

CHANGING BEHAVIOUR TO HELP MORE PEOPLE WASTE LESS FOOD

12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION



A GUIDE



CHAMPIONS  12.3

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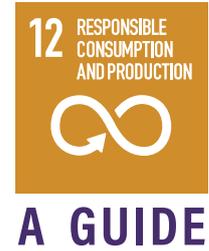


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CHANGING BEHAVIOUR TO HELP MORE PEOPLE WASTE LESS FOOD

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EXECUTIVE SUMMARY



HIGHLIGHTS

- More than a third of food is lost or wasted annually worldwide. This amounts to around 10% of global greenhouse gas emissions and more than \$1 trillion in financial losses⁷.
- Consumer food waste occurs at the retail, food service, and household stages of the food supply chain and accounts for 17% of global food production (61% households, 26% food service and 13% retail) (UNEP 2021). Recent estimates suggest that household food waste accounts for a large share of consumer waste regardless of a country's GDP.
- Recognising the urgent need for strategies addressing consumer food waste, Champions 12.3 brought together in June 2021 food waste experts from around the world, including many with behavioural change expertise, for a workshop to generate promising strategies based on experience and evidence.
- This guide organises the content generated from this workshop into categories for five key actors in the food system: policy makers, food businesses, non-food businesses, non-profits, and educators/other influencers. It then provides actions they can take to help address consumer food waste.
- There is no single solution which will result in sustainable behaviour change to reduce household food waste. Initiatives should consist of partnerships between the different actors and should be evidence-based, using an appropriate behavioural change model wherever possible. They should use a combination of raising awareness together with practical tips and tools to increase “ability” and “opportunity” to reduce food waste.
- The guide has sought to illustrate the approaches using real life examples. However, there are still only a small number of examples of behaviour change approaches being used with consumers where the impact and effectiveness has been properly evaluated. This guide can therefore only be a starting point. More examples are needed, especially from the global South.
- The evidence suggests that changing consumer behaviours is not easy. Simple awareness raising is not enough. It is important to understand the drivers for food being wasted at a household level and real change requires a mix of interventions that target specific behaviours. This will best be achieved by a partnership of actors in the food system working together.





CONTEXT

Reducing consumer food waste can have a positive impact on a wide range of social, economic, and environmental outcomes. Key reasons to take action on food loss and waste are outlined below:

COST	HEALTH	HUNGER	PLANET
<ul style="list-style-type: none"> • More than one third of all the food produced on the planet every year is wasted, worth well over \$1 trillion.² 	<ul style="list-style-type: none"> • According to the Food and Agriculture Organisation of the United Nations (FAO), a staggering 3 billion people cannot afford a healthy diet³. Minimising food waste can increase food availability and reduce consumer prices. 	<ul style="list-style-type: none"> • Although calorific intake has increased globally by 20% in the past 50 years⁴, the FAO estimates that between 720 and 811 million people experienced hunger in 2020⁵, a number that is expected to rise sharply post-COVID-19⁶. Reducing food waste can increase food availability and get more food to those in need. 	<ul style="list-style-type: none"> • Food waste is responsible for an estimated 8-10% of greenhouse gas emissions⁷. • 1.4 billion hectares of land – 28% of the world's agricultural area – is used to produce food that is lost or wasted⁸.

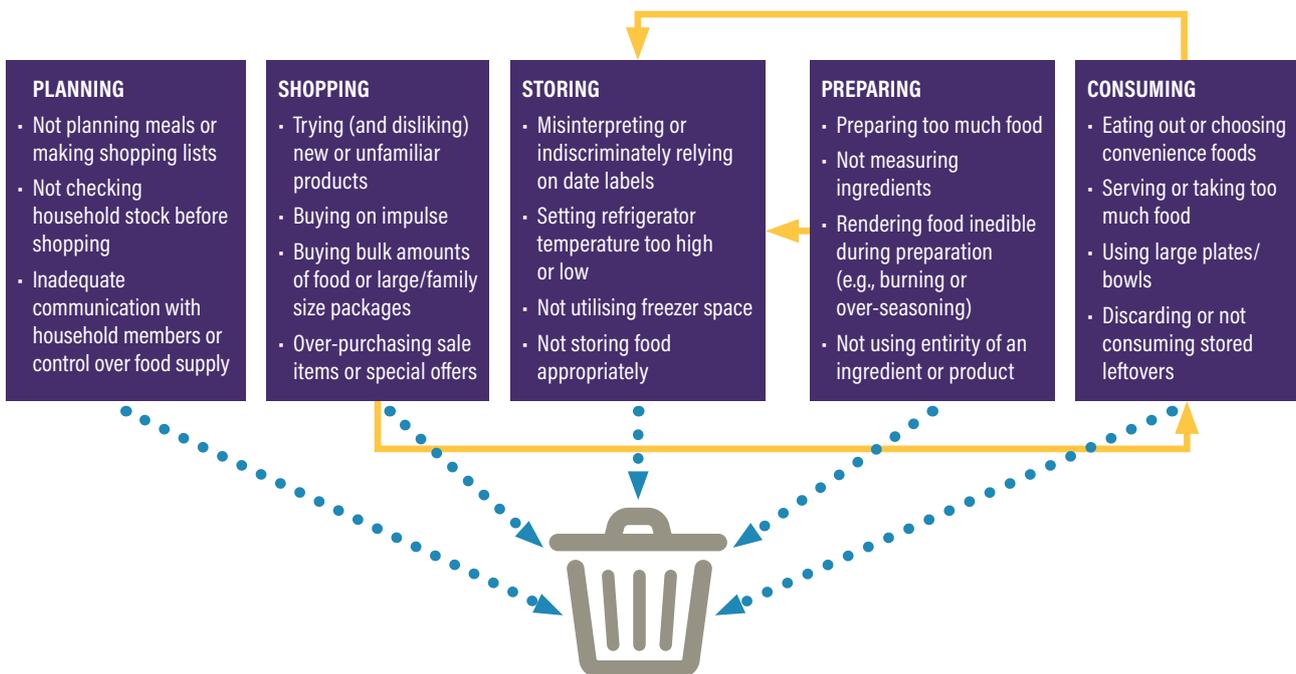
The United Nations' Sustainable Development Goal 12 seeks to ensure sustainable consumption and production patterns. [Target 12.3](#) calls for cutting in half per capita global food waste at the retail and consumer level and reducing food losses along production and supply chains (including post-harvest losses) by 2030. Champions 12.3 is a coalition of leaders from governments, businesses, international organisations, research institutions, farmer groups, and civil society dedicated to inspiring ambition, mobilising action, and accelerating progress toward achieving SDG Target 12.3 by 2030.

ABOUT THIS GUIDE

Food loss and waste occurs throughout the food system – from farm through to *fork*. This guide focuses on food waste from households which is a significant issue in many countries.

The causes of food waste at household level are *complex*. There are many drivers and many behaviours which lead to food being wasted. The main reasons for food being wasted are: (1) food not being used in time, possibly because of sub-optimal storage, lack of planning, lack of skills and knowledge or (2) through having leftovers which are then not used. Reasons for food waste can occur during the planning, shopping, storing, preparing, and/or consuming stages of consumer behaviour (Figure 1).

Figure 1 | Household Behaviors That Can Lead to Food Waste across the Food Waste Journey



Note: Orange arrows represent direct relationships between food waste journey steps.

Sources: Authors, based on van Geffen et al. 2020; Principato et al. 2021; Schanes et al. 2018.

Many organisations and others who interact with householders have a role to play in helping people reduce the amount of food they waste – by helping to raise awareness and then helping address the barriers to reducing food waste, whether they are related to the product offering or a result of behaviours, skills and knowledge.

Champions 12.3 has collated this guide to help key actors in the food system to focus on how they can help consumers reduce food waste through behaviour change.

In June 2021, the World Resources Institute (WRI) hosted a behaviour change webinar⁹, followed by a workshop that convened leading experts behind some of the most prominent efforts to reduce consumer food waste to share their knowledge and best practices. The output from the workshop has informed the content of this guide (as indicated by “What the experts say” sections throughout),

which also incorporates illustrative examples of consumer food waste interventions from around the world. Annex 3 details the methodology behind this guide.

This document aims to guide actors towards actions they can take to help consumers change behaviours that may lead to food waste arising in households. In doing so, the guide takes into account the fact that multiple actors can influence how consumers deal with food waste. It also deliberately allows the reader to refer to the section that is most relevant to them and the actions they can take to help people reduce food waste. It is designed to allow the reader to dip into relevant sections as well as provide a comprehensive overview of the approaches and interventions that have been shown to reduce food waste.



ORGANISATIONS AND OTHERS WHO CAN HELP INFLUENCE BEHAVIOURS

Different types of action can be taken to influence consumer behaviour. This guide discusses the roles different 'actors' can play to support consumer food waste reduction initiatives. The examples, drawn from around the world, will be expanded over time as more case studies are developed.

ACTORS

A number of actors can play a role in helping influence and change consumer behaviours to reduce food waste:

1. Policymakers

Includes multi-lateral, national, federal or state governments as well as local authorities and municipalities. These organisations can enact policy changes that influence the actions of other actors, both directly and indirectly.

2. Food businesses

Includes food retailers, food manufacturers, primary food producers or companies in the hospitality & food service sector, including chefs. These organisations are focused on food and can influence the behaviours of consumers.

3. Non-food businesses

Covers all other businesses both those providing goods and services to the food sector and those in other sectors unrelated to food. These can influence consumers either through their employees or by providing services or equipment used by consumers for handling/management of food.

4. Non-profit organisations

Includes charities, Non-Governmental Organisations (NGOs) or Community and Voluntary Services (CVS) entities. These organisations' aims are charitable in nature and they engage consumers through their activities.

5. Educators and other influencers

Includes universities, colleges, schools as well as other influencers (journalists, social media personalities, etc.). These people teach, educate or influence people.

These actors can take a range of actions to influence consumer behaviours:

- Develop policy – a range of measures (regulations, information and incentives) to provide the right environment to facilitate and support reduction of food waste.
- Develop awareness – providing information to help ensure consumers are aware of the issue of food waste and the reasons why we need to reduce it.
- Intervene – intervening to encourage and support consumers to change their behaviour.
- Collaborate – working with other actors to ensure approaches are aligned and can be more effective than working in isolation.
- Research and evaluate – it is essential that there is research to ensure focus on the right things and then evaluation of the impact and effectiveness of actions taken.



Many of these actions will be most effective if they are not done in isolation but are carried out alongside other actions. Some of the types of action overlap with others e.g. developing awareness can lead into intervening.

Some of the examples given later in this guide could be associated with more than one type of action. Table 1 gives an overview of the different actors and the actions they might take.

Table 1 | **Consumer Food Waste Prevention Actions Available to Each Type of Food System Actor**

ACTORS	ACTIONS				
	Develop policy (I)	Develop awareness (II)	Intervene (III)	Collaborate (IV)	Research & evaluate (V)
 Policymakers	●	●		●	●
 Food businesses		●	●	●	●
 Non-food businesses		●	●	●	●
 Non-profit organisations		●	●	●	●
 Educators and other influencers		●	●		●

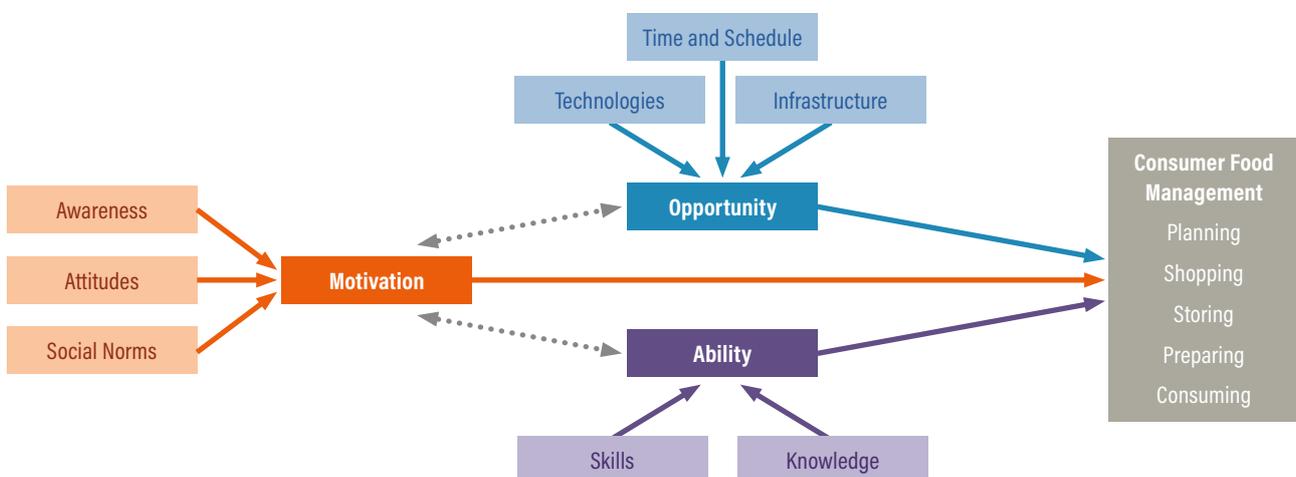
Each of these action types is explored in more detail in the following sections of this paper.

It is important that any initiative planned by any of the ‘actors’ is based on evidence wherever possible, and that it uses an appropriate behaviour change model.

There are numerous evidence-based behaviour change models that can be applied to help understand how to change food waste related behaviours. The Motivation-Opportunity-Ability (MOA) model is one that has been noted for its applicability to food waste prevention

(Rutledge 202; NASEM 2021). It is illustrated in figure 2 below, and is referred to throughout this document. The MOA framework rests on the premise that barriers to and facilitators of behaviour change resulting in food waste reduction depend on consumers’ motivation, opportunity and ability (whether they exist and to what extent). Each of these three components is necessary but insufficient on its own – all must be present to enable a given behaviour. Moreover, the three components interact to influence one another, in addition to directly influencing the behavioural outcome of interest (i.e. consumer food waste reduction).

Figure 2 | **Pathways through which Motivation, Opportunity, and Ability Influence Consumer Food Management and Waste**



Actions that focus predominantly on awareness-raising (as a form of motivation) rarely lead to lasting behaviour change. Designing evidence-based interventions that include additional elements (e.g., ability and opportunity) to encourage behaviour change are much more effective

(NASEM 2020). A simple example of how this MOA model can be applied to a real food waste situation is given in Table 2, below.

See more on the MOA model in Annex 1.

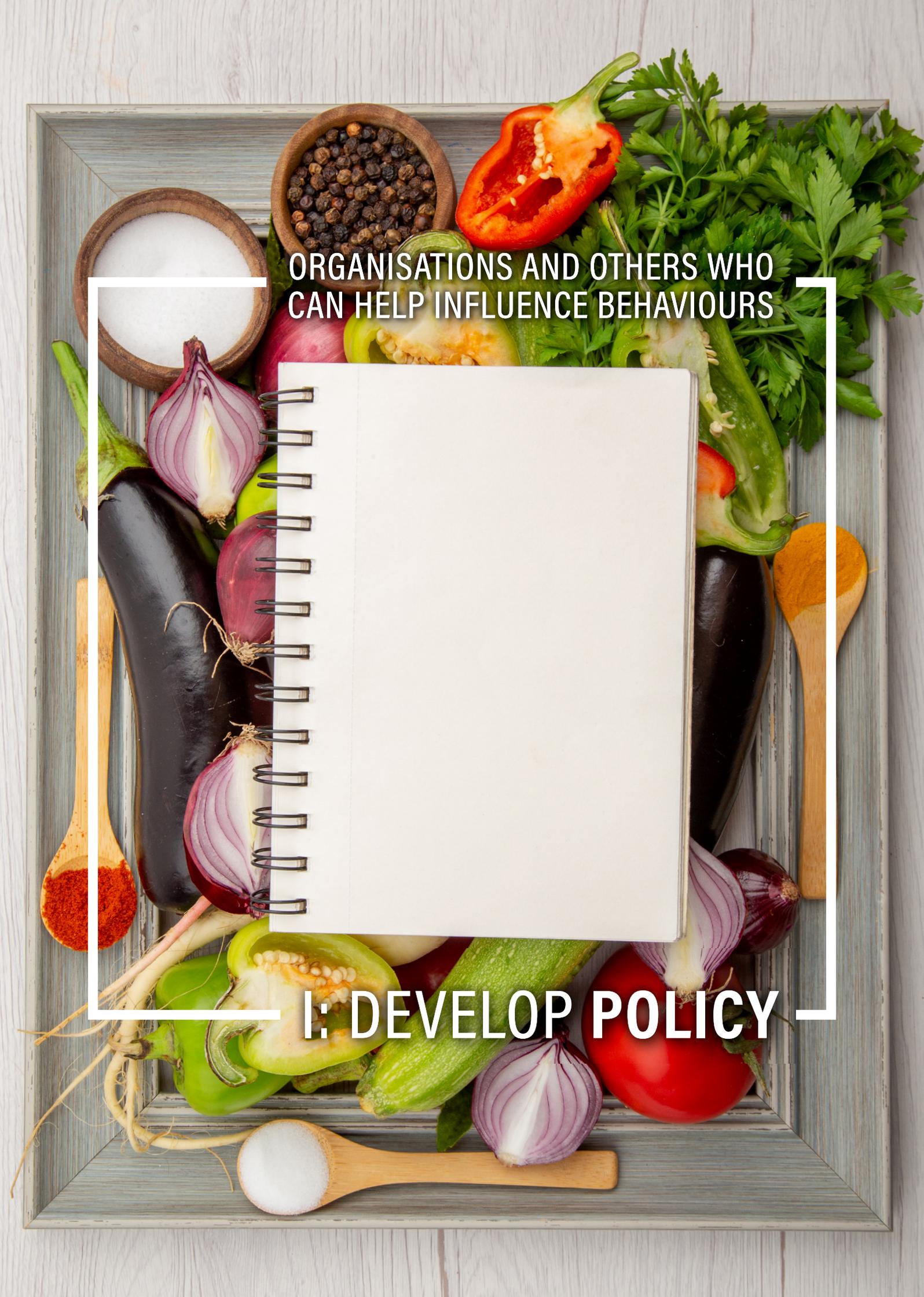
Table 2 | **A simple example of how the MOA model can be applied to a real food waste situation - storing food correctly**

MOTIVATION (driver/reason that a consumer might take action)	ABILITY (skills/knowledge in order to take action)	OPPORTUNITY (the time/space to take the action - is it an option for them?)
Does the consumer know what the best storage conditions are?	Does the consumer know how to check the conditions are correct?	Does the consumer have access to the correct storage options?
Does the consumer know/care that they could save money and reduce food waste by storing food correctly?	Does the consumer have the skills to know the value of the food they are storing and hence potential to save money?	Does the consumer have the time/energy to ensure food is stored correctly?
Is storing food correctly a behaviour done by friends, family or modelled by chefs/influencers in the media? Is the behaviour seen as normal?	Does the consumer, their family and friends have the knowledge and confidence to use the correct storage?	Does the consumer discuss with friends and family and do they have time to make the assessment?

The example above seeks to illustrate that most effective initiatives target motivation, opportunity and ability together.

The following sections are organised around the five action types listed in Table 1.





ORGANISATIONS AND OTHERS WHO
CAN HELP INFLUENCE BEHAVIOURS

I: DEVELOP POLICY

Through a combination of regulation, information, and incentives, policymakers should endeavour to ensure that it is always easier and cheaper to prevent food waste, and donate, reuse or recycle food, than to send it to a disposal destination, such as landfill or incineration.

Ensuring that policy does not inadvertently lead to food waste requires thoughtful laws and policies which result from consultation with key stakeholders. For example, indirect policy barriers such as inconsistent and confusing date labelling can result in unintentional barriers to reducing food waste.

Many of the examples in this policy section focus on diversion of food waste rather than prevention. There are very few clear examples of policy focused on food waste prevention. This is probably because there are still few examples of effective policy measures being developed. More concrete examples will be added over time as they become available.

It may help to structure policy actions by thinking of them in terms of types of governmental interventions that may be implemented. These governmental interventions can range from direct regulation (requiring actors to do or not do something) to using funding to achieve a goal, to providing information.¹⁰

Table 3 | Policy Intervention Types¹¹

POLICY AREA	DEFINITION	EXAMPLE
A. Regulation	Creating or changing requirements	Creating requirements on businesses to help consumers reduce food waste e.g. through date labels (standardising and simplifying labels), advice on storage etc. Creating requirements on businesses to set targets, measure and report on their waste – which is a powerful tool that can help raise awareness among employees and customers
B. Subsidies and Grants	Financially incentivising desired activity or disincentivising undesirable activity	Unfortunately, there are few examples of incentives. Disincentive options include charging for collection and taxing disposal of food waste
C. Service Provision	Offering or expanding access to services	Providing collections of food waste which is separated from other waste or recycling to allow processing. This separate collection can help consumers see the amount of food they are wasting and as a result waste less ¹²
D. Information	Requiring or regulating the sharing of information	Standardising and simplifying date labels on foods
E. Education and Consultation	Providing and sharing information	Educating the public, including children, about the impacts of food waste and the benefits of not wasting food
F. Food donation	Whilst not strictly food waste reduction, many policy makers encourage food donation as an alternative	Food donation can help ensure that food which might become waste does not end up being disposed of as waste

A. REGULATION

Through targeted regulation or deregulation, governments can discourage consumer food waste.

Food Waste Separation Requirements

In order to prevent wasted food from ending up in destinations where there is limited value (e.g., a landfill), governments can institute food waste separation requirements. These requirements may be accompanied by either a penalty for failing to comply with those requirements or an incentive to motivate individuals to minimise food waste. By limiting the amount of organic waste that can be disposed of in landfills, organic waste bans and waste recycling laws compel food waste generators to explore more sustainable practices like waste reduction, donation, composting, or anaerobic digestion in order to minimise costs.

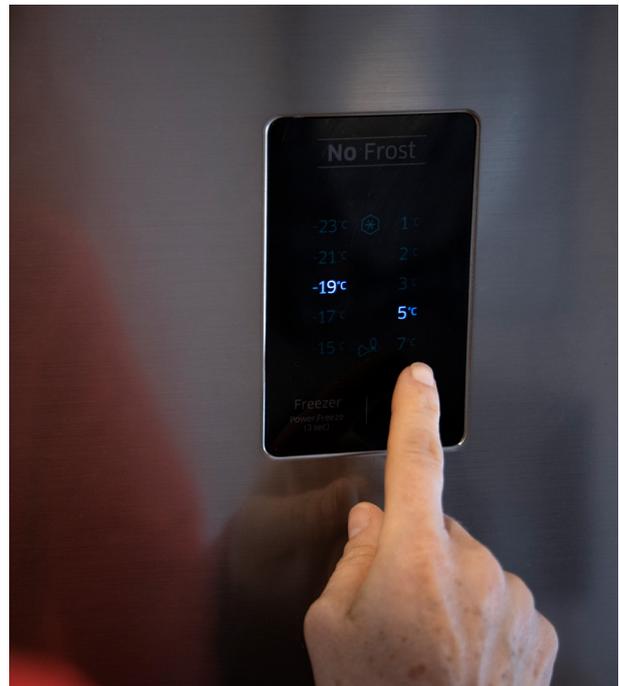
EXAMPLES

Examples which have been evaluated are included here. Annex 2 provides further examples where there is less evidence of evaluation.

- **South Korea** banned sending food to the landfill in 2005. In 2013, the government *instituted* a requirement that all food waste be disposed of in biodegradable bags, charging residents for both the bags and the volume of food that they throw out; this is the only option for food disposal and noncompliance *results* in a fine. The food waste collected from the program is used for animal feed, when possible, or used for compost to fertilise gardens and farms. As a result of these efforts, South Korea's Ministry for the Environment *estimated* that the amount of food recycled increased from 2.1% in 1995 to 90.2% in 2016. The system also saves the local government money (from reduced treatment/processing costs).



- **Taiwan** incentivises residents to opt for recycling and special disposal of food waste by requiring that individuals dispose of all their waste in government-certified bags, which individuals must purchase and which cost more depending on the size. Recyclable materials and “kitchen waste” including food scraps, on the other hand, are *collected* by the Environmental Protection Bureau for free. Thus, consumers have an incentive to dispose of food scraps using the free disposal rather than spend money on sending food to the landfill. From 1997 to 2011, individual households in Taiwan *reduced* their daily waste from two and a half pounds per day to less than one pound per day and the national recycling rate increased from 5% to over 60% during the same period.



B. SUBSIDIES AND GRANTS

Governments can financially incentivise research and innovation to address food waste as well as supporting replication and expansion.

EXAMPLES

- Social Innovation Fund **Ireland's** new Growth Fund, financed in part by the private sector and in part by the Department of Rural and Community Development, *awarded* its first funding to FoodCloud in 2018. *FoodCloud* is an Irish non-profit that works to connect businesses with safe and high-quality excess foods to charities and organisations across the country that serve communities in need. Since then, the government has continued to *recognise* the organisation in its messaging role in reducing food waste.
- Food waste innovation competitions are also operated by the **InterAmerican Development Bank** and partners in *Colombia* and *Mexico*, awarding funding to finalists along with the opportunity to participate in an Innovation Bootcamp, offering workshops on innovation, communications and business models, and mentoring by experts and industry leaders.
- The **New Zealand** government financially supports its *Waste Minimisation Fund*, which then funds local government projects that encourage the reuse, recovery, and recycling of materials. Auckland Council, for example, used grant money from the fund to support *Kai Ika*, a project addressing food waste and food security by repurposing conventionally (edible) wasted parts of fish (like fish heads) into meals, and to be distributed within the community.
- The Ministry of Economic Affairs and Employment and Business in **Finland** has supported the development of initiatives to reduce food waste, such as the Res-Q application¹³ (a platform for selling surplus food from restaurants) and Fiksuruoka¹⁴ (an online store for selling surplus groceries at discounted prices).

C. SERVICE PROVISION

By providing food waste collection services, such as food waste bins, governments can provide consumers with an alternative to sending their food waste to the landfill.

Results from the UK have shown that separate food waste collections were significantly associated with lower total food waste arisings¹⁵. These results suggest there may be potential to prevent food waste with the introduction of food waste collections, though wider evidence is needed.

Governments can financially encourage citizens to begin recycling their food waste by financing the transition costs associated with shifting from landfilling to food processing. Offering kerbside food waste collections effectively makes recycling—rather than discarding—food scraps the default option. Some cities provide food waste containers for residents and schedule weekly food waste recycling pickup services alongside standard waste and recycling. If free food waste recycling services are not available, governments may issue rebates to support consumer investment in their own food waste recycling service or solution.

EXAMPLES

- Cities in the **United States** that have introduced free, default food waste recycling services to residents include *Cambridge, MA*, *San Francisco, CA*, *Portland, OR*, *Boulder, CO*, *Denver, CO*, and *Seattle, WA*.
- To help residential households set up their own composting systems, the **San Diego, California** Environmental Services Department *provides* vouchers between \$50-\$130 for customers to buy certain home composting equipment at a local hardware store. **Austin, Texas** *provides* consumers the option of a \$75 rebate or voucher for purchasing home composting equipment; consumers must also complete a free composting class to receive the incentive.



D. INFORMATION

Adopting the current best practice recommendations around standardising the type of information that food producers share may help to reduce food waste.

A major driver of food waste is the general misconception about the date labels such as ‘sell by,’ ‘use by,’ or ‘best before,’ affixed to food products. There are a number of aspects to this:

1. *Consumer misconception.* Many consumers interpret date labels as indicators of the safety of food, when in reality for the vast majority of foods, date labels indicate freshness or quality rather than food safety.
2. *Legislation and [best practice for labelling](#).* Implementing a standardised policy for a maximum of one date label per product (either a ‘best before’ or a ‘use by’ date) - as several countries have already done - can reduce consumer confusion about date labels and consequent unnecessary waste. Such a policy should require a standard safety-based date for foods that will pose a health hazard after a specific date and a standard quality-based date label for other foods.
3. Policy/legislation that allows for food donation past quality-based dates where appropriate.
4. Initiatives to understand how better information can be provided to consumers to avoid misconceptions and then implementation of that advice/information.



The UN Food and Agriculture Organisation’s *Codex Alimentarius* Commission, which sets international food standards with an eye towards food safety and quality, provides General Standards for Date Labelling that recognises a standardised maximum of one date per product labelling system as the best practice for all countries (i.e. either a ‘use by’ date or a ‘best before’ date). In addition, Champions 12.3 and the Consumer Goods Forum (CGF) have developed [date labelling guidance](#) and the Harvard Law School Food Law and Policy Clinic and Global Foodbanking Network have also produced a guide on best practices for date [labels](#) as part of the [Atlas Global Food Donation Policy](#) project.

The European Commission is currently consulting on different graphic options for ‘Use-by’ and ‘Best Before’ date labels that are more self-explanatory to the public, which can be accompanied by a consumer education campaign to clarify the meaning of these labels so consumers can make informed decisions about when to discard food products.

A recent review of WRAP’s date labelling evidence suggests that the presence of a date does influence behaviour, making people less likely to discard food before the date and more likely to discard it afterwards. For fresh produce stored correctly, this could result in significant waste.¹⁶

More insight is required to understand the impact of removing a quality date mark on nudging citizens to use their judgement rather than defaulting to using a date for the decision.

Provision of clear, consistent storage guidance (e.g. on pack, on trusted websites or in the fridge), combined with other cues, are thought to be effective, as many consumers do not know which foodstuffs are best kept in the fridge or at room temperature.^{17,18}





EXAMPLES

- In the **United Kingdom, and across the EU**, food producers must use either a ‘Best Before’ or ‘Use By’ date when labelling their products. The requirements surrounding the use of either label are *clearly defined* by the relevant government. Most foods should use the ‘Best Before’ label, which communicates food that is labelled to indicate when it will be at its best quality but may still be consumed even if past that date. ‘Use By’ labels should only be used on food products for which consuming food after the date would lead to food safety concerns. All foods, other than uncut, fresh produce, are required to carry one of these two labels. The United Kingdom also provides *clear guidance* for businesses on how to determine which label to use for their products. The United Kingdom’s date labelling standards allow for the donation and *redistribution* of food that has passed its ‘Best Before’ date; only foods that have passed their ‘Use By’ date cannot be donated.
- In order to facilitate the redistribution of food past the ‘best before’ date, **Latvia** has adopted additional regulations²⁰ that include indicative timeframes for specific food categories past their minimum durability dates, which may be donated to charities, persons registered in the Register of Social Services, municipal social services, or directly to the final consumer. Other EU Member States (e.g. Italy, Belgium) have adopted similar guidance in order to facilitate safe redistribution of food past the ‘best before’ (quality) date.
- In the **United States**, NRDC has developed *guidance* for training Health Inspectors to provide information on safe food donation practices to food service providers. In this way, they have identified a very effective messenger to dispel uncertainty about legal food donation that often results in the waste of good quality food that could have been safely donated.

In the UK, WRAP has produced guidance, in conjunction with government and the Food Standards Agency (FSA), about how to apply and use food date labels on food packaging.¹⁹

E. EDUCATION AND CONSULTATION

Governments can play an important role in creating and sharing public education around food waste prevention by creating their own campaigns or providing outside organisations with the support and funding needed to educate the public.

In combatting food waste, governments can provide resourcing and funding for food waste prevention awareness campaigns and programmes as well as targeted education around confusing topics like date labels. Many of these are explored in more detail in the ‘Awareness’ section.

EXAMPLES

- In the **United Kingdom**, the Waste and Resources Action Programme’s (WRAP) *“Love Food Hate Waste”* nationwide behaviour change campaign *reduced* consumer food waste by 21% in five years by educating consumers about the costs of food waste and providing practical strategies for reducing that waste.
- In China, under the 2020 Anti-Food Waste Law, food businesses are required to display signage in restaurants or on menus to remind consumers of the value of food and to educate them about the implications of food waste, among many other provisions.

The majority of **EU Member States** have developed—or are currently developing—national plans or strategies for food waste prevention. These include awareness-raising actions aimed at consumers such as national campaigns. Pursuant to these public campaigns, governments across the European Union have set up websites with information about food waste and ways to prevent it at household and business levels, including best practices. Some examples include **Croatia’s** *‘waste prevention portal’*, **Estonia’s** *‘Respect food completely!’*, **Finland’s** *‘Food waste week’*, **France’s** *‘angi-gaspi’ website*, **Ireland’s** *‘Stop Food Waste’*, **Lithuania’s** *‘Sincerely, food’*, **Slovenia’s** *‘Our Super Food’*, **Spain’s** *‘More food, less waste’*, **Germany’s** *‘Too good for the bin!’ initiative* and **Netherlands** *‘How #waste free are you?’*.

- The **Swedish Food Agency** organised a *public awareness campaign* for social media,²¹ popularising the new term *svinniska* as a way to describe consumer actions to reduce food waste (e.g. meal planning, storing food, using leftovers etc.). The campaign aims to increase consumers’ knowledge about the environmental impacts of food waste, to promote ways to reduce food waste at home and motivate consumers to take such action.
- The Government of **Flanders** (Belgian region) funds circular projects, some of which focus on the revalorisation of food waste streams, through a dedicated programme called ‘Circular Flanders’²². Under the ‘Good Food strategy - Towards a sustainable food system in the Brussels-Capital region’, awareness raising activities have been carried out concerning food waste in Brussels. These have included pilot projects in collaboration with non-profit and private organisations (through calls for proposals). Such an example is the collaboration with non-profit organisation FoodWIN to run the ‘Food Waste Mission Brussels’²³ campaign, aiming to help 1000 residents to reduce their food waste by 30%.
- **Estonia** finances awareness raising actions on food waste delivered by private sector organisations under the *environmental awareness programme* of the Environmental Investment Centre, which supports the development of sustainable consumption habits among Estonian citizens. Examples include campaigns like *‘Eat food wisely’* by the Stockholm Environment Institute Tallinn Centre and its partners, *‘Valuing Food’* by the Estonian Union of Co-Operative Housing Associations and *‘Let’s keep good food’* by the collaboration platform Green Tiger. The programme *‘Resource efficiency in enterprises’* supports projects that aim to transform surplus food or food co-products into new added-value products.



F. FOOD DONATION

Many governments have introduced policy measures supporting food donation. Whilst this is an important option to direct food which might have been wasted, to people in need, it does not directly relate to consumer behaviour change or necessarily reduce food waste in households. The box below gives an overview of some of the introduced measures.

A RELATED AREA: FOOD DONATION POLICIES

Food surplus redistribution serves a dual-purpose action that ensures that those facing food poverty do not go without and prevents safe, edible food from either being recycled or wasted.

Supportive policies are critical for reducing food waste along the value chain, in particular to ensure that surplus food that is safe for consumption goes to feed those in need. The [Global Food Donation Policy Atlas](#) project, a partnership between the Harvard Law School Food Law and Policy Clinic (FLPC) and The Global FoodBanking Network (GFN), aims to promote strong food donation policies as global solutions to both hunger and food loss and waste. The project provides comparative analysis on food donation laws as well as policy recommendations for countries around the world on seven key areas of law. To learn more, explore the Global Food Donation Policy Atlas [interactive platform](#). Below are some topics that are most relevant to reducing consumer food waste and keeping safe, edible food in the food supply.

Liability protection: A significant barrier to food donation is the fear among donors and intermediaries that they will be found liable if a food recipient falls ill after consuming donated food. Some countries have adopted liability protections to mitigate this concern. **Argentina** [offers](#) comprehensive national liability protections for food donors and food recovery organisations. In the **United States**, the [Bill Emerson Good Samaritan Food Donation Act](#) provides comprehensive national protection to food donors and the nonprofit food recovery organisations that distribute food donations at no cost to populations in need. **Italy** also [provides](#) liability protections to donors of food.

Food donation requirements: Some countries have employed food donation requirements in order to influence business behavior and promote more sustainable food systems. **France** enacted a law in 2016 [requiring](#) large grocery stores (those larger in area than 400 m²) to donate— rather than throw away – excess, unsold food. In accordance with the Egalim Law (2018), this obligation has been extended in 2019 to collective catering operators preparing more than 3000 meals/day and to food and drink industry operators with over 50M€ turnover, as well as to wholesalers with more than 50M€ turnover, in 2020. In the **United States**, **California** [passed](#) a law requiring 20 percent of all landfill-bound edible food to instead be redirected for human consumption by 2025. **Peru's** Food Donation Law [includes](#) a donation requirement on food storage facilities and supermarkets (though the law is still not enforced, pending final implementing regulations). In the Czech Republic, retailers over 400m² are obliged to establish partnerships with relevant food aid organisations to donate surplus food.

Tax incentives for food donation: Transportation and storage costs are often cited as barriers that prevent manufacturers, retailers, and restaurants from donating food. [Tax incentives](#), such as deductions or credits, can help to offset these costs and make donation a more attractive option. **Colombia** [allows](#) donors to claim a tax credit up to 25 percent of the value of donations made to food banks and charitable organisations. The **United States** [offers](#) an enhanced tax deduction for food donations that provides up to twice the basis value of donated food, up to a cap of 15 percent of net income. Eliminating tax barriers is also an important element of tax policy that is favorable to food donation. For example, in countries that employ a Value Added Tax (VAT), the financial obligations that may occur when food is donated can lead donors to opt to discard rather than donate surplus food. Several countries have passed policies to alleviate those costs, such as [Chile](#), [Mexico](#), and many [European Union Member States](#).



ORGANISATIONS AND OTHERS WHO
CAN HELP INFLUENCE BEHAVIOURS

II: DEVELOP AWARENESS

Awareness raising is any activity aimed at increasing awareness, knowledge, and motivation, which may increase consumer motivation to change their behaviour. Sustainable behaviour change requires more than just awareness raising but there is clearly some overlap between the two. This section focuses on basic awareness raising and persuasion. The next section (intervene) covers incentivisation, training and other types of interventions.

This section covers two aspects of awareness raising:

- Basic awareness raising and information provision
- Persuasion (using communications to stimulate action e.g. through labels which encourage consumers to store products in the best way)

EXAMPLES

AWARENESS RAISING SUPPORTED BY GOVERNMENT FACILITATED COMMUNICATION CAMPAIGNS

- In the **United Kingdom**, the Waste and Resources Action Programme's (WRAP) "[Love Food Hate Waste](#)" programme helped [reduce](#) consumer food waste by 21% in five years. Its consumer-focused campaigns, developed in collaboration with the government, celebrities, and businesses, aim to increase awareness about the costs of food waste and provide practical strategies for reducing food waste. The program [cost](#) £26 million over five years to implement, but was responsible for £6.5 billion in savings to households in avoided food costs, as well as £86 million in savings to UK government authorities in avoided waste disposal costs. Altogether, the initiative [reaped](#) a total benefit-cost ratio of 250:1 - a very worthwhile investment of government funds. In addition, the UK [avoided](#) 3.4 million tons of greenhouse gas emissions and saved 1 billion cubic meters of water (about 400,000 Olympic-sized swimming pools) each year after launching the campaign. "Love Food Hate Waste" can be licensed and is currently licensed in eight countries.
- In **the Netherlands**, the ongoing National food waste activation campaign contributed to a significant reduction of food waste. Dutch households wasted an average of 34.3 kg of solid food (including thick liquids and dairy products) per person per year in 2019. A reduction by 17% compared to 2016 (41.2 kg) and 29% compared to 2010 (48.0 kg)²⁴.
- **Singapore's** [National Environment Agency](#) launched a food waste reduction program in 2015 that includes educational materials for different producers of types of food waste generators, including retailers and manufacturers. Materials associated with its "Food Waste Reduction" program were featured across newspapers, television, and social media. As part of that campaign, the agency launched a program targeting schools known as the "[Love Your Food @ Schools Project](#)." The initiative made it easier for children to compost their food scraps by [installing](#) composting equipment in select schools and [providing](#) educational materials. Educating children at an early age can be a particularly effective strategy to create beneficial, lifelong habits around reducing food waste.
- **United States** Food: Too Good to Waste (FTGTW) is a food waste prevention toolkit designed by the United States Environmental Protection Agency (EPA) to engage households in reducing food waste at home. Although the EPA created the toolkit, it relies on local governments and community organisations to organise groups of consumers to participate in the "challenge" outlined in the toolkit. FTGTW provides an [implementation guide](#) for organisations and governments on how to design the campaign, recruit participants, collect and analyse results, and successfully scale up. An evaluation of the effectiveness of the toolkit by the EPA found that 86% of the participants "found the strategies and tools useful" and 96% said they would likely continue to utilise their learnings from the program.
- Local and state governments, including **Honolulu, Seattle, Iowa City, and Rhode Island** have organised Food: Too Good to Waste challenges in their jurisdictions. Incentives can complement campaigns like these. For example, the **King County**, Washington Solid Waste Division achieved a high retention rate for its pilot of the Food: Too Good to Waste challenge by [sending](#) out short weekly surveys for prize drawings. In **Charlotte, North Carolina**, the Solid Waste Services Department [awarded](#) the winner of the Food: Too Good to Waste challenge tickets to a professional basketball game. The Oregon Department of Environmental Quality launched its [Don't Let Good Food Go Bad](#) campaign in 2021 to raise awareness and encourage consumers to reduce food waste via online resources and educational materials.

- UNEP Goodwill Ambassadors, chef Massimo Bottura and model Gisele Bündchen, use their social media channels to communicate the impacts of food waste, and how they tackle this in their own kitchens. For example, at the outset of the Covid-19 pandemic, Bottura hosted the Instagram Live series, Kitchen Quarantine <https://massimobottura.it/kitchen-quarantine/>, where he demonstrated how to use up leftovers in his refrigerator and fielded practical questions from viewers.

AWARENESS RAISING SUPPORTED BY BUSINESS

- In **Portugal**, as part of the ‘*United Against Waste*’ alliance,²⁵ the Portuguese Retailers Association launched a national campaign in supermarkets to educate consumers about the difference between ‘use by’ and ‘best before’ date markings and to clarify that foodstuffs with a date of minimum durability (‘best before’) can still be consumed after this date. Similar campaigns have been promoted together with national authorities in charge of food safety and animal health.

AWARENESS RAISING SUPPORTED BY NGOS

- Funded by the Postcode Earth Trust,²⁶ the **Scouts UK** Make Food Better²⁷ activity has developed a programme that is suitable for young people. A fun and easy two weeks’ worth of fun activities explores the impact of throwing away edible food away at home. The activities are linked to achieving Scouts and Beaver badges. In addition, young people are required to keep a food diary in the first week to see how much they throw away.
- The *Edible Schoolyard Project*, which works on food sustainability with schools around the world, developed lesson plans to engage schoolchildren on food waste together with UNEP, during a period of school closures and home schooling in 2020. Also aimed at children, Brazilian Agricultural Research Institute EMBRAPA developed a special edition comic book using the beloved Brazilian characters *Turma da Monica* to present the issue of food waste to children and their parents, highlighting practical tips to reduce waste throughout.

EDUCATION TO HELP INFORMING AND RAISE AWARENESS

Education is used to increase knowledge or understanding in order to increase consumers’ capability to carry out the desirable food waste prevention behaviours.

School age curriculum

- The World Wildlife Fund’s (WWF) “Be a Food Waste Warrior” curriculum offers grade-based lessons, activities, and resources to teach kids about the importance of minimising food waste and the role they can play in preventing it.²⁸
- **FAO** and the International Food Waste Coalition joined forces to develop the “Do Good: Save Food!” series of teaching manuals targeted to children of four different age groups. The guides seek to promote awareness of the economic, social, and environmental consequences of wasting food, advantages of preventing food waste, actions that children can take to reduce food waste and good habits that they can develop and introduce to their friends, families, and communities to reduce food waste.²⁹
- In the **Netherlands**, a special free issue of the Donald Duck magazine dedicated to food waste prevention was distributed to 4,500 schools in the last week of August and the first week of September. Students from 9 to 12 years old learned about food waste in a fun way and what they can do about it. The magazine was coupled with the teaching package “Taste Lessons” about preventing food waste.³⁰
- The region of **Flanders (Belgium)** developed educational materials³¹ on food waste prevention that can be used in Dutch-speaking schools across Belgium. Other such examples include **Estonia’s** school campaign ‘*Let’s cook together!*’, **Hungary’s** ‘*Wasteless*’ school programme and **Ireland’s** *resource pack* for schools.
- In Finland, the government funds a Food Waste Battle³² school competition that takes place every year.
- With the assistance of the Agency for Environment and Energy Management (ADEME), 1000 primary and secondary schools in France carried out food waste diagnoses and implemented food waste reduction actions between 2016 and 2018. These establishments have reduced their food waste quantities by an average of 20% across all the stages of their services.

THE EXPERTS’ ADVICE: HOW TO RAISE AWARENESS

The following are some examples,

TYPE OF APPROACH	BEHAVIOURAL INSIGHT ON HOW PEOPLE MAKE DECISIONS	Action/instruction on what to do
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Table 4 | Expert advice on awareness raising approaches

APPROACH TYPE- PERSUASION	
THE WAY INFORMATION IS PRESENTED AFFECTS HOW WE UNDERSTAND IT.	
Create a moment	The TV programme <i>Blue Planet II</i> was catalytic in engaging the public with the plastic pollution problem, making it meaningful and persuading people to think about their behaviours and the impact of human activity on the marine environment.
	EXAMPLE: Oddbox, a UK-based fruit and veg. box provider, used International Day of Awareness of Food Loss and Waste to submit an application to the UN requesting that the country of <i>‘Wasteland’</i> - the third largest emitter of greenhouse gases after China and the US - be admitted as a member state.
	EXAMPLE: Chef Dan Barber set up a pop up restaurant in London which served lunch, tea and dinner made from food that would otherwise gone to <i>waste</i>
SHOW THAT EVERYONE CAN DO THEIR BIT – LOTS OF SMALL STEPS ADD UP TO A BIG OVERALL IMPACT	
Encourage agency	People need to recognise that there is a problem and that they are part of it. They also need to understand they are the solution and that individual actions, which might not seem particularly significant, really do add up and make a difference.
	EXAMPLE: As part of a project called <i>TRiFOCAL</i> , funded through the EU Life programme, <i>Small Change Big Difference</i> set out to help everyone in London lead better, healthier, more sustainable lives. Developed by partners WRAP, the London Waste and Recycling Board (LWARB) and Groundwork London, the project also acted as a testbed for other European cities.
WE JUDGE THE IMPORTANCE OF SOMETHING BY HOW EASILY EXAMPLES COME TO MIND.	
Connect wasting food to saving money, climate change or another motivator	Public awareness of the impact of wasting food on climate change is less common than for other environmental factors. Research ³³ found that whilst 81% of people in the UK were concerned about climate change, less than a third (32%) made the link between wasting food and climate change.
	EXAMPLE: In 2021 WRAP launched the UK’s inaugural Food Waste Action Week to drive awareness nationwide and spread the message that <i>Wasting Food Feeds Climate Change</i> . One in three UK adults heard or saw messaging about wasting food during this first annual week of action and nearly half of them reported either doing something differently to save food or planned to. View the ‘hero’ video for Food Waste Action Week here .
WE PRIORITISE THE PRESENT OVER THE FUTURE, AND WE ATTACH MORE WEIGHT TO EVENTS CLOSER TO HOME THAN FURTHER AWAY.	
Dial up the urgency- make it present	As George Marshall, the author of <i>Don’t Even Think About It: Why Our Brains Are Wired to Ignore Climate Change</i> says in this article : “The language we use [to engage people with climate change] has to speak to a person’s values and resonate with them. If it doesn’t, people will simply say, ‘I’ll deal with the problem when I see it.’ But by then it will be too late.” Similarly, in countries spanning North and South America, Western Europe and East Asia, climate change is thought to be more severe elsewhere in the world than at home, which prevents immediate action. This heuristic is known as spatial discounting.
	EXAMPLE: In 2019 UK newspaper The Guardian updated its style guide, preferring climate emergency, climate crisis or climate breakdown to ‘climate change’ and global heating instead of global warming. This change signals the importance of action now, instead of in the future. This language is also endorsed by scientists ³⁴ and has even been used by the UN secretary general António Guterres ³⁵ .
	Frame the problem by relating it to something concrete and not abstract e.g. ‘save x amount of water or trees’ instead of ‘better for the planet’. See also the example below on climate change images in UK press which bring the issue closer to home and make it more real.
EVOKING EMOTION IS A POWERFUL TRIGGER FOR BEHAVIOUR CHANGE.	
Provoke an emotional response	‘Food waste’ is a term used frequently by governments, local authorities/ municipalities and campaigners, but may distance people from and devalue food, whereas wasting food has, at least, more agency. The visual images associated with wasting food can also feel somewhat removed from everyday life. <i>A picture is worth a thousand words</i> has never been more fitting than in the case of photographer Justin Hofman’s striking image of a seahorse ³⁶ , which communicated the problem of plastic pollution so poignantly - better than any written explanation - and persuaded millions of people to commit to action.
	EXAMPLE: Images accompanying climate change articles in the UK press have moved away from polar bears and melting ice caps to instead portray flash floods and protests, in line with a rise in climate concern in the UK ³⁷ . These <i>images</i> bring the issue closer to home, depicting scenes that British consumers can relate to and are more personally meaningful ³⁸ .

APPROACH TYPE- INCENTIVISATION

WE ARE MOTIVATED BY DIFFERENT THINGS AND DIFFERENT REWARDS

Make it attractive and desirable	Not everyone is motivated by saving the planet or being a good person. For some people, practical benefits, such as saving money or time, are important. For others, their identity – how they feel or how they look to others – is key.
	EXAMPLE: Van der Werf, Seabrook and Gilliland (2019) found their Canadian survey respondents overwhelmingly selected “reduce amount of money wasted” over reducing environmental and social impacts as the key motivator to reducing food waste.
	EXAMPLE: Oregon Department of Environmental Quality’s Bad Apple campaign leads with the monetary cost of food waste because they found those messages resonated most in their state.

MAKE IT EASY TO DO THE RIGHT THING – SIMPLER THAN NOT DOING THE RIGHT THING

Offer simple solutions	Changing one thing at a time is easier for people to do and is likely to have more impact, meaning larger numbers of people can take an action. ‘Planning’ is not a food waste prevention behaviour: it is a strategy made up of multiple behaviours. Asking people to plan is asking a lot of them. Be specific.
	EXAMPLE: Encouraging people to make a weekly meal plan through simple guides. See Example 1 and Example 2 .

APPROACH TYPE- MODELLING

WE ARE MORE LIKELY TO RESPOND IF A MESSAGE IS FROM SOMEONE WE TRUST/ADMIRE OR WHO IS ‘LIKE ME’.

Choose the right messenger	The person who delivers the message is as important as its content. <i>“When we’re making decisions on an issue, we look to see whether we believe the person informing us, because when something is outside of our personal experience, we’re having to take it on their word.”</i> ⁴⁰ When targeting a particular audience, using a messenger from or who represents that audience can make people feel like they are ‘like me’.
	EXAMPLE: Oscar Ekponimo , founder of Chowberry App in Nigeria. EXAMPLE: Other examples of celebrities talking about food waste can be found here .

WE ARE MORE LIKELY TO ADOPT A BEHAVIOUR WHEN WE SEE OTHERS DOING IT.

Show everybody’s doing it	Showcasing good food management behaviours could help to influence the behaviour of others and lead to a new (positive) social norm of saving (not wasting) food. Social norms are shared standards of acceptable behaviour, which can be very powerful drivers of behaviour change. Using credible models and authentic influencers can help.
	EXAMPLE: Love Food Hate Waste had celebrity endorsers and social media campaigns.

APPROACH TYPE- TRAINING (AND INCENTIVISATION)

WE NEED TO KNOW HOW TO DO IT IN ORDER TO BE ABLE TO DO IT

Impart skills to enable change	Promoting positive food management behaviours, such as creative cooking with the ingredients available, whereby people are involved in the process and there is an end result of which they can be proud, could help them to value their food more.
	EXAMPLE: Hellmann’s levers its high-reach brand communications to inspire people to <i>‘make taste and not waste’</i> ³⁹ . The content focuses on how a simple ingredient in millions of people’s home becomes an easy solution to the problem of wasting food. It does this by demonstrating a more creative role for the product in recipe hacks that transform leftovers and forgotten foods into tasty meals.
	Growing your own food can help to reduce food waste – both because homegrown food is freshest and can be harvested right when you are ready to eat, but also because you value food more when you recognise the effort that went into growing in. The Stop Food Waste campaign in Ireland supported the television series Grow Cook Eat, demonstrating how to grow two high-wastage foods – lettuce and salad .



ORGANISATIONS AND OTHERS WHO
CAN HELP INFLUENCE BEHAVIOURS

III: INTERVENE

There is a clear distinction between “Developing Awareness” and “Intervening.” Awareness raising is focused on awareness only e.g., through a mass media or other campaign. It does not necessarily lead to action. Intervention seeks to encourage consumers to take action and to change their behaviours. The evidence is that you need both to be successful.

There are many different types of intervention that can be used, including:

- Environmental restructuring (changing the physical or social context e.g. providing customers with smaller plates)
- Incentivisation (creating an expectation of reward e.g. providing prize draws for participation or creating expectation of punishment or cost e.g. charging for disposing of food)
- Training (imparting skills e.g. providing demonstrations of cooking skills and techniques or giving menu suggestions for consumers)
- Role models (providing examples for people to aspire to e.g. TV programmes with celebrities and chefs using leftovers or using food that might otherwise have gone to waste. Role models can show how easy it is – creating a social norm)
- Enablement (increasing the means or reducing the barriers to increase ABILITY (beyond education and training) or OPPORTUNITY (beyond environmental restructuring) e.g. providing portion sizers to help consumers cook the right amount of e.g. rice or pasta)



In parallel, **EAST**⁴¹ is a useful checklist, which includes four easy steps that can help in designing an intervention.

EASY	ATTRACTIVE	SOCIAL	TIMELY
<ul style="list-style-type: none"> • Make the desired behaviour the default (people are more likely to go for it) • Reduce the hassle factor to increase uptake • Simplify messaging and reduce complex goals into simpler actions 	<ul style="list-style-type: none"> • Attract people’s attention with images, colour, and personalisation • Design rewards that incentivise the desired behavioural outcomes 	<ul style="list-style-type: none"> • Show that most people already do the desired action (or increasingly are) • Avoid discussion of the negative/competing behaviour • Use the power of physical and digital networks to create and harness communities of interest • Encourage people to make a social commitment to others 	<ul style="list-style-type: none"> • Prompt people when they are likely to be most receptive, such as at the point of purchase or use • Consider the immediate costs and benefits – they are more powerful than distant incentives • Help people plan their response – it helps turn good intentions into action

The literature on proven food waste prevention interventions is limited⁴². The examples below are used to illustrate how behavioural science can be developed through better understanding of what it takes to change a behaviour. By using the science of human decision-making and the EAST principles, interventions will have a strong base for success. The evaluation of any intervention is crucial not only to demonstrate it that ‘works’, but also to share why it works in terms of changing behaviour (or not) with others in the field.

In the intervene section, interventions are defined as actions that are non-campaign activities, e.g., the primary role is to change behaviour as opposed to raise awareness.



EXAMPLES

- **WRAP's *Behaviour change programme*** includes a range of interventions, for example a nudge on bread packaging designed to change the existing perception that bread (one the top 5 wasted items) is only fresh for four days. The nudge encourages the perception that bread is likely to be fresh and edible for seven days.
- **Food appliance manufacturers** can play a role in engaging or enabling citizens to reduce food waste. For example, fridge manufacturer Hisense⁴³ promotes food waste reduction tips, and Samsung⁴⁴ has incorporated a 'Family Hub' that links three cameras in the fridge to allow you to see what is in your fridge at any time. IKEA creates *transparent food storage containers*, as research shows that making leftovers more visible in the fridge increases the chance they will be eaten. IKEA also developed the *Scraps cookbook* to help consumers make the most of the food they buy.
- **Technology providers** also have a role to play. For example, Too Good To Go, a mobile application that connects customers to restaurants and stores that have unsold food surplus, initiated national pacts with food business operators on date marking, sometimes in collaboration with public authorities, in various countries across Europe (e.g. *France*⁴⁵, *Spain*⁴⁶, *Belgium*⁴⁷, *Denmark*⁴⁸, *Poland*⁴⁹ etc.). The pacts include the development of national campaigns to raise awareness on the difference between 'best before' and 'use by' dates, and depending on each country, may include actions such as the creation of "anti-food waste" aisles in retail stores etc.
- ResQ Club⁵⁰ is a Finnish company connecting sustainable restaurants, cafes, and grocery stores with consumers to find and rescue surplus food in their proximity.
- Smart bins can be very effective in measuring food waste in real-time. Smart bin technologies such as *Winnow Vision* have been used to track and reduce food waste in the food service sector for some time, and new *smart bin designs aimed at consumers* are now being developed, harnessing individual food waste data as a powerful behaviour change tool.
- There are many other 'green' technologies including apps being developed to help citizens reduce their individual food waste as well as food waste prevention within the supply chain. For example, the *FoodKeeper App* helps consumers maximise the shelf-life of the food they acquire. UNEP has published a major *study* on Green Technologies and Consumer Food Waste.
- **Large employee-based organisations** can work with their employees. For example, the EU Small Change Big Difference campaign⁵¹ developed a guide to make it easier for businesses to engage their employees to undertake small changes that make a big difference to food waste, recycling, and health. The World Resources Institute (WRI) implemented an office challenge which was very effective in cutting food waste from the *Head offices* in Washington DC.
- There is also a role for small-scale food services consultancies. For example, Venturis HoReCa (Poland) created a mobile application to monitor food waste in households called KuMin.App⁵², which requires a mobile phone and a small kitchen scale. This is an alternative to keeping manual diaries and surveys and supports consumers in managing their food better.



THE EXPERTS' ADVICE: HOW TO INTERVENE

TYPE OF APPROACH	BEHAVIOURAL INSIGHT ON HOW PEOPLE MAKE DECISIONS	Action/instruction on what to do
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(Note: there is some repetition between this table and the previous one because the boundary between awareness raising and intervention is often blurred. The examples are included in both places for completeness)

Table 5 | Expert advice on interventions

INTERVENTION TYPE- INCENTIVISATION	
WE ARE MOTIVATED BY DIFFERENT THINGS AND DIFFERENT REWARDS	
Make it attractive and desirable	Not everyone is motivated by saving the planet or being a good person. For some people, practical benefits, such as saving money or time, are important. For others, their identity – how they feel or how they look to others – is key.
	EXAMPLE: <i>Van der Werf, Seabrook and Gilliland</i> (2019) found their Canadian survey respondents overwhelmingly selected “reduce amount of money wasted” over reducing environmental and social impacts as the key motivator to reducing food waste.
	EXAMPLE: Oregon Department of Environmental Quality’s Bad Apple <i>campaign</i> leads with the monetary cost of food waste because they found those messages resonated most in their state.
MAKE IT EASY TO DO THE RIGHT THING – SIMPLER THAN NOT DOING THE RIGHT THING	
Offer simple solutions	Changing one thing at a time is easier for people to do and is likely to have more impact, meaning larger numbers of people can take an action. ‘Planning’ is not a food waste prevention behaviour: it is a strategy made up of multiple behaviours. Asking people to plan is asking a lot of them. Be specific.
	EXAMPLE: Encouraging people to make a weekly meal plan through simple guides. See <i>Example 1</i> and <i>Example 2</i> .
INTERVENTION TYPE- MODELLING	
WE ARE MORE LIKELY TO RESPOND IF A MESSAGE IS FROM SOMEONE WE TRUST/ADMIRE OR WHO IS ‘LIKE ME’.	
Choose the right messenger	The person who delivers the message is as important as its content. <i>“When we’re making decisions on an issue, we look to see whether we believe the person informing us, because when something is outside of our personal experience, we’re having to take it on their word.”</i> ⁵³ When targeting a particular audience, using a messenger from or who represents that audience can make people feel like they are ‘like me’.
	EXAMPLE: <i>Oscar Ekponimo</i> , founder of Chowberry App in Nigeria. EXAMPLE: Other examples of celebrities talking about food waste can be found <i>here</i> .
WE ARE MORE LIKELY TO ADOPT A BEHAVIOUR WHEN WE SEE OTHERS DOING IT.	
Show everybody’s doing it	Showcasing good food management behaviours could help to influence the behaviour of others and lead to a new (positive) social norm of saving (not wasting) food. Social norms are shared standards of acceptable behaviour, which can be very powerful drivers of behaviour change. Using credible models and authentic influencers can help.
	EXAMPLE: Love Food Hate Waste had celebrity endorsers and social media campaigns.
INTERVENTION TYPE- TRAINING (AND INCENTIVISATION)	
WE NEED TO KNOW HOW TO DO IT IN ORDER TO BE ABLE TO DO IT	
Impart skills to enable change	Promoting positive food management behaviours, such as creative cooking with the ingredients available, whereby people are involved in the process and there is an end result of which they can be proud, could help them to value their food more.
	EXAMPLE: Hellmann’s levers its high-reach brand communications to inspire people to <i>‘make taste and not waste’</i> ⁵⁴ . The content focuses on how a simple ingredient in millions of people’s home becomes an easy solution to the problem of wasting food. It does this by demonstrating a more creative role for the product in recipe hacks that transform leftovers and forgotten foods into tasty meals.
	Growing your own food can help to reduce food waste – both because homegrown food is freshest and can be harvested right when you are ready to eat, but also because you value food more when you recognise the effort that went into growing in. The Stop Food Waste campaign in Ireland supported the television series Grow Cook Eat, demonstrating how to grow two high-wastage foods – lettuce and <i>salad</i> .

INTERVENTION TYPE -ENVIRONMENTAL RESTRUCTURE-PHYSICAL

PEOPLE MAKE DECISIONS WITHOUT EVEN KNOWING WHY THEY MADE THEM.

Re-organise the physical context in which people make decisions

Ninety-five per cent of our decision-making is unconscious, fast and emotional. Only 5% of it is logical, taking time and cognitive effort.

Choice architecture is a term which refers to the practice of influencing choice by “organising the context in which decisions are made”. Making a slight adjustment to the context, to make the preferred choice more noticeable, easier to do, front of mind and effortless, can change behaviour⁵⁵.

EXAMPLE: Many universities have reduced cafeteria food waste by introducing trayless dining. A 2013 American University *study* found a reduction in food waste of 30-40% when trays were removed, combined with an awareness campaign on taking only as much as you need.

EXAMPLE: A Danish *study*⁵⁶ reduced food waste by 20% in restaurants simply by providing Consumers with smaller plates.

PEOPLE CAN GET OVERWHELMED BY TOO MANY CHOICES

Remove some of the choices available

Although people like to think that unlimited choice is a good thing, and the eventual ‘choice’ will create greater satisfaction, the opposite has proved to be true.⁵⁷

The existence of too many choices can be a deterrent to making a choice altogether. Choice Overload⁵⁸ is a term which demonstrates the choice paradox; where presented with too much choice can lead to no choice at all.

EXAMPLE: Smaller, more focused menus has been shown to reduce waste. The impact of the Covid-19 pandemic on supply chain unpredictability, staff shortages and food costs have led to smaller menus in many restaurants. The resulting trend for *smaller menus* has been welcomed, increasing efficiency and reducing waste.

PEOPLE STICK WITH PRE-SET OPTIONS (DEFAULT) AND RARELY CHANGE. THEY OFTEN PREFER THINGS TO REMAIN THE SAME (STATUS QUO)

Make the preferred behaviour the easiest, or only behaviour. That is, make it the default behaviour

Make the desired behaviour really easy, and other competing behaviours, much more effortful.

EXAMPLE: In the UK and Canada fresh produce (vegetables, salad, fruit) is the most wasted food group and items are purchased packaged more often than loose. Whilst packaging is used to protect fresh produce, it is also used to contain or collate it for convenience or quantity e.g. six bananas or 1kg carrots. Selling fresh produce loose not only helps people to buy what they need – tackling one of the main causes of people wasting food, it also helps to reduce plastic packaging. Furthermore, fresh produce sold loose often does not have a date mark (see below and POLICY). Several large retailers in the UK have trialled loose/ plastic-free fresh produce offerings, and it has always been the norm in many countries (e.g. France).⁵⁹

EXAMPLE: UK Organ Donation⁶⁰. In the UK laws have changed from having to opt in to donate your organs, to now having to opt out. This means the default is that consent is automatically implied i.e. the pre-set option.

INTERVENTION TYPE- ENVIRONMENTAL RESTRUCTURE-SOCIAL

PEOPLE ARE VERY SOCIAL ANIMALS AND LOOK FOR CUES IN THE ENVIRONMENT ABOUT WHAT OTHER PEOPLE ARE DOING.

Make the behaviour seem like everyone else is doing it, that is, normalise the behaviour

The social context in which people make choices can be changed, or the perception of the social context can be changed. This can be done by modelling the correct behaviour, signalling that a behaviour is normal, or by using ‘social norming messaging’, i.e., telling consumers what others are doing⁶¹.

EXAMPLE: In the Netherlands, Food Waste Free United introduce a nudge intervention by putting on 8 million stickers on loaves of bread telling “92% of the Dutch don’t want to waste bread, will you eat all your slices?”

EXAMPLE: WRAP increased the recycling rate of bathroom products by 6% by simply putting a salient social norming message- ‘Most People Recycle Me’ on a bathroom plastic bottle.⁶²

INTERVENTION TYPE- ENCOURAGEMENT	
FEEDBACK ENCOURAGES BEHAVIOUR CHANGE BY MAKING IT VISIBLE	
<p>Make the consequence of the behaviour visible-seeing is believing</p>	<p>Most people believe they do not waste no or waste very little food and therefore do not recognise the need to be part of the solution. Providing consumers with feedback on the amount of food waste they generate draws attention to the problem. Measuring, or observing what is wasted, in the form of Food Waste Diaries, is often used to measure the intervention’s effectiveness. It turns out that the diary is in itself an intervention as it provides salient, real-time feedback on what is being wasted⁶³. See for example.</p> <p>After taking into account social deprivation, time and other factors previously reported to influence the amount of food waste generated by a household, a 2019 WRAP study⁶⁴ found that separate food waste collections were significantly associated with lower total food waste. It does not prove a causal relationship between food waste and food waste collections, but previous research has also found that local authorities (municipalities) with separate food waste collections have higher overall recycling rates⁶⁵ and that a direct causal relationship exists between the introduction of food waste collections and increased sorting of packaging waste⁶⁶.</p> <hr/> <p>EXAMPLE: There is some evidence that separate food/ organic waste collections, whilst primarily directed at recycling food waste, can illustrate how much food waste is being generated and may offer a touch point for engagement about undertaking food waste prevention behaviours.</p> <hr/> <p>EXAMPLE: In their Make Food Matter activities, Scouts and Beavers ask their young people to undertake a food waste diary to see how much food they throw away.</p> <hr/> <p>EXAMPLE: Smart energy meters measure how much gas and electricity a household uses via a remote connection to their energy supplier. An in-home display screen helps householders to visualise energy usage in real-time. As well as providing accurate readings and bills, instead of estimates, smart meters are thought to help householders reduce their energy consumption.</p> <hr/> <p>EXAMPLE: Smart bins that weigh and analyse food waste in restaurants have been very effective at helping food service providers reduce waste. A household smart bin has been tested in Sri Lanka, and widely available, cost-effective household smart bins that provide consumers with real data on the types and quantities of food they waste the most could have a big impact.</p>
PEOPLE LOVE TO BE REWARDED AND AVOID NEGATIVE SITUATIONS	
<p>Either provide a reward, or remove a situation or decision that is unpleasant, or perceived as risky</p>	<p>Incentivisation can be the anticipation of a reward or gain, or it could be the removal of something that is unpleasant; that is, people dislike and avoid risky decisions or situations.</p> <hr/> <p>EXAMPLE: Reward. In their Make Food Matter activities, Scouts and Beavers reward their young people with badges on completion of food waste prevention activities. [link back to NGO actor section]</p> <hr/> <p>EXAMPLE: Risk Aversion. It is natural to be wary of foods that may make us sick. People can be rewarded by removing real or perceived negative consequence. For example, the removal of the perception of risk can increase the likelihood of eating food before it becomes inedible. Dates on food give safety advice (Use-by) and quality advice (Best Before). But these dates might not be necessary on all products, especially if consumers can see the products and make their own decisions about whether they are spoiled. In the absence of a ‘best before’ date on uncut fresh produce, consumers are more likely to use their judgment and consume a product as opposed to throwing it away⁶⁷.</p> <hr/> <p>EXAMPLE: Taiwan incentivises residents to opt for recycling and special disposal of food waste by requiring that individuals dispose of all their waste in government-certified bags, which individuals must purchase and which cost more depending on the size. Recyclable materials and “kitchen waste” including food scraps, on the other hand, are collected by the Environmental Protection Bureau for free.</p> <p>People dislike the unknown, losing something, missing out⁶⁸, regret^{69,70} or negative feelings that make them feel uncomfortable. By leveraging these either real or perceived feelings, consumers can be encouraged into undertaking the correct behaviours.</p> <hr/> <p>EXAMPLE: South Korea banned sending food to the landfill in 2005 and, beginning in 2013, instituted a requirement that all food waste be disposed of in biodegradable bags, charging residents for both the bags and the volume of food that they throw out; this is the only option for food disposal and noncompliance results in a fine.</p>

INTERVENTION TYPE- ENABLEMENT- INCREASE CAPABILITY

PEOPLE ARE CREATURES OF HABIT. THE UNCONSCIOUS MIND AND HABITS GUIDE A LOT OF THE DECISIONS BEHIND BEHAVIOURS.

Help break (incorrect) habits, by increasing the capability to do a behaviour

Over 95% of our decisions are made unconsciously and are habitual. Couple that with ‘Overconfidence bias’ (a tendency to hold a false and misleading assessment of our skills, intellect, or talent), and a perfect recipe is created for incorrect habitual behaviours leading to food waste.

EXAMPLE: Cooking everyday dried staples, for example rice, pasta and dried foods (that look small when dry, but swell on cooking), leads to consistent over estimation in measuring the ‘right amount’. A measuring cup (Eetmaatje) with portions for pastas, couscous and rice was developed by the Netherlands Nutrition Centre in 2013. This increased the means for consumers to capably portion the correct amount of dried food required. More than 1.5 million have been distributed and there is strong evidence that the Eetmaatje has increased the number of Dutch households measuring rice and pasta and thereby reducing food waste.⁷¹ Measuring cups are commonly used for cooking in North America and work just as well, coupled with communication on simple ratios (such as 1:1 water to couscous) and portion sizes.

Example: Hellman’s Fridge Night provides easy Flexible recipes for consumers that can be adapted to allow use of ingredients found in the fridge, increasing consumer resourcefulness in the kitchen, and using up vegetables at risk of being thrown away.⁷²

INTERVENTION TYPE- ENABLEMENT- INCREASE OPPORTUNITY

PEOPLE OFTEN TAKE THE PATH OF LEAST RESISTANCE.

Provide an opportunity to allow the behaviour to occur

Interventions can be developed to increase the opportunity for consumers to undertake desired food waste prevention behaviours. The global pandemic example below demonstrates what happens when people are given additional time.

EXAMPLE: Food waste decreased during the height of the COVID-19 pandemic,⁷³ when consumers had more time (enablement) to devote to planning, less social engagements to compete with the groceries in the fridge, more meal occasions as well as fears of food scarcity (motivation).

Interventions that improve people’s quality of life or work-life balance could help to reduce food waste by enabling conditions for food waste prevention behaviours such as planning.

EXAMPLE: Australian food rescue organisation, *OzHarvest*, developed the *Use It Up tape*TM to help tackle household food waste. The bright yellow and black tape aims to be visible at the exact moment when food decisions are being made. The tape engages all household members in adopting the Use It Up behaviour, not just the primary person responsible for cooking and shopping. Households can also label one shelf in the fridge the “USE ME FIRST” shelf, for opened packages and highly perishable foods.

ORGANISATIONS AND OTHERS WHO
CAN HELP INFLUENCE BEHAVIOURS



IV: COLLABORATE

“What actions can I take to help consumers waste less food?”

Collaboration provides the opportunity for multiple actors in a system to solve a collective problem together.

There are multiple methods of collaborating between different actors in the food system to facilitate consumer food waste prevention, including:

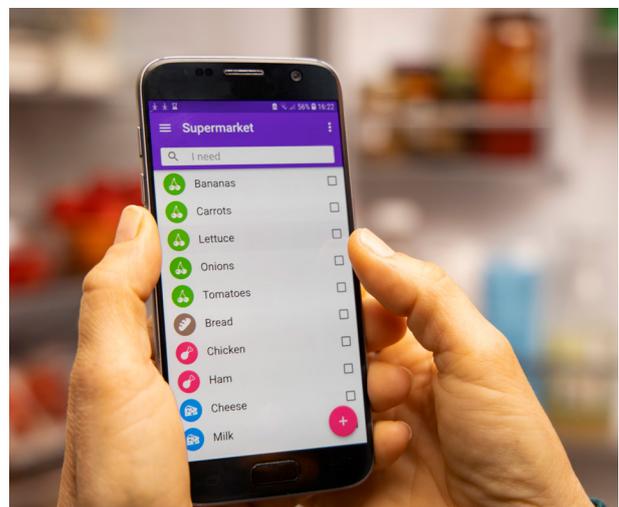
- Voluntary agreements, international, national, regional and city level
- Sectoral dialogues
- National and regional working groups and pacts
- Advisory groups

VOLUNTARY AGREEMENTS

A Voluntary Agreement (VA) is a proven method for tackling food waste, focusing on prevention rather than diversion from landfill. In a VA, food businesses, often in collaboration with other actors, commit to a common target of halving food loss and waste by 2030 and work collaboratively to achieve it. They can learn from each other, and eliminate food loss and waste across supply chains in the most efficient, effective way. VAs set a target, and then measure progress.

VAs do not require new legislation, can be implemented quickly and can be easily adapted to changing circumstances. They also provide a safe, pre-competitive space for companies to work together. The REFRESH (Resource Efficient Food and dRink for the Entire Supply cHain) project brought together 26 partners from 12 European countries and China to tackle the growing problem of food waste. A guide was produced which explains the five key stages of setting up a voluntary agreement and provide examples from around the world of how VAs work in practice⁷⁴:

By setting up a voluntary agreement, members can unite to cut food waste far more rapidly, cost-effectively and at greater scale than by working alone. They can also help businesses help people reduce their food waste in their homes, perhaps through supporting a national behaviour change programme.



EXAMPLES OF VOLUNTARY AGREEMENTS AROUND THE WORLD

- UK - The Courtauld Commitment 2030** is a Voluntary Agreement that enables collaborative action across the entire UK food chain to deliver farm-to-fork reductions in food waste, greenhouse gas (GHG) emissions, and water stress that will help the UK food and drink sector achieve global environmental goals. As part of this commitment, the UK's largest retailers, food producers, manufacturers, and hospitality and food service companies have committed to milestones laid out in the Food Waste Reduction Roadmap to tackle food waste in the UK⁷⁵. This agreement has helped the UK reduce edible food waste across the supply chain by 27%.⁷⁶ Find out more about the Courtauld agreement [here](#) and other agreements around the world [here](#).
- Australia- Australian Food Pact⁷⁷**. This voluntary agreement brings together organisations in a pre-competitive collaboration to make the food system more sustainable, resilient, and circular. It focusses on prevention, reuse (donation), and food chain transformation and innovation.
- Norway⁷⁸**. Five Ministries on behalf of the Norwegian government and twelve food industry organisations signed a binding agreement to halve food waste across the food value chain in Norway by 2030. The reduction target is in line with the UN Sustainability Development Goal 12.3 and in fact more ambitious because the goal applies to the entire food value chain from primary production to consumers.
- Netherlands - United Against Food Waste Free United** focuses on prevention, reducing, and adding value to food waste throughout the food chain. Within the United Against Food Waste Free United charityFoundation, organisations, government and knowledge institutions work together to combat waste by joining forces and working towards one common goal: *together we will make the Netherlands one of the first countries in the world to cut food waste in half, making us a world example in realising Sustainable Development Goal 12.3*. Find out more [here](#).
- Hungary - Food is Value**. The Ministry of Agriculture and the Hungarian Food Bank Association have jointly launched the forum Food is Value⁷⁹, in order to reduce food losses and waste. Members are required to sign a declaration through which they commit to a voluntary agreement to reduce food losses and food waste in their respective stages of the food value chain.
- Ireland – Food Waste Charter**. Irish grocery retailers (representing nearly 70% of the Irish grocery market), pledged to work towards a common and long-term approach to tackling food waste in the sector by signing the 'Food Waste Charter'⁸⁰. The Charter is the foundation for action, requiring committed organisations to follow a framework of Pledge > Measure > Reduce > Report. Following a review of the programme in 2020, work is underway to establish an appropriate model that will drive industry commitment to food waste reduction targets, to extend the reach across the whole supply chain. Initial actions are focused on the roll-out of a standardised measurement methodology, and developing tools and resources for upskilling for action on food waste prevention.
- Sweden – Swedish Collaboration for the Reduction of Food Waste (SAMS)**. This national voluntary agreement was established in Sweden in March 2020, based on the blueprint⁸¹ for such initiatives developed by the EU-funded REFRESH project. In the national voluntary agreement SAMS⁸², actors in the food value chain collaborate to identify the hotspots and causes for food loss and waste. The agreement is built on three components: the goals to reduce food loss and waste, data collection for monitoring the goals of the agreement and for identifying hotspots across the value chain, as well providing a forum for exchange gathering stakeholders along the food value chain. The Swedish Environmental Protection Agency, the Swedish National Food Agency and the Swedish Board of Agriculture are also collaborating to reduce food waste with a large number of actors through The Food Waste Network, a network that gathers public authorities, researchers, interest groups and the food industry.
- A relatively new voluntary agreement is being set up in South Africa on Food Loss and Waste. See more [here](#).



EXAMPLES OF OTHER TYPES OF COLLABORATION

- At a city level, the TriFOCAL collaboration was set up involving a number of cities from across Europe to promote food waste reductions <https://trifocal.eu.com/about-trifocal/>
- EMF's Circular Food Initiative in Sao Paulo is another example of city level food collaboration: <https://www.youtube.com/watch?v=biiWym3vW4A>
- **Germany's** national strategy for food waste reduction⁸³ is implemented with the participation of actors across the food supply chain, from primary producers to consumers, brought together through 5 sectoral dialogue forums⁸⁴. These forums are composed of various stakeholders, e.g. representatives from the agricultural sector, the food and nutrition industry and the catering and hotel sectors, whose umbrella organisations committed to reduce food waste by adopting a general agreement. The forum for private households develops and evaluates promising interventions that – beyond raising awareness about the relevance and the impact of food waste – may help consumers reduce food waste at home and encourage the adoption of sustainable dietary habits. The national dialogue forum comes together on a yearly basis, assembling representatives of the sector-specific dialogue forums and other stakeholders, in order to report on progress made at each stage of the food supply chain.
- **Portugal - National Commission for Combating Food Waste (CNCDA)**. Portugal established a National Commission for Combating Food Waste (CNCDA)⁸⁵, which includes key public authorities from the national and local governments, as well as a social solidarity association. The CNCDA has established an advisory panel with representatives of the whole food supply chain, as well as from research, academia, and non-governmental organisations, in order to receive advice on food waste related matters. As part of the national strategy, the CNCDA established a voluntary agreement with the retail sector to create specific points for selling products at risk of being wasted. The CNCDA also carries out public awareness campaigns targeting consumers to clarify the meaning of date marking. The Portuguese Federation of Food Banks has agreements with charitable organisations to redistribute surplus food and, together with CNCDA and other entities, has established the United Against Waste alliance (Unidos contra o Desperdício)⁸⁶, which aims to encourage and facilitate the donation of surplus food, while also promoting responsible consumption.

The **European Commission** established in 2016 the EU Platform on Food Losses and Food Waste (FLW)⁸⁷, which brings together EU institutions, experts from the EU countries, international organisations and relevant stakeholders selected through an open call for applications, in order to support achievement of the SDG 12.3 target on food waste and maximise the contribution of all actors. The EU Platform on FLW aims to support all actors in defining measures needed to prevent food waste; sharing best practice; and evaluating progress made over time. In addition to plenary meetings, the Platform also operates in 5 sub-groups to examine specific aspects and/or questions related to food waste prevention: food loss and waste monitoring, date marking, action and implementation, consumer food waste and food donation.

- **France – a national pact and REGAL networks**. France has implemented integrated strategies and plans to avoid food waste involving all the stakeholders, such as the [national waste prevention program](#) (2014-2020)⁸⁸ and the [French national pact against food waste](#) (2017-2020)⁸⁹. The latter has involved 5 French ministries and 58 stakeholders working together in six working groups.
- The national waste prevention program includes several measures to reduce food waste and it ensured continuity of actions foreseen in the first French national pact on food waste, enacted in 2013. It was led by the French ministries in charge of agriculture and the environment, as well as the Agency for Environment and Energy Management. The pact has been evaluated⁹⁰ to assess its effectiveness and to determine the way forward.
- Regional networks to avoid food waste (REGAL)⁹¹ have been created in 6 French regions⁹² (with new networks under development) to mobilise all the actors of the food supply chain through actions like dissemination of information, creation of collective knowledge, emergence of innovative projects, sharing and capitalisation of good professional practices. For example, two of these structures are operating in the regions Nouvelle Aquitaine⁹³ and Normandie⁹⁴.



- Denmark – ONE\THIRD think tank.** The Danish Government established the think tank on Prevention of Food Loss and Food Waste – ONE\THIRD⁹⁵ and launched the Denmark against Food Waste voluntary agreement, where food business operators along the entire food value chain commit to monitor and reduce their food waste by 50% by 2030. The aim of ONE\THIRD is to form partnerships between stakeholders from food businesses, non-governmental organisations, research institutions and public authorities in order to raise awareness, promote initiatives, share science-based knowledge and exchange best practices concerning food loss and waste prevention initiatives. The think tank ONE\THIRD offers advice⁹⁶ to the Danish Government on initiatives to reduce food losses and food waste, in line with its five objectives: support the civil society's battle against food loss and food waste; contribute to general business opportunities; offer insights on how to overcome barriers to prevent food losses and food waste; ensure that data collection and impact assessments are improved; and cooperate with foreign partners on know-how and sharing of experiences.
- United States. The U.S. Department of Agriculture (USDA), the U.S. Environmental Protection Agency (EPA), and the U.S. Food and Drug Administration (FDA) launched what is now called the Federal Interagency Food Loss and Waste *Collaboration*. As part of this collaboration, the agencies affirm their shared commitment to work towards the national goal of reducing food loss and waste by 50 percent by 2030.⁹⁷
- Malaysia. As an outcome of participating in the FAO SAVE FOOD⁹⁸ initiative that encourages dialogue between industry, research institutions, policy makers and civil society on food losses, Malaysia set up the MYSaveFood programme and advocates a voluntary approach through awareness, persuasion, and education.⁹⁹ This involves a *Facebook*¹⁰⁰ and *Instagram* presence with food waste tips.
- In Latin America, the Sin Desperdicio *campaign* is a collaboration between businesses and NGOs to promote reductions in Food Loss and Waste in Latin America. It promotes four areas of activity: innovative projects, national and local public policies, knowledge generation, and responsible consumer habits.

ORGANISATIONS AND OTHERS WHO CAN HELP
INFLUENCE BEHAVIOURS

V: RESEARCH
AND EVALUATE



A crucial part of helping consumers to reduce household food waste (HHFW) is to **research** and **evaluate** the impact of interventions. This information can be used to improve interventions and to select the right intervention for the local circumstances. Without research and evaluation, there is no way of knowing what works, what does not, and why.

Research and evaluation can help:

1. Build the evidence base on the causes of HHFW
2. Understand where to focus actions (interventions) to maximise potential for impact on HHFW prevention
3. Understand whether or not the action (intervention) has been successful in preventing HHFW, or encouraging helpful behaviours that contribute to a reduction in HHFW.

This section:

- Outlines some overarching principles of research and evaluation
- Shares some examples of research that has been carried out to build the evidence base and guide subsequent interventions
- Provides some guidance on how to evaluate each of the actions in this guide, with links to comprehensive best practice principles.

It is important that all actions – raise awareness, intervene, collaborate and develop policy – are evaluated on their impact. There is a dearth of data currently available to enable decision-makers to determine the most successful actions, but more evaluation will support these decisions, whilst also improving the effectiveness of the actions themselves.



RESEARCH AND EVALUATION PRINCIPLES - WHAT THE EXPERTS SAY

1. *Build the evidence base and understand where to focus*
Undertaking research will supply the evidence and insights necessary for informed decisions to be made on which actions to take, and where to focus. How this evidence might be used in practice is outlined in Annex 1.
2. *Understand the intervention*
 - a. **Use a logic map¹⁰¹** to describe how the action (intervention) is expected to deliver impact. This will help describe the ‘theory’ of the intervention: i.e., how the activities of the intervention will lead to the ‘final outcome’, and any impact on HHFW. It will also indicate where it might be most appropriate to quantify the impact. An example of a logic map is given in Figure 3 on p.43.
 - b. **Define the intervention.** Base the intervention on a theory/evidence e.g. the MOA framework or similar. Consider who is the audience? What is the intervention seeking to change (for example, knowledge, motivation, attitudes, awareness, or behaviour)? What type of intervention is to be used to elicit change (for example awareness (campaigns), interventions, collaboration or policy)?
3. *Develop the evaluation approach*
 - a. **Choose an evaluation type.** The most appropriate type of evaluation will differ between interventions and depend upon the logic of the intervention, its nature, what is already known about similar interventions of this type, why the evaluation is being conducted and for whom.
 - b. **Develop the evaluation questions.** These are key and should answer what the evaluation is seeking to determine. For example, if the aim of the intervention is to raise awareness of food waste as an environmental issue, then a relevant evaluation question would be: ‘what, if any, change in awareness of food waste as an environmental issue can be observed?’
 - c. **Choose what to measure, and how.** Most evaluations will need to capture a range of metrics. These metrics should have a clear link to the evaluation questions and provide information that helps to answer these. The logic map is invaluable in guiding decisions on important variables to measure and monitor. See the Logic Map in Figure 3 on p.43 as an example of what to measure for each intervention type, and how to do it.

4. Measure

Ideally, all evaluations aimed at consumer food waste prevention would include measurement of the amount of household food wasted throughout the intervention period. The UNEP Food Waste Index Report provides guidance on measuring food waste at the household level.¹⁰²

- a. For interventions, measuring food waste at a pilot stage can provide evidence of its potential impact if the intervention were to be scaled nationally. As a gold standard it is recommended that the intervention should be tested in a (randomised) controlled trial, although it is recognised that this may not be possible in situ.
- b. Food waste measurement at the population level should be undertaken periodically to evaluate the impact of national interventions. An example of how this can be done is explained [here](#)¹⁰³.
- c. Self-reporting of food waste usually leads to less being wasted, as the act of checking reveals how much waste is generated, providing feedback which prompts reactive action¹⁰⁴. Extensive evidence on this can also be found in the Household Food Waste Measurement module of UNEP's Regional Working Groups¹⁰⁵. Participants may also waste less so as to 'look better' in front of researchers (this is called the Hawthorne effect¹⁰⁶). This can be mitigated by collecting the whole waste stream from households and sorting and measuring the food fraction, without informing households that the measurement study specifically focuses on food.



5. Continue Monitoring

Regular population-level monitoring¹⁰⁷ is key to ensuring that current and future interventions are still targeting the most impactful attitudes, behaviours and food items in terms of overall HHHFW prevention. Tracking these variables can also provide an indicative evaluation of all existing interventions in the space, such as policies and voluntary agreements, and the impact of any wider societal changes on HHHFW.



EXAMPLE OF BUILDING AN APPROACH TO EVALUATION:

- The European Commission established the ‘European Consumer Food Waste Forum’¹⁰⁸ in October 2021, following a public call for practitioners and researchers in the area of consumer food waste prevention. Experts will identify and develop multi-dimensional tools to curb consumer food waste considering both the motivation of consumers as well as their ability to change related behaviour. The tools will be multi-level addressing both the role of consumers and that of other key players engaged in food waste reduction. The tools will include proposals to improve action design, monitoring and evaluation of interventions as well as knowledge sharing in the field.

EXAMPLE OF BUILDING ELEMENTS OF THE EVIDENCE BASE:

- The **European Commission** is carrying out consumer research related to date marking. The aim of this work is to shed light on how consumers themselves understand and use these dates, and to identify and test new ways of expressing date marking (e.g. changes in terminology, format, visual presentation) that meet consumers’ information needs, whilst avoiding unnecessary food waste linked to the misunderstanding and misuse of date marking. The findings will support the revision of EU rules on date marking which the Commission will propose by end of 2022, as called for by the Farm to Fork Strategy¹⁰⁹.



EXAMPLES OF BUILDING ELEMENTS OF THE EVIDENCE BASE AT UNIVERSITIES:

(Note: some of these examples relate more to food service than household food waste but they help illustrate building an evidence base)

- A study in an American university found a 32% reduction in food waste and a 27% reduction in dish use when trays were removed from a university dining facility. These findings suggest that ‘trayless’ cafeterias are a simple solution for universities and other dining facilities looking to reduce waste and save money¹¹⁰.
- In Scotland, St Andrew’s University and Zero Waste Scotland collaborated on a study to investigate food waste reductions in the university restaurants¹¹¹.
- The Swedish Food Agency commissioned a study¹¹² in collaboration with the University of Copenhagen, Denmark to understand what types of in-store nudges can help consumers reduce food waste at home. Findings revealed that multi-buy offers can nudge consumers to buy more than they need and interventions that get consumers to wait and think before buying can help reduce household food waste.
- Aarhus University, Denmark has conducted several studies on date marking with the aim of improving consumer understanding. The report ‘Consumer food waste in Denmark’ (2018)¹¹³ published by the Aarhus University offers a better understanding of consumers’ perceptions and behaviours related to food waste, in order to inform measures to limit such waste.
- The Clean Technology Centre (CTC) at Munster Technological University (MTU) in Ireland is running a research project named ‘Food Path’¹¹⁴, which aims to analyse the effectiveness of existing behaviour change interventions in Ireland and to trial alternative approaches to food waste prevention in households.



HOW TO EVALUATE AND MEASURE EACH OF THE ACTIONS IN THIS GUIDE

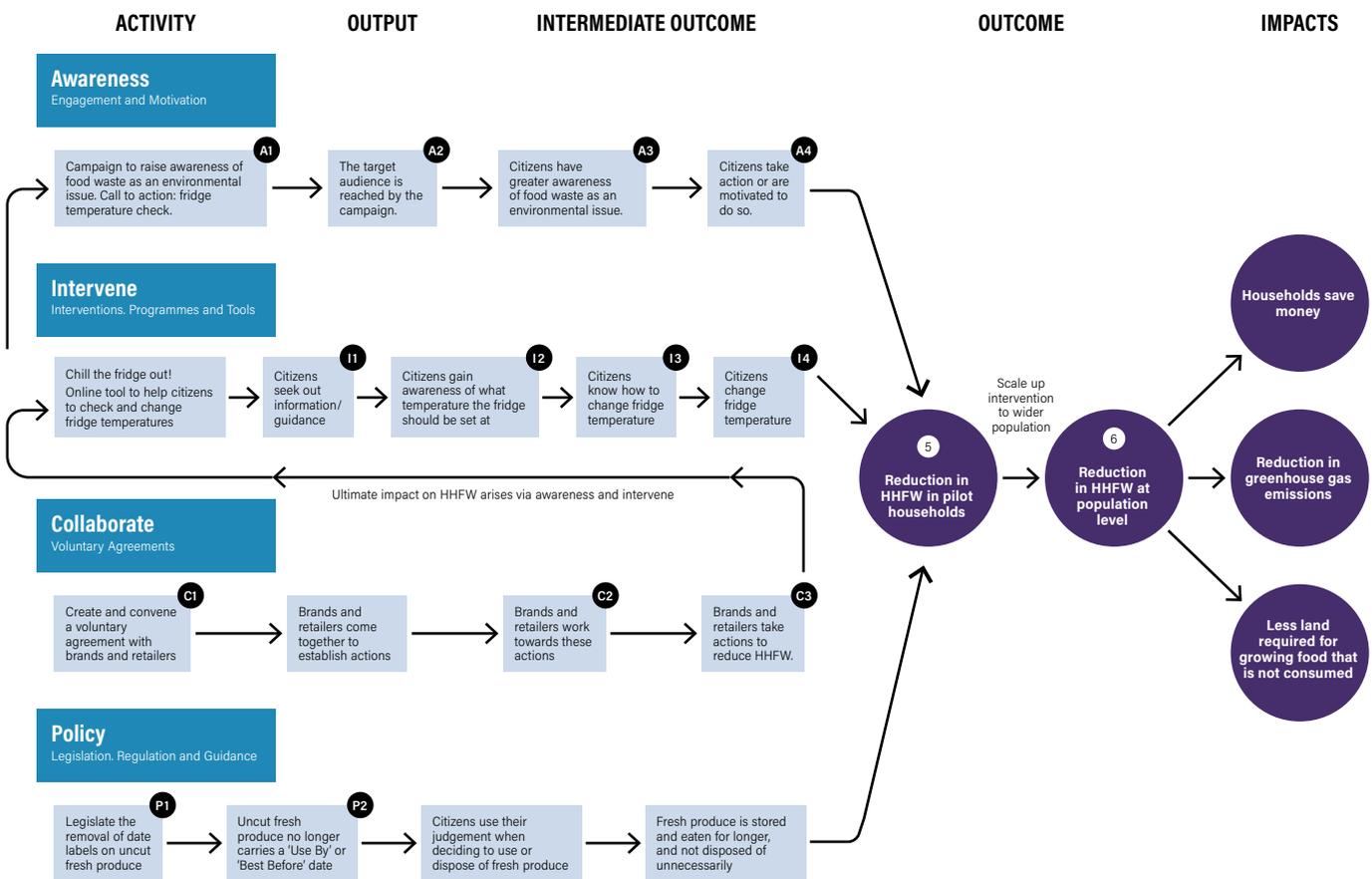
The logic map in Figure 3 is a useful guide to understanding the intervention/action being evaluated and its theory (the basis behind it/the theory of change), which is crucial in order to evaluate its impact.

Once an activity (for example a campaign, an intervention, a policy change or voluntary agreement) has been chosen:

- Create a logic model which follows the theory of the activity
- Follow the references below for guidance on measurement and evaluation that is relevant to each activity.

Keep in mind that no single silver bullet exists to evaluate the impact of HHFW interventions. The most appropriate approach will depend on the nature of the activity itself, and on the context in which it takes place.

Figure 3 | Process/Logic Map





ORGANISATIONS
AND OTHERS WHO
CAN HELP INFLUENCE
BEHAVIOURS

MEASURING
AND EVALUATING
ACTIONS

DEVELOP AWARENESS

Measuring and evaluating **awareness**: Refer to the Government Communication Evaluation Framework (GCEF)¹¹⁵

For example: A campaign to raise the awareness of food waste as an environmental issue

Note: each row in the tables below refers to a block in the logic map (above). Published examples do not exist for everything (nor are they needed for every single element). Hence some of the final columns have no content.

	WHAT TO DO	SUGGESTED METHOD
A1	Test motivational messages and creatives with citizens to inform campaign development ahead of launch	Citizen testing of messages and imagery before the campaign launch, to ensure that the campaign development is tailored to the audience and to incorporate citizen feedback. This can take various forms, depending on budget and time – two common methods are online concept tests with a nationally representative panel, and focus groups.
A2	Measure reach of campaign (Government Communication Evaluation Framework, GCEF)	Population survey assessing recognition of the campaign, to answer the following questions: Have citizens heard anything about the campaign? Have citizens heard anything about food waste? What have they heard? Where did they hear it? Campaign reach can be measured as an absolute number or proportion of target audience if applicable. Assess both online and offline if applicable. GCEF recommends a campaign dashboard to monitor performance. This incorporates evaluation of, for example, PR, channel, digital, engagement, reach, and any impact measures taken from surveys.
A3	Measure change in awareness of food waste as an environmental issue (GCEF)	Population surveys assessing levels of awareness about food waste as an environmental issue. A pre-campaign survey will establish the baseline, and a post-campaign survey will indicate any change. This second survey can also investigate causality (i.e. was a change in awareness due to the campaign?). This could be conducted in the weeks after the campaign to assess any immediate changes, and/or in the months after the campaign to assess longer-term impacts.
A4	Measure change in percentage motivated to change (GCEF) their behaviour	Survey of those who recognised the campaign, assessing whether heightened awareness of food waste as an environmental issue is motivating enough to change behaviour and stimulate action, particularly regarding any key behaviour of focus. Consider the following questions: Did citizens find the campaign motivating? Or engaging? Did they do anything differently as a result? If so, what? If not, why?

By way of example, WRAP’s bi-annual food waste tracker survey¹¹⁶ captures a range of attitudes and behaviours relating to food waste, as well as investigating recognition, recall, and any resulting behaviour change from ongoing campaigns, including Food Waste Action Week and Love Food Hate Waste.

The Winter 2021 wave of the survey identified that 26% of the UK population had heard something about Food Waste Action Week in the past year. Of these citizens, 67% reported doing something differently as a result of seeing the campaign.

Assets were tested with citizens prior to the launch of Food Waste Action Week, and a separate omnibus survey was administered in the week following the campaign to explore behaviour change in more detail.

INTERVENE

Measuring and evaluating **intervening**: Refer to Guidance for Evaluating Interventions Preventing HHFW¹¹⁷

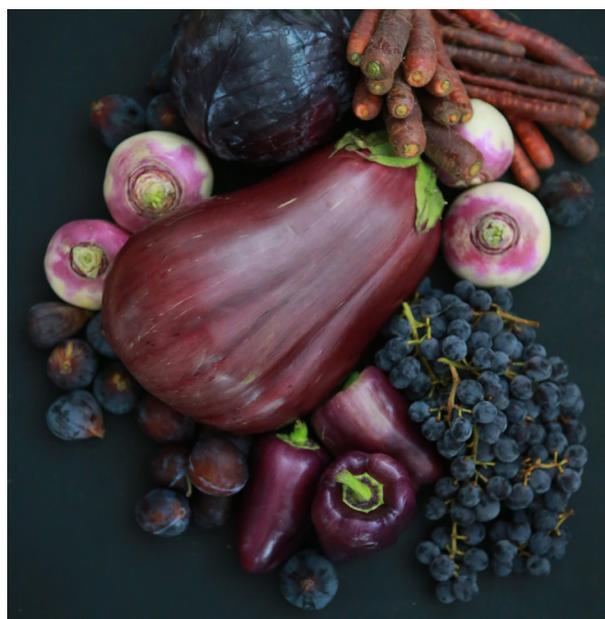
For example: An online tool to help citizens check and change their fridge temperature¹¹⁸

	WHAT TO DO	SUGGESTED METHOD
11	Assess whether citizens seek out information and guidance	Population or participant survey assessing whether citizens have ever sought information on how to check and/or change their fridge temperature, and if so where they have searched for this. Additionally, website traffic to the specific tool under investigation can be monitored: uses of the tool, page views, conversion rates, dwell time.
12	Measure knowledge (Psychological Capability) of correct fridge temperature	Survey of pilot participants, asking what temperature their fridge is currently at and what the optimum temperature is.
13	Measure understanding (Psychological Capability) of how to check and change fridge temperature	The simplest method would be to survey pilot participants on how they do this behaviour. However, a qualitative approach could also be deployed here, which would provide a more in-depth picture, as participants could explain why they are doing what they are doing and even show it first-hand.
14	Measure change in behaviour – percentage change in citizens checking and changing their fridge temperatures	Population or participant survey assessing whether citizens are checking/changing their fridge temperature as a result of the intervention. Qualitative approaches can also be deployed to understand not only whether the intervention has worked, but how.

As an example, WRAP’s bi-annual food waste tracker survey captures a range of attitudes and behaviours relating to food waste, including checking/changing fridge temperature, and investigates recognition and recall of ongoing interventions, including Chill the Fridge Out.

The Winter 2021 wave indicated that UK citizens rate themselves poorly on checking/changing the fridge temperature, scoring an average of 5.3 out of 10, and that 50% believe that the fridge should be kept between 4-7 degrees in order to keep food at its best.

In the Winter 2021 wave, 14% of UK citizens reported seeing or hearing something about Chill the Fridge Out. Of this group, 75% reported doing something differently as a result. Furthermore, 59% of this group correctly identified that food should be stored below 5 degrees (a statistically significant difference from the average of 50%).



COLLABORATE

Measuring and evaluating **collaboration**: Refer to Building Partnerships and Driving Change.¹¹⁹

For example: Voluntary agreements between brands, retailers and other supply chain businesses

	WHAT TO DO	SUGGESTED METHOD
C1	Measure the share of market engaged in the voluntary agreement	Desk research using resources such as Kantar ¹²⁰ and Statista ¹²¹ to map voluntary agreement signatories to the current market.
C2	Provide case studies of actions taken	Write short case studies that can help other businesses learn and implement their own measures.
C3	Brands and retailers take Actions (see intervene) and measure impacts	To impact household food waste (not supply chain waste), brands and retailers can raise awareness or intervene (for example with a change to the retail environment) – see the relevant sections above.

As an example of collaboration, in 2020, retail signatories to Courtauld 2030 were estimated to cover more than 95% of the sector by sales¹²², and 50% of the UK’s largest food businesses had adopted ‘Target, Measure, Act’ (121 businesses)¹²³.

A case study from Morrisons on the implementation of plastic-free fresh produce aisles provides valuable insights for other businesses considering such a change to reduce food and plastic waste¹²⁴. Other case studies from Courtauld 2030 signatories can be found here¹²⁵.



DEVELOP POLICY

Measuring and Evaluating **policy**: Evaluating policy measures is more difficult than evaluating the previous actions, particularly when looking to isolate an impact on HHFW. However, there are several options available, depending on the nature of the policy. For example:

- Assess level, types and effectiveness of changes made by consumer-facing businesses
- Assess level, types and effectiveness of changes by consumers
- Model potential impacts: Refer to *Guidance for Evaluating Interventions Preventing HHFW*¹²⁶
- Measure and report progress against SDG 12.3: Refer to the *Food Waste Index Report*¹²⁷

For example: Legislation to remove date labels on uncut fresh produce

	WHAT TO DO	SUGGESTED METHOD	FOR EXAMPLE...
P1	Conduct research to ensure that the policy action is safe and one that will actually lead to a reduction in HHFW	Laboratory tests, hall tests, statistical modelling, and citizen surveying methods (e.g. implicit association tests).	Ground-breaking research from WRAP used these methods to investigate the relationship between plastic packaging, date labels, storage temperature and levels of waste of five frequently wasted fresh produce items, revealing significant opportunities to reduce HHFW ¹²⁸ .
P2	Survey retailers to understand the extent to which new guidelines are implemented	Measure the proportion of relevant products that carry each date label format, across all major retailers	WRAP's Retail Survey uses this methodology to understand the extent to which best practice guidelines are being implemented across the UK's major retailers ¹²⁹ . Tailored feedback and recommendations are provided to each retailer.

ALL ACTIVITIES

Measuring and evaluating a **reduction in HHFW** is recommended for all activities in this guide, where feasible and possible.

	WHAT TO DO	SUGGESTED METHOD
1	Measure household food waste generated Model potential impacts - Use <i>Guidance for Evaluating Interventions Preventing HHFW</i> ¹³⁰	Household food waste diaries as outlined in the methodology of WRAP's 2012 Household Food and Drink Waste report ¹³¹ (although note the limitations previously outlined), and/or waste compositional analysis.
2	Depending on the intervention, this need not involve measuring all food waste (e.g. only refrigerated and edible food, only uncut fresh produce).	Use the methodology outlined in the Courtauld 2025 targets progress report ¹³² , combining waste compositional analysis from local authorities across the UK with data from WasteDataFlow.



CONCLUSION

This guide was developed to provide advice and guidance to any organisation, government or business wishing to engage with consumers to encourage behaviour change that reduces household food waste. The intention is to support actions that go beyond awareness raising and that encourage shifts in behaviours and, over time, make wasting food waste socially undesirable.

The UNEP Food Waste Index Report 2021 shows us that household food waste is significant in almost every country that has measured it, regardless of country income level. Food waste is a waste of money and valuable resources. It contributes to global greenhouse emissions, is a waste of water and land used to produce the food that is ultimately wasted. At the same time, globally, 1 in 10 people go to bed hungry each day.

There is a growing body of evidence that consumers can reduce the amount of food wasted in their homes. This guide seeks to pull together the evidence of best practice so that those wishing to engage consumers can learn from others. The evidence base will grow over time and this guide will be updated periodically to include a wider range of examples from all parts of the world.

The authors hope that you find this guide useful and would welcome feedback, as well as examples of initiatives and actions which will add to the database of knowledge.





ANNEXES

The following primer on consumer behaviour change gives an overview of why it's important to change consumer behaviours around food waste and introduces a behavioural framework (the MOA model) that can be used to help consumers reduce food waste.

Interventions that focus predominantly on awareness-raising (as a form of motivation) rarely lead to lasting behaviour change. Designing evidence-based interventions that include additional elements (e.g., ability and opportunity) to encourage behaviour change are much more effective.

HOW CAN WE WORK TO CHANGE CONSUMER BEHAVIOURS THAT LEAD TO FOOD WASTE?

Each actor in the food system undertakes actions to meet their own objectives. However, some of these actions have an influence, even inadvertently, on consumer food waste. Rather than holding the consumer entirely responsible, each actor in the food system can ask:

- Which of my actions (or inactions) make it easier for a consumer to waste food? and
- How can I change my actions to help consumers undertake food waste prevention behaviours?

The overall aim of any action is to help consumers:

1. Stop behaviours that lead to edible food ending up in the rubbish or as compost, and/or
2. Adopt behaviours that result in edible food being consumed.

Actions taken to facilitate changes in behaviour, such as these, are called behaviour change interventions. For example, a behaviour change intervention may be to stop doing an action that makes it easy for a consumer to waste food, such as the removal of bulk purchasing discounts.

A BEHAVIOUR CHANGE FRAMEWORK AND GUIDING PRINCIPLES

Behavioural Science is the evidence-based study of how people behave, make decisions, and respond to programmes, policies, and incentives.¹³³ In short, behavioural science is about understanding how humans make decisions and why they behave as they do.

Behaviour change models are scientific theories and strategies used to understand why and how to change human behaviour. They provide a systematic guide to help understand a behaviour, and then assist in choosing the right type of behaviour change intervention to facilitate change.

The combination of using behaviour change models to understand why consumers are (or are not) undertaking food waste prevention behaviours, choosing the right intervention type, and monitoring consumer food waste levels to assess impact can provide an effective method to develop behaviour change interventions.

Combining the discipline of behavioural science, with an understanding of consumer attitudes and behaviours around food and the context in which food wasting behaviours occur, is key to determining where and how to make the most impact.

There are multiple influences in the food system that contribute to food waste despite consumers' desire and efforts to avoid it, e.g., lack of cooking skills, inadequate storage space, bulk purchasing discounts, and expiration date labelling legislation.

When designing behaviour change strategies, it is important to consider the following in order to optimise impact whilst minimising cost:

- Not all consumers waste significant amounts of food and many make concerted efforts to avoid wasting food.
- Some foods are wasted more frequently and in greater quantities than others.
- Disposing of some food products has a greater impact on the environment, health, and food insecurity than others.
- Food waste prevention behaviours vary in impact and ease of adoption.
- Food waste behaviour change interventions vary in cost and complexity. Behaviour change interventions can be simple, low cost and highly effective so it is not always necessary to commit significant funds to achieve results.

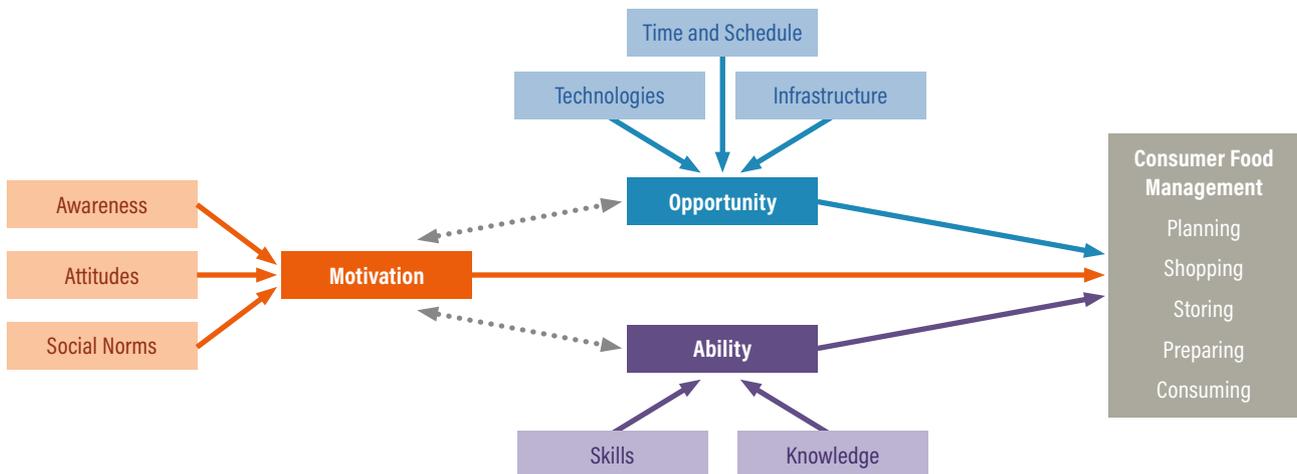
BEHAVIOUR CHANGE INTERVENTIONS - WHERE TO FOCUS INTERVENTIONS FOR IMPACT

A behaviour change framework is an analytical tool designed to help understand the individual-level and societal factors that influence a given behaviour. The 'why' can then inform the optimal type of intervention to use to help change consumer behaviour.

Among the myriad behaviour change frameworks that have proliferated in recent decades, the Motivation-Opportunity-Ability (MOA) model has been noted for its applicability to

food waste prevention, specifically (Rutledge 2020; NASEM 2021). The MOA framework rests on the premise that barriers to and facilitators of behaviour change depend on upon consumers' motivation, opportunity, and ability (whether they exist and to what extent). Each of these three components is necessary but insufficient on its own – all must be present to enable a given behaviour. Moreover, as depicted in Figure 4, the three components interact to influence one another, in addition to directly influencing the behavioural outcome of interest (i.e., consumer food management).

Figure 4 | Pathways through which Motivation, Opportunity, and Ability Influence Consumer Food Management and Waste



The following is hypothetical example of using the MOA behaviour change mode to analyse the behaviour- Eat Past the 'Best Before' date¹³⁴. The responses to the questions in

Table 6 are intended to inform and optimise intervention strategies that appropriately target components of the MOA model that are absent or deficient.

Table 6 | Example of Applying the MOA Model to a Consumer Food Waste Prevention Behaviour- Eat Past the 'Best Before' date

MOTIVATION	ABILITY	OPPORTUNITY
Does the consumer know that using their five senses to determine whether a food has expired is often more effective than relying on the package date?	Does the consumer know which date labels indicate quality versus safety?	Does the consumer have the appropriate storage space at home to preserve foods up until/beyond their best by date?
Does the consumer know/care that they could save money by extending a foods' shelf life as long as is safe?	Does the consumer have the knowledge that food can be safely eaten past the 'best before' date printed on the food package?	Does the consumer have the time/energy to employ sensory methods of assessing a food's longevity, or does relying on the printed date serve as a time-saving mechanism?
Is eating beyond the 'best before' behaviour done by friends, family or modelled by chefs/influencers in the media? Is the behaviour perceived as normal?	Does the consumer, their family and friends have the knowledge and confidence to assess whether food can be eaten safely?	Does the consumer discuss with family and friends and do they have time to make the assessment?

Once the MOA framework has been employed to understand the underlying reasons for observed consumer behaviour, the insights gleaned can be used to optimise intervention design and implementation. There are many ways to change behaviour, and some methods or intervention 'types' are more suited to remove specific barriers to behaviour change than others. For example, while habits are very difficult behaviours to change, and asking a consumer to do a behaviour that their peers are not doing is also challenging, if the consumer is highly motivated, they may still be able to change the behaviour (for example, eating more healthily or drinking less alcohol).

The main part of this guide provides the actions and intervention types that can be used, depending on what barriers are identified from the behavioural analysis (from behaviour change models).



THE MOA FRAMEWORK APPLIED

The following example illustrates the process of choosing the right type of intervention, depending on the MOA behavioural analysis outcomes.

Scenario 1: In the above example of ‘eating food past the best before date’, a behaviour change model analysis may highlight that consumers:

- know they can ‘eat past the best before date’
- know how to judge when food becomes inedible
- hold a belief that fresh is best, and old food is less nutritious
- believe that ‘most people’ do not eat past the ‘best before’
- **Intervention 1:** The intervention type in this case may be ‘modelling’¹³⁵ to address the social opportunity barrier. Developing the intervention further could involve utilising the messenger effect¹³⁶, which enlists a credible role model to model turning food that is ‘beyond the best before date’ into a healthy nutritious meal.
- **Scenario 2:** If the behaviour change model analysis demonstrates that consumers:

don’t know the difference between a ‘use-by’ date and a ‘best before’ date

- don’t know or care about the climate change or other impacts of food waste

Intervention 2: The intervention type could be ‘education’¹³⁷ via a widespread awareness campaign (see Awareness section) to increase consumer knowledge about the difference between the two dates and what to do with each date. This can be coupled with increasing awareness of the financial benefits (incentivising) to the consumer (i.e., tackling motivation).

Intervention 3: Another intervention type could be an ‘environmental restructure’¹³⁸ with retailers removing the ‘best before’ date (where appropriate or allowed by law) on packaging to automatically ‘encourage’ consumers to use their own judgement on when a food is fit to eat, as opposed to defaulting to a date. This is illustrated in the ‘Remove Choices’ element of the Intervene Section.

Intervention 4: To assist in changing the retailer’s behaviour to facilitate the removal of the ‘best before’ date (where appropriate and legal do so), the appropriate regulatory or policy body can use the intervention type Guidelines¹³⁹ to develop best practice guidance on date labelling, or use legislation¹⁴⁰ to facilitate the removal of the ‘best before’ date on certain food (where appropriate).

All the examples above showcase different actors taking different actions, using different intervention types to help citizens change one behaviour – so instead of throwing it out on or after the date, encouraging them to judge for themselves whether food is fit for consumption after the ‘best before’ date.

This is a systems approach to behaviour change, with each actor taking responsibility for actions they can do which then lead to consumer behaviour change.

REGULATION

- Several cities and states in the **United States** have implemented *organic waste bans*. For example, the city of **San Francisco** *fines* residents and businesses for violating the city's requirements that all compostable and recyclable materials be separated from solid waste. Another example is **Vermont**, which enacted a ban on sending food scraps to landfill in 2012, which phased in businesses starting in 2014 and by 2020 included all sizes of businesses and residences.
- EU waste legislation requires that **biowaste** is collected separately or recycled at source by 2023. Since 1999, EU countries must progressively **reduce amount of biodegradable waste sent to landfill**. *EU waste legislation*¹⁴¹ further requires that Member States reduce food waste levels, monitor and report on food waste levels at each stage of the food supply chain (including consumption) according to a common measurement methodology¹⁴². The European Commission will propose legally binding targets for food waste reduction by 2023 and will revise EU date marking rules (by end 2022) aiming to avoid food waste linked to the misunderstanding and misuse of these dates¹⁴³.
- In **Lithuania**, the separate collection of household food waste will be mandatory as of 2024¹⁴⁴.
- Denmark set the target to achieve 60% organic foods in all public kitchens by 2020. In the conversion to organic food of professional public kitchens, studies commissioned by the Danish Veterinary and Food Administration have shown that kitchens have not only been able to increase the procurement of organic products, but at the same time they have reduced food waste significantly. The organic price premium is partly covered by reducing food waste, allowing more organic meals without an increase in operating budgets¹⁴⁵.
- In **France**, the food use hierarchy has been enshrined in law since the adoption of the national law against food waste (Garot Law) in 2016¹⁴⁶. Moreover, the financial aid provided by the Agency for Environment and Energy Management (ADEME) is in line with this hierarchy: only prevention and donation actions are eligible for financial support.
- In a partnership between the City of Baltimore and NRDC, grants were made to a series of local organisations to support on the ground food waste reduction efforts. The grant making process was conducted with a focus on *equity*.
- Pay as you throw (PAYT) (also called trash metering, unit pricing, variable rate pricing, or user-pay) is a usage-pricing model for disposing of municipal solid waste. Users are charged a rate based on how much waste they present for collection to the municipality or local authority. The example of South Korea was mentioned earlier in this guide but it is also common in several EU-countries. In the Netherlands dozens of municipalities use this model, and very successfully reduce amounts of waste.



COMMUNICATIONS, INFORMATION AND AWARENESS

- There are targeted communications on topics like clarifying the meaning of date marking (e.g. **Czech Republic**¹⁴⁷), tips to avoid food waste at home (e.g. **Netherlands** 'How #waste free are you?'¹⁴⁸, European Commission's leaflet¹⁴⁹) etc.
- **Germany**¹⁵⁰, **Finland**¹⁵¹ and the **Netherlands**¹⁵² organise yearly food waste prevention awareness weeks with a multitude of activities (e.g., exhibitions, workshops, school competitions etc.), around the date of the International Day of Awareness of Food Loss and Waste.
- The **French** EGalim Law (2018)¹⁵³ introduced education on food waste reduction for consumers in the school curricula and the Ministry of National Education has developed recommendations¹⁵⁴ on this aspect.
- Consumers are encouraged to take away their meal leftovers through dedicated campaigns such as '**Rest-o-pack**' in **Brussels** (Belgium) and '**Ecobox**' in **Luxembourg**. **Food: Too Good to Waste (FTGTW)** is a food waste prevention toolkit designed by the **United States**' Environmental Protection Agency (EPA) to engage households in reducing food waste at home.
- In the Philippines, the World Wildlife Fund (WWF) , a non-governmental organisation runs **The Sustainable Diner**¹⁵⁵ campaign and workstream which seeks to engage stakeholders (government, food service, consumers) to promote more sustainable dining practices (eating at home).
- There are a number of faith-based initiatives focused on reducing food waste. See for example this [one](#).
- The European Food Information Council, a non-governmental organisation, has created a series of informative articles¹⁵⁶ for the general public providing actionable information on food safety, food storage and how to avoid food waste at home.
- In **Slovenia**, the non-governmental organisation Ecologists Without Borders carried out a project named 'Food waste prevention in the public sector and households – Don't throw away food!'¹⁵⁷, co-financed by the Ministry of the Environment and Spatial Planning. The main focus of the project was to prevent food waste in hospitals and in retirement homes, and its results include a toolkit for monitoring food waste, the awareness-raising campaign 'Just eat it!' and workshops for intergenerational integration (the elderly taught younger kids good practices with food).
- An agreement¹⁵⁸ between the Italian Ministry for Environment, Land and Sea Protection and the National Association of Italian Municipalities (ANCI) was signed for further promoting food waste reduction actions in school food services (through formation/education of teachers, municipal officials and school catering service contracting companies) and in commercial catering (by promoting the take-away of uneaten food; testing the doggy-bag / family-bag in commercial catering and monitoring the avoided waste).



OVERVIEW

This guide was developed from the proceedings of a workshop hosted by WRI in June 2021 and is intended to influence the actions of all actors in the food system to help consumers waste less food, rather than changing consumer behaviour directly. The structure of the guide is devised to recognise and address the reality that food waste is a consequence of multiple actors in the food system undertaking siloed behaviours -- often to maximise their own utility or gain and sometimes with little understanding of how their behaviours impact consumer food waste. The solution, presented in this guide, is to outline the types of actors, help them to understand their role in the system, and give them clear direction on ‘what actions can I take?’, and ‘how do I do this?’, all supported by examples from around the world.

Workshop participants discussed a plethora of explanations for why consumers waste food and the actions required to address these underlying causes. The action sections ‘policy’, ‘awareness’, ‘intervene’ and ‘collaborate’ frame the types of action that, by their nature and design, focus on the different reasons at the most effective lever points within the whole system. The behaviour change model MOA (Motivating, Opportunity and Ability) is a framework for diagnosing the reasons why consumers waste food. This makes it easier to choose the most effective type of intervention to effect change. Again, examples from around the world were selected to illustrate how the actions of food system stakeholders address some of the reasons for behaviours not occurring.

The research and evaluation experts at the workshop were clear on the need to frame research effectively to make informed decisions on what action to take, and where to focus. In addition, researchers need to understand the logic of what the action is trying to change, which metrics can be used to measure the change, and whether the change meets the outcome and the final impact the action was trying to realise. The Research and Evaluation section outlines the research and evaluation principles followed by how to measure each action, with links to specific best practice evaluation methods.

In drafting this policy section, the Harvard Law School Food Law and Policy Clinic (FLPC) drew upon over a decade of experience of food waste policy research both domestically and internationally, including desk legal research and ethnographic research in the field (e.g. stakeholder interviews, focus groups, webinars). In accordance with our international research [methodology](#), we begin with interviews with in-country experts and stakeholders, which inform our research direction on specific laws and policies that most affect levels of food waste and opportunities for food waste redistribution. In doing this international research, common legal issue areas emerge across borders, such as date labelling, government grants, tax incentives, and [more](#), helping identify the most pressing global policy opportunities as well as the most promising best practices. An integral part of our policy analysis methodology is our tool for policy ranking, which involves a detailed matrix that breaks down the elements of strong, moderate, weak, or no policy. Finally, whenever possible, FLPC evaluates our research with leading lawyers and policy experts in the country from which the example originated.

In addition to the existing arsenal of innovative models and global best practices utilised for this publication, FLPC devoted dedicated research time to identify and analyse further policy examples and opportunities to reduce consumer food waste and inspire behaviour change on the individual level. In illustrating the myriad policy examples, FLPC utilised a useful framework constructed by Bardach and Patashnik, which categorises relevant policies by type of intervention (channels include regulation, subsidies & grants, service provision, information, and education & consultation).

CONFERENCE PROCEEDINGS

A consumer behaviour change webinar and workshop, titled “How Behaviour Change Programs can Help More People waste less Food” was held virtually on June 28th, 2021. A 90-minute workshop followed a public webinar on the topic, featuring the following speakers and corresponding topics:

MODERATOR: Liz Goodwin

WHY: 1.

Richard Swannell (8-10 mins):

- Why is domestic food waste worth tackling? (General food waste issue insights and its contribution to climate change, Food Atlas insights about domestic food waste)
- Why are consumers wasting food, COVID impacts (key insights about why/how food waste is happening)

WHAT: 2. Erica vs Herpen (and/or Toine Timmermans) (8-10 mins)

- What are successful strategies to tackle domestic food waste? Academic view explaining successful strategies in context of models of behaviour change, e.g. MOA model (Motivation, Opportunity and Abilities) that Erica and also WRAP have been using.

HOW: 3. Best example of successful interventions: (8-10 mins each)

- LOVE FOOD HATE WASTE – Helen White
- Municipality KopenHagen: Examples of GO interventions - Berit Haahr Hansen Petersen
- Example of Brand Intervention – For Unilever, Rene Lion and Christina Bauer-Plank do a shared presentation

Following the breakout group portion of the workshop, a plenary session was held, during which a designated spokesperson for each group shared their group’s conclusions. Notes were taken by each group lead and by the moderator.

The following participants attended the workshop and were assigned to the groups as indicated. Attendance was by invitation, using a snowball technique in which existing contacts with expertise in consumer food waste were asked to provide recommendations for additional participants. WRI sought to include representatives from diverse societal sectors and global locations. Attendees were given the opportunity to provide feedback on the final version of the guide.

GROUP 1: Awareness	GROUP 2: Targeting	GROUP 3: Intervention Points	GROUP 4: Motivational Messaging	GROUP 5: Programmes and Tools	GROUP 6: Monitoring and measurement
<ul style="list-style-type: none"> • Nina Sevilla (NRDC) • Selina Juul (Stop Wasting Food) • Yolanda Kakabadse (Ecuador, WWF) • Thea Koning (Unilever) • Tristram Stuart (Toast Ale) • Aliya Kumekbayeva (Consumer Goods Forum) 	<ul style="list-style-type: none"> • Dana Gunders (ReFED)* • Toine Timmermans (Wageningen) • Katie Bender (Ohio State University) • Jean-Christophe Marcel (Nestle) • Andrew Parry (WRAP) • Clementine O'Connor (UNEP) 	<ul style="list-style-type: none"> • Richard Swannell (WRAP)* • Alexandra Macleod (Too Good to Go) • Samantha Kenny (WWF) • Emma Stanbury (Arla) • Christina Bauer-Plank (Unilever) • Tony McElroy (Tesco) 	<ul style="list-style-type: none"> • Marjolijn Schrijnen (Netherlands Nutrition Centre)* • Stacy Blondin (WRI) • Sabrina Stockli (has worked on normative prompts) • Leah Wistrand (WRAP) • Andrea Collins (NRDC) • Paul Jeffrey (Marketingmums) 	<ul style="list-style-type: none"> • Rene Lion (Unilever) • Emily Broad Leib (Harvard Food Law Policy Clinic) • Ignacio Gavilan (Consumer Goods Forum) • Helen White (WRAP)* • Sanne Stroosnijder (Wageningen) • Anne-Laure Gassin (EU) • Olivia Heywood V D Akker (Aldi) 	<ul style="list-style-type: none"> • Mark Roberts (WRAP) • Paul van der Werf (Western University Canada) • Erica van Herpen (Wageningen)* • Brian Roe (Ohio State University) • Bartosz Zambrzycki (DG Sante) • Angela Cooper (BEWorks, Canada)

Following introductory remarks to acquaint attendees with the purpose of the session, participants were assigned to the following groups according to their topic-area expertise and asked to address the problem statement presented by responding to the corresponding questions:

GROUP	PROBLEM STATEMENT	QUESTIONS TO BE ANSWERED	PARTICIPANTS
Group 1: Awareness (WHY)	Consumers and Stakeholders are not aware that food waste is such a big issue. Nor are they aware of their role in it. They think it is somebody else's problem.	<ul style="list-style-type: none"> • Why is it important to create more issue awareness? • Who do we need to make aware of what? • What have been successful strategies to drive acceptance and urgency to address food waste in the home? • Why household food waste hasn't had its BP2 moment yet? How can we push it up the social agenda? 	General food waste experts and activists, Government, NGO, Corporates
Group 2: Targeting (WHO)	Some groups waste more than others and some will be more easily influenced to change their behaviours than others. And should there be a focus on certain food groups? We want to make our messaging and interventions as effective as possible.	<ul style="list-style-type: none"> • Who should we be targeting? Is it more effective to target specific groups e.g. young families versus young singles or blanket messaging? • Are there any groups we should not target at all and why? • Should we then target on particular food types or all food waste and why? 	General food waste experts, communications practitioners
Group 3: Intervention Points (WHERE and WHEN)	Domestic food waste is the outcome of a complex chain of everyday behaviours. If we want to change behaviour we need to be surgical in terms of what specifically we are asking people to change and there are many possibilities.	<ul style="list-style-type: none"> • What are the critical intervention points in the chain of behaviour and which ones lead to greatest reduction? • What are the challenges people face at these intervention points? • Who in the field of consumer-facing players can drive credible interventions where? 	Experts who have insights into consumer behaviour, people who understand the player field in terms of who can do what
Group 4: Motivational Messaging (WHAT)	There are many things we could say to consumers, but not everything will be equally motivating, influencing or effective, and we have to be choiceful.	<ul style="list-style-type: none"> • What Messages to consumers are proven to work? Proven not to work? • What are the do's and don't in messaging? • How important is norms messaging versus tapping into other motivations? 	People with experience in consumer-facing communication, NGO (LFHW, Unilever, Arla, academic)
Group 5: Programs and Tools (HOW)	Changing consumer behaviour is not as simple. There are proven methods and tools that can also be applied for the reduction of household food waste.	<ul style="list-style-type: none"> • What behaviour change methods/tools have proven effective? • What are the do's and don'ts in designing and implementing BC interventions? • How to ensure change is sustainable and continues after the intervention? 	Behaviour Change academic experts, Behaviour Change practitioners, NGO/Government/ Corporates, Rene Lion
Group 6: Monitoring and measurement (HOW)	Most campaigns have not included rigorous evaluation. So, there is very little hard evidence of what works and what doesn't work.	<ul style="list-style-type: none"> • How should household food waste be measured/ assessed – what are the different levels of complexity/accuracy and what are the trade-offs? • How else can behaviour change be measured (if different from outcomes in terms of amounts of food waste)? • How should progress be monitored (frequency)? 	Measurement experts, academics, research experts

ENDNOTES

NUTRITIONAL INFORMATION

TYPICAL VALUES:	PER 100g AS SOLD	PER 28g SERVING*
ENERGY	1585kJ 375kcal	442kJ 104kcal
FAT	3.7g	1.0g
OF WHICH SATURATES	2.4g	0.7g
CARBOHYDRATE	70.4g	19.7g
OF WHICH SUGARS	68.6g	19.2g
FIBRE	4.7g	1.3g
PROTEIN	12.7g	3.5g
SALT	0.8g	0.2g

*PER 28g SERVING MADE UP WITH 200ML OF HOT WATER

INGREDIENTS: SUGAR, SKIMMED MILK POWDER, MILK PERMEATE POWDER, COCOA POWDER (15%), CONTAINS MILK.

SUGAR AND COCOA: TRADED IN COMPLIANCE WITH FAIRTRADE STANDARDS. TOTAL 48%. VISIT WWW.INFO.FAIRTRADE.NET. PACKED IN THE UK FOR CLIPPER TEAS LTD. STORE IN A COOL, DRY PLACE. MAY SETTLE IN TRANSIT. BEST BEFORE END: SEE BASE.

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