

ReLondon

Circular Food Research: Final Report

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ReLondon

ReLondon is a partnership of the Mayor of London and the London boroughs to improve waste and resource management and transform the city into a leading low-carbon circular economy. The city's economic and environmental future depends on a transition to a low-carbon circular economy, and ReLondon works to ensure that London's businesses, local government and communities thrive by helping them make the very best use of resources and materials.

ReLondon believes it can catalyse transformational change in London by inspiring and empowering the action of others. ReLondon can mobilise boroughs, businesses and citizens to change their policies, practices and behaviours, to revolutionise the way everyone uses items and interacts with their environment.

To find out more about ReLondon's work, please visit <https://relondon.gov.uk/about-us>

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1. Glossary

Term	Definition
Activity	The outputs needed for the intervention.
Average price of food basket	The total cost of an average basket of typically purchased food and drink items for an adult within the targeted country, according to the World Bank's Food Prices for Nutrition database. ¹
Campaign ²	According to the UK government, campaigning refers to "awareness raising and efforts to educate or involve the public by mobilising their support on a particular issue, or to influence or change public attitudes and/or behaviour change."
Climate risk community	Climate risk considers a community's potential exposure to climate impacts (such as flooding or heatwaves) and their ability to cope with climate impacts and/or extreme climate events.
COM-B Model for behaviour change	"A framework designed to aid intervention designers in moving from a behavioural analysis of a problem to an evidence-based intervention." The COM-B Model cites capability, opportunity and motivation as the three factors that can change an individual's behaviour. ³
Coercion (COM-B intervention type) ⁴	Changing the attractiveness of a behaviour by creating the expectation of an undesired outcome or denial of a desired one.
Education (COM-B intervention type) ⁵	Increasing knowledge and understanding by informing, explaining, showing and correcting.
Enablement (COM-B intervention type) ⁶	Providing support to improve ability to change in a variety of ways not covered by other intervention functions e.g. through medication, surgery, encouragement, moral support.
Environmental Restructuring (COM-B intervention type) ⁷	Constraining or promoting behaviour by shaping the physical or social environment.
Food touchpoint	The places in a community in which people make a food choosing or food wasting decision, meaning the setting in which the targeted behaviour change would occur.
Food waste ⁸	The decrease in the quantity or quality of food resulting from decisions and actions by retailers, food service providers and consumers.
Foodways	The traditional activities, attitudes, beliefs and behaviours associated with food within the project's community.
Income inequality	The extent to which income is evenly distributed amongst households and individuals within the target community.
Initiative	An overarching programme or project, composed of multiple interventions.
Intervention	A specific project within an initiative.
Low-carbon consumption ⁹	Consumption where a conscious effort has been made to reduce carbon emissions by choosing ingredients that have lower greenhouse gas emissions.
Modelling (COM-B intervention type) ¹⁰	Showing examples of the behaviour for people to imitate.
Persuasion (COM-B intervention type) ¹¹	Changing the way people feel about a behaviour by generating cognitive dissonance and showing how changing behaviour can reduce it.
Restriction (COM-B intervention type) ¹²	Constraining behaviour by setting rules.
Training (COM-B intervention type) ¹³	Increasing psychological or physical skills, or habit strength by explanation, demonstration, practice, feedback and correction.
Urbanised area	A continuously built-up area with a population of 25,000 or more. ¹⁴

2. Context and project aim

ReLondon is a partnership between the Mayor of London and the London boroughs to improve waste and resource management. The city's economic and environmental future depends on a transition to a low-carbon circular economy, and ReLondon works to ensure that London's businesses, local government and communities thrive by helping them make the very best use of resources and materials.

ReLondon is proposing to develop a replicable model for a circular food community in London, embedding interventions that increase residents' consumption of low-carbon food and reduce food waste. The project commissioned a global research and analysis to identify and benchmark interventions that have been implemented to reduce household food waste and increase consumption of low-carbon food. The key objectives of the work are to determine the impact of these interventions using available evidence and determine their likely replicability in a London community context.

3. Methodology

3.1. Literature review and mapping

In conducting this research, the team began by reviewing the relevant project documents, resources and materials provided by ReLondon, including internal reports, campaign documents and other data sources. To supplement these resources, further research into the academic and grey literature on food waste and low-carbon consumption interventions was conducted to provide an understanding of the existing landscape and highlight possible interventions to be mapped.

In parallel with the literature review, the research team developed a selection criteria, in consultation with ReLondon, to guide the selection of relevant global interventions to be mapped. The selection criteria consisted of the following:

Criteria	Overview
Type of initiative	The mapping includes initiatives that are focused on changing behaviour on the generation of food waste and the transition to low-carbon diets through the increase in consumption of plant-based foods and/or decrease in consumption of animal-based foods.
Urban context	The mapping includes initiatives from an urbanised area (UA) context. We used the census definition of a UA: “a continuously built-up area with a population of 25,000 or more” ¹⁵ (to include medium towns, large towns, and cities).
Population focus	The mapping includes initiatives that are geared towards the individual or community level.
Est. <10 years	The mapping process thoroughly reviewed initiatives undertaken within the last 10 years, from 2013 – 2024, to ensure that those selected are the most relevant and up to date.

The team identified interventions via online searches and government open data search engines to locate a wide range of sources including webpages, news articles, peer-reviewed research articles and academic papers, along with NGO and grey literature reviews. This was done through keyword searches in English, French, Italian, Spanish and other languages for words including: *food waste prevention, plant-based diet, low-carbon consumption, urban, behaviour change, capability, opportunity, motivation, planning, buying, storing, preparing, consumption, preventing from becoming waste, case studies, interventions, projects, COM-B behaviour change (education, persuasion, incentivisation, coercion, training, enablement, modelling, environmental restructuring, restrictions), climate change, circular food system, and food waste.*

Once interventions were identified, these were assessed in terms of the research design, credibility of the author(s), potential sources of bias, the rigour of the research methods, and the overall impact of the study. The interventions determined to be in scope were then gathered into an Excel spreadsheet, and separated according to their focus on food waste or low-carbon diets. The mapping of interventions was developed over several weeks, with regular feedback from the ReLondon team.

3.2. Analytical framework

To conduct the analysis of interventions, the research team developed an analytical framework to guide how the interventions were examined. A guidance document was created to ensure that the interventions were analysed in a standardised manner. The criteria for the analytical framework were developed through desk-

based research and in consultation with the ReLondon team to ensure that the information was analysed in the relevant context of the circular food project. The purpose of the analytical framework was to define appropriate parameters for capturing relevant information about the interventions, how they were implemented, the behaviour change that they targeted, and their impact data. The analytical framework was refined in consultation with ReLondon as the intervention mapping was expanded. The complete analytical framework employed can be found in Annex A.

COM-B Behaviour Change

The interventions were further analysed within the analytical framework and categorised according to the COM-B model of behaviour change. The COM-B behaviour change wheel is a “framework designed to aid intervention designers in moving from a behavioural analysis of a problem to an evidence-based intervention,”¹⁶ and identifies the main sources of behaviour that can be targeted through an intervention. Capability (C), Opportunity (O) and Motivation (M) are defined as the three main factors that can change individual behaviour, within which nine specific intervention functions can be implemented to incite behaviour change.¹⁷

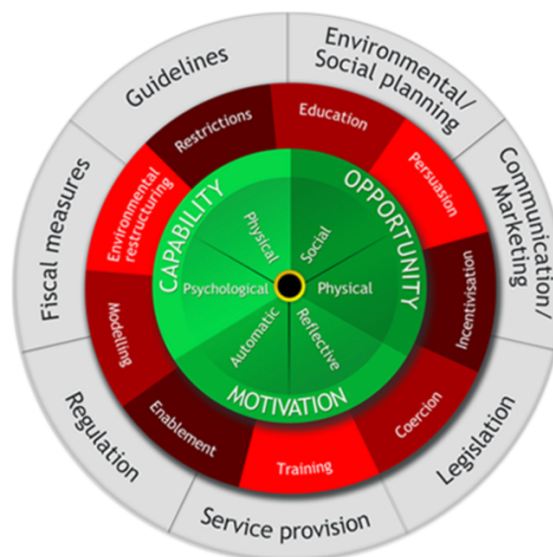


Figure 1: COM-B Behaviour Change Wheel, <https://www.behaviourchangewheel.com/about-wheel>

The COM-B behaviour change types are set out as follows:

- Capability: Modelling, Environmental restructuring, and Restriction
- Opportunity: Education, Persuasion, and Incentivisation
- Motivation: Enablement, Training, and Coercion

Each of these types of behaviour change includes a preferred group of specific activities to induce behaviour change, which will be discussed further below. It is important to note, however, that these activities are not necessarily specific to one type of COM-B behaviour change, and can instead overlap. The interventions mapped have been grouped according to best fit on the COM-B behaviour change wheel.

3.3. Interviews

Semi-structured interviews were conducted with three key stakeholders in the food waste and low-carbon diets space, consisting of two academics and one practitioner, in March 2024. The purpose of these interviews was to discuss expert perspectives on successful interventions and key learnings to reduce household food waste and increase the consumption of low-carbon food in urban contexts. The interviews lasted approximately 30 minutes and were transcribed verbatim. The learnings from the interviews were used to inform the mapping of additional interventions and support the development of an evaluation framework.

3.4. Evaluation framework

Following the mapping of the interventions and the stakeholder interviews, the team developed an evaluation framework to determine the replicability, scalability and feasibility of the interventions in a London circular food initiative context. Based upon the analytical framework, the evaluation framework analyses the interventions by benchmarking them against the London context and scaling them according to their degree of success. Following the evaluation of the interventions, the research team reviewed the results to provide the appropriate recommendations to the ReLondon team. The evaluation framework can be found in Annex B.

4. Intervention evaluation

4.1. Literature review and analysis

According to the Food and Agriculture Organisation of the United Nations (FAO), the global food system accounts for one-third of the total global greenhouse gas emissions.¹⁸ Unless considerable changes are implemented to how food is produced, transported and consumed, emissions in this sector are expected to rise by 40% by 2050.¹⁹ As a result, there is a growing need to make food systems more sustainable to reduce their environmental impact and achieve food security.

Reducing emissions associated with global food systems includes dietary change strategies to reduce the consumption of animal-sourced foods and replace these with a higher intake of vegetarian or vegan foods.²⁰ The consumption of more plant-based foods can contribute to a reduction in water use, improve biodiversity and generate climate benefits by accounting for fewer carbon emissions compared to animal-sourced foods.²¹

Food waste represents another growing challenge to agri-food systems, contributing to the generation of greenhouse gas emissions, excessive water consumption and soil depletion.²² Food waste prevention is widely considered to be the best approach to address this issue, aiming to avoid the generation of food waste in the first place, rather than managing food waste once generated through recycling, disposal, composting and redistribution. Previous research on food waste prevention has suggested that policymakers must prioritise prevention measures over redistribution measures, with the former considered to be more effective and easier to achieve consensus on.²³ A diverse range of food waste prevention measures are being adopted at the international, national and local level by actors including governments, international organisations, NGOs, the private sector and community groups.

The urban context is particularly significant, given that “80% of all food produced globally is expected to be consumed in cities by 2050.”²⁴ Cities are taking a leading role in the work to achieve more sustainable food systems across a variety of local, regional and international initiatives. For instance, numerous cities have signed the C40 Good Food Cities declaration to commit to more sustainable food policies.²⁵ This includes policies to change the type of food cities buy, making low-carbon food more affordable and accessible, and commitments to reduce food loss and waste. Similarly, the Milan Urban Food Policy Pact, launched by the Municipality of Milan in 2015, is an agreement among cities to “develop sustainable food systems that are inclusive, resilient, safe and diverse, that provide healthy and affordable food to all people in a human rights-based framework, that minimise waste and conserve biodiversity while adapting to and mitigating impacts of climate change.”²⁶ To date, 240 cities worldwide have signed the Pact.

4.1.1. Intervention information

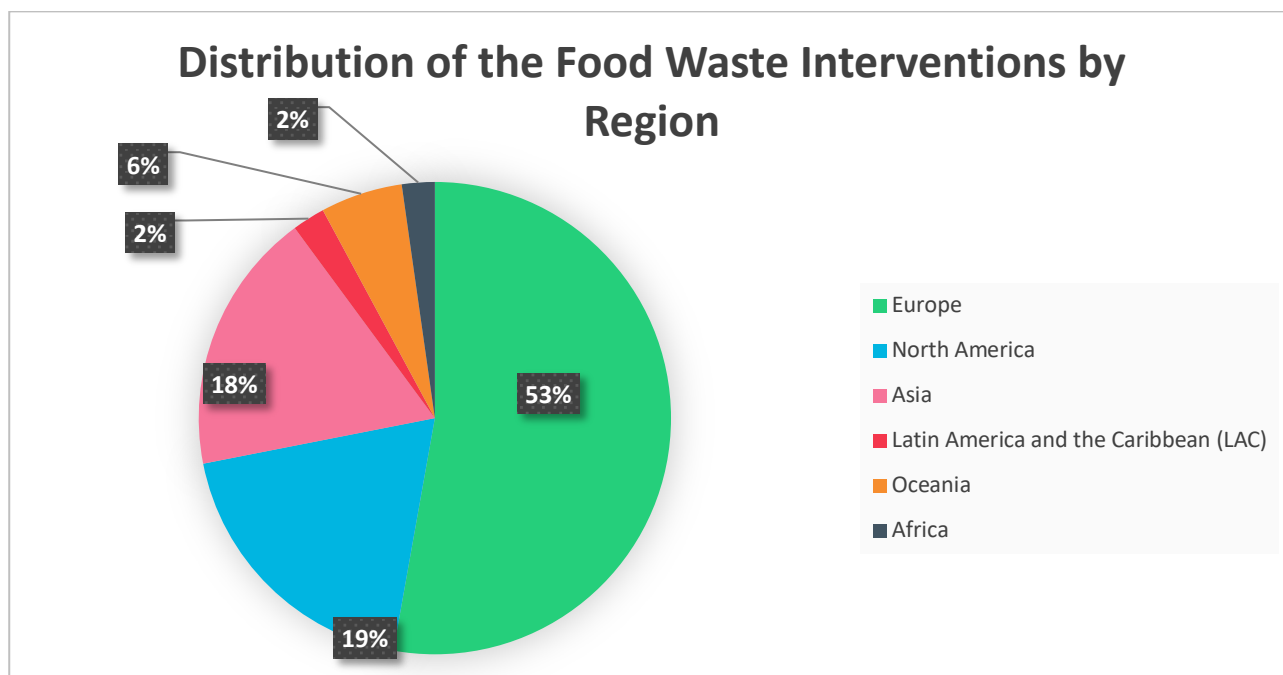
Based upon the research criteria and the literature review, the research team performed a global mapping of food waste and low-carbon consumption interventions to distil key learnings and recommendations for ReLondon, prioritising urban contexts. The interventions were separated according to their focus on either food waste or low-carbon diets. Where interventions targeted both of these areas, two separate entries were created to reflect the specific goals and relevant outcomes.

The research team identified a total of 89 interventions globally to reduce food waste and 85 interventions were identified that aimed to increase consumption of low carbon food and decrease consumption of high carbon food.

4.1.2. Trends

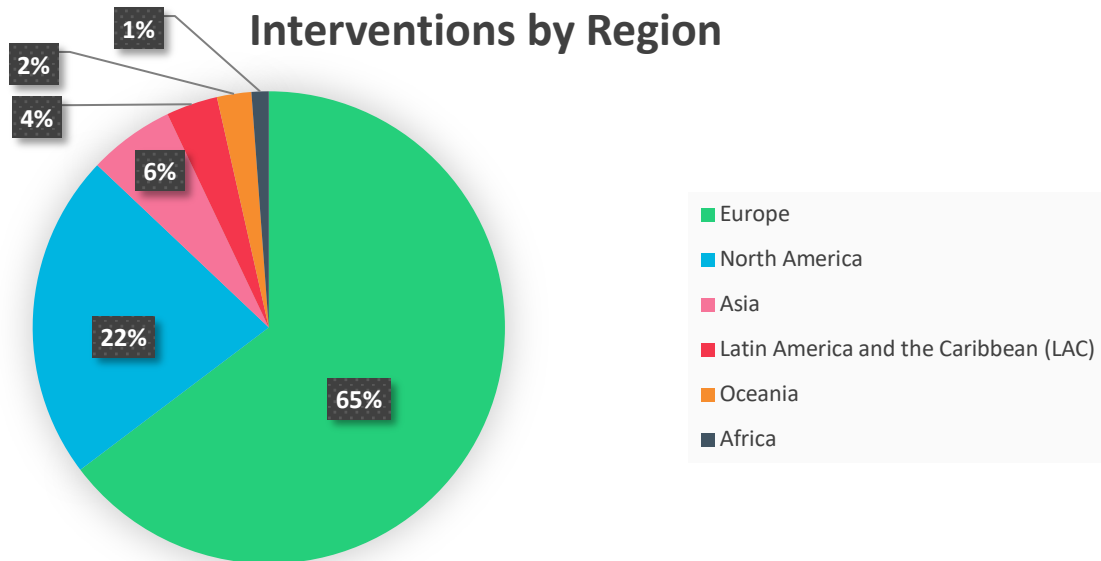
Geographic Spread

The 89 food waste interventions covered a range of geographic locations, including 47 in Europe, 17 in North America, 16 in Asia, 5 in Oceania, 2 in LAC and 2 in Africa. Most of the interventions mapped were found in Europe, North America and Asia, with significantly fewer in Oceania, Latin America, the Caribbean, and Africa. This suggests a correlation between those parts of the world characterised by an over-supply of food and where food takes up a smaller share of household income, in other words, those communities that can afford to waste food, and those more at risk of food insecurity and over-stretched resources due to climate change and population growth.²⁷



Regarding low-carbon consumption, a total of 85 interventions were identified. The geographic spread of these interventions is as follows: 55 in Europe, 19 in North America, 5 in Asia, 3 in LAC, 2 in Oceania and 1 in Africa. Similarly, to the food waste interventions, most of the low-carbon diet interventions were found in Europe and North America. However, in contrast, there were fewer in Oceania and Asia compared to food waste interventions. There were also few interventions in Africa and Latin America aiming to promote low-carbon diets. A possible explanation for this pattern is the prevalence of culturally ingrained food practices in many of these regions, including indigenous food traditions, which are often characterised by high consumption of meat, dairy and fish. In such contexts, social, traditional and cultural practices mean that meat is not just seen as a source of nourishment, but as a cultural symbol that is highly politicised and linked to local identities.²⁸ This therefore makes low-carbon interventions potentially more controversial and harder to successfully implement.

Distribution of the Low Carbon Consumption Interventions by Region



Implementing and financing organisations

A number of key trends were identified through the mapping. Firstly, as regards the implementing organisation for food waste interventions, charities and NGOs were found to be the biggest drivers of food waste interventions, with less action from local and national governments or the private sector. This poses a potential barrier to addressing the issue of food waste, given that policymakers are considered key due to their role in designing public policies.²⁹

Charities, NGOs, local government, and local authorities were found to be the biggest drivers of low-carbon consumption interventions, particularly in contexts where dietary guidelines promote low-carbon consumption and healthy eating strategies, such as in Sweden and Denmark. Dietary guidelines serve as tools that implementing organisations refer to when developing their own programmes. Thus, with these guidelines in place, these interventions receive more buy-in from the local governance entities within the community.³⁰

Regarding financing for the interventions, the mapping indicates that interventions are commonly financed by public authorities or through funding and grants from entities such as the European Union under its Horizon Programme. The buy-in of public entities is important, as their policies unlock the financing to kick-start the interventions.³¹ Furthermore, interventions where the financing organisations also serve as an implementor, either alone or as part of a consortium, were the second most common source of funding. These arrangements often appear in the public sector or the private sector. One example is with major retailers, such as Sainsbury's in the United Kingdom with its Waste Less, Save More project. Interventions such as these indicate the importance of including the funding partner throughout the intervention's development to ensure financial buy-in and sustainability.³²

Touchpoints

The majority of the interventions for food waste targeted households as the primary touchpoint. Interventions that targeted other touchpoints, such as schools, businesses and community centres were identified, however, these are less common than those that focus on household-level food waste. **For low-carbon diets, most of the interventions targeted households (37) or schools (21) as the primary food touchpoint.** Interventions that targeted other touchpoints, such as businesses and community centres were identified, but to a lesser degree than those that focus on school-level and household-level food waste.

COM-B behaviour change type

Interventions were categorised based on the COM-B behaviour change framework. Here we outline the key trends that emerged from the mapping, category by category.

Most food waste interventions mapped have employed behaviour change tactics that involve education and training, with significantly less reliance on persuasion, coercion and restriction. This reflects existing research in the field that suggests that positive reinforcement of behaviour is more effective than negatively restrictive behaviour change tactics.³³ **Interventions aimed at encouraging a positive change in consumer habits through education and awareness-raising have previously been found to be most effective** when compared to those that increase social pressure to prevent household waste.³⁴ According to Aschemann-Witzel et al. (2017), **having a positive focus on the value of food is more effective than emphasising the negative impact of waste**, as this helps to avoid a backlash from consumers.³⁵ Some of the food waste interventions mapped also framed these interventions as cost-saving for consumers, which can be particularly significant in the context of a cost-of-living crisis. However, greater focus was placed on mitigating the environmental impacts associated with high levels of food waste.

This same trend around education and training was also observed regarding low-carbon consumption interventions, with an added prevalence of environmental restructuring as a behaviour change tactic. Education and training programmes were normally coupled with cooking classes or community gardens, to facilitate a knowledge exchange and upskilling that secured more long-term change, as participants became more comfortable and familiar with the change needed.³⁶

Capability: Environmental Restructuring

Environmental restructuring involves “constraining or promoting behaviour by shaping the physical or social environment.”³⁷ A key example within this category is the changing of defaults, whereby a particular situation is created in which the desired behaviour will occur unless individuals actively choose to pursue a different option.³⁸

Menu alterations entice consumers to choose a plant-based option that reduces or eliminates animal-based products from meals. By incorporating plant-based alternatives in restaurant menus, catering services, and education institutions’ dining programs, the interventions use nudges such as “low-environmental emissions labelling” or plant-based default options to encourage the consumption of nutrient-rich plant foods. The interventions such as “Encouraging sustainable food consumption through nudges: An experiment with menu labels” illustrated that subtle nudges to diners were most successful in shifting their choices to a plant-based meal.³⁹

On food waste, redistribution is another category of intervention that focuses on environmental restructuring. These interventions work to combat food waste by recovering, reusing and redistributing surplus food, often to vulnerable communities. The Urban Harvest programme in Toronto works with local households to divert food waste by sharing surplus food grown on their properties with local food banks.⁴⁰ With regard to the food touchpoints, redistribution interventions target food-wasting decisions in businesses, restaurants, households, food markets, supermarkets, and community centres.

Environmental restructuring can also occur as part of a broader campaign. Introducing plant-based days is particularly common amongst low-carbon consumption campaigns, with interventions such as Meat Free Thursdays in Belgium and Meatless Monday in the United States aiming to substitute meat with plant-based meals to reduce meat consumption and support healthy eating.

SPECIFIC ACTIVITIES FOR ENVIRONMENTAL RESTRUCTURING	
Food Waste	Low-Carbon Consumption
Food recovery, redistribution, and donation	- Increasing proportion of plant-based dishes on menus - Meat-free days - Plant-based labelling - Default vegetarian/vegan options - Changing language around plant-based dishes on menus

Capability: Restriction

Restriction is defined as “constraining behaviour by setting rules,”⁴¹ and includes interventions such as guidelines, taxes or legislation. These activities reduce the opportunity for communities to engage in the target behaviour or increase the targeted behaviour by reducing the opportunity for them to engage in competing behaviours.⁴² This type of behaviour change was rarely identified among the interventions mapped. In community-level interventions that ReLondon is aiming to implement, restriction-focused interventions rely on the regulatory context in which the intervention operates, as governments and administrative entities have the authority to implement these rules. Examples of these interventions include food waste laws that require food businesses to redistribute unused food to communities (France), proposed taxations on meat consumption to promote the consumption of low-carbon food (Sweden and Denmark),⁴³ and dietary guidelines that promote low-carbon consumption (Germany).^{44 45 46 47 48}

The only type of activities mapped that fall under the restriction category are meat-free days (5). These interventions are also classified as environmental restructuring, meaning that these two types of interventions complement each other on the community intervention level. The rules implemented by the governing bodies in schools or hospitals restrict the sale of meals with meat to encourage the consumption of plant-based meals. Such examples include Meatless Monday in the United States and Meat-free Thursdays in Belgium.

SPECIFIC ACTIVITIES FOR RESTRICTION	
Food Waste	Low-Carbon Consumption
Food waste laws or ordinances forcing businesses to redistribute food to communities.	- Meat-free days - Taxation on meat - Dietary guidelines

Capability: Modelling

Modelling is defined as “showing examples of the behaviour for people to imitate.”⁴⁹ This type of behaviour change was not frequently used as a standalone intervention, and there is significant overlap between modelling, training and education activities. However, a key example is the Nashville Food Waste Initiative, which organised the ‘Waste Not’ Cooking Competition for professional chefs to showcase techniques for cooking with leftovers as a means of reducing household and restaurant food waste. The cooking competition demonstrated creative ways to repurpose food scraps into dishes that could be easily made at home. Interviews conducted with attendees indicated a very positive reaction and high uptake of the techniques demonstrated, with other US cities since hosting similar events.⁵⁰

SPECIFIC ACTIVITIES FOR MODELLING	
Food Waste	Low-Carbon Consumption
Cooking competitions for food waste reduction	Mentorship programmes

Opportunity: Education

As one of the intervention functions on the COM-B Behaviour Change Wheel, education is defined as action to “increase[e] knowledge and understanding by informing, explaining, showing and correcting.”⁵¹ Education interventions are one of the most common archetypes among the interventions mapped, with a total of 25 for food waste reduction and 24 for low-carbon consumption. They aim to make target audiences more aware of the problem of food waste and high carbon consumption by making individuals aware that there is a problem to be addressed in the first place and subsequently providing information on how to go about addressing this issue. For food waste, these interventions provide information on how to prevent food waste and encourage people to be more responsive to the food waste problem. For low-carbon diets, the focus is on educating people about low-carbon alternatives, healthy eating habits and sustainable nutrition.

Education for food waste prevention and low-carbon consumption is common because it is largely cheaper and easier to implement. Typical activities include awareness-raising sessions, signage, articles and information materials, tips and quizzes. There is also the option to tailor education programmes to different audiences and touchpoints, including households, schools and businesses, as seen with the interventions mapped. Moreover, tailored education tools can be developed for all of the phases of behaviour change, namely planning, buying, storing, preparing, consumption and sharing, explaining why this approach is most frequently used. Education interventions also report a good degree of success in changing behaviour and reducing environmental impact.

The interview with Mr. Lars Ottersen, Advisor on Sustainable Food for the Municipality of Oslo, on 19 March 2024 shed light on an example of an education-centred intervention targeting schoolchildren. The local government has implemented a policy whereby all 4th-grade students at schools across the city visit the waste management facility to learn about recycling and food waste prevention. In 2022, a total of 5,000 children and teachers participated and Mr. Ottersen reported that the children shared these learnings and best practices with their parents, to then implement at home.

SPECIFIC ACTIVITIES FOR EDUCATION	
Food Waste	Low-Carbon Consumption
• Tips on food storage • Articles on creative use of leftovers • Posters and leaflets • Enhancing food literacy • Quiz on food waste levels • Awareness raising on the environmental impact of food waste	• Education on low-carbon alternatives, healthy eating habits and sustainable nutrition • Posters and leaflets • Awareness raising on the climate impacts of food

Opportunity: Persuasion

Persuasion is defined as “changing the way people feel about a behaviour by generating cognitive dissonance and showing how changing behaviour can reduce it.”⁵² Nudges often fall within this behaviour change type, depending on their degree of subtlety, with more forceful or obvious nudges more frequently classed as coercion.⁵³ With regard to the food waste interventions mapped, persuasion has been observed primarily through the use of stickers and labels for the consumption of leftovers. Several interventions utilised ‘use up’ or ‘eat first’ stickers for households to place in their fridges as a reminder to consume leftovers and prevent waste.⁵⁴

In relation to low-carbon diets, persuasion comes in the form of nudging, whereby consumers are encouraged to purchase plant-based options. For example, the Sustainable Healthy Food Choices Auckland utilised nudging tactics in a trial to encourage plant-based food options. The trial consisted of an online supermarket prototype that integrated more plant-based options into the purchasing journey, reporting a 34% increase in the selection of plant-based options by the 1,865 participants.⁵⁵

Campaigns are another intervention archetype that falls under persuasion, using social norming and nudging tactics. These are common in the mapping with a total of 32 for food waste and 21 for low-carbon diet interventions. It is important to note, however, that due to their broad nature, campaigns should not be considered to fall solely within the persuasion behaviour change type. In fact, campaigns frequently rely on educational activities to achieve their goals. These interventions often use physical and/or online communication materials to inform target audiences about the issue of food waste and methods for preventing food waste, and the benefits of consuming plant-based produce. Campaigns are often part of a broader programme and can be national-level, rather than community-specific. For example, the I Value Food campaign in the United States used a quiz to make individuals and families aware of how much food they waste on a daily basis.

SPECIFIC ACTIVITIES FOR PERSUASION	
Food Waste	Low-Carbon Consumption
• ‘Use up’ stickers • ‘Eat first’ signage and labels	• Nudging • Positioning of plant-based options • Social norming

Opportunity: Incentivisation

Incentivisation refers to actions to “chang[e] the attractiveness of a behaviour by creating the expectation of a desired outcome or avoidance of an undesired one.”⁵⁶ Among the interventions mapped, several focus on

providing money vouchers and discounts to help low-income communities afford and access fresh produce to encourage sustainable eating. Rose Vouchers for Fruits and Veg and Fruit and Veg on Prescription are two interventions in London that provide families with vouchers to receive discounts on fresh produce at their local markets. In part, these are implemented with the help of local community entities. For instance, the Fruit and Veg on Prescription intervention partnered with local health facilities. In partnership with convenience stores, organisations can financially and through training on the importance of fresh produce help store owners with their procurement to provide low-cost fresh produce to local communities, as seen in the Healthy Neighbourhood Network in Los Angeles, United States. The most successful interventions help encourage registration for the vouchers, such as those for Healthy Start, to ultimately improve access to fresh produce and quality of diets.⁵⁷

SPECIFIC ACTIVITIES FOR INCENTIVISATION	
Food Waste	Low-Carbon Consumption
• Supermarket discounts for food close to expiry date	• Vouchers

Motivation: Training

Training refers to “increasing psychological or physical skills, or habit strength by explanation, demonstration, practice, feedback and correction.”⁵⁸ Several interventions mapped focused on achieving behaviour change via the provision of training. These interventions work to inspire individuals to reduce their food waste or adopt a low-carbon diet by teaching creative recipes and cooking techniques. For food waste, this could include re-using leftovers or preparing food that needs to be eaten first. The Team Up on Food Waste intervention implemented by three businesses in Washington, D.C., for instance, taught participants waste reduction strategies centred around food storage, food shopping and meal planning.

With regard to low-carbon diets, the focus may be on developing recipes or teaching participants how to prepare healthy and nutritious food.⁵⁹ The Green Monday School Programme in Hong Kong teaches schoolchildren about plant-based eating habits, sustainable living and the benefits of vegetarianism for people and the planet. St. Thomas’ Community Fridge in Exeter has a dual focus on food waste and low-carbon diets by providing cooking classes to community residents on how to utilise and prepare meals with the surplus food that the community fridge receives. It is also important to note that this community fridge only accepts vegetarian items in order to support sustainable eating.

As with education, training is also often used as part of a broader campaign. For example, the Cracking Good Food campaign against food waste delivers cooking courses and training to provide people with the skills to cook healthier and more sustainable food.⁶⁰ Among the interventions mapped, typical training activities include courses, workshops, tips and toolkits. The training archetypes have targeted several food touchpoints, including households, schools and businesses.

The interview with Dr Erica van Herpen, associate professor at Wageningen University held on 07 March 2024 resulted in numerous insights into food waste interventions and research projects on household food waste reduction. Dr van Herpen indicated that most of the food waste interventions that were found to be impactful were those that gave individual 1-1 coaching to consumers as a means of further spreading knowledge, yet these were also the most expensive to implement.

SPECIFIC ACTIVITIES FOR TRAINING	
Food Waste	Low-Carbon Consumption
• Teaching anti-waste measures around purchasing food • Tips on food storage • Toolkits on food waste reduction • Meal planning and creative recipes • Cooking classes that also teach preparation, handling, budgeting and storage	• Community workshops • Tips for adopting a low-carbon diet • Recipes for surplus and zero waste cooking • Classes to teach preparation, handling, budgeting and storage of fresh produce • Meal planning to cook fresh produce

Motivation: Enablement

Enablement refers to “providing support to improve ability to change in a variety of ways not covered by other intervention functions,” in a way that increases individual capability to behave in a desired manner.⁶¹

A key archetype here for food waste is portion control, which falls within the preparation phase of behaviour change. This practice appeared in many broad campaigns and interventions, but was utilised as a stand-alone activity in just one of the interventions mapped. The intervention looked to change food portion sizes at a restaurant in Alentejo, Portugal. The researchers found that a restriction of the portions of six menus led to a reduction in food waste, CO2 emissions, and nutritional improvements.⁶² Portion control interventions primarily target restaurants, canteens and food businesses as a touchpoint, reducing the amount of food that consumers leave on their plates when dining out.⁶³ However, these practices can also be adopted in the home to reduce household food waste. Interventions including Love Food Hate Waste have handed out spaghetti measures via third-party events and also host an accessible (easy to use) resource for households to meal prep via a food portion calculator.^{64 65 66}

In the interview, Dr van Herpen further noted how small waste-prevention tools, such as measurement cups, which are much cheaper to implement, have also been used successfully. Dr van Herpen highlighted the stigma that exists around food waste and the fact that much of the household waste produced is often unintentional and underestimated. As a result, several research studies have disguised the fact that they are studying food waste and avoid making people feel guilty about wasting food to avoid backlash.

On the topic of low-carbon diets, enablement most frequently comes in the form of community gardens. Community gardens are instrumental in promoting sustainable diets by offering access to fresh, locally grown produce. Through education and community engagement, such as cooking classes, these gardens connect the community with their local food system and simultaneously upskilling them, which ultimately empowers the community members to make informed dietary choices towards sustainable eating.⁶⁷ Community gardens are frequently implemented within community areas and schools. The Growing Food to Grow People encourages students to grow fruit and vegetables and to increase their consumption of low-carbon food by serving the food grown at the school’s salad bar.

SPECIFIC ACTIVITIES FOR ENABLEMENT	
Food Waste	Low-Carbon Consumption
• Portion control • Measuring cups • Scales for weighing food waste • Doggy bags	• Community gardens • Growing fresh produce • Vegan/vegetarian community pantries

Motivation: Coercion

Coercion involves “changing the attractiveness of a behaviour by creating the expectation of an undesired outcome or denial of a desired one.”⁶⁸ These types of interventions can involve forcing individuals to behave in a particular way, but also include generating unattractive outcomes or the feeling of social disapproval for the individual. Interventions aimed at encouraging a positive change in consumer habits through education and awareness-raising have previously been found to be most effective when compared to those that increase social pressure to prevent household waste.⁶⁹ For these reasons, amongst the interventions mapped, this type of behaviour change was by far the least common. However, communications that detail the negative environmental or health impact of a behaviour were successful in inciting change. This was seen through an intervention with environmental awareness posters in a workplace canteen in China for food waste and in Italy, where an intervention focused on communicating the consequences of the intake of red and processed meat to reduce its consumption.^{70 71} As these results illustrate, communication materials evoke emotive responses that foster the success of coercion-focused interventions.

SPECIFIC ACTIVITIES FOR COERCION	
Food Waste	Low-Carbon Consumption
Negative-environmental impact messaging	Emotionally provocative health-information messaging

Evidence and impact data

Of those analysed, 67 (75.3%) food waste interventions and 66 (77.6%) low-carbon consumption interventions provided evidence of behaviour change and impact data. It is important to note that the quality of the data varies considerably between these interventions. Some were independently verified by external bodies, particularly when implemented as part of a broader national or international programme, whereas others merely report to have been successful without supplying comprehensive impact data. This variation was a key consideration when shortlisting interventions and providing final recommendations. Evidence of behaviour change for food waste prevention and low-carbon consumption was shown in the following principal ways by the interventions analysed:

Food waste:

- **Recorded reduction in the level of food waste generated:** Some interventions provided detailed measurements of the reduction in food waste, measured in tonnes or kilogrammes, while others reported a general reduction without specific measures.
- **Sharing and uptake of best practices on food waste prevention:** This was often measured in terms of the number of people participating in the intervention activities, adopting the practices promoted and reporting to retain these practices over time.

Low-carbon diets:

- **Increased consumption of plant-based food:** Several interventions indicated the number of vegetarian or vegan meals that were served or consumed as a result of their activities.
- **Sales of plant-based food:** Interventions that involved food businesses increase the number of plant-based foods that they carry and position them in areas to increase the rate to be sold, resulting in the sales of plant-based foods increasing.

- **Uptake of vegan/vegetarian cooking:** A number of interventions illustrated that buying and then understanding how to prepare plant-based meals increased participants' willingness to continue to prepare these foods regularly.

It is important to note that data on attribution was very limited across the interventions. Most of the interventions mapped utilise quite simple reporting mechanisms for success. Aside from a few research studies, interventions generally do not provide a breakdown of impact across each of the activities implemented, instead recording the impact or success of the intervention as a whole.

4.2. Evaluation of interventions in the London context

Following the literature review, the project team discussed the factors of the analytical framework that are most important for ReLondon to regularly consider, which are the replicability, scalability, and feasibility of the interventions identified. The shortlist of factors served as the foundation for the evaluation framework (Annex B).

Factors to be considered for the intervention evaluation:	
Non-negotiable	Supplementary
• Evidence of success (behavioural change and environmental) • Quality of data¹ • Demographic composition • Climate risk • Budget size • Touchpoint	• Type of behaviour change • Climate risk factors • Geographic similarity • Population density • Food communications • Foodways • Food regulatory environment (Food safety, Food waste, Food donation, Food labelling, Dietary guidelines) • Income inequality • Average price for a healthy diet • Implementing organisation • Timeline

To determine a shortlist of interventions to evaluate from the broader mapping, the factors that ReLondon identified were divided into non-negotiable categories and supplementary categories for the team to evaluate the interventions. The project team reviewed the broader mapping based upon the evidence of the success of the interventions, the quality of the interventions' data, the demographic of the targeted community, whether the city of implementation is at climate risk, the budget size of the intervention, and its touchpoint.

Based on these non-negotiable criteria, a shortlist of interventions was chosen to be evaluated.² The evaluation compared the shortlisted interventions against the ReLondon project context to determine the replicability, scalability and feasibility of the intervention to be implemented in London. A numerical weighing criterion was developed to support and rank the evaluations to understand which activities ReLondon should

¹ The quality of data is based upon whether there is a third-party verifying the data or if its peer-reviewed, if there is a monitoring and evaluation framework to monitor the impact of the organisation, and whether the data is self-reported by the organisation.

² It is important to note there is a subjectivity bias with the shortlisting methodology as the evidence of success and quality of data was determined from the reviewer's perspective.

consider within its own project. The essential criteria were ranked 1-5 for their importance to the ReLondon project, while supplementary criteria were ranked 1-2 based on their alignment with the project context for implementation. The evaluations were then ranked upon their points, with the highest score set at 63, to emulate the ReLondon project. Based on the results, the evaluation framework determined the recommendations for the ReLondon project.

Weighting criteria			
Non-negotiable		Supplementary ³	
Factor	Points	Factor	Points
Evidence of behaviour change success	5 = presence 1 = no presence	Climate risk factors	2 = has at least one of the factors; 1 = none
Evidence of environmental impact	5 = presence 1 = no presence	Geographic similarity	2 = Northern Europe, Western Europe, Southern Europe, North America, Oceania; 1 = Other Global Geographies
Quality of data	5 = high, 3 = medium, 1 = low	Population density	2 = Small, 1 = Other densities
Demographic composition	5 = presence 1 = no presence	Food communications	2 = presence 1 = no presence
Climate risk	5 = presence 1 = no presence	Foodways	2 = presence 1 = no presence
Budget Size	5 = Small and Medium; 3 = medium/large; 1 = Large	Food safety	2 = presence 1 = no presence
Touchpoint	5 = one of the touch points, 1 = none	Food waste	2 = no presence 1 = presence
		Food donation	2 = presence 1 = no presence
		Food labelling	2 = presence 1 = no presence
		Dietary guidelines	2 = no presence 1 = presence
		Income inequality	2 = 40 to 75; 1 = outside
		Average price for a healthy diet	2 = \$1 - \$2; 1 = outside
		Implementing organisation	2 = one of the implementing organisations; 1 = none or the information is unavailable
		Timeline	2 = within a year, 1 = outside or unavailable

³ The type of behaviour change was not weighed as the ReLondon project context aims to work across all behaviour changes.

4.2.3. Evaluation of interventions for food waste

Based on the mapping conducted, a shortlist of the eighteen most successful food waste interventions was created to identify further trends and draw key learnings. The following interventions were shortlisted:

Points	Intervention Name	City	Activity	Implementing Organisation	Touchpoint	COM-B	Type of Behaviour Change	Project Success
62	Team Up on Food Waste	Washington, D.C.	Challenge to measure and prevent food waste in the home.	Private sector	Households	Training, Enablement	Storing, Preparing	Preventable food waste reduced by 60% in 30 households, representing 76kg; 80% retention rate
61	Sparkling Change	London	Challenge to educate in meal planning, food storage and use of leftovers.	Private sector	Households	Education, Training	Planning, Storing, Consumption	90% of participants reduced food waste; 52% more confident in storing food; 62% more confident in using leftovers
58	Felix's Kitchen	London	Catering kitchen repurposing food into culturally familiar meals and redistributing.	Community group	Community Kitchens	Environmental restructuring	Sharing	516,428kg of household food waste prevented in 2022; 1,311,727kg CO2 emissions prevented
58	Waste2Taste	Oxford	Community café offering cooking classes.	Local government	Community Kitchens	Training, Environmental restructuring	Preparing, Sharing	5,705 tonnes of surplus food saved from landfill; 20 weeks of cooking workshops, reaching 30 people in the community
58	Save the Food, San Diego!	San Diego	Educational waste awareness campaign.	NGO	Households	Education, Training	Planning, Buying, Storing, Consumption	38% reduction in food waste; 90% increased awareness of food waste issues; high retention rates
57	Il Sacchetto Salvamere	Milan	Educational booklets and doggy bags for schoolchildren.	Local authority	Schools	Education, Enablement	Storing, Consumption	30,500 doggy bags distributed to 100 schools, reaching 57,000 children
56	Matt Vinn Project	Oslo	Workshop and toolkit for household waste reduction.	Local authority	Households	Training, Enablement	Storing	Reduced household food waste from 4.7kg to 50g in four weeks; high retention rates
54	Zero Waste Academy	Paris	Implementation of anti-	National government	Households	Education, Training	Buying, Storing,	59% reduction in food waste of 243

			waste measures in the home.				Consumption, Sharing	households from 25.5 kg/person/year to 10.4 kg/person/year
54	Hilton Green Ramadan	Riyadh	Sharing eco-friendly practices to reduce food waste and donating surplus food.	Private sector	Restaurants, Hotels	Education, Environmental restructuring	Consumption	61% reduction in food waste, equivalent to 4,659 meals; 14 tonnes of CO2 emissions prevented
52	Convenient tools and social norms	Amsterdam	Tool package including measuring cup and stickers.	University	Households	Persuasion, Enablement	Planning, Storing, Preparing, Consumption	Trails decreased self-reported food waste by 39.1% and 23%.
51	New Zealand Food Network	Auckland	Redistribution of surplus community food to food banks.	NGO	Businesses	Environmental restructuring	Sharing	26,123,130 household food products prevented from going to waste; 38,791,285kg CO2 emissions prevented
51	Save Your Food	Ankara	Guidelines, tips and checklists for food waste reduction.	IO, Private sector, National government	Restaurants, Households	Education, Training	Planning, Buying, Preparing, Consumption	Increase in the number of people saving leftovers from 45% to 55%; increased understanding of best before dates by 20%
50	The Food Challenge	Toronto	Teaching food storage, food efficiency and shopping list planning.	National government	Households	Education	Planning, Storing	24% of participants reduced food waste; 40% uptake of food preservation activities
49	Love Food Sydney	Sydney	Food waste prevention through portion control and use of leftovers.	Local authority	Restaurants	Training, Enablement	Planning, Buying, Preparing, Storing, Consumption	High uptake among businesses and retention rate among employees
49	Food Loss & Waste Diary App	Kobe City	Food waste diary and measurement app.	Research institutes, Private sector	Households	Education, Enablement	Preparing, Consumption	30-40% reduction in food waste of 332 households
48	JustNow	Johannesburg	Supermarket app for discounted products close to expiry date.	Private sector	Households, Supermarkets	Incentivisation	Buying	50% reduction in supermarket food waste
48	Buenos Aires Sustainable Urban Food Strategy	Buenos Aires	Information campaign on best practice for food waste prevention.	Local government	Schools, Households, Restaurants	Education	Sharing	50,000 citizens engaged and food waste volumes reduced

47	Food Without Waste	Copenhagen	Education on food waste prevention practices.	Local authority	Households	Education	Planning, Storing	21% reduction in food waste from 30,350 tonnes to 23,977 tonnes; reduced GHG emissions
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The interventions involve a wide range of actions for reducing food waste, including workshops, training and education materials, communication materials, meal portioning, food sharing and redistribution, creative cooking, use of leftovers, meal planning, food storage techniques, labelling, and food waste measurement. When it comes to the COM-B behaviours, **education and training are the most common (14) among the successful interventions that have been shortlisted, and these two behaviours are often applied in tandem.** Food Without Waste, an intervention by the City of Copenhagen, provided courses on food waste reduction measures in the home. The intervention adopted an educational approach to change people’s understanding of food waste by promoting three good habits: 1) assessing the durability of food products before using them or throwing them away; 2) knowing which foods in the fridge need to be eaten soon; 3) looking in the fridge and planning dinner the day before. It was successful in achieving a 21% reduction in food waste from 30,350 tonnes to 23,977 tonnes between 2016 and 2020.⁷²

Enablement is also common (6) among the shortlisted interventions, frequently accompanied by a form of education or training. Enablement has been applied together with education in the context of schools, with the Milan city council having introduced the ‘Sacchetto Salvamerenda’, or doggy bag, to teach schoolchildren about the importance of preventing food waste. It is a washable, reusable, and recyclable bag freely provided to schools, which children can use to store any leftover food not consumed during the school lunch. It was first launched in 2014 and has since delivered over 30,500 doggy bags to more than 100 schools in Milan.⁷³

Environmental restructuring (4) is an additional focus of successful food waste interventions, taking the form of redistribution of surplus food to prevent waste. Felix’s Kitchen is led by a community group, The Felix Project, which rescues food from local households and the food industry, and repurposes it into culturally familiar meals at its catering kitchen. It then redistributes the surplus food to those experiencing food insecurity in London. In 2022, Felix’s Kitchen prepared 1.3 million meals, preventing 516,428kg of surplus food from going to waste and averting 1,311,727kg of CO2 emissions. Similarly, the Hilton’s Green Ramadan intervention, which targeted hotels and restaurants, and promoted eco-friendly practices during Ramadan, successfully led to composting at Hilton hotels, sourcing food locally, and donating meals to tackle food waste across the food value chain. Over the month of Ramadan, a 61% reduction in food waste was achieved, equivalent to 4,659 meals⁷⁴.

Only one of the shortlisted interventions employs incentivisation. This is the JustNow app in Johannesburg, which provides discounts on supermarket produce that is nearing its expiry date. Consumers receive alerts on their phones to nearby offers and can scan the JustNow code at the tills to receive their discount.⁷⁵ The intervention reports to have reduced food waste by 50% in participating supermarkets and was featured in a BBC World News report as an intervention to be replicated in other countries.⁷⁶

The majority of the interventions either solely or partially target households as a food touchpoint, with good evidence of success in reducing household food waste and, as reported by Team Up on Food Waste and Save the Food, San Diego!, a high retention rate among participants. Other touchpoints among the shortlisted interventions include schools, restaurants, businesses and community kitchens, though these are less frequent targets among those with strong evidence of success. This suggests that food waste interventions will be more successful when implemented at the household level and involve some form of direct engagement, primarily through education or training, supporting the claims made by Dr van Herpen that 1:1 engagement is most effective in changing behaviours.

There is a degree of balance in the stages of behaviour change targeted by the shortlisted interventions: planning (7), buying (5), storing (10), preparing (6), and consumption (9). Buying is less frequently targeted among these. **Storing is the most common given the relative ease of providing households with general food storage tips and adopting new practices.** Regarding the implementing organisations, the shortlisted interventions display a good mix of implementation by NGOs, private sector, local authorities and national government. Community groups are less prominent; however, this may be linked to the lack of specific reporting mechanisms to measure success among these groups.

4.2.4. Evaluation of interventions for low-carbon consumption

On the basis of the same measures of project success and similarity to the London context, a shortlist of the nineteen most successful low-carbon consumption interventions was created to identify the key activities for ReLondon's project. The following interventions were shortlisted:

Points	Intervention Name	City	Activity	Implementing Organisation	Touchpoint	COM-B	Type of Behaviour Change	Project Success
62	Redbridge: Food that serves the community	London	Cooking and dietary workshops with culturally familiar meals.	Local Authority	Community areas & Households	Training	Preparing	100% increase of ability to cook healthier meals and passed knowledge to family
61	Addressing food insecurity	London	Increasing vegetarian options in food businesses.	Local Authority	Convenience Stores & Supermarkets	Environmental restructuring	Buying	Sales for healthy items increased: fruit +18%, natural nuts +11%, chilled foods + 8%.
61	Meat-free Thursdays yield multiple benefits	Ghent	Introduction of meat-free day each week.	NGO and Local Government	Schools & Households	Environmental restructuring	Consumption	The percentage of vegetarians and vegans has increased significantly compared to 2020 from 5% to 8%; 28% eat vegetarian at least 1 day a week compared to 13% in 2016.
61	Sparkling Change: the Challenge	London	Training and sharing of vegan/vegetarian recipes.	Private Sector & NGO	Supermarkets & Households	Education, Training	Planning, Buying, Preparing	73% of participants had a more sustainable home; 90% ate less meat; 84% ate more vegetables, fruit, pulses, nuts, seeds and wholegrains; 73% were cooking

								from scratch more
60	Chilis on Wheels Mentorship Programme	New York City	Training programme with meal plans, information packages and mentor.	NGO	Households & Community Areas	Training, Modelling	Preparing, Sharing	Over 100,000 plant-based meals donated; Beneficiaries discuss that their diets to be more plant-based.
59	Encouraging sustainable food consumption through nudges: An experiment with menu labels	London	Nudging and menu labels for plant-based dishes.	University	Restaurants	Environmental restructuring	Buying, Consumption	The sales of sustainable starters increased by 14.1%
58	NYC – Plant-Based Hospitals	New York City	Mentorship for plant-based diets and menu change.	NGO	Hospitals, Schools, Community areas (canteens)	Environmental restructuring	Consumption	50-60% of patients were sticking with the plant-based default option; 95% of patients who chose a plant-based meal were happy with it.
58	OzHarvest's NEST Program	Melbourne	Education on vegan/vegetarian diets and healthy eating.	NGO	Households	Education	Preparing	Food security improved by 28%; 95% were more confident to make healthy food choices on a budget; 67% increased intake of healthy food and drinks
58	Rose Vouchers for Fruit and Veg	London	Vouchers for fruits and vegetables	Local authority & NGO	Supermarkets & Households	Incentivisation	Buying	64% of children eat at least 5 portions of fruit & veg a day; 55% of parents eat at least 5 portions of fruit & veg a day
58	Green Bronx Machine Curriculum	New York City	Education on growing vegetables and adopting plant-based diets.	NGO	Schools, community areas	Education, Enablement	Planning, Preparing, Consumption, Sharing	8,165 kg of food redistributed, 8084 kg of fresh produce grown, 867,310 servings of fresh produce eaten by students; 93% understood how to prepare nutritious meals, 100% increased consumption of fresh fruits and vegetables
57	Veg on the menu?	Copenhagen	Vegetarian default on	University	Restaurants & Schools	Environmental restructuring	Buying	A reduction of 204 kg CO2e for

menus and food
labelling
language.

every 100
vegetarian
burgers sold in
this case; 14% of
those not
intending to
reduce their meat
intake eat
vegetarian

57	Connecting with the Voluntary and Community Sector (VCS) to increase Healthy Start uptake	London	Availability of vegetarian options, nudge tactics and communication materials.	Local authority	Supermarket, Community centres	Education, Environmental restructuring	Buying	Increased awareness among frontline workers – via webinars; Increased awareness within the community - via posters, leaflets as well as translated information in four main languages spoken.
57	Micro-gardening in the city of Dakar	Dakar	Community gardens to promote low-carbon diets	Local authority	Community areas	Enablement	Preparing	Elderly people and women improved their diets; Improvement of diet; Increased consumption of vegetables; 24 micro gardening trainers educated; 26 elementary schools around micro gardening formed;
56	Torres Vedras Sustainable School food Programme	Torres Vedras	Low-carbon schools meals and locally sourced ingredients.	Local government	Schools	Environmental restructuring	Consumption, Preparing	Lowered the environmental footprint by promoting a circular economy; 4,700 healthy low-carbon meals to schoolchildren every day
56	Healthy Neighbourhood Market network	Los Angeles	Training food business owners in sustainable and healthy retail practices.	NGO	Convenience Stores	Training	Buying	Revenue increase by \$7,000, driven by healthy food sales; More than 200 small business owners and helped 51 stores
56	The Green Monday School Program	Hong Kong	Lectures, workshops and classes on plant-based diets.	NGO	Schools	Education, Training	Preparing	Reduction opportunity of 5.38kg CO2e per meal, and 5.05kg CO2e per meal;

								40% of Hong Kong's population practise flexitarianism, a 70% jump compared to 2018; 62% willing to reduce meat consumption
55	Waltham Forest Gold-plated catering	London	Plant-based menus and taster sessions.	Local authority	Schools	Education, Environmental restructuring	Consumption, Preparing	One million plant-based school meals a year; 250 fully trained and vetted staff; Producing over 12,000 nutritious meals a day
54	Investigating goal conflicts in menu planning in Swedish school catering on the pathway to sustainable development	Uppsala	Study on popularity of vegetarian options and food waste generation on school menus.	University	Schools	Environmental restructuring	Consumption, Preparing	Unpopular menus generated more plate waste than popular menus; Popular school meals and vegetarian options generated less waste than unpopular meal
40	WRI Playbook	Global	Report that identifies interventions for food business to adopt to encourage diners to select more plant-rich dishes.	NGO	Food business	Environmental Restructuring, Modelling, Education	Planning, Buying, Preparing	The behaviour change interventions were ranked according to their impact score and feasibility score to provide a shortlist of the most impactful interventions.

The interventions involve a range of different actions for increasing the consumption of low-carbon foods, with the types of behaviour change targeted by the shortlisted interventions as follows: planning (2), buying (7), sharing (2), preparing (10), and consumption (7). Planning and sharing are utilised the least within these interventions, as **behaviour change for shortlisted low-carbon consumption interventions relied mostly on education (7) and environmental restructuring activities (10)**.

The benefits of education programmes and upskilling children and their families with this knowledge is a trickle-down effect, where knowledge is passed from students to their wider ecosystem. The Redbridge intervention in London illustrated this success. Through cooking classes that taught how to prepare nutritious and cultural foods with Bangladeshi families, 100% of participants increased their ability to cook healthier low-carbon meals and would pass their learned knowledge to family and friends. Creating a domino effect and knowledge sharing that can be transferred across social networks is key to long-lasting impact where generational and culturally sentimental attributes yield the most success in encouraging families to adopt sustainable diets.⁷⁷ Another example of knowledge transfer success in a different context is from the micro-gardening programme in Dakar. Vulnerable populations improved their diets by increasing the consumption of vegetables through a domino effect of gardening trainers educated to help teach gardening and the utilisation of the crops in cooking. Community gardens, just like the Green Bronx Machine and the Dakar

micro-gardening interventions, encourage communities to learn how to grow their own produce and consume it through cooking classes. Coupling growing activities with cooking classes are critical factors that ensure that the community gardens, whether in schools or community areas, achieve the long-term behaviour changes desired.

Environmental restructuring and education activities also yielded the most impactful results based on publicly available data, particularly menu alterations among the shortlisted interventions. In schools, having themed plant-based days, such as the Green Monday in Schools in Hong Kong also yielded change amongst pupils and their families. The Green Monday intervention coupled its No Meat on Mondays programmes (where only plant-based meals were served) with a curriculum on the importance of a plant-based diet. As a result, there was a reduction of 5.38kg CO₂e per meal and 62% willingness to reduce meat consumption. Interventions commonly implement environmental restructuring via menu changes, such as providing different labels or substitutions of meat on menus, or within supermarkets or convenience stores, where fresh produce is marketed and placed in more prominent positions to encourage purchase. As such, environmental restructuring nudges participants to choose the plant-based and healthier option through a change in their physical environment.⁷⁸

“All new meals in kindergartens, nursing homes and schools in the city should be meat free. The majority of schools in the city already serve a large proportion of meat-free food in their canteens, and nursing homes are adapting traditional Norwegian recipes, for instance by introducing 20% lentils into traditional meatballs as a starting point to reduce meat consumption.”

“Changing the choice architecture, namely replacing meat options with vegetarian or vegan options in restaurants, canteens or supermarkets, can achieve more sizeable behaviour change than interventions based on labelling or social norms.”

Peter Scarborough, Professor of Population Health, University of Cambridge.

Lars Magnus Ottersen, Social Responsibility & Sustainable Development Adviser, Oslo Municipality.

The Healthy Neighbourhood Market Network in Los Angeles, United States worked with local convenience stores to improve procurement of produce through networks with local farmers and markets to help increase access to these foods for the local population. While incorporating more produce, the owners were provided with trainings that supported their understanding of the importance of fruits and vegetables within a diet and the importance of consuming these foods to promote healthier lifestyles. A consequential benefit from these interventions was an increase in revenue from the convenience stores, as community members increased their buying habits to be plant-based for a healthier diet.

Incentivisation for low-carbon diets was often achieved through vouchers. Rose Vouchers for Fruit and Veg is a payment programme that helps low-income families in London access and afford fresh produce by using these vouchers as coupons to receive discounts on their shopping. The intervention also provides resources such as recipe books to provide families assistance in cooking these foods. Rose Vouchers for Fruit and Veg successfully helped:

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- 1) Families' fruit and veg intake improved by an average of 3 portions a day, with a 40% increase in parents eating at least 5 portions of fruit & veg a day.
 - 2) Families increase their creative cooking of nutritious meals with their children.
 - 3) Children develop a lasting preference for fruit & veg, with a 57% increase in children eating at least 5 portions of fruit & veg a day.
 - 4) Help families who identify as from African, Caribbean, Asian, Latin American and Arab backgrounds access and afford culturally familiar food, which helps them retain important cultural and emotional links to food and joy in home cooking.

The Rose Vouchers exemplify how partnerships between an NGO and Local Authority help introduce and maintain low-carbon consumption within families, with a particular emphasis on those with a multicultural background. However, the voucher programmes require buy-in and substantial investment from both the NGOs and the Local Authority. If the partnership opportunities and the funds are available, vouchers will be a successful enabler in promoting low-carbon diets.

5. Recommendations

The mapping and analysis of global interventions to reduce food waste and promote low-carbon consumption has revealed several key trends in the strategies adopted by these interventions, the preferred food touchpoints, the types of behaviour change they target and their degree of success. Based on this analysis, several recommendations have been distilled for the implementation of ReLondon's project for a circular food community in London.

As indicated previously, interventions can have a dual focus on preventing food waste generation and promoting low-carbon consumption. While these interventions may have a primary behavioural change focus, (as categorised by the COM-B behaviour change framework), due to the complexity of interventions they often cut across more than one COM-B behaviour intervention category. For instance, using surplus food to redistribute to the local community, coupled with cookery classes, not only increases access to low-carbon foods making it affordable for community members – which falls under environmental restructuring – but the cooking classes also train individuals in how to prepare these foods – which falls under training and/or enablement. This indicates that the ReLondon project team should consider a multi-faceted focus within each intervention to maximise the ability of the project to successfully enable behaviour change within the community.

Barriers to be aware of

While the research for the mapping did not conduct a deep dive into the barriers the interventions faced, external research indicates some barriers that implementors often face and which the ReLondon team should be aware of within their project:

- **Social and Cultural Barriers:** Language barriers and interventions that do not take cultural and traditional beliefs and norms into consideration affect project implementation. ReLondon should ensure that the communication materials and the design of the project are accessible to all community members.^{79 80}
- **Lack of Community Engagement:** Projects struggle when they are unable to receive buy-in from the communities. Often these issues revolve around the concept of the monetary costs and time

costs required by the community to implement the activities. Focusing on interventions that mitigate these costs is essential for the ReLondon team.⁸¹

- **Limited Data and Measurement Tools:** Many of the interventions lacked the financial and logistical resources to develop comprehensive and robust data to measure the impact of the intervention. The ReLondon team needs to implement a proper framework and budget to enable the collection of quality evidence. ReLondon should consider implementing a robust monitoring and evaluating framework when developing the circular food project to avoid this limitation.
- **Logistical Challenges:** Developing the proper infrastructure and creating the space to implement the interventions with proper systems requires logistical support, including proper coordination mechanisms, which can all be resource intensive. ReLondon needs to work with the community to ensure that the interventions selected have the proper infrastructure support to survive the initial implementation and longevity. The team should also develop accessible communication materials (such as language translation, digital and/or in-person announcements) to coordinate and deliver updates on the implementation of the intervention.^{82 83}

Table of Recommendations

#	Recommendation	Target	Touch Point	COM B Intervention Type	Phase of Behaviour Change
1	Education programme for children on food waste and low-carbon diets, including information booklets and by implementing school gardens.	Food waste and low-carbon diets	Schools	Education Enablement	Growing, Preparing, Consumption
2	Education campaign targeting individuals on food waste and low-carbon diets, including information booklets and awareness campaigns	Food waste and low-carbon diets	Retail, Households, Community Centres, Restaurants	Education Enablement	Buying, Preparing, Consumption
3	Training in food waste prevention through portion control and use of leftovers.	Food waste	Restaurants, Canteens	Training Education Enablement	Planning, Buying, Preparing, Storing, Sharing
4	Creating community gardens and utilising produce from a community garden or a community fridge to host cooking classes and hand out recipe books for food waste prevention and low-carbon diets.	Food waste and low-carbon diets	Community centres, Schools	Training Enablement Modelling	Preparing and Consumption
5	Menu restructuring by increasing the number of days or options with vegetarian defaults in schools, canteens and restaurants to increase the proportion on plant-based dishes.	Low-carbon diets	Restaurants	Environmental Restructuring Restriction	Buying
6	Provision of doggy bags in food businesses and in schools.	Food waste	Retail, Schools	Enablement	Preparing, Consumption
7	Distribution of 'use up' labels and 'eat first' stickers, including at supermarkets and community centres.	Food waste	Households	Persuasion	Storing
8	Vouchers for purchasing more fruits and vegetables along with meal preparation advice.	Low-carbon diets	Retail, Households	Enablement Incentivisation	Buying

9	Mentorship programme to help households understand how to incorporate plant-based foods into their lifestyles.	Low-carbon diets	Households	Modelling Education	Planning, Preparing
10	Vegan Zero Waste Café that also provides community cooking classes.	Food waste and low-carbon diets	Restaurants	Training Education Environmental restructuring	Consumption, Buying
11	Establish vegan Community Fridges, where surplus produce and plant-based produce can be shared throughout the community.	Food waste and low-carbon diets	Community Centres, Households	Enablement Incentivisation	Sharing
12	Food waste diary and measurement app, with food waste prevention tips.	Food waste	Households	Education Training Enablement	Preparing, Storing, Consumption

5.1. Education

As one of the intervention functions on the COM-B Behaviour Change Wheel, education is defined as action to “increase[e] knowledge and understanding by informing, explaining, showing and correcting.”⁸⁴

Relevant Activities

#	Recommendation	Case Study from the Evaluation	Outcomes and Impacts	Key Conditions for Success (Considerations and Barriers)
1	Education programme for children on food waste and low-carbon diets, including information booklets and by implementing school gardens.	- Buenos Aires Sustainable Urban Food Strategy - Il Sacchetto Salvamerenda - The Green Monday School Program - Waltham Forest Gold-plated catering - Green Bronx Machine Curriculum	50,000 people engaged and food waste volumes reduced 30,500 doggy bags distributed to 100 schools and 57,000 children - Reduction of 5.38kg CO2e per meal; 70% increase in flexitarianism; 62% willing to reduce meat consumption 1 million plant-based school meals a year; 250 fully trained staff 8,165kg food redistributed; 8,084kg fresh produce grown; 100% increased consumption of fruit and vegetables	- Facilitating partner and space for the training - Curriculum development for school education programmes - Materials to handout to participants - An understanding of the socio-economic and cultural context of the population to inform the development of relevant & appropriate recipes and communication materials
2	Education campaign targeting individuals on food waste and low-carbon diets, including information booklets and awareness campaigns	- Hilton Green Ramadan - Matt Vinn Project - Save the Food San Diego - Food without waste - Zero Waste Academy - The Food Challenge - Save Your Food - Connecting with the VCS to increase Healthy Start uptake - Healthy Neighbourhood Market network	61% reduction in food waste; 12 tonnes CO2 emissions prevented - Reduced household food waste from 4.7kg to 50g in four weeks 38% reduction in food waste; 90% increased awareness 21% reduction in food waste 59% reduction in household food waste per year - Increase in people saving leftovers from 45% to 55%; 20% increase in understanding of best before dates - Increased awareness of vegetarian options among frontline workers	- Current food procurement process for canteens, food businesses and retailers - Procurement of the food for the cooking classes - Developing education materials for the community gardens to distribute and utilise during classes

			and in the community; leaflets translated into 4 languages	
			Revenue increase of \$7,000 due to healthy food sales; 200 small business owners involved	
3	Food waste diary and measurement app, with food waste prevention tips.	- Sparkling Change - Food loss & Waste (FLW) Diary App	90% of participants reduced food waste; 52% of participants more confident in storing food - FLW Diary App achieved 30-40% reduction in household food waste	- Understand current problem areas for food waste within the community - Digital literacy and infrastructure of the community - Education on food waste, food waste reporting

Food waste app/online platform

Education is a key approach to inducing behaviour change and has strong evidence of success across a variety of interventions. At the household level, the creation of an app or online platform for households to record their weekly food waste and provide general tips has been successful in reducing food waste at home. The creation of a measurement tool is important as a first step to educating individuals about the problem of food waste and making them aware of the amount of food they are wasting, thereby combining education with enablement. As noted by Dr van Herpen, household food waste is often unintentional and underestimated, so it is important to raise awareness of the problem in the first instance. Education can also be combined with training in this intervention through the provision of additional materials on food waste reduction in the home, including information on 'use-by' dates, correct storage techniques, use of leftovers, and so on. Such online platforms can also be tailored to encourage the adoption of vegan and vegetarian diets or the reduction of meat consumption, as was successfully done by the M&S Sparkling Change challenge.

Case Study: *Food Loss and Waste Diary App*

In 2018, a group of universities and research institutes in Kobe City, Japan developed an online Food Loss and Waste Diary App to record household food waste over a period of three months. The 332 participating households used the app to record the weight of the food they disposed of on a weekly basis and the categories of food most frequently discarded. The app also incorporates additional information on ways to use up leftovers and prioritising the preparation of food that needs to be eaten first to reduce food waste. The intervention was successful in generating a 30-40% reduction in household food waste among two trial groups over a three-month period.⁸⁵

Case Study: *Sparkling Change*

'Sparkling Change' is a campaign piloted by Marks & Spencer and Hubbub to promote a reduction in food waste and an increase in sustainable low-carbon diets among M&S customer and colleague households through a three-month challenge. The aim of the intervention is to reduce food waste in targeted households by sharing tips for meal planning, proper food storage, and creative use of leftovers, and promote low-carbon diets by sharing vegan/vegetarian recipes and encouraging the adoption of 'Meat Free Monday' via an online platform. This intervention incorporates education, enablement and training, and was shown to be highly successful. After the three-month challenge, 90% of participants were wasting less food and eating less meat, with 73% of participants reporting that their households had become more sustainable as a result of the challenge.⁸⁶

Education for youth & school gardens

Moreover, education interventions targeting children and youth should also be implemented in local schools to raise awareness of measures to prevent food waste, but also to encourage low-carbon consumption. This could range from simple information booklets to dedicated classes or field trips, such as the visits to waste management centres implemented by the Municipality of Oslo, to teach children about the issues at hand. To be successful, such educational interventions would need to be implemented across schools and education centres in the target community and move beyond a one-off intervention, perhaps by repeating a workshop or field trip on an annual basis.

Another intervention that ReLondon should consider is school gardens. A version of community gardens in an educational setting, the gardens connect children with their food system, and focus on learning about how to prepare nutritious meals to consume the produce that they grow. It is evidenced that these interventions make children excited about these meals and return home to their families and encourage plant-based meal consumption at this touchpoint as well, creating the domino effect that was previously discussed with cooking classes in earlier sections. Given that the ReLondon project context already has community gardens within its area, there is the foundation and community knowledge that can be leveraged to formalise educational interventions within schools.

Case Study: *Green Bronx Machine*

Coming from multiple angles, the Green Bronx Machine Curriculum provides students the practical knowledge of nutritious meal preparation and connects students with the fresh produce they consume by introducing small gardens within the classroom. As a result, the interventions successfully facilitated: 1) 867,310 servings of fresh produce eaten by students; 2) 93% understanding how to prepare nutritious meals; and 3) 100% increasing their consumption of fresh fruits and vegetables. Coupling interventions that involve plant-based meals with an education programme developed these long-lasting results.

This type of intervention is a preferred approach because there is the option to tailor education programmes to different audiences and touchpoints, including households, schools and businesses. Moreover, tailored education tools can be developed for all of the phases of behaviour change, namely planning, buying, storing, preparing, consumption and sharing, explaining why this approach is most frequently used. Education interventions also report a good degree of success in changing behaviour and reducing environmental impact.

This intervention archetype is recommended for ReLondon because of its effectiveness and applicability to the London context. The borough selected for the implementation of the ReLondon circular food community project has already indicated a desire to implement education for food businesses in techniques for reducing food waste and school education programmes. This education work could be further expanded to target additional food touchpoints, including households, community centres and other workplaces to induce a more widespread change in food-wasting behaviour and sustainable consumption at the community level.

5.2. Training

Training refers to “increasing psychological or physical skills, or habit strength by explanation, demonstration, practice, feedback and correction.”⁸⁷

Relevant Activities

#	Recommendation	Case Study from the Evaluation	Outcomes and Impacts	Key Conditions for Success (Considerations and Barriers)
1	Training in food waste prevention through portion control and use of leftovers for businesses.	Love Food Sydney	High uptake among businesses and high employee retention rate	- Facilitating partner and space for the training - Development of training courses - Materials to handout to participants
2	Creating community gardens and utilising produce from a community garden or a redistribution network (e.g., community fridges) to host cooking classes and hand out recipe books for food waste prevention and low-carbon diets.	- Felix's Kitchen - OzHarvest's NEST Program - Redbridge: Food that serves the community - Micro-gardening in the city of Dakar	516,428kg of household food waste prevented in 2022; 1,311,727kg CO2 emissions prevented 95% more confident in making healthy food choices; 67% increased intake of healthy food 100% increase of ability to cook healthier meals and passed knowledge to family - Increased consumption of veg; 24 micro-gardening trainers educated; 26 schools formed around micro-gardening	- Socio-economic and cultural context of the population to develop recipes - Procurement of the food for the cooking classes - Working with existing community gardens to increase community involvement and training of participants - Training in gardening skills - Developing education materials for the community gardens to distribute and utilise during classes
3	Vegan Zero Waste Café that also provides community cooking classes.	Waste 2 Taste	5,705 tonnes of surplus food saved from landfill; 20 weeks of cooking workshops, reaching 30 people in the community	- Procurement of Surplus Food - Staff for the zero-waste café - Costs required to create and run a food business

In addition to education, training has been shown to be a very effective approach to behaviour change across both food waste and low-carbon diet interventions. Within this intervention type, ReLondon should look to organise cooking classes and workshops in community centres and provide training for staff in local food businesses on food waste prevention techniques.

Cooking classes

Cooking classes can target both the prevention of food waste generation and encourage low-carbon consumption. Cooking classes can teach residents how to utilise food, in culturally familiar manners, and provide recipes for these meals that reduce food waste, cut meat consumption and increase the uptake of vegan/vegetarian diets. As training goes hand-in-hand with education, cooking classes can be combined with the distribution of online or physical recipe books that record the learnings from the classes and provide a wider variety of recipes to be used in the home.

Community gardens

It is also important to note that community gardens can be leveraged within this intervention type. Community gardens, which combine enablement with training, serve as a tool to connect local residents with their food systems, upskill with horticulture knowledge and learn about plant-based consumption. As previously discussed, the ReLondon project context already has a strong presence of gardens within the community, meaning that introducing cooking classes are a feasible activity. However, the logistics of the cooking classes, including the space to host them and procuring the food are two main areas that need to be

considered. The evidence shows that helping the local community access and afford fresh produce and then teaching them how to prepare it within their own homes creates lasting behaviour change.

A further step would be to combine creative cooking with opportunities to redistribute low-carbon food, which is proven to be successful in other contexts for long-term behaviour change. The most successful interventions include workshops, where community members are taught how to utilise either leftover produce or plant-based foods that are not normally consumed (e.g. stems) into nutritious and easy meals. Creating community pantries or community gardens that utilise the redistribution of surplus produce and plant-based meals to community pantry centres encourages a circular food network.

Regarding budget, the most cost-inducing components of these activities are the space for the pantries and/or cooking classes, as the rest of the activities rely on receiving free or low-cost donations. In the ReLondon project context, there are spaces for community pantries to be established, leveraging the redistribution of vegetarian and vegan, with a desire to create zero-waste cafés, with an example of the Waste2Taste café highlighted below.

Case Study: *Waste2Taste*

Waste2Taste is a food waste and sustainable catering service and community café that works to foster a healthy and sustainable food culture in Oxford, UK. The intervention offers cooking classes for health and wellbeing, providing these to various groups including parents, vulnerable groups and the homeless. The classes focus on teaching people creative recipes for preparing affordable and healthy meals with a variety of ingredients. In 2022, Waste2Taste saved over 5,705 tonnes of surplus food from landfill and, as a result, was able to provide 5,965 free meals. The intervention also held 20 weeks of cooking for health and wellbeing workshops, reaching 30 people in the community.⁸⁸

Training for food businesses

Training may also be provided to local food businesses to reduce both business waste and individual waste among staff. This could include training to reduce portion sizes and create smaller menus, correct food storage, creation of controlled inventory and proper planning of food orders, use of food close to its due date for staff meals, and reuse of leftovers. Through direct 1:1 training, staff will become more aware of the problem of food waste, with the possibility of the learnings being replicated in the home environment. In order to maximise uptake, the training should ideally be free or discounted.

Case Study: *Love Food Sydney*

Food businesses in Sydney completed the Love Food Sydney training course organised by the city council to teach their employees about practices for preventing food waste. The key actions taken included creating more concise menus and reducing portion sizes, keeping a controlled inventory and buying only what is needed, using food close to its due date for staff meals, and reusing leftovers such as preparation scraps and meat offcuts. The training is free and numerous food businesses across Sydney have taken part, sharing evidence of its impact. For example, following the training, the Tattersall Club began reusing vegetable and meat offcuts to produce stocks and fillings, and succeeded in reducing its food waste by 20-30%.⁸⁹ Staff members also reported becoming more engaged and aware of the problem of food waste after undertaking the training.

5.3. Enablement

Enablement refers to “providing support to improve ability to change in a variety of ways not covered by other intervention functions,” in a way that increases individual capability to behave in a desired manner.⁹⁰

Relevant Activities

#	Recommendation	Case Study from the Evaluation	Outcomes and Impacts	Key Conditions for Success (Considerations and Barriers)
1	Provision of doggy bags in food businesses and in schools.	Il Sacchetto Salvamerenda	30,500 doggy bags distributed to 100 schools, reaching 57,000 children - Reduced waste associated with school meals	- Educational workshop to encourage buy-in from companies and schools to provide doggy bags - Awareness of the environmental benefits of doggy bags
2	Establish vegan Community Fridges, where surplus produce and plant-based produce can be shared throughout the community.	Chilis on Wheels Mentorship Programme	- Over 100,000 plant-based meals distributed over 7 years through community fridges - Increase in consumption of plant-based food	- Engagement from the community and awareness of the pantry/fridge - Infrastructure to host the fridge or pantry

The research has uncovered examples of interventions that have used enablement as a strategy for changing behaviour. Enablement can be used in combination with some of the other behaviour change strategies discussed previously in this section, including as part of cooking classes and workshops. Here we outline our recommendations for interventions which solely draw on enablement as a behaviour change strategy, specifically the provision of doggy bags in food businesses for food waste prevention and the creation of vegan community fridges and pantries.

Doggy bags

The provision of doggy bags is a recurring activity among the interventions mapped and is the subject of numerous academic studies, including several conducted by Dr Erica van Herpen. Dr van Herpen emphasised the importance of introducing positive messaging around the provision of doggy bags to restaurant customers to mitigate any negative sentiments that may result from consumers being forced to take any leftover food home with them. Conducted via a series of five experiments in different target communities, her research found that an opt-out strategy increased the uptake of doggy bags by 74% compared to 27% for an opt-in strategy.⁹¹ This dynamic should be taken into account when introducing any similar scheme at community restaurants and cafes. There is also the possibility to extend the distribution of doggy bags to schools and other educational centres to reduce food waste associated with school meals.

Case Study: *Sacchetto Salvamerenda*

The ‘*Sacchetto Salvamerenda*’ is an intervention implemented by Milano Ristorazione and funded by the city council that provides free doggy bags to schoolchildren across the city. The doggy bag is washable, reusable and recyclable, and it intended to store any food or snacks that are not consumed during the school lunch. The doggy bag is also regarded as an educational tool to teach children about the importance of not wasting food. The intervention was first launched in 2014 and been expanded to over 100 schools

in Milan. In the school year 2022/23, over 30,500 doggy bags were distributed to schoolchildren, successfully reducing the amount of food waste in the participating schools.⁹²

Community fridges and pantries

Community fridges and pantries are both community-sharing activities that aim to increase access to plant-based foods for communities who typically have lower levels of access. These activities aim to prevent food waste by enabling community members to redistribute any food that they do not need, while promoting low-carbon consumption by requiring donated food to be plant-based. In implementing these activities, the proper infrastructure and community buy-in and engagement is necessary for the community fridge or pantry to be put in place, raising the cost of the intervention. It is recommended that an overarching communication campaign on the importance of the intervention is implemented to raise awareness in order to increase community engagement and encourage locals to make use of the fridge or pantry.

Case Study: *Chilis on Wheels Vegan Community Fridges and Pantries*

Chilis on Wheels provides vegan community fridges and micro-pantries to facilitate low-cost or free access to plant-based foods. The organisation has so far provided over 100,000 meals throughout its seven years. These fridge and pantries are strategically set up in communities who are unable to afford the vegan community fridge in New York City, Overthrow Fridges, which aims to overcome access and affordability issues associated with plant-based foods in the Bronx, New York City. The organisation also provides food demonstrations, which teaches the local community how to utilise the food that they receive.⁹³

5.4. Incentivisation

Incentivisation refers to actions to “chang[e] the attractiveness of a behaviour by creating the expectation of a desired outcome or avoidance of an undesired one.”⁹⁴

Relevant Activities

#	Recommendation	Case Study from the Evaluation	Outcomes and Impacts	Key Conditions for Success (Considerations and Barriers)
1	Vouchers for purchasing more fruits and vegetables along with meal preparation advice.	- Rose Vouchers for Fruit and Veg - Connecting with the Voluntary and Community Sector (VCS) to increase Healthy Start uptake	64% of children eating 5 a day; 55% of parents eating 5 a day; Transformation of families' diet to be more plant-based when using the vouchers and access to recipes and cooking classes - Increased awareness of programmes among frontline workers and in the community, particularly when materials are translated into multiple languages	- Financial costs to sustain vouchers - Existing voucher programmes within the community - Retail ability to engage with consumers to increase registration - Education materials to help sustain the transformation to low-carbon diets

Vouchers

The research uncovered examples of interventions that use financial incentives in an attempt to change behaviour and we found evidence that the provision of discounts or vouchers can incentivise communities to purchase more plant-based foods they would either not normally be able to afford or access. Key to the success of such an intervention is the ability to communicate with community members to increase their knowledge of the programme and register them. The "Connecting with the VCS (Voluntary and Community Sector) to increase Healthy Start uptake" intervention illustrated that retailers were a key access point to register community members into the Healthy Start programme. If there is already a presence of the Healthy Start programme or Rose Vouchers within the community, ReLondon should then focus on registering community members into these programmes. Key activities for successful registrations to these programmes include translated communication materials (posters, leaflets, etc.) present in the councils and local retailers, and training frontline workers to promote the programme as well.

The main disadvantage to these projects is the financial buy-in that is required to sustain them. However, as both the Healthy Start programme and the Rose Vouchers are implemented in London, there appears to be local government and local authority level buy-in that the ReLondon project may be able to capitalise on in order to compensate for the financial burden.

Case Study: *Connecting with the VCS (Voluntary and Community Sector) to increase Healthy Start uptake*

The intervention's primary aim was to increase the uptake of Healthy Start vouchers by eligible families with an operating budget of £5,000. The intervention was performed through a series of capacity building and promotion activities covering developing information sheets, posters, leaflets, all translated into the 4 main languages spoken besides English. The intervention raised awareness amongst frontline workers through webinars, short workshops and training, including a voluntary sector partner - Bridge Renewal Trust (BRT). BRT were commissioned to recruit volunteers to engage their local retailers and encourage them to sign up to the Healthy Start scheme. Volunteers were trained by the Public Health team on Healthy Start and how to engage retailers. Retailers were targeted in areas of high deprivation and mapped to local food banks who can direct families to the retailers for their fruit, veg, milk and pulses.

"Connecting with the VCS to increase Healthy Start uptake" implemented within the London Borough of Haringey London achieved:

- 1) 277 beneficiaries signed up to the Healthy Start voucher scheme in Haringey.
- 2) Increased awareness among frontline workers – via webinars, creating and sharing an information sheet, short training sessions to council teams, Children's centres, food bank coordinators, early help teams, DWP, connected communities.
- 3) Increased awareness within the community - via posters, leaflets, promotion in the Haringey People magazine, social media and website as well as translated information in four main languages spoken.
- 4) Adapted the plan for engaging retailers through joint work with partners within the council and key voluntary partner agency.

The intervention created an opportunity to raise awareness with partners and to train community volunteers to engage with food retailers and increase knowledge on food insecurity issues and healthy food choices.

5.5. Modelling

Modelling is defined as “showing examples of the behaviour for people to imitate.”⁹⁵

Relevant Activities

#	Recommendation	Case Study from the Evaluation	Outcomes and Impacts	Key Conditions for Success (Considerations and Barriers)
1	Mentorship programme to help households understand how to incorporate plant-based foods into their lifestyles.	Chilis on Wheels Mentorship Programme	Tailored mentorship programmes to the socio-economic and cultural context of the population yield greater low-carbon diet transformation	- Recruitment of volunteers - Developing a mentorship pairing system and working with a community organisation - Gathering toolkits and resources to be

Mentorship programme

Modelling interventions often go hand-in-hand with education activities, as they require the participant to be taught and guided to achieve the desired behaviour change, based on an example. Based on the research we carried out, we identified one intervention implemented in New York City which we believe is replicable in London and that we are recommending ReLondon should implement in its circular food community project: a mentorship programme.

Case Study: *Chilis on Wheels*

The LIVE (Low-Income Vegan Education) Mentorship Program by Chilis on Wheels is a programme based in New York City. The programme takes cultural and socioeconomic differences into consideration to promote a transition into veganism. The intervention encompasses a 21-day programme, where participants receive daily informative emails, a full cost-effective meal plan, and will be matched with a mentor of a similar background to assist them on their journey into a more plant-based diet. The aim of the intervention is to equip attendees with the tools and resources, through a mentor, to transition to a more plant-based diet that is reflective of their cultural and socioeconomic background. Another activity that is completed as part of the Chili on Wheels initiative are food demos, that help the community understand how to utilise the foods they buy. The information of the behaviour change is evidenced through social media posts of beneficiaries who transformed their diets.

Mentoring involves some mentors, often volunteers, developing relationships and supporting a participant (mentee) on a particular subject matter. These programmes aim to guide mentees’ self-development and learning.⁹⁶ An important consideration for the team with a mentorship programme is to develop the infrastructure and recruit volunteers for the intervention. Regarding budget, the most cost-inducing components of these activities are the required logistics for establishing the mentorship programme. These include:

- Volunteer or employee to serve as a coordinator for the intervention.
- Various volunteers to serve as mentors to match with similar cultural and socioeconomic backgrounds to the participants.
- Website or database to pair the participants with a mentor.
- Development of meal plans.

ReLondon can work with established organisations within the community to implement the programme to engage with volunteers and community members. Further, in distributing meal plans and tool kits, resources from additional organisations such as Chilis on Wheels are available to help kickstart the initiative. Once the programme is developed, the maintenance costs can be reduced through engagement with free resources and volunteers.

5.6. Environmental restructuring

Environmental restructuring involves “constraining or promoting behaviour by shaping the physical or social environment.”⁹⁷

Relevant Activities

#	Recommendation	Case Study from the Evaluation	Outcomes and Impacts	Key Conditions for Success (Considerations and Barriers)
1	Menu restructuring by increasing the number of days or options with vegetarian defaults in schools, canteens and restaurants to increase the proportion on plant-based dishes.	- Addressing food insecurity - Meat-free Thursdays yield multiple benefits - Encouraging sustainable food consumption through nudges: An experiment with menu labels - NYC – Planet-Based Hospitals - Veg on the menu? - Torres Vedras Sustainable School Food Programme - Investigating goal conflicts in menu planning in Swedish school catering on the pathway to sustainable development - WRI Playbook	- Sales increased: fruit +18%, natural nuts +11%, chilled foods + 8% - Vegetarians/vegans increased from 5-8%; 38% eat vegetarian 1 day a week - Sales of sustainable starters increased by 14.1% 50-60% of patients kept the plant-based default option - Reduction of 204kg CO2e for every 100 veg burgers sold; 14% increasing intake of vegetarian food 4,700 low-carbon meals for schoolchildren every day - Vegetarian options generated less waste than unpopular meal - Shortlist of most impactful interventions according to impact and feasibility score	- Education presentations to receive buy-in from the governing bodies and managers within schools and food businesses - Training of kitchen staff - Developing meal plans that abide by the standards and contexts of the canteens - Consideration of the most popular meals

Environmental restructuring to reduce food waste

When it comes to food waste prevention, our research suggests that environmental restructuring activities to control portion sizes are very effective at reducing plate waste generated by consumers in restaurants and canteens. In the food preparation phase, employing portion control techniques in the plating of food successfully reduces plate waste by reducing the amount of food prepared and served in the first place. There is also evidence to suggest that encouraging diners to take less at buffets and to return for more food as needed through signage also reduces plate waste.

Environmental restructuring to reduce meat consumption and increase consumption of plant-forward foods

Environmental restructuring activities can also be applied to achieve low-carbon consumption outcomes, employing subtle nudges to encourage consumers to choose plant-based options rather than meat.

Altering the choice architecture by restructuring menus offers a low-cost solution that can be implemented at multiple food touchpoints, including food businesses, workplace canteens and schools. Menu restructuring activities in schools are often employed in tandem with education and training activities to help children put their lessons towards reducing food waste or increasing consumption of plant-based meals into practice. In restaurants, menu restructuring activities include offering default vegan or vegetarian options or low-emissions labelling, but without the communication or education materials sometimes seen in schools. WRI's playbook offers a selection of evidence-based strategies for changing the choice architecture in food service establishments, as well as strategies that would fall under other COM-B intervention types.

A key condition for success is staff training on how to alter portions and on how to prepare nutritious meals as previously discussed. Providing a toolkit, such as the WRI Playbook, can be used to guide food businesses and provide them with an overview of interventions for them to decide and understand which activities they should implement to promote low-carbon consumption and prevent food waste generation. Thus, combining intervention archetypes by providing educational resources, maximises the effectiveness of these interventions. ReLondon needs to ensure that it works closely with the staff members within restaurants and canteens to co-create effective changes to the menus and meal preparation.

Case Study: Investigating goal conflicts in menu planning in Swedish school catering on the pathway to sustainable development

Through a study by the Swedish University of Agricultural Sciences in Uppsala, Sweden, researchers aimed to identify the most popular and unpopular lunch meals, taking into account plant-based and meat meals and food waste quantification data from lunch menus at school canteens. The overall aim of the intervention was to gain knowledge on how lunch menus could be adapted for increased sustainability. The results showed that popular school meals and vegetarian options generated less waste than unpopular meals with the meat alternative.

Thus, school-catering units should stop serving unpopular meals and shift their focus to serving popular nutritious meals, including popular plant-based options, as part of efforts to make school meal schemes more sustainable. Furthermore, the staff tried to encourage pupils to consider their portion sizes by encouraging them to take smaller portions first and come back for seconds later. Another school had a separate line for second servings to reduce queuing time, thereby minimising the risk of children serving themselves too much on the first occasion, as they knew that they would not have time to come back for seconds. Another method used for mitigating waste was to use the leftovers as ingredients for other meals on the following day. A third strategy was to change the amount of food prepared, with some kitchens reducing the amount of food they prepared on days when unpopular dishes were served. To ensure that the pupils had enough food to eat on those days, kitchen staff increased the amount of side dishes, such as baked bread.

5.7. Persuasion

Persuasion is defined as “changing the way people feel about a behaviour by generating cognitive dissonance and showing how changing behaviour can reduce it.”⁹⁸

Relevant Activities

#	Recommendation	Case Study from the Evaluation	Outcomes and Impacts	Key Conditions for Success (Considerations and Barriers)
1	Distribution of ‘use up’ labels and ‘eat first’ stickers, including at supermarkets and community centres.	Convenient tools and social norms	• Reduced food waste by 39% and 23%. • Most effective when combined with motivational messaging.	• Include positive motivational messaging to improve effectiveness. • Successful when combined with a package of waste reduction measures.

Labels and stickers

Persuasion interventions can be used in tandem with other activities in order to encourage community members to engage with the intervention and ultimately change their behaviour. Educational campaigns are a general example of this type of intervention. However, in the context of food waste prevention, our research uncovered examples of persuasion being utilised through the distribution of ‘use up’ labels or ‘eat first’ stickers as reminders to consume leftovers and other food close to their expiry date. These types of interventions have been shown to be effective through both the literature review and the mapping of interventions, with numerous research conducted in this space. For instance, Dr Erica van Herpen noted in her interview that several interventions using stickers as reminders to consume food or provide information on where best to store food have been successful in households in Germany and Australia. Moreover, these types of stickers have also been successfully used in student dormitories in the Netherlands as communication tools for students to tell their housemates which products in the fridge they could share or were leftovers.⁹⁹ The advantage of this type of food waste prevention measure is that it is very cheap and easy to implement. Stickers or labels can be distributed at a number of different touchpoints in the community, including at local supermarkets and food businesses, or in universities as done in the Netherlands. They can also be easily combined with other educational and training materials.

Case Study: *Convenient tools and social norms – Measuring the effectiveness of an intervention to reduce household food waste*

A research project by Wageningen University in the Netherlands tested the effectiveness of a tool package that combined several waste-reduction tools, such as measuring cups, stickers, leaflets and recipes, combined with motivational messaging around food waste prevention. A total of 466 participants in the Netherlands were randomly selected online to participate in the study across two separate trials and keep track of food waste in their respective households. The first experiment took place between November and December 2020 and the second between March and May 2021. The results found that the use of waste reduction tools, including stickers, combined with positive messaging was effective in changing food management behaviours, with self-reported food waste decreasing by 39% in the first trial and 23% in the second trial.¹⁰⁰

Campaigns

As previously noted, the implementation of interventions for food waste prevention and low-carbon diets will require community buy-in and engagement in order to be most successful. In order to maximise awareness of and participation in these interventions within the target community, it is recommended that the ReLondon team look to develop an overarching communications campaign to provide information on the interventions being implemented and opportunities for participation across food touchpoints. Such a campaign may employ elements of persuasion, in tandem with educational materials, social norming and nudging tactics, to encourage a change of behaviour within the community.

6. Conclusion

Central to ReLondon's vision is the development of a replicable model for a circular food community within London. This ambitious initiative seeks to embed interventions that not only decrease residents' food waste but also encourage the adoption of low-carbon dietary habits. To inform the implementation of a circular food neighbourhood in London, a comprehensive global research and analysis that identified and benchmarked interventions from across the globe was conducted to understand which interventions have successfully curbed household food waste and promoted the consumption of low-carbon foods.

Based on this analysis, and the evaluation of interventions based on the feasibility, replicability and scalability in the London context, a number of key recommendations have been made. The interventions recommended to be applied in London include a food waste measurement tool, a community garden and community fridges, provision of doggy bags, vouchers and more, spanning a range of COM-B behaviour change archetypes, namely education, training, enablement, modelling, persuasion, incentivisation and environmental restructuring. These interventions can have considerable overlap, with the opportunity of combining enablement or persuasion measures, such as measuring cups and stickers for food waste, with education or training programmes, such as cooking classes. There is also the possibility to address both food waste and low-carbon consumption in tandem through a single intervention, for example through distributing recipe books that share low-carbon recipes while also promoting waste reduction strategies.

The mapping has shown that it is common for interventions to be implemented by a coalition of different stakeholders, such as local authorities together with NGOs and research institutes, as is also reflected in the case of ReLondon's project. The creation of a broader coalition of implementing partners can be beneficial in providing access to greater levels of funding and capacity for project implementation, thereby expanding the range of activities that can be undertaken within an intervention.

7. Limitations and gaps to the research

There are a number of gaps and limitations to be considered within this research. Firstly, within the methodology, interviews were conducted on a supplemental basis with two academics and one professional. A comprehensive understanding of the barriers and successes for interventions, and the acquisition of

further knowledge on additional interventions, was limited. Secondly, it is important to note that there was a significant lack of available data on the size of project budgets, as this information is often not made public. This prevented a complete analysis of the correlation between budget size, intervention activities and relative success, though it is reasonable to assume that projects with more sizeable budgets may have been more successful in the longer term. Further research is needed in this area to better understand the link between intervention activities implemented and relative budget size. An additional analysis and further research would also be beneficial to review the relationship between interventions and their activities to understand which components need to be in place for the interventions to work most effectively.

The overall availability and data quality for the interventions was limited due to the inadequate use of monitoring and evaluating for impact data across the interventions, impacting the ability to review and evaluate the success of an intervention to change behaviour comprehensively. Finally, the research did not review additional topics that may be relevant to ReLondon, for instance, a consideration of the restriction of ultra-processed foods on the promotion of low-carbon consumption.

8. Acknowledgements

ReLondon would like to thank the team at Shared Planet for their advice, analysis and collaboration on this project, and to Dr Erica van Herpen, Professor Peter Scarborough and Mr. Lars Magnus Ottersen who contributed their valuable insights and time through the interview process.

9. Annex

Annex A: Analytical Framework

Component	Criteria	Overview
Overview of the Intervention	Intervention	The title of the intervention hyperlinked to an official website describing the intervention.
	Description	A short paragraph that describes an overview of the intervention and its activities
	Objectives	A short paragraph on the activities aims and goals.
	Contact Information	Please input the information needed to contact the project, if needed. This includes a contact name, email and phone number.
	Location	The country, city/town and neighbourhood in which the intervention is implemented. This should be as specific as possible based on the actual boundaries of the intervention.
	Region:	The sub-region in the world that the project is located in ¹⁰¹ Northern Africa; Sub-Saharan Africa; North America; Latin America and the Caribbean; Central Asia; Eastern Asia; Western Asia; Southern Asia; South-eastern Asia; Eastern Europe; Northern Europe; Southern Europe; Western Europe; Oceania
	Target Community Size	The size of the community that is being targeted by the intervention is measured by number of people.
	Facilitating organisation(s)	The organisation or other entity that is implementing the intervention, hyperlinked to their main website page.
	Type of Organisation	The type of organisation that is implementing the intervention, according to the below categories: National Government; Local Government; Local Authority; NGO Private Sector; International Organisation; Community Groups (e.g., schools/churches/community groups), Academic; Other *If there are multiple implementing organisations, choose the lead organisation's classification for this column and include the other organisations' types in the additional notes column. ** If other, please indicate the type in the additional notes column
	Funding Mechanism Organisations ^{102 103}	Public: Funding that is provided by the government for intervention. Private: Funding provided by the private sector for the intervention. Blended: A combination of public and private finance. Philanthropy: Funded by foundations, philanthropic trusts, and individual donors. Other: Please indicate the type in the additional notes section.
	Budget Amount	The exact amount in GBP currency for the intervention's budget.
	Budget Classification ¹⁰⁴	Small: £0 - £10,000 Medium: £10,000 - £50,000 Large: £50,000
	Project Timeline	The length of the intervention, to the nearest month and year. (i.e., January 2023 – January 2024).
	Intervention Archetype	To be decided based upon research.
	Stand-alone vs. Broad Programme	Identifying whether the intervention was a stand-alone intervention or part of a broader programme and, if so, to provide details of the broader programme.
Intervention Activities and Impact	Type of Intervention ¹⁰⁵	Based on the COM-B behaviour change wheel, the categories of intervention type are: Education; Persuasion; Incentivisation; Coercion; Training; Enablement; Modelling; Environmental Restructuring; Restriction
	Food Touchpoint	The places in a community in which people make a food choosing or food wasting decision. This is not about the location in which the intervention is physically taking place, but rather the setting in which the behaviour change that is targeted would occur e.g. home, restaurant, school, shop etc.

	Type of Behaviour Change (Target Behaviour)	Indicating both the phase and the specific behaviour the intervention is targeting. This is based on the phases and interventions that the ReLondon team determined to be most relevant. For food waste: • Planning: Shopping planning (checking stock, list); Meal planning • Buying: Little impulse buying; Fixed shopping routines; Buying frozen or tinned • Storing: Storing food for limited time; Storing food in adequate packaging/wrapping; Storing food under optimal temperature; Use of freezer to extend storage life • Preparing: Portioning foods; Creative cooking; Preparing food that needs to be eaten first • Consumption: Consume leftovers/ take leftovers home with you; Correct use of date labels & one's senses; Prevention from becoming waste For low-carbon diets: • Planning: Introduce a plant-based day(s) a week; Plan to eat meat only at certain times e.g. after 6pm • Buying: Buy plant-based proteins instead of meat; Choose plant-based dishes in restaurants/when ordering takeaway; Experiment with cultural foods that have lots of veggie/vegan options • Preparing: Substitute meat for plant-based protein in dishes; Creative and delicious veggie/vegan cooking
	Stage of Behaviour Change	The stage of behaviour change based on the transtheoretical model of behaviour change.¹⁰⁶ • Precontemplation; Contemplation; Preparation; Action; Maintenance; Termination
	Evidence and Description of Behaviour Change	A Binary yes/no categorisation of evidence of behaviour change as a result of the intervention. If there was evidence, a description of the evidence of a change in behaviour has taken place as a result of the intervention is provided
	Evidence and Description of Environmental Impact	Binary yes/no categorisation of evidence of environmental impact as a result of the intervention. If there was evidence, a description of the evidence that the intervention has had an impact on the environment
Contextual Analysis	Description of the Demographic Target of the Interventions	Binary yes/no categorisation of a particular demographic that was targeted within the interventions. The demographics of the community that has been targeted by the intervention, e.g. age, gender, ethnicity, sexual orientation, religion, wealth, social status, migration status, etc.
	Commonwealth Country ¹⁰⁷	Binary yes/no categorisation of if the country of implementation is/was a commonwealth country.
	Population Density	The density of the population within the intervention's location. This is calculated based on the number of people per square kilometre.
	Climate Community ¹⁰⁸ Risk	A description of how the target community falls under the categorisation of climate risk. Climate risk communities are considered to be those communities disproportionately affected by climate change. Climate risk considers a community's potential exposure to climate impacts (such as flooding or heatwaves) and their ability to cope with or respond to the climate impacts and/or extreme climate events. High climate risk typically coincides with areas of income and health inequalities, and can be linked to factors such as income, age, cultural demographics. This indicator will consider exposure to the impacts of climate change as defined by the United Nations.¹⁰⁹ These are: rising temperatures and heatwaves, severe storms and extreme weather events, increased drought, rising sea levels, loss of species, lack of food, elevated health risks, poverty and displacement. The indicator will also capture the presence or absence of local and/or national strategies to improve the ability to cope with or respond to climate impacts.
	Foodways	Foodways are all of the traditional activities, attitudes, beliefs and behaviours associated with food within the project's community. Foodways may include customs of food

		production, preservation, preparation, presentation, gathering, marketing (both buying and selling), uses of food products other than for eating and food folklore. ^{110 111}
		This column will describe the social norms, practices and culture that exists in the target community around food waste and low-carbon diets, to ensure that it is relevant to the project's scope.
	Food Communications	The external communication methods that exist around food and how it is presented in the media. This also considers the role of any food redistribution apps, social media campaigns and news coverage that may influence foodways within the community. The contexts of the awareness for food waste generation and low-carbon based on communication.
	Food Regulatory Environment	The presence of laws and administrative rules that regulate all aspects of the supply chain including supply, production, and distribution of food products to maintain food safety to prevent food waste generation or promote low-carbon diets within the country and city of the intervention.
	Income Inequality¹¹²	The extent to which income is evenly distributed amongst households and individuals within the target community. This is measured according to the Gini coefficient, which varies between 0 and 100%, whereby 0 represents perfect income equality and 100% represents perfect income inequality.
	Average Price of Food Basket^{113 114}	The total cost of an average basket of typically purchased food and drink items for an adult within the targeted country. To be measured by the World Bank's Food Prices for Nutrition database and its cost of healthy diet indicator for the purchasing the least expensive locally available foods, for a representative person within energy balance at 2330 kcal/day.
Additional Information		Information that is relevant to the intervention but is not captured in the columns.

Annex B: Evaluation Framework for the Contextual Analysis

Contextual Analysis of the Interventions			
Category	Area	Definition	
Culture	Demographic Composition	The demographics of the community that has been targeted by the intervention, e.g. age, gender, ethnicity, sexual orientation, religion, wealth, social status, migration status, etc.	Diversity of age, gender, religion, ethnicity, sexual orientation, etc. Target audiences will be considered multi-cultural if there are different nationalities and cultures normally present in the community
	Region	Identification of geographic qualities that could result in cultural similarities with the UK	Geographic region in which the intervention is located, according to UN definition of geographic regions ⁵
	Population Density ¹	The number of people per square kilometre within the city	3,500 -7,500: Small 7,501 – 10,000: Medium 10,001 – 15,000: Large 15,001+: Very Large
	Climate Risk Community	Climate risk considers a community's potential exposure to climate impacts (such as flooding or heatwaves) and their ability to cope with climate impacts and/or extreme climate events	Exposure to impacts of climate change: ⁴ rising temperatures, heatwaves, extreme weather, drought, rising sea levels, loss of species, lack of food, health risks, poverty and displacement. Recognition by the local government of a climate emergency within the community.
	Food communications	The external communication methods that exist around food and how it is presented in the media within the project's context	Presence of e.g. food redistribution applications, display of calories on menus, social media campaigns to promote healthy diets, etc.
	Foodways	The traditional activities, attitudes, beliefs and behaviours associated with food within the project's community	Presence of e.g. community gardens and home-grown food, meals centred around family gatherings, diverse cuisines, etc.

Administrative	Food Regulatory Environment	The type of laws that exist on a country level, that affect household touchpoints and behaviours	Food Safety & Quality Legislation
			Preventing Food Waste Generation guidelines
			Food Donation Legislation
			Food Labelling Legislation
			Dietary guidelines
Economic	Income inequality	The extent to which income is evenly distributed amongst households and individuals within the target community	Gini Coefficient for income inequality
	Average Price of Food Basket	The total cost of an average basket of typically purchased food and drink items for an adult within the targeted country	Cost of healthy diet indicator for the purchasing the least expensive locally available foods, for a representative person within energy balance at 2330 kcal/day

Annex C: Review of the evaluation framework for analysing the interventions according to the project

Intervention-Specific Analysis			
Category	Area	Definition	Indicator
Project Information	Implementing Organisation	The type of organisation that is implementing the intervention.	National government, local government, local authority, NGO, private sector, international organisation, community groups, other.
	Size of Budget	Classification of the budget according to size.	£0-£10,000: Small £10,000-£50,000: Medium £50,000+: Large
	Project Timeline	The length of the intervention.	Measured to the nearest month and year.
	Food Touchpoint	The places in a community in which people make a food choosing or food wasting decision.	May include households, schools, restaurants, supermarkets, community centre, etc.
	Type of Behaviour Change	The phase and specific behaviour that the intervention is targeting.	Planning, buying, storing, preparing, consumption, and preventing from becoming waste.
Intervention Success (The indicators for project success will evolve throughout the research)			
Area		Indicator	
Environmental Impact		Avoided Emissions (GHG)	
		Dietary Change Purchase of meat items and plant-based protein items per household	
		Food Waste Prevented (KG)	
Behaviour Change		The extent of the behaviour change. - Food waste practices changed after the intervention - Households reporting that they have changed/have intention to change meat consumption or plant-based protein consumption	

Annex D: Review of the London Project Context

ReLondon is working to develop a replicable model for a circular food community in London, embedding interventions to increase residents' consumption of low-carbon food and reduce food waste. ReLondon will deliver the project in collaboration with a borough partner and community partner. As its borough partner, ReLondon has selected a London borough that has declared a climate emergency and that has made a commitment to deliver change in food systems and circularity at a community level. The council in question has made the following commitments in relation to food systems:

- Maximise food waste recycling and cut food waste by 50% per person by 2030.
- Engage with schools, residents and businesses, identifying opportunities to improve education to avoid food waste.
- Develop a Community Food Growing Strategy.

A number of activities have been proposed as part of the project, including surplus food collection from food markets, supermarkets and food retailers, a food surplus café, and training for food businesses in techniques for reducing food waste, community fridges, community growing schemes, school education programmes and menu changes, and a new food waste system.

The anchor institutions that could act as food touchpoints for these interventions consist of a variety of food businesses, such as manufacturers, takeaways, cafes, restaurants, community food providers and retailers, primary and secondary schools, and religious centres.

With regard to demographics, the chosen borough partner has a multi-cultural population comprised of a mixture of White British, Non-White, and Other White. The area is also characterised by stark inequalities, with extreme wealth and poverty existing in close proximity. Much of the community consists of high-density housing estates, with more than half of residents living in socially rented housing. In addition, 41% of children in their last year of primary school living in this ward are considered to be obese, which is higher than the national average of 37%.

Climate risk

The emissions associated with the existing global food system are accelerating climate change and compromising food security, with approximately 820 million people worldwide currently at risk of hunger and malnutrition.¹¹⁵ Given this global challenge, ReLondon has chosen to implement its project in a London community that is considered to be a 'climate risk community.' Climate risk considers a community's potential exposure to climate impacts, such as flooding or heatwaves, and its ability to cope with climate impacts or extreme climate events. In this way, it also takes into account the social and economic inequalities in a community that may hamper the ability to respond to climate change.

According to official reports from the Mayor of London¹¹⁶ and the City of London,¹¹⁷ the main climate risks for London are flooding and rising sea levels, heatwaves and rising temperatures, and droughts and water stress. These also generate further vulnerabilities related to biodiversity loss, increased risk of pests and diseases, and can have a negative impact on trade, food and infrastructure. The Mayor of London has created a climate risk map to identify areas within London that are most exposed to climate impacts with high concentrations of vulnerable populations – i.e. climate risk communities.¹¹⁸ The map incorporates three criteria: overall climate risk, heat risk, and flood risk.

In the chosen borough, the main climate hazards are high temperatures and surface water flooding. It is considered a climate risk community because of the high levels of deprivation, which result in a reduced

ability of residents to prepare for, respond to and recover from climate impacts. The council is currently working to develop a Climate Adaptation Strategy and Action Plan to build climate resilience.

Food Regulatory Environment

The research considers the regulatory environment as the policies and government support serve as mechanisms that assist interventions and improve general awareness amongst the population towards food waste and low-carbon diets.

The UK food regulatory environment is characterised by legislation around food safety and quality, food donation, and food labelling. The relevant pieces of legislation include:^{119 120}

- Food Standards Act 1999
- Food Safety Act 1990
- Food Safety Order 1991
- General Food Law
- Food Information Regulation
- The London Food Strategy

However, unlike some other countries in which interventions were analysed, such as France and Canada, the UK lacks formal regulations or guidelines around preventing food waste. It also does not have explicit dietary guidelines, as exist in Japan, the US, and Norway.

Annex E: Interview Transcript – Dr Erica van Herpen

Rachel Shairp

Hi, Erica. Hi. Good to see you. There you are. Hello. Can you see us? I'm sorry that there are so many of us on the call. I'll do a quick intro. I'll do some intros. But, yeah, I did seem a bit bad that there are four of us.

Herpen, Erica van

Only have a half hour because at 03:00 I have to share another meeting.

Rachel Shairp

That's very clear. And we'll be finished at 02:00 exactly. We'll. Keep it very efficient and very tight if we can. So, Erica, thank you so much for your time. We really appreciate it. Today. I'll do quick intros, then I'll. Set the scene, and then we'll dive into some questions for you because we're really keen to hear from you, and we know that you have so much knowledge on this. We're really excited to talk. To you. So myself and Sarah are from an organization called ReLondon, which. Is essentially local government in London. So we're a partnership between the Mayor of London and. London's boroughs, London's local authorities and our remit is on the circular economy. Reducing waste, increasing recycling and accelerating London's transition as a city to a more circular city. We're working with Alessandra and Arielle at the moment. Who were the other two ladies on the call. There are some consultants from an organization called Shared Planet, and they're helping us with a piece of research that we're doing in London. At the moment. So they're on the call because they're helping us with this. Piece of research. So I hope that all makes sense in terms of who we are and our roles. So. Sarah and I are very excited because. We have started at the beginning of this year what we consider quite an innovative project in London. To develop a replicable model. For a circular food community in London. In quite a small community, 5000 households and the idea in that community over a six-month period is to embed a package of different interventions. And they are not yet agreed on, but a package of different interventions to do two things. One to increase. The resident's consumption of low-carbon food in that community. And the second thing, to reduce their food waste. So the idea is to implement a package of interventions that achieve those two outcomes. And the research we're doing at the moment is a global mapping of interventions that have been undertaken. By cities. And places and academics around the world. To achieve those two goals. We want to learn from what's been done and then look at

what we might be able to replicate in London in our community context. So that's the context for the core. I hope that makes sense. Would you like to quickly introduce yourself and how your work relates to food. I know it's more food waste related, but either food waste or low-carbon consumption.

Herpen, Erica van

Yeah, it's more food waste related, but I'm in a group where the low-carbon consumption is very prominent as well, so. I'm very well aware of that. My name is Erica van Herpen. I'm an associate professor at Wageningen University. And my research is mostly focused indeed on food waste production, the household food waste reduction. So I've done some research on. Drivers of food waste done some research on how to measure household food waste in different ways. So I have experience. With photograph coding. With waste audit. With surveys. All sorts of different kitchen bins, all sorts of different ways to measure food waste. I've also lately been knowing more work on interventions and testing different types of interventions to reduce household food waste. I also have been a part of the EU. Expert forum. On. Household food waste, so. There. We also. Gave an overview. Of compendium. On many different types of food waste interventions that we as experts were aware of and. We tried to sort of summarize and give an overview of all sorts of different types. Of interventions out there. We thought in the beginning that we would get about 30, maybe if we were lucky, but we got more than 70. Different interventions that we were able to combine in.

Rachel Shairp

Is that a publicly available report, Erica? Could you share the link with us?

Herpen, Erica van

Yes. So, over 70 interventions. Okay, fantastic. Yeah. Not all of them were tested with quantifiable data, I have to say. But we're finding. Them. Is on here as well. Yeah, this is the link. I'll put it in the chat. Listening to you. Other things that I might just as well say that pop up for me like. Are you aware of that? Rap has done some work in London in the past on reducing food. Waste. Probably aware of that. Yeah, quite well. LinkedIn to rap? Yeah, I think so. Foodwin. Has done some things in hint. I know that we also looked at that. At some point in Ghent. What was the organization? Food. Okay. And they also tried to do something with a specific neighbourhood and trying to get them to make less food.

Rachel Shairp

Okay, that's very interesting because that sounds very applicable. Those resources that you've just shared with us are incredibly useful, so thank you. Can I. Ask you a few questions, just drawing on your experience, and they're going to be quite big, broad questions, so feel free to respond to them how you like, but based on your knowledge,

Rachel Shairp

What interventions? What would be your advice to a project? What would be your advice to us, given that we're implementing this. What interventions are you aware of? That are evidenced. That have successfully led to a reduction in household food waste.

Herpen, Erica van

The overview of interventions that we made is that there are quite. A few quite different interventions that seem to be able to reduce food waste anywhere between 20 and 35% or sometimes 40. The ones that sort of stood out as being very impactful were also ones that were very expensive. So there is a sort of budget. How do you want to do it so. The most impactful interventions that I have seen are the ones where you give individual one on one coaching to people. But that is quite time intensive. Quite. You need a lot of research sources. So what people have suggesting sometimes is to train a few. People who then can spread the knowledge and then sort of get a movement started. So. That is one way of doing it, but it is quite an effortful way of doing it. I've also seen several sort of small tools and things. Having effects. So then you can think of, like, in the Netherlands, we have the Netherlands nutrition Centre that has this tool package that we tested not too long ago also. Are you aware of that or not? Otherwise, okay. I'll put a link to the paper. On the chat. While I continue talking a little bit. So what we did in that study is we looked at a set of different tools and how much effect that had. But we also have somewhere in the appendix a table with how often people use the tools and how they evaluated it. Especially look at how often they use it because some of the tools were like, hardly anybody used it. So those I wouldn't put in. Some other ones were quite helpful. Like, for instance, there's a measurement cup. That uses. Portion sizes rather than. Grams and things like that. So you can say, okay, one person of macaroni. How much? Is that actually or two persons of rice? How much do I need? And that seemed to be. Quite helpful. They also had some stickers where I have the impression that the stickers. Might not be so much about what information is on it, but just a reminder might work.

Rachel Shairp

So, like, use up soon. Stickers in the fridge? Is that what you mean?

Herpen, Erica van

No. That isn't the other thing I wanted to say. The stickers that were. There were stickers. They put in the fridge, but then in the inside of the door, for instance, and that says, these products go into the fridge and these ones do not. And you had one for the freezer. That had some information about how long can you keep products in the freezer so. It was quite information lens in that sense, but also worked, I think, as a reminder, the one that you're talking about. Use it. Uptake. That's one that we're currently doing a study on, but. I don't have the outcomes yet. But seemed quite promising in Australia. And I know that the Netherlands Nutrition centre now has it because we're testing it there, but also Germany was talking about it. The big advantage of that one is that it's extremely cheap. And it seems to work in multiple ways. So we've done one smaller study now here. Also. In student housing, and it seems to. Work. There are effects because you can indicate which products you need to use. Up fast, and that's a reminder for yourself. It can also just really. Be very visible in the fridge and just be a reminder in that way, but it's also the communication tool. So some of the students that. We pretested it, used it to tell their housemates, like, these are the products that I'm not going to eat up, but you can have. And I know that when I was talking to Mark Boulev, who came up with this in Australia. And definitely a guy you should also talk to. I think he has lots of great ideas. He said that that also was the case there. But then in families that. They would use the stickers sometimes to just indicate to children or spouses these are the products that you could have for lunch. They need to go, that sort of thing. So it can also be a communication tool. And it's very easy and very cheap and simple to use. Right. That can be helpful. I think the reminder part is a big thing of it. We've also done a study. In Brazil. And there, what we saw there is that we had two different intervention packages in a control condition. And I had a PhD student who was from Brazil. That collaborated with me on. I collaborated with him. He was the one instigating and. He set up this really interesting, relevant, big data set because he asked people to keep track of that food waste for more. Than half a year. And I hardly ever know anybody who's done that. So people were weighing their waste moments that they wanted to, but giving him the information of how much food they were wasting over time. And there we saw that. Indeed, if you had that intervention. Food waste went down, but also the control condition to an equal extent. So just repeatedly measuring it and being aware of how much you're wasting people. Are already taking steps to reduce it, then. So that's also one of the reasons why I think I'm in favour of some of those very cheap tools because they are these reminders and things that might prompt you to do things. Because I think people know how to reduce their food waste if they're really paying attention. At least to some extent. Not having it, maybe, but the 20 30% less we see that. Happening? Also there in that control condition, and it's just a matter of being a bit more aware of it. That sort of thing. And the other thing that I really liked as an intervention or that was there. Is the flexipes from Unilever. Are you aware of those?

Rachel Shairp

I've come across them. But talk us through them.

Herpen, Erica van

Okay, so this is a study and. I'll put references in the chat in a minute. But this was a bigger study in the US and in Canada. Where we looked at. Actually. What we said was. Okay. Most of the interventions so far were aimed at better planning and. Trying to get people more better at. Not having leftovers, basically. And. In that study, we said, like, okay, but sometimes. Certain life phases, especially. Children, families with young children. Better planning is just not really possible there. Not always. So why don't we look at remedy? To remedy it later, after the fact. So yes, there are leftovers. We know that. But let's get people to use those leftovers. And there again, we looked at an intervention with multiple components to it, so we cannot pinpoint. What exactly you worked. But the total intervention definitely worked very well in both the US and in Canada. And part of it was picking a user update. So it's just saying, like, okay, that. One day a week, I'm going to use everything that's left in the fridge. The leftovers or leftover ingredients or whatever and do something. But part of it was also giving people. Flexible recipes. So instead of giving them a recipe, These ingredients. They would get flexible recipes such as. You could maybe make a wrap. And on that wrap you would need sometimes a vegetable such as this or this, but look in your fridge and see what you have. You need some. Meat replacement. And it could be chicken, and it could be something like beans or something. Just see. What you have and. You need? Well, no. The first one is the base. Like you need a base product, like a wrap or something else. So you need a wrap. And it was a three plus one approach, and the plus one was. The add something to spice it up. You could add spices, but you could also add mayonnaise. And Unilever bitcos helmets. But. What I keep trying to tell people is it doesn't have to be mayonnaise. And you can just tell people to put a few spices on it, but the idea of using flexible

recipes and getting people. To experiment and be creative with their leftover ingredients. That is a really nice, I think, and there. We also saw, like I said, a significant decrease in food waste. That is important. There's a couple of things I don't know yet. One of the things is whether everybody wastes a little bit in the different phases, like cooking and preparing. Or storing or leftovers or whether there's difference. And there's one study that we've done recently on leftovers. With a segmentation where we show that there's really big differences in leftover lovers. And leftover haters. So there we see that. Hey, some people really, really like their leftovers and would cook enormous. Amounts, but also eat a leftover soap. Hey, no waste. Who cares? And other people really hated afternoon. Even if they have that little bit, they will definitely throw it. Out. So they are the ones who are trying to prevent having leftovers usually. So that's. Good, but they really treat it very differently. And that type of segmentation. One of the advices that we had. In the EU forum was that we really need to look better at segmentation because there are differences, and it's also something that I see. Very, very big differences between households. So there are some households. Who miss very little and a few households who raised an awful lot. And initially when I started it, I thought, oh, well, I also have that sometimes, right? Sometimes you clean out a fridge after a couple of weeks or so and you throw out more than you. Usually do. But that doesn't seem to be the case there, because when we did a few study few data sets that I have where we asked people multiple times, the big waste are big waste. Again two weeks later, for instance. So it really seems to be an individual household level thing, and I don't really have a good grip on it. We also see quite a few households, like a significant portion of our samples, that are telling us they don't waste anything in a week. Which we then are quite sceptical on. But then we did a waste audit. Where we took the garbage back of everything that they wasted in that week they were put in. The garbage bag, not just the food waste. They didn't know it was specific about food. Waste. You also put the plastic packages and all of that in there? We sorted it out and. Even that our households with no food waste in there. So it does seem that there are some households that weigh little. And the interesting part is trying to pinpoint the bigger wasters that are willing to change. And that's the difficult point.

Rachel Shairp

Erica, this is so interesting. I think. I'm sure I speak for everyone on this call. It's fascinating to hear your insights. You know so much. Thank you. This is so informative. What we're doing in London? I'm just conscious of the time. We've got ten minutes left. Feel free to throw any more stuff at us that you think is high impactful. That's. Got evidence behind it. So feel free to chuck any more stuff at us, but I had two questions for you. One is. Communications like the way specific language that's used to talk to households about food waste, whether there's any recommendations you've got? There was one. And my other question was moving outside of the household just for a short bit of this to thinking about in a community context, like people make food wasting decisions outside of the household. So they make food wasting decisions in schools, for example, or they make food wasting decisions potentially in hospitality and food service. Have you got. Any recommendations, based on your knowledge for interventions there as well.

Herpen, Erica van

So two questions to answer. The first, how to talk to households. In most of my studies, we try to sort of disguise the fact that we were studying food. Weight. I think that's not really that relevant for you. Because you don't want people to be aware of what they're doing. There is sort of a stigma around it, so. There is social desirable answering. Also happening. There are people underestimate. Just in general, they underestimate their food waste. But we do have some initial evidence that people who score high on social desirability skills that have nothing to do with racing food. But just in general. You want to behave in? Normative. Way, then they underestimate even more. So there is some social desirability going on. There, so I'd be very careful to put people at ease. And. We understand that people waste food. So you can be honest to us about. What you're doing and what's going on. So not like pointing the finger at people. Yeah, exactly. You waste food. Making people feel bad. For food waste. Because we all do. We all do it. There's one, I think, really? Cool paper by Mia Biro from a couple of years back where they show that. If you try to make people feel guilty about wasting food, that has a backfire effect. So. You don't want to do that. People sort of move against it, then? Even and when guilty.

Rachel Shairp

I've had some interesting conversations about this. But. Is talking about the climate impact of food waste. Does that make people feel guilty?

Herpen, Erica van

Arguably, yes, maybe. Would be. The communication that they use in their paper was far more direct about, hey. You're to blame if you waste or something. What is also relevant here, I think, is we have one paper where we looked at different motivations. That people have to not waste. One of them is environment, the other one is moral and then

there's also financial. And going into that study, we thought that financial would be a big thing turned out not to be the case, and. Moral and also, to some extent, environmental, were the ones that were driving the actual food waste. And. We're trying now also with a company, to see if we can find a way to communicate. Morality without. Running into that guilt rep type of thing. And to see if we can also sort of. Push some buttons there. Since the moral motivation seems to be driving quite a bit. Okay, that's really interesting. Your other question was about out of home food waste. The only thing that I've done there is related to doggy bags. We have a study there where we looked at. Can we somehow overcome? That feeling of shame of asking for a doggie bag. That's common in some of the countries in Europe. I mean, there's cultural differences in the US. Nobody worries about asking. For a doggy bag that much. In Europe, it's not that much. Done. So it's really social norm kind of thing that's going on there. Yeah. And I actually used it to test one of hypothesis that I had for a long time. Which is sort of a trick that I learned when my kids were young. That when. They're in a terrible tooth phase, and they say, like, oh, no to everything. Then you give them an option. Between two things, but whatever they choose. They end up doing what you want. So they're in a car seat and they say, and you tell them, do you want to put your own seatbelt belt on, or does mommy put it on. Regardless of what they choose, the seatbelt goes on, and that's something. That we tried out with as doggy bags. So we had different conditions. One of them was just like regular. You have to ask for a doggy bag. Not many people did that. There was one where the waitress would ask you, like, do you want a doggie bag or. Not that already increased the uptake of doggy banks. But then we had two other conditions, and then one was. Where the waitress. Would sort of automatically assume you wanted the doggie back and presented to you, and then she said, no, I don't want one. And then lots of people had a doggie back. And when she did that with a big smile, as if it was a present, it was fine. But if people felt it was forced upon them, not so much. And the other condition was where we asked them, do you want a plastic or a paper? Wrap or for your doggie bag? And giving people that choice. Made them sort of. Like with the kids, you have the choice again, so you don't feel like something is. Forced upon you. But regardless of what you choose, you have the doggie bag and we have. Some information in that paper as well, some insights that people actually did eat this stuff that was in the doggy bag also. When they. Some people in that condition would not have asked for it, but they forced it, more or less. So we did one lunch study here at the university where people, we gave people lunch that was way too much for them. For most of them. We had about four people who ate everything. Teenage boys can eat a lot. But still most of them did not eat everything. We forced them to take the doggie back. Home, more or less by not giving them much of a choice. And they reported back that they ate most of it or something, that we had a longer shelf life and, yeah, seem to work out.

Rachel Shairp

That's really interesting. So the condition where they were given a choice between paper and plastics led to the highest increase in uptake of the doggy bag?

Herpen, Erica van

Well, the uptake was equally high to the. Sort of forced. You take a doggie back and let's just say you get a doggie back. Unless you say no. Yeah. But the default doggy bag condition. Yeah, the default doggie bag. Yeah. So that basically works. Equally well in terms of uptake, but. It does have the downside of, in some cases, people feeling like they're forced into something. And then they were not so happy about a restaurant and a waitress, so it was more of an image thing then, or an attitude thing. They didn't like the restaurant so much. Anymore, the better for the business is the option.

Arielle Rosenthal

I just wonder. You referenced a lot of studies that you did for instance, on the measuring cups

Herpen, Erica van

Put one in the chat now, but. I have another meeting after that. I think if I go back to the chat, I can just. Put a couple of references in there, right? And you can pick them up and you have all. Those things that I talked about. And you realize that I talked about something that is not in that list that I forgot to. Just send me an email and I'll give it to. You right?

Arielle Rosenthal

I just want to also flag one more thing. If there's any studies that you have. In mind that were impactful in terms of food storage, like you talked about with the stickers. But if they were saying this stuff, think about. Anything additional in that sense? That's also something we're interested. At too.

Herpen, Erica van

There was years ago with the EU project refreshed. We did have some study that we did together with. Rap with very hypothetical scenarios. With stickers on products about where to store them, like that bread could be frozen up to the day of. Or no? That was chicken or so up to the expiration date. You can still freeze it. Something stickers? Of explanation or stuff on there, and at least. They're the intentions of people on freezing. Became a lot better or more in line with what you would want. But especially for those products where I didn't already know it. So there are products where they know quite well how to handle it, and then there's no difference anymore. But there were also some products that I didn't know or some things that they didn't. Quite know. That's an EU report about that. On the refresh website. I'll try and see if I can find that one for you as well.

Rachel Shairp

Thank you so much. Feel free to email me if you have any other questions or things that you want to discuss, okay?

Herpen, Erica van

Lots of luck on your study. Thank you.

Annex F: Interview Transcript – Professor Peter Scarborough

Peter Scarborough

Labelling as a mechanism for saying to people, you need to think about what the impact of this product is in terms of greenhouse gas emissions, land use, biodiversity, impact on whatever could be useful like that. It could also have a kind of knock-on impact in terms of being useful in affecting kind of manufacturer behaviour or even potentially retailer behaviour in terms of what. They stock because some of these, the impacts can be quite shocking in terms of especially the difference with meat. And plant-based products. But in terms of how much does it affect consumer behaviour? A little bit. Not that much. I mean, I think the evidence broadly points to the fact that it worked about as effectively as nutrition labelling does, which is a little bit, not very much. That's broadly kind of where we are with that. The shift around the choice architecture, though, like changing the bolts and all that kind of stuff again. It's not going to be like, great, we solve the problem all in one go, but. That is more promising. You can get sizable changes. By doing this and kind of work with this. It's a little bit early for the work that we're doing at the moment. In the salient project. We've got quite a few studies that are doing exactly that. We've just finished. One in a workplace cafeteria, which. With, like, blue collar working. It was, like factory working. And basically we just changed it so that. Basically, the trial was to say, within this cafeteria. Within. Well, it was multiple cafeterias, but basically. When you were in the intervention period, they had to drop out one. Meat option and replace it with a veggie option. Right. So if they had five options. Daily, and they usually had four meat and one veg that we got a three meat and two veg, right? Whatever what it was, it was drop one meat and replaced one veg, and that had quite a big impact on sales. That was effective and didn't need anything more than just kind of changing things around there. So I think. Those availability trials can be effective, and I think you could get kind of proper movement there. But again, we're talking about nibbling around the edges realistically. If we're going to do something as a population I think you need to be kind of pulling out bigger guns, which are kind of controlled by the UK government. So one of the things that I'm quite interested in at the moment is. There's quite a few policy UK government has around public health, which are all controlled by a nutrient profile model. There's a neutral profile model, which is an algorithm which defines whether a food is healthier. Or unhealthy. And if it's defined as unhealthy, then it means you can't advertise it to kids. It's going to be restricted from online advertising. Get that policy to work and kind of get rolled out. It can only be position. Positioned in certain places in supermarkets. And you can't do promotions, price-based promotions on them. Now, all of that, you could. Potentially roll out and say, let's do the same. But for sustainable foods, you know what? I mean. Similar. With the TFL outdoor advertising ban. On unhealthy food, but you could roll that out to unsustainable foods. But. You need. Some metric that decides or what is an unsustainable food. So I think a development of that nutrient profile model for me is a nutrient and environment profile model is potentially a really helpful exercise because it's just a policy tool that can support a whole bunch of other things. I'm extremely dubious of the fact that any government in the UK will ever get runs. To taxing meat or dairy, but I think price mechanisms will come into play in another way. Because I think if we wait long enough, meat and dairy will just naturally become more and more. Expensive, and I suspect that will end up having more of an. Impact. But. I'm dubious. Anyway. There you go. There you go. I think pricing mechanisms could have the potential. To be far more. Impactful than anything that we discussed up to this point. But I also think. That very unlikely that they're going to get rolled out. In fact, I think, if anything, we're more likely to see. I would have a bet with someone to say that we're more likely to see subsidies. Put

on meat and dairy. The taxes put on meat and dairy in the near future. Because I just think that's where we are in this country.

Rachel Shairp

Have you come across any local initiatives in the UK or abroad that look at pricing?

Peter Scarborough

No, not that pricing, I mean. The local stuff. That thing I know that is either going on even the UK or elsewhere is. Based around outdoor advertising and food procurement. So you've got the outdoor advertising is small, but. There are places in the UK that have started to. Where local councils have started to vote for bans of outdoor advertising. On unsustainable foods. But what? It'll actually come down in practice? Who knows? But. There are certain councils that have done that. I believe Cambridge is one, but I'm not. Sure exactly where they'd want them. The most obvious one in terms of the one that's got furthest on that is Harlem in the Netherlands, which I'm sure you'll be aware of in terms of their meat ban and outdoor advertising. I mean, the outdoor advertising is the one there. Just because it's something that's in control of local government. That's why they're focusing on that. But it's something that they can potentially do. And then the other thing that I've got, of course, is food procurement for local schools, for councils, for hospitals and things like this. Now there you've got kind of a mixed history of that. New York City, I believe. Is doing something that's quite interesting around making plant-based default in hospitals. That I think is really important and something that. Could be. Stepped up. I think school food procurement is a massive area because I think there's loads and loads of multiple wins on school-based foods, but with a big barrier being like, a cultural barrier. I mean, with school based food, it strikes me that if you're providing a predominantly if not entirely, but predominantly plant based. Meals in schools. Then. It's cheaper for the school to provide for the caterers to provide. So you got cost savings, and you also cut out a lot of the problems that you have. With. Cultural meals in terms of saying. Right. Okay, well, this has to be. We have to have halal. Version. We have to have a kosher version. A lot of those problems kind of disappear. Okay, we could just have one version that's kind of available. And going around. But equally along those lines in terms of moving towards more plant-based meals in school for school. Food procurement. Is, you see? How it triggers particular groups to kind of really react very, very badly. So there's some examples, I think in France. Where they had basically plant based meals in schools in certain regions that were kind of enacted. And then about a year down the line, when certain groups got a whiff of it, they kicked up like a massive first and they would quickly turned around. So I think you've got. Important lobby groups that you have to worry about in these situations. I would encourage anyone who's going for a school vote food procurement plan around here to kind of emphasize what is being increased, which is cereals and plants. And cereals and fruits and vegetables and deemphasize what's being reduced and I certainly wouldn't recommend anyone to kind of suggest we are going purely plant based, because I think it would just kick off massive opposition to it, which is probably unnecessary, but I think. That again. Is within the remit of local schools, but varying around different places. Because knowing this being a school governor. These days there's less and less control of the school. Food procurement, particularly in certain parts of the country where if academies are absolutely. Sort of doing kind of school system within your structure. You've not even got much. Control over that. Basically down to the academy about how they're doing the catering. Those are some options, I would say.

Rachel Shairp

Okay. Thank you. That's really interesting. And I think validates a lot of the research. That we've been doing and what we've been finding. So is there anything else? From your research that you're doing that is worth flagging to us. So. Really interesting to hear the trial that you're doing with your salient project around choice architecture. The increasing availability of the veggie options that leading to a change in sales. Are there any other kind of practical. Experiments, trials that you're involved with that might give you updates around where we are with things?

Peter Scarborough

So in terms of things that are done and finished and published, indeed, in this area, This isn't work that I was directly involved in, but people in my team were so. Within the leap project. We did some research around. Trying to promote policies to try and promote plant-based alternatives, basically in consumption of those and there's a couple of. Well, there's about three or four bits of research that are done there that are based around. Labelling and cafeterias and based around. Changes position of plant-based alternatives in supermarkets. So, basically, we got some data from Tesco and Sainsbury's who shifted where they put their veggie sausages and veggie. Burgers instead of sticking them in a particular on their own. You know what I mean, this is a veggie bit. They just put them alongside the meats, sausages. And the meat burgers and. See if had an impact there. And what we found there was, as I kind of mentioned with the e car labelling inside canteens and everything. Unlimited effect, kind of about the size of the fact that we expected not

very much. Yeah. In terms of. Still a positive effect, in terms of behaviour change, but limited, marginal. Okay. Marginal, but, yeah, people didn't react and go, oh, God. I'm going to react against it and buy more meat because of it. It was just limited. In terms of the supermarket shifting, plant-based alternatives were that was quite interesting because what we saw was an increase in sales of those plant-based burgers and sausages, but no decrease in sales of meat-based versions. Which is, I think, interesting. It did help boost the sales of plant-based alternatives, but no particular productions in meat sales. But that was interesting itself. So that's that bit. The projects we've got going on. At the moment, the copper project is quite interesting because what we've just finished. Is the deliberative forums work where we went, and effectively we did two citizen juries. One in Bridlington and one in Glasgow, where we met with local people. We sat down. With them for two days. We talked about health impact of the food system, environmental impact, the food system, economic impact, food system. We talked about a whole bunch of different things, and. Then we set them right. Now you guys tell us what we think we should do for physical. Policy. What should we be subsidizing? What should be taxing? The only policy that was agreed upon from the two areas was a carbon tax on food. Both the juries returned and said that they wanted basically the climate impact of foods to be included. In the price of foods. So there were some public support for that. As demonstrated in these two juries, there was loads of stuff that came out, like, basically making fruit and vegetables cheaper and more available. And a lot of health based. Policies, but broadly speaking. There was good support for a carbon-based tax, and we're just writing that up at the moment. And we'll get into the modelling stage, too. I'm doing any of the modelling. There. So it's too early to say that in terms of the final bit failure. So the bits that are relevant to you in these projects. The cafeteria one. We got another trial that's going on at the moment, which is changing. Defaults. So it's basically going to be on a smartphone app, which people use to order food in workplace cafeterias, and we're going to change it so that the plant based version is always. The default and you have to choose the meat one instead, see what impact that has. Too early to say what impact. Again. I'm expecting that. All of these I'm expecting roughly around the same size. As the choice architecture ones. You know what I mean? A measurable effect, which, if done in combination, you can imagine if you do everything all at once could contribute to quite sizable reductions, but on their own. You're not getting anywhere with it. We've got an interesting app that we're doing, an interesting trial that we're doing in an online supermarket. Where we're providing eco labels and we're providing price promotions, which basically tried to cancel out the price differential between. Plant based alternatives and meat products. So basically we know style milk is more expensive. Do we offer the cash different. We say we kind of give. It's a combined kind of like swap. And price promotion instead. If we say, hey, we see you've got. This milk in your basket. Would you consider buying the soy milk and we'll refund. A difference in cost. Kind of like that deep dealing cut that has, I don't know. What impact that's going to have. We're going to wait and see. You can imagine it's going to have some impact. Again. We will have to wait and see how that kind of comes out. The final one we're doing is. Specifically because salient is working around health and sustainability. So the only one that we got that ground sustainability is working with. The retail. Frozen food retailer. That's how we describe them at the moment. Within some of their stores. We're basically changing the product range. So again, it's going to be like an availability assessment, so. It'll be kind of like swapping a menu in a canteen, but instead of just. Swapping the mentee in the canteen. It's literally swapping what's available. In stall when you go see it. 's increasing the amount of their range that is plant based from where it is at the moment, which is about 20% increasing up to 45% and seeing what impact that has in sales. But it's too early. I don't want to result for you on these ones. I'm afraid.

Rachel Shairp

No, but this is really interesting for us to hear. I mean, what I'm hearing very. Much is that? You're saying that based on your experience, it's changes to the choice architecture that are going to have the most impact. Individually, small changes, like switching the default, for example, don't have a massive impact, but collectively, doing several. Making several changes. Leads to a more measurable impact. That's the take home I'm hearing from you.

Peter Scarborough

That's the same as. Well, you would argue that the same with public health, right? There isn't one thing that you say, right. We do that we boat nails here, right? You got to kind of do quite a lot things on at the same time. But changing. With the change of the choice architecture, right? Yes, I agree. That would be better than labour. And potentially, if you do a lot of things at the same time, you can kind of make a difference there. But a crucial aspect of that is. Things that restricts the choice of the meat options. So basically, it's like, okay, remove. Some of those options and increase the veggie options accordingly, if you see what I mean. I think. Just. Kind of trying to do these nudges, but not really changing what's on offer. Is not going to get that far, if you see what I mean. I think it has to have an element of, but. We're rolling back on the amount of meat that's been offered here in whatever. Way, in whatever form of that is, I think is really important. There's one other thing I will say about this, right, which is this is not evidence. Based anymore, but I will say it's my hobby horse because it really frustrates. Me. Is a pushback, and I know. This is, in the sense, irrelevant. It's not a

local politics or the national policy. But one of the problems that we're fighting against is a situation where. You've got effectively plant based alternative meals being demonized left, right and centre not being able to call themselves what they actually are. So not even being able to call a soy milk. Or soy milk, but I'm going to call it a soil drink. Because for fear of confusing the consumer. These are the kind of national level policies which. Makes things far harder in the real world because it just kind of sets a kind of general tone around that. These are policies. These are products that are somehow bad. There's also, along those lines, I think. Current debate around ultra-processed foods. I mean, you only have to kind of look in the way that people deal with. Any kind of debate online. Around plant-based alternatives or veganism. Vegan kind of restaurants and everything. And you'll see it underneath the line, just basically saying, yeah, but its ultra-processed crap isn't. It. You know what I mean? There's that kind of narrative that I think. Is cleverly designed to try. And hold progress towards more kind of plant-based diets. Again, I don't think that's very helpful, because I think that isn't. Helping you guys in terms of designing your adventures of polity, but I suppose it is something. Which is to understand the landscape in which they're going to fit in because that's. The other thing there, which is that whatever you do, whatever you try and do to try. And make change. You've got to be aware that. It's going to be as successful. To make it more like bit successful. You've got to understand the policy landscape. It's. Fitting in and. There's going to be actors that are against it for various reasons, including health actors that's the problem? I think, I think it's natural to kind of think that what we're doing is to try and move people towards more sustainable, more healthy diets and it would be great if the public health community was on board, and I think a section of the public health community is on board. A section of them are not. And that's frustrating.

Rachel Shairp

Yeah, no I hear you. And I think that's really interesting. That's a really good point to make. Can I just ask one last question? Is bringing me back bring you back to the beginning of. Your conversation. When you were talking about three things, you spoke about choice architecture, which we've spoken about labelling, and you also mentioned social norming hugely happens via camp like traditional comms. Campaign, and you were not dismissive, but you sort of alluded to the fact that based on the evidence that you've seen. That isn't hugely effective. Can you talk us through some of that? Because there's a lot of that going on globally, I think.

Peter Scarborough

Yeah, but it makes people feel better, doesn't it? You know what I mean? It's like, all right, great. We're doing something, but it's not okay. We've got a default student working on this at the moment, right? And her entire campaign. Was a randomized control trial at a workplace setting where the intervention that she was testing was social norms and she went to absolute town on it, right? She did such a great intervention here, right? There's no change to the menu, no change to the price or anything like that. It was literally, it was the environment where you were going into. So you go into this place and it's not just like there's posters on the wall saying, hey, did you know? That people are trying to reduce their meat consumption for the environment. There was, like, loads of stuff. Everywhere. There was like, sort of like steps put down on the ground, whereas as you're walking, you're in the queue. It's like saying something about the carbon footprint and. How? It was like a bombardment of social norm-based intervention. You couldn't have turned it up to a higher level. And anyway, it had zero impact. It wasn't like, not a zero measurable impact. It's like a zero impact. No impact whatsoever. Right. And that doesn't surprise me because it's not like. I think when you've got a contested narrative like environmental sustainability, food like me, right. I think there's a fundamental problem with the social norm campaign. If you've got a social norm around eating fruit and vegetables, right? Or getting kids to eat fruit and vegetables. Fundamentally, everybody agrees with the message that kids should eat more fruit and vegetable they might disagree with, like socks. They might say, we have guitar because the cache isn't there. But everyone would like kids to eat more fruit and vegetables. There isn't. Really anyone against that. As a statement. Right? So social norms work there because. They're working in the same direction, and you go, okay, well, that's an interesting that reminds me of you. Maybe I'll do it. Too. But this isn't the case with meat. It's contested. And there's strong narratives go against it. And when you're going against that strong narrative going against it, then I think. It's really naive to think that you can get a social norm campaign that will get around that all you're going to do is polarize society. You'll be talking to the people that already know that we should be reducing the consumption, about into that message. And you'll be completely ignoring all this sector over here, which need to be addressed, and. Kind of doctrine, and I just don't think. So I think the best social norms campaign can do, or any kind of campaign around there is to try and chip away at that block and try and say, okay, well, we've got to try and mainstream. This is an idea. But that's a long-term project, which probably does need to go alongside. A transformative change of the entire food system to get us into this area. But as a short-term goal. I just think it's going to be completely ineffective, so that's why? I just think the better way of going about it is actually to do these interventions. To some degree, by stealth. That's a little bit. Careful about describing that, but I would emphasize other elements of it. I certainly go involved with the idea that. Any suggestion that this is a

promotion of sort of a vegan lifestyle, bang off. This is. About kind of a small reduction. This is about saying, I think the better messages to get through. Is around saying you could still be a meat eater; you could still be drink. I've dairy contribution. All this in the same way that you could still be a driver of your car. Right. But if you reduce. The amount that you do that you're going to have. A decent impact. Right? So our paper in nature food last year kind of had that message coming. Out where the environmental impact of vegans, fish eaters and the main take on message. There was actually if you move from high meat down below meat diet, so you're still eating meat. But you just didn't have that low group. Then you have that slate, half the job. Done. You know what I mean? Do you have a really massive change? And if everyone in the UK did that. We'd be doing really well for our dietary emissions. But you're pushing people away. If you're saying. Okay, well, we insist that everyone be vegan.

Rachel Shairp

How would you classify then, like. Not changing the product available, but the meat free Monday campaign. Campaign, the information campaign, rather than making Monday's meat free in schools, which is a different thing, but actually. The communications campaign that you'd classify that as like social norming, it would come into that bucket, would it for you?

Peter Scarborough

Yeah. The meat free Monday campaign, basically. Yeah. Is problematic on loads of grounds, but anyway.

Rachel Shairp

Thank you for your time. Can I just ask one last thing? Which is? Do you have a web page you can send us which links to all your publications that some of which you've spoken about today. Is there an Oxford university link?

Peter Scarborough

Got an orchid page that could do that. It's probably easiest. But yeah. Thank you. Because what I certainly do not want to kind of suggest is that I think that, for example, that school. I think it's fine for a school to say or a workplace to say. Right. We're not going to serve me in dairy, actually. Or we'll make it. So restricted that. It's not the norm completely. I don't want to suggest that. Because there, I think these are environments where you're only getting one meal a day, school. Is a bit different. Maybe because you got breakfast clubs and everything like this, but I think there is things where we can challenge the narrative and suggest that this isn't just, you know, what I mean, you've got to see this in the context of a whole diet and. Everything like that, but. I think you've got to be kind of aware of that narrative and the direction it's going. Because if you set it up to be combative, I think it's just going to be. I think it's going to be problematic. There you go. That's. Kind of where I think for things.

Rachel Shairp

No, I hear you and we really appreciate your time. It's been really helpful and insightful. So, thank you. And, yeah, you could send across the link to some sort of. Page which links to your body of work and any of the PhDs that you meant. And anything you can point us in the direction of would be. Really helpful from an evidence perspective. Thanks so much.

Annex G: Interview Transcript – Mr Lars Magnus Ottersen

Rachel Shairp

Well, thank you so much, Lars, for responding to my LinkedIn invite. It's really great to connect, so thank you. For agreeing to have a quick chat with us this morning. Shall I do quick intros from our side? Because I feel like we've outnumbered you. Quite a lot here. My name is Rachel. I work for an organization called ReLondon, which is essentially London local. Government. So we're a partnership between the mayor of London and London's local authorities. Or boroughs. And we focus purely on circular economy. So reducing waste in the city, increasing recycling and accelerating the city's transition to a more circular economy, and we focus on different sectors and food is my area, so I lead our food work. My colleague Sarah on the call. I'm working really closely with her at the moment. She's in our local authorities support team, and we've just started a really exciting new project that we're very excited about here in London. We think it's quite new. We don't think that anywhere has done anything similar globally. But the idea. Is to implement. In a very small community or neighbourhood in London. About 5000 households. What we're calling a circular food community, so. We want to implement in this small area, in this small place, a package of different

interventions. To try and do two things. One, to increase household food waste, and two, to increase consumption of lower carbon food and decrease consumption of higher carbon foods. So more plants, less meat, essentially. So we're going to be throwing a lot of different interventions in this community designed to achieve either of those two behavioural outcomes, and then we have a lot of monitoring and evaluation around it to see. Whether it's successful. And the idea is to design this for replication. We're really keen that what we do is very replicable, so that other cities and other places around the world. Can learn from what we've done and potentially copy us if it's hopefully successful. So that's the really exciting project that we're working on and that we're really excited about. We've chosen our community in London so we know the place and the neighbourhood where we're going to be doing this project. And where we are at the moment is. We are trying to figure out what those interventions are. What is that package of things or activities that we want to do in that community? So to inform that we've been working with Alessandra and Ariel, who are the other two ladies on the call. They work for a consultancy called chair planet. They're helping. Us to do a kind of global mapping. Of lots of what other cities and other places have done. So that we can take the best ideas and copy them and copy them in London, essentially, so. That's a very long introduction, but that hopefully explains why there's so many of us on the call and. We're really keen to talk to you about what you've done. In Oslo to reduce waste and change diets. And we're very happy to share. From our side. Stuff that might be useful to you, too. So, anyway, I'm going to. Pause there last and give you an opportunity. You can introduce yourself, and we'd love to. Love to hear more about you.

Lars Magnus Ottersen

My name is Lars and I'm an advisor on sustainable food for the municipality Oslo. I work mainly right now with reduced. Plus, my role is sort of called. A food-based coordinator, sort of the role I have right now. But in general, I do a lot of different work on sustainable food here in the city. Been working here a few years now and also some years earlier with another job in between. Where I'm out working in a software business with food waste reduction. That's sort of my role here. I stayed at what's called the agency of improvement and Development. The name doesn't really make that much sense. But. We're placed directly under. Going to find the English word. The Department of Finance. For the city council. So the guy with the money is above us. And then. That's why we sit here where we are. And my department has all the procurement agreements for the entire city. We're sort of a main office or headquarter for Oslo when it comes to a lot of services and procurement agreements. And in my department. Here we are, six people I work with sustainable food. And different things within sustainable food. So we have neon food waste, and then we have someone working on meat production, and then we have one that works on fair trade and ethical trade, and we have one that works with menu planning towards kindergarten, gardens and children. And then we have. Let's see. One team leader. And then there's one person that's sort of in charge of the procurement agreements. For food and beverages. So that's sort of how we're organized in a team. That works with all these different things, and I also work like, my role as food waste and also organic food. But then I'm sort of a generalist as well. That helps up with different projects. Within. The city. So that's sort of short. About how we're organized. And I have a presentation. From. Another meeting that I could pull up and just show you guys a little bit more details about. The food place part later. See what you want.

Rachel Shairp

Yeah, that sounds great, and thank you for that. Overview. It's really interesting that you sit in the finance director. Really interesting and gives a sense of how high a priority I guess this is for the city. And the fact that you're bringing that team and as you say, because you've got that procurement link. It makes a lot of sense, in a way, for you to in that. Team. So that's really interesting from our perspective. And Sarah's nodding. Sarah used to work for a council. So I'm sure she'll find that very interesting from her perspective. I'm sure your sustainability team didn't sit in the finance team, Sarah? No, I don't. Know if you can see me or not. I can't see the video.

Sarah Williams

Fine. Great. Yeah, we used to work for a long time in local authority. And. I felt like exactly the same as Rachel, that it shows what seems to be lacking. In many places here, which is. That kind of overarching? Well, the high profile and the real care. And intrinsic understanding that that matters and that it needs to be deployed across departments and actually something like that position is a fantastic one, to actually be able to sit and actually have leverage over. So many different. Entities within these organizations which are so huge. Here in the UK. So. Yeah, not how, not common practice, but sounds like a great example of just basic kind of structure that could really make a difference.

Lars Magnus Ottersen

We weren't, like two years ago. That's how we were organized and that's. When we were put in this agency, which is really good. Prior to that. It was. Another agency, so. It came with the lost city council, not the one we have now that

they put food. Really. High on the agenda. And wanted to sort of have this team that organizes everything that has to, which is sustainable food. In the city. So we're really happy about. Where we're at right now. Really interesting.

Rachel Shairp

So, Lars, you spoke about. I mean, it sounds like you've got a great team, and. You're doing an awful lot across the board on this. You're focused a bit more on food waste reduction, but you've got colleagues. That are looking at meat reduction. You've got colleagues that are looking at menu planning. All those areas are really interesting to us in the context of this project. So if it's all right. We'd love to hear. I know that you're focused on food waste. Which is one of our key focuses. So maybe we can start there, but. We'd love to hear a bit more about some of the specific. Actions that you've been taking or are taking or are considering to take to help. And we're very much looking at the kind of individual levels, so individuals as they go. About their lives. It could be in the home, it could be individuals at schools. It could be individuals in restaurants and cafes. So our focus is very much on how can we help individuals or households to reduce their food waste and decrease consumption of meats. Anything that you could share with us.

Lars Magnus Ottersen

Sure we would love to hear. I think what I'm going to do is pull out. This presentation, and I'm not going to follow the presentation, but just to make sure that I know sort of what to tell you guys about. The different areas. Because, of course, yes, I work with food waste, but at the same time. I do. Know a lot about all the different things we do, and also, right now.

Rachel Shairp

Can I just ask one thing to check you're comfortable? Are you happy for us to. Transcribe what you're saying. Sure. And we've got a transcription service, so it just takes down notes while you're. Talking.

Lars Magnus Ottersen

Sure. Of course. Okay. No problem. Great. Thank you. No problem. And you can see my presentation, right? Now, right? Yes. So I'm not going to go through everything as it's a long presentation, but. I'm just going to give you some insight on the city. So there's about 700,000 people living in central Oslo, about 1.5 million people in the metropolitan area. And it's divided into 15 different districts. And we have about 50,000 employees in the city that work for the municipality. And 800 kitchens serving public meals. And. Slide here. This is just some random facts, but like I said, we're under the department. Of finance. And. Go through all the details. But sort of give you an overview of sort of what we work the most with. So it's to have to meet consumption in Oslo. Reduced food waste by 50%. Set requirements for sustainable production and good animal welfare in public procurement of meat and animal products. Promote the use of climate friendly menus with seasonal products. And always offer a full-fledged vegan alternative and also. Increase the share of organic food in our city's procurements and increase the share of ethical products. So that's sort of the overview, just to give you sort of what our goals are with what we do. And I'm going to go into detail, but just to give you. Sorry to interrupt. Can I ask? Sure. Do you have an organic target? Like a quantitative target? We used to have an organic target. With the last city council, our target was 50%. But right now we don't have a number. To reach for? Because our new city council, they're not that focused. On. The sheriff. Organic food. Since we had elections in September, so. We're not quite sure yet where we're going with the organic food. Sort of what percentage we will be working for. So right now is just to increase the share. Right now, we're about 10%. And the goal is to increase. In all our agencies. They are certified with this environment target that says we have to have at least 15% organic. So that's sort of the minimum that we have to have 15%. And then we'll see if the city council goes in and says something more about if they want to increase it even more or further than 15%. But it used to be 50. That's very ambitious. It's amazing. Yes, it was. So the last city council was a very green party, and also that sort of was in the city council. And now we're on the right side. That's sitting in the city. Council. So that's sort of the difference there when it comes to the focus on food. And they're all working towards climate friendly food. All of the parties are agree on this. That we're going this way. But. It's more of how much into details they want to go and how much they talk. About it. Really. Yeah, I know. I understand. Thank you. That's really interesting. Sure. And another thing that. We do to reduce food? No meat consumption is that. We have. All our events. And meetings. Vegetarian food is a default option. So all the events that are held we should serve vegetarian food. And always a vegan alternative. So that's sort of one of the measures we use. To reduce the meat consumption in the city. My agency, we don't work that much directly towards. The individual out there in the city. But our top is that since we have about 50,000 employees, We know that 80% of the people that work for the city. They live in the city. So by reaching them through sustainable food at work, we think we can influence them a lot also. In their household. And sort of introduce them to new foods and inspire them to reduce their meat consumption or their food waste, so we're sort of using. Maybe a bit of a different way to work. That we try to reach through our staff, and also,

since we do serve a lot of public meals to all the kindergartens and a lot of food in the schools and nursing homes. Et cetera. So we believe that we reach about 80% of our population through our services in some way. And then there's some other agencies in the city that work towards the general population. With different messages and try to inspire them as well. But our role is more within the city's. Services. If you understand what I mean. And I'm going to go a bit about the food waste because in Oslo there's. Two ways that we work with food waste production. We have one for the households and that's a different agency than mine. That's. The waste agency. That work with the households and then I work. Our agency work with the public kitchens. So all the household food waste in Oslo gets recycled into green bags. And then sticking to a bio plant, and then it's used for either biogas. Or biofueled fertilizer. So that's sort of the way the food waste ends up. The agency for waste management. They work, like I said, towards the general population. So they work a lot on social media. They have about 68,000 followers. These are old numbers, so probably more now, but they're. Quite popular. They're really good with their communication on Instagram especially. They do a lot of stories there that really reaches a big number of our population. On how they should reduce waste and recycle everything and. They have different campaigns on different waste areas, including food waste. And the pictures are in Norwegians. We're not going to go into that. But. They're really doing a great job. They have a really good communication department. That really? Fun to follow them, actually, because they really go into details about everything on how we should cycle. And why. It seems to be working. But another thing they do, they actually do visit residents to help them recycle. And I was thinking about your project, that this might be something you could do, but what they do is. They have these different campaigns where they use students from different universities in Oslo and they have them knock on doors around the city and bring. The bucket for food waste and also the bags for recycling, the green bag for food waste and the purple bag for plastic, et cetera. So they actually nudged. The people. That don't if they're seeing areas where people are not that good at recycling. They go knocking doors and talk to the residents and give them this bucket and also the bag. Support. To try to make them recycle. And another way to reach our population is that all the fourth graders can also visit the waste. Management facility every year. So all schools also get a visit from the agency for waste management. Where they have this presentation about recycling, and there's about 55,000 kids and teachers that receive the recycling course in 2022, and this number would be the same in 2023. And also this year. So that's another way to reach the population and reach the kids. And these kids go. Home to their parents and talk about recycling and that they need to do it more. So that's sort of the strategy. To involve. The. Go into the details, into numbers here. So I'm not sure how relevant this part is for you. But we worked a lot on food waste towards our own public kitchens. And the one thanks me produced. So we started with a project in 2017. Where we had 20 nursing homes and 61 activity schools and 59 kindergartens that participated. And we're seeing that it's a bit hard to get enough data from many kitchens and data quality was not good enough to compare the two periods. Where they weighed their food waste. And then Covid-19 came in and of course. That affected the numbers that we got at the end of the project. Unfortunately. So right now. We're working in a new way. And that's why I was hired here, as well as a food-based coordinator, because they're seeing that. It's a lot of work. To actually just work on the food waste part and not just sustainable food in general. So we need someone who can sort of coordinate all the activities around the city. And right now. We have a pilot of a new staff training group that's traveling around the city working. With staff in different sectors and helping them how to weigh and reduce food waste. And also we're working closely with all our food suppliers. And like I said, That's another great thing about being in this agencies that we're really close to. The suppliers. Through the procurement agreements to make sure that we get that cooperation all the time with the suppliers. On how we can help. Them reduce food waste also in the value chain, but also how we can use our web shops. That all our staff do the shopping and how we can reach them with messages about how to reduce food waste. In their department. Yeah. So, like I said, here's the staff training crew. And they're doing a lot of work, especially in the nursing homes, because we're seeing that. That's where the biggest part of our food waste occurs. Sorry there. And right now, I'm working on using new technology to help reach our goals, so. We're in the process right now of buying. A new. Sort of an app that we're going to use to collect data on food waste. So we're sort of. In. Stop the presentation there so I can see you guys. We're sort of in a process right now where we're looking into whether we should buy, like, a finished product, like an app or website or if we're going to go and try to develop it ourselves for the city. So we have one agency that's been trying out a new that's been developing. An app themselves. So we're going to look into now if. We're going to spend more money on developing that app further for the entire city, or if. We're going to just go into the market and just buy. Something from the shelf. That's already there, so. We've been doing a lot of different work on food waste. Both targeting the households but also the public kitchens and indirectly trying to reach the population through. Our public kitchens as well. But it's definitely challenging. And especially getting good enough data has sort of been our main. Difficulty in this project. And that's what we're working on, seeing how we can use new tools. And different ways to collect data in the future. Sorry. That was a lot of information. I'm not sure what is relevant or not, but. Just ask me questions. Yeah. Hugely interesting laws. Thank you.

Rachel Shairp

And really interesting to see the difference between the work that you're doing, this households and then also the stuff in public kitchens as well, which, as you say, is a route to reaching people as well. Some of the stuff you said is really interesting, and I don't know that we've. Come across it before in terms of the things you're doing for households. Like. Taking kids to waste management observations. I'm not sure if that's something that we do in the UK? Does that have an impact, do you know? I know you said data is a challenge, and I totally sympathize, empathize. With you on that. And I can talk to you about our food waste measurements challenges. We've? Got in London. But yeah. Do you know if that has an impact, the stuff that you're doing with the fourth graders taking them to a waste management facilities?

Lars Magnus Ottersen

Yeah, we're not sure, of course. And we don't have any good data on this, but we definitely believe so. And at least for a period of time, and I think. When you're in the fourth grade, I think it makes an impact just going to this. Huge facility and seeing all the garbage. And seeing the robots working, collecting the different green bags and the purple bags. And using it for something and seeing that it actually means something. What you're doing at home. But we don't have, unfortunately, any data on this, but we do believe it's important to educate the kids as much as possible. And we do also believe that these kids will come home from this day in the waste management facility talking to their parents about recycling. And luckily, most people in Norway do recycle. It has been a thing here for a lot of years, of course. But still. There's more. Even though most people have all these different. Recycling buckets and stuff. They still need to be better at what goes where. So there's. Also a lot of information about the details. Into what plastic goes where and how you should clean the plastic, et cetera. Right. So we do believe it's educational and important to involve the kids. But it's sort of hard to measure. And we've been doing it for a lot of years, so we're not sure. How we would measure it either. But. We do take out numbers from all the schools every year. On recycling. Like they do. I'm not sure the word in English, but. When they analyse all the garbage by hand. To see with composition analysis type thing. Yes, thank you. So they do that every year to see the development in the schools. So, of course, you can see that. Together with having. These twisted set to waste management facility. To see the numbers get better, of course. You could. I don't think they've done. Sort of that comparison.

Rachel Shairp

Yeah, that's really interesting. And then with the door knocking as well. So visits to residents. We've heard elsewhere that one to one engagement. Is a really. There's evidence that shows that one to one engagement. Is a really good vehicle, let's say, for encouraging behaviour change. What made you decide to do this? And do you know that it has an impact? And do you just talk to them about recycling? Or do you talk to them about other food waste prevention? Strategies that they could do.

Lars Magnus Ottersen

I think it's mainly just about recycling and getting them started because since they bring the buckets in different coloured bags. It's more about reaching those who are not doing anything. At all. And. I think. This has also been ongoing for years. I'm not sure of the history here. And if they know sort of the details. Of the results of doing this? I'm not sure. Honestly. And it's also, like I said, The waste management. Agency that works with this. But I think. There's. Certain parts of the population that. They can see the numbers on where they recycle and not right. So there's some areas that are more likely not to recycle. And it could be like one thing could be typical, a student moving to Oslo to go to the university or something. They might have a smaller apartment. They might not have room for all these. Buckets with different recycling things or something like that. And just giving a student, for example, this bucket. Just get them started because this might not be something they will go out and just. Buy themselves. From start with, and every municipality in Norway has. Different recycling. Different recycling. Different coloured bags and different systems. And also, it's a city with people coming from all over the country and all over the world to study and work. So I think it's also a part of it is sort of reaching out with how it works towards the people that comes into Oslo. And also, of course, immigration and other groups.

Rachel Shairp

Interesting. Okay, yeah, that's really interesting to hear. So Lars pivoting away from. Waste, which I know is your area of expertise to meet. And I know you said that. You don't do any meat reduction stuff specifically targeting households, but you do do some meat. Reduction. You do have some activities or projects ongoing in your municipal buildings, don't you? So I'm assuming that that kind of thing. Is like menus and changing defaults, but can you talk us through. What interventions you've taken in schools, for example, or care homes. And anything you know about how successful they've been, that would be really interesting for us.

Lars Magnus Ottersen

Yeah. So we got a new action plan on sustainable food that went through the city council in September. And then we got a new city council in October. Which is sort of a bit weird timing. But the great news is that almost everything in the action plan. Will continue with new city council. But one thing that it said in the first action plan was that all new meals in the city. No, sorry. All kids meals in the city would be meat free. So from September, all kindergartens, all schools, all the meals that were served by the city were meat free overnight. Which is pretty cool. And then the new city council came in and they say, We don't want it to be meat free. We're going to eat less meat, but it's not going to be meat free. So right now, when it comes to schools and kindergartens, we don't have. The same approach, saying it's meat free. But still. We still have one note in the action plan that says all new meals being implemented by the city should be meat free. So if a school or kindergarten or another. Sector would implement a new type of public meal. It should be meat free. And most our kindergartens, they serve meat free food anyways. Because of culture and making it easier, just deserving one thing to everyone. And the same applies for the schools. So I don't think we haven't seen the numbers from that yet. Having that change from meat free to a bit more open. But it's going to be interesting to see. If we can see the change in the numbers now that. It's been changed. Sarah.

Sarah Williams

Thank you. Just a quick question. It sounds like there's loads of fantastic work going on in. The younger years at school, and I was wondering if that's kind of specifically chosen, rather. Than. And or whether there's also activity going on for the older, perhaps teenagers at school.

Lars Magnus Ottersen

School meal was for all kids. So aged. From until they're 18/19. So we were reaching sort of all the. Municipality only runs schools until they're 19. And the universities are run by the government and not the city. Like nationally, so we can't influence. What they serve at the universities in the same way as we can in our schools. High schools, et cetera, so. It was sort of all kids age. 19 that we sort of serve meals. Too. And. We've been having a lot of meetings with different districts likely talking about this, and it seems like. Most cities still, or most sorry, most schools in kindergartens are still serving. Meat free. Food in other different departments. Except. From. Big traditional celebrations where traditional food is being offered. So that was sort of the entry into this that. The food should be meat free. Unless. It's like a holiday where Norwegian traditional food is important, for example, so that's sort of been the focus area, and then there's been done a lot of, or some. Work with the nursing homes in the elderly as well. But of course. They're more used to eating their traditional food. So what we've done there is. They've tried different. Typical Norwegian traditional food is like meat cakes or meat balls. So they've introduced like 20% lentils. Into the meat balls, for example, they've done some different ways to reduce the meat consumption. For the nursing homes as well. But mainly the focus that has been on the youth. And also all the staff that works here with the vegetarian food as a default option in all meetings and events. So that's sort of been the strategy so far, and then we'll see. How it goes. We're seeing in the numbers that we're not reaching our goal of halving. The meat consumption yet, of course, so it's going to take some time. And then. We'll have to evaluate if there's any other measures we should take. To reach our goals when it comes to meat reduction. But like I said, we believe or what? We're seeing is serving me free food. And all our kindergartens, for example, a lot. Of the parents ask for recipes. Because they're seeing that their kids are liking the food. Like at home, they're picky, and they don't want to eat tomato soup or whatever. And then the parents come to the kindergarten, are like, what do they eat? Today we had tomato. Soup with eggs and whatever. And then they asked for the recipe because they're surprised that their kids eat a lot. Of vegetables in the kindergarten. So we're seeing sort of the effect changing the diet in schools or in kindergarten really have an effect on the community. And every family out there because. It's possible for them to get the recipes and do the same thing at home. And a lot of parents. Are. Surprised how much vegetables their kids are willing to eat when they're in a group or small kids that are eating together compared to. Animal. That's something. We believe it's important to sort of shape the future diet.

Rachel Shairp

That's really interesting, Lars. Thank you for sharing that. Yeah, and great to hear that it's having an impact on the broader community as well. As you say, like the parents asking for the recipe cards. It's really great to hear. I was going to ask. So obviously you're doing a lot of work with your menus. And I assume you're doing different things. So I assume in some cases, You're cutting out meats in some cases now that it's not totally meat. Free. You're kind of substituting. You're doing half and half is substituting. Animal protein. For plant-based protein, there's lots of strategies on there. Is there anything that you've done that you could tell us about? And the answer might be? No, but is there anything you've

done around? How you talk about plant-based dishes. Have you done anything on. Positioning things on menus. Is there any cons around it that you've been doing? To the kids. Anything like that would be really useful for us, for here.

Lars Magnus Ottersen

Sure. That's also been changed with the change of our city council. Like I said, they lost. City council was a green party, so. They wanted us to sort of yell and communicate a lot about, this is vegan. This is vegetarian. Flag it. And now our strategy has changed since we have a new city council. That's not that happy about. Reaching out, like, hey, look at me. We're serving vegetarian food. But they still want to make consumption to go down and we want to reach our climate goals. So the goal is the same. We just have to change the way we communicate, so. We're definitely looking into more and more using plant-based food instead of vegetarian. Or just saying that it's lasagne. And it's a vegetable lasagne and not a vegetarian lasagne, for example. Like how we communicate throughout the communities about what we serve. So we're focusing on the food should just be, have a good name and sound really good. And not sound like it's vegan or vegetarian, even though it is, of course, but. Still, it's like how we communicate around it. We're also trying to do. Last year we had competition in the city. I don't know if you guys use workplace. But workplace, like Facebook for it's the same as Facebook, just. For work. So we have all the stuff and also our workplace. So we're using it just like Facebook. That the only problem or the only difference is all your friends. There are the 50,000 employees and not your friends in private. But we're doing some different campaigns on there to reach the staff, and we also did a competition last year because every year there's a huge vegetarian festival here and also. So we're giving out tickets to our staff to sort of get inspired. To change. Be inspired to change to our menus and what they serve in their public kitchens. But also reaching them as individuals as well, because. They're going to go on the festival in their free time, bring their families. So we're doing that, and it's a really big success. Last year we had like 750. Staff members that were competing to win tickets to the festival, and there was a lot of engagement. On social media. So we're doing the same this year. So we're sending 50 families from our staff to the festival to sort of try to inspire them. We're picking winners from all the different agencies and departments to make sure that you sort of get someone that's really engaged into changing diets, like in every area of the city. And all the agencies, so. We're working. Communication will be really important. In the future, and then we'll probably modify. How we talk about meat free, or if we just say, It's a really good soup. It's not a meat free soup, even though it is. So. We're definitely learning by doing. Here. And right now we're working on a new communication strategy for sustainable food. Like an overall for the city to make sure that we, so we have a lot of people. From. Our. Communication department that helps us with the messages that we're trying to reach our staff in. Public.

Rachel Shairp

Okay. Thank you for sharing that. Really interesting. And really interesting to hear that your decision making around how you talk about these things and how inputs that is by the government and the council. So yeah, really interesting. Thank you for sharing that with us. I'm going to ask you one more question, Laz, because I don't want. To take up too much for your time. And then if you've got questions for us. Sarah and I would be more than welcome to talk about some of the work we're doing. But the last question I had was around businesses. In Oslo. So, have you done any work? To try. And this is more about diets, I guess, than waste. But obviously, the actions that businesses take like food service businesses specifically, the actions that they take can have a big impact on. What the people in Oslo eat potentially. So if businesses were to do similar things to what you're doing in public, Institutions like schools, businesses could have a big impact on. If they were to change some of their menu. So to make it more plant forward and offer more plant based dishes if they were to talk, if they were to describe the plant based dishes. In a way that makes them sound really appealing. Have you done anything to engage businesses on that? At all. I guess there is a food waste link here as well. Like businesses could be providing doggy bags to their customers to encourage them to not waste food on their plate, things like that. Anyway. Sorry. No. Yeah, sure.

Lars Magnus Ottersen

I would say yes and no because. As a big city, we buy. A lot of food, and we buy a lot of services, and we do a lot of conferences. And different events and used restaurants a lot for our staff, since we have 50,000 employees. There's always stuff happening around the city. So we're sort of trying to influence the market. By when we go out, like, let's say my department are going out to eat at a restaurant and we have vegetarian food as the default option. We set demands for the restaurant or the hotel or the conference centre. That this is what we need to have the food. Has to be vegetarian. Organic, maybe. Fair-traded, fair-trade coffee. We set all these demands, and we sort of believe that we really can influence and change the market. Since we're such a big buyer here in the city. Since we have 50,000 people working here, and a lot of our staff goes out to different things all year round, so that's sort of one way. We're engaging with the market. And another way is that we have a lot of private canteens that serve our staff. Like Compass group or

Sodexo or. These huge. Yeah, we have both. We've done a couple of projects together with, for example, Sodexo. Where they sort of did a pilot at one. Agency here, where they changed the entire business model and what they serve at the canteen. But focus on sustainable food and food waste. So we're also trying to sort of influence the market that way. By all the canteens that we have and seeing how we can influence. The market by setting different demands and doing different pilots and cooperation with the market there. And then. We're also. Sort of more. One or two of our big, like, procurement agreements on food. It's the same company that delivers food to all of most people. And also when it comes to. Their homes or the households. So we're staying with. That really demanding demands. On our new procurement agreement with them. On what they should do. And how they should deliver the food and everything should be electric trucks. We've done a lot of things there. To influence them also. And we also believe that by going in and buying. A huge amount of food from this company. That will change how their web shop looks. When. The public also uses the same web shop and buy the same products in there. So we're sort of indirectly trying to also. Push the market towards the public as well. But we're not working directly. With any big campaigns towards restaurants in the city, but I would say a lot of that work sort of happens naturally here, I think. Like on food waste. The foods industry. Norway. They've been working on food waste since 2010. And a lot of the big companies have been measuring food waste every day since 2014. So I think the public sector is falling behind. If anything, I would say. I don't think the municipality also needs to drag restaurants in a direction. In a way. Because they're ahead of us when it comes to sustainability. A lot of the bigger chains here in Norway because they've had. They've done a lot of great work. So we're sort of learning maybe the other way around also. If that makes sense. Yeah, that makes a lot of sense. Thank you.

Arielle Rosenthal

Sorry, I don't want to take too much of. Your time either. And thank you so much for all of your insights. I just wanted to ask. If it's something that we've been exploring. Is combating food waste generation while promoting low-carbon consumption. With partnering, different interventions with cooking classes so that community gardens. Or community fridges that are vegetarian. Surplus food that's donated. And so I was just wondering if Oslo, if any of the work that you're doing is. On the same parameters or same activities.

Lars Magnus Ottersen

Thank you. We do have a lot of community gardens and different projects when it comes to urban agriculture and different things, like in that area. And that's not quite my area, because there is another agency. But there's definitely been projects focusing on surplus food. And what's been done earlier is also the city is held like what we call surplus. Food tables. Very directly translated. But. It's sort of been like a community thing in one district. Where? The city would together. With. Some volunteers or something would collect surplus food from different stores in the community and would have, like a surplus food table or party. To sort of inspire the public to see how much surplus food there is in their community and how they could use this, and that has also been made. A guide on how. To arrange a surplus food party, for example. And now they can sort of go out in their community to collect food from stores and sort of used their local venues or something to engage the public. To just be social and meet each other, but also do something good. For the public, so there's been some projects. There. And. The people that work on urban agriculture and community gardens in the city, they, of course, have a very high focus on the whole value chain. And. There's a lot of the public that engage in these community gardens and, of course, learn how to grow their own food, but also making sure they used everything and learn about that and do some cooking as well. And then we have cooperation is also with something. It's called a culture centre for kids. A food culture centre for kids that's, like, in the middle of the city. It's. A huge garden where a lot of kids from different schools and kindergartens go to cooking. Classes. Both. With the schools or the kindergartens, but also their parents can buy, like in their private time. They can also buy a place there. In different times of the year where like an after-school program where they can go there and learn how to cook. And. They get cook, like, get a whole fish and do it. From learn everything and about how to prepare fish, for example. So there's a lot of different smaller projects around the city, and since we're divided into 15 different districts. There are different ways of doing this in every district. That they usually coordinate themselves in their own district. So, yes, there are some projects. In a bit different way, possibly.

Arielle Rosenthal

Thank you so much. That's great insights. If you have any links. Or information on the project. Or. That would be great if you could share them.

Lars Magnus Ottersen

Sure. I'll look up what exists in English. For you guys. I know there's a lot of.

Arielle Rosenthal

We have a software that we can translate documents into English as well if that's not available. Yeah, that's great. And this is very interesting, so thank you. So much.

Lars Magnus Ottersen

I can try to find some different documents and send over to you guys, no problem. I just had one question for you. How are you guys when it comes to your project? What do you guys think will make the most impact when it comes to changing the diets? In the area you're going into. Or reducing food waste.

Rachel Shairp

Well, this is exactly what the research is going to tell us. Hopefully, Lars and I'm. Very happy to. I mean, we should be able to share this research. I would have to check internally, but I'm very happy if I can't share. The document that I'm very happy to have a call with you once it's finished and I can talk you through the results. So the door is open there, and we're happy to share, but. I think based on what we've seen so far and everybody else jump in if I'm misrepresenting. But I think it's going to be a package of different interventions. And those interventions are going to be targeting. Different touch points in a community. So I think. There'll be some stuff that we'll do that's quite similar to what you've done so looking at schools. And trying to make changes to menus, changing default options, thinking about the language used to describe dishes, thinking about positioning. There's going to be a lot of that kind of stuff in schools. We may do similar things in restaurants as well. So we may deploy similar strategies in restaurants. We might offer restaurants a toolkit. We might do some one-to-one training in restaurants again. To help restaurants think about. How their menu, whether they can increase the number of plant-based dishes, whether they can talk about them differently, whether they could make them cheaper. There's all this evidence that shows that all these things have an impact on consumption. So that's the one bundle of things that we might do that's quite similar. To what you've done. Aerials touched a little bit on growing, I think. There's evidence that there's a link between. Community food growing. And consumption of fresh, low-carbon food. So some kind of community food, growing activities. Community cooking classes to provide people with the skills that they need to actually cook. More plant-based food at home because it's very easy to say to people, You need to eat more plants, or we want you to eat more plants. But. If individuals don't have the skills, it's very difficult. So enabling people to actually cook more low-carbon food by providing cooking classes in the home. In terms of the waste side of things. I think, again, it's likely to be a package of different measures. So lots of nudge based tactics for people in the home. There's lots of evidence. That. Stickers. In fridges with, like, a use up day shelf. There's evidence to suggest that that has an impact on household food waste generation. There's evidence around providing households with small, cheap tools that they can use, like portion measurement. Tools to measure out a portion of rice so that they don't overcook. So, like, nudge-based tactics in the home. And then I think also, Things that can be done in schools and in restaurants as well, like provision of doggy bags. To people. There's also some interesting app-based solutions in London which you may have in Oslo as well, like there's a solution. There's an app called Olio. That is essentially a community food sharing app, so you can use it to share food with people. In your community. So promoting that kind of technology.

Arielle Rosenthal

And then obviously overarching information provision as well. Anyway, I think it will be something like that others jump in based on. Yeah, I was going to say. And supplement more on the food. Waste. And Alessandra as well. Please do. I think as well, with those nudging. Tactics. It's also about portion control. And so trying to train. To not deliver so much food or it's also on, there are buffets or in canteens. Trying to encourage that portion. I think it's like for those where people are being served. Have training the staff to encourage people to come back. There, I think as well within the home. It's understanding how to use surplus food and reutilize it. So the kind of leftover cooking. Zero waste cooking. Those aspects. Alessandra. There are others that you want to touch too.

Alessandra Zannier

I think the main ones have really been covered. I think just generally. It's important to educate and inform people on, specifically on food waste. Just getting people to understand that there is an issue, and then from. There teaching ways in which that can be addressed. And I mean, same for low-carbon diets. Just kind of teaching people about the issue and ways that. They can work to reduce that impact.

Arielle Rosenthal

And I would say that the foundation of what we're seeing with the most successful initiatives are when. They are coupled together with that educational piece, but it's in a practical implementation, so people are learning and upscaling

themselves at the same time. Say, for instance, in that community growing learning how to garden. And with kitchen stuff, teach them to cook more sustainably, but also with that portion control element. With children, it's the same. In schools, the same elements. With learning how to cook, but also how to measure. And. Took meal prep and everything, so it's when those. Those. It's those educational campaigns. Are done with workshops or some type of way that people can learn those skills. The evidence seems to show a more long-term behaviour change. But definitely there will be more. For when you finish.

Rachel Shairp

I think the other one we've missed. That, I think is quite. Interesting is. Incentive based interventions. So there have been some local authorities here in London that have done some really interesting things around. Vouchers. Giving people vouchers to buy fresh fruit and vegetables. And this is in more disadvantaged communities that are at climate high climate risk. So, yeah, essentially, like, subsidizing people's consumption of fresh fruit and vegetables. Fruit and vegetable prescription is another interesting intervention that we found. So doctors essentially. Prescribing fruit and vegetables. Like again, like. A free amount of fruit and vegetables to people. As part of a healthcare prescription. So there's some interesting. Stuff there as well that we found. That, particularly in very disadvantaged communities, I think could have a big impact. And for instance, I think going off of that.

Arielle Rosenthal

There's also stuff in London that's coming with convenience stores in local markets, so. Not, especially in areas where there are food deserts and people are relying on the local markets trying to get. Those healthy foods in. And also then. Restructuring those markets to promote those healthier vegetables to be upfront. So people physically see that first. I think those are really good for those communities that Rachel was talking to who normally won't. Have that type of access. To that fresh produce.

Lars Magnus Ottersen

Cool. Very interesting, and I would love. If you can share the report or something later, it'd be great. And if not, we can just update. Get an update at some point. Would be interesting just to see how this goes. Since you have a bit of a different approach. Working more towards the public than we do, so. It's very interesting, for sure. I just wanted to mention one more thing. That I might try to send you guys. I sat in this government. The government in Norway. They collected all the food waste interest organizations and people that work with food. Waste. So we worked out a report that was published. In January. Like summarizing all the work that's been done on food based in Norway over the past decade. And also. Our suggestions for the way forward for the government. It might be interesting for you guys to read because there's a lot of parts there. That reaches the households as well, and more about the individuals and how we can change these with pricing. And different tactics. So I'm not sure if it exists in English, but yet you can use the translator. App. And then try to make sense of it, but I think it really could be an interesting report. For you guys to read. So I'm happy to share that if you want. One thing. I didn't mention that in Oslo. We have a climate budget. I'm not sure if you know. The process of that, but also. It's now been implemented in many cities around the world, I think, but we started here. With the climate budget that's sort of on the same level as the money budget. So they sort of have to budget everything on climate, and now. We've also included non-direct emissions like food. So we're starting to work on that. When it comes to food waste and meat consumption, et cetera, will be a part of the climate budget for the city. So just a tip. That could be interesting. For London in the future to see if you could include. Because it sort of gives food like, I said, like being here in the agencies, were working for the agency. And being close to the finest department is important. And also then seeing money and the climate in together and having a budget for both. Having all the budgets have to go up. Could be interesting. I could send you some information about that as well.

Rachel Shairp

Yeah, very interesting. I'd love to. See more on that. Very interesting. I'm very conscious of the time. We've taken up a lot of your time. And we're so grateful for everything you've shared. And I will be in touch. Lars. Once we have the final report, if I can share it, I will. But otherwise, happy to. Organize a call and we can talk you through some of the things we found and you're. Welcome to bring other team members as well, if that's useful to other people. Yeah, we want to share, but, yeah. Thank you so much, and thank you in advance for anything. That you can send us by way of reports or links, things like that, all very.

Lars Magnus Ottersen

Thank you so much, guys, and good luck with your project. Thank you. Great to meet you. Thank you. Have a nice day. Bye.

Annex H: Interview Questions

Introduction	
General Information	Please introduce yourself, including your current work and position?
	How would you relate your work to reducing food waste and promoting low-carbon consumption diets in communities?
Project information	
To ask as needed, for project information that is missing	Regarding the intervention, would you be able to tell us about the intervention, the timeline, its activities and main objectives?
	How does it work to reduce food waste and/or promote low-carbon diets?
	Does it target a particular demographic or community? What was the original target community size?
	Who were the implementing organisations the intervention? If there were multiple, how did the partnership work?
Funding	How and by whom is the intervention funded? What is the budget size?
Successful Interventions	
Measures of Success	To what extent do you consider the intervention successful in changing behaviours? If so, how was the success measured e.g. behaviour change, dietary change, environmental impact, etc.?
	To what extent do you consider the intervention successful in promoting environmental impact?
	What are the main lessons/best practices that can be learnt from this intervention? Is there anything that should have been done differently?
	What are the key learnings you had from the project? What challenges did you experience to encourage behaviour change?
	How has this projected expanded, whether within the city or to other cities?
	What contextual factors, such as the regulatory environment or cultural habits helped enable the interventions' success?
Additional Interventions	
Identification of Interventions (then proceed to project information questions)	To the best of your knowledge, what interventions are you aware of in XXX city to reduce household food waste and/or increase consumption of low-carbon food in a community context?
Government Role	What is the local government's role in facilitating the intervention?
Project Success	In your perspective, what activities facilitate successful behaviour change and environmental impact in the interventions?
	To what extent do you consider the intervention successful in changing behaviours? If so, how was the success measured e.g. behaviour change, dietary change, environmental impact, etc.?
	To what extent do you consider the intervention successful in promoting environmental impact?

Annex I: Interview Consent Form

Information and Purpose: ReLondon is a partnership of the Mayor of London and the London boroughs to improve waste and resource management, working to ensure that London's businesses, local government and communities thrive by helping them make the best use of resources and materials. ReLondon is currently seeking to develop a replicable model for a circular food community in London by implementing interventions that increase residents' consumption of low-carbon food and reduce waste. The project's current phase of work involves conducting global research and an analysis to identify and benchmark interventions that have been implemented to reduce household food waste and increase consumption of low-carbon food. This interview serves to gather further information on food waste and low-carbon food interventions and their impact.

Your Participation: As part of this project, you will be invited to participate in an online interview lasting approximately thirty minutes. During the interview, you will be asked a series of questions regarding your knowledge of interventions that focus on reducing food waste generation and promote low-carbon food consumption. It is important to note that you are not obligated to answer any questions and are free to opt out of the interview and the project at any time.

Benefits and Risks: Your participation in this project is valuable as it contributes crucial information to ReLondon, London borough partners, community partners and policymakers. This information will be used for the development of a series of activities that can be implemented in a London community-context and increase residents' consumption of low-carbon food and reduce waste. We do not anticipate any risks associated with participating in this project.

Confidentiality: With consent, this interview will be recorded for transcription and internal use. Unless agreed, your name and identifying information will not be associated with any part of the written deliverables. The recording will be stored on a secure drive and deleted upon the completion of this project.

Should you have any questions or concerns, please contact Arielle Rosenthal (arielle.rosenthal@sharedplanet.co.uk) or Alessandra Zannier (alessandra.zannier@sharedplanet.co.uk). By signing below, I acknowledge that I have read and understand the above information and consent to the interview (please tick as appropriate).

☐

I agree to participate in an interview. I understand that I am free to withdraw my consent at any time without giving a reason.

-
- ☐ I agree to the interview being audio-recorded.
 - ☐ I agree that the information I provide as part of this interview may be used in a final report related to implementing interventions that increase residents' consumption of low-carbon food and reduce food waste. This information will be presented anonymously so that I will not be personally identified.
 - ☐ I understand that any personal data I provide for this project will be destroyed after project completion.
 - ☐ I agree that my organisation's name can be identified in the final report and any other final output.

Signature: _____ Date: _____

10. Endnotes

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