Evaluating the Protein Transition in Leeuwarder Hospitality: A Study on the Greendish Campaign

Maret M. Sturms (S4540808)

University College Fryslân, University of Groningen, The Netherlands

BSc. Global Responsibility & Leadership

CFB063A10: Capstone

Dr E. Cavagnaro

June 5, 2023

Wordcount: 8951 excluding footnotes,

9556 including footnotes

Acknowledgements

Hereby, I express my gratitude to my supervisor Elena Cavagnaro for her supervision in the process of brainstorming, setting up the research and the writing process. Her continuous support, feedback, and enthusiasm not only allowed for a pleasant process but also profoundly contributed to enhancing my writing skills. I would also like to thank my family, friends, UCF peers and staff, and colleagues in my current hospitality job for their continuous moral support and input. Their encouragement has kept my spirits high during the last three years. Lastly, I am grateful to Kevin, the late chef who introduced me to the most delicious vegetarian and vegan dishes during my first hospitality job back in 2017, and Danielle, his wife, for giving me the opportunity to develop a passion for hospitality in the first place.

Maret Sturms

June 2023, Leeuwarden

Abstract

The food sector, including the hospitality industry, requires significant changes to address its environmental impact. Hospitality enterprises have a great potential to contribute to the protein transition, and various interventions have been implemented in the Netherlands to promote meat-reducing behaviour. The organisation Greendish and the Municipality of Leeuwarden carried out an intervention to serve more sustainable dishes in Leeuwarden. However, it remains unclear what the impact of the project has been. Therefore, this research asks: "*What is the impact of the Greendish campaign on the menus of the respective participating Leeuwarder hospitality enterprises in the context of the protein transition?"*. A menu analysis of 18 hospitality enterprises in Leeuwarden was conducted, including both participants and non-participants of the Greendish intervention, and two semi-structured interviews were carried out with the intervention's participants to give preliminary insights into the intervention's impact. The findings suggest that the intervention may have had a positive influence for the participants as all underlying components of behaviour have been affected. However, the study also highlights the need for further improvement in terms of offering more sustainable meal options and incorporating more sustainable protein proportions on the menu cards, as proposed by Greendish, in Leeuwarden.

Keywords: protein transition, hospitality sector, intervention impact, menu composition

Table of contents

Evaluating the Protein Transition in Leeuwarder Hospitality: A Study on the Greendish Campaign

Nowadays, climate change is regarded as one of the most significant issues confronting humanity and is influencing every aspect of our lives (Ben Youseff & Zeqiri, 2022). To protect all life on earth from the worst consequences of climate change, countries around the world rapidly need to cut their greenhouse gas emissions, particularly in sectors that contribute mostly to national footprints (UNFCCC, n.d.; Parkin & Attwood, 2022). The food sector is one of these sectors needing to undergo significant changes along its entire chain (Macdiarmid, 2021). There is a growing consensus on the importance of shifting away from diets based mostly on animal proteins and towards diets based primarily on plant proteins (Aiking & de Boer, 2020). Such a reduction in meat consumption is one of the key elements that the term 'protein transition' encompasses (Pyett et al., 2023). This particular component of the protein transition is justified with multidimensional arguments ranging from the effective use of scarce sources (Parkin & Attwood, 2022) via global food security (Aiking & de Boer, 2020) to animal welfare and human health (Vaan, Steen & Müller, 2019).

More specifically, the hospitality sector has the potential to contribute to the protein transition. Currently, the restaurant industry is regarded as one of the least sustainable of all economic sectors worldwide (Wang et al., 2013), contemporary society is expanding its desire for meals away from home, and restaurants have increased their meal production in recent years (Maynard et al., 2020). Nevertheless, the restaurant industry within the hospitality industry is a closed setting, offering the potential to assist consumers in nutrition decisions. This closed setting is characterised by limited opening hours, a restricted number of locations, as well as predetermined menus determined by actors other than the consumer (Meeusen et al., 2022). As

such, fewer external factors are of influence on the consumer's dietary choices and allow restaurants to exert more influence on the consumer's dietary behaviour.

However, the number of vegetarian dishes sold in restaurants in the Netherlands remains relatively low (De Vaan et al., 2019). Several studies have been conducted to investigate effective methods to nudge consumers towards choosing a vegetarian option on the menu card (De Vaan et al., 2019; Hielkema et al., 2022). On a governmental level, the protein transition has recently attracted some attention. In 2018, the Dutch government introduced an official protein strategy intending to enhance the number of new and plant-based proteins for the health of humans, animals, as well as the environment (Ministerie van Landbouw, Natuur en Voedselkwaliteit, 2020). Furthermore, projects to promote the protein transition are being commissioned on a local and national scale.

Problem statement and research question

An example of a recent project on a local scale was the participation of several restaurants in the campaign 'YourChoice' in Leeuwarden, located in the Northern Netherlands. The non-profit organisation Greendish carried out the project with the Municipality of Leeuwarden to promote a more sustainable and healthy food environment (Greendish, 2022b). In the YourChoice-campaign, taking place from May until June 2022, twelve businesses participated with the aim of serving more sustainable and healthy dishes. Greendish and the municipality of Leeuwarden aimed to provide entrepreneurs in the restaurant sector with a business model for sustainable and healthy food service through the YourChoice campaign (Gemeente Leeuwarden, 2022). However, up until now, it remains unclear what the short-term and long-term results of such projects to foster the protein transition are. Therefore, this research

will ask, "*What is the impact of the Greendish campaign on the menus of the respective participating Leeuwarder hospitality enterprises in the context of the protein transition?"*.

The objectives of this study are 1) to assess the intervention of the Greendish in Leeuwarden, 2) to explore the differences in menu cards for participating and non-participating hospitality enterprises, and 3) to examine the perceived impacts of the intervention on the menu by the restaurant staff. The study aims to provide insights into the impact of the Greendish project on the menu's protein composition for the Leeuwarder municipality. This research can help to provide fruitful understandings for other municipalities when considering participating in similar projects to enhance the protein transition. Moreover, it can assist Greendish in understanding the legacy of their projects. The study can potentially support policymakers in gaining knowledge about the impacts of projects on the protein transition in other hospitality settings. For these reasons, as well as for the fact that understanding the effectiveness of interventions enhances the likelihood of an improvement of future projects (Steg & Vlek, 2009), it is thus of relevance to evaluate the Greendish project in Leeuwarder hospitality as the campaign can be regarded as an intervention.

Outline of the research

This research is structured as follows. The study starts with a literature review to define the most significant concepts and give an overview of the current research on the topic of protein transition in restaurants. Hereafter, the methodology will discuss the methods used in this study, which are twofold. Firstly, the protein proportions across two types of dishes on the menu cards are examined by comparing the group of enterprises participating in the Greendish intervention with a group of enterprises in Leeuwarden not participating. Secondly, qualitative research is performed with multiple semi-structured interviews. The study's findings will be discussed in the

result section. In the discussion section, they will be analysed and critically evaluated. Moreover, the discussion will address the study's implications and limitations. The conclusion will offer closure by summarising the findings of the research and will give recommendations for future research.

Literature review

This section will describe existing literature on interventions concerning the protein transition. First, the current situation on meat eating in the Netherlands will be outlined as well as the restaurants' potential in the transition. Hereafter, literature on behavioural change and interventions is discussed. Lastly, Greendish and the intervention's context will be touched upon.

Current situation

A dominant meat-eating culture is still prevalent in the Netherlands even though the number of (self-declared) flexitarians has been increasing over the past years, and consumers claim to want to reduce their animal meat consumption in the future (Dagevos & Verbeke, 2022). According to the most recent statistics of the CBS, 45 per cent of the Dutch aged 18 or over qualified as flexitarians in 2021, meaning in this research that they consume meat a maximum of four times a week, whether as a meal or a snack (2021). Other studies coincide with the above-mentioned percentages of flexitarians of approximately 40 per cent in spite of the fact that there is no definite agreement upon one definition of flexitarianism in literature (Dagevos & Verbeke, 2022; Boereboom et al., 2022; Verain et al., 2022). Notably, there is also no scholarly and consumer consensus about the term vegetarianism (Rosenfeld, 2018). Still, generally, a vegetarian diet is often characterised by refraining from eating meat, fish, seafood, and potentially also the exclusion of dairy, eggs, and other animal products (Dagnelie & Mariotti,

2017). In turn, vegans refrain completely from any type of meat or any other food of animal origin (Dorgbetor et al., 2022). The percentages of vegetarians and vegans remain much lower than those of flexitarians. To illustrate, percentage estimates of the Dutch population leaving out meat entirely from their diet are around five per cent, according to the CBS (2021). Another study suggests that four per cent of the Dutch would be classified as vegetarians or vegans (Natuur & Milieu, 2021), whilst the Smart Protein Project proposes that vegetarians and vegans account for seven per cent of the Dutch population (2021). Although various drivers have been identified among the Dutch to follow an entirely vegetarian diet (Natuur & Milieu, 2021), barriers also exist. Scholars suggest that the current level of meat consumption combined with the flexitarian diet will continue to remain stable over the next couple of years in the Netherlands (Dagevos & Verbeke, 2022).

Based on the previously stated matter, the concept of flexitarianism seems to have gained popularity in the Netherlands as a dietary approach. The EAT-Lancet Commission has presented a sustainable, balanced, and nutritious menu to feed the future population within the planetary boundaries, and the menu is also adaptive to one's culture and geographical location (Willett et al., 2019). Although not explicitly stated in the EAT-Lancet Commission's report, their recommended diet is flexitarian as among the suggestions are modest intakes of meat, fish, and dairy several times per week next to plenty of vegetables, fruits, and other plant-based foods (Elzerman et al., 2022; Willett et al., 2019). It should be noted, however, that for this diet to be impactful, the entire world's population must adopt these dietary recommendations. Despite the number of flexitarians, vegetarians and vegans mentioned above, recent studies on meat consumption per capita in the Netherlands show that the level of consumption is exceeding the EAT-Lancet dietary guidelines by more than two times (Dagevos et al., 2020; Dagevos &

Verbeke, 2022; Willet et al., 2019). These statistics thus highlight the need to transform how animal proteins are consumed in the Netherlands. Lastly, while enhancing flexitarianism within the population is a step towards reducing meat consumption, it is of significance to state that research has indicated that, in general, a vegan diet has the least environmental impact compared to a vegetarian diet and a diet including meat, with meat-containing diets having the highest impact where, in contrast, a vegetarian diet falls in the middle[1] (Chai et al., 2019).

The potential of restaurants in the protein transition

Next to the already mentioned opportunity for restaurants to positively impact the consumers' choice of consumed meals in closed settings in the introduction, scholars mention various other reasons why restaurants may be ideal environments for interventions and the importance of chefs in the protein transition. For instance, Van der Horst and colleagues (2023) hold that alternatives for proteins from the Swedish oat milk pioneer Oatly were purposefully launched in restaurants before the products appeared in supermarkets. As such, the demand for their products increased, and consumers tied the terms 'culinary' and 'restaurant worthy' to them. The chef's crucial position is attributed to their skills in the preparation of alternative proteins and enhancing the dishes' flavours with complementary ingredients (Michel et al., 2021) but also to their abilities and knowledge to connect tradition with innovative manners of cooking, innovate plant-based dishes without the reliance on meat substitutes, without compromising a high level of texture and taste in their respective dishes (Van der Horst et al., 2023). Earlier studies, however, point towards possible reluctance of chefs to reduce meat and expand the vegetable ratios in meals as a result of concerns about the perceived value of meals (Gase et al.,

[1] This comparison only holds in case the vegan diet is not mainly consisting of highly industrially processed replacements for meat and dairy as these products tend to have a large environmental impact as well (Sabaté & Soret, 2014).

2014), increased preparation time and waste (Glanz et al., 2007) and a perceived lack of knowledge and training in sustainable cooking (Obbagy et al., 2011; Reinders et al., 2020). Notwithstanding these potential challenges, it is apparent that restaurants and chefs can play a significant role in influencing the consumer's consumption of proteins.

Behavioural change resulting from interventions

Apart from the potential role of restaurants and chefs, the literature stresses that the protein transition is mainly dependent on a change in consumer behaviour (Onwezen, 2022). Behavioural change in consumers can potentially be fostered with interventions, which are a set of organised activities intended to modify specific behavioural patterns (Michie et al., 2011). Michie and colleagues' (2011) Capability, Opportunity, Motivation - Behaviour (COM-B) framework points out that capability, opportunity, and motivation are the generating components of behaviour. One or multiple of these components must be modified to sustain an alteration in one's behaviour or practice (Michie et al., 2011). Capability is herein defined as the capacity of an individual to behave in a certain way, which includes possessing the required skills and knowledge. The term opportunity entails physical and social assistance for engaging in certain behaviour. Lastly, with motivational factors are psychological elements meant in this context, which differ among food consumers (Onwezen, 2022). Each of these components can furthermore be separated into additional subcategories to capture significant nuances within the components.

Additionally to the COM-B model is the more elaborate theoretical domains framework (TDF) (Atkins et al., 2017). The TDF, synthesising 33 behavioural theories, has fifteen domains, and a description of the categories can be found in Table 1 (Atkins et al., 2017; Cane et al., 2012). Once the domains are mapped upon the COM-B model, they together enable for a more

in-depth analysis of behaviour by revealing underlying facilitators and barriers to change (Atkins & Michie, 2013). The domains and subdomains of the COM-B as well as the TDF's domains, can be found in Figure 1 below.

Table 1
TDF domains with a description of their meaning

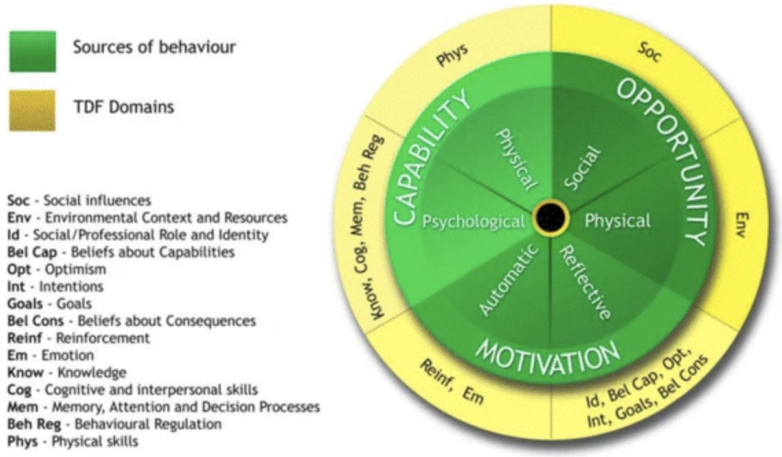
TDF domain	Description
Social influences	Interpersonal processes that may make individuals alter their behaviour, views, and senses.
Environmental context and resources	Any environmental or situational factor stimulating or hindering the development of skills and capabilities, independence, adaptation behaviour and social competence.
Social/professional role and identity	The coherent collection of expressed personal attributes and behaviours in social or business contexts.
Belief about capabilities	Acceptance of truth, talent, validity of a skill, or reality that an individual can employ constructively.
Optimism	The belief that things will turn out well or that intended goals will be met.
Intentions	Conscious choices to engage in a certain behaviour or a firm determination to behave in a certain manner.
Goals	Individuals' mental representations of desired final outcomes.
Beliefs about consequences	Acceptance of truth, talent, the validity of a skill, or reality of a behaviour's results in a specific scenario.
Reinforcement	Increasement of a reaction's likelihood by establishing a dependent relationship, or contingency, between the reaction and a provided stimulus.
Emotion	A complicated reaction pattern including behavioural, physiological, and experimental factors as the person seeks to handle a personally meaningful event or topic.
Knowledge	The understanding that something exists.
Cognitive skills	Individuals' ability to learn, think critically, make decisions, and solve problems
Interpersonal skills	Individuals' ability to interact, communicate and collaborate effectively with others.

Memory, attention and decision processes	The capacity to remember information, concentrate on specific features of the environment, and select between two or more options.
Behavioural regulation	Something intended to control or change actions that are objectively observed or measured.
Physical skills	A through-practice obtained ability or proficiency.

Note. *Adapted from Cane and colleagues (2012) and Curtis and colleagues (2017).*

Figure 1

The COM-B framework (in green) and TDF (in yellow) combined



Note. *From Atkins et al., 2017.*

Coming back to the COM-B, the capability and opportunity for behavioural change coupled with the motivational factors are believed to increase the degree of successfulness of the intervention (Michie et al., 2014; Steg & Vlek, 2009). It should be noted here, however, that different target groups may rely on distinct interventions as their drivers of behaviour might differ (Onwezen, 2022). Building on this, Meeusen and colleagues (2022) consider interventions

in a closed setting successful once the food recipients, and the food providers have benefitted from the intervention. For the food recipients in Meeusen's study (2022), this benefit implied eating more plant-based protein meals in some of the closed settings of the study, whereas, for the provider, the effectiveness revolved around accepting and executing the interventions in practice. Thus, according to the reviewed literature, interventions to encourage a shift forward in the protein transition in the hospitality industry must correspond with the three components of the behaviour of both the food consumer as well as the food provider in order to be effective.

Recent interventions in the Netherlands

Various interventions in the form of projects and policies can be carried out to promote meat-reducing behaviour (Onwezen, 2022). These interventions have different and sometimes multiple underlying components of behaviour that are being tackled. The interventions can include multiple functions, among which are education, persuasion, training, coercion, restriction, modelling behaviour, enablement, incentivisation, and environmental restructuring. Studies so far in the hospitality industry in the Netherlands have included the replacement of dishes containing meat with vegetarian alternatives in restaurants, leading to a decrease in meat consumption (Reinders et al., 2017) as well as altering the portion sizes of vegetables and meat, also resulting in a reduction of meat consumption without a loss in consumer satisfaction (Reinders et al., 2020). Other studies with the Dutch population in a hospitality setting include a study on the presentation of the menu in order to stimulate vegetarian choice of dishes (De Vaan et al., 2019) and vegetarian default options to increase the choice of vegetarian dishes (Hielkema et al., 2022).

Greendish

The guidelines that Greendish implements during such programmes as in Leeuwarden are based on the Greendish 2050 Guidelines. In essence, the Greendish guidelines are in accordance with the EAT-Lancet diet and the Dutch 'Wheel of Five' (Richtlijnen Schijf van Vijf) in order to make these broader recommendations practically applicable to menus for all food providers in the Netherlands. The Greendish 2050 Guidelines are twofold. On the one hand, the guidelines cover the composition of the menu, meaning the ratios of vegetarian, fish, and meat dishes for both lunch and dinner, as well as the portion size of the dishes. On the other hand, are the choices of ingredients and their ratios in menus (Greendish, 2022a). Returning to the COM-B framework, Meeusen and colleagues (2022) stress that Greendish is most likely to influence the capability of the food providers, as they share knowledge on and skills required for the protein transition. Based on this information, projects like Greendish could then be viewed as mainly an education and training intervention strategy for food providers.

The YourChoice campaign of Greendish in Leeuwarden involved optimising one dish from the menu according to the Greendish 2050 Guidelines while maintaining the existing menu. This highlighted dish was subsequently prominently featured in the campaign's materials with a distinctive YourChoice logo. According to Greendish, the YourChoices dishes sales increased by 26% in comparison to the pre-campaign sales numbers of the dishes (Greendish, 2022c).

Context

Despite the opportunities restaurants hold to impact the consumers' dietary choices positively, it is also of importance to consider the local context of the restaurants regarding the protein transition. For instance, Gaddefors and Anderson (2017) emphasise the inseparability of entrepreneurs from their operating context. Building upon this concept, a recent study by Merkus

(2022) illustrated that restaurant holders in the Northern Netherlands face barriers such as a lack of time and knowledge (capability) in becoming a sustainable restaurant, which includes, among others, responsible menus with less meat and more vegetables. Their research also points out that these barriers may be overcome with the support of the municipalities or other actors by providing guidance and education. Therefore, projects such as YourChoice from Greendish could be expected to have a great impact in Leeuwarden.

Methodology

The research methodology was two-fold to examine the Greendish intervention's impact on the menu in the Leeuwarder hospitality in light of the protein transition. First, the ratios of protein types in lunch and dinner dishes of 18 hospitality enterprises in the city centre of Leeuwarden were analysed. Additionally, qualitative research was conducted as this type of research allows for gathering insights and helps to understand the identification of contexts through participants' interpretations (Hennink et al., 2020). As such, qualitative research allows for providing insights on the perceived impacts of the YourChoice intervention on menus, participants' views on perceived differences in capability, opportunity, and motivation after the intervention (Mitchie et al., 2011), and follow-up questions based on the menu analysis. Thus, the significance of this sequential mixed methods study approach lies in the fact that both of the methods will complement each other (Hennik et al., 2020) and therefore, the qualitative method allowed for interpreting the findings of the menu card analysis and understanding the processes underlying the patterns in the menus.

Data collection

Menu card collection

This study first aimed to collect menu cards from all participating restaurants prior to, during, and after the YourChoice intervention to obtain insights into the differences in menus over time. Firstly, the Municipality of Leeuwarden shared a list with the names of all the eleven participants in the intervention. Hereafter, the following methods were employed to collect menu cards. During participant recruitment,[2] participants were asked to provide the researcher with the menus before, during, and after the intervention before the start of the interview. As it became apparent after these requests that some of the restaurants do not store menu cards older than their most recent, the online restaurant review websites Tripadvisor, Google Review and Yelp[3] were employed as sources to search for pictures of older menus uploaded by customers visiting the participating restaurants. An extensive search on these platforms did not yield instances of readable and complete menu cards. The Municipality of Leeuwarden also did not possess the menu cards in active use during the intervention period. Nevertheless, they provided a list of the intervention's optimised dishes. Lastly, Greendish was approached regarding the provision of menu cards, as a participant stated that menu cards were submitted to Greendish during the intervention. Contrary to the assumption that Greendish would consequently possess the menu cards before the intervention, Greendish indicated an absence of the respective requested menus in their possession. Therefore, ultimately, only online menu cards from the participants' websites were collected for analysis. Out of the eleven businesses participating in the intervention, the

[2] The next section will address participant recruitment more elaborately.
[3] These online restaurant review websites were chosen as they are among the most popular players in the review site business according to Luo and Xu (2020) and Mathayomchan and Taecharungroj (2020).

current menu cards[4] of nine enterprises were found on their websites and subsequently downloaded for analysis on the 18th of May, 2023[5]. An overview of the included hospitality enterprises is depicted in Table 2. The categorisation of enterprises in terms of cuisines and price ranges was conducted through the utilisation of TripAdvisor, aiming to diminish the sole reliance on self-reported descriptions by the hospitality businesses themselves. The hospitality type was determined using the website Visit Leeuwarden, a platform designed to enhance tourism and recreational businesses' visibility in Leeuwarden (Marketing Leeuwarden, n.d).

Table 2

Descriptive information on enterprises in the intervention group

Enterprise	Type of hospitality	Type of cuisine	Price range
A	Restaurant	Irish, European	$$-$$$[6]
B	Lunch room	Dutch, European, International	$$-$$$
C	Restaurant	Dutch, European	$$-$$$
D	Foodbar	Dutch, European, Healthy	$
E	Hotel with Grand Café	Dutch, European	$$-$$$
F	Restaurant/Grand Café	Dutch, European	$$-$$$
G	Restaurant	Dutch, European	$$-$$$
H	Restaurant	Dutch, European[7]	$$-$$$
I	Food café	Dutch, European, Seafood	$$-$$$

Note. *Obtained through data collected from VisitLeeuwarden and Tripadvisor.*

[4] This is based on the assumption that hospitality enterprises commonly update their menu cards online after significant menu changes.
[5] The menus of the enterprises participating in the interviews were analysed prior to the interviews. On the 18th of May 2023, the menus were still the same as when analysed.
[6] The dollar signs from TripAdvisor do not correspond to actual prices. Rather, they are considered to be relative measures classified by the users of TripAdvisor (TripAdvisor, 2018).
[7] For this restaurant, the type of cuisine was not specified by TripAdvisor. Resultantly, the type was determined by the researcher by drawing comparisons with the study/s other enterprises.

Alongside the collection of menus from the participating businesses in the intervention group, menu cards from comparable enterprises were also gathered to allow comparisons of protein ratios between the intervention group and a non-intervention group. TripAdvisor was utilised to search for restaurants in the city centre of Leeuwarden to select an appropriate comparison group with similar characteristics. The initial search was filtered on the same price range as the intervention group and Dutch and European cuisines. The researcher further refined the selection by considering the type of hospitality according to Visit Leeuwarden, resulting in the final group of enterprises for comparison. An overview of the selected group can be found in Table 3.

Table 3

Descriptive information on enterprises in the selected non-intervention group

Enterprise	Type of hospitality	Type of cuisine	Price range
J	Restaurant	Dutch, European	$$-$$$
K	Lunchroom	European	$$-$$$
L	Restaurant/Grand Café	Dutch, European	$$-$$$
M	Restaurant	Dutch, European, Seafood	$$-$$$
N	Lunchroom/restaurant	Healthy, Japanse	$$-$$$
O	Restaurant	European, Italian	$$-$$$
P	Restaurant	Dutch, European, Asian	$
Q	Restaurant/Eetcafé	Dutch, European, Barbecue	$$-$$$
R	Restaurant	Dutch, European, International	$$-$$$

Note. *Obtained through data collected from VisitLeeuwarden and Tripadvisor.*

Participant recruitment interviews

Recruitment efforts for the qualitative part of this study included onsite visitations of the enterprises participating in the Greendish intervention, whereby an attempt was made to directly

contact the managerial personnel to request voluntary participation in the study. In cases of the absence of a manager or owner during the visit, the employee addressed in the restaurant was asked for the best means to contact the managerial personnel or others with information on the intervention. For two businesses, the Municipality of Leeuwarden acted as a gatekeeper by providing their contact details as one business was temporarily closed due to renovation[8] and the other was led by an individual no longer affiliated with the organisation[9]. Hereafter, all enterprises were contacted at least twice by the provided contact details with information on the study in Dutch, as can be found in Appendix C, and Appendix A provides a translation of the form in English. Further efforts were also made, such as sending additional emails to different addresses found on websites other than those provided by the managerial personnel. For one enterprise, another employee was asked to request participation from their chef. Despite these recruitment efforts, the sample size of the study remained small, with only two participants included in the final sample for the study's qualitative part (n=2).

After recruitment, semi-structured interviews were conducted with the participants. This method allows for guidance and provides flexibility to explore topics raised by the participants which were not known by the researcher while ensuring to cover the main themes (Gill, Stewart, Treasure & Chadwick, 2008). The interview questions are based upon the already discussed COM-B model and the TDF, which have been widely used in qualitative studies to investigate barriers and facilitators in relation to dietary behavioural change. Furthermore, the COM-B and TDF were shown to be beneficial in informing behavioural change interventions in such studies (Timlin et al., 2021). The developed qualitative data-gathering instrument, an interview guide,

[8] Enterprise D from Table 2.
[9] Eventually, this enterprise was not also included in the list of enterprises, as depicted in Table 2, as their menu card was not available online.

can be found in Appendix 5, which was used while conducting the interviews in Dutch. Participant demographics are presented in Table 4 below for contextual information.

Table 4

Participant demographics and interview details

Participant	Type of hospitality	Position in company	Time in position	Interview duration	Online or offline
P1	Restaurant	Owner	24 years	16:01	Offline
P2	Lunchroom	Hospitality entrepreneur	6 years	23:53	Online

Data analysis

Despite the intervention's primary focus on the optimisation of one specific dish and its plant-based protein proportions, the menu card analysis in this study was done based on the proposed proportions of vegetarian, fish, and meat dishes for both lunch and dinner based on the Greendish 2050 Guidelines[10] (Greendish, 2022a) to provide a broader perspective on the overall composition of protein sources within the menus. Originally, these ratios are based on seven dishes on the menu card, but there can be adjusted[11] for more and fewer dishes. The classification of menu items followed the established criteria for defining lunch and dinner dishes as outlined by Greendish (Greendish, 2022a). Lunch dishes are considered to be meals such as soups, lunch salads, appetisers, sandwiches or variations thereof, such as wraps. The dinner dishes are those

[10] For lunch dishes, the proportions for seven dishes entail 43% vegetarian, 29% fish, 29% poultry meat, and 0% lamb/beef/pork meat. For dinner, it concerns 57% vegetarian, 14% fish, 14% poultry meat, and 14% lamb/beef/pork meat. A visualisation of these target percentages can be found in Appendix F, table 6.

[11] For instance, in cases where the menu has fewer than seven options, dishes are removed starting from position seven, then the sixth position, and so forth. If there are more than seven dishes for the menu category, the replenishment will occur in reverse. In essence, this would mean that, for instance, the eighth dish should be vegetarian, the ninth dish as well, and so forth. Appendix F provides the proportions of protein types adjusted to the number of dishes found in the intervention groups' menu card, in which Table 7 covers classified lunch dishes and Table 8 dinner meals.

that consist of at least a protein, vegetable, and starch component. Dishes in this category are, amongst others, pasta, pizzas, hamburgers, curries, and meal salads.

Before the classification, several inclusion and exclusion decisions were made by the researcher to ensure a focused analysis. Firstly, several dishes were omitted, namely side dishes, snacks and bites, desserts, breakfasts only served in the morning, children's menus and daily specials. Side dishes were excluded as they commonly complement main dishes or additional options and do not commonly serve as a standalone course. Similarly, snacks and bites were also excluded because they are typically smaller portions. Desserts and breakfast items were omitted as they did not directly align with the criteria for classifying lunch and dinner dishes. Children's menus were excluded due to their simplified nature and are typically tailored to children's preferences, which may not accurately represent protein ratios. Lastly, daily specials of which the protein status could not be determined were excluded due to their potential variation in protein content. Furthermore, in cases where a restaurant had a separate lunch and dinner menu, and the same dish for the same price was offered on both cards, the dish was only included once for consistency.

After excluding meal items, the researcher determined the main type of protein based on the information given on the menu cards. Based on the categorisation, the total number of dishes for a protein category was divided by the total number of dishes for the meal type. In cases where a dish could be ordered as a vegetarian option or with an animal-based protein, the dish was counted once as vegetarian and once respective to the type of protein[12]. To consider the environmental impact of protein choices, dishes with fish and meat, such as Surf and Turf, were included in the lamb/beef/pork category, as meat dishes generally have higher emissions than

[12] For example, if indicated that a dish with ham can also be ordered vegetarian, the dish was included both in the vegetarian ratio and the lamb/beef/pork one.

dishes with fish as a protein source (Carlsson-Kanyama & Gonzales, 2009; Volanti et al., 2022). Additionally, to understand the proportion of vegan options within the vegetarian category, the number of vegetarian and vegan dishes as well as the share of vegan dishes is included in Appendix G, Table 11 as well.

For the qualitative part of the research, anonymised verbatim transcripts were manually created in Dutch based on the audio-recorded interviews. Hereafter, the transcripts were codified thematically. This approach allowed for adding to the existing themes from the literature and applying them in the context of the participating restaurants in Leeuwarden. After familiarisation with the data, preliminary codes were generated. Subsequently, the codes were reviewed to identify recurring themes. Finally, the data was reviewed again to ensure that the themes matched the quotations to which the codes were previously matched, and the definite themes will be established, as Verhoeven (2020) recommended.

Ethical considerations

This research had various ethical considerations. Consent forms of participants, additional notes from the researcher during the interviews, anonymised transcripts, and codes were stored during the research on Google Drive, which was only accessible to the researcher and supervisor. Upon completion of the study, these documents will be stored on the X:-drive of the University of Groningen. The interviewees also signed a consent form granting permission for their data to be used in this study. Moreover, the consent form addressed the permission for verbal recordings of the interview, which was verbally confirmed before the start of the recording. The form furthermore addressed that due to the possibility of finding participants of the campaign online, ensuring total confidentiality and anonymity could not be guaranteed. The

consent form, in line with the standards of the Ethical Committee of Campus Fryslân, University of Groningen, can be found in Appendix D and its English translation in Appendix B. Furthermore, the raw data from the interviews was only accessed by the research team.

Methodological limitation statement

Before addressing this study's findings and its discussion, it is of importance to shortly address a large methodological limitation stemming from the small sample size. The limited number of participants restricts the generalizability of the findings as the insights obtained may solely reflect the specific characteristics and perspectives of the interviewees, which limits the potential breadth of viewpoints. Therefore, it is crucial to note here that the results from the interviews presented in the next section cannot be considered representative of the entire intervention group. In the forthcoming discussion, further elaboration will be provided regarding other limitations of this research.

Results

This section presents the research findings. The first part will compare the findings of the menu card analyses of the enterprises participating in the intervention and those not participating, and will compare them shortly. In the second section, the themes emerging from the interviews will be presented, covering the COM-B framework, the TDF, and additional themes that arose due to the semi-structured nature of the interviews.

Protein ratios menu comparison

The menu comparison has yielded multiple results. First of all, several notable observations emerged upon examining the menu cards before calculating the menu's protein

proportions. For instance, from the restaurants participating in the Greendish intervention, it was observed that three out of nine still had the Greendish dish on their menu. Furthermore, two enterprises from this group were found to have dedicated vegan menu cards. One of these restaurants predominantly featured “veganised” versions of dishes from their non-vegan menu, whilst the menu from the other comprised distinct dishes that were not mere replicas of the non-vegan offerings. In contrast, none of the enterprises from the non-participating group had a separate vegan menu card alongside their existing menu cards.

Menu analysis of enterprises of the intervention group

Appendix G, Table 8, provides the protein ratios of lunch and dinner dishes from the Greendish intervention’s participating enterprises. It reveals that five out of nine enterprises met the target for the number of vegetarian lunch dishes, with a range of 28.13% to 56.25% in proportion. However, none of the enterprises met the dinner target for vegetarian dishes. Additionally, all enterprises have lamb, beef, and/or pork among their lunch dishes, with the highest percentage being 56.26%, while the Greendish target is zero dishes with this type of protein. Two businesses did not serve poultry for lunch, and one of them also lacked dinners containing fish. All six enterprises serving dinner exceeded the ruminant protein targets, two fish and four poultry targets were met, with the remaining fish and poultry proportions being higher than the target, and none reached the target of vegetarian dishes. As can be found below in Table 5, the highest proportion of vegetarian dinners was 35.71%, and the lowest was 22.22%. In comparison, the dinner targets ranged between 72.72% and 57.14%. Notably, the enterprises without dinners categorised had the second, third and fourth highest percentages for vegetarian lunch dishes.

Concerning the highest proportion across the four protein types, six enterprises had vegetarian protein for lunch as the highest, two ruminant meat and one a shared proportion for vegetarian and ruminant meat. For five, the largest proportion of the type of protein in dinners was for ruminant meat, and one had vegetarian as the largest proportion.

Moreover, Table 11 in Appendix G shows that four of the nine enterprises had no vegan options listed within the lunch category, despite one stating that some of their vegetarian dishes could be made vegan. Among those serving dishes for lunch, there is a large range within the percentages: from 4.55% to 91.67%. Out of the six enterprises with meals categorised as dinners, only one did not serve vegan options. This particular enterprise also did not offer vegan options during lunch. For two enterprises, all the served vegetarian options for dinner were, in fact, vegan.

Menu analysis of the non-intervention group

Appendix G, table 10, displays all the protein proportions on the menus of non-participating enterprises in the intervention. All enterprises had classified lunch meals with lamb, beef, pork and fish, with one lacking serving poultry. The enterprise with the highest proportion of vegetarian lunch dishes offered no classified dinner dishes. For dinner, the eight enterprises serving classified dinner options served all four types of protein for it.

For seven out of nine businesses, the highest proportion across the four types of protein for lunch was vegetarian. For the other two, the highest protein proportion was in the ruminant meat. For dinner, six had ruminant meat as the main protein with the largest share among their dishes, one poultry, and one a shared fish and vegetarian proportion.

From Table 11 in Appendix G, it becomes apparent that three of the nine enterprises for the non-participating group did not specifically have any vegan options among their vegetarian

lunch dishes, of which two of them also did not have any vegan option for dinner meals. In contrast, the other one lacking vegan dishes for lunch did have 66.67% of its vegetarian options vegan for dinner. The highest proportion of vegan dishes among the vegetarian lunch dishes was 66.67%, and there was one enterprise with all its vegetarian dinner options being vegan.

Table 5[13]

Overview of the ranges of protein type proportions within the meal categories by group.

	Intervention group		**Non-intervention group**	
Main protein	**Lunch**	**Dinner**	**Lunch**	**Dinner**
Vegetarian	28.13 - 56.25%	22.22 - 35.71%	18.18 - 63.33%	16.67 - 38.10%
Fish	0.00 - 22.72%	11.11 - 28.57%	10.53 - 25.00%	4.76 - 35.71%
Poultry	0.00 - 16.36%	5.56 - 10.71%	0.00 - 20.00%	0.00 - 36.26%
Lamb/beef/pork	12.50 - 56.26%	25.00 - 61.11%	13.33 - 59.09%	7.14 - 66.67%

Based on Table 5 above, there is greater diversity in the percentages' range of vegetarian lunch and dinner options provided by the non-intervention group compared to the participating group. Additionally, the highest percentages of vegetarian dishes for both meal types are in the non-intervention group, but the minimum percentages are higher for the intervention group. Furthermore, the highest ruminant meat proportions are smaller for the intervention group than the non-intervention group for both types of meals. Concerning the fish and poultry dishes, the highest percentages are also found in the non-intervention group.

[13] The percentages provided in the table were rounded off at the second decimal by the researcher. Therefore, they may not add up precisely to 100%.

Interview results

Perceived impacts of the Greendish intervention

To create an understanding of what the Greendish intervention in Leeuwarden entailed, participants were asked how they would describe the intervention. The first participant perceived the intervention as a means to reduce the CO_2 impact of an already-existing dish before the intervention on their[14] menu card. For them, a reduction of 44.44% of meat was implemented and substituted by a plant-based protein in their chosen dish without a reduction of taste, according to the manager as well as the guests. Additionally, the participant highlighted that the intervention was not only about excluding meat from the menu but also about "*how to do certain things differently*"[15]. The second participant stressed that the intervention was about the potential impact on people, the planet, and animals by increasing the number of vegan dishes and lowering the number of meat-containing dishes. They also stated that after submitting their menu card to Greendish, the proportion of local versus externally sourced products was assessed to examine the impact of the ingredients beyond monetary considerations. Both mentioned that Greendish supplied promotional materials, such as stickers, to highlight the dishes during the intervention.

Regarding the influence of Greendish impacting the capability of the participants, both mentioned different perspectives. The first participant indicated that the Greendish intervention helped their enterprise to ensure the quality of their dish stayed the same because Greendish shared knowledge on a preparation method by drying the plant-based protein in the oven, which the participant indicated as positively experienced and helpful. The second participant, however,

[14] Throughout the remainder of this thesis, the singular pronouns 'they' and 'their' will be used in order to protect the anonymity of the study's participants and ensure inclusivity. This use of singular pronouns has been supported by the APA 7th edition manual (APA, 2020).
[15] From here on, the quotations are translated into English and the original Dutch quote will be cited in footnotes. "*Hoe kun je bepaalde dingen anders doen*".

stated that despite finding the impact assessment of the products valuable, their learning experiences were limited in terms of acquiring new knowledge or skills as they believed that they indicated to be already aware of the impacts on the planet, recommended ratios of ingredients within a dish were mostly already incorporated in their menu and they were already serving a wide variety of vegan dishes.

In terms of opportunity concerning the intervention, the interviewees highlighted different factors about the implementation of the intervention. As already stated previously, one factor helping in the dish optimisation was the knowledge sharing of Greendish on skills and their support. Furthermore, the first participant indicated that one of the more challenging aspects of making the optimisation a success was the personnel. This interviewee also noted that they learned from other colleagues participating in the intervention, as they shared their created dishes during a final conference and got inspired by one another. The second participant did not attend this gathering. A difficulty for the first participant lay in the fact that, when initially the partial replacement of the meat protein did not go as intended, it was challenging to instil and maintain employees' enthusiasm. Factors mentioned to hinder executing the intervention as intended by the second participant were time constraints and pre-existing capability in terms of knowledge. Furthermore, according to them, being part of a franchise formula posed a challenge to buy more local products in line with Greendish recommendations due to franchise regulations but also to incorporate a greater variety of vegan and vegetarian dishes onto the menu.

The motivation component of behaviour was also touched upon during the interviews, revealing insights into the potential for further changes. At the enterprise of the first participant, no additional dishes containing meat have been replaced or partly substituted for vegetarian or vegan options following the intervention. Nevertheless, the participant gave the impression of

being optimistic about the future of plant-based proteins on their menu cards. To illustrate this statement, they did not rule out the possibility of changing other signature meat-based dishes into (more) plant-based protein dishes, as they said: *"That {name of dish} is so part of us, that yes, it is going to be harder to find another product for that, but maybe in the near future, instead of meat, we will be making the {name of dish} based on a plant or a meat substitute"*[16]. However, they expressed that this shift also depends on their hired chefs' skills and interest in working with plant-based proteins. Optimism for this shift was noted when working with younger chefs: *"You do notice that, especially in the kitchen, more and more young people are interested in this and also know much more easily, that instead of meat, you can also serve other products"*[17]. The participant also mentioned their professional role in the conveyance of staying optimistic about the dish to their employees during the intervention, even when it did not work out as wished in the first place. Furthermore, their role was also to encourage guests to order the dish of the intervention, even if they indicated that they expected not to like the plant-based replacement protein. The participant highlighted that guests frequently expressed satisfaction with the dish after their encouragement. Lastly, the participant believed they must engage in sustainable practices despite "... s*ustainability is actually no longer something for my generation, while we should be doing it, I absolutely think that*"[18], which points towards their motivation to engage in sustainability interventions such as the investigated one. With regards to the motivation component of the second participant, they acknowledged their role in the intervention by choosing the Greendish dish and altering it to the guidelines. Moreover, they stated that

---

[16] "*{naam gerecht} dat hoort zo bij ons, dat wordt moeilijker om daar een ander product voor te vinden, maar misschien is het straks wel zo dat we straks in plaats van vlees een {naam gerecht} maken op basis van een plant of vleesvervange*r".

[17] "*Je merkt wel dat met name in de keuken er steeds meer jonge mensen zijn, die daar ook geïnteresseerd in zijn en ook veel makkelijker weten, dat je in plaats van vlees ook andere producten neer kan zetten.*"

[18] "*... duurzaamheid is eigenlijk niet meer iets voor mijn generatie, terwijl wij het wel moeten doen, ik vind dat absoluut*."

regarding the future of implementation, currently, the ratios of vegetables in a dish, as recommended by Greendish, are taken into account when creating new dishes, but also because they were already mostly considering these ratios in their dishes in the first place. Additionally, they mentioned the shift towards more local and "pure" products in diets to be a positive movement. Lastly, they mentioned the willingness to give the opportunity to someone else to implement and learn from projects similar to Greendish's intervention in the future.

Additional themes

Both the participants mentioned that they had observed an upward trend in the consumption of vegetarian and vegan meals. For instance, the first interviewee noted that among their staff, there is an increase in the consumption of vegetarian and vegan meals. The second participant elaborated more on their observation of a growing market in vegetarian and especially vegan dishes. They stated, for instance, that revenue of these dishes has doubled compared to previous years, and dedicated this to an increase in public awareness and a shift towards greater adoption of vegan diets among individuals, as they said: "*Maybe because it is also becoming more well-known, but also that people are starting to eat more vegan*"[19]. Both participants also remarked that the number of vegetarian dishes on their menu has grown over the past years. However, the first participant also voiced their belief that meat will never be eliminated from their menu.

Furthermore, the first participant mentioned an intercultural aspect as they stated a difference in the level of awareness regarding sustainability practices in hospitality between their location and other parts of Europe. The participant voiced that by sharing knowledge and

[19] "*Misschien omdat het ook wel meer bekend wordt, maar ook wel dat mensen meer vegan gaan eten*"

experiences on sustainability practices within their restaurant, their personnel expressed bringing back their gained insights and experiences regarding sustainability.

Discussion

As stated in the introduction, the impact of the Greendish campaign on the menu from Leeuwarder hospitality is unknown, specifically in the context of the protein transition. By analysing the menu protein compositions and the perceptions of participating enterprises, the present study sought to understand the impacts of the intervention by Greendish to encourage a shift towards more sustainable menu cards. In the following section, the findings from the menu card analysis and the interviews will be discussed in relation to the discussed literature. It will also address the implications and the study's limitations.

The findings of the menu analysis provide several insights. Where some participating enterprises offered dedicated vegan menu cards, and none of the non-participating group did, this might suggest a higher inclination towards more environmentally friendly menus among participants. Whilst this fact cannot directly be attributed to the Greendish intervention, the observation aligns with the intervention's overarching goal to serve more sustainable dishes (Greendish, 2022b). However, it is important to note that not all participating enterprises offered vegan options, indicating the need for further improvement in the low environmentally impacting meal options considering that vegan diets commonly have the least environmental impact (Chai et al., 2019). The protein proportion analysis furthermore revealed a potential for improvement as a majority of the participating enterprises met the proportion of recommended vegetarian dishes, but none met these results for their offered dinners. The prevalence of ruminant meat in

lunch meals for both groups as well as the participating enterprises all exceeding the targets for ruminant meat in their dinners also indicates the continuing challenge of reducing non-vegetarian proteins and lowering the environmental impact of the menus. Additionally, the results showed a larger variation in the proportion of vegetarian lunches and dinners offered among the non-intervention group compared to the intervention participating group, which may imply that there is less emphasis on providing consistent vegetarian options in the non-intervention group, albeit the difference in range is not extremely large. Despite the non-intervention group having higher maximum percentages of vegetarian dishes, the intervention group has lower maximum percentages of ruminant meat for both types of meals. This suggests a potential awareness of the reduction of the protein type with the highest emissions (Carlsson-Kanyama & Gonzales, 2009; Volanti et al., 2022).

The interviews give a preliminary insight into the perceived impacts of the intervention. When asked to describe the intervention, both participants highlighted distinct aspects of the intervention. This suggests, among others, potential variations of the memory, attention, and decision-making aspect within the TDF from Atkins and colleagues (2017), potentially implying that the intervention was perceived and interpreted differently by the interviewees and potentially therefore also by other intervention participants. In terms of capability in relation to the COM-B framework by Michie and colleagues (2011), this study suggests that the intervention's impact on physical and psychological capability differs among participants, emphasising the influence of pre-existing knowledge and skills. As such, there is a possibility of diverse experiences and outcomes for other non-interviewed participants in the intervention as well.

Moreover, based on one interview, it became apparent that several opportunity factors influenced the implementation of the intervention, which in turn can impact its impact. For

instance, franchise regulations may pose a significant challenge for participants implementing the Greendish intervention, which might impact their opportunity for change in the long run and, thus, the impact of the intervention overall. These constraints can be linked to the TDF domains of *Environmental Context and Resources* and *Social Influences* as franchise systems on decision-making might hinder the ability to incorporate recommended changes in menu options, for example buying more local products and offering a greater variety of vegetarian and potentially vegan options with lower environmental impacts. Other challenges to benefit fully from the intervention are related to personnel enthusiasm, time constraints, and already considered to be pre-existing capabilities. The limiting factor of time constraint aligns with Merkus's finding (2022) that hospitality enterprises commonly face time constraints when pursuing sustainability practices. The found constraining factors also highlight the need for tailored strategies, which is in line with Onwezen's claim that different groups may require different interventions based on their behavioural drivers (2022). Potentially, collaborative efforts between intervention providers, franchise management and participating enterprises to overcome these environmental contexts and resource constraints as well as social influences in future interventions. Nevertheless, the intervention offered valuable opportunities for knowledge sharing, skill development, and inspiration among the participating enterprises, which may possibly foster a culture of sustainability within the participating enterprises. Especially since an intercultural aspect of knowledge sharing was mentioned by one of the participants, the impact of the intervention may move beyond the directly participating enterprises by contributing to broader knowledge and awareness within and outside the industry.

With regards to the motivation aspect of the COM-B framework, the TDF domains of participants that were addressed in direct relation to the intervention were optimism and their

professional role. For both participants, the motivation to promote sustainability within the menu is present. However, this may not be directly attributable to the Greendish intervention. Potential other explanations arising from the interviews are already existing motivation and intentions, already observing a positive trend in vegetarianism, caring for future generations, and working with young skilled personnel, with the latter being in line with the literature on the crucial role of skilled chefs in preparing alternative proteins (Michel et al., 2021). The mentioned explanations, in turn, might also have influenced their willingness to participate in the intervention in the first place compared to other enterprises. The willingness expressed by one interviewee to give others a chance to participate in similar future interventions may indicate their belief in the intervention's positive consequences and its benefits.

Additionally, the Greendish campaign may have contributed to promoting flexitarian menus among the participating restaurants. With the participants' belief in the permanent meat presence on their menu cards, this might suggest that flexitarian menus may remain the standard in the hospitality sector, albeit the proteins be in a different ratio. This aligns with the literature on increased flexitarianism's popularity in the Netherlands (Dagevos & Verbeke, 2022). Furthermore, as seen in the menu analysis, the proportions of fish and poultry remain rather low compared to ruminant meat and the guidelines of Greendish. As such, a significant opportunity for the Leeuwarder hospitality may be to prioritise serving more fish and poultry dishes, which generally have a lower environmental impact compared to the ruminant meat options, to lower their environmental menu impacts whilst remaining non-vegetarian options on their menu.

From the existing literature, it became apparent that successful interventions in a closed setting require alignment with the three components of behaviour in both the food consumers and providers (Meeusen et al., 2022; Michie et al., 2014; Steg & Vlek, 2009). As indicated above, all

components of behaviour were touched upon for the food providers. Despite consumers not being the prime focus of this study, a participant's mention of frequent guest satisfaction after their encouragement to order the Greendish dish could point towards a growing acceptance of more environmentally sustainable dishes and a potential increase in consumers eating more plant-based protein. This aligns with the notion that successful interventions rely on food providers accepting and carrying out interventions while also considering the behaviour and experiences of food recipients, as stated by Meeusen and colleagues (2022).

Overall, this study contributes to the understanding of the impact of the Greendish campaign on the menus of the participating Leeuwarder hospitality enterprises in the context of the protein transition. Based on the findings, the impact of the Greendish campaign on the participating Leeuwarder hospitality enterprises menu may be described as having a positive influence towards sustainable menu options, but with room for improvement on reducing the protein ratios with the highest emissions and increasing the number dishes with plant-based proteins. The campaign may have contributed to the promotion of flexitarian menus and fostered a culture of sustainability in the participating hospitality. However, challenges in implementation and contextual factors may also have impacted the extent of the intervention's impact.

Implications

Based on the preliminary insights, this study has various implications. First of all, the research suggests that interventions like Greendish can be of impact on hospitality enterprises in Leeuwarden in regards to the protein transition, albeit their impact can be dependent on various factors. Therefore, other hospitality enterprises could consider implementing similar interventions to promote sustainable menu options in contribution to the protein transition. In

addition, for Greendish, the municipality, as well as entrepreneurs in a franchise formula, it is of use to understand that different enterprises may need tailored strategies and collaborative efforts to address the effectiveness of future interventions. To enhance the maximum impact of the intervention, it may also be of importance to select participants without much pre-existing knowledge and with ample time availability. Furthermore, by fostering partnerships between hospitality enterprises, valuable insights and best practices on lowering a menu's environmental impacts may be shared, potentially fostering more protein proportion shifts as a result of inspiration and new knowledge creation.

Overall, the implications of this study could be considered as a call for continued efforts in promoting, supporting, and sustaining sustainable menu shifts in the Leeuwader hospitality sector.

Limitations

While this study provides preliminary insights and suggestions on the impact of the Greendish intervention on the menu cards, it is important to acknowledge the limitations that prevent definite conclusions regarding the research questions.

Firstly, the menu card availability limits the study's scope and the longitudinal assessment. As stated previously, the menus of two enterprises participating in the Greendish intervention were excluded, as their menus were not found online. Their absence might introduce a potential bias in the study and might have limited the availability of unique information from their menus. Additionally, this also poses a challenge in assessing the full scope of the current status of the participating restaurant protein proportions on menu cards. Furthermore, this study lacked a longitudinal analysis to observe changes or improvements in the menu card composition following the intervention due to the lack of menu cards' availability over time.

Secondly, another limitation is the selection of non-intervention enterprises to allow for comparisons. Despite the used selection criteria and the utilisation of TripAdvisor as a tool to limit the introduction of biases, the final decision on the nine selected enterprises was ultimately made by the researcher. As such, unconscious preferences and subjective judgement may have influenced the choices. Therefore, this could impact the overall representativeness of other hospitality enterprises in Leeuwarden. Furthermore, one of the included restaurants in the intervention group was unable to finish the entire intervention, and one was temporarily closed upon writing this study. While the reasoning behind still including those menu cards was for representation and a more comprehensive assessment despite potential limited participation, their inclusion may also have impacted the results' generalizability. In addition, reasons for their incomplete participation in temporary closure may be related to specific characteristics, which could differentiate them from other participants and hence introduce bias into the study.

Additionally, the small sample size regarding interviews introduces limitations. For instance, the findings may not be representative of the broader population that participated in the Greendish intervention. The generalizability of the results is also diminished by the small sample size, and therefore, definite conclusions about the overall impact of the intervention are limited. The lack of saturation in interviews suggests, furthermore, that not all relevant perspectives and themes related to the Greendish intervention in Leeuwarder hospitality may have been captured in this study. Lastly, there might be a possibility of nonresponse bias, which potentially affects the interview results, and hence the study outcomes as well.

Conclusion

In conclusion, the hospitality industry has a significant potential to contribute to the protein transition needed to lower the environmental impact of the food industry. This study analysed the menu protein compositions of the Greendish intervention group compared to a selected non-intervention group in Leeuwarden and investigated the participant's perceptions of the interventions' impact. Despite limitations preventing the ability to draw definite conclusions, this research gave preliminary insights into the impact of the Greendish campaign, an intervention aiming to promote sustainable menu options in Leeuwarden. The study suggests that the intervention may have influenced all the underlying components of behaviour for the food providers, hence, positively impacting the intervention in practice. However, it also signifies that there is still room for improvement in terms of the availability of lower-environmental impact options for meals and sustainable protein proportions, as developed by Greendish in accordance with the EAT-Lancet diet and the 'Wheel of Five', for hospitality enterprises in Leeuwarden.

Future research

Despite the study providing valuable insights into the current state of participating and non-participating hospitality enterprises' protein ratios, future research should aim to investigate menu cards prior to the intervention to offer insights into menu cards' trends and patterns. Additionally, it could provide a thorough knowledge of the long-term impact of Greendish and similar interventions to foster the protein transition. Moreover, due to the limitations discussed regarding the study's small sample size, there is a need for additional research to validate and expand upon the findings of this research to allow for a more comprehensive understanding of the impact of the Greendish intervention in light of the protein transition in Leeuwarder

hospitality. This could potentially be done by interviewing the entire intervention group. Furthermore, future research in this light could investigate how the challenges related to implementation and following the intervention may be overcome.

References

Aiking, H., & de Boer, J. (2020). The next protein transition. *Trends in Food Science & Technology*, *105*, 515–522. https://doi.org/10.1016/j.tifs.2018.07.008

APA. (2020). Chapter 4.8 Contractions and Colloquialisms. *Publication Manual of the American Psychological Association (7th ed.)*. Retrieved from: https://apastyle.apa.org/style-grammar-guidelines/grammar/singular-they

Atkins, L., & Michie, S. (2013). Changing eating behaviour: What can we learn from behavioural science? *Nutrition Bulletin*, *38*(1), 30–35. https://doi.org/10.1111/nbu.12004

Ben Youssef, A., & Zeqiri, A. (2022). Hospitality industry 4.0 And climate change. *Circular Economy and Sustainability*, *2*(3), 1043–1063. https://doi.org/10.1007/s43615-021-00141-x

Boereboom, A., Mongondry, P., de Aguiar, L. K., Urbano, B., Jiang, Z. (Virgil), de Koning, W., & Vriesekoop, F. (2022). Identifying consumer groups and their characteristics based on their willingness to engage with cultured meat: A comparison of four European countries. *Foods*, *11*(2), 197. https://doi.org/10.3390/foods11020197

Carlsson-Kanyama, A., & Gonzales, A. (2009). Potential contributions of food consumption patterns to climate change. *Epidemiology*, *89*(5), 1704–1709. https://doi.org/10.1097/01.ede.0000362799.46174.56

Cane, J., O'Connor, D., & Michie, S. (2012). Validation of the theoretical domains framework for use in behaviour change and implementation research. *Implementation Science*, *7*(1). https://doi.org/10.1186/1748-5908-7-37

CBS, Kloosterman, R., Akkermans, M., Wingen, M., Molnár- In 't Veld, H., & van Beuningen, J. (2021, June 4). 6. Vleesconsumptie. *Centraal Bureau Voor de Statistiek*.

https://www.cbs.nl/nl-nl/longread/rapportages/2021/klimaatverandering-en-energietransitie-opvattingen-en-gedrag-van-nederlanders-in-2020/6-vleesconsumptie

Chai, B. C., van der Voort, J. R., Grofelnik, K., Eliasdottir, H. G., Klöss, I., & Perez-Cueto, F. J. A. (2019). Which diet has the least environmental impact on our planet? A systematic review of vegan, vegetarian and omnivorous diets. *Sustainability*, *11*(15), 4110. https://doi.org/10.3390/su11154110

Curtis, K., Atkins, L., & Brown, K. (2017). Big hearts, small hands: A focus group study exploring parental food portion behaviours. *BMC Public Health*, *17*(1). https://doi.org/10.1186/s12889-017-4711-z

Dagevos, H., Verhoog, D., van Horne, P., & Hoste, R. (2020). *Vleesconsumptie per hoofd van de bevolking in Nederland, 2005-2019*. Wageningen Economic Research. http://dx.doi.org/10.18174/531409

Dagevos, H., & Verbeke, W. (2022). Meat consumption and flexitarianism in the Low Countries. *Meat Science*, *192*, 108894. https://doi.org/10.1016/j.meatsci.2022.108894

De Vaan, J. M., Van Steen, T., & Müller, B. C. N. (2019). Meat on the menu? How the menu structure can stimulate vegetarian choices in restaurants. *Journal of Applied Social Psychology*, *49*(12), 755–766. https://doi.org/10.1111/jasp.12632

Dorgbetor, I. K., Ondrasek, G., Kutnjak, H., & Mikuš, O. (2022). What if the world went vegan? A review of the impact on natural resources, climate change, and economies. *Agriculture*, *12*(10), 1518. https://doi.org/10.3390/agriculture12101518

Elzerman, J. E., van Dijk, P. E. M., & Luning, P. A. (2022). Substituting meat and the role of a situational context: Exploring associations and motives of Dutch meat substitute-users. *British Food Journal*, *124*(13), 93–108. https://doi.org/10.1108/bfj-09-2021-1051

Gaddefors, J., & Anderson, A. R. (2017). Entrepreneursheep and context: when entrepreneurship is greater than entrepreneurs. International Journal of Entrepreneurial Behavior & Research, 23(2), 267–278. https://doi.org/10.1108/ijebr01-2016-0040

Gase, L., Dunning, L., Kuo, T., Simon, P., & Fielding, J. E. (2014). Restaurant owners' perspectives on a voluntary program to recognize restaurants for offering reduced-size portions, los angeles county, 2012. *Preventing Chronic Disease*, *11*. https://doi.org/10.5888/pcd11.130310

Gemeente Leeuwarden. (2022, April 6). *Leeuwarden serveert Greendish!* Ondernemend Leeuwarden. https://ondernemendleeuwarden.nl/leeuwarden-serveert-greendish/

Gill, P., Stewart, K., Treasure, E., & Chadwick, B. (2008). Methods of data collection in qualitative research: interviews and focus groups. *British dental journal*, *204*(6), 291-295.

Glanz, K., Resnicow, K., Seymour, J., Hoy, K., Stewart, H., Lyons, M., & Goldberg, J. (2007). How major restaurant chains plan their menus. *American Journal of Preventive Medicine*, *32*(5), 383–388. https://doi.org/10.1016/j.amepre.2007.01.003

Greendish. (2022a). *Greendish 2050 Guidelines*. Greendish. https://greendish.com/wp-content/uploads/2022/07/Greendish-2050-Guidelines-Richtlijnen-Menu-van-de-Toekomst-2022.pdf?utm_source=ActiveCampaign&utm_medium=email&utm_content=Hi++FIRSTNAME+%2C+hier+zijn+de+Greendish+Guidelines%21&utm_campaign=Bevestiging+download&vgo_ee=8icWrhIJmOpm87eI%2FCmlHL35hO7C%2FF3J%2FgQB9Uu3XAY%3D

Greendish. (2022b, April 19). *Yourchoice - Campagne gaat van start in Leeuwarden*. Greendish. https://greendish.com/cases/leeuwarden-yourchoice/

Greendish. (2022c, April 19). *YOURCHOICE CAMPAGNE IN LEEUWARDEN VOOR*

DUURZAME EN GEZONDE HORECA. Greendish. https://greendish.com/cases/leeuwarden-yourchoice/

Hennink, M., Hutter, I., & Bailey, A. (2020). *Qualitative research methods*. SAGE.

Hielkema, M. H., Onwezen, M. C., & Reinders, M. J. (2022). Veg on the menu? Differences in menu design interventions to increase vegetarian food choice between meat-reducers and non-reducers. *Food Quality and Preference*, *102*, 104675. https://doi.org/10.1016/j.foodqual.2022.104675

Kampers, F. W., & Fresco, L. O. (2017). *Food transitions 2030: How to achieve the transitions to a sustainable, affordable, trustworthy and high-quality food system in the next decade or two that will fulfil the needs of a diverse and growing world population*. Wageningen University & Research. https://library.wur.nl/WebQuery/wurpubs/fulltext/423601

KNAW, NFU, NWO, TO2-Federatie, Vereniging Hogescholen, & VSNU. (2018). Nederlandse gedragscode wetenschappelijke integriteit [Application/pdf]. *Data Archiving and Networked Services (DANS)*. https://doi.org/10.17026/DANS-2CJ-NVWU\

Luo, Y., & Xu, X. (2019). Predicting the helpfulness of online restaurant reviews using different machine learning algorithms: A case study of Yelp. *Sustainability*, *11*(19), 5254. https://doi.org/10.3390/su11195254

Macdiarmid, J. I. (2021). The food system and climate change: Are plant-based diets becoming unhealthy and less environmentally sustainable? *Proceedings of the Nutrition Society*, *81*(2), 162–167. https://doi.org/10.1017/s0029665121003712

Mathayomchan, B., & Taecharungroj, V. (2020). "How was your meal?" Examining customer experience using Google maps reviews. *International Journal of Hospitality Management*, *90*, 102641. https://doi.org/10.1016/j.ijhm.2020.102641

Marketing Leeuwarden. (n.d.). *Marketing Leeuwarden*. Visit Leeuwarden. Retrieved May 20, 2023, from https://www.visitleeuwarden.com/nl/contact

Maynard, D. da C., Zandonadi, R. P., Nakano, E. Y., & Botelho, R. B. A. (2020). Sustainability indicators in restaurants: The development of a checklist. *Sustainability*, *12*(10), 4076. https://doi.org/10.3390/su12104076

Meeusen, M. J. G., Immink, V., Reinders, M., Battjes-Fries, M., Hoefnagels, F., Pot, G., … & Sauer, L. (2022). *Gezonde voeding in de zorg & horeca: Op weg naar gezonder eten in gesloten settings : Onderzoek naar interventies die bewoners in de zorg, gasten in de Out of Home en kinderen ondersteunen om gezonder te eten*. Wageningen Economic Research.

Merkus, A. (2022). *The road to implementing sustainability in restaurants* (Master dissertation).

Michel, F., Hartmann, C., & Siegrist, M. (2021). Consumers' associations, perceptions and acceptance of meat and plant-based meat alternatives. *Food Quality and Preference*, *87*, 104063. https://doi.org/10.1016/j.foodqual.2020.104063

Michie, S., Atkins, L., & West, R. (2014). The behaviour change wheel. *A guide to designing interventions. 1st ed. Great Britain: Silverback Publishing*, *1003*, 1010.

Michie, S., Van Stralen, M. M., & West, R. (2011). The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation science*, *6*(1), 1-12.

Ministerie van Landbouw, Natuur en Voedselkwaliteit. (2020). *Nationale Eiwitstrategie* (pp. 1–51). https://open.overheid.nl/documenten/ronl-6ea7577b-85a6-425a-9dad-b9b9cf695495/pdf

Natuur & Milieu. (2021). *Vegamonitor 2020*.

https://natuurenmilieu.nl/app/uploads/Vegamonitor-Hoeveel-mensen-eten-vlees-rapport-2020-DEF.pdf

Obbagy, J. E., Condrasky, M. D., Roe, L. S., Sharp, J. L., & Rolls, B. J. (2011). Chefs' opinions about reducing the calorie content of menu items in restaurants. *Obesity*, *19*(2), 332–337. https://doi.org/10.1038/oby.2010.188

Parkin, B. L., & Attwood, S. (2022). Menu design approaches to promote sustainable vegetarian food choices when dining out. *Journal of Environmental Psychology*, *79*, 101721. https://doi.org/10.1016/j.jenvp.2021.101721

Pyett, S. C., Jenkins, W. M. N., van Mierlo, B. C., Trindade, L.M., Welch, D. & van Zanten, H. H. E. (2023). *Our future proteins: A diversity of perspectives* (pp. 1–575). VU University Press. https://vuuniversitypress.com/product/ourfutureproteins/?lang=en

Reinders, M. J., Huitink, M., Dijkstra, S. C., Maaskant, A. J., & Heijnen, J. (2017). Menu-engineering in restaurants - Adapting portion sizes on plates to enhance vegetable consumption: A real-life experiment. *International Journal of Behavioral Nutrition and Physical Activity*, *14*(1). https://doi.org/10.1186/

Reinders, M. J., van Lieshout, L., Pot, G. K., Neufingerl, N., van den Broek, E., Battjes-Fries, M., & Heijnen, J. (2020). Portioning meat and vegetables in four different out of home settings: A win-win for guests, chefs and the planet. *Appetite*, *147*, 104539. https://doi.org/10.1016/j.appet.2019.104539

Rosenfeld, D. L. (2018). The psychology of vegetarianism: Recent advances and future directions. *Appetite*, *131*, 125–138. https://doi.org/10.1016/j.appet.2018.09.011

Sabaté, J., & Soret, S. (2014). Sustainability of plant-based diets: Back to the future,,. *The American Journal of Clinical Nutrition*, *100*, 476S-482S.

https://doi.org/10.3945/ajcn.113.071522

Smart Protein Project. (2021). What consumers want: A survey on European consumer attitudes towards plant-based foods with a focus on flexitarians. *Smart Protein*, 1-58. https://smartproteinproject.eu/wp-content/uploads/FINAL_Pan-EU-consumer-survey_Overall-Report-.pdf

Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology*, *29*(3), 309–317. https://doi.org/10.1016/j.jenvp.2008.10.004

TripAdvisor, & H., J. (2018, January 29). *Price Ranges for $, $, $$, & $$ on Restaurant listings*. Tripadvisor Support Forum. https://www.tripadvisor.com/ShowTopic-g1-i12105-k11213382-Price_Ranges_for_on_Restaurant_listings-Tripadvisor_Support.html

UNFCCC. (n.d.). *The Paris Agreement*. Unfccc.Int. Retrieved February 12, 2023, from https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

van der Horst, H. M., Michielsen, Y. J. E., & House, J. A. (2023). No protein transition without societal acceptance: two reasons why the protein transition has not accelerated yet. In *Our future proteins* (pp. 501-507). VU University Press.

Verain, M. C. D., Dagevos, H., & Jaspers, P. (2022). Flexitarianism in the Netherlands in the 2010 decade: Shifts, consumer segments and motives. *Food Quality and Preference*, *96*, 104445. https://doi.org/10.1016/j.foodqual.2021.104445

Verhoeven, N. (2020). *Thematische analyse: patronen vinden bij kwalitatief onderzoek*. Boom.

Volanti, M., Arfelli, F., Neri, E., Saliani, A., Passarini, F., Vassura, I., & Cristallo, G. (2022). Environmental impact of meals: How big is the carbon footprint in the school canteens? *Foods*, *11*(2), 193. https://doi.org/10.3390/foods11020193

Wang, Y.-F., Chen, S.-P., Lee, Y.-C., & Tsai, C.-T. (Simon). (2013). Developing green management standards for restaurants: An application of green supply chain management. *International Journal of Hospitality Management*, *34*, 263–273. https://doi.org/10.1016/j.ijhm.2013.04.001

Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., Garnett, T., … & Murray, C. J. (2019). Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. *The Lancet*, *393*(10170), 447-492.

Appendix A

Information sheet in English

INFORMATION SHEET

EVALUATING THE PROTEIN TRANSITION IN LEEUWARDER HOSPITALITY: A STUDY ON THE GREEN DISH INTERVENTION

Dear participant,

Thank you for your interest in participating in this research. This letter explains what the research entails and how the research will be conducted. Please take time to read the following information carefully. If any information is not clear kindly ask questions using the contact details of the researchers provided at the end of this letter.

WHAT THIS STUDY IS ABOUT?

- This research concerns an evaluation of the Greendish project 'YourChoice' in Leeuwarden, which took place in May and June 2022 and was commissioned by the municipality of Leeuwarden to foster the protein transition. However, it has remained unclear up until now what the effects on the menus of the participating restaurants have been with regards to the protein transition after the completion of the project. Therefore, by analysing the menu cards of the participating restaurants before, during, and after the campaign as well as by interviews, this study will evaluate the effectiveness of the campaign on the menu cards of the participating restaurants.
- The total number of participants will be around 10.
- You have been chosen to participate in this research because your hospitality enterprise has participated in the YourChoice campaign of Greendish in 2022.

WHAT DOES PARTICIPATION INVOLVE?

- Participation in this study entails forwarding your menu cards from before, during, and after the intervention as well as taking part in an interview for half an hour to an hour. The interview questions will address amongst others your motivations to participate in the YourChoice campaign, the differences in the menu card composition before, during, and after the campaign, as well as your perceptions on differences in your opportunities and capabilities with regards to new menu cards.

DO YOU HAVE TO PARTICIPATE?

- Participation in this study is voluntary.
- Participants may choose not to answer questions without any consequences or providing reasons for not answering questions.
- Participants may stop their participation at any time in this study, and/or refuse to have their data used for this study without giving any reason.
- Discontinuation of participation or refusal of participation has no adverse consequences for the participant nor the enterprise.

ARE THERE ANY RISKS IN PARTICIPATING?

- As all enterprises that have participated in the campaign can be found online, ensuring total confidentiality and anonymity can be a challenge. Nevertheless, names of participants will not be shared in the final document and the data will be anonymised as far as possible.

ARE THERE ANY BENEFITS IN PARTICIPATING?

- There are no direct benefits of participating in this research for the participant. Nevertheless, the research may contribute to the knowledge on the effectiveness of interventions such as the Greendish intervention and hence the outcome of the research can be informative for relevant stakeholders. Furthermore, a benefit in participating in the study could be gaining insight for themselves into why or why not to join similar programmes in the future.

HOW WILL INFORMATION YOU PROVIDE BE RECORDED, STORED AND PROTECTED?

- The interview will be audio recorded for the purpose of transcribing the interview. The recording will be done with use of a personal device with an access code known only to the researcher. Transcriptions will be recorded via an online transcription tool and will be manually corrected. The audio recording will only be accessible to the researcher and supervisor. After the interview, the recording will be uploaded to the Y-Drive of the University of Groningen and will be destroyed elsewhere.
- The transcriptions will be anonymised by deleting names of the participants and changing/removing other confidential information if deemed necessary to ensure confidentiality.
- Consent forms, transcripts of the interviews, derived codes from the transcripts, and the menu cards will be stored in Google Drive for the duration of the study. Afterwards, these documents will be stored and protected on the Y-Drive server of the RUG in compliance with the GDPR regulations of the university. This data is stored for the protection of both participants and researcher; in this manner, the RUG can check whether the gathered data as well as the results from the research have not been manipulated, exaggerated or made up, should a situation occur that necessitates an investigation by the university.
- After five years, all data stored on the Y-Drive server will be destroyed by the RUG.

WHAT WILL HAPPEN TO THE RESULTS OF THE STUDY?

- The results of this study will be used for a research dissertation and will be shared with the municipality of Leeuwarden. Depending on the outcome of the dissertation, the municipality of Leeuwarden can decide whether they want to use the findings and potential recommendations for future studies.
- The results of the research will also be presented during a presentation congress at Campus Fryslân of the University of Groningen for the supervisor from the university, other professors and fellow students.

ETHICAL APPROVAL

- This study has obtained ethical approval from the Campus Fryslân Ethics Committee.
- The researcher will uphold themselves to the relevant ethical standards from the University of Groningen.

INFORMED CONSENT FORM

- Please sign the enclosed consent form and send it to the researcher if you wish to participate in this study. Signing the consent form is not binding; you can decide to withdraw from this study at any time you wish.

WHO SHOULD YOU CONTACT FOR FURTHER INFORMATION?

You can contact the researcher of this study via the email indicated below. May you wish to contact the supervisor of this study, you are free to contact them as well.

Maret Sturms (m.m.sturms@student.rug.nl)

Supervisor of the University of Groningen:
E. Cavagnaro (e.cavagnaro@rug.nl)

Appendix B

Informed consent form in English

INFORMED CONSENT FORM

Title study: EVALUATING THE PROTEIN TRANSITION IN LEEUWARDER HOSPITALITY: A STUDY ON THE GREEN DISH INTERVENTION

Name participant:

Assessment

- I have read the information sheet and was able to ask any additional question to the researcher.
- I understand I may ask questions about the study at any time.
- I understand I have the right to withdraw from the study at any time without giving a reason.
- I understand that at any time I can refuse to answer any question without any consequences.
- I understand that I will not benefit directly from participating in this research.

Confidentiality and Data Use

- I understand that none of my individual information will be disclosed to anyone outside the study team and my name will not be published.
- I understand that the information provided will be used only for this research and publications directly related to this research project.
- I understand that data (consent forms, recordings, interview transcripts) will be retained on the Y-drive of the University of Groningen server for 5 years, in correspondence with the university GDPR legislation.

Future involvement

- I wish to receive a copy of the scientific output of the project.
- I consent to be re-contacted for participating in future studies.

Having read and understood all the above, I agree to participate in the research study (please specify by circling): yes / no

_____ _____

Date **Signature**

To be filled in by the researcher:

- I, Maret Sturms, declare that I have thoroughly informed the research participant about the research study and answered any remaining questions to the best of my knowledge.
- I agree that this person participates in the research study.

_____ _____

Date **Signature**

Appendix C

Information sheet in Dutch

INFORMATIEBLAD

EVALUATIE VAN DE EIWITTRANSITIE IN LEEUWARDER HORECA: EEN ONDERZOEK NAAR DE GREENDISH INTERVENTIE

Geachte deelnemer,

Hartelijk dank voor uw interesse in deelname aan dit onderzoek. In deze brief wordt uitgelegd wat het onderzoek inhoudt en hoe het onderzoek zal worden uitgevoerd. Neemt u alstublieft de tijd om de volgende informatie zorgvuldig te lezen. Als bepaalde informatie niet duidelijk is, kunt u vragen stellen via de contactgegevens van de onderzoekers aan het eind van deze brief.

WAAR GAAT DIT ONDERZOEK OVER?

- Dit onderzoek betreft een evaluatie van het Greendish project 'YourChoice' in Leeuwarden, dat in mei en juni 2022 plaatsvond in opdracht van de gemeente Leeuwarden om de eiwittransitie te bevorderen. Het is tot nu toe echter onduidelijk gebleven wat de effecten op de menukaarten van de deelnemende restaurants zijn geweest met betrekking tot de eiwittransitie na afloop van het project. Daarom zal deze studie door analyse van de menukaarten van de deelnemende restaurants voor, tijdens en na de campagne en door interviews de effectiviteit van de campagne op de menukaarten van de deelnemende restaurants evalueren.
- Het totale aantal deelnemers zal ongeveer 10 bedragen.
- U bent uitgekozen om deel te nemen aan dit onderzoek omdat uw horecabedrijf in Leeuwarden heeft deelgenomen aan de YourChoice campagne van Greendish in 2022.

WAT HOUDT DEELNAME IN?

- Deelname aan dit onderzoek houdt in dat u de menukaarten van voor, tijdens, en na de interventie doorstuurt alsmede dat u deelneemt aan een interview voor gedurende een half uur tot een uur. De interviewvragen gaan onder andere over uw beweegredenen om deel te nemen aan de YourChoice campagne, de verschillen in de menukaart samenstelling voor, tijdens en na de campagne en uw perceptie over verschillen in uw kansen en mogelijkheden met betrekking tot nieuwe menukaarten.

MOET U DEELNEMEN?

- Deelname aan deze studie is vrijwillig.
- Deelnemers kunnen ervoor kiezen de vragen niet te beantwoorden zonder gevolgen en zonder opgave van redenen.
- Deelnemers kunnen hun deelname aan dit onderzoek op elk moment stopzetten en/of weigeren dat hun gegevens voor dit onderzoek worden gebruikt zonder opgave van redenen.
- Stopzetting van deelname of weigering van deelname heeft geen nadelige gevolgen voor de deelnemer of de onderneming.

ZIJN ER RISICO'S VERBONDEN AAN DEELNAME?

- Aangezien alle ondernemingen die aan de campagne hebben deelgenomen online te achterhalen zijn, kan het een uitdaging zijn om volledige vertrouwelijkheid en anonimiteit te garanderen. Desalniettemin zullen de namen van de deelnemers niet in het einddocument worden vermeld en zullen de gegevens zo veel mogelijk worden geanonimiseerd.

ZIJN ER VOORDELEN VERBONDEN AAN DEELNAME?

- Deelname aan dit onderzoek levert de deelnemer geen directe voordelen op. Desalniettemin kan het onderzoek bijdragen aan de kennis over de effectiviteit van interventies zoals de Greendish-interventie en dus kunnen de resultaten van het onderzoek informatief zijn voor relevante belanghebbenden. Bovendien zou een voordeel van deelname aan het onderzoek kunnen zijn dat men zelf inzicht krijgt in waarom men in de toekomst wel of niet aan soortgelijke programma's zou deelnemen.

HOE WORDT DE DOOR U VERSTREKTE INFORMATIE OPGENOMEN, OPGESLAGEN EN BESCHERMD?

- Het interview zal worden opgenomen met het oog op de transcriptie ervan. De opname zal gedaan worden via een persoonlijk apparaat, dat vergrendeld is met een toegangscode die alleen bekend is voor de onderzoeker. De transcripties worden gemaakt via een online transcriptie tool en worden daarna handmatig gecorrigeerd. De audio-opname is alleen toegankelijk voor de onderzoeker en de supervisor. Na afloop van het interview wordt de opname geüpload naar de Y-Drive van de Rijksuniversiteit Groningen en elders vernietigd.
- De transcripties worden geanonimiseerd door namen van de deelnemers te verwijderen en andere vertrouwelijke informatie te wijzigen/verwijderen indien dit nodig wordt geacht om de vertrouwelijkheid te waarborgen.
- Toestemmingsformulieren, transcripten van de interviews, afgeleide codes van de transcripten en menukaarten zullen worden opgeslagen in Google Drive voor de duur van het onderzoek. Daarna worden deze documenten opgeslagen en beschermd op de Y-Drive server van de RUG in overeenstemming met de GDPR regelgeving van de universiteit. Deze gegevens worden opgeslagen ter bescherming van zowel deelnemers als onderzoeker; op deze manier kan de RUG controleren of de verzamelde data alsmede de resultaten uit het onderzoek niet gemanipuleerd, overdreven of verzonnen zijn, mocht zich een situatie voordoen die een onderzoek door de universiteit noodzakelijk maakt.
- Na vijf jaar worden alle op de Y-Drive server opgeslagen gegevens door de RUG vernietigd.

WAT GEBEURT ER MET DE RESULTATEN VAN HET ONDERZOEK?

- De resultaten van dit onderzoek worden gebruikt voor een bachelorscriptie en worden gedeeld met de gemeente Leeuwarden. Afhankelijk van de uitkomsten van het proefschrift kan de gemeente Leeuwarden besluiten of zij de bevindingen en mogelijke aanbevelingen wil gebruiken voor toekomstig onderzoek.
- De resultaten van het onderzoek zullen ook gepresenteerd worden tijdens een presentatie congres op Campus Fryslân van de Rijksuniversiteit Groningen voor de supervisor vanuit de universiteit, andere hoogleraren en enkele medestudenten.

ETHISCHE GOEDKEURING

- Voor dit onderzoek is ethische goedkeuring verkregen van de Ethische Commissie Campus Fryslân.
- De onderzoeker zal zich houden aan de relevante ethische normen van de Rijksuniversiteit Groningen.

GEÏNFORMEERD TOESTEMMINGSFORMULIER

- Gelieve het bijgevoegde toestemmingsformulier te ondertekenen en op te sturen naar de onderzoeker als u wilt deelnemen aan dit onderzoek. Ondertekening van het toestemmingsformulier is niet bindend; u kunt op elk gewenst moment besluiten om zich uit dit onderzoek terug te trekken.

MET WIE MOET U CONTACT OPNEMEN VOOR MEER INFORMATIE?

- U kunt contact opnemen met de onderzoeker van dit onderzoek via het hieronder vermelde e-mailadres. Mocht u contact willen opnemen met de begeleider van dit onderzoek, dan staat het u vrij om ook met haar contact op te nemen.

Maret Sturms (m.m.sturms@student.rug.nl)

Supervisor vanuit de Rijksuniversiteit Groningen:
E. Cavagnaro (e.cavagnaro@rug.nl)

Appendix D

Informed consent form in Dutch

FORMULIER VOOR GEÏNFORMEERDE TOESTEMMING

Titel studie: EVALUATIE VAN DE EIWITTRANSITIE IN LEEUWARDER HORECA: EEN ONDERZOEK NAAR DE GREENDISH INTERVENTIE

Naam deelnemer:

Beoordeling

- Ik heb het informatieblad gelezen en kon eventuele aanvullende vragen stellen aan de onderzoeker.
- Ik begrijp dat ik te allen tijde vragen mag stellen over het onderzoek.
- Ik begrijp dat ik het recht heb mij op elk moment zonder opgaaf van reden uit het onderzoek terug te trekken.
- Ik begrijp dat ik op elk moment kan weigeren een vraag te beantwoorden zonder dat dit gevolgen heeft.
- Ik begrijp dat ik geen direct voordeel heb van deelname aan dit onderzoek.

Vertrouwelijkheid en gebruik van gegevens

- Ik begrijp dat geen van mijn individuele gegevens zal worden bekendgemaakt aan iemand buiten het onderzoeksteam en dat mijn naam niet zal worden gepubliceerd.
- Ik begrijp dat de verstrekte informatie alleen zal worden gebruikt voor dit onderzoek en publicaties die rechtstreeks verband houden met dit onderzoeksproject.
- Ik begrijp dat gegevens (toestemmingsformulieren, opnames, interview transcripties) gedurende 5 jaar op de Y-drive van de server van de Rijksuniversiteit Groningen worden bewaard, in overeenstemming met de GDPR-wetgeving van de universiteit.

Toekomstige betrokkenheid

- Ik wens een exemplaar van de wetenschappelijke output van het project te ontvangen.
- Ik geef toestemming om opnieuw gecontacteerd te worden voor deelname aan toekomstige studies.

Na het lezen en begrijpen van al het bovenstaande, ga ik akkoord met deelname aan het onderzoek (graag specificeren door omcirkelen): ja / nee

_____ _____

Datum **Handtekening**

In te vullen door de onderzoeker:

- Ik, Maret Sturms, verklaar dat ik de onderzoeksdeelnemer grondig heb geïnformeerd over de onderzoeksstudie en eventuele resterende vragen naar beste weten heb beantwoord.
- Ik ga ermee akkoord dat deze persoon deelneemt aan het onderzoek.

_____ _____

Datum **Handtekening**

Appendix E

Qualitative Data Gathering Instrument

Interview guide

Opening protocol

- Welcome the participant and thanking them for participating in the study;
- Shortly introducing the researcher and the research;
- State that the ethical protocol (as indicated below) will be addressed.

Ethical protocol

- Check whether consent form and information sheet have been carefully read, understood, and signed by the participant;
- Address audio recording the interview as stated in the consent form and ask for permission to record;
- Emphasise the possibility to withdraw from the study at any time during or after the interview without any adverse consequences for the participant;
- Emphasise the possibility of leaving questions unanswered by the participant during the interview without having to give any reason to do so;
- Emphasise the possibility of having access to the transcription of their interview after the interview already has been completed;
- Discuss confidentiality as well as the handling of personal data of the participant;
- Emphasise that the study is not about evaluating the role of the Municipality of Leeuwarden in order to limit the chances of biassed answers due to the role of the Municipality as a gatekeeper;
- Address the objective of the study, who will have access to the results of the study, the procedure for storing and deleting the data conform to university guidelines.

Matrix of main interview questions

Question-type	COM-B framework	TDF	Key question(s)
Introductory			Considering all the information you have been provided with about this study up to now, do you have any questions before we start? Could you introduce yourself and the restaurant? *Prompts: position in hospitality enterprise, duration of the position.*

Introductory regarding the topic			Can you tell me something about the YourChoice campaign of Greendish? *Potential additional questions: How did you learn about the YourChoice campaign?, How would you describe the YourChoice campaign in your own words?*
Key	(Psychological and physical) capability	Knowledge, memory, attention and decision processes, behavioural regulation, skills	Can you tell me about the impact of the Greendish on the menu? *Prompts: menu change as result of participation, change in skills related to protein transition*
Key	(Social and physical) opportunity	Social influences, environmental context and resources	What are factors that helped and hindered the implementation of the guidelines? *Prompts: staff, environmental factors such as budget and time.*
Key	(Automatic and reflective) motivation	Emotion & Reinforcement	How do you feel about your current menu and the guidelines for the menu as set out by Greendish? *Prompt: incentives to follow the guidelines*
		Intention, belief about capabilities, goals, social/professional role and identity, optimism, belief about consequences	Can you tell me more about how you foresee the future of the implementation of the guidelines in your restaurant? *Prompts: intend to follow the guidelines, wish to enhancing or maintaining the practice of implementing, confidence in maintaining current implementation/improving implementation, your role in acting upon guidelines and those of other staff, level of wishing to acting upon guidelines,, confidence in solving barriers, advantages and costs of implementing the guidelines*
Key regarding following up on menu analysis			Are there any changes with regards to the protein transition in the menu that one cannot see based solely on the menu card? - If so, could you elaborate on it?

Closing	Do you have any additional insights that you think are of relevance to share regarding the study? Do you have any other questions that you would like to ask? Do you have any additional questions regarding the study, the collected data and/or accessing the research outcome?

Closing protocol

- Thank the participant for participating in the study and their time.
- Check whether the contact details of both participant and researcher are still correct to the other party in case of any potential questions or remarks might arise on either side.
- Say goodbye.

Appendix F

Greendish's recommendations proportions for menu composition

Table 6

Recommended guidelines from Greendish (2022a) for the menu cards

Number of dish	Lunch	Dinner
1	Vegetarian	Vegetarian
2	Vegetarian	Vegetarian
3	Vegetarian	Vegetarian
4	Fish	Vegetarian
5	Fish	Fish
6	Poultry meat	Poultry meat
7	Poultry meat	Lamb/beef/pork meat

Table 7

Proportions of proposed protein types for lunch dishes by Greendish calculated from the target percentages by the researcher

Number of dishes	Vegetarian	Fish	Poultry	Lamb/beef/pork meat
7	42.86%	28.57%	28.57%	0%
16	50%	25%	25%	0%
19	47.37%	31.58%	21.05%	0%
22	45.45%	27.27%	27.27%	0%
31	48.39%	25.81%	25.81%	0%
32	46.88%	28.13%	25.00%	0%
36	44.44%	27.78%	27.78%	0%

49	42.86%	28.57%	28.57%	0%
55	43.64%	29.09%	27.27%	0%

Table 8

Proportions of proposed protein types for dinner dishes by Greendish, calculated from the target percentages by the researcher

Number of dishes	Vegetarian	Fish	Poultry	Lamb/beef/pork meat
7	57.14%	14.29%	14.29%	14.29%
11	72.72%	9.09%	9.09%	9.09%
12	66.67%	16.67%	8.3%	8.3%
18	66.67%	11.11%	11.11%	11.11%
19	63.16%	15.79%	10.53%	10.53%
28	57.14%	14.29%	14.29%	14.29%

Appendix G

Results from the menu analysis

Table 8

Intervention's participating restaurants protein proportions per type of meal.

	Lunch				Dinner			
Enterprise	**Vegetarian**	**Fish**	**Poultry**	**L/B/P/ meat**	**Vegetarian**	**Fish**	**Poultry**	**L/B/P meat**
A Target	45.45%	27.27%	27.27%	0%	72.72%	9.09%	9.09%	9.09%
A Actual	36.36%	13.64%	0%	50%	27.27%	18.18%	9.09%	45.45%
B Target	48.39%	25.81%	25.81%	0%	-	-	-	-
B Actual	54.84%	6.45%	12.90%	25.81%	-	-	-	-
C Target	46.88%	28.13%	25.00%	0%	63.16%	15.79%	10.53%	10.53%
C Actual	28.13%	3.13%	12.50%	56.26%	31.58%	10.53%	10.53%	47.37%
D Target	43.64%	29.09%	27.27%	0%	-	-	-	-
D Actual	50.91%	16.36%	16.36%	16.36%	-	-	-	-
E Target	47.37%	31.58%	21.05%	0%	72.72%	9.09%	9.09%	9.09%
E Actual	42.11%	10.53%	5.26%	42.11%	27.27%	27.27%	9.09%	36.36%
F Target	44.44%	27.78%	27.78%	0%	66.67%	11.11%	11.11%	11.11%
F Actual	36.11%	22.22%	8.33%	33.33%	22.22%	11.11%	5.56%	61.11%
G Target	42.86%	28.57%	28.57%	0%	-	-	-	-
G Actual	53.06%	0%	0%	46.94%	-	-	-	-
H Target	50%	25%	25%	0%	57.14%	14.29%	14.29%	14.29%
H Actual	56.25%	18.75%	12.50%	12.50%	35.71%	28.57%	10.71%	25%
I Target	45.45%	27.27%	27.27%	0%	66.67%	16.67%	8.3%	8.3%
I Actual	54.54%	22.72%	4.54%	18.18%	25%	16.67%	8.33%	50%

Note. *Dashes indicate that no dishes were classified for the meal category, which results in no available results.*

Table 10

Protein proportions per type of meal for the selected enterprises not participating in the intervention

	Lunch				Dinner			
Enterprise	**Vegetarian**	**Fish**	**Poultry**	**L/B/P meat**	**Vegetarian**	**Fish**	**Poultry**	**L/B/P meat**
J	26.67%	13.3%	20.00%	40.00%	16.67%	11.11%	5.56%	66.67%
K	63.33%	23.33%	0%	13.33%	-	-	-	-
L	18.18%	13.64%	9.09%	59.09%	25.00%	6.25%	18.75%	50.00%
M	40.54%	16.22%	10.81%	32.43%	27.27%	9.09%	18.18%	45.45%
N	48.00%	24.00%	8.00%	20.00%	35.71%	35.71%	21.43%	7.14%
O	40.00%	16.67%	6.67%	36.67%	27.27%	9.09%	36.26%	27.27%
P	37.50%	25.00%	12.50%	25.00%	23.08%	7.69%	15.38%	53.85%
Q	47.37%	10.53%	10.53%	31.58%	38.10%	4.76%	14.28%	42.86%
R	58.33%	8.33%	5.56%	27.78%	25.00%	25.00%	0.00%	50%

Note. *Dashes indicate that no dishes were classified for the meal category, which results in no available results.*

Table 11

Number of vegetarian dishes, vegan dishes and the percentage of vegan dishes as a share of vegetarian dishes for both the intervention and non-intervention group.

	Lunch			Dinner		
Enterprise	**# vegetarian**	**# vegan**	**% of vegan dishes**	**# vegetarian**	**# vegan**	**% of vegan dishes**
A	8	1	4.55	3	2	18.18
B	17	9	52.94	-	-	-
C	9	0	0	6	2	33.33
D	28	9	32.12	-	-	-
E	8	5	62.50	3	3	100.00
F	13	0	0	4	1	25.00

G	26	0	0	-	-	-
H	9	0	0	10	0	0
I	12	11	91.67	3	3	100.00
J	8	0	0	3	2	66.67
K	19	9	63.33	-	-	-
L	4	0	0	4	0	0
M	15	1	6.67	3	1	33.33
N	12	7	48.00	5	1	20.00
O	12	0	0	3	0	0
P	3	2	66.67	3	3	100.00
Q	9	2	22.22	8	4	50.00
R	21	9	42.86	2	1	50.00