



National, Qualitative insight on Household & Catering Food Waste



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Table of Contents

Executive summary	1
Research findings	1
1 General introduction	1
1.1 Background	1
1.2 Aims of the work	2
1.3 Structure of the work	2
2 Methodology	3
2.1 Background of the methodology	3
2.2 Topic guide	3
2.3 Participants	5
2.4 Analysis	6
3 Country similarities and differences	7
3.1 How do people think about food waste?	7
3.1.1 Awareness	7
3.1.2 Sentiments on food waste	8
3.1.3 Thoughts and beliefs	9
3.1.4 Stereotypes about who waste and who do not	9
3.2 Food waste in a day-to-day context	10
3.2.1 Motivation	10
3.2.2 Abilities and opportunities	12
3.2.3 Acceptability of wasting	15
3.2.4 Intervention strategies	16
4 Conclusions on country comparison	18
5 Country report: The Netherlands	19

5.1 Introduction	20
5.2 Results	21
5.2.1 How do people think about food waste?	21
5.2.2 Food waste in a day-to-day context	27
5.3 Conclusions	41
6 Country report: Spain	46
6.1 Introduction	47
6.2 Results	49
6.2.1 How do people think about food waste?	49
6.2.2 Food waste in a day-to-day context	54
6.3 Conclusions	73
7 Country report: Germany	79
7.1 Introduction	80
7.2 Results	82
7.2.1 How do people think about food waste?	82
7.2.2 Food waste in a day-to-day context	86
7.3 Conclusions	105
8 Country report: Hungary	110
8.1 Introduction	111
8.2 Results	116
8.2.1 How do people think about food waste?	116
8.2.2 Food waste in a day-to-day context	124
8.3 Conclusions	151
9 References	159
10 Annex methodological documents	162
10.1 Topic guide and material in English	162

10.2	Coding book in English	177
11	Annex country methodologies	180
11.1	The Netherlands	180
11.1.1	Recruitment	180
11.1.2	Participants	180
11.1.3	Practicalities (Date and Location)	181
11.2	Spain	182
11.2.1	Recruitment	182
11.2.2	Participants	182
11.2.3	Practicalities (Date and Location)	184
11.3	Germany	184
11.3.1	Recruitment	184
11.3.2	Participants	185
11.3.3	Practicalities (Date and Location)	186
11.4	Hungary	187
11.4.1	Recruitment	187
11.4.2	Participants	187
11.4.3	Practicalities (Date and Location)	188

Executive summary

This report is part of the EU funded H2020 project REFRESH (Resource Efficient Food and dRink for the Entire Supply cHain). It documents the results from a series of qualitative focus group discussions which were conducted in four European countries (Hungary, Germany, The Netherlands, and Spain) using a common research protocol.

The research was designed around two main research questions, each with a number of topics addressed. These research questions and topics were:

1. How do people think about food waste? In terms of:
 - a. Awareness of the issue
 - b. Their sentiments on food waste generation and waste prevention
 - c. Their thought of and beliefs about the issue
 - d. Their perceptions of what they believe are stereotypical food-wasters as compared to those who do not waste food.
2. What are the important issues related to food waste in a day-to-day context? In terms of:
 - a. Motivations behind food waste generation and prevention
 - b. Abilities and opportunities that co-determine levels of food waste
 - c. Differential acceptability of wasting different food product categories and/or in different situations
 - d. Potential intervention strategies that consumers believe to be appropriate

The report presents the results from each of the individual countries and complements that with an analysis of the most striking similarities and differences between the countries. From the results it is clear that awareness and motivation regarding food waste are present and on the increase in all countries but to different degrees and with different contingencies depending on socio-cultural and socio-economic factors.

The results provide initial support for the research framework on determinants of consumer behaviour in relation to causes of food waste that was developed within the REFRESH Work Package 1 on Consumer Understanding, and serve as a basis for the design of the quantitative research that will formally test and quantify the consumer-level model in a forthcoming study.

The results from the different countries also serve as input to the National Working Platforms in REFRESH Work Package 2 on Business Engagement – Frameworks for Action, and REFRESH Work Package 4 on Behavioural Economics Modelling Approaches.

Research findings

Overall the results from the focus groups in the four countries reveal a lot of similarities as well as a level of heterogeneity across the countries.

In all countries, participants recognise and are aware of the issue of food waste, and such awareness is on the increase. Levels of current awareness seem to differ between countries as a result of national circumstances. It is quite high in Germany and also The Netherlands, where it is seen as a moral issue in relation to respect for food and how to handle it. In addition, to being identified as a moral issue in Spain and Hungary, the issue of food waste is (also) more closely related to relative shortage of food and to poverty. When linking food waste with shortage and poverty, the financial issue drives food waste prevention. However, not to every costs, both Hungarian and Spanish consumers emphasize that food enjoyment is of great importance in relation to the social value of food. Sometimes, for social and food-enjoyment reasons, food waste is seen as inevitable.

A second important similarity between the countries is the important role of "education", in the broadest sense, in the shaping of an individual's food waste prevention values and the food waste behaviours arising from that. Respect for food and to handle it with care and appreciation (rather than throw it away) is something that for many participants is transmitted from generation to generation. However, both Hungarian and Spanish participants indicate that such transfer is becoming less and less self-evident. Parenting styles have changed (mainly emphasised in Hungary), but also lifestyles have changed (mainly emphasised in Spain) and as a result food waste prevention is not always self-evident and sometimes subordinate to the goal of "pleasing the kids" and/or trying to catch up with an accelerated lifestyle.

A third important similarity across countries is that, in everyday life, the goal of waste prevention competes with many other food consumption goals and even household management goals. Partly competing goals, such as ensuring good taste, sufficient variety in the diet, ensuring product safety, entertaining guests, all may lead to (incidental) food waste. Consumers seem to be well aware of these competing factors, and appreciate that in the end some of these other factors may take precedence over preventing food waste.

A final important similarity across the four countries seems to be that participants are quite positive about possible good intervention strategies. To a considerable degree, they seem to recognise that they can start themselves, tomorrow in small steps (e.g. cooking smaller portions) but more substantial changes are also required to make the difference. Participants emphasise that it will be important to involve a wide variety of stakeholders (from the media, chefs, retailers and manufacturers). Participants in all countries, but particularly in Spain and Germany also look at other sectors of the supply chain, especially retail and restaurants, that could do more to reduce food waste. Many emphasise that it will be important to start with information and awareness campaigns using different channels and at different levels at the same time. And as the Hungarian results clearly state, to a large degree this is "back to the future", as it seems to reinforce habits and values that once were common place.

1 General introduction

1.1 Background

Consumers are responsible for approximately half of the food that is wasted across the food chain in the European Union (Stenmarck et al. 2016). Prior research within the EU H2020 funded REFRESH project has led to essential insights regarding consumer behaviours leading to food waste (Van Geffen et al., 2016). However, such insights have been largely study- and country-specific, not necessarily allowing for direct and systematic comparisons between countries. So far, no systematic and in depth pan-European understanding on consumer food waste generation and prevention has been established, while such more comprehensive insight has the potential to contribute to an efficient food waste reduction by informing food waste reduction strategies and measures at a European scale.

REFRESH is an EU research project taking action against food waste. 26 partners from 12 European countries and China work towards the project's goal to contribute towards Sustainable Development Goal 12.3. of halving per capita food waste at the retail and consumer level and reducing food losses along production and supply chains, reducing waste management costs, and maximizing the value from un-avoidable food waste and packaging materials. It includes a work package dedicated to consumer understanding of food waste and food prevention behaviour within the household and out of home. It is hence perfectly positioned to develop this pan European consumer understanding on food waste.

The present piece of work reports on the qualitative study performed in the four European countries, Netherlands, Germany, Spain and Hungary, which are central in the National Working Platforms. One of REFRESH's aims is to create evidence to support effective European and national action on food waste. To achieve this goal, national Pilot Working Platforms (PWP) have been established in four partner countries: Germany, Hungary, Spain, and The Netherlands. In the PWPs, Frameworks of Action on food waste will be developed and tested together with partners from business, civil society, and governments. Details on this approach can be found on www.eu-refresh.org.

The present study builds on, and derives its structure from previous work in REFRESH Work Package 1 on Consumer Understanding. The REFRESH theoretical framework on "Causes and determinants of Consumers' Food Waste" (van Geffen et al., 2016) reports the underlying model structure. Essentially this structure argues that consumers' motivation to prevent food waste, will only materialise in actual food waste preventive behaviours is supported by the required individual level "abilities" (i.e. knowledge and skills) and "opportunities" provided by the external environment. At a later stage, this model will be tested in large scale quantitative pan-European research. The present qualitative research tests and validates the model structure in a qualitative format. The study is hence designed to identify whether important model components are missing or redundant, and particularly also to identify operationalisations and country-specific issues that would need to be taken up in the quantitative research. In addition, the research

findings, both overall and for the individual countries from these extensive focus groups discussions, serve as stand-alone results. They play an important role as country insights to support the National PWP's which will develop and implement pilot actions throughout 2017-2018.

1.2 Aims of the work

The main objective of REFRESH Work Package 1 is to develop a better understanding of consumer behaviour in relation to waste generation, handling, reuse and by-product valorisation.

The work reported here contributes to the objective of gaining qualitative insight into consumers' food waste behaviours across Europe. In particular, its goal is to explore the similarities and heterogeneity in perceptions, motivation and practices across different European regions: Spain, Hungary, Germany and The Netherlands.

For this purpose, researchers from the four target countries worked closely together under the task leadership of Wageningen University. A common protocol was put together (available as separate publication on the Refresh website; www.eu-refresh.org/results). The protocol was implemented in four sets of focus group discussions, which were led by the REFRESH country representatives. The common protocol ensures a solid basis for cross-country comparisons and is freely available to others for use and to further extend the pan-European qualitative evidence base beyond the countries currently explored in this research. The protocol used for this research is in the appendix and available at the EU website for further dissemination. If other organisations are interested in applying this research in their country, please contact us via info@eu-refresh.org.

1.3 Structure of the work

The research protocol that underlies this piece of research was designed around two main research questions, each addressing several topics. This is also the structure around which the report is organized, both the cross-country comparisons (section 3), and the individual country reports (sections 5-8) which will each be preceded by a short country introduction.

The two main research questions addressed were:

1. How do people think about food waste? In terms of:
 - a. Awareness of the issue
 - b. Their sentiments on food waste generation and prevention
 - c. Their thoughts and beliefs about the issue
 - d. Their perceptions of what they believe are stereotypical food-wasters as compared to those who do not waste food.
2. What are the important issues related to food waste in a day-to-day context? In terms of:
 - a. Motivations behind food waste generation and prevention
 - b. Abilities and opportunities that co-determine levels of food waste

- c. Differential acceptability of wasting different food product categories and/or in different situations
- d. Potential intervention strategies that consumers believe appropriate

The remainder of this report is structured as follows. The next section describes the general research methodology, with country-specific additions and elaborations contained in Section 11. Section 3 describes the cross-country comparisons in terms of country similarities and differences, with overall conclusions and discussion contained in section 4. Sections 5 to 8 then present all country reports around the same structure of research questions and topics.

2 Methodology

2.1 Background of the methodology

To explore food waste and consumer behaviour in further detail, it was decided to use focus groups methodology. Focus groups are interactive loosely structured group discussions lead by a moderator. A moderator encourages the free flow of ideas in which group dynamics are used to develop new streams of thought and to discuss an issue thoroughly (Morgan and Krueger, 1998, Stewart and Shamdasani, 1990). Usually six to ten people take part in a discussion, and the discussion lasts for one to two hours. In this study focus groups were applied to explore motives and barriers related to prevention of food waste in households.

This method was preferred over alternatives (as for instance in-depth (in-home) interviews) as it allows gaining multiple perspectives on food waste. The interactive setting of focus groups facilitates a brainstorm in which participants can add to and reflect on each other's perspectives and discuss the issue of food waste more thoroughly.

2.2 Topic guide

During the focus groups in each country, several tasks with a variety of topics were discussed. These tasks and topics are described in table 1. The focus group discussions were semi-structured, implying that the topics were addressed with pre-determined open-ended questions and tasks (see annex 10.1). The moderator had the opportunity to explore additional themes or responses more in-depth as well while iterating on the participants' answers.

In order to create a stimulating atmosphere a variety of short tasks were prepared. Stimuli such as cartoons were used to ease and stimulate the discussions. In addition, both individual and group tasks were used to include all participants in the group discussions. The table below presents an overview of tasks and aims.

A challenge in conducting cross country focus groups is the difference in language. In particular, some words can have greater salience than other words

in different translations. Therefore, multiple meetings were organised between the translators, who as well were the focus group moderators, to diminish the risk on different interpretations of the wordings as much as possible.

Table 1: Overview of tasks and aims.

Task	Aim	Description
Introduction	<i>To create an open atmosphere and understanding of the discussions rules and aims</i>	Introduction of the moderator, the procedure, topic and the participants.
Task 1 Pictures	<i>To raise awareness that we all waste food</i>	Group task with pictures of participants food waste Before the focus group discussion took place the participants received a homework assignment to make pictures of the food they disposed. These pictures were sent to the moderator, printed and presented to all participants. Participants are asked to explain why this food ended up unused.
Task 2 Cartoon	<i>To gain insight into the behaviours and situational factors driving food waste</i>	Stimuli: cartoon A - Individual task followed by group discussion In this task participants talked about food waste based on a cartoon showing a man and a woman throwing away food. The participants were asked to elaborate on this by answering questions like why do they have leftovers, and why do they have to throw away food and how the man and woman of the cartoon experience this.
Task 3 Perfect non-waster in home 3 rd person	<i>To gain insight in awareness and barriers in the range or abilities and opportunities to engage in food waste prevention and why they are perceived as a barriers</i>	Stimuli: cartoon A - Individual task followed by group discussion In this task the participants were asked to imagine what the man and woman from the cartoon experience if they were to accept the challenge to throw away no food for one month. Would they accept the challenge, why or why not, what would make it difficult, what could be of use to them, which knowledge and skills might they need?
Task 4 Perfect non-waster in home 1 st person	<i>To gain insight in motivations to (not) engage in household food waste prevention, social norm and</i>	Group discussion Participants were asked whether they would accept the challenge themselves of not wasting food for one month. In this task they told about their own motives and barriers to deal with food waste prevention, why they are (not) willing to accept the challenge and how they think their family would respond to this.

its effect on motivation and barriers in day-to-day life

Task 5 Perfect non waster out of home	<i>To gain insight in motivations to engage (or not) in waste prevention out of home</i>	Group discussion In this task participants were asked if they would be willing to accept a challenge of not wasting food for one month out of the home, such as in the canteen or restaurant. Questions comparable to the previous task were addressed.
Task 6 Social norm	<i>To gain insight in the social norm on wasting food</i>	Group discussion In this task, the influence of other people and their perception of food waste were explicitly asked. For example, if they experience social pressure or how they would describe people who do or do not waste food.
Task 7 Ranking situations	<i>To gain insight in motivations or conflicting priorities</i>	Stimuli drawing – Individual task followed by group discussion Participants were asked to rank different situations based on the acceptability to waste in that situation. The situations were: dinner with family, dinner in restaurant, canteen, dinner with guests, unforeseen schedule. In particular, the reasoning behind their order was discussed.
Task 8 ranking products	<i>To gain insight in motivations or conflicting priorities</i>	Stimuli drawing - Individual task followed by group discussion Participants were asked to rank different product groups based on acceptability to waste it. The product groups were: bread, pasta & rice, meat & fish, sweets & cookies, fast-food, fruits & vegetables, dairy. In particular, the reasoning behind their order was discussed.
Closure		Close the discussion

2.3 Participants

The country focus groups were organised by Wageningen University & Research (NL), CREDA (Spain), CSCP (Germany), and HFA (Hungary). They coordinated the recruitment of the participants, data gathering in their respective country, and reported the national country reports back to the WP leader. A total of 24 focus group discussions were organized across Germany, Hungary, Netherlands and Spain, six in each country, all with six to eight participants. For each country, the participants of the 6 focus group discussions were selected based on the same criteria. Firstly, the participant should be responsible for at least half of the grocery shopping of the household AND should at least do half of the cooking /

meal preparation in the household. Participants were excluded if they or their partner was employed in the food or waste management sector. Secondly, to avoid misunderstanding and discrepancies among the participants it was decided to have two age groups, age of 20-45 and 46-70, and two income groups (below and around national average household income, and around average national household income and above). To gather a variety of experiences, the focus groups were balanced for gender and household composition within each group. See annex 11 for country specific methodologies.

Table 2 shows an overview of the criteria for participation.

Table 2: Demographic criteria of the participants

Focus group	Total number	Income	Age	Sex	Household Partner	Household Children
1	6-8	Medium & Above	20-45	Male & Female	Single & Partner	With kids & No kids
2	6-8	Medium & Above	20-45	Male & Female	Single & Partner	With kids & No kids
3	6-8	Medium & Below	20-45	Male & Female	Single & Partner	With kids & No kids
4	6-8	Medium & Above	46-70	Male & Female	Single & Partner	With kids & No kids
5	6-8	Medium & Above	46-70	Male & Female	Single & Partner	With kids & No kids
6	6-8	Medium & Below	46-70	Male & Female	Single & Partner	With kids & No kids

Overall, the total sample of 147 participants across the four countries consisted of 80 women and 67 men; 75 participants were 20-45 years old, and 72 were 46-70 years old. 43 had an income below average, 47 an average, and another 57 had higher than average income. 72 participants were from single-person households, 75 lived with a partner, and 61 lived in a household with kids. All data gathering took place in February and March 2016.

2.4 Analysis

In addition to the data gathering, all partners transcribed the focus group discussions, and provided a translation in English. These documents were coded and analysed in NVivo. Transcripts were coded according to a codebook developed in collaboration between the partners. To guarantee consistency in coding style among the partners, Wageningen University & Research as task leader provided feedback on the coding of one focus group per country. Additionally, meetings were organised to discuss uncertainties or when changes in the code book needed to be made.

Consistent with standard content analysis procedures (Morgan, 1997), transcripts were coded into themes. The themes that appeared to convey the same meaning were merged and larger themes were split into smaller groups or regrouped according to theme. The final coding book can be found in Annex 10.2.

3 Country similarities and differences

In line with the country reports, this section is organised around the structure of main research questions, with underlying themes.

3.1 How do people think about food waste?

3.1.1 Awareness

Levels of awareness

In all countries consumers seem aware of the issue of food waste, and such awareness is on the increase as a result of media attention. However, awareness levels differ as a result of the different circumstances in the countries. In Germany, awareness is already relatively high and several participants indicated that they are already trying to avoid food waste in their households, partly as a result of heavy media attention and public campaigns. In the Netherlands there seems to be more variation in the level of awareness. In Spain and Hungary the awareness regarding food waste seems to be lower. In Spain, the increasing business of life overshadows awareness and concerns about food waste, and also in Hungary food waste seems to hold relatively low prominence in the public discourse, both in the media, within the family and in the workplace. Several participants indicated that they do not have food waste or at least not much, but when probed with specific questions they were able to give examples of how food waste is generated in their households. Hungarian participants specifically mention fruits and vegetables, especially citrus fruits (many times purchased for having a healthy life, but not consumed), cooked food, cold cuts, bread, dairy products. There was consensus in Hungary that such food waste is bad and should be reduced and avoided, because of the costs of food waste. Also, the Hungarian participants are very aware of the level of poverty within and outside of Hungary, because of the level of poverty they feel bad about wasting food. In Spain women and old people were identified as groups with higher levels of concern. Food waste awareness is under pressure as a result of current accelerated lifestyles in Spain. As in Hungary, food waste awareness in Spain is related to the economic situation, food insecurity and poverty. However, the direct link to food waste reduction is not straightforward since the role of food consumption as a social activity is still very important in Spain, also as a manifestation of the social class to which one belongs or wants to belong to.

Key topics that emerged regarding awareness

Many participants across the countries point to the role of “education” as a key driver of food waste awareness. Not only formal education, but particularly also the extent to which food waste awareness is passed down from, and exercised by their parents, including the financial situation of the household. Friends’ behaviour with regards to food waste stimulated food waste awareness. However, many also argued that outside this closer circle they neither feel under pressure to pay more attention to the topic, nor do they have the feeling that they can exercise much influence on their wider friends and family to change their behaviour.

3.1.2 Sentiments on food waste

Across countries, there is considerable consensus that food waste is “not a good thing”. People blame themselves when wasting foods, leading to mainly negative feelings. The majority of participants across countries experiences negative feelings toward disposing food products, as guilt, shame, bad conscience, and in Hungary even feelings of sadness, anger (e.g. against sellers who sold bad quality products), frustration, disappointment (“we were so prepared to eat it, but it went bad”), remorse, as well as feelings of regret and annoyance (for throwing money and time away, together with the expensive food). However, there are differences across countries.

In Germany, negative feelings were found to relate to: a) the amount of food thrown away, b) environmental and c) moral concerns. However, in Hungary, the environmental impact of food waste does not come up as a major issue, and only very few people knew about this in depth. Yet, the moral issue was discussed in depth in Hungary: “Not to throw away food is the right thing to do, this is obvious for basically everyone”. When discussing food waste the pictures that spontaneously comes to many people’s minds are starving people and children in Hungary and in Africa (seen on TV or online), and homeless people picking the bin (seen by them personally, in front of their homes).

In Germany and The Netherlands, participants reported that the negative feelings usually remain rather short-lived (i.e. only during the actual act of throwing something away). Many consider that their own household waste as rather little and irrelevant compared to what is thrown away during the production and retail processes. In Spain it was also emphasized that food waste needs to be seen in the broader context of the multidimensional nature of its causes, and certainly also as part of the changing / accelerated lifestyle of which food waste is part, which make them feel less negative about their own food waste.

The Netherlands and Hungary also report on neutral feelings among some, particularly those who never actively thought about it. To some respondents it is OK to waste, as “an inevitable and necessary thing to happen”. Also, there are many specific situations when it is acceptable to throw out food (e.g. when it is rotten, cheap, after holiday celebrations). Also in Hungary more neutral feelings were mentioned. Here, probably due to variable quality levels and the relatively high cost of food, it was emphasized that food waste to some extent is a fact of life in the face of potential health and food safety issues and to retain a level of enjoyment with food consumption beyond eating leftovers.

In the Hungarian focus groups it was spontaneously mentioned that NOT wasting foods may be a basis for positive feelings and notions, such as being conscientious, to be morally upstanding, and a positive change.

3.1.3 Thoughts and beliefs

In the discussions on thoughts and beliefs about food waste, food prices and food appreciation appeared as important themes.

Perceptions of food prices play a dualistic role. Consumers in Germany, as an affluent country, indicate that food products are very cheap (“too cheap” according to some) in relation to the average income and in comparison with other daily consumption goods (such as energy or housing). Low food prices - combined with little awareness of and appreciation for food products - were often mentioned as a main reason for over-consumption and food waste in Germany. In the Netherlands, food prices are mentioned in relation to food waste being bad for the household budget. In Hungary, the general thinking is that Hungarian people are less affluent than people in “the West” (Western Europe and North America); therefore they cannot afford to throw out as much food as they do in the West. In that respect they do not see it so much as a problem as they compare Hungary to the “West” where they think this is a more serious problem.

In Spain, Hungary and the Netherlands, food waste has been discussed in relation to societal changes and societal challenges, namely that food waste is probably to some degree inherent in the consumerism “throwaway” society. Both in Hungary and Spain this is discussed in the context of the societal changes of political situation such as socialism and post-war, or past experiences with famine. It is emphasised that food waste is not only an individual challenge, but certainly also one at societal level.

Two additional important themes arose in the Hungarian focus groups. The first is the (variable) quality level of foods sold in shops. Several participants mention that, even though foods look good at the store, they had to throw them away at home because of bad quality and rapid deterioration. This is an important contributor to food waste which could be avoided through (better) packaging, and better food quality provided in stores.

The issue of respect for foods was discussed extensively in the Hungarian focus groups, and in relation to bread specifically. In Hungary, bread is a very controversial food, since on the one hand it is (or at least used to be) sacred, the most sacred food that should never be thrown out. This tradition still lives on in many households. On the other hand it is also cheap and, according to many participants, of low quality. It is difficult to estimate how much bread people will consume from day to day.

3.1.4 Stereotypes about who waste and who do not

The discussion on “stereotypes” of people who do versus those that do not waste food showed that in the Netherlands, older people, women and people with low income were believed to waste less food compared to younger people. The same holds for people who think much about health and environment or are more

conscious about food are thought to waste less in general. Similarly, in Germany two main stereotypes popped up. Firstly, poorer households - in which the provisioning of food products takes up a bigger share of the total household income - were perceived as less wasteful. Secondly, older generations, who may have experienced situations of hunger in the post-war period, were considered to be less wasteful than younger generations, who grew up in abundance.

In the Spanish discussion groups, there was lack of agreement on the characteristics that define a person who wastes food versus a person that does not waste food. However, the main elements that were identified as playing key roles were the financial situation of the person or the family, age (younger vs older), time available to food-related activities, gender (women vs men), awareness of food waste, household composition, planning skills, the food and cooking sensitivity, different personal traits, lifestyle, social-economic class, and education received at home and at school.

The Hungarian participants emphasized that everyone wastes food, as it is part of life and lifestyles. However, wealthy people were identified as wasting more food compared to poorer people. Families with children, large families, people living in rural areas, and people with special diets were also mentioned. In terms of their personality traits, "food wasters" were described as lazy, shallow, dumb, naïve, negligent people who tend to waste food. Among the groups that are believed to waste less food, elderly or retired people were mentioned frequently, together with other groups such as stay-at-home mothers, single householders, activists and those who volunteer at NGOs. These were labelled as conscious people in terms of personality style. Interestingly, healthy eating was mentioned both as an influence for more waste and as one for less waste.

3.2 Food waste in a day-to-day context

3.2.1 Motivation

Across countries, discussions on motivation focused largely on motivation for waste generation, rather than for waste prevention. Although none of the participants had a "motivation to waste food deliberately", it shows that food waste often occurs as a conflict between the goal to not waste food and other important goals in food consumption and household management. Taste and quality of food products was identified an important motivator. If purchased food products did not meet the expected taste or quality or if one lacks the cooking skills to prepare a tasty meal or reuse leftovers, participants considered it almost impossible to not have food waste.

Also, health and safety issues were mentioned as factors influencing household food waste. Participants stated that if a product was (or appeared to be) perished or spoiled they considered it acceptable to have food waste and not consume the product. Participants across countries agreed that it was sometimes impossible to avoid having spoiled food.

Furthermore, the price of food was discussed. With the exception of Hungary, the low cost of food products is mentioned to influence food waste levels as

consumers become more indifferent towards food waste. Price of food was frequently linked to quantities in which food is sold in stores. The fact that larger packages appear to be comparatively cheaper, appears to lead many consumers to purchase larger quantities than they actually manage to consume and, thus, to produce food waste. All participants agreed that saving money is a main motivation for them to prevent food waste.

Finally, also variety, i.e. the wish to eat diverse meals as a source of enjoyment and prevention of boredom appears to be a key factor influencing the motivation of German, Dutch, and Spanish consumers contributing to food waste. As many participants reported, in particular leftovers would regularly end up as food waste. As reasons for leftovers becoming food waste, participants frequently stated that they do usually not want to eat the same meal for several days in a row or that they want to maintain some spontaneity in their eating habits (e.g. to eat out-of-home).

The Spanish focus groups also emphasized that consumers search for convenience in different situations potentially adding to food waste, as for example the laziness to cook after a stressful day at work, or the laziness to go shopping more frequently and therefore buy more food just in case it might potentially be needed.

In the Hungarian focus groups there was strong emphasis on the motivation to please others as a basis for food waste, particularly when it comes to upbringing, the household and the smaller community around the person which shapes the values a person lives up to. In this respect there have been considerable changes over the generations. In the present, parents seem to be a lot more liberal, catering to their children's every need. Children can easily refuse, request or discard food that parents offer. Children's tastes are satisfied to the extreme, in some cases.

Also it is emphasized in Hungary that personality traits and habits contribute to more food waste and others that work against it. Issues mentioned include a) being picky and spoiled, as what is edible for some is not edible for others, b) variety; not wanting to eat the same thing again, c) eating according to changing moods, d) the habit of cooking big portions and the belief that some kinds of food can only be cooked in big quantities, and e) only wanting to eat fresh foods.

In terms of characteristics and habits that contribute to less food wasted, the Hungarian focus groups revealed: a) morality, having respect for food, b) frugality vs. choosing the good quality, c) paying attention (including being able and willing to pay attention) as an important condition of throwing out less food, d) determination, willpower, discipline, e) creativity, e.g. in how they turn ingredients into meals, e) being organised, good organising skills are useful to run the kitchen in an efficient, neat way. Everything should have its place and order is needed, and f) patience, diligence was also mentioned several times. To regularly clean boxes, organise, inspect food items people need these virtues.

3.2.2 Abilities and opportunities

All focus groups discussed abilities, an individual's (internal) knowledge and skills, as well as opportunities, the affordances provided by the direct (external) environment, that facilitate or hinder the motivation to prevent food waste from materialising in daily practice. Abilities were discussed in relation to the different stages of the food consumption life cycles: planning, provisioning, storing, preparing and consuming the food for/within the household.

Opportunities in the external environment

Across countries several factors were discussed that form barriers to prevent food waste. Some of these barriers refer to external factors in one's lifestyle, the others to more general external factors as available storage and size & price of the offered products.

Regarding lifestyle, the focus groups in Germany and The Netherlands identified a number of external factors or opportunities that have an influence on how much food waste is generated on a household level. Competing priorities related to work and social life appeared as an important factor on which participants felt to have little direct influence despite its impact on food waste. According to most participants, the possibility to plan their daily and weekly meals correctly and follow this plan through without generating food waste was oftentimes impeded by their intense and unpredictable social and work life. Also frequent unexpected and/ or spontaneous events would hinder their meal planning. Additionally, many participants argued that a successful planning would require a lot of time and some admitted that their lack of (willingness to invest this) time was a barrier for them to prevent food waste. Participants further mentioned that planning meals was particularly difficult when having children in the household as kids' taste and appetite constantly changes. For most participants this appeared to be a factor over which they had little influence. Many parents stated that they would rather accept to have food waste than forcing their children to eat and to finish their plate. Sales strategies of supermarkets, and particularly too big packaging sizes also came up as an external factor contributing to food waste in Germany. Once bought and partly consumed, products from these unwieldy packaging sizes often end up as waste. Shopping habits were also believed to contribute to the opportunity to prevent food waste. According to many participants, their household's shopping habits were influenced mainly by their working schedules and by the longer opening hours of supermarkets. In Spain, similar aspects play a role. The Spanish modern life of living in a hurry effects food waste. In particular, the demanding working life, the unrealistic planning of food purchasing and menus, a diversity of unexpected events such as last minute friends invitation to a diner or work related incidentals, lack of time to buy or go shopping once in a while for long periods of time, and the family specifically kids' appetite or fanciful behaviours are perceived as barriers.

Regarding more general external factors, across countries the availability of appropriate equipment for storing food in the household was identified as an opportunity factor. In particular the freezer, refrigerator and plastic boxes to keep

leftovers were frequently mentioned, and participants stated that they would regularly use these tools to avoid food waste.

The Hungarian focus groups found that, in terms of factors outside people's direct sphere of influence their income (it is more likely to save food with a smaller income as people are forced to do it), the quality of goods sold, and their lifestyle (in terms of time available) are the most important influencing factors.

Additionally, across countries the package size of products was considered a major issue. The available packaging size within the stores are often too big or the smaller packages are too expensive compared to the bulk package. The quantity offered on the different packaging options is closely related with the promotions and offers of the supermarkets that may alter the initial purchase preference of consumers who end up buying more than they needed. In Hungary, it is added that the quality of the offered products is often very bad, making it impossible to eat the products before they become moulded.

Also in Spain, household budget restrictions and the recent financial crisis were discussed extensively as external factors that affect food waste and encourage the use of most of the food consumers have at home. However, it did not become clear from the discussions whether food waste prevention is really ingrained in Spanish society. A key challenge currently lies in the establishment of a new morality around food waste prevention, beyond that of connotations to periods of scarcity in the past. The Spanish research also addressed extensively the role of having children at home, regardless if they are kids or adults. On the one hand, it could be challenging trying to satisfy the diversity and variability of preferences, their appetite or their whims. On the other, having children could represent an inflection point of life and parents would use 'clear-the-plate' and similar strategies as a way of teaching socially-aware and moral values.

In out-of-home situations, participants felt they had particularly limited influence to avoid food waste. Both the amount and taste of meals as well as the hygienic conditions in the restaurants and canteens were perceived as external factors out of the consumer's control.

Abilities

Abilities relate more to the individual level, internal, factors and, by their definition, are more under the control/influence of the consumer.

In Germany and The Netherlands, the stage of planning was often-mentioned. Key abilities listed were a) making a weekly meal plan and always doing groceries with a shopping list, and b) good knowledge about food products and the use of them.

At the provisioning stage, both the ability to keep a good overview of what products one still has in stock at home and the self-discipline to avoid spontaneous shopping, and the "strength" to stick to the shopping list were highlighted in several focus group discussions. Additionally, participants suggested to buy smaller quantities of food products and instead focus on better quality.

At the storing stage, participants again highlighted the relevance of knowledge about and skills on how to store food products properly. Linked to this, also the ability to keep track of which products are stored where and for what amount of time appeared to be crucial to avoid food waste. Two frequently stated problems with regard to storing were a) that food products get easily out of sight and forgotten in the fridge and b) that - according to the participants - many people do not know the meaning of the best-before date and how to estimate the durability of food products.

With regard to preparing meals, a first key ability to prevent food waste is to judge the right amount of food that will be consumed by the household members (or guests). This was perceived as particularly difficult - sometimes as impossible - when having children in the household. Secondly, at the preparing stage also the ability to know how to reuse leftover food and being creative enough to prepare an interesting meal with few products is crucial. Thirdly, good cooking skills as well as experience and time were frequently mentioned as necessary abilities. Finally, also at the consuming stage, the handling of leftovers (e.g. willingness of the parents to eat up their children's leftovers) was a key point of discussion for the participants.

The Hungarian focus groups confirm these findings in terms of knowledge (e.g. about their own and household members' eating habits) and skills (e.g. cooking exact quantities) particularly the ability to know and manage other household members' food consumption. People state that it is much more difficult to save food in a large household with children than in a single home. In the Hungarian focus groups, generational differences were reported to have considerable impact, also in relation to food waste. This can either manifest in one generation helping the other (e.g. by showing how to use leftovers), or in conflicts as well. From the examples participants mentioned it seems that older generations are more conscious, eating all the parts of animals that the young wouldn't or knowing the recipes to save leftovers. Differences are also shown in food preferences: older generations prefer the heavier, richer traditional cuisine that is not that much preferred by younger ones. This can lead to food waste when (grand)parents cook for grown-up children to take food away.

The Spanish focus groups further identified certain inappropriate abilities that, according to the participants, were also associated with the food waste volumes generated. These involve a) the lack of knowledge or practice on planning the menus for the whole week, b) the possibilities or lack of knowledge of taking advantage of a little amount of leftovers, c) unhelpful food habits, such as go shopping or cooking with hunger or "the eye is bigger than the stomach" syndrome while serving, d) forgetting food at the back of the fridge, especially the perishables as fruit and vegetables, and e) the adaptation to particular circumstances of having guests at home or readjustments in the family members living at home.

3.2.3 Acceptability of wasting

Food product categories

When discussing the different food product categories with regards to how acceptable it is to waste them, a number of similar arguments were brought up across countries and a few different between countries.

Across countries, the following factors determine acceptability; price (expensive food is less acceptable to waste), shelf-life (perishable products are more acceptable to waste, both due to the risk on food borne disease and due to the diminished taste) and healthiness (unhealthy products are more acceptable to waste) of products.

However, in Germany also the environmental and climate change impacts of the different product groups as well as moral factors related to working conditions of producers, globally rising food prices and animal welfare were mentioned. Some of these topics were also spontaneously mentioned in Spain and The Netherlands but not as often and detailed. In Germany both moral concerns about meat and fish products (and, thus, high value attached to them) and indifference towards "unhealthy" fast food (and, thus, low value to these products) were mentioned, with participants not realising the contradiction that most fast food contains meat products as well. Dairy products were hardly included in the moral concerns about animal welfare.

In Spain, The Netherlands and Hungary, also how often the particular food category is disposed of in their homes determined acceptability. Interestingly, this seems to hold both in the sense that if products are disposed often, it is acceptable to do so, and in the sense that if products are mostly *not* disposed it is acceptable as an exception.

In The Netherlands and Hungary also the amount of effort that has been put into the meal determines the acceptability of wasting it. In case of The Netherlands, it was referred to as less acceptable to dispose homemade meals. In Hungary it was considered more acceptable if the leftovers were a gift. Also in these countries it was mentioned that food products that were disliked in terms of taste were more acceptable to be wasted. Hungarian focus groups also mentioned that it is not acceptable to waste food that has an emotional value, referring to the bread which was considered sacred in the past.

Situation

Regarding the different situations in which food wasting may be more or less acceptable to participants, a similar variety of arguments was brought forward across countries. Although similar reasoning was used across participants, this does not imply that the situation in which it is (un)acceptable because of certain reasons was similar for all participants. Across countries, the most important factor that determines acceptability to dispose food is how much control the participant has over the prevention of food waste in that particular situation. The higher the perceived level of control, the less acceptable for the consumer it is to waste food. The in-home situation is considered a controllable situation, unless

children are part of the household. Also the canteen can be experienced as controllable, as the quantity of the food is clear. However, unexpected events or special occasions are considered uncontrollable, therefore making it is more acceptable to waste in such specific situations. Further, it is more accepted to waste food when guests are joining for diner, due to the norm that the table should be filled with food. This seems to be most strongly, but not exclusively, present in Hungary and Spain. Further, it is considered less acceptable to have food waste in restaurants, mainly because food in restaurants is expensive and therefore it is a pity to waste it. Additionally, participants do not want to think about food waste when eating out of home.

3.2.4 **Intervention strategies**

In all focus groups participants discussed what they considered “good intervention strategies” to reduce food waste. A variety of suggestions resulted from these discussions.

The Hungarian focus groups suggested a number of different intervention strategies, both informational from media and other information sources, as well as from various actors involved such as policy makers, commercial partners such as supermarkets, school canteens and institutions, and communities/NGOs.

In the Netherlands, participants emphasized interventions focussed on consumer awareness and behaviour, product quality, price, package size and storability, skills and knowledge about the food and planning with social media. For example raising awareness – making pictures of waste (a suggestion that also arose among German consumers), talking and discussion food waste, and exchange of food waste prevention ideas. The Spanish suggestions for good interventions focussed mainly on new abilities for consumers, some opportunities and also different interventions that other stakeholders could do to help.

Across countries participants suggested that consumers should properly plan their meals, purchases carefully and adjust the budget to it. Also they propose to be cautious with discounts and promotions and buy adequate quantities according to the real needs of the household. Changing shopping habits may also help, particularly if consumers would choose the adequate moment to go shopping and buy lower quantities of food products more frequently. Regarding dates labelling some suggested trusting one’s own perception and judgment to know if a product is still edible and to mark dates in the storage of food.

Education and acquiring new skills have a great importance to learn new ways of preserving food, cooking better, learning new recipes for leftovers and knowing the correct quantities of ingredients for each dish. To fight the “eye bigger than the mouth” syndrome, they suggest serving small portions and allow repeated small portions in case one would still feel hungry. And finally, to prevent throwing away leftovers, it has been proposed to plan one day per week to serve and eat leftovers, potentially as a special occasion organized to host friends to join eating leftovers. Also to allow friends and guests to take away the food left during special occasions.

In Spain, it was stressed that many other stakeholders could make important contributions to food waste prevention beyond just consumer actions. Among all the possibilities participants mentioned the influence of the media, particularly television and internet, schools and the hospitality sector. Information and education were seen as important instruments to promote food consumption values. Media, as an influencer of today's consumerism culture, was seen as having a powerful role in the transmission of prevention values and best practices; either with cooking shows or specific advertisements. Internet was seen to play an important role especially among the youth and may contribute to the use of social networks, signatures collections campaigns or video tutorials to spread the anti-food-waste behaviours. Educational contexts such as schools or family circles are also seen to construct and transmit good values to future generations.

Consumers face different difficulties in out-of-home situations to not generate food waste. In Spanish focus groups three main aspects were identified that could lead to the generation of food waste: a) the taste of the food, b) the price and c) the serving portions. Several participants indicated that the volume of waste generated out-of-home is bothering them. The influence of social pressure in this context and the embarrassment that comes with it, prevents participants from asking for a doggy bag in case of having leftovers. Participants indicated that using doggy bags could be promoted by the restaurants. Also, if they would see people using them, they would also ask for one as well. In Spain the use of doggy bags in restaurants is not widespread, but is becoming increasingly common. It seems a good intervention to promote since consumers seem likely to adopt this action.

In Germany, with regards to possible intervention strategies, participants mainly highlighted the role of media, supermarkets, education and politics. While most participants stated that they had already have come across the topic of food waste in media and / or in public awareness campaigns, they also argued that the topic needs to get more attention in media and politics in order to reach a wider audience. According to the participants, possible next steps in Germany should be targeted on several levels. On a political level, many participants suggested implementing stricter laws against food waste (similar to France), in particular in the retail sector. On the level of supermarkets, participants had several suggestions for interventions, such as providing more information (e.g. about storing, preparing, use of leftovers, best-before date) on the packages or on info stands in the supermarkets.

Additionally, all German focus groups highlighted the relevance of education - both in school and within the family context - in sensitising for the issue of food waste and in teaching less wasteful consumption patterns.

Finally, several promising bottom-up intervention strategies were mentioned. These included, for instance, technological solutions (such as apps), online platforms for information sharing or initiatives of restaurants, such as providing different portion sizes.

4 Conclusions on country comparison

Overall the results of the focus groups in four countries reveal a lot of similarities across countries as well as a level of heterogeneity across the countries.

In all countries, participants recognise and are aware of the issue of food waste, and such awareness is on the rise. Levels of current awareness seem to differ between countries as a result of national circumstances. It is quite high in Germany and also The Netherlands, where it is seen as a moral issue in relation to respect for food and how to handle it. In addition, to being identified as a moral issue in Spain and Hungary, the issue of food waste is (also) more closely related to relative shortage of food and to poverty. When linking food waste with shortage and poverty, the financial issue drives food waste prevention. However, not to every costs, both Hungarian and Spanish consumers emphasize that food enjoyment is of great importance in relation to the social value of food. Sometimes, for social and food-enjoyment reasons, food waste is seen as inevitable.

A second important similarity between the countries is the important role of “education”, in the broadest sense, in the shaping of an individual’s food waste prevention values and the food waste behaviours arising from that. Respect for food and to handle it with care and appreciation (rather than throw it away) is something that for many participants is transmitted from generation to generation. However, both Hungarian and Spanish participants indicate that such transfer is becoming less and less self-evident. Parenting styles have changed (mainly emphasised in Hungary), but also lifestyles have changed (mainly emphasised in Spain) and as a result food waste prevention is not always self-evident and sometimes subordinate to the goal of “pleasing the kids” and/or trying to catch up with an accelerated lifestyle.

A third important similarity across countries is that, in everyday life, the goal of waste prevention competes with many other food consumption goals and even household management goals. Partly competing goals, such as ensuring good taste, sufficient variety in the diet, ensuring product safety, entertaining guests, all may lead to (incidental) food waste. Consumers seem to be well aware of these competing factors, and appreciate that in the end some of these other factors may take precedence over preventing food waste.

A final important similarity across the four countries seems to be that participants are quite positive about possible good intervention strategies. To a considerable degree, they seem to recognise that they can start themselves, tomorrow in small steps (e.g. cooking smaller portions) but more substantial changes are also required to make the difference. Participants emphasise that it will be important to involve a wide variety of stakeholders (from the media, chefs, retailers and manufacturers). Participants in all countries, but particularly in Spain and Germany also look at other sectors of the supply chain, especially retail and restaurants, that could do more to reduce food waste. Many emphasise that it will be important to start with information and awareness campaigns using different channels and at different levels at the same time. And as the Hungarian results clearly state, to a large degree this is “back to the future”, as it seems to reinforce habits and values that once were common place.

5 Country report: The Netherlands

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5.1 Introduction

In 2009 the Dutch government formulated the aim of reducing national food waste levels with twenty percent before 2015. It therefore has initiated multiple research, several campaigns and formatted a network between stakeholders on (consumer) food waste. The conducted research has focused on insight into consumer spending on food and drink products and into food waste generation on household level (CREM, 2015).

Research found that on average the Dutch consumers spend twenty percent of their spendable budget on food and drinks. Roughly half of this is spent in supermarkets and a third on food services such as restaurants or take-a-ways, the remainder in specialty or mixed retail shops. On average the Dutch consumer has four supermarket formats nearby and shops two to three times per week of which each trip takes on average twenty-six minutes. The Dutch consumer goes out for dinner on average two times per month and spends thirty-three euro per person. Most restaurant visits are spontaneous, without something to celebrate and are accompanied by their partner, friends, acquaintances or with their family.

Of all food products consumers buy in supermarkets and mixed retail shops, they waste approximately fourteen percent. This equals € 150, - or fifty kilos of food and drinks per person per year. Products that are wasted the most in the household are: dairy; bread; vegetables; fruits; sauces, oil and fats.

There are no clear numbers available on the amount of plate waste generated in out-of-home situations in The Netherlands. However, a study on self-reported doggy bags use (resource packs to bring home leftover meals), reveals that half of the consumers report to sometimes have leftovers. Especially the side-dishes are often leftover. Females more often leave the potatoes/fries, while males more often leave the vegetables. More than half of the consumers find the portion size big and therefore think that restaurants should offer a small and large portion size option. The large majority of the consumers never bring home leftovers from restaurants. They do not make use of doggy bags mostly out of shame or unfamiliarity with the concept. Also, they feel that it is the responsibility of the restaurants to offer such packs and prefer to not ask for doggy bags themselves (Stichting Natuur en Milieu, 2014).

The vast majority of the Dutch citizens express to avoid food waste by buying exactly what is needed and report to not waste more than fifteen percent of their products bought (Eurobarometer, 2014). They as well report several strategies which would help them to reduce food waste, as using the freezer, reusing leftovers, availability of smaller portions sizes, better estimation of portion sizes while cooking, clearer on-pack information on storage, preparation and how to interpret best-before dates. The strategy that is perceived the least helpful is better shopping planning.

Multiple activities and initiatives have been launched in recent years to reduce the national food waste levels, especially in the year 2014 which was declared 'The Year against Food Waste' (http://www.cbl.nl/fileadmin/user_upload/rapporten_materialen_publicaties/overzicht_Jaar_tegen_Voedselverspilling.pdf). Among other things, multiple retailers payed attention to the problem of food

waste in their magazines and added on-pack storing information on several products. Further, in 2015 a website launched where consumers can find tips, tricks and recipes to reuse leftovers (klikjespedia.nl). Despite these efforts, the levels of consumer food waste has not declined since 2009.

The result section is divided into four paragraphs. In the first paragraph is described how participants think about food waste in terms of their awareness, feelings and beliefs. In the second paragraph is reported how participants deal with food waste in their day-to-day life, which barriers they encounter if they would accept a hypothetical challenge of not wasting food for one month and additionally which aspects would help them to succeed in this challenge. In the third section potential interventions are described which according to the participants would help to reduce domestic food waste levels. In the final paragraph participants discuss their reasoning about accepting food with a selection of products and in a variety of situations.

5.2 Results

5.2.1 How do people think about food waste?

Awareness

In home

The topic of awareness was raised during several tasks throughout the group discussion. Participants talked about food waste levels in their household and what influences the development of awareness related to food waste.

When the food waste pictures taken in the household, some participants emphasized to be very conscious about this topic and actively aim to prevent food waste. For this reason they had difficulties finding something to take a picture of. Others mentioned they immediately realised after reading the assignment they would have enough food waste to take pictures of. However, this latter group also recalls that food waste is not a topic they are that much aware of in their day-to-day lives and for some the outcome of the assignment surprised them as they wasted more than they thought.

"Yeah, I try to throw away as little as possible, those photos are mine. The bottom one is the bottom of the bin to indicate how little waste is in it"

"I knew right away I would have enough photos [of food waste disposed in home]"

"... yeah, usually you throw something away that day, and then that day another thing. Now you had to save it up and then you think: yes, it actually is a lot. And then you start paying attention to it. Normally you would have already thrown in the garbage can and then see something else. Then you don't think too much about it, now you do."

Participants mentioned that they see differences in awareness among their family members and friends, but also between spouses or even whole generations in how food is handled and if food waste is prevented. They think that awareness of

a person is influenced by experiences while growing up. They mentioned that parental behaviours related to food and waste influences how their children handle food and leftovers later on. For instance, participants assume that if the parents made new meals from leftovers, the children as well will reuse leftovers as adults and so prevent waste. However, some participants mentioned that because their parents were so focussed on preventing food waste, they themselves do not want to pay much attention to food waste in their households.

"He has no problem throwing anything away, never thought about why he throws it away. No I do not think he has grown up with a mother who, because this is set for a long time, a mother who made something of leftovers, or did anything with leftovers and who doesn't like leftovers."

"My dad never threw anything away. He was really like, if we wouldn't finish our food, first of all it really bothered him, but if there was also something left in the pan, even if it was against his will, he would finish it." M: "And now [...] do you finish it against your will, or..." "No. No, it hasn't affected me. No, I think it was actually counterproductive."

Another aspect mentioned that influences how aware a consumer is about food waste is how a person's friends think about food waste and if food waste prevention is discussed among their friends.

The awareness regarding food waste increased due to the study. The homework made them aware about the type of food they waste and during the group discussion on the causes of food waste turned into an exchange of experiences on handling food and approaches to prevent food waste. These tips were in line with some participants interests and may have inspired them to apply the tips in their own household.

"I just had a look at my pictures and I thought that's not clever." "So you learned something in a short time span." "yes" "I think we will all be more conscious after this." "Yes before I wasn't but now I am since I'm participating in this research." " Right." "I think these kind of research make people more conscious and stimulate you to talk with other person about it."

Out of home

When discussing food waste in an out of home setting, participants who consider themselves to be more aware about food waste recalled many strategies to prevent food waste in those situations. Participants who seem to be less aware reported not to waste food in an out of home setting at first. However, when discussing the topic more thoroughly they mentioned that they do sometimes waste plate leftovers, especially side dishes.

Sentiments

In home

When participants talked about their feelings regarding food waste some participants expressed feelings of guilt while others just shrugged and reported that they do not feel much while disposing food.

Participants who considered themselves as more aware about their food waste levels compared to consumers in general, expressed that for them it is less common and less easy to throw away food. They express feelings of guilt when disposing food as well as experience a burdened or ashamed feeling at that moment. Also, they find that wasting food feels outdated and out of place. They state that wasting food is not something one should act casually about and some participants even state that it is not done to throw away food. In contrast, participants who are less aware appear to have never really thought about food waste. These participants also consider throwing away food not to be a problem.

"Yes well, in the context of this discussion, because, I thought I heard that we all have an attitude of not throwing away too much. It feels outdated and out of place to act casually about it."

"But other than that I don't really think about the things I throw away. No I just throw it in de bin. Gone means gone. At that point I think it's like that."

Out of home

Participants mention that wasting food in a restaurant or canteen makes them feel less guilty. If the food in those situations tasted bad, then it is acceptable to have plate waste. However, they do find it very annoying when this happens, since they already paid for the food and were expected something tasty.

Thoughts and beliefs

In home

When participants discuss food waste on a societal and on household level, several thoughts related to waste were reported.

Participants who reported to be aware about food waste and nearly not waste in their households, think that food waste is being generated on societal level because of the fact that consumers are living in a throwaway society nowadays. They describe such a society as one in which consumers buy and dispose food products and other products too easy. They think this happens because consumers only think about the consequence which are directly effecting themselves and not so much about the consequences effecting aspects outside of their household. An example of thinking about their own consequences is for instance how expensive a product is, while an example for consequences outside their household is, for instance the impact on the environment. The participants think that in general that consumers who only think about themselves are less involved in society or have too busy lives to be focussed on food waste. Additionally, they suggest that those consumers are simply unaware about their food waste levels.

"They are too busy and they don't think about that. They just eat what they feel like and if there are some old things in the fridge they just throw it away. They don't think about that."

"And for me it's a kind of linchpin and that is we are bombarded with me-society and so it is true when these people are wasting stuff, maybe they are only thinking of their own thing. So themselves or our house or something. I also do that. And when you are aware of the consequences, then it's not just about your money, when you talk about the environment you're talking about consequences for everyone. For others. That if I eat more than or cook more than what I need, then there's less left for, or there's tax involved or something. Then maybe, there is awareness, there's more than just me and my family."

Participants who do not focus on food waste prevention in their household report several reasons why food waste is and should not be that much of an issue for them. They argue that handling food should not make life too complicated and that preventing food waste should not control a person's life. Also, they mention that they feel 'lucky' do not have to focus on food waste prevention because they earn enough money.

Most participants linked food waste to a loss of money and pity to pay for products they do not use. However, they did not have an overview of the amount of money disposed in their household. A share of the participants also linked food waste to environmental issues. They see food waste as a loss of energy used during production and transportation. Others see a link to environmental issue, but on a different level, they are for instance concerned that their liquid waste poured down the sink will affect the quality of drinking water.

Out of home

Some participants feel that it is more acceptable to disposal food products from restaurants than at home, because restaurants should serve quality and if the quality standard is not met than it is allowed to dispose food. Further, when eating in certain types of restaurants the change of plate leftovers is higher, e.g. Chinese.

The participants are positive about initiatives of restaurants to avoid plate waste. They appreciate it if smaller servings (e.g. for senior citizens) are being offered. Also, they find paying for plate waste in all you can eat restaurants acceptable. In addition, they appreciate restaurants which offer packaging to take home plate leftovers. However, as doggy bags are not commonly used in the Netherlands, participants rather prefer not to ask for such a container.

Stereotypes about who waste and who do not

When participants are asked to describe consumers who waste food and who prevent food waste, a large variety of aspects are mentioned. Some of these aspects are based on their own experiences whereas other aspects are based on more general opinions regarding the society. These variables show prejudgements surrounding food waste and are similar for in home and out of home situations.

Age

Several participants thought that younger consumers waste more than older consumers. They think that consumers who have experienced lack of food during the war are more aware about food waste. Older people are considered more familiar with scarcity and are therefore keener to prevent waste food. Younger persons, on the other hand, are considered to not think about food waste and to not know how to handle food in a way that food waste is prevented, as they have only experienced abundance. Young people are considered to not care about food waste.

"For sure. My parents saw the war. My dad always emptied his plate. Even if it was only one potato they always came back to that war. If I knew how hungry they have been. So those were different times."

"Well, I'm not sure if it's about age, eh..." "Well, I think they are like middle school age. That age they are very easy. Pff, what could happen? That bin? That's too far for me." "Well, I think they often don't realize it. They don't think about it, I think." " Well, mine is 19, and he's very easy with throwing things away." "I also threw my sandwiches away when I was at school. And then I went to the canteen to buy something." "Uh-oh." "Yes, the only thing I thought about was that I shouldn't tell my mother about it." "Indeed".

Gender

Most participants think that women are more conscious and aware about preventing food waste than men. They think that men more easily throw away food.

"Well I think that we woman are more affected by it than man." "yes" "Man can handle it more easily." "In my house that's the case because than he's asking me what I'm wining about again. That's a waste, a full pack." "So there's a difference you think." " I think so." "I think woman are more conscious. Generally speaking." "Yes, there are exceptions." " I also think they are more conscious in that kind of sense." " I think so too." " Man are a bit easier with that."

Money

Additionally, they mentioned the financial situation of a household, consumers who have less money to spent are thought to be more conscious about their spending, more aware about their waste levels and more creative in making new food from leftovers. Persons who waste food are considered to be rich, because of their amount of money they waste, they do not need to care about food waste prevention. Persons who have little to spend on the other hand are thought to be conscious about how much they buy and consume and therefore waste little.

"How would you describe someone who only throws away food? So they don't worry about anything?" "Spoiled. My friend is like that." " Spoiled, yes. Rich people." "Spoiled yes. But maybe there's something different too. It doesn't only have to be money. But also like: Mom, could you cook something different?" " Or dad."

"Well I just look at myself, I've never paid attention to it either. So a lot was going in the bin. So if people are really aware, that they actually have to work with jars, then I think that indeed a penny is turned twice. And that they go for all the offers at the Lidl or just where the offer is that day."

"But if you were to describe someone who throws away food, what would be the characteristics?" "Well, how can I put it, they probably have enough money to, well, they just don't care. They throw it out because they've got plenty anyway. They don't have to think about it."

Mind-set

It is mentioned that persons who do not waste food are persons who are as well conscious about other food related aspects. They are considered to be greener and more environment oriented than others. Being green was mentioned as being associated with a left wing political preference. The people who do not waste are considered to be more alternative. This was as well related to education, in which higher educated people were considered to be more conscious about food in general and expected to waste less food.

"Highly educated people who are based on the left side of the political scale, to put it more specifically." "Yes, that sounds good." "Because those friends I just mentioned, they all go to university in Utrecht, and they don't do anything concerning the environment or something, but they're all on the left side of the political scale. So it was very much an issue among them."

"There are a lot of people who have their own compost heap in their backyard. They too waste as little as possible but what they have they put it on there." "Ok, so that fits in the picture for you. Or is that different?" "I think those are people from the villages which are focused on the environment and the alternative sector." " Maybe with a vegetable garden. That could be possible. For the rest it is difficult. It could be anyone. I mean what she just said."

"Well, these people are conscious" "People who do it for a better environment, indeed."

"Highly educated people who are based on the left side of the political scale, to put it more specifically." "Yes, that sounds good."

Another association made by the participants is that people who waste less food, are as well more conscious about the quantity & quality of what they eat in order to prevent becoming sick or gaining weight.

"I find that people [who do not waste food] are very mindful with nourishment and with health and knowing what they're buying. And how much they should eat otherwise they will gain weight or get ill."

Culture

Participants think that how food is handled within a culture, affects how much food a consumer wastes. For instance the standard portion size being served or if it is normal to eat leftover food affects how much food will be wasted. It seems

that a universal sign of hospitality across cultures of serving enough or too much food leads to food waste.

"No but that's what I meant with the different cultures in the Netherlands. At those Italians or Portuguese, they always have too much. Every day five or six extra people could join for dinner, so to speak. So they throw away quite a lot, I think."

5.2.2 Food waste in a day-to-day context

Motivation

During the focus groups participants were asked to describe reasons why, and situations in which, food waste occurs. Motivation refers to the arguments on which the participants based their decision to dispose food products. It also refers to their opinion when food has become waste. These motivations are similar for in home and out of home situations.

Healthiness

When participants give reasons why they waste food, the issue of health is mentioned several times from different perspectives. The issue of food safety and not becoming ill is frequently mentioned as a motivation to disposal food. Participants explain that they rather waste food than eating or serving foods which might cause food borne disease. It is for this reasons that they dispose products that are spoiled or might be spoiled. The same applies to food which became unhealthy due to the preparation, for example when the food is burned, food that might contain certain allergen ingredients or contain ingredients that cannot be eaten (anymore) due to a diet constrains. Besides becoming ill there are also other health related motives mentioned. Participants can decide to dispose of food products when they have a low nutritional value, such as fast-food, candy or cookies. Additionally, they can dispose of products when they perceive the served quantity as unhealthy, due to the risk of weight gain. Also, when eating out of home, some participants would rather leave food on the plate than eating too much or bringing home the unhealthy meals. Thus, participants can decide to dispose of food products when they think that eating the products might make them ill or will increase their weight.

"I already have enough fat, so rather in the bin than around my waistline..."

Another aspect related to healthy eating is that participants want to stimulate a healthy consumption in their household. This can lead to food waste by spoilage as healthy food as fruits and vegetables are often bought with the intention to encourage healthy eating, but remain unconsumed as the household members do not succeed to eat the products before becoming spoiled. Additionally, some participants mention that eating fresh meals every day and having a large variety of meals during the week is healthier than eating the same meal for multiple days. Therefore, eating leftovers is perceived as less healthy and preferably discarded.

Taste

Next to healthiness, the taste is often mentioned as influential in consumers' decision to eat or disposal food products. Food products that are disliked in taste are more likely to become spoiled or directly discarded than products that taste good. Participants mention that the taste of products diminishes over time, for instance bread becomes old, fruits become overripe and sodas lose their sparkle. Personal preferences about when the taste of a product is still liked (enough) to be eaten or not, varies among participants. Some participants report to throw away bread that is one day old, while others would still eat it several days later regardless of the diminished taste. In general, meals prepared in home which are less tasty than expected, are less likely to be finished or the leftovers to be retained. Product bought in the supermarket that unexpectedly taste bad due to a lack of quality are as well most likely discarded. Examples mentioned are fruits that are overripe directly after purchasing or will not ripen at all. The decision to dispose of food products due to the taste can sometimes be made before the taste actually is reduced. For example, participants sometimes decide to disposal foods when they anticipate that the taste will be bad at the moment they will most likely eat it (e.g. the next day).

Participants also mention that they sometimes decide to consume other meals or products than planned, not because the taste is bad but because the taste is not fancied at that moment. They mention that if they prefer a dish or food product with another taste than the ones already in stock, they can decide to go out for dinner or purchase the preferred meal or product in the supermarket. The products that are then not consumed have a higher change of becoming spoiled. The participants who consider themselves to be aware of food waste, are less likely to do this than participants who think less about food waste prevention. In some cases food products or dishes are not eaten as variation in meals and products are preferred. As mentioned before, some participants refer variation from a health perspective, however, other participants mention to prefer variation from a taste perspective.

Disliked products are sometimes intentionally brought into the household, for instance to serve a household member or guest. However, if this guest or household member does not consume the product (completely), than it will most likely become spoiled or become discarded immediately.

Out of home

When participants are asked if they would accept the challenge in which they should not waste food for one month when eating in a restaurant or canteen, most participants respond they think this task is not too difficult. They think it is easier than the aiming for no food waste in the home. They feel they can control the amount of food that is on their plate and thus should to be consumed to prevent food waste. Also, the planning and preparing is done by someone else. Thus, you can order exactly what you want to eat, for instance one sandwich, without needing to finish the whole bread in time. Especially a canteen setting is considered relatively easy, since the size can be viewed before purchasing, which makes it easier to estimate how much should be bought based on the appetite. In a restaurant setting, they also think it relatively easy to prevent plate waste. Most participants mention that they do not often have plate waste in restaurants,

especially not if the taste is good. However, when thinking about side dishes as bowls of rice, fries or salads then some participants do have plate waste. Participants do mention that it is too easy to put too much on a plate in buffet style restaurants, as the food is already paid for. Some participants also say they do not like it if they see that other consumers are putting too much for on their plate in these situations.

"It [food waste] is not your own responsibility [when eating in a restaurant], in that situation. I think that helps, or at least for me. I think, I don't have to decide what I'm going to cook, will I make it with that, how do I calculate that? And in a restaurant you can kind of guess it yourself, I'm that hungry, so I will or won't order a starter, or I won't order that huge burger, but instead I'll have a small steak. And the same goes for the cafeteria, you can see the food and decide, not of those sandwiches is enough, but I shouldn't have that as well, because I won't be able to finish that. It's quite easy, yes"

The focus on health and taste is as well shown when discussing food waste in out of home settings. Participants mention that they are less willing to take plate leftovers if it concerns unhealthy food (e.g. fries). Also, they are unwilling to bring home plate waste from restaurants or canteens if the taste is disliked or anticipate that the taste will be bad the next day (e.g. salads). They are willing to take home plate waste if the taste is good (e.g. food from a Chinese or Indonesian restaurant).

Opportunities

When participants are asked to imagine that they or others would accept a challenge to not waste food for one month in home and out of home, several aspects are mentioned which would make it difficult for them to accomplish this goal. Additionally, aspects are mentioned which could help them to accomplish it. Some of these aspects are outside of the control of participants, therefore limiting the opportunity of participants to engage in food waste preventing. Other aspects in the control of the participant can enable participants to prevent food waste, but require a set of skills and knowledge which are referred to as abilities. The opportunities and abilities are discussed per stage in the household management.

Planning

Unexpected daily events

Participants mention to have food waste because they find it difficult to estimate how much food is needed in their household. They find the planning is complex due to unexpected daily events of their household members. Household members do not always eat the same amount of food and are not consistent in their schedules. Children especially make the planning more difficult, as they are often unclear if they will join for dinner alone or with friends and how hungry they are. It happens that the participants prepare meals for their children and their friends, who then do not join for dinner or are not hungry at all.

"Because with children, back when there were children, then you cook and then one comes home and says like: 'I'm leaving again!'. 'Aren't you joining us for dinner?' 'No, I'm going there and there'. Well then you're stuck with a lot of food..."

"I had to throw away bread on Saturday, because of the... I expected my children to come over this weekend. But because it's Easter they are at my ex-wife. And well, then I have bread left, because I only eat 2 pieces. Then there are eaten, and what's left... Well, my children often eat a lot, because they have friends come over for lunch and well, then you sometimes have leftover too."

"I remember when it was just the two of us, I knew exactly how many slices of bread per day [will be eaten]. But now we have children and they take friends home and they stay over for lunch, sometimes whole loafs will be eaten, but there are also times that I think of I'm throwing away too much. That it's not eaten but it is taken out of the freezer."

"I could imagine, when you buy food for a family, and you have to estimate how much you need, than that can be quite hard, and you're really trying, but still, you could make a miscalculation."

Also their own schedule can be unexpected due to unforeseen work or social events. Participants mention that they sometimes spontaneously decide to eat lunch or dinner at a restaurant or friend's place and only after coming home realise that there was food in the fridge that should have been eaten. Also, they sometimes need to work overtime, leaving them with no energy to cook a dish when arriving home.

"I tend to go out for lunch, and then I come back home and see something I have to throw away, and I always feel guilty. Then I think, I should have just eaten at home and finished that."

"It happens a lot to me that I think I'll just be gone one afternoon and then I end up not coming home for three days. It happens"

Additionally, it happens that they get sick, their fridge broke down or other types of accidents happen.

"Yes, unforeseen circumstances. Like getting sick, or, the guests have called to cancel, or... Your work ran over so you come home at ten in the evening and don't really feel like starting a meal anymore, so you just grab a bag of crisps."

Forecast what is fancied to be eaten

Further, planning is complex because participants find it difficult to forecast what kind of food they themselves or their household members want to eat later that week. It occurs that they buy products with the intention to eat certain meals on certain days, but that at that day they themselves or their household members do not feel like eating it.

"Yes, planning it correctly, and you never know what you'll feel like eating. Maybe they buy all kinds of foods and when the time comes they don't feel like it, so they still throw it away"

"Yes planning it correctly, and you never know what you'll feel like eating"

"If we go once a week and something comes up, then you're stuck with the expiration date on meat and well then... You can think I'm going to eat this then and then, or you had planned this for this evening but don't really want to eat it"

Provisioning

Participants discuss how the products offered in the supermarkets affect their food waste levels. Several product aspects are mentioned; the size, the price and the quality of the offered products.

Size of the packages in the supermarket

Participants report that the packages offered are often too large to be finished in time. Especially the participants who live alone emphasize that the product as meat, pre-cut vegetables or ready-made meals are too large and that single size packages are often not available. Also the other participants report that food waste occurs due to the packaging size, for instance in case of potatoes, sandwich toppings, bread or salads. They would prefer to have the option to decide the quantity themselves. Some participants mention that when you go to a greengrocer you can ask for the amount you actually need, but perceive the greengrocer as more expensive and more hassle.

"Well no it's more when I'm walking in the store and I want some sort of meat for on my sandwich, I think that the problem is that well, I'm usually the only one at home who eats meat, cheese gets eaten more but not a lot of meat. I buy the smaller packages already but still it won't get eaten and then well sometimes [it gets discarded]..."

"A single's problem. That the portions in the supermarket are always too big."

Price of the packages in the supermarket

Participants are tempted to buy food products in larger quantities due to selling strategies of the supermarkets. Participants report that they prefer to buy bigger packaging as these packages are often cheaper than the smaller ones. Participants state, that even if not all of the large quantity package is used, it is still cheaper to buy that quantity and dispose of some food than buying the small packages. Prepacked vegetable packages are preferred by some participants due to the convenience and price. Sometimes these packages include an ingredient which is not liked by the household, however they rather dispose of these products than not having the convenience of prepacked vegetables. Participants sometimes buy products impulsively when they are discounted, since these products might come in handy at a later moment. In practice this is not always the case, but the idea that it is already in stock in case it is needed and is bought for a lower price is tempting.

"While of that 5 kilo bag you only eat 3,5/4 kilos maybe. Concerning the price it might be cost-effective, but still you might throw out a kilo because in the mean time they turned into a potato plant."

"Yes, but well, I could pay attention to the price, but it's 1 euro more for 5 kilos, so 3 euros instead of 2, so if I throw out a couple of kilos I still did a good job concerning the price, but not concerning waste."

"Albert Heijn has got that with the second leek you know. Then I think if I take three, but then you have to take 4. Last week I was standing in the supermarket and it might be really Dutch, but I will buy it. Because the second one is actually for free, right."

"But with an offer, you often have the tendency to buy more. And then you again have too much..."

Quality

Some participants report that the quality of fruit is sometimes suboptimal. In these cases, they buy fruits in the supermarket which stay unripe for a long time and suddenly are spoiled, leaving no time in between to eat the fruits and prevent waste. Also, they refer to situations in which the fruit they bought is suboptimal one day after purchasing, especially when bought on the market.

Storing

In-home equipment

When discussing how food waste can be prevented, participants mentioned that freezing leftovers is a good strategy. Generally, space has not been mentioned by the participants to be a limitation for them. However, the exception is the amount of food which is leftover after hosting a party, in those cases some participants report to have too little fridge space to store everything. Additionally, it is suggested that a microwave and blender are useful to prevent food waste, as leftovers can be heated more easily and fruits and vegetables can be turned into a smoothie or soup quickly. Further, some mention that sufficient numbers of storage containers is necessary.

Surplus food in stock

Participants prefer to have surplus food in stock. They worry that if they do not stock surplus products, they can end up in a situation in which they cannot serve a meal to their household or unexpected guests due to low stock supply and no possibility to shop for food (e.g. closed shops).

Preparing

Unknown amount of guests and their appetite

Participants report that they often experience situations in which it is unclear to them how many persons will join for dinner. Especially participants with older kids say that their children are unclear about their planning, because of this the participants often prepare more food than needed. Additionally, they often prepare too much because they want to serve enough food to avoid leaving people hungry.

Consuming

Sharing and donating food

As a potential solution to prevent waste, some participants share their meals with other family members. They give away leftovers to their parents or children. In some cases participants prepare too much on purpose so they can serve the leftovers to their relatives. Also some participants mentioned to give the leftover food to their neighbours.

"Yes. And if I've made a pan of macaroni and I have a lot leftover I ask my neighbour if he already ate something. If he didn't, I give it to him and he finishes the pan"

Disposing

Participants have reported three ways in which they dispose of food products: in the bin; as feed for their pet; or on a compost heap. The latter is mentioned by a few participants who also considered themselves to be more aware about preventing food waste, and who often as well have a vegetable garden. Overall, participants feel that if leftovers are used for pet or bird food, it is not wasted and when it is put on a compost heap, it is less of a waste.

Out of home

Estimating portions size

Some aspects can make it difficult to prevent food waste. Among which excessive portion sizes. Participants in particular mention that the main meal often is the correct size, but side dishes such as salad or fries are often too large. They do not want to take these side dishes home as they are not tasty anymore the day after. Some foods can be taken home, such as rice, but only a few participants mention to do that.

Abilities

When participants are asked to imagine that they or others would accept a challenge to not waste food for one month in home and out of home, several aspects are mentioned which would make it difficult for them to accomplish this goal. Additionally, aspects are mentioned which could help them to accomplish it.

Some of these aspects are in the control of the participant can enable participants to prevent food waste, but require a set of skills and knowledge which are referred to as abilities. The opportunities and abilities are discussed per stage in the household management.

Planning

Skills and knowledge regarding meal plans and shopping list

Participants express in different ways that better planning is needed to prevent food waste. They suggest that thinking upfront how their week will look like, making a meal plan and creating shopping lists linked to this plan would help them in knowing which products need to be bought. A few other participants mentioned that they already make such plans and lists and that helps them to improve their planning. Those participants who do not make such plans at this moment, mention that planning meals upfront would limit spontaneous plans and requires effort.

"But that's [not wasting food] obviously difficult though, of course, because then you really have to plan everything of course, you can't do anything spontaneous anymore".

How to act upon planning

Participants mention that for correct planning, insight is required into the schedules of the household members and emphasize that this is a struggle. Additionally, they mention that a decision should be made about which meals will be eaten during the week and that discipline is needed to act upon this planning, as it includes eating meals as planned instead of eating what is fancied at that

moment. Also, they mention that storing leftovers to prevent food waste on a certain day will interfere with the planning of the food for another day. They think that it will be hard to take leftovers into consideration in the day-to-day planning of food. Some participants think that planning should be flexible enough to deal with unexpected social or work events, or with unplanned leftovers. A few even report that in some cases it is better to not plan at all, since then the meals can be prepared from the food that is already in-stock and needs to be used rather than eating as planned and leaving those products to spoil. Participants mention that checking the storage before going shopping would be a good approach to avoid food waste in their households.

"And that's there already for a few days, because I prefer to go grocery shopping every day. Because I can never think ahead like: tomorrow I feel like eating cauliflower. No, in the morning I feel like cauliflower, well then I'm going to get cauliflower that day. So I go each day to the store, so sometimes something is left over and then I throw it away. Or then I suddenly feel like going out for dinner and then there's still something leftover too. And I didn't cook."

"And that's discipline, to then those two days on which you eat something different than actually was planned... then you have the discipline to not do that."

"Or sometimes you cook a little too much and I think I'll put it in the fridge and we'll eat it tomorrow...but tomorrow I had something else planned what will go bad, so that's where we have let it go"

Provisioning

Buying consciously

An important reason for participants for having food waste is that they buy too much in the supermarket. To avoid buying too much participants mention that consumers should consciously think about the products they need and not buy additional products without thought or impulsively. They should make a shopping list and stick to it and not go shopping while being hungry.

Some participants think that going food shopping more frequently will reduce the amount of food waste, however, others disagree as they think that more frequent shopping trips would increase the chance that you buy products impulsively.

Some participants check the expiration dates on food products while purchasing, to make sure that the products can be finished in time, for instance, in the case of milk.

"When you go food shopping when you're hungry so you buy too much"

"because then you're consciously considering what to buy, instead of just grabbing everything because you're craving it. And eventually end up with too much."

"Yes, I'm like that too, very impulsive. And then I tried before to take a grocery list, for what I need. But then still you'll do it. So indeed, you need to do groceries when you're not hungry, and then take your list."

"If you pay attention, but you indeed shouldn't take the cartons of milk in the front, then you can keep it for quite some time. But lettuce and that kind of stuff, that I have too. I do big groceries once a week, lots groceries and then a bit of everything. But I always have to get some in between. I'm missing something. But then it also happens that you sometimes have to throw some things away."

Storing

Storing habits and preferences

When discussing food in stock, it appears that there is a wide variety of approaches in how participants handle their products. Several strategies to prevent stocked food from becoming waste are mentioned. One of these strategies is to place food products such as bread, meat and leftovers in the fridge or freezer. A common strategy mentioned is repacking bought bread, meat or leftovers into appropriate serving sizes, so that the products can be defrosted per portion. However, placing food products in the fridge or freezer does not always prevent food waste, as participants as well mention it is easy to forget what is in their stock and for how long it is already stocked. Some of the participants prefer not to make use of the fridge, for instance in case of bread as they like to have fresh bread every day and consider bread from the freezer not tasty enough or in case of fruit as they prefer to place it in the fruit bowl to encourage their kids to eat it. Therefore, when they are asked what would help them to prevent food waste, they mention that they would like to have better insight into their cupboard, fridge and freezer contents. Some suggest that organising the storage in such a way that the products with the shortest shelf-life are in front and date-labels are visible would help them with this.

How the food edibility is estimated

Participants dispose of food products from storage if they think the products are not safe to eat anymore. However, how participants estimate edibility differs, while some participants dispose products right after it passed the use-by date, others still consume the products after that date. Thus, while some pay attention to the date labelling on the products, others smell or screen the products, or try to remember how long the product has already been stored. It is mentioned that participants would like to have more knowledge on how to store food products, in order to keep the products fresh for the longest possible time. In addition, they mention they would like to have more knowledge on how to estimate food edibility.

When comparing product types, several participants state that they find it less acceptable to dispose of food products that have a long shelf-life, as then you have more time to use the products before becoming spoiled.

To prevent food waste for one month, participants would like to have a list with storing recommendations or on-pack guidelines that indicate how to store a product in order to keep it fresh as long as possible and how long the product can be used after opening.

"I think it's more a matter of estimating if it's still okay to eat, than estimating if it's past its best before-date, because the estimating actually starts after that date."

"What happens to me too, is when something's been in my fridge for a while and I'm not sure if it's still okay, but I'm too scared to eat it, I'll just leave it in there until I'm sure it's not okay and I can throw it away."

"I recently moved and when you're emptying the basement you discover things... there's bottles of water and they're passed the date. But it's just water. Could a bottle of water that's been in the basement, spoil?"

" well, that list with storage recommendations, cause that gives you a good guide line on how to store something and how to keep it fresh as long as possible"

"But you also sometimes have that in the supermarket, if they don't 'mirror' well [lining up the products near the front of the shelf, with the oldest products in front], then they shuffle the products to the back. Well, that's also what I have in my cabinet. I got tall cabinets and the highest shelf; you can't reach that of course. And so you shuffle your products to the back and then... and then at one point you have to throw it away."

Preparing

Estimating how much food needs to be prepared

Participants mention that food often gets disposed of if they prepared more food than they or their household can consume. They prepare too much food as they find it important to have enough food so that no one is left feeling hungry. Additionally, several participants mention that they prepare too much food since they find it difficult to estimate how much food is needed. In particular, they find it difficult to estimate how hungry all household members will be and what they would fancy to eat. Also, they mention that estimating the needed quantity is even more difficult when guests are joining for dinner. Therefore, when being asked what would help them to prevent food waste, participants mention they would like to be better in estimating how much food they need to prepare.

Creative cooking skills

A few participants report that waste as well occurs during the preparation of the meal when they do not feel like cooking anymore, or when they don't like eating the dish they are preparing. They then decide to stop the preparation and go out for dinner. A few other participants mentioned that they find it more difficult to discard food which they already prepared since it costed them energy to prepare.

Some participants stock the leftovers or partly used products in the fridge or freezer, but this does not necessarily means that it will be eaten as they often do not know how to turn these leftovers into new tasty dishes. It is mentioned that participants would like to have more knowledge on how to prepare leftovers into tasty dishes. Participants suggest that cookbooks or the internet can help as a source for recipe information, some already make use of those sources. Also, participants mention they just would like to be more creative in cooking.

Next to using leftovers before becoming spoiled, some participants report that food products which are not, or only partly used, can prevent from becoming waste, if they would know more ways to process the products. Participants who consider themselves to be engaged in preventing food waste, do often recall such strategies to prevent waste. For instance, they mention to process fruits or

vegetables into smoothies or soups, also they mention possibilities how to fully use certain products such as cheese or broccoli.

"I think that the fruit is a little easier... When I look at myself, and I have put blood, sweat and tears...in the kitchen."

"Yes, and I have, when friends come over for dinner, then I have one and a half kilo chicken, for example. Then I think, shall I take a little more? Well, you better can cook too much than too less. Because you'll only feel upset when you send these people home with only a half full stomach."

"So, when you have some fruit left over, you can make a smoothie of it, or when you have a lot of veggies left over, and you cut them up, you can make a vegetable stock. It's the same thing as knowing more recipes, I suppose."

"Yes, although that can be quite hard, using your leftovers for further cooking. But it's possible"

Consuming

As discussed more in detail at motivation, some participants are unwilling to eat leftovers due to health or taste reasons. However, participants mention they want to become more skilled in estimating edibility and prolonging shelf-life as well as becoming more skilled in preparing tasty dishes to prevent food waste.

Out of home

Many strategies are mentioned to prevent plate waste, especially by participants who consider themselves to be aware of food waste. They often communicate with the waiter about the size of the portions prior to the ordering, so that they can decide to ask for no side dishes or make the size of the main dish smaller. Additionally, they mention that they often share dishes, to prevent waste. One participant mentioned to ask for an extra plate which they fill with food which will probably not be eaten, so that the others can take some extra.

Intervention strategies

When participants are asked what would help to reduce the amount of food waste being generated, several types of interventions were mentioned. They suggest that the interventions should make consumers become more aware about their food waste levels in terms of the monetary value and environmental consequences. Additionally, consumers should have more knowledge about the use of products, including how to interpret expiration dates, how to prolong the shelf-life, how to buy more consciously, how to make meal plans and to know more recipes to use products.

In order to improve the planning participants express that it would be helpful for them to have insight into their spending of the former weeks and the food items that were discarded. Another issue that was raised deals with planning, this can be improved by helping consumers to have better overview of what is already in stock.

Participants think that consumers should receive information about for example product knowledge from media as cooking programs on TV, magazines or the

internet, e.g. recipes websites or blogs. Additionally, it is suggested that apps are a tool that may help them. Alternatively, it is suggested that the issue of food waste should be discussed while growing up in the household or on schools. Further, it is mentioned that the government is responsible for making consumers more aware about the problem of food waste and should take action. However not all participants appreciate such an interference as they think that the consumers should and are able to initiate change themselves.

Participants express that next to the consumers also the supermarkets can help to reduce food waste. They can do so by providing smaller packages, more visible storing instructions on the packages and stimulate consumers to buy less instead of more. Since this will lead to less sales for the supermarkets, participants are sceptical if they would be willing to undertake such actions. In the restaurants, participants think it would help if smaller portion sizes were served and “doggy bags” offered. In canteens, preparing sandwiches on request rather than preparing the sandwiches beforehand, would help to prevent waste. Participants mention that they would not mind the extra waiting time in order to prevent food waste.

Participants have noticed some interventions in the recent past. They mentioned that there was a student organisation who used to collect wasted foods and made soup from it in the area of Wageningen. As well they mentioned online platforms which stimulates sharing of food products and meals, although they do not have experience using this. Also, they recall that in some restaurants side dishes are served per table instead of per persons and in other restaurants consumers need to pay for leftovers. Generally they appreciate those initiatives as it prevents food waste.

Conclusion

With regard to interventions participants recall several possibilities to reduce food waste levels. Food waste levels in the household, can be reduced by increasing awareness or by providing tool or tips and tricks to help with managing food in the household. Supermarkets can help by providing smaller packaging sizes. Restaurants can help by providing the option for smaller dishes.

Acceptability of wasting different food products or in different situations

In an assignment participants were asked to rank several product types (bread, pasta and rice; dairy; fast food; candy and cookies; meat and fish; vegetables and fruit) based on how acceptable they find it if the products are being discarded. We were primarily interested in their line of reasoning rather than the order of their products. Additionally, they were asked to rank several situations (dinner with family; dinner in restaurant; canteen; dinner with guests; unforeseen schedule) in which food waste can occur according to how acceptable they find it to dispose of products in those situations.

Product

Some participants ranked the products based on how often their household discard the particular product category, in which they find it more acceptable to

dispose products which they or their household often dispose and the other way around.

"I have bread, pasta and rice on 6. Most acceptable, because I always eat fresh bread anyway, so a lot of it goes away anyway, but that's me."

An exception is when the participants hardly eat the product (and thus presumably not dispose them often), some participants find it more acceptable to discard them.

"At the last place [most acceptable] is fast food. We barely eat it. We actually never eat it. We sometimes only order pizza. But I don't really feel bad when it's thrown away."

An alternative reasoning referred to the taste of the products, in which products that they like or find tasty were less acceptable to be discarded and the other way around. For instance, old cookies or fast-food were acceptable to throw away, while meat and fish were not.

Also, when discussing the products in terms of health, meat and fish, dairy and vegetables and fruit were mentioned to be least acceptable to be disposed and fast-food and candy the most acceptable. The latter ones were seen as unnecessary products and could therefore be thrown out guiltlessly, while the first ones contain healthy nutrients and thus should be eaten rather than discarded.

"Because you don't really need fast food and candies. I mean if you have something left over you can throw it away. That is not a problem for me. But the important nutrients [...] should not be wasted."

However, when ranked based on shelf-life and risk of foodborne illness, as most participants did, then meat and fish were ranked as the most acceptable followed by dairy, fruit and vegetables and fast-food. While candy and cookies and bread, pasta and rice were ranked as the least acceptable to be thrown out. In their reasoning they considered the speed of decay and how easy it is to prolong shelf-life by storing the products in a particular way. Overall, they did not want to risk becoming sick in order to prevent food waste. A minority of the participants mentioned to already take this into account while shopping, for instance by looking at expiry dates.

"Because there is meat in it [fast food] and you cannot keep that and fries are not nice to eat the next day. And then I have milk [...]. That can be sour and rancid. And then, and the vegetables and fruit that is rotten and will spoil just does not taste good anymore. Then [...] bread and pasta I also think I am also thinking of bacteria. The candy and cookies which yes, you can eat for a long time and then the cookie is a bit soft and then you don't eat it."

Another type of ranking referred to the monetary value of the products, in which the more expensive products were less accepted to be discarded.

A minority of the participants ranked the product based on environmental impact. They mentioned that unsustainable or "high ecological footprint" products as meat and fish were least acceptable to be wasted. However, it was as well mentioned that it was *more* sustainable to waste meat and fish and vegetables

and fruit because they can go "back into the chain of the cycle" by putting it in the organic waste. The environmental reasoning was a few times combined with the principle that one should not discard animal products because an animal was slaughtered to produce the food.

Other principles that were mentioned a single or few times were; if they were able to process the products into new meals; how much effort was needed to prepare the food in the first place; and how much you can control the amount you buy, order or prepare.

However, most participants did not use one line of reasoning but switch between several. For instance they started with shelf-life but switched to price, or started with taste but switch to how often it is eaten in their household. A few participants explicitly mentioned to get "trapped in" their line of thinking and therefore switched to another principle. Others made clear that they used multiple principles to start with.

"I do ecological footprint and costs. For example, meat and fish are expensive to purchase and have a high ecological footprint so that I find unacceptable to throw away together with fast food. And then milk comes somewhere in the middle and to throw away the easiest I find candy and cookies and bread and pasta and rice, which is really cheap stuff. And sweets and cookies have a very long self-life so that [you] only throw [that] away if it is really due."

Situation

When discussing situations, participants mention they find it least acceptable to discard food in situations in which they had a lot of control about the preparation process, for instance when eating with the household at dinner time.

The large majority of consumers mentioned that the amount of control they have in the situation to prevent waste was the leading argument for their ranking. Thus, the situations in which they have little control were the most acceptable to waste food and vice versa. Interestingly, the situations which were referred to as being most controllable or least differed strongly among the participants. While some participants stated that wasting food in an in-home situation as family dinner or dinner with guest is less acceptable, because they themselves can influence how much is made, and easily store the leftovers, others experienced very little control in the in-home situation, due to family dynamics such as children. Also some argued that a consumer has the most control in a canteen or restaurant setting since the consumer can view the food before purchasing and can take home in a "doggy bag", while others argued that the taste and portion size are unexpected in those situations which makes food waste more acceptable.

Participants recall that they do not want to think about food waste prevention in the out of home setting and thus it is more acceptable. Further, since they pay money for eating in a canteen or restaurant they find it less acceptable if they need to dispose of it because of the taste. However, if the restaurant is unhygienic then it is acceptable.

A few participants use other reasoning as well. One reasoning was how the waste could be used after disposal, since in a restaurant or canteen it will end up in the bin, while in-home waste can go to the compost heap or animals which made it

more acceptable. Also, it was argued that it is less acceptable to waste if the participant had put a lot of effort in preparing the meals or want to create a special occasion.

"The guests. You go by the maximum number of guests, but you never know how many are coming, or are they bringing the children, or whatever. So the change that something will be leftover is extremely big. And you also don't know how much they eat so that's harder to estimate than all those other situations because it's not only your own family, but a whole group of people."

"I think that's a matter of what I can influence the most, so in the situation where I have less influence of food being thrown away that I just more acceptable than in situations where I can exert a lot of influence on it. So if I eat with my family, I can exert a lot of influence in that case so that is the least acceptable to me if I have to throw food away".

5.3 Conclusions

During six focus groups two questions were discussed; how do people think about food waste and how is food waste generated in day-to-day situations? There was a good and open atmosphere in all six focus groups which allowed the participants to feel comfortable discussing the topic.

How do people think about food waste?

Awareness

A part of the participants are already actively preventing food waste in their household. However, the majority of the participants are not. According to the participants, the awareness on food waste levels across society is influenced by the circumstances people are raised in, in terms of parental food handling, financial situation of the household and friends food handling.

Sentiments

Almost all participants feel guilty about wasting food as a first reaction. However, when elaborating on this, the feelings appear to be more nuanced. Participants who focus on food waste prevention in their household appear to feel ashamed and consider wasting food out of place. However, for participants who do not think much about food waste, this guilty feeling seems to be volatile and is also often replaced by a more neutral or indifferent one. It seems that these participants consider wasting food inevitable and normal.

Thoughts and beliefs

Thoughts and beliefs for most consumers is that wasting food is a wrong thing to do. However, participants who are not familiar with the topic are predominately orientated on the negative monetary effects of food waste, whereas participants who are more familiar additionally mentioned the environmental consequences. Participants who do not focus on preventing food waste find handling food quite complicated already and feel that a focus on avoiding food waste would make it

even more complex. Further, they think food waste is an effect of the throwaway society. Participants believe they only waste food when it is placed in the bin, when it is given to the dog or ends upon the compost heap it is considered less of a waste.

Out of home

Participants can waste side dishes when eating out of home. However, they do not experience this as bad as they do with household food waste. When eating out, participants predominantly do not want to think about food waste prevention and feel it is the responsibility of the restaurants owners to avoid. They dislike food waste in restaurants, but mainly because their interpretation is they paid for food that they did not like.

Stereotypes about who wastes and who does not

When discussing who are persons who waste and who do not, participants assume that older people, woman and people with low income waste less food compared to the counterparts. Additionally, people who think much about health, environment or are more conscious about food in general are considered to waste less.

Food waste in a day to day context

Participants consider food waste as being something negative when talking about it in general terms. However, when discussing it is a more day to day context, participants see a variety of reasons why food waste is generated. Additionally, certain situational factors and lack of skills are recalled that made it difficult for them to prevent household food waste.

Motivation

Although participants do not want to waste food, they can decide to dispose of food for a variety of reasons. These reasons mainly refer to the taste of the product or the (perceived) healthiness.

Taste can be suboptimal due to the quality of the food. However, it is also used when discussing the taste of a product which is just not preferred. Participants like to eat food what they fancy at that moment and this often does not match with what is already in stock. In some situations this directly leads to food waste, for instance in the case of leftovers. However, often it lead to food getting spoiled in stock, which then as a consequence of food edibility is disposed.

Health can be a reason to disposal products. Health can be perceived as bad in terms of edibility or risk on foodborne illness. However, often it is referred to in the context of diet, for instance they do not want to finish their plate because they do not want to gain weight.

Further, participants want to eat varied because they think it is tastier and because they perceive it is as healthier.

There is a strong diversity among participants about when food is still tasty and healthy enough to be eaten and when not. This seems to be more depended on

personal or household based rules or preferences than with the actual state of the food.

Opportunities

Participants recall behaviours or situations in all daily life events when handling food to lead to waste, namely planning, provisioning, storing, preparing, consuming and disposing.

There are several aspects in the participants' lives which make preventing food waste difficult. They experience difficulties with planning how much and which food is needed. These difficulties arise due to unexpected daily events that come up during the week and because they never know who of the household will join for dinner. Because participants consider their days to be unpredictable, they prefer to have surplus food stocked to be able to deal with unexpected guests or lack of time to shop for food. Additionally, they find it impossible to forecast what they (or their household) fancy to eat in the upcoming days.

Participants find that supermarkets are often working against food waste prevention. The package sizes offered are too big and the supermarket stimulates them to buy the bigger pack by making them cheaper than the smaller versions. Also the quality of fruits, in terms of shelf life, is sometimes less good than expected.

Lack of the right materials does not seem to be that much of an issue for the participants to prevent waste. Only in some cases the lack of storage space, sufficient amount of containers or access to a microwave or blender are mentioned to limit them from preventing food waste.

Abilities

Lack of a certain set of skills or knowledge limits participants to prevent food waste in certain situations. This lack of specific skills and knowledge occurs when handling food in all stages, namely planning, provisioning, storing, preparing, consuming and disposing.

Participants feel they need the skill to correctly plan how much food is needed. As stated above, they feel unable to correctly plan as a consequence of unexpected daily events and preferences. Some participants feel there is room for improvement by making shopping and meal plans, and by checking the storage before the shopping trip. However, besides planning, participants feel that it is important to act upon the plan by shopping consciously. This included resisting the urge to buy additional products, paying attention to date labels and additionally by eating during the week as planned rather than as preferred. Household members are thought to make this difficult.

There is a variety of ways participants stock their food in their household. There is room for improvement and participants would like to improve, because often food gets spoilt because it is forgotten. Additionally, there is variation how participants decide if food is edible enough to be eaten. Participants mention they would like to improve their skill to estimate if food can still be eaten. At this moment participants more often use rule of thumb than use of the senses.

Participants additionally report they want to improve their skills to create tasty dishes of leftovers. They mention that sharing or donating food and leftovers would be a strategy to prevent leftovers.

Participants dispose of food in three ways; the majority of the food is placed in the bin, a minority ends up on the compost heap or is given to the pets.

In general, participants mention a willingness to improve their skills and knowledge on how to handle food in order to prevent food waste.

Out of home

In general, participants are less aware that they waste food when eating in a restaurant or canteen and feel less guilty about it. Rather, they feel annoyed because it implies they bought food that was not tasty. Some think it is easiest to prevent food waste in canteens, as the size of the portions can be viewed prior to purchasing. Participants find that restaurants should serve quality and if the quality standard is not met then it is acceptable to dispose of food. They also have plate waste when the restaurants served too much. The main meal is often finished, but not the side dishes. They find it is the responsibility of the restaurants to prevent food waste. They appreciate it if smaller servings as additional option are offered. In addition, they appreciate it if restaurants offer packaging to take home plate leftovers. However, as “doggy bags” are not commonly used in the Netherlands, participants rather prefer not to ask for such a packaging themselves. Participants are reluctant to consider taking home unhealthy or bad tasting plate leftovers.

Acceptability of wasting different food products or in different situations

When judging the acceptability of wasting different food products, several themes came up. Participants mention very practical reasons when it is most acceptable to waste food, for instance how often the product is thrown out by their household, while on the other hand abstract or complex reasons were given, such as environmental consequences of the product. However, the most interesting insight is that even if consumers use the same line of reasoning, they feel different about throwing out the same product types. Additionally, consumers rarely use one line of reasoning, often participants use several principles when thinking about the acceptability of disposing of food products. This illustrates the complexity of consumer food waste. The reasons used are, how often it is disposed in their homes, how much effort has put into it, how much one can control the amount bought, the taste of the products, the healthiness of the products, the shelf-life, the risk of foodborne illness, monetary value and the environmental impact of the food.

When comparing situations, the most important factor to determine acceptability to disposal food in different situations, is how much control the participant has to prevent food waste in that particular situation. The more perceived control, the less acceptable for the consumer to disposal food. Additionally, the setting has an effect as participants do not want to think about food waste when eating out of home.

Intervention strategies

With regard to interventions participants recall several possibilities to reduce food waste levels. Food waste levels in the household, can be reduced by increasing awareness or by providing tools or tips to help them with managing food in their households. Supermarkets can help by providing smaller packaging sizes. Restaurants can help by providing the option for smaller dishes.

Implementations

This report shows that participants do not want to waste food, but that it happens nonetheless. Participants act upon many aims when handling food in the household which are often more prioritized than food waste prevention. To many, food waste is inevitable and they decide not to think about it too much because it would make managing their household even more complex. It is also only when discussing the topic a bit longer, participants can recall reasons why food is wasted, despite their overall belief that it is a bad thing to do.

The main reasons that food is disposed of is because participants are unable to correctly predict how much and which food is needed due to unexpected events and varying taste preferences. They would like to become more skilled so that they could prevent food waste but without giving in on their other aims.

This suggests that it is essential for intervention to view food waste from a household management perspective, rather than as the consequence of a single behaviour.

6 Country report: Spain

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6.1 Introduction

Food waste is increasingly more in the public agenda in Spain. Although not having a unique and coordinated strategy to reduce food waste, in recent years there has been a flourishing of numerous initiatives that aim to reduce food waste in diverse settings. The range of initiatives conducted are diverse, ranging from quantifications to small and spontaneous activities, and the majority of them centred on the food waste being generated at the consumers' level. However, there is still a need of thoroughly understanding consumers' behaviour and awareness related to food discarding or better design initiatives to prevent the current generation of food waste.

Spain with a population of 46.4 million (INE, 2016a) is organised in 17 autonomous regions and two autonomous cities. The average household size in Spain is 2.51 people. The most common type of household in Spain is the couple with children, with 34.1% of the population that is in this situation; followed, with 21.1% as childless couples and with a 14.8% single-person households under 65 years without children. At the end of statistics are single parent households with children (10.3%), single-person households over 65 without children (10.1%), and other alternative types of households (9.6%) (INE, 2016b).

The average net annual household income is 26,092€ according to 2015 Living Conditions Survey (INE, 2016c), and regarding net annual income per person, this amount is to 10.419€, with a 22,1% of population at risk of poverty. The unemployment rate in Spain is one of the highest in Europe, with a total of 20% according to the Labour Force Survey (INE, 2016d).

At home the food burden is irregularly distributed, being women the ones carrying the heaviest load. 91.9% of women (10 and over) are engaged in household chores and take care of children, elderly and dependent persons for 4 hours and 29 minutes a day, compared with 74.7% of men who are engaged for an average of 2 hours and 32 minutes (INE, 2011).

Regarding the food culture, the consumption per capita of food is 656.7 kg corresponding to 1,502.9€ in a year. The 14.9% of the household income is invested in food annually. Of the total food expenditure, 67.7% is in home and 32.3% out-of-home. The preferred channel for buying food products during the 2015 was the supermarket where the Spaniards made 44.1% of their purchases. This figure rises to 52.8% in the case of packaged products. However, for the purchase of fresh products, Spanish households prefer to go to specialized trades (traditional tents) with 35.6%. The discount stores had a volume share of 15.7% of the total and purchases made over the Internet still being small representing 0.8% of total purchases (MAGRAMA, 2015).

There are different studies that quantify and analyse food waste generation in Spain or specific regions of it. Although the methods and definitions of food waste are diverse all of them contribute to draw the big picture of the situation at the consumer level in Spain. Recently the Ministry of Agriculture, Food and Environment has presented a new quantification using a consumer's panel data that collects information semi-annually from 1,000 households in Spain. The results show that in 2015 households generated 1325.9 kg of food waste, which

is 4.53% of the food purchased. There are differences according to type of food, fruits and vegetables and fresh bread are the most discarded food products (48% of total food waste). Consumers tend to waste less cooked or prepared than fresh food. The study highlights the seasonality of food waste, in spring-summer there is a 9.4% more food waste than in autumn-winter (MAGRAMA, 2016). Previously to the latter report, the consumers organisation HISPACOOOP (2012) quantified consumers' food waste in Spanish households through online questionnaires and a dietary cooking panel. The results showed that each household generates 76 kg per year. Households with less food waste amount are those with four or more members, higher social class, and living in the autonomous communities of Andalusia, Canary Islands and Galicia. Whereas the profile of households that generates more food waste are composed of two members, and in the autonomous communities of Catalonia and Madrid.

Competence for waste matters are transferred to the autonomous regions in Spain, consequently there are differences in the approaches to the food waste problem and independent actions have been carried out. For example at the Catalan level, food waste was quantified at the final stages of the food supply chain (from retail to households) using direct measurements in the waste treatment plants in 2010 by the Catalan Waste Agency (ARC and UAB, 2011). Results showed that about 262,471 tonnes of food are wasted every year in Catalonia, 35 kg per person/year. This study points out that, if not considering agriculture and industry, 60% all food waste generated in Catalonia is generated by households.

In addition to the studies developed focusing on quantifying the amount of food waste, they also aim to better understand consumers awareness and knowledge about the problem of food waste. The results for Spain offered by the Eurobarometer Flash 388 show that the majority of people (67%) estimate their own food waste as 5% or less of the food they buy. There are also some regional differences on the most recent Eurobarometer focused on food waste and date marking. People tend to look at the date labels -'use by' / 'best before dates'- on food packaging (European Commission, 2014).

In a survey implemented in 2013 in the Barcelona metropolitan area noticed that citizens were not aware about their own food waste generation. Although the lack of food waste self-generation, the participants evidenced high concern about the problem, mainly due to moral reasons –namely the contradiction of people without access to food meanwhile huge quantities of food waste volumes- and due to economic reasons (Díaz-Ruiz et al., 2015a). In another survey in the same year it was identified that not only food related indicators such as diet selection and purchasing influence people's food waste self-reported generation but also waste prevention in other streams, and indirectly influenced by materialistic and environmental values (Díaz-Ruiz et al., 2015b). In a more recent study considering Spanish consumers (AECOC, 2016a) participants believe that Spanish food waste per capita is greater than in other countries and with other habits food waste could be reduced. Only 15% of the households have declared that they do not waste anything. The reasons the participants argue to waste food are: forgotten food or laziness to utilise the food they have (70%), low value in terms of price of food (25%), bad estimations or lack of planning (15%), lack of time (15%) or lack of knowledge about to deal with leftovers

(9%). Fruit and vegetables and opened products in the fridge are the products most often thrown away.

The interest on food waste reduction has been increasing in recent years. A wide diversity of consumers food waste prevention campaigns has been started and lead by different stakeholders profiles: institutional: "[Mas alimento menos desperdicio](#)" (MAGRAMA, 2013), "[Som gent de profit](#)" (ARC, 2016) food business association: "[La alimentación no tiene desperdicio, aprovechala](#)" (AECOC, 2016b); consumers organizations and NGO's: "[Yo no desperdicio](#)" (Prosalus, 2016) or "[No tires la comida](#)" (OCU, 2016).

Food waste is gaining a great momentum last year but further research is needed to find out what is behind consumers' food waste generation and therefore provide useful insights to the current initiatives that aim to prevent food waste.

6.2 Results

The results section is divided into four parts. In the first sub-section, it is described how participants think about food waste in terms of their awareness, feelings and beliefs. In the second one reports how participants deal with food waste in their day-to-day life, which barriers they encounter if they would accept a hypothetical challenge of not wasting food for one month and additionally which aspects would help them to succeed in this challenge. In the third sub-section potential interventions are described which according to the participants would help to reduce domestic food waste levels. Finally an overview is given of food waste streams of different products and in several situations which can most likely be reduced.

6.2.1 How do people think about food waste?

Awareness

There is large consensus in pointing the crucial role played by information availability and being capable to organize it in increasing awareness on the importance of addressing food waste. Thus **education** is seen as fundamental attribute lying behind anti-food waste behaviours and attitudes.

In addition, some other aspects are identified as exerting a relevant influence on the existence of larger willingness to adopt ways of life linked to reduced food waste generation. This is the case of **personal experience** (or those of close relatives) of having gone through periods of hunger. In Spain this is particularly relevant for the oldest generations. Several occasions emerged in the focus groups the idea that particular groups of people tend to be more concerned with the need to reduce food waste than others, namely: **women**, and **old people**. Also some mentioned that the lifestyle conducted in **rural areas** is linked to the generation of less food waste than that undertaken generally in large cities. It is also highlighted that having **kids at home** may be a stimulus to conduct lifestyles associated with lower levels of food generation, because the oldest members of the family try to exert positive influences on the younger members. **Organized people**, some claimed, are more prone to generate less food waste quantities than others regardless of their particular concerns.

Another interesting idea that emerged in the focus group is that in the current lifestyles where there is no time for anything, there is even **no time for being sad or angry** for having wasted food. You feel sorrow because you have just generated food waste but suddenly some urgent things turn up that requires your attention and you quickly stop feeling the sorrow. *The urgent tends to displace the important.*

Three main concerns are clearly lying behind the increase, for some more important than for others, of the awareness for food waste reduction in Spain. Awareness of **environmental, moral** and **economic** nature are identified as importantly enhancing the interest for adopting anti-food waste lifestyles in Spain.

Environmental concern

The urgent need to adopt environmental friendly lifestyles is widening at a fast rate among the Spanish society in the last years. The increasing access to relevant **information on the effects of our decisions on the environment** at both long and short terms is seen as the main source of such transformation. Media is seen as the main actor spreading such information among the general public. In conjunction with the increased availability of information, social pressure to conduct environmental-friendly actions is underlines as very relevant. As shown by this quote: *"Yeah, well aware with the ecosystem, ecology and even spending all, water, light...is a mmmmh ...a circle not only with just food. That person would be very responsible for everything, water, light all..."* the increased concern with the environmental issues is seen as helping to enhance the interest on understanding all surrounding factors of the food chain, what inevitably leads to increased awareness for the importance of reducing food waste at both individual and global levels.

Moral concern

Despite that it is increasingly spread the idea that the current Western societies are being growingly distanced from the primary production and the food domains, the true is that in Spain there is large consensus in awarding **food with a particular status**, more relevant than other kinds of commodities. Thus, feeling bad when throwing or having to throw food is commonly reported. To this feeling of wasting an important resource it is necessary to add, more and more importantly in the last years, the awareness of the existence of situations of food shortages in other parts of the world at present. The public knowledge about the **existence of situations of food insecurity** at present times is generally acquired through the media, particularly television news. The upcoming of the recent **economic crisis** in Spain spread the consciousness of the idea that those situations of food insecurity are not only taking place in distant places, but your very neighbour could be one of these.

Economic concern

The recent economic crisis that Spain is going through is also playing a crucial role, as reported in the focus group, in raising awareness on the amount of money we can save if anti-food waste measures are implemented.

Another relevant issue emerged in the focus group concerning the relationship between food waste and economy is the fact that in the current Western societies social status is largely established according to the capacity of consumption. That is, the larger your capacity of consuming the higher the social status you belong to. Thus, opulence as a sign of belonging to a higher social class. Larger levels of consumption linked to a sign of belonging to a higher class. Thus, indirectly, the generation of more waste as linked to the perception of belonging to a social class of a higher status. Two main discourses can be identified here. While some say that wealthy people tend to waste more food, and poorer people less because they are in need of; others stress that wealthier people have access to more information than poorer and consequently poorer people tend to waste more food than the wealthy ones. There is no clear consensus on this.

In all the focus groups participants were reluctant to accept that they waste food waste at the beginning. However, it was noted that in the focus groups with people under 45 year old were more prone to admit openly that they sometimes waste food. In particular, they mentioned that with the home assignment they had realized that they were throwing more food than they thought. On the other hand, with groups over 45 year old the collection of pictures during the first part of the focus helped them to talk about some food types, mainly vegetables that they mentioned that they rarely throw away. Interesting and spontaneous conversations started about what they do to prevent this type (examples of the pictures) of waste.

Sentiments

In addition to the particular awareness on the food waste issue, particular experiences seem to lie behind the association of particular actions with **negative, positive** or **neutral** feelings as regards its consequences in terms of food waste generation.

Negative feelings

Increased negativity has been identified as largely associated with the generation of food waste in the following circumstances: (a) as you **grow up** the awareness for all aspects that surround the food chain grows and thus your motivation to take action; (b) people tend to feel **less sorry if the value associated to the food wasted is perceived as low**, as it is the case of 'fast food' or food of low quality or cheap food, this point is clearly shown by the following quotes "*And junk food is cheap food, it's fast food and if you throw it away nothing happens*" and "*I would feel worse in a restaurant because it's more expensive*"; (c) in line with the previous point, some participants in the focus groups conducted mentioned that they feel sorer about food waste when they themselves or a close friend or a relative are who has prepared that food; and finally (d) the **feeling of sorrow tends to be larger when the food is cooked**, since there is more effort behind it.

Positive feelings

Increased satisfaction has been identified as largely associated with the generation of food waste only in the situation where larger levels of consumption and opulence, and thus of food waste generation, is **associated with the belonging to a social class of higher status**.

Neutral feelings

In the focus groups several situations were reported when people seem to allocate less relevance to addressing food waste issues. We have named these situations, situations of neutral feeling, in an attempt to highlight the fact that a non-relevant status is given to food waste in these situations. This is the case of the following circumstances: (a) **too many problems to care about** *two onions being wasted* (“*I believe that everybody cares but it’s not like... but... as I have too many problems I don’t care now about the onions...*”) ; (b) that of **food waste is such a huge issue that we cannot do anything to have a relevant effect on it**, that is the feeling that the contribution of a single person or of a reduced number of people is too small, thus leading to lack of motivation to take action; (c) quite in line with the previous point, another situation where the relevance of addressing food waste is downgraded is when there is **indolence to change habits and routines** that would potentially lead to food waste reduction; (d) **unexpected events** and **special occasions** are linked to less concern about the food waste generated because of the feeling that you could not do more to prevent it, a feeling that it is out of our reach; (e) if the food waste generated goes to valorisation through **feeding animals** or **compost** there is general consensus indicating that this should not be considered as food being wasted.

Thoughts and beliefs

Concerning how the wider societal context drives attitudes towards food waste in Spain, several ideas turn up in the focus groups conducted recurrently: (i) hard-times experience; (ii) culture of consumerism; and (iii) access to education.

In Spain the Civil War in the 30s and the subsequent dictatorship is still an experience that strongly influences certain attitudes and beliefs at present, particularly for those who lamentably had to live with it. The notion that **those that went through the Civil War and the post-war period are more aware of the nonsense of wasting food** is an idea regularly mentioned.

“The thing is that old people have lived a war when they were young in which there wasn’t food and in which it was really hard. Therefore they come from times of hunger, while those who are my age...they haven’t lived hard time so they find it more acceptable to waste food”.

Those who **experienced famine or hard times when kids are seen as people that appreciate more the value of food** than those that grew up in situations of lack of scarcity. *“If you are from a poor family you know ... that food is sacred and you cannot throw it away”.*

In contrast, being it because of lack of awareness or because of a rebound effect, the younger generations are pictured as being more and more reliant on a culture of overfeeding: **“Our eyes are bigger than our stomachs!”**. This is seen as going in line with current times in the rest of domains of our lives, where consumerism is often employed either as a sign of belonging to particular social status, or as a way to fight the anxiety and dissatisfaction associated with modern lifestyles. *“Food as something that replaces other joys, when you don’t have them, such as when you’re not pleased with the life you live, with the world you’re in”.* In line with this, the broad social acceptance and satisfaction for

restaurants that serve a lot of food is underlined "in that restaurant you get such dishes that you cannot even eat everything!".

Access to information and higher levels of educations are also widely linked to anti-food-waste behaviours or more appropriate lifestyles. Thus, "A more informed person in general tends to throw less food... And people who have less access to information, it is true that I think they throw more food ... because they do not actually think they are doing anything inconvenient".

A notion that was regularly expressed during the focus groups is the importance of the values and beliefs which participants lived with when they were kids. It is also believed that there has been a slight trend towards increasing awareness of the negative impacts of wasting foods.

Stereotypes about who waste and who do not

Different mind-sets have been identified during the focus groups related to the characteristics of both a person who wastes food and a person who does not. A variety and sometimes contradictory arguments were exposed during the focus groups, but in general terms it could be said that during all the six focus groups there was a coincidence on the fundamental drivers that lay behind of wasting or non-wasting behaviours. These drivers are: (i) **financial situation**, (ii) **age**, (iii) **time availability**, (iv) **gender**, (v) **awareness of food waste**, (vi) **household composition**, (vii) **planning skills**, (viii) **food and cooking sensitivity**, (ix) **personal traits**, (x) **lifestyle**, (xi) **social class**, and (xii) **education**.

The table below shows all the drivers and their particularities that emerged during the focus groups as mediating the beliefs on the image of those people wasting food and those others who do not waste food.

Drivers	Wasters	Non wasters
Financial situation	<ul style="list-style-type: none"> • High income • More money • New rich • Person lower rent • Economically fine/with few money also waste • No financial difficulties (not agreed) • With no necessity 	<ul style="list-style-type: none"> • People in needs • Poor in need • Financial difficulties • Persons with lower rent • Little money • Less budget
Age	<ul style="list-style-type: none"> • Teenagers /Young • Youngers(democracy, consumerism period) 	<ul style="list-style-type: none"> • Teenagers are aware (recycle and crisis) • Older (War, post-war period)
Time availability	<ul style="list-style-type: none"> • Occupied (work) • No time to cook • No time to shopping • A person that Works (less time) • Businesspeople (all day in the office) 	<ul style="list-style-type: none"> • Time to cook
Gender	<ul style="list-style-type: none"> • A man → less aware / more a mess • A younger woman (it's 	<ul style="list-style-type: none"> • Woman (take care of herself)

	changing the stereotype of gender)	
Awareness of food waste	<ul style="list-style-type: none"> Lack of awareness Don't mind wasting Don't value food and cooking 	<ul style="list-style-type: none"> More concerned More social awareness Aware More conscious / educated Care about food Values Working class with awareness and values Higher Moral Ecologist (aware of the environment) Environmental awareness
Household composition	<ul style="list-style-type: none"> Living alone 	<ul style="list-style-type: none"> Having children (inflexion point →you have to feed someone) Family with kids Single households Responsible to feed everyone Take care of family Don't live alone →in family
Planning skills	<ul style="list-style-type: none"> Buy a lot and don't plan Not good planner Not organized 	<ul style="list-style-type: none"> Used to organize shopping and take care of food Organized Better planners
Food and cooking sensitivity	<ul style="list-style-type: none"> Too lazy to cook Doesn't cook (lifestyle) Don't know how to cook well Doesn't enjoy food Don't care quality of food 	<ul style="list-style-type: none"> Pleasure for cooking – having the ability Knows growing food
Personal traits	<ul style="list-style-type: none"> Necessity to show a higher social status 	<ul style="list-style-type: none"> Family or personal past experiences Has suffered, etc. Open minded Life experienced To have the capability to go against the consumerism trend
Lifestyle	<ul style="list-style-type: none"> Travels a lot due to work 	
Social class	<ul style="list-style-type: none"> Middle class Don't need to cook at home → could go outside 	
City vs village		<ul style="list-style-type: none"> Work in the countryside Countryside knows about food production
Education		<ul style="list-style-type: none"> Higher education Higher information accessibility
Country/ cultures (Asian, etc.)		

6.2.2 Food waste in a day-to-day context

During the focus groups participants were asked to describe the reasons occurring when food waste occurs, as well as the situations when food waste generally takes place. The reasons identified are described in terms of

motivations, opportunities and abilities. While **motivations** allude to the arguments on which participants base their decision to dispose food products, that is, to their opinions when food has become waste; and **opportunities** refer to those aspects surrounding consumers that influence the generation of food waste, over which the participant has little control; **abilities** are aspects of the consumer over which the participant has some control and that influences the generation of food waste, such as skills or knowledge.

Motivation

The ideas on which consumers build their decisions that determine the way a given food is employed, and thus highly determining the generation of food waste, is seen as largely driven by several factors: (i) **convenience**; (ii) **social pressure**; (iii) **accelerated lifestyle and working life**; (iv) **budget**; (v) **food price**; (vi) **food perception**; (vii) **household composition** (providing for one's family).

Convenience

Although the shopping is conducted having in mind the needs to follow an appropriate diet, the **laziness to prepare meals** requiring certain time for preparation is usually mentioned as leading to food waste. In line with this, there are some people that even claim that they "*do not like cooking*". The **laziness to go shopping** is also mentioned. The effect of buying too much in order to minimize the number of times of having to go shopping is identified as leading to food waste. "*Wherever I go grocery shopping ... I try to buy as much as possible, that will remain good as long as possible, in order to go as few times as possible*". In line with this, some claim that they do not like to see the fridge empty.

The conjoint effect of **lack of cooking skills and boredom of repeating** meals is another cause identified leading to food waste behaviours. "*... He doesn't know how to take advantage of that food, and he finds it boring to repeat ..., repeating is, like a kind of humiliation, because if I want to live and eat well, I don't repeat because I can afford myself to do so*". This effect is being intensified by those attitudes that try to reduce the number of times a person or a family have to cook by preparing at once large quantities of food, what in the end ends up by getting bored of eating the same. "*... sometimes you cook for different days and ... then maybe in the third day, not because of the preheating, but because you don't want to keep eating that food because you don't feel like it anymore*".

The conceptions of **food as a pleasure** and ascribing **little value to food** are two intensifying factors of the drivers leading to food waste just mentioned, making people less willing to sacrifice their immediate food desires while disregarding other considerations that could lead to anti-food-waste behaviours.

Social pressure

Certain personal attitudes are seen as being mediated by the presence or absence of people around us. The desire to **present to others a well-off or more favourable self-image** is identified as leading to food waste. In these terms, the situation of not storing leftovers when with guests at home is regularly employed as an example during the focus groups. Saving leftovers in this situation is

described by some as “*embarrassing*”. However, the opposite situation is also described, as some indicate that they feel worse when they have to waste food in the presence of others. “... *there’s ... a situation where you throw stuff and if you’re with people who see you, you feel a bit worse than if... if no one sees you*”. The situation of being extra motivated to finish the meal when behaving as a guest is also reported in the focus groups.

The effects of social pressure on food-waste-related behaviours is also reported as leading to prevent food waste in situations where certain **moral values** are stressed, as when parents push their kids to eat all before leaving the table or when the media reminds us the context of food insecurity with which people in some parts of the worlds have to live with.

Accelerated lifestyle and working life

The notion of not having **enough time to devote to food** regularly turns up throughout the focus groups as one of the main food-waste drivers. It was mentioned in all workshops. This factor, highly associated with modern lifestyles, and the large importance that the working life has in it, is generally indicated as linked to (i) **lack of time to cook**, thus cooking larger portions, and lack of will/capacity to cook leftovers; (ii) **lack of time to buy**, and thus purchasing larger quantities of food than required or eatable in a coherent period of time; and (iii) **unpredictable agendas**, which involve larger incapacity to set up food-waste-wise shopping and cooking routines.

“If something is leftover ... I have to put it in a food container or to cover it, I have to put it in the fridge and if I do that with everything it takes a lot of time, time that, maybe I don’t have, so that’s a difficulty right?”

“Consume responsibly is fine but sometimes you need to invest some time... time that you don’t..., our life is not organized ... to invest on it... if you have some chicken leftover from the stew, it is not the same throwing it away, which is something quick, than doing croquettes...No time to make croquettes, as to say.”

“When you get home at around 7-8 in the evening you don’t feel like making dinner or thinking about next day’s food, you feel like grabbing a snack and resting and disconnecting and your house is your space, it’s your corner, right?”

“... I don’t throw much stuff but always something happens, and you say well I’m going to eat at home every day and then half week is gone and you don’t go home. So then if you don’t get home, maybe because you have a meeting or... you’re going to the cinema or you go out or I don’t know, you had a plan which is great because... ”

Budget

The availability of **lower budgets to be devoted to purchase food is largely associated with more undertaking of anti-food-waste attitudes**. To describe this point, the example of the recent **economic crisis** Spain has just gone through is widely employed in all focus groups to make sense the increased adoption of anti-food-waste behaviours: *“I believe that, that the crisis have transmuted a lot of things because a lot of families have seen themselves ... because they do not have another option ... really think on that issue”; “...we*

cannot keep throwing away like before the crisis"; "...when throwing away food, because you also know, today, the crisis we have and that there are people who don't have a salary while they have to feed their children..."; "At the time of skinny cows, when there is not a lot of money, so you pay more attention to the issue of food. It's sad to say this but sometimes it happens". Nevertheless, during the debate within the focus groups some of the participants disagreed that all lower budget households do not waste food. Indeed, those who disagreed argued that lower class families could be wasting food as a sign of opulence or due to a lack of awareness.

Food price

The **association of price of food with the value ascribed to it** is an important factor to make sense of the food waste behaviours. When food is cheap people tend to not to value it, is a quote repeatedly frequently in the focus groups. "The food isn't that expensive, so he throws it away". In line with this, the fact of buying high quality food (such as organic food or proteins) is seen as behaviours linked to more anti-food-waste performances. Obviously, this is generally conducted by wealthier people. "... the quality of the food you buy, for example, if you for example are, you are well-off buy organic food and this, I think that you have to throw away less, sure, because it is something more expensive". Also, reminding the price of food is employed to prevent food waste within the households, as shown by this quote "Ehh! This fish has cost a lot eh! So nothing of leaving anything...".

Food perception

The **taste and appearance of food** is another major driver identified in the focus group to explain food-waste-related behaviours. Thus, "I cannot eat something I don't like", "A product about to ripe does not taste the same as fresh" or "I don't feel like eating this right now" are quotes that reflect attitudes that could lead to certain incapacity to use leftovers or repeating meals. Also, it should be taken into account the coexistence in all families of diverse food perception. Managing the cohabitation of different food perceptions is also indicated as a cause of food waste. The case of **kids** is particularly stressed here. On the contrary, the behaviours of people that sacrifice their food preferences to eat leftovers is also described and indicated as leading to food waste reduction. The quality of the food bought and the diet followed is directly linked to anti-food-waste attitudes, as low cooking abilities are linked to enhanced food waste. The implementation of the **precautionary principle**, having in mind health issues, when preparing or choosing the food devoted to household members with particular requirements, mostly kids and pregnant women, is also mentioned as a source of food waste. This precautionary principle is also more extensively implemented on certain food products, such as milk.

Household composition

To **satisfy the diversity of preferences and quantity predilections that coexist within a family**. Cooking and buying more food for the family offspring is an attitude described in the focus groups, both to show better-off image and to satisfy the diversity of their requirements. "... when you have a family ... there are different preferences: my daughter like more this, my son likes more the other, you love them so well... Eh... and sometimes some food you lose it in the path".

Thus, the attitude of securing the happiness of the family satisfying the diversity of food desires at the expense of sacrificing the generation of certain food waste is described.

"For me personally it's just more complicated, even though we are quite conscious, even the girl of three years old already knows that food shouldn't be thrown away or anything, but of course you cannot force a creature if he/she doesn't want to eat a particular kind of food, even if he/she eats quite well but at times it just happens that someone some night just doesn't want or feels like having a plate of vegetables, he/she saves it for 2 or 3 days but doesn't keep it for more time than that and then sometimes you just have to throw this food away".

However, on the contrary, the fact of being a household of more than one person is often seen as providing better conditions to implement anti-food-waste behaviours. In line with this, the will of trying to **educate the children** of the family with **socially-aware moral values** is an attitude that goes with anti-food-waste behaviours.

"... kids learn from the example I mean if there isn't an example of... of saving, not wasting, you have to preach the example. They're mirrors, aren't they? They look up to you, of course you do things the wrong way but mmm... they should not only learn in school that they can't waste, but also see that that's done at home, the wasting, with recycling, stuff like that".

Opportunities

Several factors were identified in the six focus groups conducted that either make it more difficult or facilitate the generation of food waste. Thus, while some factors, external to consumers, are seen as limiting the **opportunity** of people to engage in food waste prevention or reduction; other factors, under the control of participants, are seen as enabling people to reduce or prevent food waste, but requiring a set of skills and knowledge, which are referred to as **abilities**. These factors are grouped in the following groups, according to the stage of the process of consumption where they occur: **planning, provisioning, storing, preparing, consuming**, and **out-of-home**.

Planning

At the planning stage, several are the aspects that were mentioned as defining the opportunity to undertake behaviours to reduce or prevent food waste: (i) **modern life**, (ii) **unrealistic planning**, and (iii) **unexpected events**.

The stressing present modern life (with a relevant role ascribed to the working conditions) is recurrently indicated as playing a key role in both conducting and inappropriate planning or being incapable to follow and adequate planning, both options leading to increased food waste being generated. It is recurrently mentioned that it is impossible to build a sound plan if we are **all the time in a hurry**. The current modern life is also described as full of unexpected even, of a working but also social nature, as show this quote: *"... I don't throw much stuff, but always something happens, and you say well I'm going to eat at home every*

day and then half week is gone and you don't go home. So then if you don't get home, maybe because you have a meeting or... you're going to the cinema or you go out or I don't know...". The **difficulties** in implementing an adequate **planning** is manifest even for those highly aware of the importance of adequate food practices for the environment and health of all of us *"... but the issue is that you buy maybe fruit because is healthy, but then maybe you fancy more yogurt, and you end up leaving the fruit ..."*.

Provisioning

At the provisioning stage, several are the aspects that were mentioned as defining the opportunity to undertake behaviours to reduce or prevent food waste: (i) **packaging**, (ii) **offers and promotions**, (iii) **time allocated to provisioning**, and (iv) **singular event**.

The existing **mismatches between packaging and household size** is one of the most mentioned ideas during the focus groups, and is particularly relevant in this section. Thus, the overabundance of large packaging sizes is seen as a factor promoting food-waste behaviour. It makes the management of food more difficult for small families, but also for the larger ones. *"... not the entire quantity is used, they're bricks of half a litre and, maybe, you use 300ml and the rest, after two days you throw it away"*

The previous point is highly linked to the regular emergence of **offers and promotions** that foster shopping attitudes that disregard the particular needs of the family focusing only on the opportunity of buying more with less, as shown in the following quote: *"... when I as a person I live on my own, I notice it, when you say, let's say to a, normally a market, let's be honest, you go and everything is very cheap, 2 kilos, I buy these 2 kilos. That turns out super expensive! It is expensive because me, I'm alone, I take some time eating those 2 kilos and I end up discarding it, I prefer to arrive to my supermarket and I take 1 piece of this, 2 pieces of something else, two tomatoes, two peppers"*. The increasing difficulty in finding loose food purchasing option is also stressed since it fosters the purchase of larger portions than required instead of just buying one or two pieces of a certain product: *"I want to buy apples but there is no way to find them in the near supermarket loose apples, so maybe... and I end up buying the typical 2kg packaging"*. Also, the fact that big bags makes it more difficult being aware of rotten products that may be hidden at the bottom of the bag is a factor mentioned.

The **time available by each family to purchase** the required food is also a key factor to conduct or not more anti-food-waste prone behaviours. The lack of time to go shopping more frequently is associated with the purchase of larger portions, which tentatively are more prone to generate food-waste situations. *"There are many days that I can't go shopping food due to work ... or... well... that... maybe instead of buying, I don't know, 1,5 kg of potatoes I buy 3 or 4kg, and then... there is always 3 that get rotten... "*.

The occurrence of **singular events** is also linked to larger probability of developing food-waste behaviours. This is a recurrent idea that emerges in the focus group and often it is associated with the Christmas meals. Another situation mentioned is the **exchange of food**, that is, when someone gives you food that

you are already well provided. "... you for example, you say in 15 days I eat one kilogram of oranges, just to give an example, and if suddenly someone gives you another kilo of oranges, you don't have time enough to eat all of them".

Storing

At the storing stage, the aspects playing a role in the definition of the opportunities to conduct anti-food-waste behaviours were described as multiple: (i) **date-labelling**, (ii) **equipment**, (iii) **time allocated to provisioning**, and (iv) **singular event**.

Although as regards the issue of the date-labelling there was largely shared the idea that consumers are well aware of the specificities surrounding the 'best before' and the expiry date; date-labelling was seen as a relevant factor mediating the opportunity of undertaking food-waste friendly behaviours at the stage of storing. Matching the expiry dates of the products bought and the food habits is often described as a challenge. Also there are particular food products with which this challenge is particularly acute. This is, for instance, the case of ham or turkey that soon get an unpleasant texture. While, for other products, as is the case of yogurts, the date-labelling is a less relevant issue. Here the idea that supermarkets always place the products with the nearest expiry dated closer to the consumers is mentioned as leading to food-waste behaviours.

Another aspect, although less mentioned than the previous one, is the one of the equipment available. Thus, having a room to eat with Tupperware at work, to be able to cook every day, or having a freeze large enough to be used for unexpected leftovers, or space in the kitchen to cook comfortably are factors mentioned by the participants of the focus group playing a role.

"...if they have a space to lunch at work a microwave then they can cook at home and they can heat up at work and no longer have to eat outside obligatorily thus they are no longer having a mouldy onion because they had already cooked it ... this helps a lot!"

Preparing

At the preparing stage, there is one fundamental factor that was identified in the six focus groups as intermediating in the opportunity domain. The **working life** that is forcing us to be in a hurry the whole day and let little time or forces remaining to be devoted to other tasks, such as food preparation.

"... when you get home at around 7-8 in the evening you don't feel like making dinner or thinking about next day's food, you feel like grabbing a snack and resting and disconnecting ... "

"Sometimes it also happens to me, but it happens because when I finish work I'm very tired, then at night I'm lazy saying: look this celery, for example, I had thought about preparing soup at night, but sometimes I finished so tired that I say I'm going to make bread with tomato and with oil and that's all"

Consuming

At the consuming stage, the aspects playing a role in the definition of the opportunities to conduct anti-food-waste behaviours were the following: (i) **whim and kids**, and (ii) **unpredictable schedule**.

Fanciful behaviours are largely identified as laying behind food-waste-generating practices at the consuming stage. This is, for instance, the case of buying fruit because it is a healthy food, but in the end preferring to eat another dessert because fruit requires more time to be prepared and thus it might end up by becoming spoiled: *"I have to eat oranges, but it's so annoying having to cut it, clean it... I get dirty... I have to get cleaned. It's a cause why I don't eat fruit"*. Although not entirely, this kind of fanciful attitudes are often associated with kids: *"He's so weird... depending on the day, I have to eat his leftovers because he's irregular, if he feels like it, he eats it, if not, no"*. The statement that with **kids**, particularly small ones, it is impossible to achieve the challenge of not wasting anything is often mentioned: *"No, it is not difficult, impossible, with children ..."*. In line with this, it is also indicated the lack of willingness of kids of repeating meals.

The emergence of **unexpected events**, particularly related to social and working life, is frequently referred to as leading to food-waste generation behaviours. Thus, you go out to dinner and you do not consume the food that you have planned for: *" ... because any day a plan can come up and be like: well so today we're eating out, and of course that day you won't have dinner at home, you don't consume the products you had at home. And work, due to the amount of work, there might be weeks where you have tonnes of work and you get home and you're like..."*.

Abilities

Planning

At the planning stage, concerning the ability of consumers to conduct anti-food-waste behaviours, various are the factors identified as playing a role: (i) **presence or absence of a planning**, (ii) **budget**, (iii) **shopping habits**, and (iv) **capacity or lack of capacity to make more meals at home**.

Those families or persons not conducting any plan to organize the consumption and shopping tasks are highly described as more food wasters. Thus, being methodological in **planning** all the menus for the week are seen as essential to decrease food waste: *"A bit of discipline would be essential, because let's say... having a... a menu prepared, either daily or weekly, is ideal because that helps you when making the shopping list and buying according to the meals that you have"*. Thus, *"... planning and restructuring your time as you have in your life, give priority to this matter and take time from other things that are superfluous"*. Particularly, being capable to do a list of the meals the family is going to conduct the coming days is seen as the key issue to be planned.

Incorporating the **budget** aspect in the planning to undertake the shopping also emerged as a relevant aspect to consider that modifies the ability of a given family to be more anti-food-waste friendly. This fact is particularly related to the purchase of occasional whims, which afterwards is linked to more food waste being generated.

The shopping habits and, specifically, being capable of **shopping the more frequently** the possible is largely associated with preventing behaviours, as shown in the following quote: *"Actually in my house, stuff that goes bad and so..."*

it's difficult, you know, cause what we open is what we eat, and we always go shopping kind of weekly and that's already like a bit calculated, I mean, I already know what I'm going to eat every day at work and then we don't... it's pretty calculated".

Finally, there is large consensus among the participant of the six focus groups in pointing that it is always **more feasible to build and implement sound planning if the majority of meals occur at home.**

Preparing

At the provisioning stage, concerning the ability of consumers to conduct anti-food-waste behaviours, the main factor identified is to **adequate the quantity purchased to the needs of the household.** Being capable of adjusting the quantity of purchased food and the needs of the households is seen as a fundamental driver of the ability of a given consumer when provisioning to minimize the generation of food waste. This implies **being cautious with the offers** and promotions, choosing **adequate moments to go shopping**, and being capable to undertake high **frequencies of shopping.**

The ability to *"...learn to read properly the quantity you buy and the promotions, which goes faster than learning how to cook"* is repeatedly seen as relevant. This is indicated as relevant to evade the situation described as follows: *"Let's be honest, you go and everything is very cheap, 2 kilos, I buy these 2 kilos. That turns out super expensive! It is expensive because me, I'm alone, I take some time eating those 2 kilos and I end up discarding it, I prefer to arrive to my supermarket and I take 1 piece of this, 2 pieces of something else, two tomatoes, two peppers"*.

Also going shopping after lunch or breakfast, instead of when you are hungry, is described as a good strategy to avoid impulsive purchasing, which tends to match less the needs of the household. In the contrary, being aware of the final destiny of the food you bought last time is mentioned as a good starting point to **learn** to conduct adequate shopping and manage offers and promotions for our own interest.

Attempting at purchasing **less quantity more frequently** is also another behaviour highly associated with anti-food-waste actions. Despite the obvious difficulties for many people, as shown in the quote: *"I have a working day very intense of 10 hours daily without break and sure, I don't have time to go shopping, I only dispose a free day that is just Thursday and then sure I try so to supply a bit what is missing in home and sometimes yes I buy a little bit of excess because that day that I dedicate to the purchase"*. Purchase more frequently, although desirable for many people, is also recognized as difficult for a good deal of the population as a consequence of the time availability and the fact the buying small portions in some occasions might be more expensive. It should be kept in mind that the nature of some food products makes it very difficult for large shopping frequencies; this is particularly the case of fruits and vegetables.

Storing

At the storing stage, concerning the ability of consumers to conduct anti-food-waste behaviours, several are the factors identified as playing a role: (i) **quantity**, (ii) **date-labelling**, (iii) **oversight**, and (iv) **storing method**.

The **amount of leftover** or food product that have to be stored is an issue considered at this stage. Specifically if there is not much leftover generated, since some might see this as not worthy of keeping it. *"I ... have something leftover, but it's that little that they don't find it worth to keep it, like we talked before. Maybe it's just 2 potatoes and you think I'm not going to save this, it's not worth it, because I don't have enough to do anything with it, so that's what I wrote"*.

The abilities described around the issue of the date-labelling are multiple. Some mention that disregarding best-before and expiry dates they often **trust on their perception** of the given food product to eat or not eat it. *"In my case if I smell it and it smells well I still eat it, eh... And I always, with the smell you can see it pretty well, and with meat too, with meat I'm more intolerant, if it smells a little badly then no..."*. Also, **marking the dates** in the products is reported as an interesting strategy to enhance a more adequate storing management: *"I write them with a pen, when I open it I write it, until day X, with a marker on the container"*. Others mention making a list of the food stored at home: *" ... the advice I would give them is to make a list of the meals that eh... that expire later, right? So that they have food but which doesn't expire until next week"*.

Those products that remain at the **end of the fridge** or of the cupboard and you **forget** about them and thus letting them rotting is one of the most described situation in the six focus groups. This is particularly relevant for fruits and vegetables, but not only. This situation is often described in combination with opening two products of the same kind by mistake, for instance *"starting more than one brick of mild at the same time"*, or with the fact that your appetite prefers to choose other food products than those are about to expire.

The storing method and the ability to use the one most adjusted with the nature of the given leftover or food product is a relevant issue to prevent or reduce food waste. It is important learning **new ways of preserving** food than freezing: *"You also have to learn new ways of preserving food, not only in the freezer, but not everything has to be frozen and is fine frozen, there is food that shouldn't be frozen, so then... maybe there's stuff on the internet that you say well so let's use sugar, I can make jelly or whatever..."*. The need to know that certain products require certain storing mechanisms is also mentioned, as it is for instance the case of bananas. Also, labelling the food stored in the fridge is described as highly advisable to conduct a more adequate management. Vacuum packaging is generally seen as an interesting method to store.

Preparing

At the preparing stage, concerning the ability of consumers to conduct anti-food-waste behaviours, several are the factors identified as playing a role: (i) **skills and knowledge**, (ii) **quantity**, (iii) **serving portions**, and (v) **special occasions**.

Having **skills and access to knowledge about cooking** is largely repeated as a fundamental factor leading or preventing food waste throughout the focus groups. In particular, these skills and knowledge are perceived as essential to valorise leftovers: *"... the man took too much food on his plate and he didn't eat it and so he doesn't know what to do with it, he doesn't know he can make infinity of things, recycle it or for the next day or whatever, and the most comfortable thing for him is throwing it away"*. These skills and knowledge are even more required to be able to cook small amounts of leftovers, in order to be capable to see utility in them. It is largely shared that mothers and grandmothers are generally very good in doing numerous recipes with leftovers, such as *gazpacho*, *salmorejo*, omelettes, compote, jam or croquettes with stew pot meat.

These skills and knowledge are also fundamental to prepare recipes that are particularly adequate for food about to ripe, such as garlic soup or bread crumbs. Thus, *"... to take advantage with a food leftover you can make omelettes..."* or *"For example, what the colleague said before about the peel of oranges that you can use them with cognac, me too, eh, I like liquors, you can make something that can be better than Cointreau, Cointreau is very bitter, but cognac is sweet, so you make a nice cognac to have after food, no?"*.

These skills and knowledge also can contribute to consider parts of foods that you do not usually employ in your conventional recipes: *"Having more cooking skills sometimes helps you, because I often see things that I say I do not know what to do with this. I remember... it comes to my mind Maripina, she is the mother of a friend, who is always very... very good at this sort of things, recycling, and... and you grab the toes of chard, which are green and then fry them with the garlic so that then makes an omelette. And you think that you wouldn't have used it, for me it goes to waste and she does these recipes in a way that I say this is so good, right? and then if you also acquire resources or you learn ..."*. All this is essential to cook your meals with the food available.

The **quantity of the food cooked** is also seen as a relevant issue to consider the ability to reduce or generate food waste at the preparing stage. Thus the family habit to cook too much food is an attitude associated with food waste generation, as shown in the following quote: *"Oh, yes, and in my house we try to cook less. My house is always going for big amounts (explains the past and the future), it's always better to have more food than less food so that some is left, well I don't know, that's what used to be said, and now I always try to go for less, I mean if it's... If I don't know if putting this much pasta or this much paste it's like going for less and if you're still hungry, you're still hungry, well... you never end up hungry..."*. It is also mentioned that fact of cooking too large quantities because you went to buy food hungry and this makes to cook too large quantities of food. Another cause of cooking portions of food too large that was mentioned during the focus groups is recent reduction in the number of members that conforms the households. It is always difficult to change habits of any kind.

The lack of knowledge and skills do not relate uniquely to cooking, also **portioning** is very important to counteract food waste generation. **"The eye is bigger than the stomach"** syndrome makes often that too large portions are served during meals, what may lead to more food waste generation. In that situation it is suggested to serve small portions and repeat as many times as

necessary: *"When we cook, well my wife used to cook, what she likes is cooking, when making lunch and if you calculate and make a bit too much, well put a plate and if you want more, you take more, and if you don't want more... you save it, you keep it for the next day or for dinner, or if you want to freeze it, you freeze it, so, the best is to take a plate at sight, this is what you eat, if you want more, you take more"*.

Hosting guests at home because of a **special occasion** is also seen as a major cause of food waste generation at the preparation level. This is particularly described for Christmas dinners and lunches, when most of the people tend to cook more food than required. This is seen as a consequence of a historical habit, but also due to inappropriate calculation of portions.

"Even though you improve the Christmas dinners, at that moment you don't control the quantities of food, and we don't have, in my family we do have control, but there is always food leftover, and even if you keep it for the next day, often there is still food leftover and in the end it's thrown away"

"... dinner with guests is that you plan the menu because you have to feed someone and even so you're not capable of..., I mean, you are thinking that you want to indulge them with all and you buy tons of food more than thinking on the proper portion of food I need for the people we are"

An option to prevent food waste mentioned implies counteracting the traditional food-wasting nature of the special occasions and to organize a special occasion when certain quantities of food about to spoiled are identifies at home. That is, inviting friends to eat leftovers: *"... if you see that you have something that it's about to spoil you can invite friends to eat at home"*. Another option describe to reduce food waste is to that each guest takes his own Tupperware with the leftovers.

Consuming

At the consuming stage, concerning the ability of consumers to conduct anti-food-waste behaviours, two are the main factors identified as playing a role: (i) **repeating meals**, and (ii) **consumption skills**.

Repeating meals are described as one of the abilities to cultivate to prevent food waste, to eat all that you have bought: *"... for example when David brought up the tray of meat, then well of course if... what we said, if you have to eat 10 steaks in three days then you'll have to repeat meals for sure, therefore that's already a difficulty, an effort that you're going to have to make in order not to throw anything"*. Thus, a suggestion to counteract this it to eat leftover once a week: *"My sister usually says, one day per week there are leftovers, so when the best situation arrives, she asks what to do for lunch..?... And she says today we eat a-la-carte, everyone can take what he wants"*.

Certain consumption skills are also a crucial factor at the consuming stage leading or preventing food waste. Thus, the participants mentioned the ability of smelling to decide if a given food is safe eating is described as preventing food waste: *"In my case if I smell it and it smells good I still eat it"*. Also, the ability to chop inedible parts of the food to eat the rest is also described. In line with this, it

is also highlighted the attitude of eating what is about to expire instead of what you fancy more.

Also, the role of different appetites depending on the age of each member of the household, the occasional lack of appetite for a given food, and the existence of certain flavours and foods that are disliked are also seen as abilities that might lead to behaviours that generate more food waste.

Out-of-home

At the out-of-home stage, the main factors playing a role in the development of either anti-food waste behaviours or the contrary are the following: (i) **taste**, (ii) **price**, and (iii) **serving portions**.

Taste and the fact that the guest does not like some ingredients or the whole dish is mentioned as a common factor leading to food waste, as shown in the quote: *"Except that of aspect its good and then at time to taste it it has a sauce that you see you can't eat that sauce or it was something that you didn't count on"*. Also, tasting new dishes might be an open door to discover something that you do not like: *"I go out in a restaurant and you're going to pay X for a meal, and then you say: well I'm going to eat veal or chicken grilled another time round and round"*.

The price, and specifically the **relationship between price and the quality of the food**, is a relevant issue that determine certain anti-food waste or food-wasting attitudes. Thus, it is commonly shared the idea that it is more acceptable to waste cheap food also because it is of less quality: *"I consider more permissible to throw, in the canteen/dining room because it's supposed that the food it's not from such quality or don't have a preparation so... So elaborated as a restaurant"*.

"I think that.... that the daily menu, nobody is thinking on the possibility of taking it away to home, I mean, the first dish, the second and the desert, so... well if I leave some potatoes o half of the dessert... And when you go to a restaurant that the dish costs 15€, or when you are ordering a pizza and ... you leave something... I don't know if it is because of the quality of food or because it has cost you money but I think that you are more prone to ask to take it away..."

The **portions** that are served when out-of-home it is described by the participants in the workshops as a relevant factor to make sense some food-waste-related behaviours, as well as some anti-food-waste behaviours, as it is the case of the doggy bags.

In opposition to a conventional restaurant, in a canteen you have larger control over the portions that are served to you, as well as on the type of food that you will end up eating. While some claim that this allow you to have more control on the portions and variety of food you require and like; other participants see this as a source of food-waste practices, since you can serve as food as you want, and you are impressed by the large quantities of food available and you end up taking a bit of everything.

"I think that in the canteen more food is thrown away because in my case when I've eaten in canteens, which it was in university, you could serve yourself as much as you wanted. So then sometimes you say ooh I don't know if I'm very

hungry or not and as I've already paid for it, because usually you pay 7€ or whatever for what you want"

"It's also the fact of seeing so much food there and you don't know which one to pick... and you end up taking from one and another and you have the plate there and just by looking at it I... I already get like satisfied"

Another situation that was identified and should also be taken into account is the existence in some restaurant of discounts if the largest proportions are choosing, what often leads to more food waste being generated. In general, in Spain, it is claimed that is commonly appreciated the fact that a restaurant tends to serve large portions. *"In that bar, they serve such dishes that you can't even eat all"*.

In order to foster anti-food-waste behaviours, several suggestions emerges during the focus groups, such as to be thoughtful before ordering the menu; ordering *tapas* as you eat; request smaller portions or *tapas*; and sharing the menu with another person.

The case of the doggy bags

A food-waste preventing practices largely discussed during the focus groups was the doggy bags. Two main trends are identified as regards **doggy bags** adoption in Spain: despite (i) **the existence of some social prejudices that still prevail**, it is (ii) **becoming more and more common** and even fashionable in some domains, particularly in places of certain quality. The fact that going out-of-home is a social event and not only a feeding event, implies that other social issues play crucial role, such as the image you want to show to the others. Some participants mention that this is a common practices in other countries, such as Portugal or United States.

"... you're embarrassed of asking or... well it's that, sometimes a bit like the cliché or the protocol that when you go there it's like more acceptable not taking it away I don't know... I don't know that's how I see it, it's that simple"

"... it's not something that I actually see very common when I go out with people... asking for a Tupper is kind of peculiar, isn't it?"

"... the people also see it as an act of showing your social status, say... So if there are leftovers ..., it doesn't matter right?"

"The problem is that no one does it, no one else but you"

"Well look, maybe if you see someone else doing it and the waiter can manage well, you know, that he is not offended, and that the place and that, yeah, yes I would do it."

"...there're more and more restaurants that have this possibility"

"... and since it is a habit that has resurged, such this that it is not something for poor people or something..."

Intervention strategies

Interventions to reduce food waste have been proposed during the discussion, taking into account the different sectors that have influence at the global food waste. Notably, at a general level, participants have hinted that food waste is an issue that is gaining strength today and an incipient change of consciousness is perceived at society. This can be observed in the fact that many of the proposed actions relate to encourage or expand actions already performed nowadays.

Information and education

Overall, participants highlighted the importance of **promoting values** in the population and also best practices in shopping, cooking and food preservation to reduce food waste. In that sense, it is considered that the population should be informed, educated and formed so that it can develop a better performance to deal with food waste.

One of the most important interventions mentioned in most of the focus groups was the use of the **media to transmit values and promote best practices** in the use and preservation of aliments; in fact, it was mentioned that nowadays the media seem to promote precisely the opposite, what means that they contribute to promote a culture of consumerism and impulsiveness in purchasing, which is at the opposite end to the values necessary to reduce waste.

The most pointed media was television. Television is seen as a powerful tool to generate population trends and changing mind-sets. **On television, cookery shows** were frequently mentioned considering that this programs have a large audience at present and can help convey best practices regarding the use of the different parts of the food, food conservation, etc.. However, it is underlined that some cookery shows, by the type of cuisine they perform, are currently transmitting precisely the opposite message, for instance by employing only certain parts of the food in the cooking of the given meal.

"Television is what stuns us and, for example the other day I saw a show, a cooking show, we will make sole, pum, the next day the sole it's all sold in the market, so make a show, that serves to recycle food I think that would be very positive"

"Talks and conferences eh... The fact of promoting new ways of taking advantage of food, because there are a lot of products that can be used in more than one way, not only being cooked but also for other things... but I think that we don't have the mentality of using them to make other things. The pork in Spain we take advantage of most of it in the world bout outside of Spain for example it isn't used nearly anything of it, you know? It's a social issue at the end"

Moreover, it is also considered that **television advertisement** could be a good tool. Both specific advertisements on food waste and on world poverty, which mobilize reflection in the population and encourage people to value food and to be more aware of the consequences of their food behaviour. However, as stressed by one of the participants, the use of the media should be employed with a lot of caution since sometimes over-advertisement may generate the opposite effect, immunizing people against what they see.

Concerning the media, it is also mentioned the current importance of the **Internet** as a method of transmitting messages because of the viral capacity of the news posted on Facebook or other social networks, the dissemination of campaigns to collect signatures or the importance that today have the recipes on culinary blogs. All these elements can contribute to inform, raise awareness and promote good practices.

Another element frequently mentioned was the use of **educational** contexts such as speeches, tutored courses, workshops, etc. Within this group, special mention was made of the school as a vehicle for transmission of positive cultural values and practices, giving importance to education of children as a way to reduce waste.

"No, that's why I suggested it, to go to training activities and practices with experienced teaching, what happens is that a society can't have the knowledge if it's not taught at school, so we are a bit the product of the teaching that we get, ...?"

Finally, it was also noted the relevance of **social norms** informally transmitted by the people around us, neighbours, family, etc. Specifically, the importance of educating children through socialization in the family was highlighted, considering that it is not only the school that makes this educational function, but children imitate behaviours they see in their inner circle.

Actions by others

During the focus group, other sectors were mentioned as useful to undertake actions to reduce food waste. One sector that was repeatedly mentioned was **hospitality**. Two key proposals were mentioned recurrently. First, it was stated that restaurants should be more proactive in **encouraging people to take home the leftovers** of the dishes. Although many restaurants already have this option, in most cases only it is offered when the customer makes a claim. It is considered that, for example, if the boxes were visible or if it was directly the staff to conduct the suggestion to customers, this would help to spread the practice and stop the embarrassment or taboo of this practice.

"Well I don't know...many times it depends on the size of the portion and the thing that has happened to me sometimes is that I've left something that I had taken away but if the restaurant doesn't offer this possibility I'm quite ashamed and I don't ask for"

Secondly, it was indicated that it would be useful keep working to **reduce portion sizes**, although it is considered that this is a fairly widespread trend nowadays in restaurants compared to the past. Finally, other suggestions were mentioned, such as offering **different size options** in restaurants or having a standard size in the canteens were made.

Another area considered of relevance was the one of the **political sphere**. It was pointed that it would be necessary to implement laws to prevent customers to throw food, and to encourage the donation of food, although no concrete laws were specified. Also, the practice of lowering the price of products that are about to expire in supermarkets was seen as showing potential to reduce food waste.

Acceptability of wasting different food products or in different situations

In an assignment participants were asked to rank several product types (bread, pasta and rice; dairy; fast food; candy and cookies; meat and fish; vegetables and fruit) based on how acceptable they find it if the products are being discarded. We were primarily interested in their line of reasoning rather than the order of their products. Additionally, they were asked to rank several situations (dinner with family; dinner in restaurant; canteen; dinner with guests; unforeseen schedule) in which food waste can occur according to how acceptable they find it to dispose products in those situations.

Products

When being asked about what products they considered more or less acceptable to throw, in general participants placed products in the following order, with the first ones being those less acceptable and the last ones those more acceptable: (1) meat and fish, (2) fruits and vegetables, (3) dairy products, (4) bread, pasta and rice, (5) sweets and cookies, and finally (6) fast food.

One of the most relevant elements when assessing whether it is more or less acceptable to throw a product was **human health**, and specifically the consideration of the amount and nature of **nutrients** provided by the given food and how necessary they are to human nature. Thus, products considered essential and / or nutritive, such as fruits, vegetables, meat and fish, were placed in a lower position. However, it should be noted that the criteria to determine what essential food is was variable. By contrast, in general it was considered more acceptable to throw products like cookies or fast food because they comprise ingredients and nutrients not only dispensable but also harmful to health (e.g. fats, sugar ...).

"I don't know, because I really don't care since it doesn't have that much importance when getting vitamins and so for the body, I don't take it so much into account"

A second important element when considering if it is more or less acceptable to throw a product was the **expiration date and food safety**. It tends to be perceived as more acceptable to throw perishables short-lasting products since it is thought that the person has less time for reaction and consequently they are more difficult to control. Overall, it seems it is more acceptable to throw vegetables, fruit, meat or fish, because they are largely perishable, while biscuits and dried pasta are less acceptable. *"The fruit and vegetables in number 5 because well, because they're also more perishable they're also harder to control if they get spoiled or no"*. In line with this, it tends to be seen as more acceptable to throw those products that being expired may pose a greater health risk, such as fish or milk.

A third element that was pointed out was if the product is a **usual ingredient within the personal diet**. In this regard, it was noted as less acceptable to throw food when it is used regularly, understanding that consequently waste would also occur frequently, whereas if it is an occasionally eaten food, throwing it is perceived as an occasional event, and thus more acceptable.

"I've put in second place the, the pasta, rice and more, because usually lots of it done, right? And as they do, lots of it, then I feel guilty throw this amount that I've got, because that is done a lot of times..."

Another element is the **economic issue**. Some participants highlighted that they feel more bothersome wasting food when it has a higher price, as in case of meat and fish, rather than when it comes to a cheaper product, such as pasta. In the same way, participants expressed that **taste** was another relevant element to make sense their ranking of products. In this case, they felt more acceptable to waste a product when they do not like the taste that much. On the contrary, when the product is considered as tasteful, they do not feel angry throwing it.

Another element that emerged in the debate was the **environmental impact** associated with the products. Some people stated to be worried about the cost of producing products in terms of natural resources. They considered that is less acceptable to waste a produce such as meat because more natural resources are employed during its productions process. In line with this, some participants included their awareness for **animal welfare**. They claimed to less acceptable to waste a product when killing an animal is involved in its production.

"I've seen it more in the waste, in the sense that... If you kill an animal and... you kill an animal to throw it to the trash"

Finally, **social factors** were another element that emerged during the discussions. Some participants stressed that those products which the majority of the population do not have access to, and those that contain large amount of human work, should be considered more valuable and consequently their wastage is seen as less acceptable.

Situations

During the ranking of situations, participants ordered different situations depending on how acceptable it proved to be for them throwing out food at each one. Considering the average of the scores, in general participants showed the following order of preference from lowest to highest acceptability of food waste: (i) lunch or dinner at home, (ii) cantina / dining room, (iii) lunch or dinner with guests, (iv) restaurant and (v) unexpected events.

Regarding the explanatory factors when assessing the food waste of a situation, a very important factor was **control**, meaning the ability people think they have to control the different elements that can generate waste as the amount of food served, quality or taste of the product, the taste of diners, the tools available to store leftovers, etc. In situations where the person consider having less control over these elements, they tend to consider more acceptable to throw food. This factor was very important to consider less acceptable waste generated in meals at home as it is a daily activity that allows more planning and control because of the knowledge of the dinners, their tastes and food habits.

"Because you have plenty of control on what happens at your home, and even more it's with your family and your people I mean you perfectly know, you know them... What they're going to eat or what they aren't going to eat. So it's your problem if you throw it or not, it's no one else's"

On the other hand, this factor also explains that unexpected events are situations where it is considered more acceptable to throw food as it comes to situations where the person has less control.

Moreover, some people have commented that they felt worse throwing food in a cantina than in a restaurant because in the first situation you can control the amount of food you choose while in the restaurant there is some uncertainty about the served amount; however, it has also been said that the situation may be the reverse as often in cantinas quality of the food can be very low making it more acceptable to throw it out. In addition, on distinguishing between the cantina and the restaurant special mention has been done of the **economic factor**: as throwing food at a restaurant is a great expense, it is considered less acceptable.

"Then restaurant because it's because an economic issue, it's more expensive in a restaurant and it makes me angrier throwing it away. In a canteen the food is normally more affordable and then you say well if I don't like it nothing happens. It is bad to say it but this is the truth."

Regarding meals with guests, some people have indicated that they consider quite acceptable throw food because you cannot control the amount finally the guests are going to eat or if they will enjoy or not the food, plus another factor that has to do with lack of confidence with guests which implies a limitation to recover and eat leftovers the day after; however, others have noted that if guests are people nearby, it is easy to know their tastes and quantities, so the waste would not be justified.

Another interesting factor to note has been the **cultural habit of "filling the table"** when a special occasion is celebrated: in this case, people has the habit of entertain guests cooking more food than necessary, so it is considered more acceptable to throw.

"Because normally, when you have guests, you make an excess because you try to serve the best, you spend a lot and normally at your house it would be less".

What do they waste?

During the focus groups participants use specific food produces to explain their behaviour related to wasting or preventing food waste. The table shows the type of food participants mentioned that were more often wasted and some of the potential reasons and the type of food which they were suggesting ways of preventing food waste.

Table 3: Overview of what participants waste

Probability to be wasted	Probability to be prevented
<ul style="list-style-type: none"> • Vegetables: salad in winter, tomatoes (shelf life, storing method), peppers, onions, lettuce, celery • Fruit: oranges, pears, apples, bananas • Dairy: yogurts (expiry date), Milk (more risky than yogurts with expiry dates/ not regular drunk/just used for desserts), rice milk (short shelf life) • Eggs • Meat (buy more than one tray at the supermarket/ if it is in poor condition) <ul style="list-style-type: none"> ○ Cold meat (vacuum packed when opened / expiry dates, do not assume risk) ○ Tofu (when it's opened.. 4-5 days/ big packaging vs offers/ you buy more because they're healthy) • Cooked food • Cans, juices • Muffins • Bread • Out of home: potatoes, piece of bread, sauces, steak... 	<ul style="list-style-type: none"> • Bread (freeze, garlic soup, gazpacho) • Milk (recipes, desserts) • Tomatoes (cook and freeze) • Different recipes and cooking styles (casseroles) • Fruit salads • Compotes • Soups • Omelettes • Ecologic vegetables... use all parts • Tapas • Traditional bread (lasts longer)

6.3 Conclusions

The implementation and analysis of the focus groups conducted in Spain have provided both researchers and participants with interesting insights about food waste prevention. In general, the flow of the discussion was stimulating in all the focus groups. During almost two hours and half all participants were able to expose their opinions openly, while taking part in semi-opened discussions and organized activities to stimulate discussion and participation of all members. All participants show their opinions freely and in a relax environment; and at the end of the process all of them showed gratitude for their participation. They particularly mentioned the relevance of the topic and the fact that they found the discussion interesting and relevant to their everyday life. Those who realised, during the photographs exercise and the latter discussions, that they were throwing away more food than they expected, were grateful about the

opportunity provided to them of thinking carefully on their daily actions and ways to amend them to minimized food waste generations at their households. Also, for those behaving as a non-waster citizen the conversation was equally interesting as they had the chance to share their tricks and strategies to prevent food waste and were enhanced on their awareness.

Despite the initial reluctance of participants to admit that they sometimes throw away food, which was sorted out through the initial activity of sharing individuals photographs made at home, all participants showed higher concern about the topic of food waste. A part from their own point of view and their awareness on food waste issues, the discussion also allowed them to talk about the features of other people who can be more or less concerned about the problem.

Different elements emerged as playing a role as drivers that build awareness among people. The education was identified as the main driver. However, it was also stated that it is difficult to distinguish education and personal experience, since when meaning education not only formal education was kept in mind. It was also indicated that there are particular groups of people that tend to be more concern, namely women and old people. The role of the current accelerated lifestyles was also pointed as exerting a significant negative influence on people's awareness of the importance of taking action against food waste, as it was frequently mentioned the lack of time for this. Nonetheless, it was a general idea the confirmation of the fact that the concern on this topic is rapidly increasing in the last years. In line with this, participants mentioned the increasing environmental-friendly lifestyles jointly with rising awareness for moral and economic issues as favouring turning points. Thus, the economic crisis, starting in 2008 is still patent nowadays, and is a central topic employed to make sense the increasing awareness by the participants. No matter that someone has not suffered the direct consequences of the crisis, the message has won a strong presence in the media and citizens lives by making more evident food insecurity and poverty situations in general. It should be stressed, however, that the linkage between food insecurity and taking actions for food waste prevention is not straight; since it is still very important the role of food consumption as a social activity to show the social class to which every citizen belongs to or wants to belong to. In larger segments of society, still larger levels of consumption and opulence are identified as belonging to a high social class.

In general, people expressed feelings of blaming themselves when wasting food. However, in some occasions the idea that this is because of the accelerated lifestyle that we cannot avoid being involved in temper these blaming feelings. This fact could have been masquerading the relevance of the issue of food waste. The multidimensional nature of the causes of undertaking food wasting behaviours is accepted. Thus imply that to prevent food waste changing and actions could have to be taken in domains not generally associated with the food waste domain.

Different predictors of food waste taking place at the consumer level were identified at the focus groups. But not all of them are specific and located. Other macro level reasons have been discussed such as consumerism society trends in contrast with the post-war or famine past experiences and the influence of the education and information received during childhood. On that sense the

transmission of good values from parents to children is seen as a possible motivator to prevent food waste, as it equally is from kids and the parents.

Despite the lack of agreement on the characteristics that define a person who wastes food in contraposition with a person who do not waste food; the main elements that were identified as playing key roles were the financial situation of the person or the family, the age (younger vs older), the time available to food-related activities, the gender (women vs men), the awareness of food waste, the household composition, planning skills, the food and cooking sensitivity, different personal traits, the lifestyle, the social class, and the education received at home and at school.

Most of the motivators discussed on the focus groups were associated with food waste generation rather than with prevention. The most cited one was the convenience of consumers in different situations, as for example the laziness to cook after a stressful day at work, or the laziness to go shopping more frequently and therefore buy more food just in case is needed. The value of food on peoples' life could influence by mean of poor cooking skills, the boredom of repeating meals or on the contrary seeing food as a pleasure that has to be satisfied with a diversity of options. Accelerated work and social life are seen as the causes of part of the consumers' food waste as there is not enough time to devote to food issues. Taste and appearance of food seem to have an impact on consumers' willingness to eat leftovers and it is also used as a precautionary principle with certain types of food (e.g. meat and milk), and some people prefer to throw away this food if they are not sure of their quality.

Budget restriction and the crisis were discussed as possible motivations to prevent food waste and use most of the food consumers have at home. But there is no evidence whether this effect would remain once the financial constrictions and the visualization of the food poverty will dissipate. It is not clear whether they would still be aware of the problem or their wasteful behaviour would appear again, as it is for instance occurring with the use of private transport that is quickly recovering after the worse periods of the crisis are being surmounted by the majority of the Spanish population. As it is explained in the results section, it is widely spread the idea that associates anti-food-waste behaviours to the post-war generations, that is, behaviours that are conducted only in periods of scarcity as it took place after the Spanish Civil War. It is a frequently employed a parallelism between the pots-Civil War and the recent economic crisis. The challenge thus for nowadays is to reinforce this new sensitivities and disassociate them from contingent periods of scarcity and linked them to a new morality.

Having children at home, regardless if they are kids or adults, has emerged in different parts of the debate. On the one hand, it could be challenging trying to satisfy the diversity and variability of preferences, their appetite or their whims. But on the other, having children could represent an inflection point of life and parents would use clear-the-plate and similar strategies as a way of teaching socially-aware and moral values.

Interesting reasoning came up when asking participants to rank different products and situations of hypothetically wasting situations according to their judgment where more or less acceptable. Participants based their judgements to prioritize

products on the healthiness of the produce, the shelf life or food safety, the consuming frequency, the economic aspect, the environmental impact, animal welfare and other moral factors. With regard to different situations where waste could happen, they based their acceptability in their control of the situation, the more control the less acceptable; economic aspects, in restaurants food is more expensive than in canteens therefore is less acceptable; or based in cultural habits such as “filling the table” when you have a guests at home.

There was not a single behaviour or problem identified but a combination of habits, opportunities and abilities what is seen as increasing the likelihood of consumers to throw away food, which they had previously acquired to consume. When the barriers have been described by the participants they usually expressed a situation that involves many stages at the same time or even different stakeholders (namely waiters, supermarkets, governments, other members of the family). Different opportunities and abilities to prevent or to increase the probability of wasting food have emerged from the debates along all the stages related to food: planning, storing, cooking, consuming, etc. But, all in all, it could be said that opportunities have been identified more as a predictors of food waste behaviours and on the other hand different abilities have been proposed to prevent the generation of food waste.

External factors leading food-wasting behaviours could be modern life of living in a hurry, with particular relevance for the working life, the unrealistic planning of food purchasing and menus, a diversity of unexpected events such as last minute friends invitation to a diner or work related incidentals, having no time to buy or go shopping once in a while for long periods of time, the family specially kids appetite or fanciful behaviours. Moreover all the groups agreed on the difficulties encountered with the available packaging sizes on the stores and the consumption at different household sizes. The quantity offered on the different packaging options is closely related with the promotions and offers of the supermarkets that may alter the initial purchase preference of consumers who end up buying more than they needed.

Furthermore, certain inappropriate abilities, according to the participants, were also associated with the food waste volumes generated, namely: the lack of knowledge or practice on planning the menus for the whole week; the possibilities or lack of knowledge of tacking advantage of a little amount of leftovers; different inconvenient food habits, such as go shopping or cooking with hunger or “the eye is bigger than the stomach” syndrome while serving; forgetting food at the end of the fridge, especially the perishables as fruit and vegetables; and the adaptation to particular circumstances of having guests at home or readjustments in the family members living at home.

Participants not only mentioned the barriers that lead to food waste, in their opinion, but they were very proactive suggesting numerous solutions during all the focus groups. Even proposing many detailed recipes to prevent food waste. The solutions are mainly new abilities for consumers, some opportunities and also different interventions that other stakeholders could do to help.

Participants suggested that consumers should plan tidily their meals and purchases and incorporate the budget to it. Also they propose to be cautious with

offers and promotions and buy adequate quantities according to the real needs of the household. Shopping habits may also help if selected the adequate moment to go shopping and buy less quantity of food produces more frequently. Regarding dates labelling they suggested trusting on one-self-perception to know if a product is still edible and to mark dates in the storage food. Education and acquiring new skills have a great importance to learn new ways of preserving food, cooking better, learning new recipes for leftovers and knowing the correct quantities of ingredients for each dish. To fight the "Eye bigger than the mouth" syndrome, they suggest serving small portions and repeating as much as you still hunger. And finally, to prevent throwing away leftovers it has been proposed to get used of eating leftovers once a week or to organize special occasions inviting friends to eat leftovers or give them to take away the food left during special occasions.

It was also stressed that many others stakeholders could also have an important role to prevent consumers' food waste rather than just consumers actions. Among all the possibilities participants mentioned the influence of the media, particularly television and internet, schools and the hospitality sector. The importance of information and education to promote values have been suggested during the focus groups. Thus, media that is seen nowadays as an influencer of the consumerism culture, has a great powerful to transmit prevention values and best practices either with show cookings or specific advertisements. Nowadays it is acknowledged the influence of Internet, especially among the youth. So do the participants who proposed the use of social networks, signatures collections campaigns or vide tutorials to spread the anti-food-waste behaviours. Educational contexts such as schools or family circles are also seen to construct and transmit good values to future generations.

Consumers face different difficulties out-of-home to not to generate food waste. During the focus groups three main aspects were identified that could lead to the generation of food waste: the taste of the food, the price and the serving portions. Whilst a wider variability on participants' concerning was found about the volumes of waste generated out-of-home, it still bother them. The influence of the social pressure in this contexts has emerged as the main problem. Thus, in case of having leftovers, a great part of the participants would not ask for the doggy bag due to their embarrassment of others opinion. However, if this actions should be promoted by the restaurants and they saw people doing it, then they would ask for it. In Spain the use of doggy bag in restaurant is not extended but is more and more common recently. So that, it seems as a good intervention to promote since consumers seem likely to adopt this actions.

All in all, it is obvious that consumers are sensitized with the problem of food waste. However, it is also spread the certain feeling of incapability to perform more anti-food-waste actions due to the accelerated and sometimes out of control lifestyle they carry on. They are an interested and receptive audience to prevent food waste. Hence, providing to them appropriate information, offering to them new opportunities and tools would be suggested to stimulate favourable changes.

Food waste is experiencing a great momentum. Many suggestions and programs from the institutions and other stakeholders are being provided and directed to them, but it is important to understand peoples' awareness, feelings, barriers and

strategies to prevent food waste and increase the incidence of these suggestions and programs. In this research we have summarized participants' difficulties to prevent food waste and an interesting battery of initiatives that would have their acceptance to reduce the amount of food waste generated in-home and out of home.

7 Country report: Germany

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7.1 Introduction

In recent years, both political debates and scientific research on the topic of food waste have not only increased on the global and European level, but also within Germany (WWF, 2015: 15). Some of the most important studies on food waste in Germany are Kranert et. al. (2012, commissioned by the Federal ministry and carried out by the University of Stuttgart), University of Applied Sciences Münster (2012, supported by Land NRW) and Peter et al. (2013).

The most recent study about the level of food waste in Germany was published in 2015 by the WWF Germany (WWF, 2015). Based on a meta-analysis of all current research and data about the topic, this study concludes that in Germany 18.38 million tons of food are wasted per year. 9.9 million tons of these is "avoidable waste"¹. According to latest research, the largest share of this waste is caused at the end consumer level (39 %). Food loss during processing and distribution each sum up to 14 %; the large-scale consumption sector has a share of 19 % (WWF, 2015: 9). The WWF-study presents a broader picture of the current knowledge about the different dimensions of food waste in Germany. It acknowledges, however, both the sometimes insecure or missing data, as well as the differences in measurement methods (WWF, 2015: 12 and 40).

One of the reasons for the increasing public awareness of the topic of food waste in Germany might be the documentary "Taste the Waste" (2011) which illustrates causes of food waste at different stages of the value chain from production (farmer) level to the end consumer. The documentary was followed by an increased coverage of the topic of food waste in radio, TV and newspaper, was accompanied by various public discussions and events and arguably contributed to reaching a very broad audience in Germany (Kranert, 2012: 1). Even the Federal Association of German food retailers (BVLH) ascribes the movie an important role in putting the topic of food waste on the public agenda (federal association of German food retailers 2012).

Since then, several civil society initiatives and networks have been established and are constantly growing. The online platform "foodsharing", for instance, was initiated immediately after the release of "Taste the waste". It enables households to share food leftovers and helps to organise the pick-up of unsold food products from supermarkets. Around 2,700 businesses are currently cooperating on the platform and the initiative counts almost 18,000 individual members (foodsharing.de). While foodsharing is a relatively young initiative, the food bank association "Bundesverband deutscher Tafeln" is organising the collection of food leftovers (e.g. from supermarkets, restaurants etc.) already since 1993. In more than 2,100 local "stores" across Germany, this association is preparing and handing-out meals free of charge for approximately 1.5 million people per day (Bundesverband deutscher Tafeln e.V., 2016).

¹ Avoidable food waste is defined as food waste which is not generated due to necessary food processing stages, e.g. cooking, cleaning, cutting (WWF 2015: 7).

Also the German government is making an effort to reduce the level of food waste. In 2012, the federal ministry of food and agriculture implemented the campaign "Too good for the bin" ("Zu gut für die Tonne"). The campaign aims at connecting different organisations working on the topic of food waste, providing information on an internet platform and giving practical support to consumers, e.g. a smartphone application that provides leftover recipes (Bundesministerium für Ernährung und Landwirtschaft, 2016).

In Germany, the level of food prices is quite low. While in 2012 the level of food prices in Germany was with 100.3 still around the average of the EU15² countries (100=average EU15), the index has been decreasing constantly and has fallen to 96.7 (Eurostat, 2016). The food retail market is very concentrated in Germany: the four biggest food retail companies are currently holding over 75% of total sales (Bundeskartellamt, 2014). German households spend on average 10.13 % of their income on food products (destatis, n.d.). Comparing this to the rest of Europe, only Switzerland and the United Kingdom have a lower share.

At the same time, awareness of sustainable food and nutrition is growing in Germany. The demand for regional and organic products is constantly increasing; in a recent survey by the federal ministry of food and agriculture approximately 1/4 of the respondents indicated that they frequently or exclusively consume organic products (bmel, n.d.). In 2015, the first food policy council was founded in Cologne, Germany. It aims at developing a sustainable and ecological food system for the region. While awareness for sustainable food and nutrition in general, thus, appears to be growing among German consumers and there are several studies confirming this trend, so far - apart from the above-mentioned meta-study done by WWF - there is no study analysing consumer awareness with regard to food waste.

In general there appears to be high awareness for both sustainability topics and food waste in Germany. Chapter 7.2.1 will in the following outline the various factors that influence awareness and feelings towards food waste. Additionally, it will be discussed how participants perceived the topic of food waste in society in general and what are the participants' stereotypes of wasteful and non-wasteful consumers.

In chapter 7.2.2 food waste will be discussed in the day-to-day context of the participants. This chapter discusses the various considerations of the participants about what influences their motivation to prevent food waste.

This will be followed by the opportunities or external factors that, according to the focus group participants, lead to food waste and over which the participants feel to have limited direct influence. Accordingly, the following chapter will outline the various internal factors or abilities consumers need to have in order to avoid food

² EU15 countries are called the member countries of the European Union before the 2004 enlargement. It includes Belgium, Denmark, Germany, Finland, France, Greece, Great Britain, Italy, Ireland, Luxemburg, Netherlands, Austria, Portugal, Sweden und Spain.

waste. In contrary to the opportunities, the abilities are, in the view of the focus group participants, under the direct influence of the consumers.

In order to assess which waste streams are most likely to be reduced, the chapter about 'acceptability of wasting different food products or in different situations' will discuss how participants ranked different product categories and situations in which food waste can occur and the underlying factors that influenced these rankings.

Finally, this report will analyse what are, according to the focus group participants, good intervention strategies to tackle food waste on household level in Germany.

7.2 Results

7.2.1 How do people think about food waste?

Awareness

In general, the participants of the focus groups appeared to be **well aware** of issues related to social and environmental sustainability in the food value chain.

"There is a trend towards sustainability and dealing with this topic. Where does it [the product] come from? Where was it grown? What can I do with it? Which parts can you make use of?"

Both ecological and social problems of food production and consumption, such as overproduction in agriculture, consequences of industrial mass farming, food speculation, and low farmers income were mentioned by the participants. Many participants stated that they appreciate local and organic products.

Similarly, many participants reported that they had already heard of the topic of food waste and that their awareness had been raised through different channels.

"There was such an awareness campaign a few years ago with posters everywhere showing that every eighth food product is thrown away. I found them great and really interesting. I still have lived at home in this time, but it made me think about it. 'Are we doing that or not? Do we throw away a relatively large amount of food or just a little?'"

Apart from coming across this information in media and in public campaigns, according to several participants the level of awareness derives mainly from the attitudes and education one has received from the closer family (i.e. parents, siblings, grand-parents). Several participants reported that in particular their **parents had passed on their conscious attitude** towards food waste on their children and that their parents had always kept an eye on preventing food waste. Another important awareness-raising factor mentioned was media reports. Participants reported about media, in particular television, as key tool to gain information about sustainability topics and food waste.

Discussing the awareness and feelings of their **friends and wider family**, participants' replies differed widely from very conscious, non-wasting to indifferent and wasteful friends and family.

"Also my parents-in-law. There I sometimes have to turn around and just cannot watch. There is never a completely empty jar. It is very horrible, if people always leave a rest. Like in principle. There is no consciousness on food. There is so much thrown away. {...} Thank God, I know much more people, who treat food responsibly."

Thus, most participants felt that their close family and their up-bringing had had most effect on the development of their own awareness and consciousness regarding food waste. Only few participants felt otherwise pressured to pay more attention to the topic of food waste, and, in contrast, a wish for more pressure was even expressed.

"Do you otherwise feel under pressure?" GE61: "Far too little. Far too little. There is far too little being said about it and/No. In my view it's swept under the table."

Sentiments

Closely connected to their high level of awareness, most participants mentioned different negative feelings when being asked about how they feel when having to dispose food. These can be separated in two types: firstly, the **frustration** about the monetary value of the food ("throwing money into the trash can").

"I don't feel bad about it but it annoys for a short time. Every time I throw something in the trash, I feel like I'm throwing away a 5 EUR note."

Secondly, feelings of **bad conscience and guilt** to throw away food were mentioned. Discussing these feelings of guilt, participants identified various **factors that influence their negative feelings: a) The amount of food thrown away** ("If it is actually only a small meal leftover I don't have such a bad conscience"), **b) environmental concerns and c) moral concerns**.

Regarding **environmental concerns**, several participants stated that they have particularly bad feelings about throwing away food products whose production and transport had larger environmental or climate effects (e.g., dairy products, exotic and/or non-seasonal fruits and vegetables).

"Currently I perceive it from my circle of friends and family who are forgoing animal products in order to reduce CO2 emissions. And to think about the amount of land acreage needed by a cow before it's ready for slaughter. It would be good to incorporate all these information and knowledge in food consumption decisions."

Moral concerns regarding food waste were related, firstly, to social disparities and inequality (throwing away food while others are starving). This was considered both on a national (e.g., homeless people that go to food banks and/or soup kitchens) and on a global level (poverty in developing countries).

"I know that the more bread, noodles, and rice we throw away, the more expensive they become. This way, the Third World cannot feed itself because they cannot pay the prices. Especially prices of wheat and noodles."

Secondly, the respect for the animal that had to die to produce meat products played an important role for many participants.

"I also consider the moral factor that the animal has to die so that I can eat the piece of meat. And if it's not eaten, then it gives me a bad feeling in my stomach. To think that the animal is slaughtered and then not eaten gives me a strange feeling."

Thirdly, the fact that others (in particular farmers) had to work hard to produce these food products came up as well. Regarding the respect for the farmers' labour, participants also oftentimes discussed that farmers are not paid well-enough for their products and that food products are in general too cheap in Germany.

In general, even though participants agreed on these various reasons for having a bad conscience when throwing away food products, they also frequently stated that these **negative feelings are usually rather short-term**, i.e. only during the actual act of throwing something away.

"It's not that you feel guilty about it for hours. You take it and go to the trash can and during that time you have a bad conscience. But as soon as the lid is closed, it is ok again, I think. It is not like you lie in bed in the evening and still say 'gosh, why did I throw it away?'"

Additionally, many participants stated that their feelings of guilt and bad conscience would usually remain limited because they **considered their household's food waste very little and irrelevant** compared to the large amounts of food waste occurring in supermarkets and canteens. Talking about food waste in the retail sector, one participant concluded:

"I find that really sad. To be honest, as a result of this I throw away any leftovers at home, including those from my children, with a very clear conscience."

Thoughts and beliefs

Discussing the wider societal context in which food waste may occur, two main points of discussion appeared in all six focus groups. Firstly, **Germany is perceived as a rich, developed country where food products are very cheap**.

"One reason for the fact that so much is thrown away, is actually that so many food products are so cheap. Not only meat, I know, I am vegetarian {...} but it is actually, what comes from mass production, it is really cheap. There one rather says 'Well, it doesn't cost so much, then I rather throw it away'. So I think that is in the mind, that foods that are cheap don't get attention in that context."

"I think in Germany one pays really little for food products."

The low prices for food products were often mentioned as a reason for over-consumption and, in the end, food waste:

"I believe that our problem lies in consumption. We are being over-satisfied with everything and that is why we are throwing around things just like that. Because we can."

"We are a consumption-spoiled country."

Secondly, **cultural issues and social norms about what it means to be a good provider** play - according to the focus groups - an essential role in determining the level of food waste in a society. For instance, when cooking for one's family one rather wants to provide too much than too little to make sure no one is left hungry. When having guests for dinner this reasoning appears to be even more relevant. In all three cases the person providing/ preparing the food, may, thus, tend to prepare too much and will thereby most likely also produce food waste in the end.

"Yes, we cook a lot of food most of the times, I have never experienced cooking too little."

"It's interesting that everybody says that you cook too much as opposed to too little. The factor of embarrassment about having too little seems to be widely spread. I agree. It's better to prepare more and you can eat it later even though you usually don't do it. Nevertheless that's better than somebody saying 'I am still hungry'."

Stereotypes about who waste and who do not

During the focus groups several stereotypes about the characteristics of people that are more or less likely to waste food were mentioned. Discussing the demographics of (non-) wasteful households, **the main stereotype focused on the financial situation: poorer households are perceived as wasting less food than rich households**. The most frequently stated reason for this being that **food products are valued more if their provisioning takes up a bigger share of the total household budget**. Rich households, on the contrary, are perceived to not worry about food waste because they can afford to buy as many new food products as they like.

"Maybe if someone is poorer and doesn't have a lot of money, I can very well imagine that they appreciate it more and eat the leftovers. I know for example from my grandparents, they have not been poor but normal. And then there was not much. And therefore they ate nearly everything. What I wouldn't touch anymore, for example bones or bacon. What young people don't like to eat. And for rich people I don't know, they may eat something different. So I would say that people who are poorer or have less financial opportunities prefer to use everything or use it better."

Another factor regularly mentioned relates to **differences between generations**. Participants shared their perception of the post-war generation that grew up not having enough to eat. **Older generations are believed to value**

food much more than younger generations who grew up in abundance and are little aware of their own wasteful behaviour.

*"We throw away a lot of things today that can actually be used again and therein lies a big difference between us and the generation before us that recycled a lot. **We are a throwing away society.**"*

"So my parents in any case. They live really conscious. They also have nearly nothing in the fridge. They only have few things in there – always only what they really need. So they don't buy huge amounts, but really consciously. It may be because they are older. They are another generation."

While few participants mentioned **gender differences** (e.g. *"I think a woman rather feels bad and thinks about the waste of money"*), these comments remained solitary and were sometimes also contradictory. Thus, there appear to be no clear stereotypes regarding gender differences in the German focus groups. When being asked which kind of person manages to not have any food waste, the most frequent responses were that it has to be a highly disciplined, well-organized and conscious person. Additionally, it was often mentioned that this would usually be a person who wants to live sustainably and "ecologically aware".

7.2.2 Food waste in a day-to-day context

The following chapter will outline the main drivers that would - according to the participants of the German focus groups - generate or prevent food waste on household level. While the previous chapter focused on the more abstract feelings and beliefs that the participants had about food waste, the following part will summarise how participants discussed their day-to-day behaviour as consumers.

Motivation

Participants identified various factors that would influence their motivation to avoid food waste. The drivers that were most frequently mentioned here related to the taste and quality of food products, health and nutritional aspects, food prices and to the wish to have a diverse diet (variety).

Taste and quality

In the German focus groups **taste and quality of food products and meals were among the most frequently mentioned drivers leading to or preventing food waste**. This driver was mainly related to the stages of provisioning and preparing.

Among the main reasons listed at the provisioning-stage was, firstly, that products are of less quality and/or taste differently than expected:

"There are fruits that you buy fresh and try it and it really doesn't taste. Because it is harvested too green."

"Pepper, ok, I could have used it, but {...} this one I threw away rightly, because it was really disgusting."

Secondly, another main reason for many participants appeared to be that products spoil faster than expected. In particular fruits were regularly mentioned here.

"Because it can always happen that one buys something that was already spoiling."

"Yes, these are simply chips. The bag was open the whole time and they became soft, I think everyone once made this experience."

At the stage of preparing meals, participants frequently mentioned that a lack of cooking skills - resulting in a non-tasty meal - would lead to food waste. Related to cooking skills, participants also discussed that their wish to try to cook something new and/ or exotic would regularly result in a non-tasty meal that they would then dispose rather than eat.

Several participants mentioned that - as a consumer - avoiding bad taste and quality of food products and meals entirely and, thus, living completely without food waste would only be possible if one does not try any new things (neither preparing in-home, nor going to unknown restaurants/ canteens) and only acquires one's food products at stores or markets where one knows well what quality and taste to expect.

"I would only eat what I know I like."

At the out-of-home stage, a frequently mentioned example when food waste would still occur was that meals in canteens - according to the participants - oftentimes look tastier than they actually are.

"I think it's difficult in the canteen. It was especially difficult for me when the food looked better than it tasted."

Health issues

When being asked for situations in which it would be most acceptable to have food waste, most participants stated perished/ spoiled food first and highlighted the potential negative health effects. In particular meals including fish, meat, mushrooms or spinach were regularly mentioned as examples of food products that should not be "re-cycled" for health reasons and where it would be acceptable to have food waste.

"Speaking about fish and meat, I thought about the danger for health."

"It is always in my mind spinach / that you shouldn't warm it up because there are some toxic things then. So there are things that you shouldn't warm up again."

Several participants also reported that - **when being unsure whether certain food products are still edible - they would rather dispose them, than taste them and run the risk of getting any health problems.**

"And there is still a mouthful of orange juice in it. It already stood there in the morning and when I came home in the evening or afternoon it was still standing there, then I disposed it, because I was simply afraid that it wasn't so good anymore. So I poured it away."

Similarly, participants also considered it justified throwing away food when one is unsure whether one might have an allergy to it.

"Or he caught something that he is allergic to and then tasted it and noticed "oh, better away with it" and then disposed the leftovers."

Healthy diet

Oftentimes also the nutritional aspect was highlighted as a key factor influencing both the decision whether to dispose food and the feelings one has towards disposing these products. For most participants unhealthy products, such as fast food and candies, are acceptable food waste.

"Fast food I can throw away easily, because it is not healthy. I like to eat it sometimes, but if there are leftovers I don't have a bad conscience."

"And fast food you can throw away. It is like it doesn't have value."

"Sweets are second last on my list because they are not healthy and can therefore be thrown away. They also contain nothing but sugar."

Similarly, in order to follow a healthy diet and not gain weight, some participants stated that they think it is better to have leftovers than to eat more than one's hunger requires.

"I would also not want to expect that from my daughter. I would like to teach her not to eat more than she feels to. Otherwise this will end in gaining weight. I would therefore say that, 'If you are satisfied, then you should stop eating.'"

Price

With regard to the price of food products, a very interesting argument made in all six focus groups was that **food products are too cheap in Germany** and not in relation to the actual production costs. Many participants compared the German case to France, where - according to participants - food products are more expensive, but also of better quality.

"I think in Germany one pays really little for foods."

"Yes, in France it is completely different. To buy foods of high quality, expensive food."

"Clearly a lot is produced but it's all too cheap. Other countries have of course a different relationship if you were to compare what a French or Italian spends for food in relation to his/her salary. Aldi has made Germany totally different."

Along the same argumentation, several participants admit that they have **little appreciation for food products of less economic value**, these products are thrown away with a less guilty conscience and on a more regular base. Expensive

and exotic food products, on the other hand, are appreciated more and less likely to end up as food waste.

"One reason for the fact that so much is thrown away, is actually, that so many food products are so cheap. Not only meat {...} I know, I am vegetarian {...} but it is actually, what comes from mass production, it is really cheap. There one rather says 'Well, it doesn't cost so much, then I rather throw it away'. So I think that is in the mind {...} that food products that are cheap don't get attention in that context."

"I would find it bad for exotic things, for rare things, too, because it is about the money. For the exotic things, it comes from far away. And I buy it with awareness and usually never throw it away. It just doesn't happen."

Another stated reason why price is a relevant driver leading to food waste relates to **products that are on offer in the supermarkets**. E.g. participants state that they are often tempted to buy cheaper products that are already close to the best before date, but then they do not manage to consume the products on time.

"That reminds me of one more thing about the bakery "Merzenich". Two to three years ago, "Merzenich" would sell things at half the price after 6 pm. There was a queue. As I passed by I joined the queue and bought bread and cake enough for the whole week. But we only ate them for three days. One still felt like one had saved money and gotten something special."

Finally, in all six focus groups the price of food products was also linked to the **quantities offered in stores**. Here participants highlighted that - in particular in supermarkets - oftentimes larger packages would be comparatively cheaper, which would tempt consumers to purchase larger quantities even when knowing that some of it will not be used and end up as food waste.

Participants made several suggestions how the challenge of the *price* as a driver leading to food waste can be overcome. Interestingly, several participants suggested that **food products should be more expensive** in order to increase the appreciation for them. At the same time, participants however doubted that the average German consumer would be willing to pay adequate prices for food products after having been used to the cheaper offers.

"I think the willingness to spend money for it, is very different too. In Germany people rather buy engine oil of good quality instead of cooking oil."

Finally, most participants mentioned that for them **saving money is a main motivation to prevent food waste**.

"The only thing that annoys me is the money that I spent on it. If I am to throw away something that costs EUR 3.80, then I can as well throw that money on the streets."

The financial aspect appeared to be particularly relevant at the out-of-home stage. Many participants thought it to be easier not to produce food waste when eating out of home (comparing to the same challenge in the household) because, firstly, when eating out-of-home one was directly confronted with the precise costs of the meal and, thus, more motivated to finish the plate. Secondly,

according to the participants, eating in a restaurant was usually more expensive than preparing a similar meal at home. Thirdly, many participants considered meals in restaurants as a special treat that they would not want to waste.

Variety

Several participants mentioned that the **wish to eat diversified meals** and that the fact that one does not want to eat the same meal two days in a row might lead to more un-used leftovers and, thus, to more food waste. **However, the topic of variety appeared to be of less relevance in the German focus groups compared to, for instance, quantity, taste and price and was mentioned less often.**

"I don't belong to the people who like to eat the same meal two days in a row, for example. Like I said I have bad working times and when I come home, I look forward to getting something to eat. At ours it is often the case that my husband then cooks. And if he gives me the same meal two days in a row, I think I would throw up. I think I would be too unbalanced."

The driver variety was mainly linked to the storing stage. Several participants stated that they usually store their leftovers (e.g. in the freezer), but then **regularly the leftovers remain unused** because the participants and/ or their household members prefer to eat something different for the following days.

"What shall I do? If I put all the stuff into the fridge, then it still will be there tomorrow and still nobody eats it."

"There we had rice leftovers in the evening and I kept it. And on the next day no one wanted it, probably because we had pasta. The next day I threw it away."

Some participants reported that fast food places often lead to food waste in-house because they then spontaneously eat out of home when feeling hungry even though they still had food stored at home that they had originally planned to consume instead. This is closely connected to the statement of several participants, which assert that they value the flexibility to spontaneously meet friends and/or eat diverse meals out-of-home – even though this might lead to food waste in-home.

Talking about the storing stage, many participants also mentioned that they - or their household members - oftentimes purchase new food products even though they still had the same product(s) stored at home. In particular, fruits were mentioned here. Some participants stated that their wish to always have diverse, fresh fruit products at home would be more relevant to them than the attempt not to produce food waste.

"So I know it from my parents, they for example go to the market every Saturday and buy fresh fruits and if there was a banana left from the week before it was replaced. Well if there were fruits left, which then didn't look good anymore but probably were still good to eat. The fresh bought was then exchanged with the one on the plate."

Also at the preparing stage *variety* as a driver that may lead to or prevent food waste was mentioned in all six focus groups. Here several participants reported how they would frequently have food waste because they did not stick to their original meal plan, but **changed their mind spontaneously about what they would like to eat**. In all six focus groups, the **discipline** to e.g. stick to the original meal plan and/ or to eat up the leftovers was mentioned as a key necessary skill that one needs to have in order to avoid food waste (also see below chapter Abilities – Provisioning).

"Yes, discipline. I just try to imagine how it would be for me. And hmm, the amounts and the appetite are a big topic. When I suddenly feel like having a specific meal, like Asian food, but I still have the three days old lasagne in the fridge which is still good. Then I say to me "I can eat it tomorrow". And then it becomes a week and then I have to throw it away. So discipline is really important."

"For example it was said yesterday morning 'Let's prepare the turkey breast we have that is still frozen'. In the evening it is said, we want Gyros. And there you are standing. Sure, you should not throw away that, but such are the moments where/ you plan long-term and shop short-term. Or plan spontaneity. Let's do something crazy every Friday. But only on Fridays."

"This is a classic case of "we buy this". The child likes to eat it. We wait until it moulds, then we throw it away, because the kid doesn't want to eat the salami anymore. "

Linked to discipline, some participants also mentioned that **laziness** can be a main characteristic leading to food waste.

"I thought he might be too lazy to pack it for the fridge. He rather throws that away and makes the next day something new."

Opportunities

Next to the intrinsic motivation that a consumer needs to have in order to avoid food waste and the various factors related to this motivation, there are also several external and internal factors that influence whether food waste on household level can be prevented. As external factors or "opportunities" we define all the factors that the consumer or household cannot influence directly.

Social & work life

One of the key challenges in reducing food waste that many participants voiced is the **possibility to plan meals correctly and follow this plan through without generating food waste**. This is often impeded by the intense and unpredictable social and work life of participants. While one could argue that it is rather an internal factor or ability of the participants to anticipate their work and social life well or that it should rather be linked to their motivation, some participants appeared to perceive many aspects of their social and work life as external factors that they could hardly influence and did, thus, not see it in their power to avoid food waste at such occasions.

An often-mentioned challenge in avoiding food waste relates to **unpredictable and spontaneous events** in both work and social life that would conflict with the original food/ meal planning, e.g. activities with the kids or coming home late from work.

"It would be difficult if I don't finish my work on time. My working hours are very flexible as I work them out myself. But sometimes I just don't manage to complete tasks. Then, as a photographer I just have to find a way of getting the job done. If I have a deadline the following day then I just have to work overtime. And then I am not able to cook, leaving me with some surplus already or some remains."

Additionally, careful and conscious **planning requires a lot of time** as one has to take into account for instance the durability of products. Many participants stated that next to their busy **work life**, they perceived good food/ meal planning as an additional burden. Especially business trips were regularly mentioned as a factor hindering the planning of meals and the correct provisioning. Finally, the working schedule often collides with opening hours of alternative ways of provisioning as the following quote shows:

"I also wrote down that the weekly markets are on unfavourable days. One can of course buy single things from there but I never make it there as I have to work."

Concerning **social life**, the planning appears to be more difficult, the more people are involved.

"However, it's difficult to plan if you are cooking for more people. One person already has eaten or the other one comes with a double appetite."

This is caused by distinct tastes, different quantities that can be eaten or changing current preferences. This problem is particularly tricky when preparing meals for children. For participants with (non-adult) children in the household it seemed to be impossible to not have food waste. The main reasons regularly listed here were **constantly changing appetite and taste of children**, which makes it hard to plan and prepare the right meals and amounts.

Next to that, **guests** were mentioned as a challenge because it can happen that visitors don't show up for a planned meal, eat less than expected or show up spontaneously. Even though participants expressed regret for wasting food in such situations, unpredictable schedules and unexpected events were regularly mentioned as acceptable situations to have food waste because these situations seemed to be the least controllable. Examples of **unexpected events** were illness (of the person him-/ herself or of a family member), accidents (e.g. broken fridge) and changes in the work schedule.

Infrastructure

Not only at the planning stage - where, as shown above, work and social life often contradict with the original plans - but also at the provisioning stage several external factors influence the level of food waste. With regard to the external infrastructure (i.e. the opportunities to purchase food in supermarkets, markets

and/ or other local stores) in all six focus groups two main difficulties were discussed.

Firstly, the factor mentioned most frequently here was **packaging sizes**. According to the participants, in most supermarkets many **products are only available in big packaging units** and/ or the bigger units are comparatively cheaper.

"At our place it often happens that we buy ice cream, and then we don't manage to finish the package. And then I put it in the freezer and at some point it gets these ice crystals on top of it and it doesn't taste anymore. It happens sometimes."

This is not only a problem for small household sizes, such as single households, but is also true for bigger households when preparing recipes with special ingredients that cannot be easily used for other dishes but are only sold in big units. In particular, special occasions, such as barbeque with friends, are problematic with respect to packaging sizes:

"But sausage is also difficult to buy. For two people interested in bbq, a package with six sausages is already an excess of four pieces. And yet once opened they must all be prepared."

Even though for some products unpacked units and smaller packaging would be available in supermarkets, these are oftentimes comparatively more expensive than the regular sizes. Thus, consumers are tempted to buy the bigger package even though it contains a larger amount than what is needed.

"If I buy individual potatoes that are not packed, then they are way more expensive than if I buy double the amount from the supermarket. So you just buy it from the supermarket."

At the same time, participants reported that the **number of small local stores, which sell fruits and vegetables per unit, decreases**. A suggested solution to avoid the dilemma of too large packaging sizes was sharing food products with other households, e.g. one participant mentioned that she is always sharing big packages with her mother who lives in a one-person household.

Another way of reducing food waste at the provisioning-stage could be **alternative ways of provisioning** in contrast to purchasing in the supermarket. Several participants suggested, for instance, obtaining food through Foodsharing, which is an online platform that enables users to offer and receive food leftovers from both consumers and supermarkets.

A second difficulty linked to the external infrastructure was, according to many participants, the **selling strategies of supermarkets**. Here participants saw a danger of increased food waste because **special offers or discounts in supermarkets would lead the consumer to buy more than actually needed**. Several participants reported that, even if they have made a shopping list and planned their purchases in advance, they are frequently "tempted" into buying products that they had not originally planned to buy, but they purchase them because they are on offer and/ or are displayed very visible in the

supermarket shelves. To avoid food waste, according to the participants one needs a lot of discipline to stick to the original shopping list and one should not do the purchases when being hungry, as this increases the risk of spontaneous and too large purchases. In particular one should avoid going shopping together with other household members (e.g. children or spouses) as they might insist on buying products, which are not on the shopping list and would, thus, jeopardise the previous planning.

"Since my husband is retired and joins me for the shopping, it changed. Then he says 'Today, I am in the mood for this {product}.'"

"That's a good point, the shopping lists. When we are shopping in the supermarket. It always happens that each individual is picking up something and that we already have five items before we even get to the first item on the list."

Shopping habits

Another factor influencing the level of food waste during the stage of provisioning is shopping habits of households. With regard to this factor it was discussed that the **shopping routines have changed in the past years mainly due to longer opening hours and a general societal change of working schedules**. For consumers this may lead to more frequent shopping trips. As one participant suggested, this can, on the one hand, help to buy according to one's needs and, thus, to avoiding food waste:

"Rather go shopping more often than to do one big purchase. And then rather to buy the things fresh for the day that you need them."

On the other hand, longer opening hours and easy-to-reach shopping possibilities also make spontaneous shopping trips easier and might tempt consumers into not eating their leftovers or the stored food that they already have at home, but to go for another spontaneous shopping trip instead.

"Here I can partly go shopping until 10pm or around the clock at the airport. I also find it very difficult. Because the temptation is always there. Like 'shall we just very quickly'. You don't have to plan as much."

Equipment

Also regularly mentioned as an essential asset for reducing food waste is the **appropriate equipment for storing food**, e.g. a freezer and/or refrigerator or plastic boxes to keep leftover food. Having access to equipment for certain methods of preparation can also matter, as the following quote shows:

"We started to think about it at home, because we are also the classic 'we throw away fruits and vegetables'-family. We buy it, looks great, stays two weeks in the kitchen, then I throw it away. Because it looks great but no one eats it. So some plastic apples would be better, probably. So we simply bought an expensive juicer. With that I got my teenager to eat fruits. I had to hide the fruits like that, but it worked. And it actually became real, that we throw away less, actually even buy less."

Specific case: lunchbox

A very specific case, that was frequently mentioned, in particular by participants that had children in the household, was lunchboxes. Many participants indicated that **leftovers from lunchboxes that children take to school or spouses to work, is a situation in which food is wasted very regularly**. It is difficult to estimate beforehand what amount is going to be eaten since it does not only depend on the childrens' or spouses' appetite, but also on the external factor whether additional food will be provided, e.g. birthday cakes of class mates.

"Here I got the little apples out of the school lunchbox and placed them nicely on a plate in the hope that they would be eaten in the afternoon during homework. Which had still not happened in the evening."

"So I immediately thought about the kids. That is the classic. One opens the lunchbox and 'great, one bite taken'. Who eats this afterwards? The attempts to put it again on the plate with hope that it will be eaten {...} I fail there regularly."

Out-of-home

While most participants of the German focus groups agreed that it is easier to prevent food waste out-of-home than in-home (as explained above, see chapter Motivation – Price), it was however also mentioned by several participants that certain external factors are out of the consumer's control and may, thus, lead to food waste out-of-home. These external factors are: a) one has **limited influence over amount and taste of the meal** one is served in a restaurant or canteen, b) it may occur that the **hygienic conditions in the out-of-home facility are not good**.

a) *"But I just thought about the school care, what the children get there. We pay 80 euros per month and our daughter eats nothing there. She doesn't like it there. Of course that is all thrown away, indirectly. It is paid for, but not used. But one cannot not order, one has to order."*

b) *"Or if the hygienic conditions of the restaurant, if you notice that they are disgusting. I once saw at Barbarossaplatz in the kebab place there was a rat in the store. I was just eating the kebab and thought 'shit'. After that I never went there again."*

Abilities

Next to the external factors leading to or preventing food waste, also several abilities that the consumer needs to have where discussed. These are, thus, internal factors, that the consumer can influence him-/ herself.

Planning

Considering internal factors, the **stage of planning appeared to be one of the most relevant factors in all six German focus groups**. As such, **making a weekly meal plan and going shopping with a shopping list** was mentioned in each group as a relevant internal factor that can prevent spontaneous purchases and, thus, food waste. Especially the shopping list was mentioned as a helpful tool that would prevent spontaneous purchases and force the consumer to

consider durability and preparation of products in advance. However, in order to create a useful shopping list, one needs to have **knowledge about products and the use of them.**

"One has to think everything through, what do I have in mind? What does one do? And also observe what can you do with the extra potatoes if you cook this or that amount, Is there anything I can really do with the stuff?"

"I think the planning process determines a lot whether there would be wastage or not. Do I prepare things I can use the next day? Or do I offer fish or such things that cannot be used anymore the following day? I can cook for guest in such a way that I can give them something to take away or use it to prepare a different dish."

"The so called 'kitchen know-how'. You need to know the basics about foodstuffs. How durable are the various foodstuffs? How are they stored? What can one do with their remains to ensure they are reused? You also need to know yourself well, i.e. your appetite and your needs in order to ensure your shopping is need based and to avoid buying too much."

Provisioning

At the provisioning stage, several different abilities were mentioned. Firstly, participants considered it necessary to have the **ability to keep a good overview of what products are still in stock at home.** At the same time, **self-discipline** is required in order to avoid spontaneous buying:

"I find such things very annoying. You bought it impulsively or spontaneously or just out of pleasure and then you leave it standing in the refrigerator unused until it's mouldy. You finally say at some point, 'Ok, its two months again, get rid of it.' That is really annoying."

Without these abilities, one runs the risk of buying more than needed. Secondly, some participants mentioned that it could be useful to **buy smaller quantities of food products and instead focus on better quality.** However, this can potentially require a higher budget if the shopping habits remain the same (as smaller quantities of the same product mostly cost more per weight).

Thirdly, in order to resist the selling strategy of supermarkets, self-discipline was again mentioned as a key necessary skill to prevent food waste.

Storing

Oftentimes participants stated that **knowledge about and skills on how to store the food products properly** is a necessary skill to reduce food waste. Inappropriate storage can have various reasons, including temperature or the place of storage. Some participant suggested that brochures listing information about the proper storage of food products might be a helpful tool to prevent food waste. These brochures could, for instance, be provided on the package of the products or on small information boards in the supermarkets.

However, not only the knowledge about appropriate storing methods is relevant, but also the **ability to keep track of which products are stored where and**

for what amount of time. A frequently stated problem was the storage in the fridge where food products get easily out of sight and forgotten. One person suggested to establish a "fridge system" in which the storage is checked and re-sorted regularly.

"I am a nerd. I would develop a system that would involve checking what's in the fridge every Friday. The system would also be to go to the basement every evening and check which of the vegetables are already/almost spoilt. This {system} doesn't take long but you always have to have it in mind."

One participant also proposed sorting the products in a way in the refrigerator as to be able to see the expiry date immediately when opening the refrigerator or to keep re-arranging the products according to their best-before dates. Other participants suggested to solve the problem of durability by buying food products only when needed on the same or in the following few days and to buy only very limited, small amounts. Thereby, one will not need to store anything at all anymore. Additionally, another proposed solution was to only select products with a long durability when doing groceries for a longer time period.

"I only keep supplies of things that don't spoil. Such as long-life milk, oatmeal, I always have an extra packet of cocoa powder, muesli is also very durable and some sweets. I buy everything else in reasonable quantities and only when I need it. I rarely throw away anything."

Another internal factor discussed by the participants was the **question how long to store food products**. According to the focus group participants, **a key problem appears to be that many people do not know the meaning of the best-before date**. As a consequence, they dispose valuable food products because they assume products that exceed this date cannot be consumed anymore. While some participants insisted that they would never eat e.g. dairy products that have exceeded the best-before date, other participants stated that they regularly consume overdue food products and only rely on their experience and knowledge when assessing if a product is still eatable.

"I don't know, say, when was the last time I threw away for example yogurt. It usually doesn't happen because I am always looking. And best-before dates I also exceed. And then I see that everything is completely fine with it. Then I don't throw away things quickly."

"I am one of those people who will still open it in order to confirm that it's really bad. So, I have no problem with that."

Preparing

Concerning the preparation of meals, it was highlighted several times that the **ability to judge the right amount of food that will be consumed by the household members (or guests) is a key ability to prevent food waste**.

"I also can't always estimate how much will be eaten. I always cook in the evening. Either my husband comes home and is really hungry or he says 'No, I already had dinner'. Then I am left with my food. Or the kids, they both have such a banana-tic and only want bananas. Banana shake, bananas in the morning, for lunch and in the evening. So I think to not buy only 4 bananas but

10. And then no one likes bananas anymore. Then I suddenly have four really dark brown bananas and no one likes them and they go away. It is always like waves, and for kids it can change within two hours whether they like something or not."

As mentioned previously, **judging the right amounts is particularly difficult when being a provider for children**, since the amount they eat constantly changes. To avoid food waste in this case, many participants considered it to be a very useful **additional ability to know how to reuse leftover food and being creative enough to prepare an interesting meal with few products**.

"I think you have to be a little artistic and make something out of the little things. You need to have some expertise and be creative in order to be able to make something out of these things. A few carrots, some potatoes, a few parsnips, what can you make out of this. "

As a possible solution to avoid food waste in these cases, participants suggested **researching the internet for leftover recipes**. The internet can support with recipes and the development of a meal plan that includes the usage of leftover ingredients and products that one still has in storage.

Besides knowledge about cooking with leftovers, **good cooking skills** in general are needed in order to avoid food waste as otherwise the meals will not be tasty and, thus, end up as food waste. In all six focus groups **experience and time** were mentioned as additional assets to improve these necessary cooking skills.

"At 20 years I still had no experience on how much I must cook. We were four girls {in the household}, we also had no idea and threw away a lot of foodstuffs due to lack of experience. Good experience is therefore important."

Exact knowledge about health risks is a key factor as well when it comes to food waste in the stage of preparing. Many participants state that they fear diseases caused by reheating of certain products, e.g. spinach or mushrooms.

"And for some food it is, I still have it in my mind this way, that you mustn't warm it up. It is always in my mind spinach, that you shouldn't warm it up because there are some toxic things then. So there are things that you shouldn't warm up again."

Consuming

Also at the consuming stage, the handling of leftovers appears to be a major issue. Some participants report that they themselves or other **adult family members usually eat up the leftovers of the children**.

"Dad, the garbage chute. It was always like that at our place in the past. Dad always ate any leftover food from us."

"My husband is also like that. He always eats any leftover food from the rest of us."

Some parents state that they want to **serve as a role model to their children** and therefore try to eat up everything and avoid throwing away food in front of their children.

Nevertheless, some parents also admitted that they do not want to eat their children's leftovers since these leftovers are often left on the plate in an unappetizing way. Creative solutions, such as making the children pay for their own meals in restaurants, were mentioned as possible solutions.

Finally, at the stage of consuming, participants also reported that - when buying special (or exotic) products which are yet unknown or only used for one specific recipe - oftentimes they do not use this product anymore afterwards because it did not taste like they expected or they do not know how else to use it.

"Sometimes one buys wrongly. You want to try something new, then it doesn't taste and that it was. It can happen very quickly."

Intervention strategies

Information

Media

The importance of media for a possible intervention strategy against food waste was highlighted throughout all focus groups.

In particular television is perceived as a good channel to inform a wide audience about the topic of food waste. Participants reported that food waste is already covered a lot in radio and TV.

"People with television at home may already have come across this subject. It is on television once in a while. This makes you think."

Documentaries such as "We feed the world" were mentioned several times. TV programmes are also seen as a way to inform about the best-before- and eat-by-dates.

"One notices that it's already a hotly discussed subject. France has legislation against food waste. Yes, you hear about it. But I wouldn't say that you get a bad conscience or you feel obligated to it. But that it's a subject that keeps coming up and that has already caught up and led to a change of behaviour in me and in my family to some extent."

Secondly, **internet** is a helpful tool to get information which is needed in order to avoid food waste, e.g. the use of products, their durability, proper storing methods. One person mentioned that the only difficulty with finding information on the internet is that it is very diffused and sometimes contradictory.

Supermarkets

Participants also mentioned supermarkets as important providers of information. Specific suggestions were, for instance, a cycle calendar for the life-time of fruits

and vegetables (e.g. what to do with bananas when they are already a bit brown) or a list of tips what to do with leftovers.

"Simply a few information stands or flyers from the supermarket with information 'This you can do with the pepper if it is getting wrinkly'."

Another option mentioned was to put signs and information about durability and appropriate shopping on the packaging.

Education

Both education in school and within family were mentioned as a key to sensitising for the issue of food waste. Practices that are currently carried out by schools were shared in the group discussions. For instance, one participant reported about a cooking class in school.

"I must say that the school my son attends has an extra cooking school where healthy eating is taught. I remember that. What's healthy? How about the amounts? They do the portioning. And since then, there is more awareness for that. He really pays keen attention to that. We have managed to reduce our food waste or whatever we throw away by around 30-40 %. He now takes only what is able to finish and can say in advance "No more please!". There are things that one can change but it all begins in the mind. "

Others shared that movies about food waste have been watched in class.

Politics

Participants reported about past public awareness campaigns and considered these to be very useful for the reduction of food waste.

"There was such an awareness campaign a few years ago with posters everywhere showing that every eighth food is thrown away. I found them great and really interesting. I still have lived at home in this time, but it made me think about it. "

As another participant mentioned:

"But maybe from the government side. To establish more and more campaigns. I think this is very effective, to treat food with more consciousness."

Action by others

Supermarkets

Regarding action by supermarkets, participants proposed to offer baskets with recipes and appropriate ingredients. Another suggestion was to reduce the advertisement in supermarkets in order to avoid spontaneous buying.

"If the advertisement space wasn't as big as it is. I am talking about the advertisement when I enter the grocery store. "There, There, There, offers, chocolate."

Politics

Concerning action of politics, participants throughout all focus group mentioned the current French legislation about supermarkets' food waste and proposed to introduce similar legislation in Germany.

"It would be good at lawmaker level to have a decision that supermarkets that sell food are not allowed to throw it away anymore. That is a regulation that in my opinion has to happen because this liberality in throwing away things leads to things like supermarkets, for example, which have a bakery. They have to take care of the fact that even at 10pm the shelves are still full. So that we get the impression that everything is great. And they can't even sell that at night with the result that big bakeries burn the things they cannot sell. Those rolls and breads, they end up being used as fuel for the stove."

However, at the same time one participant expressed concerns regarding a regulation of supermarkets:

"Honestly, enough is being done in this country. Now they want to implement a law and increase the pressure on the retail industry. That costs money, that requires logistics and would cost much more than throwing the things away in the end. Because it is an incredible bureaucracy."

More possible forms of actions could be to sell smaller packaging sizes in order to meet the needs of single households and to change the opening days of farmer markets where food products are sold per unit.

Technological solutions

Technological solution to reduce food waste can be, for instance, new online platforms such as foodsharing.de, which enables to transfer food leftovers from supermarkets to private consumers and to exchange between households. Another participant suggested to implement QR Codes or a website with tips and tricks how to be better organised.

"I really would wish for tips. Like already mentioned I am from the generation Google and would look for a page, where I get more information on how to organize myself. Maybe an overview to print out or an app. Yes, I want to, but it's always a little bit difficult with these intentions."

One participant mentioned 'intelligent fridges' as a way to reduce food waste:

"People speak of "intelligent fridges" {...}. Having an intelligent list that could say to me 'ok, you have these three ingredients. You can make this and this'."

Restaurants

With regard to out-of-home consumption, participants shared experiences with restaurants that ask their customers to pay extra if the plate was not finished. Another example mentioned was a restaurant that serves smaller portions and you can order a second one only after you finished the first plate.

Also information in the menu about which size the portion will be or a scale for portion sizes was considered as helpful. Another suggestion was to always offer

three different sizes of dishes in restaurant menus, as is already happening in some pizza places. This way, it is possible to order according to one's appetite.

Finally, special restaurant concepts, e.g. one that tries to use all parts from the animal and offers a lot of dishes with offal, seasonal vegetables, organic products, meat from known origin were also mentioned.

Acceptability of wasting different food products or in different situations

The following chapter summarises the main findings from the ranking tasks that participants were given during the focus group workshops.

In a first ranking exercise, participants were asked to rank different product categories (i.e. fish and meat, carbohydrates (such as bread or pasta), vegetables and fruits, fast food, sweets, dairy products) with regard to how justified it is in their view to have food waste in these categories.

In a second step, participants were asked to make a similar ranking for different situations (i.e. household dinner, dinner with guests, restaurants, canteens, unexpected events).

Analysing the different rankings allows for a good overview of the underlying values that consumers give to different food products and, thus, to assess which waste streams consumers are most likely willing to reduce.

When comparing and discussing their rankings, it became evident that participants had considered different values and factors that would influence whether they considered it more or less justified to have food waste.

Many participants also mentioned the **price as an important factor when assessing the justification of food waste and it was often considered as closely connected to the quality of the product**. Therefore, the higher the price, the better the quality was expected to be and the less acceptable it was to waste the food product. Accordingly, especially fish and meat in the ranking of products and restaurants in the ranking of situations were often considered as least justifiable.

Overall, **the more control a person thought to have over a situation, the less justified it seemed to waste food**. The estimations about the level of control differ though. One example for this is meal with guests. Some people think it is easy to control this situation because it takes place in their own household, thus one usually knows the guests and their tastes and one still has possibility to offer them to take the leftovers home. Others stated that it is not easy to control because one cannot know how much they are going to eat it or if they will like the taste.

Product

When being asked to rate the different food product categories with regard to how acceptable it is to waste them, the participants considered several factors. One of the first factors mentioned by all six focus groups related to **environment and climate change**. Participants mentioned the energy that is needed and the

CO2 emissions that are emitted during the production process. In particular the distance to the point of origin and effects of transportation played an important role when assessing the emissions and used resources.

With respect to **moral factors** that influence the decision how valuable a food product is, the **working conditions of producers** (e.g. coffee farmers in developing countries) and the rising prices of bread, noodles and wheat were highlighted. Many participants also linked moral factors to the discussion that many people in developing countries cannot anymore afford to buy these basic products because of **globally rising food prices**. Finally, **animal welfare** was regularly mentioned as a moral concern as well. Many participants considered it morally unacceptable to kill animals if the meat is thrown away afterwards.

Another frequently mentioned factor was **the nutritional value** of food products. Unhealthy food, such as sweets and fast food, was often considered to be more justified to throw away, as they contain mainly fat and sugar and were judged as not healthy.

Along the same argumentation, vegetables and fruits, containing many vitamins and minerals and, thus, being healthy, were usually mentioned as less justified to throw away.

Price and quality of the products have been a key factor as well. The higher the price and the better the quality of a product, the less justifiable it was considered to dispose this product. Vice versa the participants considered it to be more justified to have food waste when the products are cheap, e.g. "standard" milk.

Also the durability of food products and how easy they are to prepare and/ or recycle was an often considered factor when assessing which products are more or less justified to throw away. **Food products with a very long durability** (such as noodles, sweets and rice), **as well as products whose leftovers are easily reusable** (e.g. boiled potatoes that can be turned into fried ones) **were usually considered as less acceptable to dispose**.

Participants made sometimes a distinction between uncooked and cooked products due to the differing shelf life.

"The question for me then regarding pasta or rice is whether it's already cooked or uncooked. Because to say the truth I would not understand it at all if someone threw away uncooked rice or pasta that one has at home. I have never heard of uncooked rice or pasta that has grown mould."

Basic food products, such as bread, fruits and vegetables, which are usually consumed almost on a daily base, were also seen as less justified to be thrown away.

While some participants argued that it is more justified to throw away products that do not taste, others disagreed stating that with knowledge and experience one could easily avoid the problem of bad taste.

For some product categories, participants found themselves in contradicting situations, e.g. fish is expensive, but at the same time consuming spoiled fish is risky for one's health. Therefore, the level of justification was difficult to judge for these products and in several focus groups participants did not find an agreement whether the two categories a) fish and meat and b) dairy products are more or less justified to throw away.

Situation

During the ranking of situations, the key factors that participants considered were the a) price of the food and b) the control the consumer has about the situation. Thus, almost all participants agreed that in special occasions one has less control and therefore it is more acceptable to waste food. As special occasions were mentioned: birthdays, going on holiday, sickness.

For many participants, it is equally difficult to control the food waste when you have guests over, due to the uncertainty about the size of portions they are going to eat and the taste they have. However, some participants mentioned that having guests over is not a problem, because usually you know your guests and should be familiar with their eating habits. Participants also suggested that if one does not know the guests' habits and tastes, one could still ask them what size of portion they want and offer them to take the food home or save the leftover for the next day.

Meals at home were usually seen as the situation in which one has most control and food waste is, thus, least justified. One knows the tastes and the amounts of what household members eat very well and one has good control over storage and the reusing of leftovers. Still some participants made the **exception of children in the households since their tastes and appetite change constantly** and one cannot know if they are going to eat something or not.

Talking about out-of-home consumption, wasting food in restaurants was often judged as less acceptable than in canteens. The main reason for this was the supposedly **higher price and better quality of meals in restaurants.** Nevertheless, one participant stated that

"I wouldn't differentiate the price. Probably one would decide differently in the restaurant than to throw away in the canteen, because it is more expensive. But from a moral point of view I would say it doesn't make a difference."

The factor of control was mentioned as a key factor not only in the in-home sector, but appeared to equally hold true for the out-of-home consumption. Participants stated that it is also easy to control the situation when eating out-of-home because one can choose which restaurant to go to. Nevertheless, even though one can decide which restaurant to go to and what to order, one does not have control over the cook's skills and the size of portions served.

7.3 Conclusions

Concluding from above findings, one can see that among the participants of the German focus groups **awareness** about the topic of food waste appeared to be already relatively high. Almost all participants had already come across the topic and some of the problems related to it before the focus groups workshops and were to different degrees already trying to avoid food waste in their households.

While most participants reported that their awareness was mainly passed down from their parents and that their close family was equally aware of the topic, they also argued that outside this closer circle they neither feel under pressure to pay more attention to the topic, nor do they have the feeling that they can exercise much influence on their wider friends and family to change their behaviour.

The **feelings** participants had towards disposing food products were mainly negative. Most frequent responses were feelings of bad conscience and guilt. Frequently stated factors that influence these negative feelings were a) the amount of food thrown away, b) environmental and c) moral concerns. In general, participants reported however that these negative feelings usually remain rather short-term (i.e. only during the actual act of throwing something away) and that they often considered their household waste as rather little and irrelevant compared to what is thrown away during the production and retail processes. Possible steps to increase awareness more long-term could for instance be, as also suggested by some participants, to ask households to write down (or picture) every food product they throw away during one month and to also calculate the monetary value of this waste.

When discussing **food waste in German society**, participants perceived Germany as a rich and developed country where food products are very cheap (according to some participants "too cheap") in relation to the average income and in comparison with other daily consumption goods (such as energy or housing). The low food prices - combined with little awareness of and appreciation for food products - were often mentioned as a main reason for over-consumption and food waste in Germany.

Analysing the focus group interviews with regard to whom the participants perceived as typical wasteful and non-wasteful households, there appeared to be two main **stereotypes**. Firstly, poorer households - in which the provisioning of food products takes up a bigger share of the total household income - were perceived as less wasteful. Secondly, older generations, who partly still experienced hunger in post-war periods, were considered to be less wasteful than younger generations, who grew up in abundance.

The personal **motivation** for German households to prevent food waste is based on various factors. Firstly, a main factor in all focus groups appeared to be the **taste and quality** of food products. If purchased food products did not meet the expected taste or quality or if one lacks the cooking skills to prepare a tasty meal, participants considered it almost impossible to not have food waste.

Secondly, **health and safety issues** were mentioned factors influencing household food waste. Participants stated that if a product was (or appeared to

be) perished or spoiled they considered it acceptable to have food waste and not consume the product. All participants agreed that it was sometimes impossible to avoid having spoiled food.

Thirdly, also linked to health, oftentimes also the **nutritional aspect** was highlighted as a key factor influencing both the decision whether to dispose food and the feelings one has towards disposing these products. Thus, most participants considered it acceptable if unhealthy food ends up as waste.

Fourthly, also the **price** of food products appeared to be a key motivator influencing food waste levels. In all six focus groups one could observe a discussion about food products being too cheap in Germany. The small economic value of food products would, according to the participants, also lead to little appreciation for and little emotional connection to food products in German society and, as a consequence, also too more indifference towards food waste. Many participants admitted that this logic would also hold true for themselves and that they would bother less about disposing food products for which they did not have to pay much.

The price of food products was frequently linked to the **quantities** sold in stores. The fact that larger packages appear to be comparatively cheaper, appears to lead many consumers to purchase larger quantities than they actually manage to consume and, thus, to produce food waste. All participants agreed that saving money is a main motivation for them to prevent food waste. An interesting suggestion to trigger this motivation further in German society was made by several participants: in order to avoid food waste in German households, food products had to be more expensive.

Finally, also **variety**, i.e. the wish to eat diversified meals appears to be a key factor influencing the motivation of German consumers to prevent food waste. As many participants reported, in particular **leftovers** would regularly end up as food waste. As reasons for leftovers becoming food waste, participants frequently stated that they do usually not want to eat the same meal for several days in a row or that they want to maintain some spontaneity in their eating habits (e.g. to eat out-of-home). A key skill to overcome the driver of variety influencing the motivation, was, as mentioned by all focus groups, discipline. Discipline was related, for instance, to sticking to the original meal plan (and not eating spontaneously out-of-home) or to eat up leftovers.

Discussing the **opportunities or external factors** that have an influence on how much food waste is generated on household level and on which the participants felt to have little direct influence, a key factor appeared to be the **work and social life**. According to most participants, the possibility to plan their daily and weekly meals correctly and follow this plan through without generating food waste was oftentimes impeded by their intense and unpredictable social and work life. Also frequent unexpected and/ or spontaneous events would hinder their meal planning. Additionally, many participants argued that a successful planning would require a lot of time. Some participants admitted that their motivation to prevent food waste was hindered by lacking willingness to invest this time.

Linked to social and work life, participants mentioned that planning meals was particularly difficult when having **children** in the household as their taste and appetite constantly changes. For most participants this appeared to be a factor over which they had little influence. In particular since many parents stated that they would rather accept to have food waste than forcing to eat their children to finish their plate.

A second external factor influencing the level of food waste that all focus groups discussed was the **infrastructure**. Linked to the problem of the price (as explained above) a key problem for many participants here again appeared to be selling strategies of supermarkets, in particular too big packaging sizes.

Thirdly, also **shopping habits** were related to the opportunities to prevent food waste. According to many participants, their household's shopping habits were influenced mainly by their working schedules and by the longer opening hours of supermarkets.

Fourthly, also **equipment** can be seen as a relevant opportunity. According to many participants, appropriate equipment appears to be crucial to prevent food waste at the storing stage. In particular freezer, refrigerator and plastic boxes to keep leftovers were regularly mentioned and participants stated that they would regularly use these tools to avoid food waste.

Finally, participants felt that they had particularly limited influence to avoid food waste when eating **out-of-home**. Both the amount and taste of meals as well as the hygienic conditions in the restaurants and canteens were perceived as external factors out of the consumers' control.

In contrast to the opportunities, participants also discussed several **abilities** that a consumer needs to have in order to prevent food waste. These abilities can be seen as **internal factors** which the consumer can influence him-/herself. Here the stage of **planning** was often-mentioned. Key abilities listed here were a) making a weekly meal plan and always doing groceries with a shopping list and b) good knowledge about food products and the use of them.

At the **provisioning** stage, both the ability to keep a good overview of what products one still has in stock at home and the self-discipline to avoid spontaneous shopping and instead stick to the shopping list were highlighted in all focus group discussions. Additionally, participants suggested to buy smaller quantities of food products and instead focus on better quality.

At the **storing** stage, participants again highlighted the relevance of knowledge about and skills on how to store food products properly. Linked to this, also the ability to keep track of which products are stored where and for what amount of time appeared to be crucial to avoid food waste. Two frequently stated problems with regard to storing were a) that food products get easily out of sight and forgotten in the fridge and b) that - according to the participants - many people do not know the meaning of the best-before date and how to estimate the durability of food products.

With regard to **preparing** meals, a first key ability to prevent food waste is to judge the right amount of food that will be consumed by the household members (or guests). This was perceived as particularly difficult - sometimes as impossible - when having children in the household. Secondly, at the preparing stage also the ability to know how to reuse leftover food and being creative enough to prepare an interesting meal with few products is crucial. Thirdly, good cooking skills as well as experience and time were frequently mentioned as necessary abilities.

Finally, also at the **consuming** stage, the handling of leftovers (e.g. willingness of the parents to eat up their children's leftovers) was a key point of discussion for the participants.

When being asked to rate the different food product categories with regard to how acceptable it is to waste them, the participants considered several factors. The main factors mentioned were a) environmental and climate change impacts of the different product groups, b) moral factors (in particular working conditions of producers, globally rising food prices and animal welfare), c) nutritional value (thus, e.g. fast food and candy were judged as acceptable to have food waste), d) price and quality of the products, e) durability. Thus, one can see that participants applied very different criteria and factors when judging the acceptability of food waste.

Interestingly, while oftentimes in the same group discussion or even within one individual's ranking both moral concerns about meat and fish products (and, thus, high value attached to them) as well as indifference towards "unhealthy" fast food (and, thus, low value to these products) was mentioned, no participant realised the contradiction that most fast food contains meat products as well (also the picture in the assignment book included a burger). Also dairy products were hardly included in the moral concerns about animal welfare.

Similarly, also during exercise 4, where participants were asked to rank different situations, they applied very different criteria. The key factors that participants considered were a) the price of food products and b) the control the consumer has about the situation. Thus, almost all participants agreed that in special occasions one has less control and therefore it is more acceptable to waste food. Along the same reasoning, meals at home were usually seen as the situation in which one has most control and food waste is, thus, least justified. A frequent exception made to in-home consumption was the constantly changing appetite and taste of children.

Finally, with regard to possible intervention strategies, participants mainly highlighted the role of media, supermarkets, education and politics. While most participants agreed to already have come across the topic of food waste in media and/ or in public awareness campaigns, they also argued that the topic needs to get more attention in media and politics in order to reach a wider audience.

Possible next steps should be taken on several levels. On political level, many participants suggested to implement stricter laws against food waste (similar as in France), in particular in the retail sector. On the level of supermarkets,

participants had several suggestions for interventions, such as providing more information (e.g. about storing, preparing, use of leftovers, best-before date) on the packages or on info stands in the supermarkets.

Additionally, all focus groups highlighted the relevance of education - both in school and within the family context - in sensitising for the issue of food waste and in teaching less wasteful consumption patterns.

Finally, several promising bottom-up intervention strategies were mentioned. These included, for instance, technological solutions (such as apps), online platforms for information sharing or initiatives of restaurants, such as providing different portion sizes.

As the preceding report has shown, there thus appear to be several possibilities for interventions that can tackle the various factors that influence consumer's motivation, opportunities and abilities. Since these factors are always interlinked and the consumption behaviour in a day-to-day context is always dependent on various factors with changing relevance, it is crucial for any action against food waste to involve all relevant actors and to start any information or awareness campaign through different channels and on different levels at the same time.

8 Country report: Hungary

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8.1 Introduction

The annual net income for Hungary is HUF 1,099,710 / person (2014) (Hungarian Central Statistical Office, n.d.). The average size of households is 2.3 persons.

There are 4.13 million households in Hungary. 30% of these are households with children, 37% without children (but more than 1 person) and 33% are single households.

On average Hungarians spend 23% of their income on food (Hungarian Central Statistical Office, 2014). This is higher than in Western European countries, twice as much as in Germany for example.

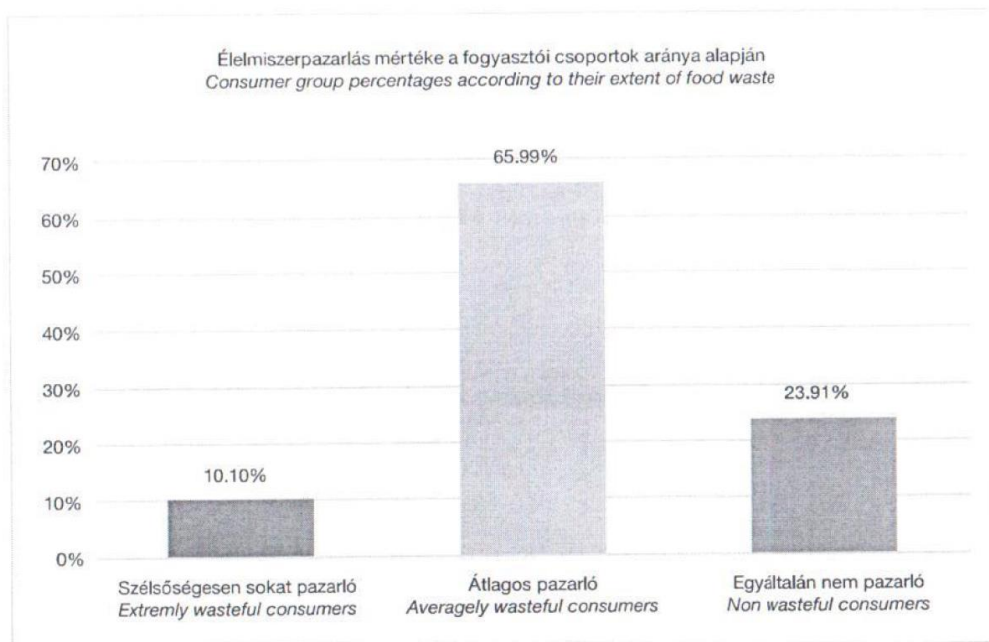
According to estimates Hungarians waste 40kg of food per person per year. It is lower than the EU average (75kg) (Bio Intelligence Service, 2010). This means about 90 kg/household annually that is 10% of total food purchase of the value of HUF 50,000 (AKI, 2016).

The top 5 food retail chains control 65% of food sales. The concentration rate is below the EU average (Kürthy & Gyöngyi, 2014).

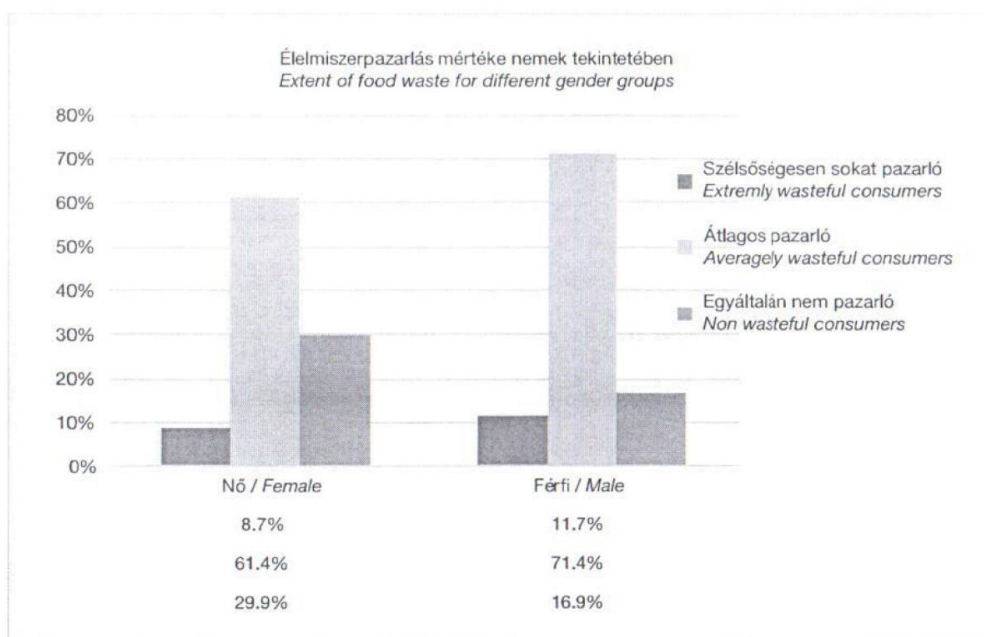
There is no system in place for food waste recycling for households. In majority of households food waste goes to communal waste and is treated as such. In some households part of the food waste is composted locally. Statistics for this were not found.

There were no major national campaigns about food waste. In 2012 the Hungarian Food Bank Association had a campaign for consumers about reducing food waste. Within this campaign a website (www.eselytazetelnek.hu) was launched where food waste is explained and tips and tricks for householders are collected.

We know about one major study about consumer behaviour concerning food waste. It was prepared by the National Food Chain Safety Office in 2015 (Bodi & Kasza, 2015). This was a nationwide representative survey based on personal interviews with 1006 people. According to the results, male consumers, people in their thirties and higher income households should be considered priority target groups for food waste campaigns as they produce higher amounts of food waste.



1. ábra: Fogyasztói csoportok aránya az élelmiszer-pazarlás mértéke alapján
Figure 1: Consumer group percentages according to their extent of food waste



2. ábra: Az élelmiszer-pazarlás mértéke a nemek tekintetében
Figure 2: Extent of food waste for different gender groups

Figure 2: Food waste for different gender groups in Hungary. From Bodi & Kasza, 2015.

In the analysis of the group discussions we will first introduce some topics that were prominent in Hungary. In Chapter 8.3.2 we show the awareness of food

waste, we list what food participants mentioned they wasted, we describe their attitudes and feelings to food waste, as well as what stereotypes they have of wasters and non-wasters.

In Chapter 8.3.3 first we explore internal factors (motivations and internal obstacles) that influence how (much) people waste. Then we move on to the external factors (opportunities) like supply, household budget that frame what people can do for wasting less. Then we discuss the necessary abilities and knowledge for not wasting. Lastly we summarise the external solutions people offered for the food waste problem.

Some hot topics, issues arising in Hungary

Then vs. now

Participants discussed in each group that in the past food was wasted less. When talking about the 'past', people talked about their grandparents' habits and teachings, Socialism or they just used a general past tense.

Why was there less food wasted in the past? Because food had more respect, it was of better quality. Cultivation methods were different, thus fruits and vegetables tasted better. Bread was also higher quality, did not get dry overnight. This is important in their opinion, as it is easier to throw away the lesser quality food items.

"I don't like socialism, even though I have lived in it. Cultivation was different back then so fruits and vegetables tasted differently. They had a lot of vitamins, minerals in them. Now they don't even have a taste. So regarding this I wanted to mention it sooner that everything is flavourless today so this is why they invented flavour enhancers. Wouldn't it be easier if they would start using manure again so foods could have more nutrients in them and we could enjoy their taste. (...) And of course the flour the bread is made of is different as well. Everything is different, we don't have the same tastes. And I really really miss them, the taste I felt when I was a child."

"There wasn't wastage in my childhood."

"2-3 bites [of food left on the plate] didn't exist. Aunt Matild used to say that you have to eat every bite and then wipe it out with bread, because it's good for your digestion. That's so good."

Also, World War II experiences are still very much alive to some extent. People heard stories from their grandparents about famine.

"It did to me when my grandparents were still alive and told us stories about the conditions after World War II. We live in an age that... It would be difficult to explain to a child today about the hardship back then, when they had to slaughter

horses to eat. It's hard to imagine now. They didn't have anything to eat. Literally." "They didn't anything to throw out." "No." "They were happy to eat. They ate raw potatoes and I heard they were happy for that too."

Compared to this past, the present order and context is very different. This society is more affluent, focused on consuming and a lot more wasteful. Quantity prevails over quality. Some even said that wasting is "trendy" in this age, since Hungary became 'wealthier'.

"We are a consuming society. Television and media don't really talk about [food waste]. They talk about buying things that are pointless. If you don't have the money for it buy it from a loan. This is what everything is about."

"We visited the grandparents, they stuffed the kids full, and on TV there was a commercial about always having a feast on the table when you have dinner at someone else's place".

"Bread used to be good 20 years ago. They were able to make good bread, they are not anymore. Bakers don't care. They use bad ingredients."

On the other hand, according to some, there are more needy people now (than back in the socialist era) who cannot afford to waste, so there is less food thrown away. Contradicting this is the issue that many people see the lack of money to buy good quality food as a reason to have more food waste. Lower quality food has a higher chance to taste bad, go bad more quickly etc. So it is a good research question whether poverty lowers or elevates the amount of food wasted in the household.

Hungary vs. the West

Wasting food is wasting money. This is what comes first into people's minds, many times. And the general thinking is that people Hungary are less affluent than people in the West (Western Europe and North America), therefore they cannot afford to throw out as much food as they do in the West.

"I think Hungary is very conscious. This consciousness mainly comes from people not having enough money. They will become conscious immediately. They will think twice and instead of buying a kilo of bananas they will end up buying three pieces. And they will for sure finish all that."

Is food waste a problem in Hungary now?

So in spite of participants saying how the present society is more wasteful than it was in the past, when asked whether they think food waste is a problem or not in Hungary, most people say no. In these cases they compare Hungary to the "West" where they think this is a more serious problem.

"This [TV] show is about Great Britain, but the moral of it was very good, I was mesmerized that this is a real problem there. I think that today in Hungary this is

not that big of a problem. So here at home you wouldn't think that with these salaries and these prices people can afford to waste food by the tons."

Bread

Bread was discussed a lot, it came up in all the discussions. Bread was also mentioned in the context of the past vs. the present (see above).

Bread is a very controversial food, since on the one hand it is (or at least used to be) considered sacred, the most sacred food that should never be thrown out. This tradition still lives on in many households. Traditionally dry bread was grounded for breadcrumbs, and many reported that they are still doing that.

"My mom told me that her parents were very wealthy. My grandfather owned a lot of land. And if my mom threw food out she would get slapped. Throwing bread away – that was a sin. It's not like that anymore. It depends on your upbringing."

"I remember when the bread fell on the floor we had to pick it up and eat it."

"Bread is saint for me. It's the most important thing for me."

"We don't throw bread out. Since my childhood. That's the tradition, we don't. It's a ... Tradition and lifestyle. Because it is said that until you have bread, you don't starve. We don't buy white bread, only rye bread or whole wheat and that can be stored longer. So we eat it the next day latest. So that is the quantity I buy. And i don't freeze bread. I don't like it."

"I appreciate and value [bread] a lot. My grandfather was a peasant and he worked really hard for having enough wheat. So it really got to me: "My dear grandchild, I would like to tell you how important it is, not to waste food." So he worked extremely hard and I appreciate that."

"The other thing is that it is horrible for me to throw even bread away.... Because all my life my grandparents used to tell me: "Throwing bread away means poverty." (...) Do I really live this well?"

On the other hand the bread today is cheap and, according to many participants, low quality.

Even though it is difficult for people to estimate how much bread they will consume from day to day, there always has to be bread at home. This leads to waste and many participants mentioned that this is a constant struggle for them.

"Nowadays bread just gets mouldy in no time. It doesn't last more than 2 days."

"That's what I'm saying that my grandma used to make delicious bread that we used to eat for a week or two. Where can you buy that now? I'm curious. I throw it out on the third day."

The quality of food sold in shops

Please see chapter at Opportunities

8.2 Results

8.2.1 How do people think about food waste?

Awareness

Food waste in general

For all focus group participants it was clear and unquestionable that food waste is bad and should be reduced and avoided. People are very much aware of poverty both within and outside Hungary.

Still, food waste does not seem to be a topic of discussion either in their families or workplaces and they don't hear much about it in the media.

Their own food waste

When talking about their households, most participants said that they do not have food waste, or at least not much. Later on, regarding more specific questions they were able to give examples of how food waste is generated in their households.

"The way I see it basically is that in our family, food only gets thrown out when it's a must. It goes bad or rots to the point where it's inedible, and you cannot do anything else with it, reuse it or anything. That is how I see it, because none of us likes to throw food out."

"It turns out I can be a bit proud of myself since we don't throw food away for years now. The only thing we do throw out sometimes is bread."

When asked about if they would take a challenge to not to throw out food at all for 30 days in their households, many participants said yes, they would take the challenge because:

- it is the right thing to do
 - It is a good and responsible approach. Not wasting anything. It's not a question of money.
- it is (relatively) easy, it only needs a bit of attention, a minimal amount of knowledge, a few utensils
 - Of course. Everything is given for success at my place. I have the place, vacuum boxes, a good fridge.

- because anyway they don't throw out food
- it fits in their lifestyle, e.g. saving food can support dieting.

Others said no, because:

- it is impossible, too difficult
 - I think it is impossible. You can try, everyone tries, but in the end, we either eat bad food or stuff ourselves.
- they don't want to eat bad food
- others in the household (e.g. the kids would not cooperate)
- it takes too much time
- they do not think it's necessary, they don't throw away much.

What do they waste?

During the discussions these types of food were most often mentioned in relation to food being wasted.

Fruits and vegetables, especially citrus fruits were often mentioned. These are often becoming waste because

- they quickly get rotten, especially when kept close to each other,
- it turns out they are dry, inedible or rotten inside (e.g. orange, garlic)
- only the peel is used for baking,
- a pumpkin may be too large to consume,
- kids would only eat the fruits if parents peel it,
- people buy the fruits because they are healthy and because there should be fruits at home, but end up not consuming them,
- when spoilt or bruised many people would cut out the bad parts, others trash the whole piece.

"I usually throw out the food I simply can't eat or am bored of. And fruits... you need vitamins. But I buy too much of these as well, I buy the big bag of fruits because it is cheaper that way, but there are always some left."

Cooked food was also often mentioned to become waste. For example some do not like to eat the pizza crust, or to eat the leftovers again and again, or the cooking was not successful. Cold cuts (like sliced ham) are also regularly thrown out as they have a short shelf life, usually low quality according to consumers. Bread pastries and dairy products (esp. milk) were also mentioned.

Sentiments

"It hurts, it physically hurts, I swear."

The majority of participants have **negative feelings** about food waste. These being: guilt, shame, sadness, anger, frustration, disappointment, regret, remorse, fear. Feeling bad, sorry and annoyed.

- Guilt and shame: because throwing food out is not right (see above at Moral concern).

"Doesn't hurt my pocket. It hurts my soul."

"I'm ashamed. That was also me [pointing at a photo of food waste], I'm going to hide it."

"Moderator Why should you hide it?"

It's just shameful. I don't like to throw food out but it happens sometimes. The fridge is big and sometimes food gets hidden."

"They must feel sorry because wasting is a bad feeling. Isn't it? It's not good to waste. If you think about it, you don't have to look far to be ashamed of yourself. Sorry. I am talking about myself, I can't talk about others, but I am often ashamed of myself."

- Disappointment: the product is already bad when taken home. We prepared to eat it, but it went bad. It is something we really like and we put aside for the kid, but he doesn't eat it and it goes bad. These are annoying situations people experience.
- Anger against sellers who sold bad quality products.

"Yes because they shouldn't do this to people, sell them bad quality food. But the majority of the people fool others. So they become less trusting. Insecure."
- Feeling sorry, angry for throwing money away. And time.

"It [makes me angry] because it's a waste of money. (...) I have worked really hard for that money and now I threw it out. Is that what I worked for?"
- Fear from illness

"I throw something out for example because I am tremulous and I don't risk it. If it expired I throw it away."

Negative feelings are often stronger in case of food cooked by people themselves.

"Maybe it is easier to throw ingredients out. You buy it, you throw it away, it is easier. But the food you put energy in, cooked or baked or whatever. You feel more sorry for that."

For others it hurts more to throw out ingredients.

"When I have some leftover cooked food that end up in the trash that's one thing. But when I throw out an ingredient I haven't even touched that's annoying. Especially with the fruits that are not cheap."

Apparently some people feel bad about living alone, as it was some kind of shame – and therefore it is also shameful to buy only a small quantity of food.

"Because when I am alone and I go there and I know that a slice of chicken is enough for me for two days, then she looks at me like: 'One slice of meat? Really?' 'Yes.'"

But forcing ourselves to eat the leftovers is not always the good solution either: "In this case we are just taking steps towards not enjoying food anymore, aren't we?" Also, there is the fear from getting sick because of food safety problems.

Participants also talked about them **sacrificing** themselves for others in the household. They refrain from eating something in order to leave it to the other person. It is frustrating when this happens in vain: the other is not eating that food.

Some people have **mixed, both positive and negative feelings**. Positive feeling can come from getting rid of a food item they did not want to eat.

"Loss, disappointment or maybe relief? That you don't have to eat something and die."

Few people have rather **neutral** feelings about throwing food out. For them it is ok to do so, a necessary thing to happen.

"In a way everybody cares about it, but of course the most important for me is to eat something fresh and tasty. If I have to throw it away I will do it without thinking."

"I'm not saying that I don't care but I don't care too much if I just throw some out. I'm not that excited about it."

Not wasting food is attached with **positive feelings** and notions such as being conscious, a moral uprise, positive change.

Thoughts and beliefs

Food waste is clearly „Not a good thing.“ in participants' opinion. Food waste is a failure, it is not OK. They say it is an instinct to not to waste and food waste is not acceptable at all.

"You can try to reason but throwing food out is not acceptable under any circumstances."

Food waste is a sign of wealth. Throwing out food is throwing out money, this is very obvious for everyone. And people tend to think that food is generally expensive.

"The moral from all this for me was that we always complain but we have very good lives. As long as we have food to throw away."

Food waste is everyone's responsibility, including the government and food chain companies. And effort is needed to save food. It is not an easy task.

"If you look it up online you will find a lot of ideas as to what to do with food you would throw out. It is true though that it is easier to just throw it away."

For the majority of the participants, food waste is a **moral issue**. Not to throw away food is the right thing to do, this is obvious for basically everyone. No one in the discussions argued that it is in general OK to throw out food. They also take it for granted that everyone feels guilty for trashing food because there are a lot of others who can't afford food.

When talking about food waste or sometimes even when they throw away food, the pictures that spontaneously come to many people's minds are starving people and children in Hungary and in Africa (seen on TV or online), homeless people picking the bin (seen by them personally, in front of their homes).

"Doesn't hurt my pocket. It hurts my soul."

"I see on TV how many children die in Africa every day. It makes me think. Oh my God. Starving to death. It's unbelievable. I don't know how many thousands of children. So many. "

"I remember, back when I was a kid in the 80's, my mother always told her story about the Ethiopian kids when we refused to eat. She told us, that we should think about all of these kids who were starving and yet here we are throwing food away and not eating."

Avoiding food waste is the right thing to do, it represents consciousness, a moral uprise and is associated with becoming a better person.

The **environmental impact** of food waste was mentioned in 3 discussions. In two cases one of the participants was only talking about the impact of the waste itself ("clogging the toilet") and that e.g. it can be composted. In one group there was one person who had a deeper knowledge about the environmental impact of food waste in the supply chain.

Sometimes people have very **contradictory attitudes** to food waste. It is not

right and still it's OK.

"Wasting is not acceptable to me at all. But if it happens from time to time then it happens. For me that doesn't count as wasting. It's just the attitude that is not acceptable to me at all."

Also, and this will be visible from this study, people are quite aware of the conflicting values and priorities concerning food waste. They feel sorry for the starving people and they still throw out food just because they don't feel like eating it.

"I feel bad for throwing food away because I see how many poor people are out there. So I also have remorse in the end, not to waste. But sometimes you just have to throw it away, since no one likes it and you can't make them eat it until they get sick."

For some, the question arises: how will me not throwing out food waste help the hungry? They do not find the direct connection and this may justify thrashing it.

For others, finances overwrite ethical considerations. They said that if they had more income they would not bother that much about food waste.

And after all, avoiding food waste is not a priority. We have busy, running lives and food waste is way at the end of the list.

"I think everybody is tired. All of us are in a hurry when we go to these shopping tours, Tesco and such places. Everybody is nervous! Nobody tells me that no matter what kind of a list you have you are not tired of shopping at the 36th aisle and you don't feel like throwing everything in your basket just so you can go already, because my legs hurt, I am tired, I have a headache and in the meantime I have 1000 other things to take care of and I have to wake up at 5 am tomorrow. Isn't it like this? I think this is how we live. Or at least I do."

"I never have enough time for everything, I just have to go and do things all the time. And this might be one of those things but I am usually not thinking about this, I just want to be good at school. Someone who already works are doing their job and do not care about this, eating is the last thing on their minds. They have to be ready with this and that. Everything needs to be ready. Then we end up having no time, we forget about it since we were so busy with all the other tasks."

Stereotypes about who waste and who does not

During the conversations we asked people who are the groups that do waste and the groups or kind of people who do not waste food. We also asked them whether people in general care about food waste or not.

Do others care?

When asked, participants said that people in general do not care about food waste.

"I think 70% of people do not. All of us sitting here, we care about it but I think there are a lot of others who don't."

"People don't usually come together and talk about this every single day. In fact I'd say 4 out of 100 people care about this at all."

"Based on all the garbage I don't think they care."

According to some, food waste is part of our lives. Everyone's. Wasting food has become a habit, a routine for many and they don't even realise they are doing it.

"The other thing is that people, no matter who we are talking about, whether they throw food out or not, it is part of their lives. They are used to it. So they don't stop to think about it unless you ask: How often do you throw food out and is it a problem for you? (...) It's a habit and we don't even realise we are doing it. We don't stop to think: oooh! Maybe, if it's not the usual, not once a month but as it was said once a week then they think about it. That maybe next time I will eat the food on day 2 so I don't have to throw it out on day 3. But if it's a system then they don't ask themselves: Do you care about this or not? They just live in the routine and don't think about it."

Only few people said that others do care.

Who wastes food?

Most frequently people said it's wealthy people who waste food. Wealthy people do not care about food waste because they have everything or because they are too busy.

The second group most frequently mentioned was young people.

"The younger generations don't really pay attention to this. Because I feel like that is where most of the wasting happens. Not so much with adults."

But there are contrary opinions, as well: there are those young people who are conscious and initiate change.

"There are young people who are raised well. They are raised to be environmentally conscious. They don't waste, they eat consciously. There are young people like that. There are also these small gardens in between houses. A lot of young people exchanging ideas. About cooking, or I don't know, how to

make a smoothie. Nowadays these green smoothies are trendy. And a lot of young people are curious."

Families with children, large families were also mentioned several times. In the discussions there was an explicit or implicit agreement that it is very difficult or impossible to not to waste food in households with children as it is hard to guess the (often changing) taste and appetite of children. We will discuss this below in more detail, see at Abilities.

"It is harder with children. If there are a lot of them in the family together. (...) If you are conscious about it you can do this 30 days challenge if nothing unexpected happens. But having kids will make it difficult, you never know how they will feel, I don't think you can manage to do the challenge with them."

People living in rural areas, people with special diets were also mentioned.

"Someone who works out. Yes I know someone. He throws a lot of things out. It's horrible when he eats 3-4 egg whites as breakfast & I asked him what he does with the yolk. He said he pours it in the toilet. He also cuts pieces off a chicken breast that you shouldn't. He says it's too fatty. These people are sick. But this is their mentality."

When asked for stereotypes, people also answered in terms of personality features. According to them, it is the lazy, shallow, dumb, naïve, negligent people who tend to waste food.

Who does not waste food?

Most participants were of the opinion that it is poor people that do not waste food. They cannot afford to throw away food. They have to save money and in a participant's opinion one can save most on food. Also, when asked why someone would take a challenge to not to waste food at all for 30 days, people almost always said the reason would be to spare money.

Elderly or retired people were also mentioned several times. They do not waste food because they have time to care about this and have different values.

"I think when it comes to elderly people it is also a matter of the way they were raised. Elderly people don't throw thing out, they make something else out of it. Because they were raised differently."

Other groups mentioned were: stay-at-home mothers (they have time to pay attention to this), single householders (alone it is easier to not waste), activists and those who volunteer at NGOs (they are more sensitive to social issues, thus more conscious). In terms of personality, conscious people were mentioned – those that live healthy, love nature and gastronomy.

"People who live consciously. Not only environmentally conscious but also in other aspects. They plan their lives their diet, their shopping consciously. Plan everything in advance. I am sure there are people who live by rules and don't ever throw food out."

What about gender?

Often women said it's men who waste more food, and men said it's women. So there was no clear stereotype in this respect.

Sometime it's more about task distribution in the household: whose task is it to actually put the food into the bin.

"In our household he doesn't throw anything out only the things that he really really has to. This is always my responsibility."

Healthy eating was mentioned both as an influence for more waste and as one for less waste.

8.2.2 Food waste in a day-to-day context

During the focus groups, participants were asked to express reasons why food becomes waste. We discuss the reasons mentioned in terms of motivations, abilities and opportunities.

Motivation

Here we discuss people's motivations to eat or not eat something, to save or throw out food items. We discuss a person's willingness to perform actions that avoid generating food waste.

In Hungary two main explanations of food waste crystallised in the discussions: people either do or don't throw away food because they were raised this way or because of certain personal qualities. We are exploring these two topics in detail.

Upbringing and education

Motivation may come from inside, the personality. Many participants told us about the childhood experiences that formed their attitude and awareness to food waste. We will also see the other side of this: how they bring up their own children.

Most people say they learnt it as children not to throw food away. "Only put as much on your plate as you will eat" "finish everything on your plate" "don't play with food" are sentences most of us heard in our childhood. These are deeply imprinted in people's minds.

In their opinion the attitude of caring about food waste is imprinted in the personality in childhood. "It's in our blood"- someone said. There were different

opinions whether this can still be influenced in adult age. Some said this is inherited, cannot be learnt in adult age.

This would confirm the presumption that throwing out food mainly depends on the persons values which are mostly fixed in childhood.

"You can try to influence or persuade an adult but it is difficult. Someone either has it or doesn't. You can't convince someone that this is good."

"This is what I have seen at home. It's not a pressure but it is what is natural to me, not wasting."

"This is also because how I was raised by my parents and what we always heard at home. We never throw anything out. So we didn't. We ate everything."

Childhood habits influence how we act later on in life, also in the case of food waste. Childhood influences can lead the person to have much or to have little food waste. If someone grew up with many siblings or in a college, they are more likely to serve themselves quickly and much. If someone grew up in a large family, they would be used to cooking big quantities. If someone was raised in abundance and the parents threw out a lot of food, the person seems more likely to throw out much as well.

"It's a matter of how you are thinking. Maybe you were raised right, but then you change and not care about it later. Regardless of whether you grew up poor or rich. My brother in law lived in a college when he was younger, and to this day he has the habit of eating first and then giving food to his children. Because there you had to be the first to eat, or you didn't eat."

"I come from a big family, but now I only have my wife and one child, and ever since I was a child especially in the weekends we had huge family feasts with 10-15 people and I don't know. I love cooking and when I cook I cannot cook little."

"When we were kids we owned a little vegetable shop and we have wasted so much, so I wasn't raised to pay that much attention."

"Moderator: Do you think it has an effect on how you think about this today?"

Well I throw quite a lot out, so, but maybe I shouldn't... But this is what I have seen."

Sometimes **traumatic childhood experiences** influence food waste habits to a great extent. Quite many participants told us stories about bad childhood experiences when they were forced to eat something unwanted ("you eat it or you stay hungry" or "you cannot stand up until this is eaten") or there was a conflict about eating. People report they still cringe when hearing the name of food they were forced to eat in their childhood. Others talk about their

grandparents being extremely strict, to the point of hitting children when they did not finish their plates.

In these cases the food saving practices forced on children in the past can turn to their opposites: wasteful habits in adulthood.

"I think, and I say this based on my friends, when they were younger they made them eat the bread that wasn't fresh. Since then what they do is they buy a kilo of bread, they eat 2 or 3 slices and then they throw it out the next day. This is like a revenge, that their parents made them eat the week old bread."

"My mom used to always find these moulded food, and always told me to at least give it to someone who would eat it. This was always the issue. But we always forgot during the day, and sometimes I literally threw it under my bed in grade school. And my mom was so angry. I always panicked."

"I have a memory similar to this from my childhood, and we weren't allowed to waste. We had stuffed cabbage and my mom sad, not because she wanted to do me bad, but she said: "You eat it!". I was so sick all night. So it doesn't work. If I don't like it, you can't force it. But they shouldn't be too choosy either. If it has a little fat on it then they don't want it. That is the other side of all this."

Present child rearing practices seem to be very different from the practice of the past. From the discussions it seems child rearing practices changed a lot. Parents seem to be a lot more liberal, catering to their children's every need. Parents seem to make amazing effort to have their children eat and to not to force anything on them. For example, some parents regularly cook 2 different meals for the two children because they do not like the same meals, or they cook different meals for themselves and the children, or they cook several meals for the children to choose from. And children are allowed to refuse, request, throw out food parents offer.

One participant said that people are general more choosy and spoiled. And that kids become like that because they are raised like that. Parents should not be surprised that the child does not eat chicken legs, only the breast – they raised them like that.

Maybe this liberal attitude stems from the traumatic childhood experiences (discussed above). They don't want their kids to panic or be scared because of being forced to eat something unwanted. From the outsider's point of view we might have gone to the other extreme.

"Maybe because my mom was also so picky, and so is my daughter. And we always cook for us and then for her. We never cook for 3 people. We have to cook for her separately, because she hardly eats anything."

"My kid doesn't eat meat with potatoes. So I can only accept that she won't eat what she doesn't want to. I don't force it on her. I would rather give her a choice and if she still cannot choose, then she shouldn't eat, she's not hungry. If she is hungry, she will be able to eat something, we always have fresh fruit and vegetables and also cooked meals. What she wants, what her body needs, honestly. I don't want to ruin that."

"It happens that no matter how nicely I cook the chicken and the potatoes, if the kid wants to eat fish then I am screwed. I have to go get the fish."

Children's tastes are satisfied to the extreme, in some cases.

"You have to know which child likes what. My son loves Sushi and my daughter hates it. But sometimes my son says he wants sushi. I say no. So he orders it from a restaurant and my daughter has to eat something else. So we have problems like this, that one child like something and the other one hates it. So if I buy ingredients for sushi which costs a lot of money... I'm not the saving type, but it costs too much for only one person to eat it. And I don't really like it either. (...)"

"They used to tell me what they want all the time. I asked them what they wanted to eat, because I couldn't think of anything. They told me and I cooked it. But it often led to fights between them. Because they said that one of them has already asked six times, and we always eat what he asked for so now the other one wants to ask for something. So it leads to arguments between my daughter and my son. This can be a problem that they want to eat different things. They eat it because they have to but if they can they cook something else for themselves."

How much children can or should be controlled in terms of what they eat is a key question. Can a child, especially a grown-up 18-year-old be told what to eat and what not to eat? Can they be allowed to cook? And how can parents control what happens when they are not at home? These are the questions parents seem to struggle with. The situations around these issues can produce a lot of food wasted, e.g. in the case when a child does not eat what is already prepared, but cooks another meal.

"Berta My son is already 18, so I can't really tell him what to eat anymore."

"Andi Mine is 19, but we have strict terror at home."

"Berta Sure, it's like this. I buy 2 dozen eggs, because I want to cook on the weekend, and the weekend comes, and there are no eggs left. It happens all the time. And I ask: 'Where are the eggs?' 'We ate them.' 'But we have food in the fridge.' 'We didn't feel like it.' This happens all the time, I am not the conscious of a mother, to keep them in terror."

"(...) But when I'm not home, I can't see what's happening. They come home from school. See? They can do whatever they want. They leave it in the fridge, put it in the back. They don't notice it. This always happens, sadly. One time I didn't cook for a week, but nothing happened, they cooked for themselves."

Some people transfer the same education they received. They repeat the same sentences they heard so many times in their childhood. Or they transmit the same attitudes.

"I always say to my daughter: don't waste, don't play with the food because thousands of children are starving."

"I would talk to my children, ask them about it. If they say yes then I make food for them, put it in the fridge and pour it on their heads if they don't eat it."

Generational differences also show within families between parents and grown-up adults. And this can either manifest in one generation helping the other (e.g. by showing how to use leftovers), or in conflicts as well. From the examples participants mentioned it seems that older generations are more conscious, eating all the parts of animals that the young wouldn't or knowing the recipes to save leftovers. Differences are also shown in food preferences: older generations prefer the heavier, fatter traditional cuisine that is not that much preferred by younger ones. This can lead to food waste when (grand)parents cook for grown-up children to take food away.

These practices may or may not be welcome by the younger generations.

"Sometimes [my mum] comes over and I cook. I clean the chicken very thoroughly, cut off the fatty parts and she's like: 'Are you going to throw that away?' She takes it and makes food for herself from it. And she always says that if I buy a kilo, all that's left after cleaning it is 7-800 dkg. And she always asks me to freeze that for her and she'll take it to make stew. There is no problem with that, because she helps to keep me in control. I don't waste, once or twice a month at most that I cannot eat something. But this is why I don't throw much food out. She raised me to pay attention to that."

"I don't like it when my mom comes over. How should I put it. She tries to do everything very consciously. She collects a bunch of dry bread from home and makes some meatloaf out of it with eggs in it and fry it and the kids love it. And I asked her: what did you cook today mom? Meatloaf. But it doesn't even have meat. But it has liver pate. Everything she finds she makes is because she has the energy to do these things. And she always scolds me."

"I meet my mom every two weeks. She always prepares a large feast with traditional Hungarian food. We pick on it, because we don't necessarily eat those kind of things at home, but of course if there are leftovers, she gives it to me. In

these cases, sometimes we still have food from the weekend on Tuesday and nobody feels like eating it anymore. We feel like eating something lighter, like fish or vegetables. (...) Unfortunately we can't discuss this [with her]."

Personality, personal tastes and preferences

(For more on personality see above at stereotypes.)

During the discussions it became clear that there are personal qualities and habits that contribute to more food waste and others that work against it. We discuss these in detail.

When do people trash food for quality reasons? What is considered so bad that they won't eat it anymore?

People have their personal standards of what is "good enough" to eat and what to thrash. In most of these cases food is still edible, but

- not fresh
- not likable taste
- burnt
- too salty, spicy, hot or tasteless
- too fatty
- soggy
- too ripe or not ripe enough
- smelling of pesticides
- looking ugly
- altered consistency (e.g. chocolate with a white layer, melted butter in sandwich cream).

The above cases were all mentioned by participants as reasons of not eating/thrashing food.

"If something doesn't taste good we don't eat it."

"Maybe I don't like it that much, or they made it in a way that I don't like. I want something different. For example not so long ago I had a chicken with mozzarella, it looked amazing with tomatoes and everything. But the chicken was very hard. This is already a mistake. I won't eat dry chicken."

"He doesn't like it, it doesn't taste good. He won't eat it, what else can he do? He throws it out."

These **personal standards** people have about what they consider good enough to eat **differ a lot**. For example in the discussions there were heated debates about whether excess bread frozen and defrosted is good enough to eat or not.

What personal qualities and habits contribute to more food wasted?

According to participants the characteristics and habits that contribute to more food wasted are:

- Being picky, spoiled. What is edible for some, is not edible for others. For example the fatty part of chicken or pizza crust. Some people care a lot about how the food looks, and if it doesn't look nice or if it's the wrong colour, they would throw it away even if it's totally edible. E.g. chocolate that got the white layer.
- Variety; not wanting to eat the same thing again. Not wanting to eat the same meal for the second or third time, being "bored" with it was mentioned as a regular reason for throwing out cooked food
- Following the changing moods. "Would I like this or that right now?" When people follow their momentary moods, some food can easily end up in the bin.
- The habit of cooking big portions and the belief that some kinds of food can only be cooked in big quantities. Cooking in big quantities seems to be a habit that stems from childhood and that is difficult to quit. Also, there are certain types of meals that people prefer to cook in big quantities, or even, they believe that these meals will only be tasty if cooked in big quantities. Some people believe that in general it is better to cook more.
- Only wanting to eat fresh food. Some people only want to eat fresh food, they don't eat leftovers. People think some foods are only edible when fresh – and there are disagreements which these foods are.
- Attitude to what is considered healthy. People's personal standards can be very different in what they consider to be healthy enough to eat. If the bar is very high, they can produce a lot food waste.
- The habit of adding an ingredient only for taste (e.g. sausage to soup) and then taking it out and trashing it, automatically creates food waste.
- Trying new products or recipes is a risk, because if they don't like it, people are likely to thrash it.

Some quotes for these:

Being picky, spoiled

"I also mentioned that my brother lives with me temporarily and he doesn't eat the crust of the pizza. I don't know why, it's one of my favourite parts. I can't imagine not eating it but he leaves it and throws it out."

"When we had meals together and I didn't eat the skin of my chicken, my dad always used to eat it when he was alive. I automatically put it on his plate so it wouldn't be wasted. What I didn't eat, he always did. I asked him 'How can you eat that?' 'That's the best part' He used to say. Big differences."

"Berta We didn't even try. It looked really bad.

Andi We don't always care about looks.

Berta For me looks are number 1.

Andi It might be ugly but taste good."

Variety; not wanting to eat the same thing again

"This one here is some lasagne from the weekend. It tasted delicious but when we had it for the second time we still had leftovers so we threw it away after."

"Especially when the kid goes to the fridge and says: 'This [pack of cold cuts] is already open but I don't feel like having that. I will have this instead. I will open this up!' So this is how it usually goes, there are usually 2-3 separate ones opened up in the fridge."

"Then comes fruits and vegetables, the ones I have left I usually turn them into a juice. Ok there are exceptions when I don't crave them anymore."

Following the changing moods

"I think it depends on the appetite of the family. How hungry they are or what they desire at the moment. My husband usually goes: 'Oh! What are you cooking? Oh it tasted so good!' And I say: 'It is ready, do you want some?' 'Oh not now, maybe later.' And later I see he is eating salami or bread with butter but a few hours earlier he was all over the place from my food."

The habit of cooking big portions and the belief that some kinds of food can only be cooked in big quantities

"...because I always make big portions. And there are often leftovers. Sometimes I eat something until I get bored of it because I don't want to throw it out. I come from a big family, but now I only have my wife and one child, and ever since I was a child especially in the weekends we had huge family feasts with 10-15 people and I don't know. I love cooking and when I cook I cannot cook little."

"I think this can be tracked back to ... When my mom used to cook, she cooked for the next 2 days, and it was just 3-4 of us. When my sister lived there, we were 4, then she moved out, 3 of us left, and she still cooked for 6 people. Like my grandmother. The same. She lived in a big family, she had a big family. That's what she was used to, what she saw, and then that is what she did, even though there were not that many people anymore."

"If you start cooking or baking in the kitchen you won't make a big mess just to prepare French fries out of two potatoes. I'd rather make a big bunch of them but then I can't eat that much and it already looks bad but I still don't want to throw it out. So I am left there and this is difficult."

"There are meals that I just can't make small quantities of. Stuffed cabbage for example, or bean soup with cabbage and meat, there are meals like these. There

are meals that I can only serve in this big pots and it will only turn out well that way."

Only wanting to eat fresh food

"I also go shopping frequently because my wife is the type of person who doesn't eat food that appears to be not entirely fresh. So I'd rather go to the market every single day because if you make food out of ingredients that are not fresh the results will not be the same."

"Maybe it's only edible when it's fresh. There are some foods that aren't good 3 hours after let alone the next day. For example fries, you can microwave them but they won't taste the same. For me is the same with chicken schnitzel. Breaded chicken breast."

Attitude to what is considered healthy

"If you do it consciously then I think the most important is whether what you eat is harmful for your body, how many calories it has, what its quality is like, how many vitamins or minerals it contains and how you can use them. Because you can get sick from food. A healthy lifestyle is very important."

"Moderator: So you think that health is more important than how much you throw out?"

Exactly, exactly."

Adding an ingredient only for taste

"I also have a problem that I love potato casserole but no matter what kind of sausage is put in it, I can't eat that. I put it in because it will taste better from it, but I don't eat it. Or my cats. What can I do with it?"

Trying new products or recipes is a risk

"This was a disaster. This is a pudding, not a cheap thing. I bought I don't know how many boxes. This was Saturday morning, I happily brought it home and told my son. He tried it, it was mint chocolate pudding, it was horrible. It tasted horrible. Not even the dog wanted to eat it."

What personal qualities and habits contribute to less food wasted?

Based on the discussions, the characteristics and habits that contribute to less food wasted are:

- Morality, having respect for food. People who have a high respect for food and for the people who produced the food, people who think certain foods are sacred will probably waste less.
- Frugality vs. choosing the good quality. It is a constant dilemma for people: should they buy more from the cheaper product or less from the more expensive but higher quality one. According to the participants, buying less, but higher quality will produce less food waste.
- Consciousness and paying attention (including being able and willing to pay attention) is an important condition of throwing out less food. Paying attention needs time spent with this issue. Leading a conscious life in general will make it more likely to be conscious in the issue of food waste as well.
- Determination, willpower, discipline. If not wasting food is not a habit yet, then a purposeful decision is essential to start focusing on this. Willpower and discipline is needed to follow through this decision. People often associated these characteristics with having to eat and finish the leftovers instead of making a new meal, sticking to decisions made before instead of following momentary cravings.
- Creativity, e.g. in how they turn ingredients into meals. Often new ideas, new recipes or recipe changes are needed to use leftovers or close-to-expiry ingredients in combination.
- Being organised, good organising skills are useful to run the kitchen in an efficient, neat way. Everything should have its place and order is needed.
- Patience, diligence was also mentioned several times. To regularly clean boxes, organise, inspect food items people need these virtues.
- Love for cooking
- Cutting out the bad part rather than trashing the whole thing is a habit that can radically reduce food waste at home.
- Being on a diet may also help reducing food waste if the person will buy less food, cook smaller portions, and measure the amounts.

Some quotes for these:

Paying attention, being conscious

"With a little attention, it might take your time away from something else, but at least you're not wasting anything."

"You have to pay very close attention."

"[Consciousness] in what you buy, what you want to eat next week. What I probably won't throw out. Organizing the fridge so nothing is hidden in the back that can go unnoticed."

Determination, willpower, discipline

"It is only a matter of determination. That's it. That is the only thing that makes it hard. Nothing else."

"You need a lot of willpower."

"Sometimes you will have to eat food you don't really want to, something that has been there for 2 days or something. You don't make something new that day because you have leftovers."

"Whether you want it or not you have to eat it."

"And that maybe you have to eat something you wanted when you purchased it but not after."

Creativity, e.g. in how they turn ingredients into meals

"We had a very rough year 15 years ago and I was able to come up with amazing things. And even the kids were quite little so I could create things from scratch."

"They should be able to think of more version from the same ingredients. They should also be able to do those. So it let's say they sense that the carrots will go bad shortly then they should not only think of making a soup out of it but also put it in salads and other things..."

Being organised, good organising skills

"I mean they should have the need for the food to be labelled and packed properly. This of course comes with diligence and they need that to run the household. Because in the end that is basically one part of running the household."

"The freezer should be organized. So it should not happen that I put the parsley here and then I don't know the fruits there and the meat here, so..."

Patience, diligence

"Putting all the food away like this [in boxes]. When it becomes empty, you have to wash it nicely."

Cutting out the bad part rather than trashing the whole thing

"I cut that part out. I would feel sorry for throwing that out. So moulded or not, I cut the bad parts out."

"I would also use that onion, the one Károly would throw away, because you can also get that brown layer out of the onion and chop it up after."

Opportunities

Opportunity to prevent food waste is the availability and accessibility of materials and resources required to prevent food waste. Relevant aspects of opportunity are time and schedule, infrastructure, and technologies. These are usually things outside people's personal sphere of influence.

The quality of food sold in shops

A persistent issue that came up in all discussions was the quality of food sold in shops. According to participants the reason of them having to throw out food is that it was already bad quality in the shop (but looking ok/good).

Being able to buy quality ingredients was mentioned as a top important condition for reducing food waste in households.

"I mean the product looks great on the outside but you buy it and then you see that it is basically just a lie."

"Nowadays you can buy unripe tomatoes very often."

"Fortunately I could eat most of the tangerines but there are always some bad ones in the bag I guess this is how they try to sell it."

Participants often mentioned these problems happening with fruits and vegetables sold in packages (not loose). These are often cheaper than the loose products.

"But they pack them like this on purpose. It can't be true that it is always 2 or 3 items [spoilt] in every case."

Often people assume that this is happening on purpose. Of course, the nature of this research does not permit us to decide whether that is true. But if this issue does not come up in Spain, Germany and the Netherlands, then it is worth to further research this topic and the reasons behind.

"It matters whether I throw it out because of me, or because the product I bought was bad. Because I think that in England they don't sell as many bad products as here. (...) But what is not up to me, is when the bag includes a rotten piece, that's makes all the other ones rot too. I cannot see inside the bag."

"And it is put in there on purpose."

"That is how they sell it. On the inside, the parts you can't see are always rotten. On the outside it is always nice. As soon as I got home I throw it out. I would make those people eat it who put those in the middle."

Participants think the solution is that shops sell the packaged fruits for the same price (per unit) as loose ones. And that it should be sanctioned if retailers put worse quality items in packages.

"They should sanction Interspar if there is a 2kg bag of apples or 4 lemons packed together, they will include one or two rotten ones in the bags. Of course it is a matter of quantity with the lemon it is one with the apples it is two or three usually. So they should be forced to sell the individual fruits for the same price [as the packaged ones]. Not double. I think this should be mandatory, so we can't be manipulated this way."

This issue was raised also for products that are cut, sliced and packaged in the shop (e.g. cheese, cold cuts).

Budget

The general (average) level of household income, and thus, the approximate budget that can be spent on food, is an external factor, thus, we discuss it here.

We already discussed that throwing out food is first of all throwing out money. Participants felt that wasting food is wasting money, time and energy with money being the most important.

People generally feel worse about throwing out food that cost more. Bread is an exception for many: even though it is cheaper, it is sacred food not to be thrown out (see above more about this).

"I felt horrible because it's a really tasty food, the cheese was really expensive and I had to throw it out."

This especially concerns eating out. Eating out is considered expensive and prestigious. Most participants do not often eat out, especially in restaurants. And if they do eat out, they will most often eat everything.

"I rarely go to restaurants or fast food chains or anything. But I always eat what I order. Even if I'm full, because I rarely go, I paid for it. I will eat it."

"What I don't eat, because it's too much, I ask the waiter to please wrap up. And they do, you take it home and eat it there. I don't throw it out at all. I order something for 2500 HUF, I won't throw it away. It would make me crazy."

Participants also talked about spontaneously (unsolicited) how much money can be saved by not wasting food. They estimated 5000 HUF/month (around 16 EUR) and 10-15000 HUF/month (32-48 EUR).

"I can imagine that if you had a list [of food wasted], and at the end of each month you would calculate the price per kilo of each product then maybe our jaw would drop, the amount would be so high."

"Throwing food out daily might be a 10-15000 HUF waste in a month. Easily. It depends on the type of the food, its quality. In a year that's over 150.000 HUF, quite a lot. The price of a vacation. You have to pay attention because it might be 200 HUF a day, but if you count it all together it could be a lot annually."

Some really need to check their budgets at the end of the month and control their spending on food.

"At the end of the month when we are look our budget. Those are the times when I focus really hard on buying only the most necessary things and living in the most planned out way possible."

From the discussions it seemed that some people would care less about food waste if they had higher income. Others said they would pay attention to food waste even if they earned more.

Even though it was clear that with saving food they can save money, many participants felt that for not throwing out food they need more money (e.g. for better quality products that keep longer or for better tools and utensils).

"If I buy rolls for home I usually buy 10 because the kids go to school in the morning and so on. Usually 2 or 3 out of those 10 gets dry, so those will be leftovers. But you can buy a certain roll that costs 116 forints and I really like it, it is like the one I had when I was a child. So if I buy from that we eat all 10 pieces. Why? Because it is better. So this is why quality matters."

In some cases lack of money was discussed as an opportunity for waste reduction. If a person has less money, they will throw away less food.

"They will also succeed if they don't have enough money. So if they are in big trouble then I am sure they will succeed."

Time and schedule, lifestyle

The busy lives and lifestyle is an important external factor influencing food waste. Throwing out less food is perceived as time consuming and people already have very busy lives. Participants thought they would need (a lot) more time to shop and cook more often or daily (since these were considered to be needed to save food). Not having enough time, the rushed lifestyle was mentioned several times as a major obstacle for saving food.

"[one of the biggest obstacles is] this rushing lifestyle basically. I never have enough time for everything, I just have to go and do things all the time. And this

might be one of those things but I am usually not thinking about this, I just want to be good at school. Someone who already works are doing their job and do not care about this, eating is the last thing on their minds. They have to be ready with this and that. Everything needs to be ready. Then we end up having no time, we forget about it [i.e. food waste] since we were so busy with all the other tasks."

"People are disorganized. I think. They have a lot to do, they have to pay attention to many different things, and they forget."

Unpredictable events also influence the amount of food waste:

- more or less guests arriving than planned,
- illness (when there is no appetite even though the fridge is full),
- (unexpected) travelling,
- unexpected dinner invitation, eating out (when at home the fridge is full).

Packaging

Packaging defects were not a major topic in the focus group discussions. Three issues arose:

- plastic boxes of fruits and vegetables in which products start to mould,
- smaller size packages are needed to be available in all stores and for a proportionate price (costing the same per unit as the larger pack),
- the packaging of cold cuts that are sliced and packaged in the shops accelerate the spoilage of products.

Equipment

People rarely buy a new fridge and it is highly budget-dependable and determined a lot by what is available on the market, so the size and quality of the fridge is considered as a given. The size of the fridge seems to be a key question. There were arguments both for having a smaller fridge and for having a bigger one in order to save food. Many said a smaller fridge and freezer is considered better so people are forced to buy less. Others argued that a bigger fridge is needed so that all fruits and vegetables fit, thus they last longer.

"They would get a smaller fridge so they are forced to buy less. A bigger fridge tempts you to fill it."

Participants also mentioned the need for these tools and equipment:

- storage boxes, especially vacuum boxes. These are expensive but worth it in participants' opinion.
- kitchen devices. Someone gave the example of blenders or slicing machines with which food can be prepared faster (thus making it possible to cook more often) and would look nicer (and thus be more appetising and harder to throw away)
- sharp knives for thinner peel, less waste
- car for saving shopping time.

Provisioning

The distance between home and the shop is an aspect that several people raised. It is important that the shop is close to the home so that shopping (going to the shop and back) takes less time.

"The stores should be closer to the home. (...) That helps in the way that you don't have to spend so much time with getting the products. You run down and are finished in 5 minutes. You don't have to sit in the car and drive to places and shop like that."

A larger distance and longer travelling time motivates people to buy more, so that they don't have to often – and this might result in more food waste.

"I also have to go very far, and today I went home, and I only wanted to buy half a kilo and then I could barely carry all the things home. But I don't go for just a piece of carrot and travel an hour to get there, I don't have a car. I wait half an hour for the bus, buy a carrot, wait half an hour for another bus and it's been 2 hours. If I buy it and prepare to cook it and then something comes up and then it doesn't matter in 2-3 days anymore. (...) Attila is right, if the store is closer then I can just run down without having to travel. I don't want to travel every day."

Being open on Sundays is another issue some participants raised. (In 2015-16 there was a regulation in place for all shops to be closed on Sundays. This regulation was in force when the discussions were held, and was cancelled shortly after, in March 2016.) Someone mentioned that the Sunday closing actually helped them to appreciate more the food they had at home if they forgot to go shopping before.

"For me it's the Sunday closing. When I forget to go to the store but I don't have anything [at home]. Then I appreciate the last breadcrumb. Then we eat whatever is left."

Abilities

Ability to prevent food waste is a person's proficiency to solve the problems that he or she encounters when performing actions that avoid the generation of food waste. Relevant aspects of ability are knowledge and skills.

By means of assuming not wasting food for one month, participants mentioned aspects which would help not to waste and aspects which would make it difficult to accomplish this. Several opportunities and abilities regarding the different phases in their household management were mentioned.

Buying or cooking too much is a frequent reason of food waste. Getting the quantities right is one of the major challenges participants discussed. So under every headline, we highlight the difficulties and solutions concerning the quantity.

"What would the other two biggest struggle be?" "Planning the quantities."

Abilities as discussed along the main stages of household management: planning, provisioning (shopping), storing, cooking (preparing), consuming.

Planning

"You need a complete lifestyle change to be able to complete this challenge." "That's right." "Not necessarily. You can do the same thing, you just have to plan better." "That in itself is a change."

Table 3: Overview difficulties and solutions mentioned regarding food waste.

Difficulties mentioned	Solutions mentioned
<p>Participants say it's more difficult to plan in case of a bigger family. The eating habits of family members can differ a lot, and this makes planning even more difficult.</p> <p><i>My son for example eats warm meals at 11 pm. But my daughter doesn't eat anything after 6 pm. And my son is very diverse. Sometimes he eats cooked food 3 times a day, other times almost nothing. This is very hard to calculate.</i></p>	<p>Consider</p> <ul style="list-style-type: none"> • the needs and preferences of household members • the eating habits of everyone • who wants to eat what and when (will they be at home?) • health issues. Someone might be allergic to something, and get offered food he is allergic to. Or that he doesn't like or something. • For each meal calculate very precisely. Calculate exactly how many people you are cooking for and how much food to buy for them. <p><i>I live alone so I only have to know myself basically.</i></p>
<p>Changing moods: not wanting to eat something we thought we would like.</p> <p><i>Get out of here... for a month? All the calculations. Oh my god, what if I don't feel like eating that? I schedule everything on Monday and what if I don't want to eat that on Friday?</i></p>	<p>Once you have said or decided you wanted something stick to it and eat it.</p>
<p>Planning is an ability/skill that people may lack.</p> <p>Many participants think that planning is very time consuming and takes a lot of effort. They say they do not have enough time for that. Or they would like</p>	<ul style="list-style-type: none"> • Every week sit down with partner with/without others, write a menu and divide who will cook what. • At planning, go over what you have at home (especially what will expire soon), which recipe you have the most

to use that time for better things.

Especially in the contemporary fast and pressed lifestyles when household members have many duties and programmes outside home, it is difficult to plan ahead.

Others already tried planning the meals for the week ahead and found it too controlled. Planning might also generate debates in the household.

In particular, it is very difficult to estimate the correct amount of bread. The consumption of bread may fluctuate a lot and people say they have to have bread at home.

Not throwing out even a slice of bread is a real challenge.

Optimising shopping round might mean buying fruits and vegetables earlier than needed (and storing longer at home which risks waste).

Maybe they buy vegetables, take it home, but if they had put more thought into it, they would have bought it the next day when they really needed fresh vegetables. So that's why they might need to go twice to the same place. This would be complicated for me.

ingredients for already, so you only have to buy a few things.

- At planning, chose meals in a way that you can use the leftovers when cooking the next meal.

I usually do this with stew. I eat beef stew for two days and when I have leftovers I add vegetables and I make a goulash out of it. And then I eat goulash for two more days and they there is nothing to throw out.

- Calculate quantities needed for the plan. Take into account how much household members like that meal. Not only like it in general, but do they want to eat it then and there? If they like it much, probably they will eat more.
- Write a shopping list for the week (not for the month). Before writing the shopping list, check what you already have at home.
- Have dry food at home, and always buy the fresh things when you need them. Things like beans, peas or whatever, pasta, rice, for example, they all fit in the pantry.
- Only buy food that is on the weekly plan.
- Take into account when you have the time to go shopping. Optimise shopping rounds. If possible buy vegetables and fruits close to cooking/consumption time (not several days before).

Make cream soup from the leftover vegetables

Quantities in planning

"You have to calculate the portions very thoroughly. So..."

Moderator: "And how can you calculate?"

"You can't."

Table 4 a: Overview difficulties and solutions mentioned regarding food waste

Difficulties mentioned	Solutions mentioned
<p>Maybe not everyone will be at home or maybe more people will come than what they have expected.</p> <p>It's difficult to calculate how much children (and others) will eat. Appetite depends a lot on the desires on a given day, the weather, the previous activities (e.g. doing sports), how much the given food is liked etc. Added difficulty is that preferences keep changing: a person might like spinach one day, and might dislike it a few weeks.</p> <p>The person who cooks often does not feel hungry after cooking, so their portion is left over.</p> <p>It's also difficult to calculate for guests (their appetite and preferences not known), especially if they are not known well by hosts.</p>	<ul style="list-style-type: none"> • You have to know <ul style="list-style-type: none"> ◦ who eats what and approx. what amount ◦ who likes what (what are very popular meals → needs bigger quantity) • Cooking more often. Cooking every day. Being able to estimate your own appetite is an important skill for planning.

Quantities at holidays / with guests

At holidays it is even more difficult to calculate the right quantities. People feel pressured to cook more lest they get into shame for not offering enough.

"For us dinner guests are a little risky, because you have to overcook yourself. It's embarrassing when there is not enough."

Table 4 b: Overview difficulties and solutions mentioned regarding food waste

Difficulties mentioned	Solutions mentioned
<p>Holiday or celebration meals "have to be" a feast: big variety and big quantity. Often also involving a lot of guests, which makes planning even more difficult – and quantities even more overestimated.</p> <p><i>Yes and then come all the relatives, everyone sends food to take home, ham or cakes. 'Take it, take it for the grandchildren, let them have it.' And of course we don't eat it all, because we bought some too and we also have food.</i></p>	<ul style="list-style-type: none"> • Eat the leftovers on the subsequent days. • Distribute and pack leftovers for guests to take home. • Decide to cook less. <p><i>I quit doing that [overcooking during holidays]. I take the chill pill, ask the kids what they want and make that. This Xmas we only had soup and chicken schnitzel. That's it. And when we don't have any left I ask what they want again, and cook that again.</i></p>

Provisioning

How to choose products, what to buy is a key question when the aim is reducing food waste at home.

Some of this advice is controversial. If people do not buy the products that expire soon or the apples that are a little bit bruised, it will be the shops trashing these. So sometimes the question is only who will trash the food along the supply-consumption chain.

There is a controversy between fresh and long-keeping products. It was evident for participants that long shelf-life products (e.g. UHT milk) is better from the food waste point of view, but they perceive these products as having more chemicals and toxins. Therefore for health reasons they would rather choose the fresh ones that expire faster.

Table 4 c: Overview difficulties and solutions mentioned regarding food waste

Difficulties mentioned	Solutions mentioned
<p>An often mentioned difficulty is when fruits or vegetables look good in the shop and at home one sees that they are bad or unripe inside. Participants said these are more often happening with products coming from abroad, travelling long distances, ripened artificially.</p> <p>Not having to time or the energy or the interest to check expiration dates in the shop.</p>	<ul style="list-style-type: none"> • Buy fruits and vegetables that are in season and come from nearby. • Choose high(er) quality food. • Observe the product well before choosing it (how does it look/smell/touch?) • Some participants advise to buy the products from the back of the shelf, the front ones expire faster.

Quantities during shopping

Table 4 d: Overview difficulties and solutions mentioned regarding food waste

Difficulties mentioned	Solutions mentioned
<p>Buying too much due to</p> <ul style="list-style-type: none"> • not being able to estimate the "tricks" of supermarkets 	<ul style="list-style-type: none"> • Never go shopping when hungry • Go shopping more often and buy smaller quantities. • Buy less but better quality. • Online shopping is preferable as it eliminates (or reduces) impulse shopping • Only take cash that is about enough, this way you cannot buy much extra food. • Don't let your eyes be tempted by other foods when you are walking by the yoghurts or sweets or anything else. • For further aspects related to the fridge see Opportunities.

Storing

Forgetting about the food we already have, not knowing about the right storage methods are the main difficulties participants reported. There also several issues and troubles around cooling and freezing. Knowledge about right storage is key.

Table 4 e: Overview difficulties and solutions mentioned regarding food waste

Difficulties mentioned	Solutions mentioned
<p>Forgetting about food in the back of the fridge, in the pantry or out in the balcony is a common issue for all. One reason they mentioned for this is that the fridge is too big and things can easily get hidden.</p>	<ul style="list-style-type: none"> • Take stock every day. Look at fruits and vegetables individually, look at all sides to see if maybe a side of it is softer. • Know what is in your fridge. Regularly (re)organise the content of the fridge. • Constantly have to pay attention when things expire
<p>Forgetting to put cooked food into the fridge in time.</p>	<ul style="list-style-type: none"> • FIFO: first in first out. Put the new things in the back, and the old ones in front.
<p>Lack of knowledge about what products not to store close to each other.</p>	<ul style="list-style-type: none"> • Check how to store that food item right. Look for information on shelf life, correct storage method.
<p>Lack of knowledge about right storing conditions. Fridge or pantry? For some, it's a dilemma whether to put fruits in the fridge or not. In the fridge they last longer, but the taste changes.</p>	<ul style="list-style-type: none"> • Don't wash eggs and fruits and vegetables, only right before cooking/consumption • When storing apples and potatoes in the basement, they need to be far from each other. Potatoes emit some gases that make apples rot.
<p>Wrong temperature in the fridge.</p>	<ul style="list-style-type: none"> • If you put a ripe banana next to your unripe vegetables and put it in a paper bag it will produce the same natural gases and it will ripen the fruits and vegetables next to it. You can play around with this.
<p>Lack of space in fridge (or buying too much?)</p>	<ul style="list-style-type: none"> • Ensure good ventilation of air
<p>Food is not stored well in the fridge, not sealed right or wrapped well. It takes the smell of something else.</p>	<ul style="list-style-type: none"> • Hot food (e.g. soup) should not be put in the fridge hot. First, cool it in cold water.
<p>Lack of knowledge about whether dry food can go bad or not.</p>	<ul style="list-style-type: none"> • It usually happens with tomatoes sold in boxes that the ones on the bottom cannot breathe and start moulding. Get them out of the box and spread them out in the fridge so this doesn't happen. • Set the right temperature in the fridge and freezer. Adjust the temperature in hot weather and at seasons' changes. • Use storage boxes (see at Opportunities)

Freezing

Table 4 e: Overview difficulties and solutions mentioned regarding food waste

Difficulties mentioned	Solutions mentioned
Lacking knowledge (or having wrong knowledge) about what sorts of food can and what cannot be frozen.	<ul style="list-style-type: none">• Put leftover in the freezer.• The freezer should be organized. You can also make a map of what is where in the freezer.• Label the boxes you put in the freezer. Choose labels or tape that will not fall off when frozen/wet. Participants advise that a special pen is needed to write upon labels. Write the name of the food, the date of freezing on the label.• Regularly disinfect the freezer, like that it won't get smelly.
Lacking knowledge about how long things can be kept in the freezer.	
In the freezer foods lose their taste after a while.	
Lack of good boxes that can be closed properly.	
It is difficult to keep order in the big "coffin-like" freezers.	
Labels fall off boxes, thus food becomes unidentifiable.	

Preparing

Good cooking skills and creativity in the use of leftovers are important abilities.

Table 4 f: Overview difficulties and solutions mentioned regarding food waste

Difficulties mentioned	Solutions mentioned
No experience and lack of skills in cooking	<ul style="list-style-type: none">• Learn to cook. Learn about the use of spices.• Look at recipes before starting to cook.• Think about how to transform (even spoiled) meals to new/better ones.• Serve leftovers differently or make a new meal out of them. Look for recipes online for using leftovers.• Cook with butter instead of oil or fat, butter is good for a longer time.• Use dry bread for: Toast, french toast, bread crumbs, hot sandwich. Or put pizza sauce on it and bake it.
Accidents in cooking (when meals do not become edible/tasty)	

Quantities when cooking

It is often mentioned that one reason of food waste is cooking too much. This is closely related with the need for variety (see above).

Table 4 g: Overview difficulties and solutions mentioned regarding food waste

Difficulties mentioned	Solutions mentioned
<p>Several people said they have a habit of cooking much.</p> <p>E.g. after cooking for many people for a long time, it is difficult to get used to / learn to cook for one person (in a single person household).</p> <p>People often cook much because they would like to save time, but often, when eating the same food again and again, they get bored of it and it gets wasted.</p> <p>Cooking less but more often is perceived as very time consuming.</p> <p>Participants claimed there are certain types of food that are difficult to make in only one portion (e.g. stuffed cabbage or potato with mayonnaise)</p>	<ul style="list-style-type: none"> • Cook less. E.g. reduce quantities by a quarter first, check how it suffices, reduce more if needed. • Cook less and with more variations to not to get bored from the food. • If you cook a lot, freeze most of it packaged by portions. • Learn how to cook smaller portions. • Use a smaller pot • Learn your quantities. E.g. <ul style="list-style-type: none"> ◦ some participants said they always eat the same quantity (e.g. one bag of bagged rice). This way they don't have the problem of preparing too much because they can be sure that they can eat this amount. ◦ using the same pot for cooking soup and filling it to the same level.
<p>Even when household members are asked how much they want, answers like "not too much" are difficult to interpret.</p>	<p><i>So when you cook in a pot it is easy to see how much you have to prepare. You can remember the amount of ingredients you have put in there so you always end up with the same amount. Not more, not less.</i></p>
<p>There also seems to be lack of knowledge. Someone mentioned they do not know how many grams they are supposed to eat per type of food.</p> <p>(See more examples above at Habit of cooking too much)</p>	<ul style="list-style-type: none"> • <i>So if I cook stuffed cabbage, as you know I am alone, 2 or 3 pieces would be enough for me, but you don't make that few once you have started it. I cook 20 pieces, I put it in boxes and the in the freezer. So it doesn't go bad. And when I want to I just get it out of the freezer, those 2 or 3 pieces I have put in one box. Whenever I crave it I just get it out of there and it never goes bad.</i>

Consuming

The main solutions mentioned for leftovers:

- eating it
- freezing it
- transforming into a new meal (see above at cooking)
- giving to pets
- donating.

Having a dog or a cat is also seen as (part of) a solution by many. They do not consider the food given to pets as waste. The opposite even.

"I would try what I can and then buy a dog so I could continue not throwing anything out."

"But for example if we give it to the dog after and it eats it, does that count? I'm asking. The other day he ate the beef stew. So right now that counts as waste. For me that counts as feeding the dog."

Table 4 h: Overview difficulties and solutions mentioned regarding food waste

Difficulties mentioned	Solutions mentioned
Opening new packages (of e.g. cold cuts, cheese) before using up the already opened one – because of the need for variety.	<ul style="list-style-type: none"> • With some food items (e.g. pineapple) you have to judge carefully what is the right time to consume (when it's ripe but not too ripe). • Eat the leftovers (e.g. take it to the office for lunch the next day).
One bite is left on the plate.	<p><i>Sometimes you will have to eat food you don't really want to, something that has been there for 2 days or something. You don't make something new that day because you have leftovers.</i></p>
Consumed quantity also depends on the weather. In big heat people eats less and prefer lighter food.	<ul style="list-style-type: none"> • Everyone should serve themselves, rather smaller portions, as much as they can eat for sure.
Guests do not finish their plates (their plate waste has to be thrown out). Guests cancelling the visit.	<ul style="list-style-type: none"> • Invite guests to help with finishing leftovers. • Give leftover to neighbour. • Put leftovers in boxes, and freeze it. • Participants say that when they have leftovers, they pack it for homeless people and leave it next to the trash or the recycling bin. Sometimes kids also give away their sandwiches to others in school. • Give the leftover to the dog/cat.

Quantities when eating

Table 4 i: Overview difficulties and solutions mentioned regarding food waste

Difficulties mentioned	Solutions mentioned
People regularly overestimate the quantity they can eat from certain foods (e.g. spaghetti), they put much on their plate and end up not being able to finish it.	<ul style="list-style-type: none"> • Only put as much on your plate as you can eat. • With food that is overestimated at serving: spread it on the plate when serving so that it looks more. • Use small plates. • Serve less, but several times.
Some report that there is always a bite left on the plate which is not worth putting back in the fridge.	

Often, when the remaining one portion is put in the fridge, it is not eaten as e.g. it is not enough for everyone. There might also be a communication problem: everyone thinks someone else (in the household) will eat it, and finally it is not consumed.

It's interesting that if we have very little leftovers from something then we put it away in the fridge and then it's going to end up in the fridge. If there is only one portion left. There are 4 of us at home and if my daughters come then it's 6 of us. Everyone just looks at that portion and thinks that someone else will eat it. The kid will eat it. My partner will come home and eat it, he likes it. So it is in the fridge for 2-3 days.

Quantities when eating out

Table 4 j: Overview difficulties and solutions mentioned regarding food waste

Difficulties mentioned	Solutions mentioned
<p>Participants say there is plate waste</p> <ul style="list-style-type: none"> ○ when portions are too big and small portions are not available ○ if the meat and the garnish are not proportionate (<i>When I have eaten the meat I don't want to eat the rest of the potatoes plain.</i>) 	<ul style="list-style-type: none"> • Ask for a doggy bag and take it home. According to participants this is possible and OK everywhere in Hungary. • Order a small portion. The problem they mentioned with this is that most places charge 70% of the full price for the half-portion. It would be great if restaurants charged 50%.

Additional obstacle is when restaurants charge extra for the doggy bag box.

The "all-you-can-eat" places annoy many people as they see a lot of plate waste there. They complain of other consumers not being able to restrain themselves.

Intervention strategies

Participants were asked what they think people would need in order to throw out less food.

When asked who should take care of raising awareness to food wastage, people most often answered: parents, the family.

The proposed intervention strategies concerning the person and the household are detailed in Abilities and Opportunities. Here we discuss additional items that participants mentioned.

Media and information sources

Some think that a general change in attitude is needed. This topic needs to appear more in the media, for example through an encouraging campaign. Someone mentioned that it is eye-opening to hear the food waste statistics.

"When all these statistics get thrown into your face it's really eye-opening."

When asked if they remember any outside influence for reducing food waste, most people do not recall anything. Some participants mentioned a few TV programmes, mostly news on poor people or cooking programmes. The internet is mainly mentioned as a source of tips on reducing food waste.

Some specific ideas/influences people mentioned:

- Programmes on cooking channels (e.g. Paprika TV) by famous chefs on how to transform and use leftovers
- A documentary about food waste on TV in prime time.
- Websites that offer ideas and tricks on how to save food (e.g. Nosalty and Mindmegette)
- Internet cannot be the only communication channel since many people don't have internet connection.

Policy

Participants thought sanctions are needed against the supermarkets to sell better quality food (see above at Opportunities). Also, food redistribution activities in the food industry and the hospitality sector should be supported by policy.

Starting the separate collection of food waste in Hungary was also mentioned.

Supermarkets

As already mentioned in Opportunities, shops selling low quality of food is a major issue.

People think retailers should

- offer the packaged and loose fruits and vegetables for the same price
- compensate consumers for having sold bad quality items (not only in the value of the product, but also the time lost)
- take part in general awareness raising about food waste
- give appropriate information in the shops, for example about the quality and shelf-life of fruits and vegetables
- sell small portions for the same unit price

- use different packaging for cold cuts sliced in-store (see above at Opportunities)
- donate the unsold food to charity
- continue selling the close-to-expiry products for discounted price (this is a standard practice in Hungary which people like).

Communities / NGOs / others

Elderly people, friends, community houses, cooking courses, apps, food donation boxes were also mentioned as potential helping sources.

"I think everyone knows a secret. We should ask elderly people."

Schools and institutions

The meals in schools should be such that children eat it. It is also showing a bad example, the children seeing how much food is thrown out in schools.

There should also be less food wasted in hospitals and other institutions.

"I pay a bunch of money for their meals [in the school] and then they don't eat and sit through the day hungrily. That's not acceptable at all."

Acceptability of wasting different food products in different situations

What is acceptable to throw out, what is not?

According to participants it is **acceptable** to throw out food, that

- is rotten, moulded, not edible and thus a health risk
- is cheap
- is expired
- is unhealthy (e.g. fast food, sweets)
- we throw away rarely (acceptable because it only happens once in a while)
- we throw away often (acceptable because we got used to throwing it)
- has short shelf life and that cannot be frozen (acceptable because there is a lesser chance of saving it)
- we don't like, does not have the desired taste or texture
 - "If you do it wrong. You added too much flour, so you had to throw it out."*
- we did not cook, but e.g. received it from someone
 - "We take food from grandma and then it's okay because we didn't cook it and didn't spend time on it, I didn't go to the store for it. I got it. It went bad. I throw it out. I don't care."*

What is **not acceptable** to be thrown? Food, that

- is expensive

- we like very much
- is healthy
- has a high emotional value for the person.

Situations when it is (more) **acceptable** to throw food are generally those when we cannot control (that much) the circumstances.

- when guests come (we have to cook much not to get into shame; food left on guests' plates cannot be saved)
- at big holiday celebrations

"Regarding the quantity, for example on holidays. They [the host] wrap up so much food for you to take home than you just keep eating it but if some is left then you just throw it out. So the quantity was so big to begin with, and it's after the holidays, we gained weight, so it's okay. Maybe it even went bad. So we throw it out."

- unexpected situations
- if it only happens rarely

"It also matters how often you throw food out, because if once a month I throw something out, big deal, that's okay. But if I do it every week then that's very annoying."

- when pets or animals eat the surplus, people don't consider it wasted.

Which are the situations when it's (less or) **not acceptable**, when do they think it's not justified?

- in restaurants, because it's more expensive (more acceptable than canteen which is cheaper)
- at home, because it feels worse and because situations can be controlled best at home.

Yes, people say contradictory things. Sometimes what is acceptable for some, may be not acceptable at all for others.

Expired food is acceptable to throw for some and not acceptable for others.

8.3 Conclusions

How do people think about food waste?

Awareness

For all focus group participants it was clear and unquestionable that food waste is bad and should be reduced and avoided. People are very much aware of poverty both within and outside Hungary. Still, food waste does not seem to be a topic of discussion either in their families or workplaces and they don't hear much about it in the media.

When talking about their households, most participants said that **they do not have** food waste, or at least not much. But regarding more specific questions they were able to give examples of how food waste is generated in their households.

During the discussions these types of food were most often mentioned in relation to food being wasted: fruits and vegetables, especially citrus fruits (many times purchased for having a healthy life, but not consumed), cooked food, cold cuts, bread, dairy products.

Attitudes

People do agree that food waste is „Not a good thing.“

Food waste is a sign of wealth. Throwing out food is throwing out money, this is very obvious for everyone. And people tend to think that food is generally expensive.

For many people, food waste is a **moral issue**. Not to throw away food is the right thing to do, this is obvious for basically everyone. No one in the discussions argued that it is in general ok to throw out food. They also take it for granted that everyone feels guilty for trashing food.

When talking about food waste or sometimes even when they throw away food, the pictures that spontaneously come to many people's minds are starving people and children in Hungary and in Africa (seen on TV or online), homeless people picking the bin (seen by them personally, in front of their homes).

The environmental impact of food waste does not come up as a major issue, and only very few people knew about this in depth.

Also, there are many specific situations **when it is acceptable** to throw out food (e.g. when it is rotten, cheap, after holiday celebrations).

The majority of participants have **negative feelings** about food waste. These being: guilt and shame (because throwing food out is not right), sadness, anger (e.g. against sellers who sold bad quality products), frustration, disappointment (we were so prepared to eat it, but it went bad), regret, remorse. Feeling bad, sorry and annoyed (for throwing money and time away).

But forcing ourselves to eat the leftovers is not always the good solution either: "In this case we are just taking steps towards not enjoying food anymore, aren't we?" Also, there is the fear from getting sick because of food safety problems.

Few people have rather **neutral** feelings about throwing food out. For them it is ok to do so, a necessary thing to happen. Not wasting food is attached with

positive feelings and notions such as being conscious, a moral uprise, positive change.

Key topics

Some key topics arising in Hungary were:

- In the past food had more respect, it was of better quality and for these and other reasons it was wasted less. When talking about the past, people talked about their grandparents' habits and teachings, Socialism or they just used a general past tense. Compared to this past, the present order and context is very different. This society is more affluent, focused on consuming and a lot more wasteful. Quantity prevails over quality.
- The general thinking is that people Hungary are less affluent than people in the West (Western Europe and North America), therefore they cannot afford to throw out as much food as they do in the West. So in spite of them saying how the present society is more wasteful then it was in the past, when asked whether they think food waste is a problem or not in Hungary, most people say no. In these cases they compare Hungary to the "West" where they think this is a more serious problem.
- Bread was discussed a lot, it came up in all the discussions. Bread is a very controversial food, since on the one hand it is (or at least used to be) sacred, the most sacred food that should never be thrown out. This tradition still lives on in many households. On the other hand it is cheap and, according to many participants, or low quality. It is difficult to estimate how much bread people will consume from day to day.

The quality of food sold in shops. According to participants the reason of them having to throw out food is that it was already bad quality in the shop (but looking ok/good). Being able to buy quality ingredients was mentioned as a top important condition for reducing food waste in households. Participants often mentioned these problems happening with fruits and vegetables sold in packages (not loose). These are often cheaper than the loose products. Often people assume that this is happening on purpose. Of course, the nature of this research does not permit us to decide whether that is true. But if this issue does not come up in Spain, Germany and the Netherlands, then it is worth to further research this topic and the reasons behind. People think the solution is that shops sell the packaged fruits for the same price as loose ones.

Stereotypes about who wastes and who do not

When asked, participants said that people in general do not care about food waste. Food waste is part of our lives. Everyone's. Some say we are used to it, it is part of the daily routines to bin the food.

Only few people said that others do care.

Most frequently people said it's wealthy people who waste food. The second group most frequently mentioned to waste food was young people. Families with children, large families, people living in rural areas, people with special diets were also mentioned. When asked, people also answered in terms of personality

features. According to them, it is the lazy, shallow, dumb, naïve, negligent people who tend to waste food.

Most participants were of the opinion that it is poor people that do not waste food. Elderly or retired people were also mentioned several times. Other groups mentioned were: stay-at-home mothers, single householders, activists and those who volunteer at NGOs. In terms of personality, conscious people were mentioned.

Healthy eating was mentioned both as an influence for more waste and as one for less waste.

Influencing factors

It is apparent from the research that (besides the quality of products sold) the personality (motivation, awareness) has the strongest influence on food waste.

In this respect, **upbringing, the household and the smaller community** around the person is defining.

Child rearing practices of today and one or two generations ago appear to be very different.

Most people say they learnt it as children not to throw food away. "Only put as much on your plate as you will eat" "finish everything on your plate" "don't play with food" are sentences most of us heard in our childhood. These are deeply imprinted in people's minds. In their opinion the attitude of caring about food waste is imprinted in the personality in childhood. "It's in our blood"- someone said.

This would confirm the presumption that throwing out food mainly depends on the persons values which are mostly fixed in childhood.

Childhood habits influence how we act later on in life, also in the case of food waste. Childhood influences can lead the person to have much or to have little food waste. Sometimes traumatic childhood experiences influence food waste habits to a great extent. In this cases the food saving practices forced on children in the past can turn to their opposites: wasteful habits in adulthood.

In the present, parents seem to be a lot more liberal, catering to their children's every need. Children can easily refuse, request, throw out food parents offer. Children's tastes are satisfied to the extreme, in some cases.

Maybe this liberal attitude stems from the traumatic childhood experiences. They don't want their kids to panic or be scared because of being forced to eat something unwanted. From the outsider's point of view we might have gone to the other extreme.

Generational differences also show within families between parents and grown-up adults. And this can either manifest in one generation helping the other (e.g. by showing how to use leftovers), or in conflicts as well. From the examples participants mentioned it seems that older generations are more conscious, eating all the parts of animals that the young wouldn't or knowing the recipes to save leftovers. Differences are also shown in food preferences: older generations prefer the heavier, fatter traditional cuisine that is not that much preferred by younger ones. This can lead to food waste when (grand)parents cook for grown-up children to take food away.

People have their **personal standards of what is "good enough"** to eat and what to thrash. In most of these cases food is still edible, but not fresh, does not have the preferred taste etc. These personal standards people have about what they consider good enough to eat differ a lot. For example in the discussions there were heated debates about whether excess bread frozen and defrosted is good enough to eat or not.

There are **personality traits and habits** that contribute to more food waste and others that work against it.

Personal qualities and habits contribute to more food wasted:

- Being picky, spoiled. What is edible for some, is not edible for others. For example the fatty part of chicken or pizza crust. Some people care a lot about how the food looks, and if it doesn't look nice or if it's the wrong colour, they would throw it away even if it's totally edible. E.g. chocolate that got the white layer.
- Variety; not wanting to eat the same thing again. Not wanting to eat the same meal for the second or third time, being "bored" with it was mentioned as a regular reason for throwing out cooked food
- Following the changing moods. "Would I like this or that right now?" When people follow their momentary moods, some food can easily end up in the bin.
- The habit of cooking big portions and the belief that some kinds of food can only be cooked in big quantities. Cooking in big quantities seems to be a habit that stems from childhood and that is difficult to quit. Also, there are certain types of meals that people prefer to cook in big quantities, or even, they believe that these meals will only be tasty if cooked in big quantities. Some people believe that in general it is better to cook more.
- Only wanting to eat fresh food. Some people only want to eat fresh food, they don't eat leftovers. People think some foods are only edible when fresh – and there are disagreements which these foods are.

Characteristics and habits that contribute to less food wasted are:

- Morality, having respect for food. People who have a high respect for food and for the people who produced the food, people who think certain foods are sacred will probably waste less.
- Frugality vs. choosing the good quality. It is a constant dilemma for people: should they buy more from the cheaper product or less from the more expensive but higher quality one. According to the participants, buying less, but higher quality will produce less food waste.

- Consciousness and paying attention (including being able and willing to pay attention) is an important condition of throwing out less food. Paying attention needs time spent with this issue. Leading a conscious life in general will make it more likely to be conscious in the issue of food waste as well.
- Determination, willpower, discipline. If not wasting food is not a habit yet, then a purposeful decision is essential to start focusing on this. Willpower and discipline is needed to follow through this decision. People often associated these characteristics with having to eat and finish the leftovers instead of making a new meal, sticking to decisions made before instead of following momentary cravings.
- Creativity, e.g. in how they turn ingredients into meals. Often new ideas, new recipes or recipe changes are needed to use leftovers or close-to-expiry ingredients in combination.
- Being organised, good organising skills are useful to run the kitchen in an efficient, neat way. Everything should have its place and order is needed.
- Patience, diligence was also mentioned several times. To regularly clean boxes, organise, inspect food items people need these virtues.

Abilities are also important factors influencing food waste.

The most important ability seems getting the quantities right. Judging the quantities well is important in all the major steps: planning, shopping, cooking, eating. It involves a lot of knowledge (e.g. about their own and household members' eating habits) and skills (e.g. cooking exact quantities).

Also very important is the ability to know and manage other household members' food consumption. People state that it is much more difficult to save food in a large household with children than in a single home.

Besides this there are numerous bits of knowledge, skills that people can or should have in order to not to throw away food.

In terms of **factors outside people's sphere of influence** their income (it is easier to save food with a smaller income – people are forced to do it then), the quality of goods sold, and their lifestyle (in terms of time available) are the most important influencing factors.

The following excerpt is quite to the point.

"If we are trying not to throw food out, what factors could make this more difficult?"

Juli A large fridge.

Feri High salary.

Juli All the brochures.

János Power of habit.

Márta And being picky."

"If the quantity and the quality is in balance and it is something I like and the meals are various enough, then I simply have to throw less out. If for some reason you can't make it right, or my daughter doesn't like it, or her boyfriend comes over and he doesn't like it. So there are several things that can go wrong, several factors that influence the amount of food you will throw out, even factors you can't plan ahead or that you don't do on purpose."

Conclusion

"The moral from all this for me was that we always complain but we have very good lives. As long as we have food to throw away."

Food waste is a topic with many contradictions. It has contradicting values and goals – within people's lives. It is immoral to throw out but still acceptable in many situations. Sometime one has to choose between healthier food and saving food. Or between the joy of eating and having to finish the leftovers.

The strongest influencing factors found in Hungary are:

- attitudes, values people attach to food (most importantly: that it is not right, not ok to waste food)
- upbringing, family habits – that transmit these values
- the ability of getting the quantities right
- the ability to know and manage other household members' food consumption
- the quality of products sold in shops
- household income
- available time
- and of course the perceived difficulty of reducing food waste.

People seem to think that the traditional values, the respect for food (that has been high in the past) is and has been deteriorating. Capitalism, the logic of market economy and the marketing avalanche of retailers are either the cause or the accelerator of this process.

For household food waste to be reduced in Hungary, the traditional habits and values need to be kept and revived. And the major place for this is the family. Families and (future) parents need to be in the focus of this work.

Wasting food is bad, even immoral in people's opinion. It makes them feel guilty and ashamed. So of course, saving food is the right thing to do.

But avoiding food waste is not a priority for most. People have busy, running lives and food waste is way at the end of the list.

They have the perception that saving food takes a lot of time (that they don't have) and money (even though it also saves money). And it is a drag, or even impossible.

"I wouldn't take it on [the challenge to not throw out food for 30 days]. It takes so so much energy and time. Is it worth it? All the time needed, during which you could do so many other things. If you are planning to buy 3 oranges and a quarter kilo of bread today, and think of what to buy tomorrow. So your whole day would be about planning and thinking about what to buy and eat."

"Because I think it is impossible. You can try, everyone tries, but in the end, we either eat bad food or stuff ourselves. I don't think it is doable."

For others, it is an easy task.

"I think I could do this, more or less without any problems. For me together with saving and dieting, this could be a good consistent goal."

In order to save food the household, the kitchen should work in a very organized way, and really thought through.

Reducing food waste doesn't always require immense resources or big changes. Even the research discussions contributed to positive change. Only by discussing it for 2 hours, people made resolutions to make changes in their lives.

"And now that we had this conversation I will pay more attention to food. I am serious, so I don't throw that much away. I should eat it instead. If I buy it I should eat it. That's it. Or if I won't then I shouldn't even buy it in the first place. Should I buy it just to throw it away?"

"I think I will prepare smaller portions in the future."

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10 Annex methodological documents

10.1 Topic guide and material in English

The focus group discussion is semi structured. This means that there are several topics and questions that need to be asked during each focus group in the same order, but that there is flexibility as well to ask additional questions about a relevant topic raised by the participants. The focus group guide is divided into ten subparts, see box 6. An indication of how many minutes should be spent per subpart is given. Further, an example text, questions and tips for the moderator are provided. Additionally, we have some general rules / tips:

- In most subparts an example text is provided to illustrate what needs to be said. However, we recommend to reformulate the text into your own words and know it by heart as this will improve the quality of the session. Be careful to not reformulate the definition of food waste.
- The questions that should be asked are listed, together with suggested follow up questions. The questions can be rephrased into the moderators own wording and additional questions may be asked.
- Make sure to let the group speak and react to each other, and avoid making the session into multiple individual interviews. If the group is rather silent, you can use one of the following questions: Does someone have (do you have) a different opinion?; Who (does not) recognizes these situations/feelings/...?; What do you think?; Does this also apply to your household/life/...?.
- The moderator should try to say as little as possible and let the group fill in the silences. Let your eyes do the talking, just look someone in the eye if you want that person to speak. Try not to summarize (too much) (creates the risk of not mentioning everyone's opinion, and by accident shutting someone out of the discussion. Also, it can unintentionally be steering).
- Create an atmosphere in which wasting and preventing food waste are both 'neutral' behaviours and that there is no right or wrong behaviour, opinion or feeling.

The first subpart is the introduction. It is important to create a good group atmosphere at the beginning of the session, in order for the participants to feel comfortable with speaking about food waste. The introduction is an essential part as it determines how willing participants will be with sharing their experiences and thoughts with the group. Therefore, we have written an extended example text.

The second subpart covers their homework. Aim for creating an understanding that all consumers waste food from time to time. Mention that some persons discard a bit more and others a bit less and that this is both okay.

Subpart three is about why the participants discard food, by making use of two cartoons (see appendix 1). Participants should be asked to first write their answers in the supplementary assignment book (assignment 1) before discussing their answers plenary. This method is used to increase the variety of answers and opinions.

In the fourth subpart, motivation regarding food waste prevention in terms of awareness and concerns will be investigated. The participants should answer the

questions in their supplementary assignment book (assignment 2) before discussing the answers as a group.

In the fifth subpart participants will be asked about their own and their household motivation to prevent food waste. Additionally, participants will be asked to list potential barriers they encounter if they would follow up on that aim and what would help them to succeed in reducing waste levels.

The sixth subpart is about out-of-home food waste, in particular plate waste in restaurants and canteens. The motivation and barriers surrounding out-of-home consumer food waste will be investigated here.

The seventh subpart is to gain insight into the social norm surrounding food waste. The social norm refers to how the participants think persons in their network think and act upon food waste prevention.

Subpart eight presents different situation in which food waste can occur. Participants rank the different situation based on how acceptable they find it to waste food in that particular situation. After an individual ranking (assignment three), the group discussion will cover their motivation / reasoning behind their ranking.

In subpart nine the participants rank how acceptable they find it to waste certain product types. After an individual ranking (assignment four), the group discussion will cover their motivation / reasoning behind their ranking.

Subpart ten is the conclusion, in which the participants can be thanked for their participation. Additionally, the incentive should be given after the participants have signed a form confirming they have received the incentive.

Introduction [10 min]

- Offer coffee or tea
- Sign consent form
- Fill in short questionnaire
- Turn tape on

Example text:

"Thank you for joining us today! My name is [name]. We are here to talk about food in your household. I would like to know about your shopping and cooking routines, your household dynamics and in particular about foods you buy or cook with the intention to consume, but which remain unconsumed.

Before we start, I would like to set some ground rules, just to make it comfortable for everyone. First of all, I'm hoping for a discussion, which means you do not have to agree with each other nor is there a right or wrong answer. Rather, I would like to hear all your opinions. Please allow everyone to finish his or her sentence and do not start a side conversation. I am interested in all you have to say, however, it could be that I interrupt you, just to make sure we cover all the topics in the available amount of time. The discussion will be approximately 130-140 minutes. Alright, I would like to start with an introduction round to get to know each other. Please tell me something about yourself, your household composition and your favourite dish. I will start: my name is [name], [household composition] and my favourite dish is [name dish] because [reason]."

Tips for the moderator:

- The goal is to inform the participants on the topic of the discussion and to create a good group atmosphere.

Photographs [15 min]

Example text:

"Prior to this focus group I asked you to shoot some photographs of food you throw away. Here is the result [show all the photographs]."

Questions:

1. Who would like to describe what is on the photograph you shot and tell a bit about how the food ended up to be unconsumed?
 - a. Could you describe the situation?
 - i. When was it?
 - ii. How did it end up uneaten?
 - iii. Did you already expect in advance that the food might end up unconsumed?
 - b. Could you tell something about your experiences or feelings at that moment?

Example text:

'I did the assignment myself as well and realized that I disposed more food than I expected, actually quite a lot'.

2. How was that for you?
3. How do you think about disposing food? / How do you experience this?

"I would say that we all dispose food, some a bit more and some a bit less. Disposed food is the topic of the next two hours, in which we will talk about food and drink products that are intended to be eaten by you, your household or other persons you eat with, but end up unconsumed and as a result will be thrown away. During our discussion we consider bones and peels or pits as uneatable and are thus not the topic of our discussion today."

Tips for the moderator:

- Goals are to raise awareness that we all waste food and in the second part to create understanding of the definition used during this discussion.
- Do not focus too much on the ones saying not to waste food, since some participants might realise during the session that they also waste food, but will not admit it here. Elaborate on the ones admitting to waste food to show that it is normal to waste.

Cartoon [15 min]

Example text:

Here you see a man and a woman both disposing some food at home. He is disposing some leftovers and she is disposing moulded fruit [show cartoons, page 25 - 26]. There are several questions about these cartoons in the booklet in front of you. Please make assignment one individually and in key words. Afterwards we will discuss your answers in the group.

Questions:

1. Could you think of some reasons why this man has leftovers?
 - a. Can you think of possible factors or issues that may have influenced this?
 - b. What kind of situations can have influenced it?
2. You mentioned several reasons. Could there be different/other/additional reasons that have led to the moulded fruit?
 - a. What factors or issues might have influenced this?
 - b. What kind of situations can have influenced it? / Could you tell some more about it?
3. How would this man and woman experience this, do you think?
 - a. Why do they think... / What do you mean with...? / Can you explain a bit more about...
 - b. How do you think that they feel?
4. Is there a difference between throwing away prepared food, like leftovers or unprepared food, like moulded fruits, for you?
 - a. Why/why not? / Could you explain this? / What makes the difference?

Tips for the moderator:

- Answers should contain multiple behaviours or situational factors increasing the likelihood to waste.
- Answers should explain their concern / awareness and feelings towards food waste and why they are or are not concerned about food waste.

Perfect non-waster in home – 3rd person [20 min]

Example text:

Imagine that the persons from the cartoon try not to waste for one month. There are three questions about this imaginary situation in the booklet in front of you. Please do assignment two individually and in key words. Afterwards we will discuss your answers in the group.

Questions:

1. Why would they do this?
 - a. What can be their motivation? Please explain.
 - b. Why might that be important for them? Could you tell some more about it?
 - c. Can you think of other values that might be important for them? Why is that?
2. What will make it difficult for them? / Which difficulties will they encounter do you think?
 - a. Please tell me more about ... / what kind of situations can make it difficult?
 - b. Can they do something to overcome ...?
 - i. Is that feasible?
 - c. Can you think of other difficulties?
3. What might help them to reach one month without waste? Please elaborate on this, try to mention as much as possible, even if you are not sure if it really might help them.
4. Is there knowledge which could be helpful? Could you tell some more about it?
5. Are there (other) skills they would need to succeed? How will it help them? / When will it help them most?

6. Is there something that could be changed in their surrounding what might help them? How will it help them? / When will it help them most?
7. Which tips or suggestions would you give them?
8. [If not mentioned spontaneously] who should give them the information?

Tips for the moderator:

- Answers should explain their awareness towards food waste.
- Answers should contain multiple barriers in the range of abilities and opportunities to engage in food waste prevention and why they are perceived as barriers.

Perfect non-waster in home – 1st person [15 -20 min]

Questions:

1. How would you feel about this challenge?
 - a. How come? / Please tell more / What makes you feel that way? / What do you mean with...?
2. Would you accept the challenge?
 - a. Could you explain that? / Please tell more...
3. How would your household react if you accepted the challenge?
 - a. How come? / Please tell more / What makes you think that? / What makes them feel that way / What do you mean with...?
 - b. How would their opinion affect your decision? How come? / Please tell more / In what way...
4. Do you think it would be possible for you or your household to avoid food waste completely for one month?
 - a. What could make it difficult?
 - b. Can you think of situations, traditions or routines which could conflict with the aim to not waste?
 - i. Why would that make it difficult not to waste?
 - ii. If you are in such a situation, based on that what would you decide to waste or not?
 - iii. How do you feel about those situations, traditions or routines? / How important are they for you or your household / why?
 - c. Are there other factors which could make it difficult?
 - i. How do you feel about those factors?
 - d. What would you need to succeed in not wasting food for one month?
 - e. Let's try to make a top three of most difficult situations to avoid waste and what you would need to overcome those [moderator: make use of a white board].
5. When is it acceptable to have food waste?
 - a. Could you tell some more about it / Why is that?
 - b. Please describe the situation. When does this situation occur? / How often does it happen? Who are involved in those situations?
 - c. How do you feel in these kind of situations?
 - d. If you find yourself in such a situation, what can make you decide to focus or not focus on preventing food waste?
 - e. If applicable/possible, could you share your family routines and traditions regarding this with us?
 - f. Do you have any idea where this [family routines and tradition] originate from? Please describe the situation.

Tips for the moderator:

- Answers should contain their motivation to engage (or not) in waste prevention and on what reasoning their motivation is based.
- Answers contain their perceived social norm in home and its effect on their motivation.
- Answers should contain barriers which they encounter in day-to-day life and how they perceive those barriers (unavoidable/frustrating/etc.) and why.
- Answers should contain their motivation to engage (or not) in waste prevention and on which reasoning their motivation is based.

Perfect non-waster out-of-home [15-20 min]

Example text:

We talked about food in the household. Now I would like to talk about food waste in restaurants and canteens. For this, please imagine that you try to not waste food (plate-waste) for one month when eating out in a restaurant or canteen.

Questions:

1. Would you accept such a challenge?
 - a. Why would or wouldn't you?
 - b. Why is or isn't this an issue for you?
 - c. Can you think of reasons why others might accept the challenge to not waste for one month?
 - i. What can be their motivation?
 - ii. Why might that be important for them?
 - iii. Can you think of other things that might be important for them? / Why is that?
2. Are there specific rules, routines or traditions in your family or culture which could conflict with the aim to not waste in restaurants or canteens?
 - d. Please describe the situation ... / How will it influence wasting?
 - e. If you find yourself in such a situation, what would make you decide to focus or not focus on waste prevention?
3. Does it make a difference to you if it regards a restaurant or canteen setting?
 - a. Please explain...
4. If you accept the aim to not waste for one month in these out of home settings. Which difficulties would you encounter, do you think?
 - a. Can you or others do something to overcome ...?
 - i. Is that feasible? Why? / Why not?
 - b. Can you think of other difficulties?
 - c. How do you feel about those difficulties?
 - d. What can you do to prevent food waste in those situations?
 - e. Which things in your surrounding could be changed to help you? / Which changes would help you?
5. How will your family or friends react if you tell them in the restaurant or canteen that you do not want to waste food? Please explain, elaborate on it, think of possible reaction of your family or best friend.

Tips for the moderator:

- Answers should contain their motivation to engage (or not) in waste prevention out-of-home and on what reasoning their motivation is based.
- Answers should contain barriers which they encounter and how they perceive those barriers (unavoidable/frustrating/etc.) and why.
- Answer should contain the social norm eating out-of-home and how it affects their motivation.

Social norm– 1st person [10 min]

Questions:

1. Do you think other people are concerned or trying to avoid food waste?
 - a. Who / When / Why/ Since when / What makes them (not) worry?
2. Who is according to your opinion someone who will not waste food? Could you describe him/her?
3. What kind of characteristics do these persons have?
 - a. Can you describe them? Who / When / Why/ Since when / What makes them (not) worry?
4. Who is according to your opinion someone who will waste food?
 - a. Can you describe them? Who / When / Why/ Since when / What will make them (not) worry?
5. Do you sometimes feel pressure to pay more attention to food waste prevention?
 - a. If so, when? / By who or what?

Tips for the moderator:

- Insight in the social norm surrounding food wasting, what do they think others think about food waste and what do they think other do.

Ranking situations [15 min]

Example text:

We have selected some situations which can cause waste. [Show page 27 – 31 and introduce the drawings]. Imagine that you need to dispose food in each of these situations. Would you find it more or less acceptable in some of these situations to waste than in others? Please rank them, with 1 equalling the least acceptable and 5 the most acceptable to throw out food.

Questions:

1. Why did you chose this order?
 - a. Please explain / What do you mean / Please elaborate on...
 - b. Why is that of important to you?
2. If we make a group ranking, how will that look like?
3. Can you think of other situations in which it is more or less acceptable to throw away food?
 - a. Please explain / What do you mean / Please elaborate on...

Tips for the moderator:

- Answers should contain the reasoning behind their ranking. Answers should contain nuances in their motivation, conflicting priorities or insights into what is most important to them and why.

Ranking products [10 min]

Example text:

We additionally selected some products which can end up unused [show them page 32 t/m 37 and introduce the product groups]. Imagine you need to dispose food of each category, would you find it more or less acceptable to dispose one food category compared to others? Please rank the categories with 1 equalling the least acceptable and 5 the most acceptable to throw out.

Questions:

1. Why did you choose this order?
 - a. Please explain / What do you mean / Please elaborate on...
 - b. Why is that of importance to you?
2. Why is it more or less acceptable to waste some of these products?
 - a. Please explain / What do you mean / Please elaborate on...
3. If we make a group ranking, how will that look like?
4. Can you think of other products for which it is more or less important/acceptable to avoid wasting them?

Tips for the moderator:

- Answers should contain the reasoning behind their ranking. Answers should contain nuances in their motivation, conflicting priorities or insights into what is most important to them and why.

Conclusion [5 min]

Questions:

1. Can you describe in three words how you think about food waste [if there is some time left].

Example text:

Thank you for attending! We are at the end of the discussion. I hope you had a nice [morning/afternoon], I know I did. [Hand out incentive and let them sign the form for receiving incentive].

Assignment 1

2. Please list the possible reasons why he throws away these **leftovers** (figure 1).

3. Please list the possible reasons why the fruit and vegetables became uneatable (figure 2).

3. What do these persons think or feel?

Left-overs

1



Moulded fruit and vegetables

2



Assignment 2

Imagine that these persons, who are not related, try **not** to waste for one month in their households.

1. Why would they do this?
2. What kind of difficulties do you think they will encounter?
3. Which skills do they need to succeed?
4. Which tips or suggestions would you give them?



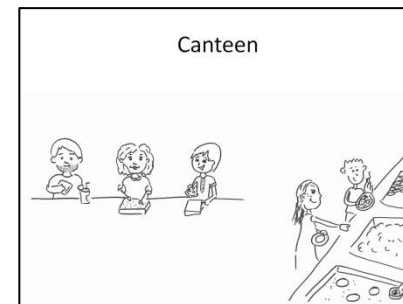
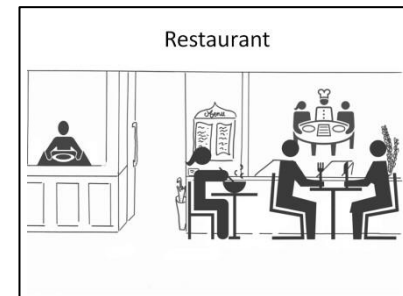
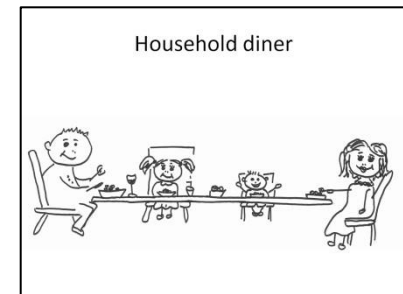
Assignment 3

Below you will see several different situations. Imagine that you need to dispose food in each of these situations. Would you find it more or less acceptable in some of these situations to waste food than in others? Please rank them, with 1 equalling the least acceptable and 5 the most acceptable to throw out food.

Why did you rank it like this?

Unexpected events

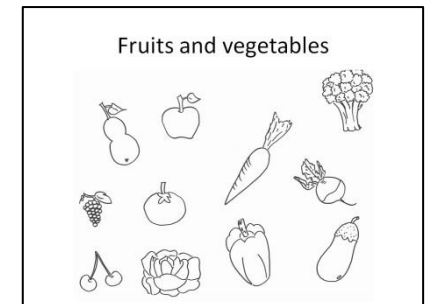
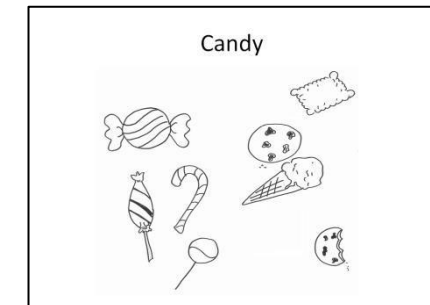
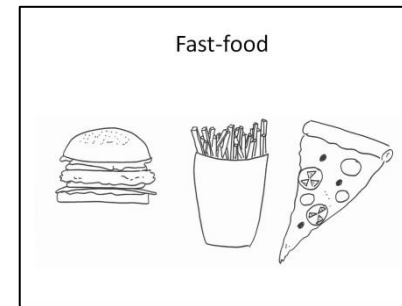
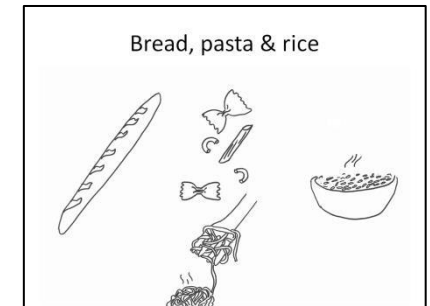
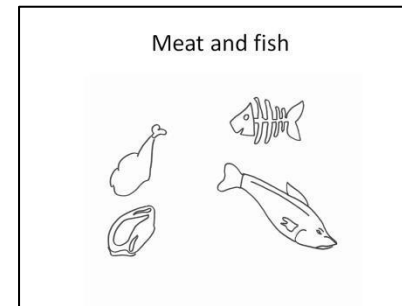
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1. Meeting at work	2. Make presentation	3. Brain storming for project	4. Prepare meeting	5. Presentation of project	6. Appointment with director	7. Appointment with director
8. Lunch with friend	9. Lunch with friend	10. Lunch with friend	11. Lunch with friend	12. Lunch with friend	13. Lunch with friend	14. Lunch with friend
15. Appointment with director	16. Appointment with director	17. Appointment with director	18. Appointment with director	19. Appointment with director	20. Appointment with director	21. Appointment with director
22. Appointment with director	23. Appointment with director	24. Appointment with director	25. Appointment with director	26. Appointment with director	27. Appointment with director	28. Appointment with director
29. Appointment with director	30. Appointment with director	31. Appointment with director	32. Appointment with director	33. Appointment with director	34. Appointment with director	35. Appointment with director
36. Appointment with director	37. Appointment with director	38. Appointment with director	39. Appointment with director	40. Appointment with director	41. Appointment with director	42. Appointment with director
43. Appointment with director	44. Appointment with director	45. Appointment with director	46. Appointment with director	47. Appointment with director	48. Appointment with director	49. Appointment with director
50. Appointment with director	51. Appointment with director	52. Appointment with director	53. Appointment with director	54. Appointment with director	55. Appointment with director	56. Appointment with director
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78. Appointment with director	79. Appointment with director	80. Appointment with director	81. Appointment with director	82. Appointment with director	83. Appointment with director	84. Appointment with director
85. Appointment with director	86. Appointment with director	87. Appointment with director	88. Appointment with director	89. Appointment with director	90. Appointment with director	91. Appointment with director
92. Appointment with director	93. Appointment with director	94. Appointment with director	95. Appointment with director	96. Appointment with director	97. Appointment with director	98. Appointment with director
99. Appointment with director	100. Appointment with director	101. Appointment with director	102. Appointment with director	103. Appointment with director	104. Appointment with director	105. Appointment with director



Assignment 4

Below you will see several groups of product types. Imagine you need to dispose food of each category, would you find it more or less acceptable to dispose some food products compared to others? Please rank them with 1 equalling the least acceptable and 5 the most acceptable to throw out.

Why did you rank it like this?



10.2 Coding book in English

Main code group	Sub coding	Sub coding
Assignments		
	Photographs	
	Cartoon	
	Perfect non-waster 3th	
	Perfect non-waster 1th	
	Perfect non-waster out-of-home	
	Social norm	
	Ranking situation	
	Ranking product	
Leads to food waste		
Prevents food waste		
Stages		
	Planning	
	Provisioning	
	Storing	
	Preparing	
	Consuming	
		Serving
		Leftovers
Drivers, barriers, strategies		
	Household members	
		Couples
		Kids and parents
		Other household members
	Household management	
		Accidents
		Budget
		Convenience – time
		Equipment
		Forgotten
		Guests - Special occasion
		Knowledge and skills
		Left-overs
		Planning meals
		Providing for family
		Serving
		Sharing – Donating
		Storing method
		Other
	Individual	
		Education
		Personality
		Principles - habits – routines
		Other

Lifestyle	Social life
	Unpredictable schedule
	Work life
	Other
Packages related	Product packaging
	Date labelling - shelf life
	Other packaging related
Product and meal related	Food born disease
	Health - nutrition
	Price
	Quantity
	Taste - quality
	Variety
	What do they waste
	Other product related
Society in general	Society - context
	Selling strategy
	Pressure of others
	Moral
	Monetary
	Environment
	Other
Miscellaneous	
Feelings attitude awareness	
Awareness, attitude	Environment
	Moral
	Perception of awareness - attitude of others
	Other
Feelings	Positive
	Negative
	Neutral
	Mixed
Stereotypes	
Demographic	Age
	Financial situation
	Gender
	Household composition
	Other demographics
Personality	Lifestyle - Personality traits
	Political preferences
	Sustainable behaviours
Other	

Intervention possibilities

	Action by others
	Technological solutions
	Supermarkets
	Restaurants
	Government
	Business
	Other
	Information education
	Supermarkets
	Politics
	Media
	Education
	Other
Ranking	
	Ranking product
	Animal product
	Environment
	Health
	Money
	Regular eaten by the household
	Safety - Shelf life
	Taste
	Other
	Ranking situations
	Control
	Price
	Special occasion
	Other

11 Annex country methodologies

11.1 The Netherlands

11.1.1 Recruitment

The recruitment of participants in The Netherlands took place in two different regions, Wageningen and 's Hertogenbosch. The participants for the three focus groups in Wageningen, were recruited through the FBR consumer panel by email. These participants live in and around Wageningen, Bennekom, Rhenen and Ede. In order to get a representative sample also members of the Essensor panel from Ede were contacted. The participants of the three focus groups in Den Bosch were gathered from the recruitment agency FRIS via mail and telephone contact. These participants live in or around the city 's Hertogenbosch.

11.1.2 Participants

Inclusion and exclusion criteria of the Dutch sample were in accordance with the general guidelines. All participants were involved with the household provisioning and meal preparation and were not working in the waste or food sector.

For the Dutch sample the average income ranges from € 32.000 - € 40.000 gross for a one person household and a range from €55.000 - €65.000 gross for a more person household. For details see table 6.

Table 6: Participants The Netherlands

Focus group	Gender	Age	Family situation	Household composition
Date				
place				
1	Female	70	Single	One person
03.01.2016	Male	63	Living together	Multi-person
9.00	Female	57	Married, Kids	Multi-person
Wageningen	Male	58	Married, Kids	Multi-person
	Male	67	Married, Kids	Multi-person
	Female	61	Single	One person
2	Male	23	Living together	Multi-person
03.01.2016	Female	42	Single, Kids	One person
12.30	Female	38	Living together	Multi-person
Wageningen	Female	24	Single	One person
	Male	42	Single	One person
3	Male	44	Single	One person

<i>09.01.2016</i>	Female	43	Married, Kids	Multi-person
<i>18.30</i>	Female	45	Married, Kids	Multi-person
<i>Wageningen</i>	Female	33	Single	One person
	Female	33	Single	One person
	Male	37	Married, Kids	Multi-person
	Male	29	Single	One person
4	Female	28	Single	One person
<i>29.03.2016</i>	Female	24	Living together	Multi-person
<i>15.00</i>	Male	32	Single	One person
<i>Den Bosch</i>	Male	34	Married, Kids	Multi-person
	Male	44	Single, Kids	Multi-person
	Female	44	Married, Kids	Multi-person
5	Female	47	Married, Kids	Multi-person
<i>30.03.2016</i>	Male	44	Single, Kids	Multi-person
<i>14.30</i>	Male	55	Single	One person
<i>Den Bosch</i>	Male	62	Married, Kids	Multi-person
	Female	52	Married, Kids	Multi-person
	Female	66	Single	One person
6	Female	49	Single, Kids	Multi-person
<i>30.03.2016</i>	Female	70	Married, Kids	Multi-person
<i>18.30</i>	Male	57	Single	One person
<i>Den Bosch</i>	Female	46	Married, Kids	Multi-person
	Male	56	Married, Kids	Multi-person
	Female	66	Single, Kids	One person

11.1.3 Practicalities (Date and Location)

The focus groups organized in Wageningen, took part on the 1st of March and one at the 9th of March. All three took place in the Wageningen university building. The focus group organized in Den Bosch, took place on the 29th of March and two on the 30th of March at the FRIS agency office. The approximate time was 150 minutes for each focus group.

All focus groups were recorded on video tape (Wageningen) or DVD (Den Bosch), in addition, there was a note taker. All Dutch sessions were transcribed and translated into English for analyses in Nvivo.

Although participants of Wageningen were not working in the food or waste area, it turned out that in each session at least 2 participants showed a relatively high level of awareness with regard to the topic. This was not the case with the focus group discussions organised in Hertogenbosch. This enabled us to explore consumer experiences differing from high to little awareness regarding food waste.

There were no campaigns or other activities with regard to food waste going on during the time span of the study.

11.2 Spain

11.2.1 Recruitment

As it is mentioned above Spain is composed of different Autonomous Communities. Each region is different to another in many aspects as population, income, language, feeding habits, unemployment rate etc. And they have specific waste management regulations. In order to gather a national representativeness two regions were selected: Catalonia and Andalusia. We will implement the focus group in the regional capitals, Barcelona and Seville. Andalusia and Catalonia are the most populated regions of Spain. Andalusia has 8.4 million people and Catalonia 7.4 million. They stand for the 18% and 16% of the Spanish population, respectively. Andalusia and Catalonia are also the regions with higher waste generation.

The recruitment of participants was carried out by ADICAE, a consumers' organisation established in different regions of Spain. They are focussed on banking and monetary problems of consumers. The headquarters of the organisation in Seville and Barcelona recruit the participants contacting by email (snow-ball), telephone and social networks. Three focus groups were implemented in Seville and three in Barcelona from people of the metropolitan areas.

11.2.2 Participants

Inclusion and exclusion criteria of the Spanish sample were in accordance with the general guidelines. Thus all participants were involved in household provisioning and food management and they were not working in the waste or food sector.

For the Spanish sample the average income ranges were treated by region. In Andalusia the average net annual household income is 21,332€ and in Catalonia 30,407€. However, according to the National Institute of Statistics the most frequent rent in Spain is 30% lower than the average rent. Therefore to facilitate the sampling process the average rent were established at 15,000€ and 21,000€ in Seville and Barcelona respectively. For details see table 7.

Table 7: Participants Spain

Focus group	Gender	Age	Family situation	Household composition
1	Female	32	Married	Multi-person
12.03.2016	Female	43	Single, kids	Multi-person
10.00	Female	25	Married	Multi-person
Barcelona	Male	27	Single	Multi-person
	Female	30	Single	Multi-person
	Male	27	Single	One-person
2	Male	40	Single, kids	Multi-person
26.02.2016	Male	27	Single	One-person
12.00	Male	22	Single	One-person
Seville	Female	33	Married	Multi-person
	Female	31	Living together	Multi-person
	Female	25	Single	One-person
	Male	32	Single	One-person
	Female	45	Single	One-person
3	Female	39	Married, Kids	Multi-person
04.03.2016	Male	27	Living together	Multi-person
17.30	Male	30	Single	Multi-person
Barcelona	Female	27	Living together	Multi-person
	Female	27	Living together	Multi-person
	Female	39	Single	One-person
	Female	36	Single	One-person
4	Female	48	Living together, kids	Multi-person
07.03.2016	Female	59	Single, kids	Multi-person
17.00	Male	64	Single	One-person
Barcelona	Female	56	Single, kids	Multi-person
	Male	61	Married, kids	Multi-person
	Female	53	Living together	Multi-person

5	Male	53	Married, kids	Multi-person
26.02.2016	Female	57	Married kids	Multi-person
17.30	Female	49	Living together	Multi-person
Seville	Male	52	Married	Multi-person
	Female	68	Single	One-person
6	Male	54	Single	One-person
25.02.2016	Male	64	Married	Multi-person
12.00	Female	47	Single, kids	Multi-person
Seville	Female	61	Married	Multi-person
	Female	46	Single	One-person
	Male	56	Married	Multi-person
	Female	53	Single	One-person

11.2.3 Practicalities (Date and Location)

Within Spain, there were 3 focus groups organized in Seville, one on the 25th of February and two on the 26th. In March (4th, 7th and 12th) were carried out in Barcelona. In both cities there were held in ADICAE's offices. The approximate time was 150 minutes for each focus group.

During all focus groups there was a note taker and in addition all focus groups were recorded and filmed. All Spanish sessions were transcribed and translated into English for analyses in Nvivo.

11.3 Germany

11.3.1 Recruitment

All of the six focus groups implemented in Germany took place in the city of Cologne. The recruitment of participants, the hosting of the focus groups and the recording of the discussions was carried out by a local market research institute, which is specialised on qualitative methods. Per focus group, the institute invited eight possible participants, six of which were selected on the day to join the focus group. In order to ensure that the participants felt comfortable talking about the issue of food waste, the groups were homogenous in income and age as the following table 8 shows.

11.3.2 Participants

Inclusion and exclusion criteria of the German sample were in accordance with the general guidelines. Thus, all participants were involved in the household provision and were not working in the waste and/ or food sector.

For the German sample, a monthly net income of 1,400-1,500 € per adult in the household was considered as average (here: *medium*) household income. Accordingly, a monthly net income higher than 1,500 € per adult is for this study defined as *above* average and an income lower than 1,400 € as *below* average. For details see table 8.

Table 8: Participants in the German focus groups

Focus group	Gender	Age	Family situation	Household composition
1	Male	59	Single	1 adult
17.02.2016	Female	48	Single	1 adult, 1 child
16.45	Male	56	Single	1 adult
Cologne	Male	54	Married	2 adults
	Female	47	In relationship	2 adults, 1 child
	Female	64	Married	2 adults
2	Male	33	Single	1 adult
17.01.2016	Female	44	Married	2 adults, 2 children
19.30	Male	29	Single	1 adult
Cologne	Female	37	Married	2 adults, 4 children
	Male	27	Single	1 adult
	Female	41	Married	2 adults, 1 child
3	Female	61	Married	2 adults
22.02.2016	Female	50	Married	2 adults, 1 child
16.45	Female	52	Single	1 adult
Cologne	Male	68	Single	1 adult
	Male	53	Married	2 adults, 1 child
	Male	54	Single	1 adult

4	Male	29	In relationship	2 adults
22.02.2016	Male	41	Single	1 adult
19.30	Female	36	Married	2 adults, 1 child
Wageningen	Male	28	Single	1 adult
	Female	40	Single	1 adult, 2 children
	Female	39	Single	1 adult, 1 child
5	Female	47	Single	1 adult, 2 children
25.02.2016	Female	49	Married	2 adults, 1 child
16.45	Male	57	In relationship	2 adults
Cologne	Male	51	Single	1 adult
	Male	63	Single	1 adult
	Female	68	Married	2 adults
6	Male	44	Single	1 adult, 1 child
25.02.2016	Male	31	In relationship	2 adults
19.30	Female	19	Single	1 adult
Cologne	Female	36	In relationship	2 adults, 1 child
	Female	34	Single	1 adult
	Male	42	Married	2 adults, 2 children

11.3.3 Practicalities (Date and Location)

In Germany all six focus groups took place in Cologne on February 17th, 22nd and 25th (thus, two focus groups per day). All of the discussions took place in a test studio in the centre of Cologne in which all equipment for the focus groups and food and drinks for the participants were provided. The approximate duration was 140 to 150 minutes for each focus group.

All focus groups were attended and facilitated by one moderator, one co-moderator and one transcript writer (all from CSCP). Additionally, all focus groups were recorded as audio and video files. All sessions were afterwards fully transcribed and translated into English for further analysis in the programme *Nvivo*.

11.4 Hungary

11.4.1 Recruitment

Inclusion and exclusion criteria of the Hungary groups were in accordance with the general guidelines. Thus, all participants were involved in household food provision and were not working in the waste and/ or food sector.

All six focus groups implemented in Hungary took place in the capital, Budapest. Recruitment of participants was done via mail and telephone by an agency specialised in focus groups. Participants were recruited in Budapest.

The recruitment of participants, the hosting of the focus groups and the recording of the discussions was carried out by a local research company specialised in qualitative methods. Per focus group, the company invited eight possible participants, six of whom were selected on the day to join the focus group.

11.4.2 Participants

Inclusion and exclusion criteria of the Hungarian sample were in accordance with the general guidelines. Thus all participants were involved the household provision and were not working in the waste or food sector.

For the Hungarian sample the average income is net HUF 120000 (about EUR 390) per person per month. For details see table 9.

Table 9: Participants in the Hungarian focus groups

Focus group Date place	Gender	Age	Family situation	Household composition
1	Male	38	Single	One person
23.02.2016	Male	44	In relationship, Kids	Multi-person
16.30	Female	39	In relationship, Kids	Multi-person
	Female	53	Single	One person
	Female	35	Single	One person
	Male	39	In relationship, Kids	Multi-person
2	Male	41	Single	One person
23.02.2016	Male	38	Single	One person
19.00	Female	36	In relationship, Kids	Multi-person
	Female	42	In relationship, Kids	Multi-person
	Female	40	In relationship, Kids	Multi-person

	Male	29	Single	One person
3	Male	41	Single	One person
25.02.2016	Male	44	In relationship, Kids	Multi-person
16.30	Female	37	Single	One person
	Female	40	In relationship, Kids	Multi-person
	Female	26	Single	One person
	Male	39	Couple	Multi-person
4	Male	57	In relationship, Kids	Multi-person
25.02.2016	Female	49	In relationship, Kids	Multi-person
19.00	Female	65	Single	One person
	Male	46	In relationship, Kids	Multi-person
	Male	47	Couple	Multi-person
	Female	57	In relationship, Kids	Multi-person
5	Female	57	Single	One person
01.03.2016	Female	57	In relationship, Kids	Multi-person
16.30	Female	64	Single	One person
	Male	58	Couple	Multi-person
	Male	66	Couple	Multi-person
	Male	67	Couple	Multi-person
6	Male	61	Single	One person
01.03.2016	Male	52	In relationship, Kids	Multi-person
19.00	Female	47	In relationship, Kids	Multi-person
	Male	58	In relationship, Kids	Multi-person
	Female	61	Single	One person
	Female	46	In relationship, Kids	Multi-person

11.4.3 Practicalities (Date and Location)

There were 6 focus groups organised in Budapest, Hungary. All group discussions were held in the same place in central Budapest, at meeting rooms specialised to host focus groups.

All focus groups were facilitated by one moderator from the Hungarian Foodbank Association. An assistant was also present.

Dates of the discussions: 23 February, 25 February, 1st March 2016. Two discussions were held each day, one between 16.30 and 19.00 and one between 19.00 and 21.30.

The approximate length of the discussion was 150 minutes for each focus group.

Participants received HUF 5000 (\approx EUR 16) for taking part in the discussions.

Both audio and video recordings were made in all sessions. All sessions were transcribed and translated into English for analyses in the software Nvivo.

During this time span there were no campaigns or other activities with regard to food waste going on.

Prior the discussion participants were asked to send in 3 photos of food waste in their household. Everyone without exception sent photos and when hearing the explanations of the photos we sometimes had the impression that people so much wanted to comply with this task that they made photos of food that was not wasted. In most cases though the photos represented food waste.