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Food Waste Free United Case Study – Stakeholder Workshop Results

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Summary

Worldwide about a third of all food that is produced for human consumption is never eaten; this phenomenon is known as food loss or food waste. In the UN Sustainable Development Goal (SDG) 12.3, a clear aim is set: halving the world's food loss and waste (=FLW) by 2030. Both the EU and The Netherlands have committed themselves to this target. The WUR Knowledgebase (KB) project 'Governance in Transitions (KB-1-1D-1)' generates the knowledge base for behavioural change and decision-making possibilities in the transition towards a more circular and climate neutral society. Its main objective is to understand actors and test the impact of interventions at various levels in agro-food systems resulting in (new) business models for a circular and climate neutral society.

Within the scope of this KB project, a specific case study was set up to understand the role of attitude and human behaviour, and human behaviour(al) change related to the transition towards a circular food system, and specifically to prevent and reduce FLW. For this case study "food loss and waste", the research team collaborated with the foundation Food Waste Free United (Stichting Samen Tegen Voedselverspilling, STV). Established in 2018, STV is the Dutch movement in which all important initiatives and expertise for a waste-free Netherlands come together and are accelerated. Companies from the entire chain, knowledge institutes, governments and social organizations work on the joint ambition to deliver on SDG 12.3 by retaining 1 billion kilos of food within the food supply chain every year. Currently STV has over 100 stakeholders (www.samentegenvoedselverspilling.nl).

The research for this case study consisted of several steps. In 2019, an extensive literature study was executed with the aim to identify drivers and barriers of behaviours related to FLW reduction. This was done not only from a consumer perspective, but also from an actor perspective, taking the behaviours of stakeholders across the full food supply chain into account. In 2020, an in-depth exploration of five Dutch food waste reduction initiatives was done via a qualitative approach. The objective was to enrich our understanding of how behavioural aspects were included in existing initiatives that aim to reduce FLW and what behavioural insights could be distracted from this case study for strengthening future initiatives. This report describes the third part of this research, which involved a stakeholder workshop that was organized in 2021 to discuss and enrich the behavioural learnings of the previous steps. The goal of this workshop was to collect new insights and peer-to-peer tips for shaping and strengthening new/ future FLW initiatives along the chain, based on both scientific and practice-based behavioural insights.

A two-hour workshop was organized and executed on the 9th of November 2021 in the inspiring environment of the 'Noordkade' (Veghel, The Netherlands), the home base of STV. Participants for the workshop were recruited through the stakeholder members network of STV. Of the 15 stakeholders that were approached, eight accepted the invitation and six were present at the workshop. After an introduction round, the WUR team presented the main results of the qualitative in-depth study from 2020 and discussed clarifying questions from the participants. The MOA-model was explained as approach to identify and discuss behavioural elements relevant to interventions and behavioural change. Also the COM-B Behavioural intervention wheel framework was explained as a tool for intervention development.

In the second part of the workshop, an example initiative from practice was presented by Event hotels, which was discussed by all participants of the workshop. This case showed that Event hotels had successfully participated in the Food Waste Challenge before, where they focused on breakfast and reduced food waste with 39%. This year, they aim to take a next step by also focusing on other eating moments to reduce food waste and by monitoring food waste via the Orbisk. During this process, they run into several challenges, which relate to two central questions: 1) How to best make use of the FW data that are continuously collected via the Orbisk? 2) How can the kitchen chefs and other employees be encouraged to become more aware of the FLW issue, and to implement solutions for FLW in their daily work? During the discussion, the participants were encouraged to share their own experiences in designing and implementing FLW initiatives, and to reflect on the different elements for behavioural change from the two frameworks presented in the first part of the workshop.

The results showed that the key aspects from discussing the Event case reflected a behavioural challenge (question 1), and the need to develop appropriate solutions that fit into the daily operational practice (question 2). The discussion confirmed that behavioural challenges in the area of food waste reduction consist of several sub-behaviours that each have their specific sub-sets of related drivers and barriers. Furthermore, it became apparent that the behavioural challenges were foremost discussed in relation to 'Motivation' and 'Opportunities'. Aspects related to 'Abilities' were less prominent in the discussion, although it was recognized that skills and knowledge may be needed to execute these FW reduction behaviours appropriately. The discussion on options to improve and strengthen future initiatives resulted in 17 possible solutions. Given the relatively short time-frame (~30 min), this clearly showed the added value of an interactive workshop approach with both scientists and stakeholders. The suggested solutions included both person-oriented as well as environmental-oriented interventions. 'Incentivisation (5x out of 17)' and 'Environmental restructuring (5x out of 17)' were the most frequent intervention techniques derived from the suggested solutions. An 'Incentivisation' example was: reward when FW numbers are below a specific benchmark, whereas an example of 'Environmental restructuring' was: appoint one central person for analysing the FLW data. The intervention techniques 'Persuasion' (for example: make a competition of the food waste reduction between different restaurants) and 'Enablement' (for example: install software that automatically shows the results in a meaningful way) came most often after (both 3x out of 17).

Another important finding from the workshop was that most stakeholders considered the MOA-model and the Behavioural Intervention Wheel as useful tools to apply in practice. Therefore, we recommend to implement these models on a larger scale and translate them into a practical, exploitable toolset to make them accessible in an easy way for everyone who is working on FLW prevention and reduction. The results also indicate that the MOA Model and Behavioural Intervention Wheel form a strong combination for both analysing the various factors that influence different behaviours, and for translating these findings into fit-for-purpose solutions, targeting behavioural challenges that stakeholders are facing. Finally, we recommend to particularly pay attention to sufficient levels of 'Abilities' in food waste initiatives, besides Motivational and Opportunity aspects, since this part is often overlooked, assumed or forgotten.

List of definitions and abbreviations

General definitions

FW	Food Waste
FLW	Food Loss and Waste
MOA	Motivation-Opportunity-Ability
STV	Stichting Samen Tegen Voedselverspilling (Foundation Food Waste Free United)
WUR	Wageningen University & Research

1 Introduction

1.1 Background

1.1.1 Food Loss and Waste

The results of the workshop that are described in this report, are part of the Knowledgebase (KB) project 'Governance in Transitions (KB-1-1D-1)' running from 2019-2022, which belongs to the Wageningen University & Research (WUR) KB program 'Towards a Circular and Climate Positive Society' and is funded by the Dutch Ministry of Agriculture, Nature and Food Quality. This project generates the knowledge base for behavioural change and decision-making possibilities in the transition towards a circular and climate neutral society. Its main objective is "to understand actors and test the impact of interventions at various levels in agro-food systems resulting in (new) business models for a circular and climate neutral society". Within the scope of this KB project, a specific case study "food loss and waste" was set up. The aim of this case study was to better understand the role of attitude, human behaviour, and human behaviour(al) change related to the transition towards a circular food system, with the purpose to prevent and reduce FLW. This report presents the results obtained in 2021 within this case study, which was executed in collaboration with the Foundation Food Waste Free United (Stichting Samen Tegen Voedselverspilling – STV).

The first year of the case study, 2019, was devoted to developing a framework to assess determining factors of FLW reduction behaviour, not only from a consumer perspective, but also from an actor perspective, taking the behaviours of stakeholders across the full food supply chain into account. Another aim was to identify and classify interventions and incentives to change behavioural aspects of food waste prevention and reduction. In 2020, the case study team performed a qualitative study on food waste interventions in The Netherlands, that were implemented by STV's stakeholder organisations. In 2021, the results of this study were published in a report (Zeinstra, Van der Haar, & Bos-Brouwers, 2021), a joint research paper was published in the scientific journal Sustainability (Aramyan et al., 2021) and a workshop was organised with STV stakeholders to investigate potential design and improvement options for behavioural interventions related to food waste. This report describes the results of the workshop in relation to the scientific knowledge.

Worldwide about a third of all food that is produced for human consumption is never eaten (Gustavsson, Cederberg, Sonesson, Van Otterdijk, & Meybeck, 2011) - this phenomenon is known as *food loss* or *food waste (FLW).* It is widely acknowledged that FLW have a detrimental impact on the economy, the climate and the society, which has led to an increasing societal and academic interest in food loss and food waste reduction. There is a clear aim set in the UN Sustainable Development Goal 12.3: halving the world's food loss and waste by 2030. Both the EU and the Netherlands have committed themselves to this target, and is included in the EU Farm to Fork Strategy (2020).

Reducing FLW presents a challenge. It is a complex and multifaceted problem, to which no straightforward solution exists. FLW is associated with a variety of both avoidable and unavoidable causes, and it involves multiple actors along the entire food supply chain (see Figure 1).

Figure 1 Actors involved in FLW along the food supply chain.

To prevent and reduce food loss and waste in The Netherlands, and to provide an ecosystem in which all important initiatives, expertise and actions against food loss and waste in The Netherlands are brought together and accelerated, the Foundation 'Food Waste Free United' (Samen Tegen Voedselverspilling= STV) was founded in December 2018. The STV formalized its predecessor the 'Taskforce Circular Economy in Food' which was launched during the National Food Summit in The Netherlands in January 2017. STV has over 100 stakeholders who contribute a yearly fee, in addition to receiving financial support by the Ministry of Agriculture, Nature & Food Quality. Its main aim is to reduce food waste in The Netherlands by 50% by 2030 (SDG12.3) together with Dutch companies, organizations, universities, government and consumers. Companies from the entire food supply chain, government, social organizations and knowledge institutions join forces to reach the ambition of retaining 1 billion kilos of food within the food supply chain every year. In March 2018, a National Agenda on FLW prevention was launched, which formulated activities and piloting actions along four different action lines. Action line 1 focuses on measuring & monitoring FLW on organisational, sectorial and national level. Action line 2 stimulates business innovation action across the agri-food chain. Action line 3 focuses on awareness raising and specific interventions for consumers. Action line 4 refers to changing regulation, legislation and business agreements to remove barriers for FLW prevention and reduction. Currently, 100 organisations have committed themselves as members to the STV (see Figure 2).

Figure 2 Overview of current STV stakeholders.

1.1.2 Focus on behavioural aspects of food waste reduction along the chain

The overall aim of this case study was to understand the role of *attitude* and *behaviour and behaviour(al) change* in creating circular food systems to prevent and reduce FLW, hence contributing to a climate neutral society. The technical aspects of innovation and systemic changes for reducing FLW are quite well known, and applications are available in practice. However, adoption and scaling of these technical innovations as successful, scalable and impactful new practice is not self-evident: an important reason lies within social and personal (human) factors, the awareness and willingness to change, the willingness to implement changes and to commit stakeholders involved in the supply chain and food system. A transition requires insights in behaviour and incentives/drivers of stakeholders involved.

Therefore, several steps were executed within this project:

1) Extensive literature study (2019). The aim was to identify drivers and barriers of FLW reduction behaviour from an actor perspective across the food supply chain, as well as identify behavioural FLW interventions (Zeinstra, Van der Haar, & Van Bergen, 2020).
2) In-depth exploration of five STV initiatives via a qualitative approach (2020): The objective was to enrich our understanding of how behavioural aspects are included in existing initiatives that aim to reduce FLW. This part of the project formed a bridge towards practice after an extensive scientific literature study. By interviewing five initiators and three participants of the five STV initiatives, we

explored which personal and contextual factors hindered or facilitated the execution of the initiative and what behavioural insights could be distracted from this case study for strengthening future initiates.

3) Workshop with stakeholders to discuss and enrich the behavioural learnings (2021). This year we aimed to bring our results a step further by organizing a real-life workshop with several STV stakeholders.

1.1.3 Starting point for the workshop

The in-depth analysis of the five STV initiatives showed that all initiatives consisted of multiple aspects related to motivation, ability and opportunities of the consumer food waste MOA model (Van Geffen, Van Herpen, & Van Trijp, 2016). Overall, the focus was mainly on motivation and opportunity, whereas ability received relatively less attention. Furthermore, several intervention strategies were applied within the initiatives (Michie, van Stralen, & West, 2011). 'Enablement' was applied in all initiatives and 'Education' in almost all initiatives, focusing on a kind of service provision (providing time, manpower or other resources directly or indirectly via collaboration) or increasing knowledge or understanding via creating awareness or providing tips. Six key success factors were distracted from the eight interviews. These were motivated individuals, awareness of the FW problem, collaboration, presence of resources (time, money, manpower), capabilities (skills, expertise and entrepreneurship) and sufficient communication within one's own organisation, within the collaboration and towards the outside world. Four key barriers were identified. These include the different interests of stakeholders (also different expectations and priorities), a lack of resources (time, money, manpower), the challenges of new initiatives such as uncertainty and getting commitment, and the vulnerability of initiatives that flourish on motivation).

By taking all results into account, several key learnings came forward to support future initiatives. First of all, it is important for initiators and participants of food waste initiatives to use an integrated sector approach and to stimulate collaboration and partnerships. Second, it is essential to ensure continuity by continuous attention for the topic of FLW, agenda setting and having a long-term vision. Furthermore, the advice is to start small and simple, and keep some flexibility to adapt to the situation at hand. Another important recommendation is to assess the impact by measuring the effects on FLW reduction, as well as other gains. Showing and sharing these successes works 'connecting', helps setting new (social or company) norms and acts as a motivator for action. Finally, because the focus of the initiatives was on motivation and opportunity aspects, it is recommended that developers of initiatives also check whether (c)abilities (knowledge and skills) of actors are sufficient for the required behavioural change.

The results of this study were published in a public report (Zeinstra et al., 2021) and STV wrote a news article on the findings and shared these recommendations with their stakeholders (STV, 2021). In addition, the results of the interview study were also used as case in a scientific publication (Aramyan et al., 2021).

1.2 Objectives and research questions of the workshop

The goal of the stakeholder workshop was to collect new insights and peer-to-peer tips for shaping and strengthening new/future FLW initiatives along the chain, based on both scientific and practice-based behavioural insights. These insights and tips aimed at two levels:

- To identify generic insights and tips that can strengthen initiatives in the context of a sustainable transition towards a more circular food system.
- To identify specific insights and tips that participating stakeholders in the workshop could take home to strengthen their own activities and initiative(s).

Beforehand, we defined a set of questions for the workshop that could guide the discussion and reflection on our 2020 findings by adding new insights from several STV stakeholders:

- To what extent do behavioural insights from our 2020 report correspond to experiences of other stakeholders? In other words: How generic were the five initiatives that we studied as well as the perceptions of the eight interviewees?
- What other barriers and success factors have stakeholders experienced when setting up and implementing initiatives to reduce FLW?
- In which part of the MOA-model are these barriers and success factors mainly located: Motivation, Abilities (knowledge/skills) and/or Opportunities (in the environment)?
- Which tips and tricks are most important or relevant to the stakeholders that are present?
- Which additional insights in the field of behavioural change are needed to scale up or strengthen initiatives towards 'the new normal'?: 'From initiative to the new normal'
- Do stakeholders have specific ideas on how different actors and stakeholders in the chain can better work together towards a sustainable transition?

2 Methods

2.1 Participants

Participants for the workshop were recruited through the stakeholder members network of STV. Both participants in our 2020 study and other STV stakeholders that are new to the STV or new to the topic of behavioural aspects in FLW initiatives were personally invited by e-mail. A total of 15 stakeholders were invited.

2.2 Procedures and data collection

A two-hour workshop was organized and executed on the 9th of November 2021 in the inspiring environment of the 'Noordkade' (Veghel, The Netherlands), the home base of STV. The full workshop programme is enclosed in Annex 1. Minutes were taken during the workshop and a flip-over was present to write down main points from the discussion.

Before the workshop started, a lunch was organized, providing all participants an opportunity for networking. After that, the actual workshop started, which consisted of three parts. Below, each part is further described.

- Part 1: Getting to know each other and sharing knowledge

The official part of the workshop started with an introduction round, to get to know the organizers and participants of the workshop. Besides an introduction, everyone was asked to share what they hoped to take home or learn from the workshop. Subsequently, the WUR team presented the main results of the qualitative in-depth study from 2020. This included an explanation of two theoretical frameworks for analysing behaviour and focusing on behaviour change: the MOA-model and the COM-B Behavioural intervention wheel framework. The slides of this presentation are enclosed in Annex 2.

- Part 2: Discussing an example initiative from practice

In the second part of the workshop, a concrete example initiative from practice was prepared and presented by Event (Bilderberg) hotels. The participants were encouraged to share their own experiences in designing and implementing FLW initiatives, and to reflect on the different elements for behavioural change from the two frameworks presented in the first part of the workshop.

The case was delineated as follows: Event hotels have participated in the Food Waste Challenge (a challenge for the Dutch hospitality sector to reduce FLW; https://www.horecafoodwastechallenge.nl/), where they focussed on breakfast. Staff members were all working on this challenge and food waste was measured via different garbage cans in the kitchen. The challenge was successful in the sense that food waste was diminished with 39%. This year, Event hotels aims to take a next step in reducing food waste, with a focus on the other eating moments, events and the evening bar. Some budget is reserved to use the food waste monitor from Orbisk, which makes it easier and more accurate to measure all food wasted by using a scanner and weighing scale that are placed above the garbage bin. This food waste monitor has now been implemented at four locations of Event hotels. Several differences and challenges come forward as compared to the previous time:

- The chefs experience barriers to open the Orbisk digital dashboard, which shows the amount of food waste. This dashboard containing data about food waste 24/7 should be the first step, but this first step does not occur. How to motivate chefs to have a look at these data?
- The staff seems also less involved, and they experience a feeling of 'we already did this the previous time'. So, how to obtain commitment from staff again to put additional time and effort into this topic?
- How to motivate chefs and staff to come with new solutions for these different eating moments?

- Should the Orbisk monitor be placed at other locations, and after which time period? The underlying aim of measuring is to induce behavioural change with the aim to prevent and diminish food waste (different way of buying, cooking and handling of food.

- Part 3: Take home tips for own initiatives and interventions

In the last part of the workshop, participants shared what they had learned from the workshop. Everyone reflected on whether this matched with their expectations at the beginning of the session.

2.3 Framework for analyses

During the case discussion of the workshop (part 2), a first step was made by thinking about which behavioural challenges could relate to motivations (M), opportunities (O) and/or abilities (A). This was done based on the MOA consumers food waste model (see Figure 3) that was presented on the screen during the case discussion. After the workshop, the behavioural challenges were further studied and categorized by the WUR research team based on the meeting minutes, and described in the result section of this chapter.

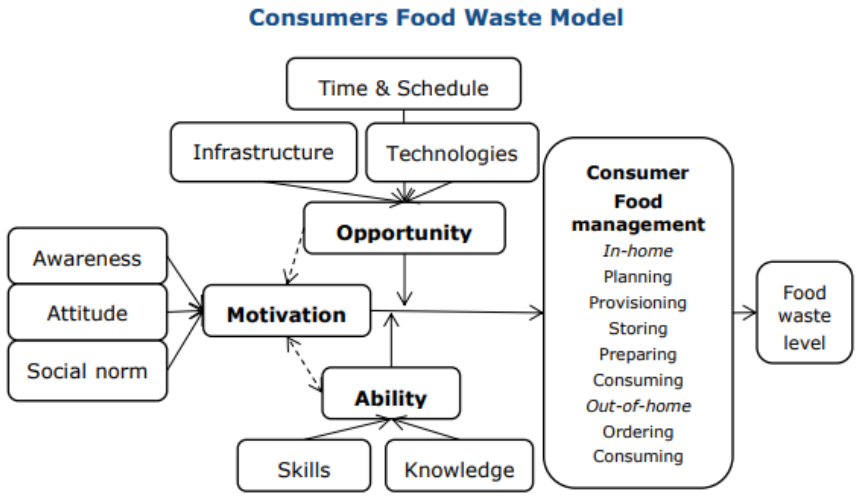

Figure 3 Consumers Food Waste Model (MOA), van Geffen et al 2016.

Besides the behavioural challenges, the participants proposed possible solutions for the behavioural problems that were discussed in the workshop. The research team categorized these solutions afterwards and linked them to the behaviour change intervention wheel of Michie (see Figure 4) in the result section of this report. This intervention wheel is linked to the MOA-model, as it also includes the aspects Motivation, Opportunity and (C)ability as drivers of behaviour. The definitions of the different behavioural change interventions in the wheel are provided in Table 1.

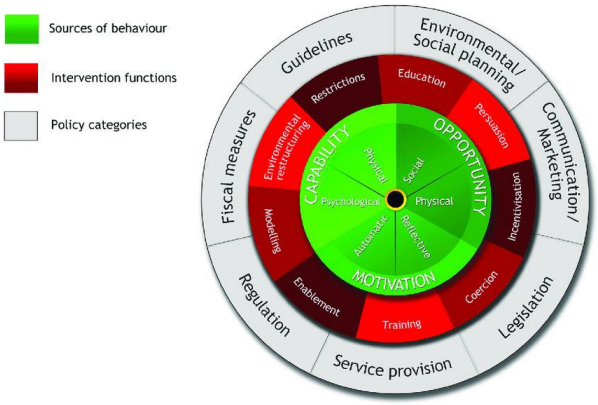

Figure 4 COM-B Behaviour Change intervention wheel, Michie 2011.

Further explanation and details on the MOA consumers food waste model and the behavioural change intervention wheel can be found in our previous report (Zeinstra et al., 2021).

Table 1 Definitions of interventions and policies according to the COM-B framework of Michie et al (2011).

Table 1 Definitions of interventions and policies

Interventions	Definition	Examples
Education	Increasing knowledge or understanding	Providing information to promote healthy eating
Persuasion	Using communication to induce positive or negative feelings or stimulate action	Using imagery to motivate increases in physical activity
Incentivisation	Creating expectation of reward	Using prize draws to induce attempts to stop smoking
Coercion	Creating expectation of punishment or cost	Raising the financial cost to reduce excessive alcohol consumption
Training	Imparting skills	Advanced driver training to increase safe driving
Restriction	Using rules to reduce the opportunity to engage in the target behaviour (or to increase the target behaviour by reducing the opportunity to engage in competing behaviours)	Prohibiting sales of solvents to people under 18 to reduce use for intoxication
Environmental restructuring	Changing the physical or social context	Providing on-screen prompts for GPs to ask about smoking behaviour
Modelling	Providing an example for people to aspire to or imitate	Using TV drama scenes involving safe-sex practices to increase condom use
Enablement	Increasing means/reducing barriers to increase capability or opportunity[1]	Behavioural support for smoking cessation, medication for cognitive deficits, surgery to reduce obesity, prostheses to promote physical activity
Policies		
Communication/ marketing	Using print, electronic, telephonic or broadcast media	Conducting mass media campaigns
Guidelines	Creating documents that recommend or mandate practice. This includes all changes to service provision	Producing and disseminating treatment protocols
Fiscal	Using the tax system to reduce or increase the financial cost	Increasing duty or increasing anti-smuggling activities
Regulation	Establishing rules or principles of behaviour or practice	Establishing voluntary agreements on advertising
Legislation	Making or changing laws	Prohibiting sale or use
Environmental/ social planning	Designing and/or controlling the physical or social environment	Using town planning
Service provision	Delivering a service	Establishing support services in workplaces, communities etc.

[1]Capability beyond education and training; opportunity beyond environmental restructuring

3 Workshop results

3.1 Participants

From the 15 stakeholders that were approached, eight accepted the invitation and six were present at the workshop. These participants came from varying companies. Table 2 presents an overview of the STV stakeholders who participated in our workshop. Half of the workshop participants had been interviewed for the STV case study in 2020, whereas the others were not.

Table 2 Overview of participants in STV stakeholders workshop.

Participant number	Participated in 2020 study	Initiative and/or company
1		Marketing company specialized in fresh fruits and vegetables
2		Brand manager of multinational food manufacturer
3	X	Project manager of hotel chain
4	X	Sustainability manager at a bank
5		Sustainability manager at a retailer
6	X	Owner of a start-up, valorising residual streams

3.2 Reflection on introduction and sharing knowledge

During the introduction round, the stakeholders expressed their expectations of the workshop and what they hoped to learn from the workshop. Important aspects that came forward during the introduction round were:

- All stakeholders were aware of the FW problem and were motivated to work on reducing FW, but they sometimes struggle with how to get everyone (internally and externally) on board.
- Sometimes they already worked on an initiative, but the next steps seem difficult. They wonder how to move forward from there by supporting awareness and inspiring others towards action on food waste reduction. A few participants mentioned they hope to take home some tips and tricks for this specific challenge.
- One participant mentioned that FW monitoring for small companies seems a challenge – she was particularly looking for the right ways to support them.
- One participant hoped to obtain concrete behavioural insights, at the consumer level but also for different actors broader in the chain, that can help in daily practice (sustainability manager).
- One participant mentioned that the residual streams that they use are already applied as fodder. The fact that clients and stakeholders regard this as a sustainable product, forms a barrier for their business. In their business, they aim for a higher valorisation level by using these residual streams for the production of an ingredient for human consumption. The fact that companies have to adapt their way of working if they want to use this upgraded ingredient, forms another barrier. They wonder how and when to communicate about these aspects.
- Most stakeholders acknowledged the importance of using data and numbers to make problem of FW visible.
- Another participant indicated that strategy, policies and business development should be aligned, social innovation is important, but getting all aspects aligned can be challenging, so how can this be supported.
- One participant mentioned the potential influence of financial incentives to support the development and implementation of food waste reduction solutions, targeting innovative start-ups as well as specific, sustainability-oriented loans. This may stimulate the transition towards innovative food waste solutions.

After the presentation on research results, one question came up which was discussed jointly. An important recommendation from our research is to involve the whole chain in future FW initiatives and to look for collaborations. One of the stakeholders asked what was exactly meant by this recommendation, since there is a difference between an integral sector approach and involving a whole chain within a specific sector. It was jointly concluded that both a specific focus on a particular sector as well as a collaboration between different sectors, can be valuable approaches, as long as a broad spectrum of relevant stakeholders is involved (integral approach) and when possible covering different actors in the whole chain.

3.3 Reflection on the Event hotels business case

Based on the business case description and the discussion that followed, two central questions could be identified:

1. **Behavioural Challenge: How to best make use of the FW data that is continuously collected at the moment?**

Currently, the chefs do not open the Orbisk digital dashboard with FW numbers themselves. How can the chefs be motivated to open and make use of the data?

2. **Solutions: How can the chefs (and other employees) think about and implement solutions for FW in their daily work?**

Reducing FW is often not the first priority for the personnel of the hotels. They are occupied with their normal responsibilities (e.g. cooking, serving food to the guests) and thinking about, and working on, food waste reduction is not on top of their mind.

The case description led to a lively discussion with many questions and suggestions from the participants. The first part of the discussion was mainly an 'analysis of behaviour' (central question 1), discussing the factors that influence the behaviour, and the second part of the discussion was about possible solutions for the behavioural challenges (central question 2). Different actors were involved in this case (chefs, general staff and management) and they were all considered since they are all part of the same setting.

Table 3 shows a categorization of the specific behavioural challenges per actor, that were mentioned during the business case discussion. Four main behavioural challenges could be identified: 1) chefs do not open the Orbisk digital dashboard with 24/7 FW data, 2) unwillingness to share FW data with other restaurants, 3) the staff and chefs do not automatically work on FW reduction, and 4) the staff pays little attention to the FW monitor. The elements that underlie this behavioural challenge, are sometimes related to motivations, opportunities or abilities, but more frequently, it is a combination of the different MOA elements.

Table 3 Categorization of the different behavioural challenges that came forward per actor (chefs and staff) in the case discussion, categorized in Motivations (M), Opportunities (O) and Abilities (A) according to the food waste MOA-model.

Actor	Behavioural challenge	Motivation (M)	Opportunity (O)	Ability (A)
Chefs	Chefs do not open the Orbisk digital dashboard with 24/7 FW data	Attitude - Chef might not be motivated to work on FW. Not visible to them what is the personal advantage. Attitude - The chef feels responsible for the whole restaurant,	Time – a real barrier, since this is an extra activity on top of the normal responsibilities of the chef. Chefs are held accountable for the food-cost balance, so	Skills and knowledge – Do chefs have the right skills and knowledge to open, analyse and interpret the FW data? Skills - It is a new dashboard and chefs need to learn how to

Actor	Behavioural challenge	Motivation (M)	Opportunity (O)	Ability (A)
		including the food waste aim, but other aspects have priority. Attitude – data in itself may not lead to action, as additional steps are needed: 1) making sense of the data (data interpretation) + 2) Based on the outcomes, concrete solutions need to be developed. Awareness of the problem - Do the perceptions of the chef about food waste match with the measured data from the Orbisk?	that's their main priority. There is no KPI on food waste reduction, nor is it included in the monthly reporting.	integrate this in their daily activities.
Chefs	Chefs are unwilling to share own FW data with other restaurants	Attitude – want to protect their own restaurant: not happy when own FW numbers are worse compared to other restaurants.		
Chefs & Staff	Staff and chefs do not automatically work on FW reduction	Attitude – FW not seen as first priority, because food preparation for guests and food ordering come first. Awareness - a sense of urgency to work on FW reduction seems to lack. Attitude - Does the team feel responsible for food waste reduction? Attitude – Attitude of chefs is probably positive towards food waste reduction as they will not like to discard food (their passion). Attitude – An additional KPI on top of their busy schedule will not motivate.	Time - one of the barriers is that the time schedule of chefs and staff is already very full. You don't want them to become overworked (burn-out). Manpower – no new/additional staff has been appointed to support food-waste reduction activities. Infrastructure - It seems that the management does not structurally focus on FW reduction: there is no KPI, there are no resources dedicated to analyze the Orbisk data and make an action plan. Finance & infrastructure: A barrier linked to the point above is that FW	Knowledge – It is not exactly known what the financial yield is when discarding food is prevented (i.e. saving one or two dish bowls of food, will this make a financial difference?)

Actor	Behavioural challenge	Motivation (M)	Opportunity (O)	Ability (A)
			monitor Orbisk is too expensive to structurally implement on all locations.	
Staff	Pay little attention to the FW monitor	Awareness – staff might not be aware of the FW monitor, or about the FW problem in general.	Time - limiting factor, since this is an extra activity on top of the usual responsibilities of the staff (they are already very busy)	Skills and knowledge – in relation to FW reduction. Maybe they don't even know what to do to reduce FW in the hotel

In the discussion, mostly behavioural challenges relating to the chef and staff were discussed. Many of the points raised related to motivational aspects (M), with attitude aspects and awareness aspects coming up frequently. Concerning attitude, there may be opposing forces. On the one hand, chefs and staff may have a positive attitude towards food waste reduction, as they are passionate about food, and will not appreciate it when this food is discarded. On the other hand, food waste is not their top priority and forcing them to work on food waste reduction may work demotivating. Here, also Opportunity aspects come in. Time and manpower were frequent recognized barriers, preventing chefs from opening the digital dashboard with food waste data and hindering chefs and staff to work on food waste reduction. The management's viewpoint was not specifically discussed (not described as a separate actor in Table 3), but the management and/ or (un)conscious decisions of the management came up as barrier for several behavioural challenges (Opportunity). Even though the Food Waste Challenge initiative was carried out successfully last year, the management does not structurally focus on reducing FW in their company, since there is no performance indicator (KPI) or other yearly goal for the staff on FW. Furthermore, the Orbisk monitor was considered to be too expensive in order to measure food waste continuously. Therefore, the management has decided that now only a few locations of the hotel have the monitor and a specific time period is reserved for measuring via the Orbisk. Furthermore, there are no resources dedicated to check and analyse the FW data for the Orbisk and to draw an action plan based on the numbers. These are all barriers in the environment of the staff and the chefs, with a possible role for the management to overcome these barriers. Aspects related to Abilities were less prominent in the discussion, although it was recognized that skills and knowledge may be needed to open, analyse and interpret the FW data, as well as to come up and implement food waste reduction activities.

The possible solutions that were proposed during the workshop discussion are shown in Table 4. These solutions are again linked to motivations, opportunities, abilities, or a combination of the MOA elements. As a next step, the solution was categorized in an intervention technique from the wheel of Michie et al (2011) (see last column of the table).

Table 4 Categorization of the different solutions for the behavioural challenges that were proposed during the case discussion, outlined according to Motivational (M), Opportunity (O) and Ability (A) solutions and particular intervention techniques (Behavioural Intervention Wheel).

Actor	Behavioural challenge	Proposed solutions	Intervention technique
Chefs	Chefs do not open the Orbisk digital dashboard with 24/7 FW data	• Appoint one central person (current or new employee) for analysing the 24/7 data, one who is interested in working with data, has the capacities to make data results insightful (add value) and can do it for all locations (efficiency) (O).	• Environmental restructuring • Enablement

Actor	Behavioural challenge	Proposed solutions	Intervention technique
		• Install programme/ software that automatically shows the results in a meaningful way (M).	• Persuasion
		• Ensure that data results are visually attractive and clear, easy to interpret for all. For example, working with green, yellow and red zones (M + A). *	
Chefs	Chefs are unwilling to share own FW data with other restaurants	• Make the data of each restaurant anonymously (M).	• Enablement
		• Make a competition of the food waste reduction between different restaurants. Motivate chefs to have as little food waste as possible, and make them proud on sharing their data (M).	• Persuasion
		• Make an attractive roadshow along all restaurants that have data from the Orbisk. Develop learnings (solutions) together based on each restaurant setting; certain solutions may be applicable for all; others are location specific. Differences between different hotels can give useful insights of which all can benefit. Because all restaurants will be visited, all are equal, this may facilitate sharing data (M + O).	• Enablement
Chefs & Staff	Staff and chefs do not automatically work on FW reduction	• Convert FW in kilograms to food costs, making the impact and benefit of FW more visible and relevant to the chefs (employees) (M).	• Incentivisation
		• Ensure that data results are visually attractive and clear, easy to interpret for all. For example, working with green, yellow and red zones (M + A). *	• Persuasion
		• Make the whole team (organisation) responsible for food waste reduction (M + O); tasks are shared. *	• Environmental restructuring
		• Take chefs (staff) out of their daily context and bring them together in another (inspiring) setting to support thinking along together, inspiring each other, collaboration and finding solutions together (M + O).	• Environmental restructuring
		• Let chefs decide themselves how they will use the money that has been saved by food waste reduction (ownership). I.e. let them decide whether they want to use this for extra staff, new utensil or else (M).	• Incentivisation & choice/ autonomy
		• Show the staff direct benefits, it could save time when the amount of prepared food is adapted to the actual need; it is a waste of time (and food) to prepare dishes that become leftovers (M).	• Education & Incentivisation
		• Make use of the chefs capacities/strengths and their proudness on their work. Challenge them to make tasteful foods from leftovers, trigger and compliment positive ideas (M + A).	• Incentivisation & Persuasion

Actor	Behavioural challenge	Proposed solutions	Intervention technique
		• Have a nice sessions with an inspiring chef-cook, such as Pierre Wind (M + A).	• Modelling
		• Communicate about food waste reduction achievements to the outside world (i.e. customers): make food waste reduction a Unique Selling Point and show customers how you work on it (remaining hospitality) (M).	• Communication
		• Reward when (daily) FW numbers are below a specific benchmark (M).	• Incentivization
Staff	Pay little attention to the FW monitor	• Make the whole team (organisation) responsible for food waste reduction; tasks are shared (M + O) *	• Environmental restructuring
		• Have the Orbisk placed at various locations, preferably more locations and a bit shorter measurement than long periods of measuring. This will help to create a sense of urgency at more locations (awareness), each location receives insights that are relevant for their own location (awareness & knowledge) and a maintaining attention and motivation may be easier for shorter duration than a long-lasting period (M + A).	• Environmental restructuring & Education
		• Create scarcity around the Orbisk: who can have the Orbisk, this should be an honour, something locations really want to have (M).	• Environmental restructuring

** These solutions applied to two behavioural challenges*

The participants came up with various solutions; 17 unique solutions, of which two were applicable to two different behavioural challenges, resulting in 19 solutions mentioned in Table 4. Especially for the behavioural challenge 'how to encourage chefs and staff to work on food waste reduction', a high number of ten solutions were suggested. 'Incentivization (5x out of 17)' and 'Environmental restructuring (5x out of 17)' were the behavioural intervention techniques that came forward most frequently based on the suggested solutions, with 'Persuasion' and 'Enablement' coming next (both 3x out of 17). 'Education' matched with proposed solutions two times, whereas 'Modelling' and 'Communication' solutions were mentioned one time each.

3.4 Reflection on workshop: individual take home messages

Many participants mentioned that the consumer food waste model (MOA) could be useful to apply in practice as a checklist. It could potentially help them to explore whether the three main aspects (motivation, ability and opportunity) are included and used in their initiatives and activities. Also the behavioural change wheel was considered a useful tool to inspire for behaviour change options. Participants mentioned this as useful frameworks based on science, that can be used in practice, whereas - in practice - they generally make decisions based on gut-feeling.

4 Discussion and conclusion

4.1 Main findings and discussion

The aim of the stakeholder workshop was to come to new insights and tips for shaping and strengthening future FLW initiatives along the chain, based on science-based and practice-based behavioural insights. This was done by first sharing knowledge on behavioural insights from food waste initiatives (our STV case study, carried out in 2020), followed by an interactive business case discussion. Two main questions were addressed during the business case discussion. The main findings per question are summarized below.

Behavioural Challenge: How to best make use of the FW data that is continuously collected at the moment?
Several sub-behaviours could be identified within this behavioural challenge: 'chefs do not open the Orbisk digital dashboard with 24/7 FW data', 'chefs are unwilling to share own FW data with other restaurants', 'staff and chefs do not automatically work on FW reduction' and 'staff pays little attention to the FW monitor'. The behaviour challenges in this concrete business case mainly related to the chefs and staff, whereas the management only came forward in the analysis of these behavioural challenges. Most of the points raised related to motivational (M) aspects (examples: other priorities than working on FW reduction, lack of urgency to work on FW, staff might be unaware of the FW monitor, dashboard of food waste numbers on its own might give little insight). Opportunity (O) aspects were also mentioned quite often in this context. Time and manpower were frequent recognized barriers, preventing chefs from opening the digital dashboard with food waste data and hindering chefs and staff to work on food waste reduction. In addition, working on food waste data and solutions did not seem to be supported by additional resources, nor was it a KPI. This does not facilitate a social norm of "working on food waste is normal in our organisation" (Aramyan et al., 2021; Zeinstra et al., 2021) Aspects related to Abilities (A) were less prominent in the discussion, although it was recognized that skills and knowledge may be needed to execute these behaviours.

These findings are in line with our previous work on behavioural insights from FW initiatives and interventions. In the case study that we carried out in 2020, several initiators and participants from FW initiatives were interviewed and we found that Motivation and Opportunity were the most observed MOA aspects in the initiatives, and Ability received relatively less attention (Zeinstra et al., 2021). The fact that multiple behaviour challenges were identified underpins that food waste behaviour is a result of multiple sub-behaviours, a finding that has been acknowledged in previous research (Quested, Marsh, Stunell, & Parry, 2013; Secondi, Principato, & Laureti, 2015; Van Geffen et al., 2016).

Solutions: How can the chefs (and other employees) think about and implement solutions for FW in their daily work?
Participants came up with several solutions for the behavioural challenges (17 unique solutions in total). The majority of the solutions were linked to the challenge 'how to encourage chefs and staff to work on food waste reduction' (10 in total). The solutions could most often be categorized in the intervention techniques 'Incentivization' and 'Environmental restructuring'. 'Enablement' and 'Persuasion' came next. Both these two sets show a more personal approach (Incentivization + Persuasion) and on the other hand a more environmental-related approach (Environmental restructuring + Enablement). This nicely fits the MOA-model and previous research that a motivated person alone may not be enough to induce behavioural changes (Stefan, van Herpen, Tudoran, & Lähteenmäki, 2013; Van Geffen et al., 2016; Vermeir & Roose, 2020), because the environment needs to be supportive as well (opportunity).

In the case study that we carried out last year, we also identified several intervention techniques. Here, 'Enablement' and 'Education' were the most applied intervention strategies within the initiatives (Zeinstra et al., 2021), also a combination of a more person-oriented approach and a more environmental-related approach. In our business case discussion, 'Enablement' was also mentioned

several times, mainly in the solutions that were proposed for the 'opening the data' and 'sharing the data' issues. These solutions were, just as in our case study, focusing on a kind of service provision (providing time, manpower or other resources). Providing these solutions should enable the chefs and staff to work with the FW data (example: install programme or software, that automatically shows the results in a meaningful way). In contrast, in the current business case discussion, solutions related to 'Education' were not very frequently mentioned. This is in line with the fact that Abilities were generally not frequently mentioned as important factor for the behavioural challenges.

4.2 Further reflections

As mentioned in the introduction of this report, we defined a set of questions for the workshop for some guidance on the discussion and reflection on our 2020 findings. Our aim was to add new insights from practice from the stakeholders. Not all questions were addressed in the workshop, since we specifically focused on one business case in the interactive part. Still, we obtained new insights from what stakeholders mentioned in the introduction round, during the discussion or in the closing part of the workshop.

Similarities with our case study are the behavioural challenges and barriers the stakeholders are facing in daily practice. Just as the initiators that we interviewed in our case study, all participants of the workshop are very much aware of the FW problem and motivated to work on the problem. This links to our previous findings in the case study (Zeinstra et al., 2021), where we found that one of the most important drivers for starting up new FW initiatives is intrinsic motivation of one or a few individuals, and a strong awareness of the FW problem. These individuals can be considered the frontrunners. The challenge of these frontrunners however, is to get everyone on board, which was mentioned a few times by the stakeholders in the introduction of the workshop. Multiple parties and actors are needed to be successful and reaching internal and external consensus on initiatives or interventions is a real challenge. A new barrier - related to this point - that came up in this particular business case discussion, was the fact that some stakeholders already worked on an initiative in the past, but that follow-up steps seem difficult, it is difficult to get commitment and enthusiasm again ('we already did this') and it is hard to move forward from there. Doing an intervention or initiative once is one thing, but doing it another time or extending the initiative with next steps seems extra challenging.

There were several barriers that were identified in our case study that also came up in the business case discussion: FW reduction does not always have priority (Motivational), a lack of urgency to work on food waste (Motivational) and some parties may be reluctant to share data (Motivational), as they may not do so well on the topic of FW. Also a lack of time or manpower to work on FW reduction (Opportunity), on top of normal responsibilities, were acknowledged. This was considered a key barrier in our case study.

'Collaboration' and 'Communication' were two success factors from our report that were not so prominent in the business case discussion. Nevertheless, they came forward a few times during the workshop. One participant indicated in the introduction round that strategy, policies and business development should be aligned, which can be challenging. This clearly links to both communication as well as collaboration between company departments and stakeholders with different interests. When solutions were discussed in the business case, collaboration between the chefs was strongly recommended to facilitate thinking power about potential actions for food waste reduction. Another recommendation was to collaborate, share and interpret the Orbisk data together in order to strengthen the knowledge, awareness and relevance in relation to this data. One solution was categorized as a Communication intervention: making food waste reduction a Unique Selling Point which can be shown to the outside world. Furthermore, the fact that the management does not yet structurally focus on reducing FW in their company may be linked to internal communication. When this would be a structural topic to work on in the organisation, it is important to explain why, to have a shared goal (Zeinstra et al., 2021) and to support requested actions and activities by providing resources. In line with this, a behavioural challenge in the business case was that chefs did not open the Orbisk digital dashboard containing food waste data. Several drivers and barriers were discussed,

but the point of communication was not brought up in particular. However, several communication questions might have been relevant in this respect and were touched upon slightly in the discussion: How was this additional task communicated to the chefs? Was the aim and benefit sufficiently clear for them? Was explained to them why each chef should take up this new task and not one central chef or other person (responsibility and efficiency). This topic of communication and encouraging collaboration would be an interesting topic for another workshop or seminar.

As discussed in 4.1, the drivers and barriers that came up were mainly located in the Motivation and Opportunity part of the MOA-model. There was less focus on Ability aspects, and the few times that it came up it was mostly addressed by the researchers. It seems that Ability is less top of mind, when thinking about behavioural challenges in relation to FW reduction and setting up new initiatives. This was similar to our findings in the case study of last year. It seems that in the working situation (case study + this business case), there is less attention for abilities, whereas when food waste behaviour is considered at the consumer level, lack of abilities has been recognized as an important barrier for food waste reduction (Zeinstra et al., 2020). Examples are the misunderstanding of use-by and best-before dates, inappropriate storing of food, and limited skills to use left-overs in a next meal (Aschemann-Witzel, de Hooge, Amani, Bech-Larsen, & Oostindjer, 2015; Parfitt, Barthel, & MacNaughton, 2010; Van Geffen et al., 2016). It is possible that in the working situation, it is expected that employees are professionals who are capable of doing their work-related tasks, and it is underestimated that the tasks related to food waste reduction may be new for them. For example, in this case, the chef needs to have knowledge on how to open and analyse the data in the dashboard and interpret the findings, in order to be able to take action on these numbers. So, although it is possible that for various food waste reduction activities (new) knowledge and skills are not needed, it seems that Ability is generally an underestimated factor when FLW reduction initiatives are set up or implemented. Therefore, this seems to be an important recommendation for future initiatives.

An important tip that most stakeholders took home, was to apply models that we introduced to them in practice: the MOA consumer food waste model, and the Behavioural Intervention Wheel of Michie. It could be helpful to identify behavioural challenges by means of the MOA model (which Motivation, Opportunity or Abilities aspects explain these challenges?) before searching for a solution. In this way, the solution can be better tailored to the underlying causes of the behavioural challenges.

4.3 Conclusions and recommendations

In conclusion, by organizing a stakeholder workshop, we identified several similarities in relation to our previous work and came to a few new behavioural insights in relation to FW reduction initiatives. The offering of a concrete business case, followed by a short discussion of about thirty minutes on behavioural challenges already resulted in 17 possible solutions, showing the added value of such an interactive workshop approach with both scientists and stakeholders.

The results of the workshop showed that the behavioural challenges were foremost discussed in relation to 'Motivation' and 'Opportunities', and there was less focus on 'Abilities'. The discussion confirmed that behavioural challenges in the area of food waste reduction consist of several sub-behaviours that each have their own specific drivers and barriers. The solutions that were suggested by the participants encompassed both person-oriented as well as environmental-oriented interventions. 'Incentivisation' and 'Environmental restructuring' were the most frequent intervention techniques derived from the suggested solutions.

An important finding is that most stakeholders considered the MOA-model and the Behavioural Intervention Wheel as useful tools to apply in practice. Therefore, we recommend to implement these models on a larger scale and translate them into a practical, exploitable toolset to make them accessible in an easy way for everyone who is working on FLW prevention and reduction. This could for example be by means of an infographic, factsheet or a checklist, explaining the models in a simplified way and encouraging application in practice in a pragmatic way. The results also indicate that the MOA Model and Behavioural Intervention Wheel form a strong combination for both analysing the various factors that influence different behaviours, and for translating these findings into fit-for-

purpose solutions, targeting behavioural challenges that stakeholders are facing. We furthermore recommend to particularly pay attention to sufficient 'Abilities' in food waste initiatives, besides Motivational and Opportunity aspects, since this part is often overlooked or forgotten.

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Annex 1 Workshop programme

Workshop programma STV casus 2021

Workshop Hoe kunnen gedragsinzichten uit wetenschap en praktijk voedselverspillingsinitiatieven versterken?
Datum: dinsdag 9 november 2021, van 13.00 – 15.00 (vanaf 12.00 lunch met inloop)
Setting: Fysiek bij STV in Veghel
Duur: 2 uur
Maximale capaciteit: Plek voor 10-15 geïnteresseerden (inclusief geïnterviewden) van buiten WUR
Context: WUR Kennisbasis (KB) programma ' Circulair en Klimaatneutraal (KB-34)', project: Governance in Transitions (KB-1-1D-1).

Doel van de workshop
Op basis van gedragsinzichten uit wetenschap en praktijk te komen tot nieuwe tips en inzichten voor het vormgeven en versterken van voedselverspillingsinitiatieven in de keten --> voor duurzame transitie (generiek) + voor jouw initiatief of organisatie.

Geen voorbereidingstijd vanuit deelnemers --> tijdsinvestering ~ 2 uur.

Wat levert het de stakeholders op?

- Nieuwe inzichten en kennis uit wetenschap t.a.v. gedragsinzichten voor interventies op het thema voedselverspilling
- Delen ervaringen en inzichten rondom gedrag uit praktijk (bedrijven en organisaties) t.a.v. voedselverspillingsinitiatieven
- Gezamenlijk brainstormen over actuele cases (vanuit deelnemers of vanuit STV) en geven van tips om voedselverspillingsinitiatieven op te zetten en te versterken
- Daarmee verkennen we met elkaar hoe we een stap verder kunnen komen om de duurzame transitie vorm te geven en te versterken op het terrein van voedselverspilling.

Gewenste uitkomst workshop:

- Overzicht van tips en tricks: bij voorkeur concrete adviezen of vragen om interventies en initiatieven vorm te geven: generieke do's en dont's.
- Doing the right thing in the right way: Deze tips en tricks – vanuit gedragsperspectief - kunnen bestaande en nieuwe initiatieven t.a.v. de reductie van voedselverspilling verrijken, vergroten, verbreden & verdiepen.

Onderzoeksvragen te beantwoorden in KB-rapport – voor Sandra en Gertrude

- In hoeverre komen gedragsinzichten uit de rapportage overeen met ervaringen van andere stakeholders (hoe generiek waren de 8 initiatieven)?
- Welke andere barrières en succesfactoren hebben stakeholders ervaren bij de opzet en uitvoer van initiatieven reductie voedselverspilling?
- Op welk terrein zitten deze barrières en succesfactoren: Motivatie, kennis/kunde en-of kansen in omgeving/ opportunities?
- Welke tips en tricks vinden de aanwezige stakeholders het meest belangrijk/ relevant?
- Afgeleid daarvan: Inzichten in wat er nodig is op het terrein van gedragsverandering om initiatieven op te schalen/ te versterken in de richting van 'het nieuwe normaal'?: 'Van initiatief naar het nieuwe normaal'
- Speciale aandacht voor – mogelijk als onderdeel/ doorvraag - : Concrete ideeën over hoe verschillende actoren/stakeholders in de keten beter samen kunnen werken op weg naar een duurzame transitie...

Agenda

13.00 Deel 1 Kennis maken en kennis delen

- Welkom: Opening door STV: Belang van gedrag bij alle initiatieven door hele keten heen (niet alleen consument)
- Korte kennismaking alle deelnemers
- Gedragsinzichten uit wetenschap en STV casus. Behavioural insights from food waste initiatives: What do they teach us?

13.45 Deel 2 Samen aan de slag: 1 concrete casus met discussie in kleine groepjes

- Case presentatie
- Case bespreken in de twee groepen
- Terugkoppelingen bevindingen + feedback andere groep

14.40 Deel 3 Welke top tips neem jij mee naar huis voor de opzet en verrijking van interventies?

- Interactief: jouw eigen eyeopeners van vandaag!
- Wrap-up en afsluiting

15.00 Afsluiting

Annex 2 WUR slides during workshop about behavioural insights results

These slides summarize in Dutch our previous research on behavioural insights from FW initiatives. Please see the full report (in English) for more information: Zeinstra et al., 2021.

Hoe kunnen gedragsinzichten bijdragen aan succesvolle verspillingsvrije initiatieven?

Behavioural insights from food waste initiatives: What do they teach us?

Gertrude Zeinstra & Sandra van der Haar, WFBR

WAGENINGEN
UNIVERSITY & RESEARCH

9 November 2021

Inleiding

- 1/3e voedsel verspild → negatieve effecten
- SDG 12.3: 50% reductie FLW → meer circulaire voedselsysteem
- Naast technische innovaties, *menselijk gedrag* belangrijk
- Inzicht nodig in welke factoren gedrag bepalen om te beïnvloeden
- Eerder literatuuronderzoek liet zien dat:
    - Meeste studies gaan over 'factoren die gedrag beïnvloeden', minder over interventies om gedrag te veranderen
    - Meestal gericht op consument, weinig aandacht voor andere actoren (zowel wat betreft factoren gedrag als interventies)

Doel & onderzoeksvragen

Op welke manier zijn gedragsaspecten meegenomen in bestaande voedselverspillingsinitiatieven en wat kunnen we hiervan leren t.a.v. gedragsverandering in de keten voor toekomstige initiatieven?

1. Begrijpen hoe gedragsaspecten meegenomen zijn in de initiatieven
2. Welke individuele en/of contextfactoren werkten als barrière of als succesfactor bij de uitvoer?
3. Welke inzichten kunnen we afleiden om toekomstige initiatieven te versterken?

Aanpak

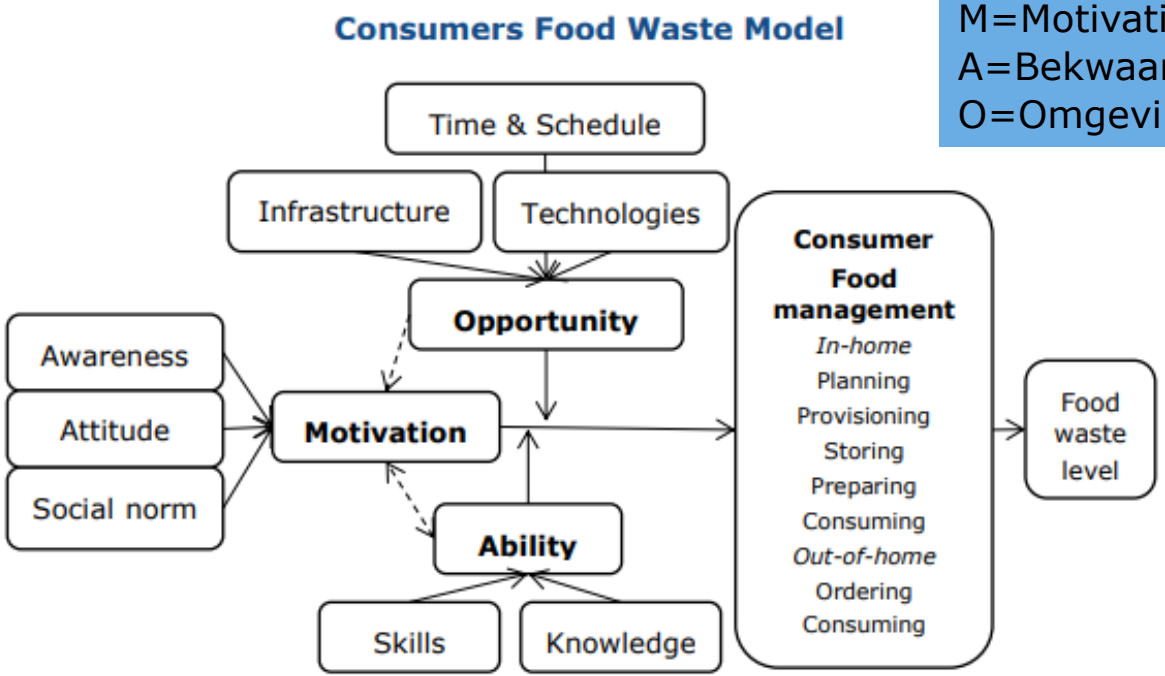
- Nog weinig bekend → kwalitatieve aanpak
- Diepte-interviews over praktijkinitiatieven
    - Variatie in type initiatieven
    - Verschillende actoren
    - Verschillende plek in voedselketen

- Interviews met 8 personen; 5 initiatieven gelieerd aan STV
- Gestructureerde overzichten (tabellen) a.h.v. gedragsmodellen
- Analyseren overeenkomsten en verschillen

Food Waste Challenge	Reststroomverwaarding Brood en Deeg	Nulmeting retail
MBO Challenge	BrewBar MaGie Creations via voucher	

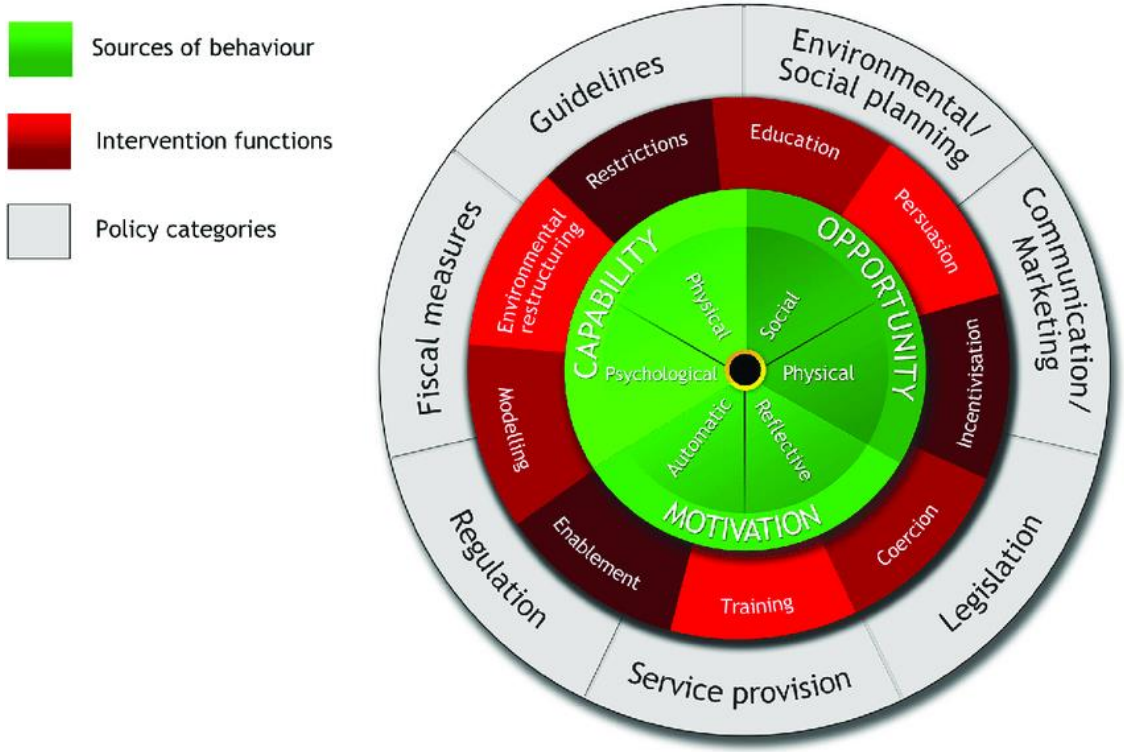
Gedragsmodel voedselverspilling consument

M=Motivatie (willen)
A=Bekwaamheid (kunnen)
O=Omgeving (mogelijk)



MOA-model: Van Geffen et al, 2016

Interventies passend bij gedragsfactoren

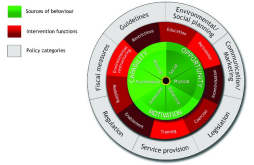


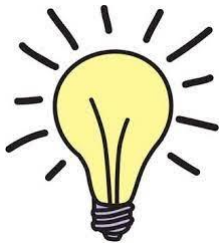
Gedragsinterventies-wiel Michie, 2011

Interviewvragen

Motivatie (willen)
Bekwaamheid (kunnen)
Omgeving (mogelijk)

- Op welke manier gedragsaspecten meegenomen:
  - Hoe initiatief begonnen?
  - Waar bestaat het initiatief uit: welke elementen?
  - Welke barrières en succesfactoren speelden een rol?
- Verdieping & leerervaringen:
  - Effecten van het initiatief (gepland + ongepland)
  - Aanpassingen tijdens of na initiatief
  - Suggesties voor toekomst & opschaling





Resultaten – karakteriseren van de initiatieven

In de volgende slides: FW = voedselverspilling

Plaats van de vijf initiatieven in de keten

Resultaten – hoe is het initiatief begonnen?

Drijvende factoren	Aantal keer *
Praktische kansen om initiatief te beginnen (geld, netwerk, mankracht)	5
Initiatief gaf gelegenheid en faciliteerde	4
Persoonlijke drive (motivatie)	3
Noodzaak om te meten (cijfers)	3
Toeval: dingen komen samen	3
Juiste moment om aan FW te werken	3
Win-win situatie (FW + kostenbesparing)	2
Agendapunt van STV	1
Door andere partij benaderd met verzoek	1

Voor alle initiatieven: **combinatie** van meerdere factoren;

m.n. factoren in omgeving naast persoonlijke motivatie

* Op initiatief-niveau

Resultaten – welke elementen in het initiatief?

- Alle initiatieven bestonden uit meerdere elementen
- Elementen met name gefocust op motivatie (willen) en omgeving (mogelijk), veel minder focus op bekwaamheid (kunnen)
- Indien bekwaamheid (3 v/d 8):
    - Nieuwe kennis over FW (reductie): College voor studenten of filmpje met tips van collega's
    - Vaardigheden: Hoe meet ik FW in supermarkt?

Motivatie-elementen (in 8 v/d 8)

- **Intrinsieke motivatie van de initiator!** 
- Motiveren van anderen → management, organisaties, studenten, werknemers: vinden van de juiste 'motivatie' p.p.
- *Bewustzijn* over het probleem creëren vaak de eerste stap: inzichten/getallen geven om noodzaak te laten zien 
- Veranderen van *sociale norm* om FW te verminderen. Voorbeelden:
    - Verkleinen van portiegroottes op bord bij gasten zodat minder eten overblijft
    - Verminderen FW wordt standaard onderdeel van takenpakket van medewerkers

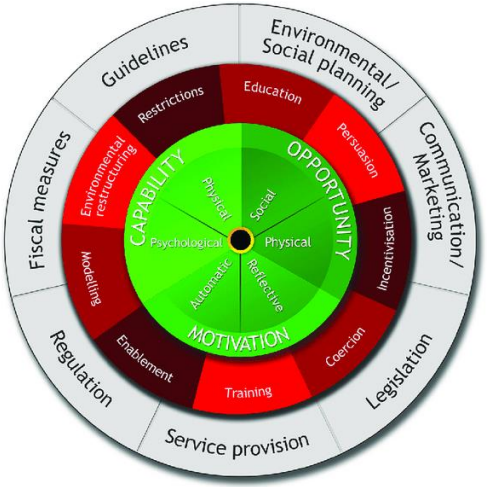
Omgevingselementen (in 8 v/d 8)

- Initiatief faciliteert de deelnemers om aan FW reductie te werken door
  - Beschikbaar stellen van middelen
  - Samenwerkingen op FW aan te moedigen

- Goed momentum: verminderen FW nu vaak hoog op de agenda
- Op zoek naar een ‘win-win’. Voorbeeld:
  - Studenten gekoppeld aan business-case uit de praktijk om FW te verminderen (winst student & ondernemer)

Welke interventiestrategieën toegepast?

Interventie-strategieën	NL vertaling	Aantal keer*
Enablement	Faciliteren (barrières ↓, middelen ↑)	7
Education	Kennis of begrip vergroten	7
Persuasion	Communicatie die aanzet tot actie	5
Modelling	Rolmodel of voorbeeld	4
Environmental restructuring	Omgeving veranderen (fysiek/ sociaal)	2
Incentivization	Beloningen	2
Training	Training en vaardigheden	1
Regulation	Regels instellen	1
Marketing/comm	Communicatie, media, marketing	1



In alle initiatieven *meerdere* strategieën

* Op interview-niveau

Effecten van de initiatieven

- 1 initiatief heeft effect op FW gemeten: daling 21% (I) – 39% (P)
- Bij overige initiatieven: geen daadwerkelijke FW-reductie gemeten, soms schattingen of berekeningen t.a.v. potentie.
- Andere (onverwachte) ervaren effecten:
  - Bewustwording (+ agendasetting) FW
  - Positieve publiciteit
  - Nieuwe samenwerkingen
  - Startpunt voor actie/ sector-brede ‘beweging’ (samen)

Key succesfactoren

- Individuele intrinsieke motivatie
- Bewustzijn over het probleem en momentum in maatschappij
- Samenwerking → gezamenlijk doel + gebruik netwerk
- Beschikbaarheid van juiste middelen (geld, tijd, mankracht etc.)
- Bekwaamheid: *management vaardigheden, expertise, ondernemerschap, hands-on-mentaliteit*
- Voldoende communicatie: intern + extern

Key barrières

- Verschillende belangen, verwachtingen en prioriteiten van stakeholders → consensus over aanpak + FW niet altijd prioriteit
- Gebrek aan middelen

- Uitdagingen & onzekerheden bij het starten van iets nieuws
- Kwetsbaarheid van initiatieven die leunen op de intrinsieke motivatie van één of enkele personen

Conclusie en aanbevelingen

Conclusie

- Binnen de vijf voedselverspillingsinitiatieven m.n. aandacht voor **motivatie** en **omgeving**, minder focus op bekwaamheid
- **'Educatie'** en **'Enablement'** (faciliteren tijd, geld, mankracht) meest gebruikte interventiestrategieën voor gedragsverandering → lijkt een logische combinatie
- Vanuit gedragsperspectief kijken naar de initiatieven heeft tot waardevolle inzichten en aanbevelingen geleid

Aanbevelingen voor toekomstige initiatieven

1. Betrek de hele keten met een geïntegreerde sectorbenadering
2. Stimuleer samenwerking en partnerships
3. Besteed continue aandacht aan voedselverspilling
4. Begin klein en eenvoudig en wees flexibel
5. Meet de impact en toon resultaten
6. Kijk naar motivatie, kansen in omgeving én bekwaamheid

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Samen aan de slag!

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