆☆☆☆☆☆
	Teach people how to consume and reuse products	Behaviour change	Consumers	☆☆☆☆☆☆
	Start an awareness campaign in the media	Awareness	Consumers	☆☆☆
	Provide instructions for sorting	Improve recycling	Consumers	☆☆
	Develop campaigns to scare people and educate them about waste management	Awareness of negative effects/ Awareness of possibilities	Consumers	☆
	Use the media to encourage swapping	Less use of resources	Consumers	☆
	Change consumer and producer behaviour, stop buying new products	Less waste production/ Behaviour change	Consumers/ Producers	☆

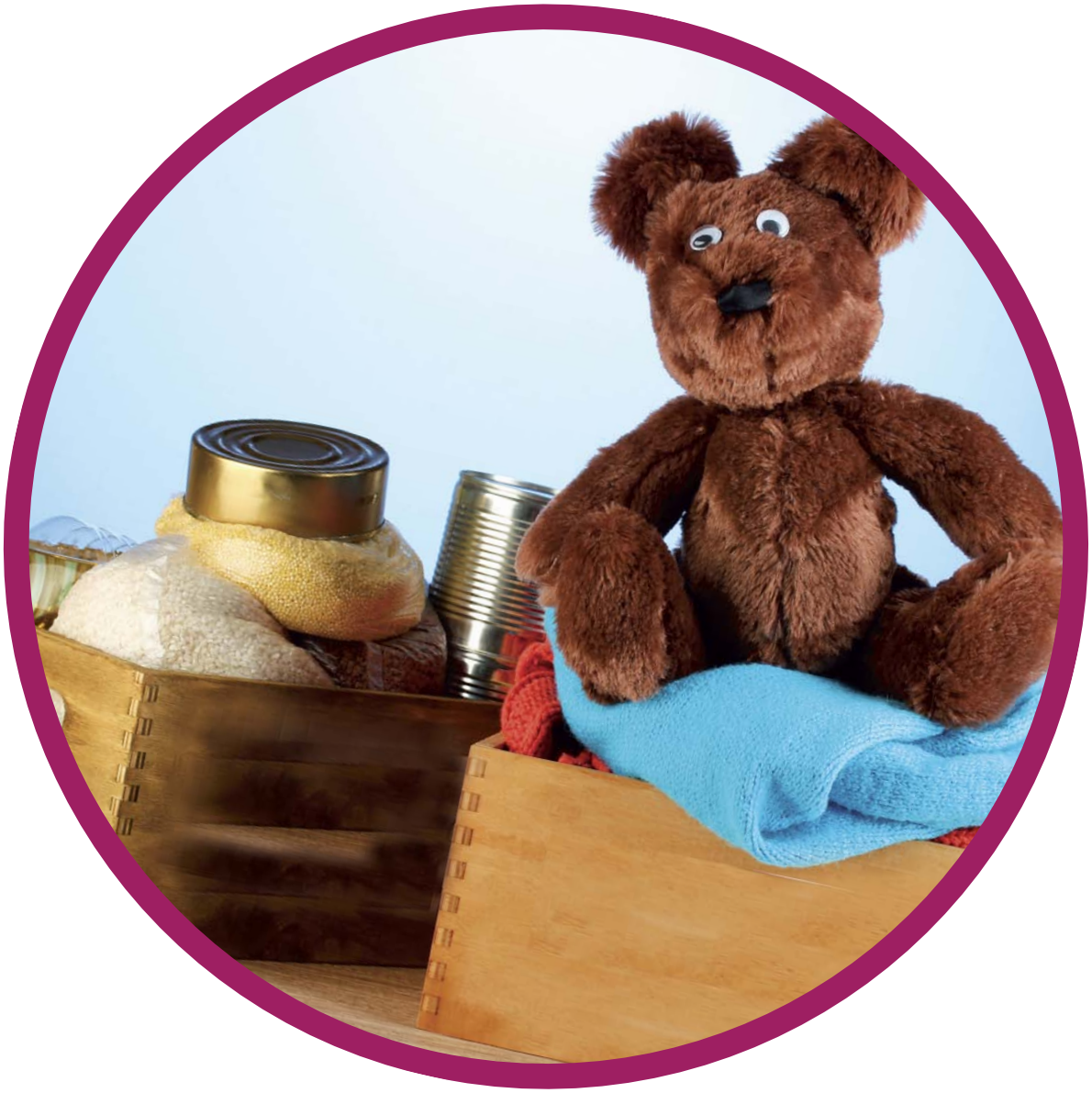
LOCAL INITIATIVES

Some ideas that were forwarded in the focus groups do not need much research, but merely some organisation. The category 'local initiatives' captures these ideas. Many ideas were mentioned that fell in this category (see table 4.3.8). However, only two ideas were prioritised. In one of the focus groups in Grenoble, they would like to encourage local consumption and distribution networks. One of the participants mentioned he often goes to a farm to buy his fruits and vegetables because they have fresh products which taste good.

In another focus group, the participants would like to recycle the seeds of food and waste to replant fruits and vegetables, instead of throwing them away. According to them this would lead to less waste production and more recycling of food waste.

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

Category	Idea	Aim	Target Group	Priority
Local initiatives	Encourage local consumption and distribution networks	Local production	Consumers	☆
	Recycle the seeds of food waste to replant fruits and vegetables	Improve recycling/ Less waste production	Consumers	☆



5. Conclusion, discussion and evaluation

This country report presents country-specific findings from citizen focus groups in France. 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 two different locations. In France six 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 France. 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

France ranks 11th on the EU27 ranking list on Municipal Solid Waste Recycling (MSW). They have managed to increase recycling from 26% in 2001 to 35% in 2010. They are making an effort to meet the target set by the EU, which is to achieve a 50% recycling target for household waste in 2020.[14] The results from the focus groups showed nearly all participants separate their waste at household level and have access to facilities needed to separate waste. This is in line with the findings from the Flash Eurobarometer survey 'Attitudes of Europeans towards resource efficiency'[15] in which 92% of French 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. However, knowledge about what happens to their waste after disposal is limited and differed among the participants.

During the focus groups, large clusters of barriers and concerns could be distinguished for dealing with waste appropriately. When talking 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. In addition, the participants worried about the fact that not every citizen is sorting waste correctly. They were wondering why they should make an effort to sort their waste while other citizens do not. Furthermore, the participants indicated they find it complicated to separate their waste. This is often related to the number of bins in the house that the participants find inconvenient, and the time it takes to separate waste correctly. The participants indicated there is a lack of information on how to sort products and they would like to know the benefits of sorting waste. This is in line with the results from the Flash Eurobarometer Survey, where half of the respondents indicated more information should be provided on how and where to sort waste.

Regarding the disposal of waste the participants also experienced some challenges. The participants believed the difference in rules regarding waste management in and between cities makes the separation of waste more difficult. According to them, the waste management system should be harmonised. The participants also experienced the distance to the containers and the recycle centre as inconvenient, especially for citizens who do not have a vehicle. Furthermore, some participants mentioned waste is not often enough collected or only collected when separated correctly. In addition, some of the participants find the tax on waste too expensive. They would like a system where citizens pay for the amount of waste collected. This relates to the results of the Flash Eurobarometer where 79% of the respondents would like every citizen to pay for the quantity of waste generated in each household. The participants also expressed some long-term concerns when talking about the disposal of waste. They worried about the effects on the environment and the consumer society, which encourages consumers to keep on buying new products.

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 technology to use waste more effectively, to improve the management of waste in the household and to use fewer resources. Consumers and producers are the most prominent target groups, followed by waste management companies.

The envisioned ideas in the domain 'environmental sciences and technology' focus on developing machines to make more effective use of waste. For instance, a car engine that runs on waste, or a machine that uses waste to produce electricity. Furthermore, ideas were often related to building machines or bins that could

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

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

reduce waste and help citizens to sort and recycle. More convenience in the house was one of the main drivers behind these ideas, followed by improving recycling behaviour. The possibilities of creating other material than plastic were extensively discussed with the aim to reduce the amount of packaging and waste. New packaging material should be developed that is recyclable, biodegradable and non-toxic. The participants often worried about the programmed obsolescence of products nowadays. They would like more research on durable materials to strengthen the quality and lifespan of products.

Ideas in the second domain 'policy, management and communication' circled mainly around regulations, incentives and communication to raise awareness and change behaviour. Regulations should force manufacturers to use less packaging material or only use material that is recyclable. Citizens should receive sanctions in the form of community service for harming the environment. They should also be rewarded with tax credit, discount coupons or bonuses for separating waste correctly. This is in line with the results from the Eurobarometer Survey where more than half of the respondents indicated stronger law enforcement on waste management is necessary.

Other ideas that received high priority included encouraging supermarkets to sell products without packaging so citizens can come with their container and buy the exact amount of food they need. The dominant idea behind this proposal was reducing the amount of packaging material. Citizens are perceived as one of the most important actors in creating a 'zero waste society'. However, they are often unaware of the value of separating and recycling waste. Educational programs at schools, media campaigns and information labels on how to recycle and reuse products are thought to increase awareness and improve recycling behaviour among citizens.

Of the most highly prioritised ideas, the first is to strengthen the quality and lifespan of electronic and household appliances; increase the lifetime of products by doing research on durable and non toxic materials. The second was shared between two ideas that received the same number of priority stickers: developing new packaging material, instead of plastic, which is recyclable, reusable and can be used for all kind of purposes; acting on behaviour of producers/distributors; stop importing and buying products which are manufactured in China because they are polluting and not environment friendly, produce locally on European scale.

5.3 Reflection

The focus groups were effective in eliciting citizen's preferences, values, needs and expectations concerning urban waste and innovation. Some of the participants were hesitant at the start to come and talk about waste for three hours. However, afterwards they indicated they felt involved in the group discussion and perceived the exercises as interesting and fun to do. Furthermore they appreciated the opportunity to exchange ideas with other citizens on the subject of urban waste and to improve their knowledge. The participants were pleased they have been consulted by the European Commission and hope their input will be valuable and their ideas will be implemented. They suggested the European Commission should use this method of consultation more often to discuss topics with citizens. Participants realised there is still a lot of work to do to achieve a society without waste but they believe this initiative will be a good start to make a change in Europe.

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	Strengthen the quality and lifespan of electronic and household appliances. Increase the lifetime of products by doing research on durable and non toxic materials	Less use of resources	Producers/ Consumers	☆☆☆☆☆ ☆☆☆☆☆ ☆☆
	A machine that would compress packages and reduce waste to a microscopic level	Eliminate waste/ Convenience in the home	Consumers	☆☆☆☆☆
	A self sorting bin	Improve recycling/ Convenience in the home	Consumers	☆☆☆☆
	Send waste into space and use antimatter to destroy it	Effective use of waste/ Eliminate waste	Consumers/ Waste management companies/ Producers	☆☆☆☆
	Develop a car engine that runs on waste	Effective use of waste	Consumers	☆☆☆☆
	Use the incineration of organic waste for the production of energy	Effective use of waste	Waste management companies	☆☆☆
	Disintegration of non-recyclable waste with a laser	Eliminate waste	Waste management companies	☆☆☆
	Create a food tap which brings your products in house without packaging and which you can control digitally	Less packaging/ Convenience in the home	Consumers	☆☆☆
	A boiler or machine that burns waste and gives electricity in return	Effective use of waste	Consumers	☆☆
	Per block or flat an incinerator for waste which produces heat in the winter and air-conditioning in the summer	Effective use of waste	Consumers	☆☆
	A machine in which you put paper and notebooks will come out	Effective use of waste	Consumers	☆
	A machine to transform a product or waste into another product	Less use of resources/ Effective use of waste	Consumers	☆
	A machine with a card and deposit system. People who return glass or plastic bottles, put their cards in and receive points. With the points they can buy something free of charge	Improve recycling/ Behaviour change	Consumers	☆

	A machine which repairs clothes	Less use of resources	Consumers	
	A machine which converts clothes and transforms them to the fashion of the day	Less use of resources	Consumers	
	Develop eternally rechargeable batteries	Less use of resources	Consumers	
	Develop a sink in which you can dispose your waste			
	Develop a machine which disintegrates or dissolves waste with antimatter and produces warmth or fuel	Effective use of waste/ Eliminate waste	Consumers/ waste management companies/ Producers	
Material	Develop new packaging material, instead of plastic, which is recyclable, reusable and can be used for all kind of purposes	Less plastic/ Improve recycling/ Less packaging/ Effective use of waste	Producers/ Consumers	☆☆☆☆☆ ☆☆☆☆☆ ☆
	Create 100% recyclable, biodegradable and edible packaging	Less packaging/ Improve recycling/ Eliminate waste	Consumers	☆☆☆☆☆ ☆☆☆☆☆
	Packaging that becomes soap	Less packaging/ Effective use of waste	Consumers	☆
	Do research on how you can use packaging for other purposes. Because recycling is also a source of pollution	Effective use of waste/ Effect on planet	Other	☆
	Make packaging material or fabric which disintegrates and does not pollute	Eliminate waste/ Effect on the planet	Consumers	
	Use natural material for fabric instead of oil and plastic	Effect on planet	Producers	
Bio(techno)-logical	Grow bacteria which consume waste and produce energy	Effective use of waste	Consumers	☆☆☆☆☆
	Food pills which become a meal	Less packaging	Consumers	☆☆
ICT	Develop a bin which informs whether you separate your waste correctly or not. When you separate waste correctly you receive tax credit	Improve recycling/ Behaviour change	Consumers	☆☆☆☆☆ ☆☆☆
	Develop an intelligent talking bin that helps citizens to sort	Improve recycling/ Convenience in the home	Consumers	☆☆☆☆
	Develop a fun smartphone app		Consumers	
	Digitize instruction manuals on a CD	Other	Consumers/ Producers	

POLICY, MANAGEMENT AND COMMUNICATION

Category	Idea	Aim	Target Group	Priority
Policy	Act on behaviour of producers/distributors. Stop importing and buying products which are manufactured in China because they are polluting and not environment friendly. Produce locally on European scale	Effect on the planet/ Behaviour change	Producers/ Consumers	☆☆☆☆☆ ☆☆☆☆☆ ☆
	Encourage and force manufactures to reduce the amount of waste and packaging through taxes	Less packaging/ Less waste production	Producers	☆☆☆☆☆ ☆☆☆
	A policy which forces manufacturers to only use recyclable and reusable material	Improve recycling	Producers	☆☆☆☆
	Providing a tax incentive for waste separation	Behaviour change/ Improve recycling	Consumers	☆☆☆
	An eco-friendliness card which will provide discounts at certain supermarkets	Behaviour change	Producers/ Consumers	☆☆☆
	Lower overconsumption by reducing choice in the supermarkets	Less waste production	Producers	☆☆
	Discount coupons to reward eco friendly gestures in supermarkets	Behaviour change	Consumers/ Producers	☆
	Put an end to programmed obsolescence of equipment for consumers	Less use of resources	Producers	☆
	Sanctions in the form of community service for people who harm the environment	Effect on planet/ Behaviour change	Consumers	☆
	Find out what happens with the eco participation tax on new household appliances			☆
	Fines for dropping litter on the ground or leave bags outside the bin	Behaviour change	Consumers	
	Limit packaging at the source	Less packaging	Producers	
	Provide a tax for people who consume more and a bonus for people who consume less	Less waste production	Consumers	
	Make repairs cheaper than buying new products	Less waste production/ Less use of resources	Consumers/ Producers	
	Tax should be calculated according to the amount of waste each person produces	Less waste production	Consumers	
	Supermarkets need to be forced not to throw products away	Less waste production	Consumers	
	Force manufactures not to sell gray trash bags, because they are not recyclable	Less plastic/ Less waste production	Producers	
Management/ Logistics	Encourage bulk distributors so citizens can come with their container or trolley and fill it up with food products	Less packaging/ Improve recycling	Consumers	☆☆☆☆☆ ☆☆
	Universal containers for the purchase of pasta, rice, beverages and detergent	Less packaging	Producers/ Consumer	☆☆☆☆☆ ☆

	Bi-functional bins for different kinds of waste should be placed in every street	Improve recycling	Consumers	☆☆☆
	Create a circuit for the remnants of foodstuffs to feed animals and create heat	Local production	Consumers	☆☆
	Put a compost heap in parks and receive a token in return	Improve recycling/ Convenience in the home	Consumers	☆☆
	Providing locations, like collective eco compost, in big cities where people could throw away their food waste	Improve recycling	Waste management companies	☆
	Be able to repair a garment or pair of shoes piece by piece	Less waste production	Consumers	☆
	More drop-off points for clothes	Improve recycling	Waste management companies	
	The waste management industry should be developed	Other	Waste management companies	
	Replace plastic bottles for lightweight glass bottles with a deposit	Less use of plastic/ Less use of resources	Producers	
	More recycling bins in public transport	Improve recycling	Consumers/ Waste management companies	
	Create a network to send waste directly through landfill	Other	Waste management companies	
	Develop family size packaging instead of many small packs	Less packaging	Producers/ Consumers	
Communication and education	More education in schools, at the workplace and in the media on the value of sorting and responsibilities of citizens. Show the progress of sorting over the years. Focus on achievements	Awareness	Consumers	☆☆☆☆☆ ☆☆☆☆☆
	Teach people how to consume and reuse products	Behaviour change	Consumers	☆☆☆☆☆ ☆
	Start an awareness media campaign	Awareness	Consumers	☆☆☆
	Provide instructions for sorting	Improve recycling	Consumers	☆☆
	Develop campaigns to scare people and educate them about waste management	Awareness of negative effects/ Awareness of possibilities	Consumers	☆
	Use the media to encourage swapping	Less use of resources	Consumers	☆
	Change consumer and producer behaviour, stop buying new products	Less waste production/ Behaviour change	Consumers/ Producers	☆

Communication and education	Fridge magnets displaying waste collection schedules and waste separation information	Awareness of possibilities	Consumers	
	A bin with a panel which provides information on what the effect of your waste is on the environment	Awareness of possibilities/ Effect on planet	Consumers	
	Provide a logo on products with recycling information	Awareness of possibilities/ Improve recycling	Consumers	
	Develop simplistic logos that can be placed on the bins	Improve recycling	Consumers	
	Follow courses on recycling	Behaviour change/ Improve recycling	Consumers	
	Organise guided tours through recycling centers	Behaviour change/ Improve recycling	Consumers	
	Develop a theme park with an ecology theme, where all the attractions are built with recycled products to raise awareness among people	Awareness of possibilities	Consumers	
	Encourage people to repair products instead of throwing them away	Less use of resources	Consumers	
Local initiatives	Encourage local consumption and distribution networks	Local production	Consumers/ Producers	☆
	Recycle the seeds of food waste to replant fruits and vegetables	Improve recycling/ Less waste production	Consumers	☆
	Repurchase food waste to make compost. In exchange you receive vegetables	Effective use of waste	Consumers	
	Place recycling boxes for pencils and paper at schools	Improve recycling	Consumers	
	Reuse packaging to decorate your home	Less use of resources	Consumers	
	Rent or share household equipment	Less use of resources	Consumers	
	Eliminate shoe boxes and watches. There are clocks everywhere	Less waste production	Consumers	
	Develop art from recycled materials	Improve recycling	Consumers	

Annex 2: Attitudes of citizens from France 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:

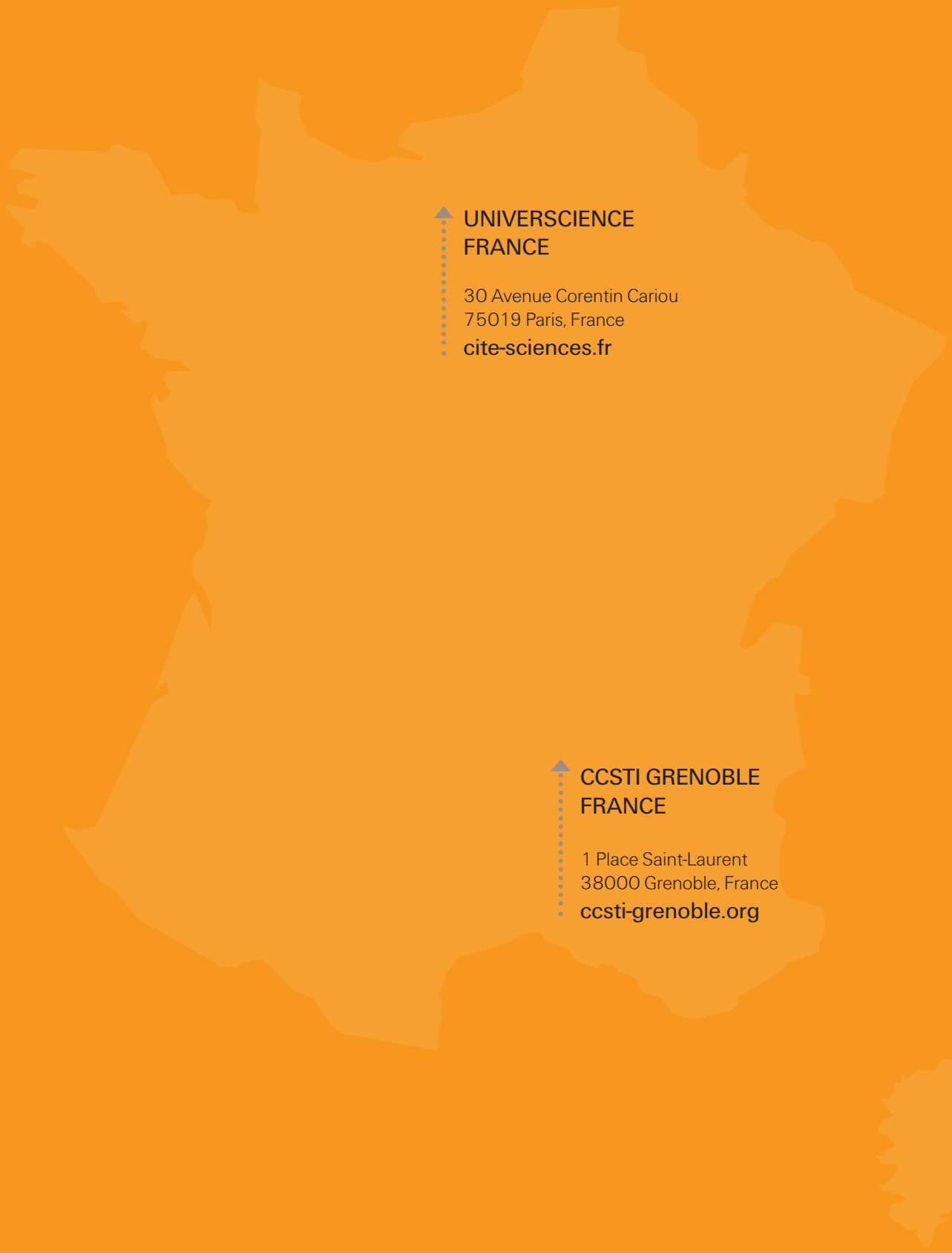
- citizens' perceptions of Europe's efficiency in its use of natural resources
- the amount of waste EU households produce and whether they separate that waste for recycling or composting
- preferred actions to improve EU households' and communities' waste management
- citizens' views on how to pay for 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 France.

Question	Answer	%	EU27 Average
Do you think Europe could be more efficient in its use of natural resources?	Yes	88%	87%
	No	5%	5%
	DK/NA*	7%	8%
Do you think that your household is producing too much waste or not?	Yes	49%	41%
	No	49%	58%
	DK/NA*	2%	1%
Do you separate at least some of your waste for recycling or composting?	Yes	92%	89%
	No	8%	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	69%	76%
	Improve separate waste collection at your home	66%	67%
	More information on how and where to separate waste	59%	65%
	Legal obligation to separate waste	57%	59%
	Taxes for waste management	28%	39%
What initiatives would improve waste management in your community?	Better waste collection services	72%	70%
	Stronger law enforcement on waste management	61%	65%
	Make producers pay for collection and recycling of waste	69%	63%
	Make households pay for the waste they produce	31%	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	79%	75%
	DK/NA*	11%	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	15%	25%
	Include the cost of waste management in the price of the products you buy	68%	59%
	DK/NA*	17%	16%
Can you estimate what percentage of the food you buy goes to waste?	None	17%	11%
	15% or less	68%	71%
	16% to 30%	11%	13%
	More than 30%	3%	4%
	DK/NA*	1%	1%
What would help you to waste less food?	Better estimate portion sizes (how much food you cook) to avoid excess food	58%	62%
	Better information on food product labels, e.g. how to interpret "best before" dates, information on storage and preparation	56%	61%
	Better shopping planning by my household	51%	58%
	Smaller portion sizes available in shops	57%	58%
How important for you is a product's environmental impact - e.g. whether the product is reusable or recyclable - when making a decision on what products to buy?	Very important	26%	39%
	Rather important	51%	41%
	Rather not important	13%	12%
	Not at all important	9%	6%
	DK/NA*	1%	2%
Are you willing to buy second-hand products?	Yes	78%	68%
Base: all respondents, % of yes			
Would you buy the following products second hand?	Furniture	70%	56%
Base: all respondents, % of yes	Electronic equipment	50%	45%
	Textiles (clothing, bedding, curtains, etc)	44%	36%
What reasons prevent you from buying second-hand products?	Quality/usability of the product	57%	58%
	Health and safety concerns	35%	50%
	Less appealing look of the product	16%	25%
	Afraid of what others might think	3%	5%
Would you buy products made of recycled materials?	Yes	94%	86%
	No	5%	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	45%	51%
	Environmental impact of the product	29%	26%
	Price of the product	22%	18%
	Brand/brand name of the product	2%	2%
	DK/NA*	2%	3%
What prevents you from buying recycled products or products containing recycled materials?	Health and safety concerns	25%	44%
	Quality/usability of the product	33%	42%
	No clear consumer information on the recycled product	27%	32%
	Less appealing look of the product	19%	17%
	Afraid of what others might think	4%	5%

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



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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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