

WR1204

Household Waste Prevention

Evidence Review:

L3 m3-4 (T) – Attitudes and Behaviours

Food Waste

A report for Defra's
Waste and Resources Evidence Programme

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L3 m3-4 (T) Attitudes and behaviour Food waste

This paper focuses on consumer attitudes and behaviours with respect to food waste. It draws heavily on WRAP’s very substantial recent research which has informed the development of the Love Food Hate Waste campaign. Aspects examined are:

- Current patterns of food waste and who wastes food
- Reasons for food waste
- Public understanding and perception of the problem and their attitudes to food waste
- Public awareness of the barriers for preventing food waste
- Motivations
- Impacts of food waste prevention initiatives and carbon impacts
- Cost savings
- Opportunities and barriers for waste prevention through tackling food waste

Modules providing further insight or detail in relation to food waste and to other waste prevention attitudes and behaviours are:

L1 m1 Executive Report (section 3)	L2 m3 Consumers & waste prevention	L3 m3/1 (D) Extent to which waste prevention behaviours are practised L3 m3/2 (D) Motivations and barriers L3 m3/3 (D) Impacts of public campaigns and interventions L3 m3/5 (T) Attitudes & behaviour – home composting L3 m3/6 (T) Attitudes & behaviour – reuse L3 m3/7 (T) Attitudes & behaviour – small actions around the home
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(D) denotes a briefing paper providing more background detail; (T) indicates a short focused topic briefing

1.1 Evidence reviewed

The main sources of information on this topic are:

- WRAP’s (2008) report *The Food We Waste*, an extensive waste analysis to investigate actual behaviours with respect to food waste based on compositional analysis and supporting diaries; and
- WRAP’s (2007b) report *Understanding Food Waste – research summary*, a short paper summarising the findings from WRAP’s extensive research programme on food waste, constituting a comprehensive information source on food waste attitudes, claimed behaviours, barriers and opportunities.

Another important source is the Love Food Champions project report by WRAP and the Women’s Institute (2008). This project involved monthly meetings over four months to discuss food waste related topics and exchange advice and experiences. The report gives a detailed account of the project, including an in-depth understanding of participants’ barriers and motivations, as well as empirical data on the waste prevention potential of food waste reduction.

In addition, this paper draws on a number of other sources which touch on the topic of food waste as part of research into waste prevention more generally.

1.2 Topline summary of findings

Food waste makes up a significant proportion (around 20%) of the household waste stream. The average household throws away about 270kg of food a year, and at least 61% of this could have been eaten. Food waste has been predicted to be one of the three fastest growing sources of household waste in future.

Everyone wastes food, due to buying too much and/or throwing away food while it is still edible – behaviours which are driven by a number of external and internal factors, including:

- Retail practices that encourage people to buy more than they need;
- Lack of economic incentives to avoid food waste;
- Lack of social norms to avoid food waste; and
- Lack of advance planning, skills and knowledge when it comes to food purchasing, storage and preparation.

The public do not tend to perceive food waste as an environmental problem, and the majority do not think that they waste much food. Although two thirds of the population claim to be concerned about food waste, there is a sense that people lack a sense of personal responsibility when it comes to food waste.

There are significant savings to be made through food waste prevention, in terms of landfill tonnage, carbon impacts, and household expenditure. WRAP estimates a typical household wastes £420 of food each year. The first year of the Love Food Hate Waste campaign is reported to have reduced food waste by 137,000 tonnes and prevented the release of 600,000 tonnes of greenhouse gases¹.

There is some evidence that retailers are beginning to take action to assist householders in reducing their food waste – and householders tend to consider it to be the retailers' responsibility to do this. It is also important that householders are encouraged to change their food-related behaviours, and the most effective means of motivating such change is through a package of measures including continuing communications and direct, personal engagement.

The potential from changing behaviour is significant; a household that is committed to reducing food waste throws away 1.46 kg per week less than one that is not – or 76 kg a year (WRAP 2008). This has to be set in the context of Waste Strategy 2007 targets to reduce residual household waste to 225 kg per person by 2020, from 321 kg per person in 2008.

1.3 Key findings

Current patterns in food waste

Food waste makes up one of the largest fractions of the household waste stream. WRAP's (2007b) research suggests that food waste currently makes up about one fifth of our domestic waste, and futures scenarios by Brook Lyndhurst (2007, WR0104) singled out food as one of the top three materials that will also be instrumental in determining future waste amounts.

WRAP (2007b, 2008) report that around one third – or 6.7 million tonnes a year – of the food bought in the UK is thrown away. At least 61% of this could have been eaten, with only 19% truly unavoidable food waste, and the remainder potentially avoidable. This means that the average household throws away about 270kg of food a year, or 5.3kg a week (WRAP, 2008).

¹ See http://www.wrap.org.uk/wrap_corporate/news/consumers_save_300.html as the source for these up-to-date figures; and see <http://www.lovefoodhatewaste.com> for more general information on the Love Food Hate Waste campaign

In terms of weight, the most commonly wasted foods are (WRAP, 2008):

- Potatoes
- Sliced bread
- Apples
- Meat or fish meals
- “World breads” (e.g. naan, ciabatta).

Other patterns in food waste identified by WRAP (2008) include:

- The type of food that is wasted in greatest *proportion* is salad: 45% by weight of all salad purchased in the UK is thrown away;
- Nearly half (46%) of avoidable food waste is *fresh, raw or minimally processed*;
- Nearly a quarter of avoidable food waste is thrown away *whole or unopened* – most common items to be thrown away whole are fruit; and
- At least 8% of all avoidable food waste is still *in date* when thrown away.

Who wastes food?

WRAP’s (2007b, 2008) research concluded that everyone wastes food, even though many people think they waste very little. In this first survey, only 1 in 10 said they waste “quite a lot” or “a reasonable amount”. Overall, 30% of households were classified as ‘high food wasters’, 27% as ‘medium food wasters’ and 43% as ‘low food wasters’ (WRAP, 2007b). The waste analysis (WRAP, 2008) further discovered that even householders who claimed not to waste any food were throwing away 88kg of avoidable food waste a year.

WRAP’s (2007b, 2008) research has also examined differences between socio-demographic groups, and found that:

- Larger households waste more food overall, while smaller households waste less – but on a per capita basis, large households waste less per person and smaller households waste more (WRAP, 2008);
- Contrary to conventional wisdom, older people waste as much food as younger people on a per capita basis, although they may appear to waste less due to smaller household sizes;
- However, households where the food shopper is younger waste the most food, while households where the main shopper is older waste the least;
- Although families with children report over-purchasing food (due to pester power and to avoid running out of things), being more sensitive to date labels and often cooking separate meals for children (WRAP, 2007b), the presence of children in the household does not lead to more food waste per capita (WRAP, 2008);
- Managerial and professional households produce less food waste than less affluent households though there is no difference between them on a per capita basis, because less affluent households tend to have more people in them (WRAP, 2008, pg 190) Affluent households may produce more vegetable waste than less affluent households, however (WRAP, 2007b).

Reasons for food waste and barriers to prevention

WRAP’s (2007b) research indicates that there is a whole host of reasons why people waste food. The main reasons are:

- Buying more food than they need
- Throwing away food that is still edible

- Letting food go off

WRAP (2008) expand on these reasons in more detail. The main reasons for avoidable food waste (in order of importance by tonnage) are:

- Food was left on the plate after a meal
- Food had passed its date
- Food looked, smelt or tasted bad
- Food went mouldy
- Food was left over from cooking

There are some external factors which influence people's food-related behaviours, at both the shopping and disposal stages (WRAP, 2007b):

- Retail promotions such as 'buy one get one free' (BOGOF) can encourage people to buy things on impulse and to over-shop.
- Increased affluence has combined with cheaper food and has meant that the economic incentive for not wasting food has been eroded (although it will be interesting to see how the recession will affect this pattern).
- There are no social and ethical pressures to avoid food waste in today's society – possibly due to the fact that most of the population have not experienced food shortages in their lifetime, so the issue of food waste seems less important to them.

Consumer attitudes, behaviours and understanding are also part of the underlying reasons for food waste (WRAP, 2007b). These include:

- Lack of planning – e.g. only 2/3 people make a shopping list, and of those only 48% stick to it most of the time;
- Buying bigger packs or 'buy one get one free' offers, to save money;
- Buying more perishable foods, often in an attempt to eat more healthy foods;
- Lack of skills including proper storage, management and cooking;
- High sensitivity to or lack of understanding of 'use by' and 'best before' dates;
- Ad hoc clearing out of stored foods;
- Unwillingness or lack of knowledge when it comes to using leftovers;
- Increasingly unpredictable eating patterns;
- Not liking the food prepared (a common reason in families with children); and
- Last-minute change of plans or lack of time.

Similar reasons are also highlighted by other authors, including Tucker and Douglas (2006a, WR0112) and Woodard and Harder (undated). Tucker and Douglas (2006a, WR0112) also add the following to the list:

- Buying too much for special occasions;
- Buying things for specific recipes;
- Forgetting about foods; and
- 'Adventurous' cooking.

Public understanding and perceptions of the food waste problem

Evidence from WRAP's (2007b) research suggests that many people do not recognise that food production and distribution generate carbon emissions, and do not link food waste to environmental problems: 40% of people considered food waste not to be a problem, because they saw it as "natural and biodegradable", while nearly 3/4 thought that packaging was more of a problem than food waste (WRAP, 2007b).

In addition, WRAP's work also suggests that the vast majority of people do not think they waste much food. One of their research projects in 2007 found that 90% of respondents (n=1,862) claimed to waste 'some', 'a small amount', 'hardly any' or 'no' food – but they calculate that in order for the tonnage figures quoted above to add up, the remaining 10% of people would have to waste almost all of the food they buy. The waste analysis for *The Food We Waste* report (2008) similarly found that even the households who thought they were not wasting any food were in fact throwing away 88 kg of avoidable food waste a year.

People's perceptions of what they waste are also incorrect: they tend to believe that more prepared food than raw ingredients is thrown away, but composition analysis suggests the opposite (WRAP, 2007b).

Further insights come from the Defra (2007) report on *Public understanding of sustainable food*, which explored acceptability and likely take up of behaviours like wasting less food. The report found openness to this behaviour, which was seen as an area where people felt that they could take action. Fundamentally, the wasting less food goal does not contradict any of the participants' aspirations. Participants admit that they are able to alter their behaviour in this way, and indeed, identify the potential cost savings this might bring. The report also identified two key barriers to taking action - best before dates are seen as a trigger for unnecessary wastage and supermarket offers, especially Buy One Get One Free Offers, are seen as ploys which increase the volume in which participants buy produce.

Attitudes to food waste

WRAP's (2008b) research shows that 62% of people say that food waste bothers them, while 37% are less or not at all concerned.

Of those who were worried about food waste in the 2007 survey (WRAP, 2007b), many claimed not to throw much food away, while more than 1 in 4 did not consider food waste to be a problem, 1 in 5 said food waste cannot be avoided, and 1 in 5 said they would rather throw away food than risk food poisoning. A minority of 15% said they have "other things to think about".

On a more positive note, nine out of ten people said that they are not opposed to making an effort to reduce their food waste.

WRAP (2007b) concluded that, overall, 13% of the public appeared to be receptive to and actively engaged with the issue of food waste, while around 1 in 4 were receptive but passive and 1 in 4 not particularly receptive – with around 1 in 3 unconcerned *and* resistant to change. The 2008 survey indicated that 14% of the public (GB) could be considered to be *committed food waste reducers*.

Public awareness of the barriers

The evidence also seems to suggest that people may be more aware of the external barriers than of the internal ones (or they may be looking for someone other than themselves to blame). For example, in the Love Food Champions project – a scheme devised and delivered jointly by WRAP and the Women's Institute to deliver food waste information to communities via trusted intermediaries - project participants discussed barriers to reducing food waste, and the topics they raised were (WRAP, 2008):

- Role of retailers and brands – they were perceived to be doing too little to assist consumers in reducing waste, or even encouraging food waste through 'wasteful' promotions;
- Lack of information about the relative importance of food waste and packaging waste;
- Schools – their role in teaching children more about food and how it is used at home; and
- Food waste collections – how these are carried out, why, and can the waste be used to generate energy.

There is a notable absence in this list of any consumer-related barriers, such as lack of knowledge about using leftovers or lack of planning ahead.

If people do not recognise their own internal barriers to reducing food waste, it is likely to be difficult to encourage them to change their behaviour. That said, the Love Food Champions project did successfully address many of the internal barriers to food waste prevention – regardless of whether or not participants themselves were aware of these at the outset.

Motivations for reducing food waste

WRAP (2007b) have found that those who express concern over food waste tend to be more worried about the cost of the wasted food than about its environmental impacts: of those who were concerned, 68% stated that this was for cost reasons, 45% thought it was a waste of good food, and 36% said they felt guilty. Cost reasons have continued to be the leading concern in the 2008 Love Food Hate Waste (LFHW) surveys.

The motivations identified by the Love Food Champions project participants for reducing their food waste were:

- Fun and practical activities, enabling learning from each other;
- Champions with good people skills and a pragmatic approach;
- Feeling empowered through discussing practical action; and
- Embedding new habits into their daily lives as they formed new friendships.

In addition, the project report suggests that because people's motivations can be so varied, there is no 'one size fits all' solution, but messages and advice need to be both specific and similarly varied. The project approach allowed information and messages to be tailored to the audiences (WRAP & the WI, 2008). There is also some evidence to suggest (though more is needed) that making food waste visible to people – by keeping diaries, weighing their waste, or having food waste collected – can encourage them to think more about reducing the food they waste (e.g. WRAP 2007b; WRAP, 2008c; Brook Lyndhurst, 2009 (forthcoming)).

Impacts of food waste prevention initiatives

The Love Food Champions project found that through discussing and sharing ideas on reducing food waste, project participants (n=38) managed to cut down their food waste from an average of 4.7 kg/household/week to 2.2 kg/household/week (WRAP & the WI, 2008).

At the start of the project, 5% of participants were classified as 'committed food waste reducers' according to WRAP's metric, but by the end of the project this had increased to 29% – compared to a national average of 14% (Ipsos MORI, 2008b).

There is a possibility that the Love Food Champions participants were more interested in and willing to reduce their food waste than the average person. At the start of the project, 73% of participants (n=81)

said it bothered them a 'great deal' or 'a fair amount' to throw away uneaten food, compared to 62% nationally (Ipsos MORI, 2008b). At the same time, only 57% claimed to put 'a great deal' or 'a fair amount' of effort into minimising the amount of food they threw away – compared to 70% nationally (Ipsos MORI, 2008b).

The project did, however, appear have an impact on the participants' attitudes as well as their behaviour. By the end of the project, 96% of participants (n=52) said it bothered them a 'great deal' or 'a fair amount' to throw away uneaten food, while 92% said put 'a great deal' or 'a fair amount' of effort into minimising the amount of food they threw away².

On a national scale, WRAP's Love Food Hate Waste campaign is estimated to have prevented 137,000 tonnes of food waste in its first year³. Based on the compositional analysis reported in *The Food We Waste* WRAP have calculated that **a committed food waste reducer wastes 1.46 kg per household per week less than someone who is not committed.**

Beyond WRAP's work, Waste Watch (2007a, WR0105) ran a campaign on the theme 'What Not to Waste' in Western Riverside over six weeks, with 14 households participating throughout. The project involved participation in waste-related tasks, with a new one being introduced each week. Compositional analysis of residual waste showed that food waste from the 14 households (added together) decreased from 50.9kg/week to 25.1kg/week (although some of this will have been due to uptake of home composting, rather than to food waste prevention).

Resources for Change et al. (2008c, WR0506) report on the SORT IT! scheme introduced in Somerset by ECT Recycling, which includes a weekly food waste collection, and has led to a decrease of 24% (a total of 8,528 tonnes a year, or 1kg/household/week) in food waste. Although they note that increased home composting and moisture loss may be partly responsible for this reduction, they also consider that the introduction of the collection led to some food waste prevention through encouraging changes in purchasing habits.

Carbon impact of food waste prevention

WRAP's (2007b) research indicates that reducing food waste could also have significant implications in terms of carbon dioxide savings. They state that the carbon savings that would be achieved by not throwing away any edible food would be equivalent to taking one in five cars off the road in the UK.

WRAP's Love Food Hate Waste campaign is estimated to have prevented the release of 600,000 tonnes of greenhouse gases over the course of a year, equivalent to the carbon impact of 100,000 return flights to Australia.⁴

The carbon impact of the SORT IT! scheme is quantified as £440,171 worth of carbon saved (Resources for Change et al., 2008c, WR0506) (using the official shadow price of carbon).

Cost savings to households from food waste prevention

WRAP (2008) estimate that a typical household throws away £420 worth of avoidable food waste a year – significant cost savings could therefore be made through reduced food bills by avoiding food waste.

² Note that the number of participants returning their questionnaires at the end of the project is lower than at the start of the project – and it may be that those who were less interested in the projects were more likely to drop out part of the way through. This has been observed elsewhere in volunteer projects (e.g. Hampshire County Council and Brook Lyndurst, 2008, WR0117).

³ Consumers save £300 million worth of food going to waste (14.01.09), WRAP Press Release, http://www.wrap.org.uk/wrap_corporate/news/consumers_save_300.html Accessed 19.03.2009.

⁴ As above.

WRAP's Love Food Hate Waste campaign is estimated to have saved consumers a total of £296 million (between 1.8 million households) on their food shopping over the course of a year.⁵

There is also anecdotal evidence from the Love Food Champions project to support this, as participants reported that they began to notice a decrease in their food bills after the first of their monthly meetings. After four months, one participant estimated her food bills to have decreased from around £100/week to around £60-70/week.

Resources for Change et al. (2008c, WR0506) calculate that Somerset residents will have saved £2,132,000 collectively through more efficient food shopping.

1.4 Opportunities for progressing waste prevention

Opportunities for food waste prevention

The evidence suggests that food waste is a very important component of the household waste stream to focus on, because it makes up such a large proportion – around 20% – of domestic waste (WRAP, 2007b; Tucker & Douglas, 2006a, WR0112). In addition, food waste also has a high carbon impact relative to other types of waste; and it is expected to be one of the fastest growing household streams in future (AEA Technology et al, 2006, WR0107; Brook Lyndhurst, 2007, WR0104). Food waste prevention therefore represents a 'big win' in terms of both weight and carbon reductions.

Given that such a high proportion (61%) of all food waste is avoidable, better management could lead to significant reductions in food waste (WRAP, 2008).

Food waste prevention also appears to be an area of waste prevention where there is little public resistance, at least in principle, with 9 in 10 people not opposed to the idea of reducing their food waste (WRAP, 2008)

Who needs to take action?

In terms of who should be leading on food waste prevention, WRAP (2007b) feel that retailers need to play a key role. They go on to note that retailers are beginning to trial different types of food promotions which may have the potential to reduce waste – for example, selling five different fruit and/or vegetable items for the price of four, rather than two of the same for the price of one. They are also starting to provide food management assistance for online shoppers, including shopping lists, recipes and advice on using leftovers. WRAP is currently working with retailers to research and develop new forms of packaging and labelling that will help consumers to manage food better so that less of it goes off after purchase (see WRAP's retail and food programmes for more detail).

It is important to note here that due to public perceptions about the environmental impacts of packaging, any retailer initiatives that modify packaging in order to reduce food waste need to use as little material as possible (WRAP, 2007b).

WRAP (2007b) also consider that it is vital the public understands the food waste problem and takes action to reduce their own impact – for example, better understanding of food storage and management would enable people to make use of retailer promotions while wasting less food.

⁵ As footnote 2.

Current research on what works

In terms of what retailers can do to promote food waste prevention, WRAP (2007b) report on consumer tests of potential resources, which found that consumers preferred non-intrusive concepts (e.g. a box of minimally wrapped goods, meal plans, recipes on the back of receipts), which required little change on their part.

In terms of encouraging more active involvement in food waste issues on the part of the consumer, the Love Food Champions project was the most effective of the interventions identified in the literature. In addition, WRAP (2007b) also report that food waste diaries have been found to be effective in making people realise how much food they waste.

1.5 Barriers to progressing waste prevention

Lack of direct and obvious motivators

Although food waste prevention is a high-impact activity with little public resistance in principle, the difficulty in encouraging it is that there are a range of factors driving high levels of food waste, but few motives for reducing food waste. As noted above, people appear to be more concerned about the cost of the wasted food than about the food waste itself – but that the recent trend towards ever cheaper food has meant that the economic incentive to avoid food waste is not strong enough to change behaviour on its own. We could speculate that the credit crunch represents an opportunity to ‘disrupt’ people’s wasteful food habits and lock in new consumer practices before the economy starts to recover.

The motivations identified in the Love Food Champions project were all highly specific to the project. It is difficult to see how they could be harnessed to encourage the public to reduce their food waste, except by rolling out the project on a large scale – which would necessarily be resource-intensive.

1.6 Researchers’ recommendations and further questions

In summarising their research on food waste, WRAP conclude that “the way forward is to create a positive climate around encouraging good behaviours in relation to food management” and to “provide persuasive arguments for a change in behaviour together with simple but effective steps and tools [to] manage our food better” (WRAP, 2007b, p. 27). They also highlight the importance of making consumers aware of the environmental impacts of food waste, and in particular its contribution to carbon emissions.

WRAP and the Women’s Institute (2008) also feel that the Love Food Champions programme should be rolled out more widely, but through existing community and social groups rather than by setting up groups from scratch. Their report also includes detailed recommendations on project structure, materials used and leadership required.

Tucker and Douglas (2006a, WR0112) report that their literature review identified little evidence on where in the process most food waste occurs, and why people buy more food than they need. These points have been largely addressed by WRAP’s (2007b, 2008) research, and WRAP go on to suggest that more research is now needed to identify the shopping patterns that lead to most food waste – e.g. one large weekly shopping trip vs. several smaller trips.

1.7 Practical issues and lessons

Food waste is a key part of the household waste stream, both in terms of its weight and climate impact. It also appears to be an area where people are at least not strongly opposed to changing their behaviour, which provides a promising opportunity for interventions.

While the evidence suggests that retailers do have a role to play in enabling householders to reduce their food waste, it also shows that retailers can only achieve so much on their own, and it is vital that households become actively engaged in preventing food waste.

Given the public's current relationship with food waste – they tend to not recognise food waste as a problem, they think that they personally do not waste food, they seem unaware of the internal barriers to behaviour change, and lack any direct motivations to take action on their own initiative – a package of measures including continuing communication, or intensive personal engagement in the manner of the Love Food Champions project, appears to provide the most successful route to behaviour change.

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Basis of this report

The material in this paper is derived from a large scale evidence review of household waste prevention conducted by Brook Lyndhurst, the Social Marketing Practice and the Resource Recovery Forum for Defra's Waste and Resources Evidence Programme.