

WR1204
Household Waste Prevention
Evidence Review:

L3 m3-2 (D) – Motivations and Barriers to
Waste Prevention Behaviours

A report for Defra's
Waste and Resources Evidence Programme

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L3 m3-2 (D) Motivations and barriers to waste prevention behaviours

This paper provides detailed insight into the motivations (section 1) and barriers (section 2) to waste prevention behaviours.

At the end of this section there is a table highlighting the key motivations, potential motivations and barriers for individual waste prevention behaviours cited in the literature – this table also draws on evidence from the international literature reviewed.

The evidence provided here forms the detailed basis of the synthesis in **L2 m3 Consumers – engaging**, and the evidence summary in the Executive Report (**L1 m1**).

A full bibliography is given in Waste prevention bibliography (**L3 m8/2 (D)**). Modules providing further insight or detail in relation to consumer practice of waste prevention behaviours are listed below:

L1 m1 Executive Report (section 3)	L2 m1 Technical Report (section 3) L2 m3 Consumers - engaging	L3 m3/1 (D) Extent to which waste prevention behaviours are practised L3 m3/3 (D) Impacts of public campaigns and interventions L3 m3/4 (T) Attitudes & behaviour – food waste L3 m3/5 (T) Attitudes & behaviour – home composting L3 m3/7 (T) Attitudes & behaviour – everyday actions around the home L3 m3/6 (T) Attitudes & behaviour – reuse L3 m5/2 (D) International Review ¹
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(D) denotes a briefing paper providing more background detail; (T) indicates a short focused topic briefing

1 Motivations for household waste prevention

The evidence reviewed offered a rich source of insights into the motivations which lie behind waste prevention behaviours. As the activities under the umbrella term of 'waste prevention' are many and varied the motivations behind these are equally numerous and diverse. There is no agreed consensus in the literature as to the relative importance of different motivations, although it appears that their importance varies depending on the specific waste prevention behaviour in question. The discussion in **L2 m3** pulled out personal responsibility, self-efficacy, costs, norms and habits as some of the most commonly identified motivators and commented on the 'unexplained' variation in behaviour. This paper offers a more detailed account of the motivations for household waste prevention and motivations specifically attributable to individual waste prevention behaviours.

It is important to note that the evidence presented in this paper is drawn directly from the sources quoted, and is expressed in authors' terms. Thus, for example, if an author has used a percentage figure on the basis of a small sample size (e.g. Waste Watch, 2007b, WR0105) that might have prompted other authors to avoid the use of percentages, we have quoted the figure. Similarly, in some cases (e.g. Barr, 2007) the figures quoted are derived from work in a single location and the figures are treated neither as 'representative' nor 'not representative' of the wider or national picture. Discussion about data quality issues is presented in **L2m6** and **L3m6/1 (D)**; while estimates that seek to draw together the many different sources of evidence, having made judgments about their respective quality, are presented in the **L1m1** Executive Report.

¹ For information on the practice of international waste prevention behaviours please refer to this document, bearing in mind that the scope of the paper focused on policy measures.

Waste prevention not one behaviour but many

It is worth noting up-front that the two main studies which analysed a whole host of waste prevention behaviours through consumer attitude surveys found that a majority of the motivations behind waste prevention behaviours were down to a random factor.

Tucker and Douglas (2006b, 2007, WR0112) stress the random element in driving waste prevention behaviour. Despite investigating a number of potential motivators and drivers, they had to conclude that approximately 70% of variation in waste prevention behaviour could not be explained through these, and appeared to be entirely random. Barr (2007) found this to be 75% for reduction behaviours, 83% for reuse behaviours and only 45% for recycling behaviours (NB this includes recycling textiles).

It may be the case that the difficulty authors have in explaining waste prevention relates to the fact that it is, in reality, **not a single behaviour but many** (e.g. food, home composting, reuse, etc - see L3 m3/4 (T); L3 m3/4 m3; L3 m3/6 (T) and table at the end of document). Moreover, it is possible that there are missing inputs to the models which are drivers of behaviour but that do not relate either to waste, environmental values or world views (for example, the strength of purchase and food management drivers in WRAP's food waste research – WRAP, 2007b).

Importantly, research has suggested that waste prevention behaviours are poorly correlated with recycling, and are sometimes even negatively correlated (Tucker & Douglas, 2007; Barr, 2007) – such that recycling may become a reason for not doing more to reduce waste. The research also revealed a degree of confusion among the public between “recycling” and “reduction” and the two are often conflated in the public's mindset.

Of the documents assessed it was difficult to get a sense of the ranking or order of importance for the motivations as only two documents reviewed attempted to do this (Tucker and Douglas 2006b, 2007, WR0112, Barr 2007) and especially since the motivations often overlap. Those motivations which were most frequently mentioned in the literature reviewed included: personal responsibility, self-efficacy, costs, social norms, habits, consumer identity, values and attitudes.

The rest of this paper unpacks the following motivations:

- 1.1 Waste prevention as a motive;
- 1.2 Responsibility and self-efficacy;
- 1.3 Costs;
- 1.4 Norms and moral issues;
- 1.5 Habits;
- 1.6 Consumer identity: wider consumption behaviour;
- 1.7 Values;
- 1.8 Attitudes;
- 1.9 Context;
- 1.10 Convenience;
- 1.11 Environmental concern;
- 1.12 Experience;
- 1.13 Incentives;
- 1.14 Fun;
- 1.15 Knowledge;
- 1.16 Perceptions;
- 1.17 Visibility;
- 1.18 Triggers and spillover; and
- 1.19 Interactions between motivations.

The last two sections do not introduce new motivations but review how the discussed motivations interrelate with one another.

1.1 Waste prevention as a motive

The evidence suggests that people tend not to think of their waste prevention behaviours as waste prevention – and not necessarily even as environmentally friendly behaviour. For example, a survey by Tucker (cited in Tucker & Douglas, 2006a, WR0112) found that when people were asked what they were doing to prevent waste, few were able to give valid answers, but when given a list of waste prevention behaviours, the majority claimed to be doing around three of them.

Consequently, it is likely that many waste prevention behaviours are not driven by a motivation to prevent waste, but rather by other motivations. The waste prevention attitude and behaviour survey carried out by Tucker and Douglas found that the majority of respondents were carrying out many of the waste prevention activities included in the questionnaire, but not necessarily for reasons of waste prevention. The authors conclude that a desire to reduce waste is rarely the main motive behind waste prevention behaviour, and cite factors such as cost, convenience, health and safety as more pertinent motivators. They strongly emphasise the role of habit as a driver of waste prevention behaviour (Tucker & Douglas, 2007, WR0112).

There is, however, some evidence that a desire to reduce or prevent waste can play a role in driving waste prevention behaviours, at least for some individuals:

- Composting:
 - There is evidence in the literature that waste reduction is a motivator for composting, and younger people in particular cite environmental motivations as a reason for composting (Tucker & Douglas, 2006a, WR0112)
 - Research into reasons for taking up a subsidised compost bin offer found that 26.1% mentioned environmental reasons, and reducing landfill in particular, while 12.7% said they took up the offer because they considered home composting to be a good way of getting rid of waste (WRAP, 2007a)
 - Research into the kinds of messages that people feel are good for promoting composting has found that people tend to prefer environmental messages: the top three being that it is 'good for the environment (40.2%)', 'a good way of getting rid of waste' (19.8%) and 'it reduces waste to landfill' (10.9%) (WRAP, 2007a)
- Junk mail: A survey by Ipsos MORI (2008a) found that out of those who had registered with the MPS (n=294), 9% gave as their (unprompted) motivations environmental reasons or seeing junk mail as waste of paper
- Reusable milk bottles: Watson (2008) refers to research which found that people who were interviewed (sample size not given) about their use of a doorstep milk delivery service mentioned the avoidance of moral issues with regard to disposal as a reason for using the service
- Reusable bags:
 - Of those who had bought a 'bag for life' (n=437), 3% gave as their main reason that it is better for the environment, and 3% that single use bags are a waste; 14% gave as one of their reasons that they are better for the environment, and 6% that single use bags are a waste (Andrew Irving Associates, 2005)

- Of those who say they will 'probably' or 'definitely' use B4L in future (n=353), 16% give as their reason that these are better for the environment (unspecific) and 9% say it saves on waste (Andrew Irving Associates, 2005)
- Drinking tap water instead of bottled water (reduces plastic bottle waste): Waste Watch (2007b, WR0105) report that of those who switched to tap water after taking their 'Test the Water' (n=30) challenge and continued to drink tap water afterwards, 20% gave as one of their reasons for doing so that it reduces waste.
- One of the reasons that people give for buying refills is to reduce waste (Lee et al., 2008).

1.2 Responsibility and self-efficacy

Responsibility

Tucker and Douglas (2007) state that the literature suggests acceptance of personal responsibility is a prime antecedent to the formation of a personal norm (which supports waste prevention behaviour). Their own work also emphasises this relationship, as the strongest link they discovered was between a sense of responsibility and the waste prevention behaviours considered – in particular, the more emotional aspects of responsibility such as satisfaction, embarrassment and guilt.

Watson (2008) gives a specific example and notes that selling or donating items for reuse is partly about feeling a sense of responsibility – for the goods sold or donated, rather than to the environment – because unwanted items are perceived as having some remaining embedded value.

Self-efficacy

Self-efficacy describes the personal capabilities, confidence, know-how and skills needed to carry out a particular behaviour (Tucker & Douglas, 2007, WR0112). Tucker and Douglas (2006a, WR0112) suggest that a sense of self-efficacy may be very important in first initiating a change in behaviour, and this may be achieved through self-evaluation or feedback from others.

Examples of how a sense of self-efficacy is linked to waste prevention behaviour include:

- Research has suggested that intentions to compost are in part influenced by perceived behavioural control, which encompasses self-efficacy as well as relative personal costs and convenience (Tucker & Douglas, 2006a, WR0112).
- Gray and Toleman (2006) point out that the theory of planned behaviour appears to explain composting behaviour particularly well, and within this model self-efficacy is one of the requirements for people to take up home composting.
- Repair and reuse behaviours also appear to be influenced by the ability to perform the specific behaviours (Tonglet et al., 2004).

1.3 Costs

The lower cost of waste prevention options compared to the cost of alternatives can drive waste prevention behaviour. In terms of purchase choices, it is worth bearing in mind that the price/quality ratio may be more important to consumers than price alone, as suggested by research in Europe (OVAM, 2008).

A number of studies have suggested that cost, or perceptions of cost, may be one of, if not the most important motivator of waste prevention behaviour:

- WRAP's (2007a) research into motivations for taking up the subsidised compost bin offer found that the low cost of the bin was the most commonly cited motivation, by 30.0% of respondents (n=261; unprompted).

- A survey on plastic bag use by Andrew Irving Associates (2005) found that, out of a number of potential measures (irrespective of whether they approved of the measures) to promote 'bags for life', charging for bags was most frequently considered the most persuasive reason to change their behaviour, by 33% of respondents (n= 1,048; prompted).
- ACS (2006) investigated reasons for buying from charity shops and furniture reuse organisations, and found that the most common reason was good value or low prices, cited by 68.5% of respondents (n=720; unprompted).
- Watson (2008) notes that the relatively low price of remanufactured, repaired and reused goods is considered a dominant motivation in the literature, although it is manifested in a number of different ways:
 - Lower price of refillables compared to new products has been found to be a popular attribute of refillables.
 - A key reason for buying in to product service systems is to access products which are otherwise unaffordable.
 - Price can also be used to encourage re-use, e.g. by charging for single-use bags.
- Tucker and Douglas (2007, WR0112) describe their survey results – which show that the most popular activity was ensuring unwanted or broken items were passed on and restored, while activities minimising the purchase of new resources was much less popular – and suggest that wanting to conserve something that has financial value is likely to be a stronger motivation than altruistic motivations related to resource conservation (although they note that this is not a definitive explanation).
- Waste Watch (2007b, WR0105) report on the results of their 'Test the Water' challenge, which show that the most common motivating factor cited by the follow-up survey participants (n=30) for switching to tap water was the financial savings, cited by 43%.
- James Ross Consulting et al. (2008) investigated the drivers for use of self-dispensing systems and found that in Australia and New Zealand value for money and low cost appeared to be the main drivers of these behaviours. They also note that in the US, Australia and New Zealand, consumers may be more motivated by these factors than UK consumers.

There are also a number of other, more qualitative, examples of cost influencing waste prevention behaviour – whether as the top motivation or as one of a number of motivations:

- Gray and Toleman (2006) report that the National Home Composting survey found varied reasons for composting, but that receiving a subsidised compost bin was one of the more common ones, cited by 19% of composters.
- They also found that 14% of non-composting households (n=11,102) said they would consider composting if provided with a low-cost compost bin (Gray & Toleman, 2006).
- Andrew Irving Associates (2005) found, in their qualitative research, that one of the reasons people gave for using a 'bag for life' was that it did not cost much more for a more durable bag.
- They also found that 18 of the 25 survey respondents who shop at Lidl, Aldi or Netto (the supermarkets which charge for bags) have bought a reusable bag (Andrew Irving Associates, 2005), which suggests that cost may be a motivator here.
- James Ross Consulting et al. (2008) investigated the drivers for buying loose produce, and found that one of these was the lower price.
- WRAP (2007b) found that one of the reasons for buying loose goods from self-dispensing systems is that people consider them to be cheaper.

- Lee et al. (2008) note that lower cost is one of the reasons people give for buying refillable products.
- James Ross Consulting and Butcher & Gundersen (2008) note that, in the US, the perceived good value of refills over the standard products is a main driver of consumption of refills.

It is worth noting, however, that although the influence of cost can motivate people to practice waste prevention behaviours, the impact may not necessarily be as expected. Watson (2008) points out that one of the reasons people buy second-hand items is that this gives them access to mainstream consumer products for a lower price. Watson refers to work on motivations for using Freecycle, some of which suggests that members tend to pursue anti-materialistic values, but some of which suggests that consumerist motivations are more common, and participation is motivated by a desire to obtain more items or higher status items on a smaller budget.

A further issue to consider is that in some cases, cost is a driver of waste prevention behaviour not out of a sense of thrift for its own sake, but out of necessity.

- Watson (2008) refers to research which has suggested that the majority of people who buy furniture from furniture reuse organisations do so out of financial necessity. This creates a feeling of exclusion from mainstream consumption, and many of the furniture reuse organisation customers would in fact prefer to buy new items
- Watson goes on to point out that as new goods are becoming cheaper, they are becoming more accessible to these 'traditional' customers of furniture reuse organisations.

1.4 Norms and moral issues

Different types of norms can drive waste prevention behaviour. The following describes how social norms (drawing on Tucker & Douglas, 2006a & 2007, WR0112) and personal norms (drawing on Dunne et al., 2008) function.

Social norms

- Social norms imply that other people are carrying out the behaviour in question, and that they may judge your behaviour (Tucker & Douglas, 2007, WR0112).
- The assurance people gain from norms that others are taking action can motivate behaviour through creating a sense that individual contributions are not in vain (Tucker & Douglas, 2007, WR0112).
- Norms can lead to diffusion of new behaviours, through creating social pressure to engage in these behaviours (Tucker & Douglas, 2006a, WR0112).
- Social norms can reinforce attitudes and thereby reinforce existing motivations for specific behaviours (Tucker & Douglas, 2006a, WR0112).

Tucker and Douglas (2006a, WR0112) also point out that, importantly, for social norms to have an influence, the behaviour needs to be visible or somehow related to social interactions.

Personal norms

- Personal norms for a specific behaviour are activated if:
 - People believe that the existing situation poses a threat to others (i.e. are aware of the consequences); and
 - People believe that their personal action or inaction is capable of preventing that harm (i.e. they ascribe responsibility to themselves).
- Together these create a sense of obligation to act to prevent the harm (Dunne et al., 2008).

Evidence of the influence of norms

Much of the evidence for the positive influence of norms on waste management behaviour comes from recycling studies:

- Barr (2007) found that awareness and acceptance of social norms are some of the factors influencing recycling behaviour.
- Dunne et al. (2008) refer to research which has suggested that people tend to benchmark their waste management performance against the requirements of the collection service, and therefore a more sophisticated collection service has the potential to raise socially accepted norms of waste management behaviour.

There are, however, some studies which have found evidence of the positive influence of norms on waste management behaviour specifically:

- Tucker and Douglas (2006a, WR0112) refer to research which has found that intentions to compost are influenced by (among other things) internal and external subjective norms.
- Gray and Toleman (2006) note that between 5% and 10% of composters tend to say that encouragement from friends made them start composting.

Moral issues

Barr (2007) states that waste management behaviours can be seen as altruistic behaviours, involving the need to recognise a problem exists, awareness that certain actions can help, and ascribing responsibility to the self to act. This moral dimension can be a motivator for waste prevention behaviour:

- Tucker (2007a, WR0112) suggests that people have “a finite amount of moral attitude available to support and defend moral behaviours” and they will direct their energies to where they perceive it to be most beneficial.
- Tucker also notes that although moral considerations can prevent drop-out from waste prevention behaviours, people have different levels of resilience to negative experiences, and the strength of moral considerations as a behavioural driver can therefore vary between people (Tucker, 2007a, WR0112).

Some authors have commented on the way that moral considerations motivate waste prevention behaviour in general:

- Tonglet et al. (2004) suggest that buying behaviours which aim to reduce waste appear to contain a moral dimension.
- ACS (2006) surveyed waste prevention behaviours involving donating and buying second-hand items, and found that the main motivations for donating to charities or furniture reuse organisations were what could be considered moral motivations (n=890, unprompted, multiple answers possible):
 - The most common reason was to support the charity, cited by 48.7%.
 - 36.0% gave as their reason that they believed the item still had further use, while 13.6% said it was ‘the right thing to do’ or that they could not bear to waste the item – the authors consider these two reasons to be similar in nature and if grouped together, this moral concept is in fact the most common reason.
- Moral considerations also appeared to be an important reason for buying from these outlets:
 - Supporting the charity was the second most common reason for doing so (after good value / low prices), cited by 42.1% of respondents (n=720, unprompted, multiple answers possible).

1.5 Habits

Habits are an important influencing factor on consumer behaviour in general (OVAM, 2008), and Tucker and Douglas (2007, WR0112) suggest on the basis of their literature review that habit is in fact often found to be the main causal factor of behaviour. Tucker and Douglas (2006a, WR0112) make the following comments about the role of habits in influencing behaviour:

- Habits can work in two directions:
 - They can help to maintain established behaviours.
 - They can inhibit the uptake of new behaviours.
- They are also often so strongly embedded in people's routines, that strong cues are needed to change them.

Because habits can inhibit new behaviours, they can also form barriers to the uptake of new waste prevention behaviours. Equally, habits can be supportive of waste prevention behaviour in that they can help to maintain these behaviours, once established.

Examples in the literature of how habits influence waste prevention behaviours include:

- Watson (2008) refers to a study by WRAP, which found that use and re-use of plastic bags "is embedded in the systems, routines [i.e. habits] and norms of shopping environments" (p. 7).
- Qualitative research by Andrew Irving Associates (2005) found that one of the reasons people gave for using reusable bags was that they had "got into the habit" of doing so.
- WRAP & the Women's Institute (2008) found that as the Love Food Champions participants got to know each other and formed friendships, this appeared to help to embed new habits into their lives.

1.6 Consumer identity: wider consumption behaviour

Barr et al. (2005) state that purchase-based waste prevention behaviours need to be thought about in the wider context of consumption. Some of the reviewed authors have commented on the influences which drive consumption behaviour in general, and although this is a topic in its own right, it is commented on here to the extent that the reviewed work has referred to it in the context of waste prevention behaviours.

- Purchase-related waste prevention behaviours are related to people's attitudes towards issues such as where they shop and which retail practices they support, rather than being simply focused on the product itself (Barr et al., 2005).
- Tucker and Douglas (2006a, WR0112) reviewed literature on the importance of different factors in people's purchasing choices, and found that product quality was the most important factor, while toxicity or hazardousness was the most important environmental factor, with waste issues lower on the list of priorities.
- Similarly, OVAM (2008) note that research has found a good price/quality ratio to be important to many consumers.

Some findings with respect to how these influences act on specific waste prevention behaviour include:

- Some of the reasons why people buy refillable products include product quality and brand loyalty (Lee et al., 2008)
- Watson (2008) reports that pursuit of distinctiveness, uniqueness and individuality can provide motivations for buying second-hand items, and in particular where these items provide

opportunities for displaying identity (e.g. clothes, furnishings and ornaments), for the following reasons:

- With antiques, previous ownership can be part of what is valued.
- It provides opportunities for a deliberately anti-consumerist, anti-corporate or ethical consumption identity.
- Similarly, LCRN (undated) note that when buying items from charity shops, people may not be thinking of reuse but of finding vintage clothing or of supporting the charity.
- A survey of attitudes towards plastic bags and reusable bags found that only 29% of respondents thought that the argument that 'bags for life' are "more attractive" than ordinary plastic bags was of no interest or relevance to them (Andrew Irving Associates, 2005).

1.7 Values

Different authors have categorised values in different ways:

- Tucker and Douglas (2007, WR0112) identify what they consider to be the two main categories in the literature:
 - Biospheric, altruistic and egoistic values.
 - Openness to change and self-transcendence.
- Barr (2007) describes three different levels of values:
 - Fundamental value types, including relationships between social and environmental values. Ecoistic and conservative individuals are less likely to be pro-environmental, while universalism is the basis for a biospheric value orientation.
 - Relational aspects of environmental values concern the nature-culture relationship. Individuals who are more open to change, more altruistic, and feel closer to nature are more likely to be pro-environmental.
 - The most salient element of environmental values relates to behaviour. The ecocentric-technocentric continuum describes a range of behavioural options.

Barr (2007) goes on to suggest that at least some waste management behaviours is value-based:

- Barr states that environmental values have both direct and indirect effects on behaviour, with a significant overall influence.
- In terms of waste prevention behaviour, the value orientations Barr describes as 'ecocentric' and 'human priority with sustainable development' appear to make people more likely to reduce their waste.

Research by Tucker and Douglas (2006b, WR0112), however, suggest that although there is a relationship between values and waste prevention behaviour, this relationship is at best weak and values are poor predictors of behaviour (or attitudes, for that matter):

- All correlations between specific values and specific WP behaviours (pair-wise correlations) were found to be relatively weak.
- Weak and patchy correlations were also found between groups of values and groups of behaviours.
- Regression analysis found that values could explain only just over 12% of variation in behaviour.

Evidence for the influence of values on specific waste prevention behaviours includes:

- Watson (2008) refers to a large scale survey in Exeter (no sample details given) which found that reuse (of paper, packaging etc.) was predicted in part by environmental values (as well as knowledge and concern).
- Watson also comments on work which suggests that Freecycle members are 'downshifter' pursuing anti-materialistic values.

- Barr (2007) and Barr et al. (2005) conclude that values appear to play a role in reduction and reuse behaviours specifically (in contrast to recycling, which is a normative behaviour and depends on practical influences).

Different values also appear to have different levels of influence on waste prevention behaviours:

- Helpfulness, openness and (to a lesser extent) care with money were found to have the strongest impacts on waste prevention behaviour, and they were positively correlated with most behaviours, by Tucker and Douglas (2006b, 2007, WR0112).
- They also found that a liking for the latest gadgets was negatively correlated with most waste prevention behaviours (Tucker & Douglas, 2006b, WR0112).
- Barr (2007) found evidence for the influence of ecocentric values on reuse behaviours.

1.8 Attitudes

Types of attitudes

Tucker and Douglas (2007, WR0112) reviewed the literature on waste prevention behaviours and the influencing factors. They state that there are various levels of attitudes, ranging from general attitudes which have little impact on behaviour to highly behaviour-specific attitudes which can have a direct impact on behaviour.

- Fundamental attitudes form a hierarchical value-attitude chain:
 - This links fundamental values through to a moral motivation or personal norm, which seems to stem from an acceptance of personal responsibility
 - There may also be supporting attitudes which are non-environmental
- Behaviour- specific attitudes, relating to the implementation of the behaviour, include:
 - Personal costs
 - Perceptions of the activity (usually negative)

Waste prevention attitudes and behaviours are poorly correlated

Tucker and Douglas (2006b, WR0112) carried out an extensive waste prevention attitude and behaviour survey (n=1,463) and, in order to explore the 'attitude-behaviour gap', analysed the correlations between attitudes and behaviours. They concluded that attitudes and behaviours were correlated, although only weakly so.

- Attitudes and behaviours were almost always positively correlated, with stronger attitudes equating to stronger intensities of behaviour. About half of the pair-wise attitude-behaviour correlations in the total sample were found to be significant at the 95% level (Spearman's rank test).
- There were minimal differences in correlations between attitude/behaviour pairs.
- The correlations were weak across the board. At best, between 25-30% of variation in behaviour was explained by attitudes, with 70% remaining unexplained.
- Highest correlations were found between specific attitudes and overall aggregated behaviour (although even these were weak).
- The four groups of waste prevention behaviours (private reuse, minimising new buy and valorisation of unwanted goods, point of purchase decisions, and use of long-life products; identified through factor analysis) could not be predicted from the seven groups of attitudes (prejudices, self-efficacy, awareness of consequences and some aspects of acceptance of responsibility, personal costs, emotional aspects of acceptance of responsibility, what others are doing, and the idea that "producing waste is ok as long as you recycle it"; identified through factor analysis) using regression modelling, and the power of the attitude groups to explain the behaviour groups was minimal.

- In some cases, respondents' behaviours appeared completely random and unrelated to attitudes or demographics.

In summary, the authors concluded that attitudes were poor predictors of individual waste prevention behaviours, and more strongly related to the totality of waste prevention behaviour being undertaken – although even then attitudes could only account for about 25-30% of variation in behaviour.

Tucker and Douglas (2007, WR0112) also point out that it appears behaviour change can take place first, followed by a post-rationalisation of attitudes – so the cause-effect relationship may at times work in the opposite direction.

Influence of attitudes on waste prevention behaviours

Although there is evidence in the literature for the influence of attitudes on behaviour, this is patchy and uncertain at best, relying on correlations between attitudes and behaviours, rather than robust research to determine a definite cause and effect:

- In interpreting the survey results described above, Tucker and Douglas (2006b, WR0112) conclude that there must be other antecedents besides attitudes to waste prevention behaviour, but they consider the correlations between attitudes and behaviours to suggest that in some cases waste prevention behaviour is driven by pro-environmental attitudes.
- In their literature review, they also note that research has found intentions to compost to be influenced by attitudes among other things, such as internal and external subjective norms, and perceived behavioural control (Tucker & Douglas, 2006a, WR0112).
- Gray and Toleman (2006) also refer to composting specifically, and note that the theory of planned behaviour, which the literature suggests explains composting behaviour particularly well, includes positive attitudes/perceptions (as well as conducive circumstances and self-efficacy) as a requirement for people to take up composting behaviour. They also suggest that the influence of attitudes and other internal factors can be further moderated by people's socio-economic circumstances.

Attitudes are fairly strong across the board

The survey by Tucker and Douglas (2006b, WR0112) also found that most people had fairly strong waste prevention attitudes, regardless of the strength of their behaviours (although there was a significant difference in attitudes between waste prevention participants and non-participants). Some respondents were even found to have strong behaviours and weak attitudes (although the authors suggest they could have made a mistake filling in the questionnaire).

- This means that a number of specific attitudes played little role in discriminating between behaviours – either because:
 - They were so widely held that they were no use in differentiating between behaviours; or
 - They were not relevant to all behaviours (meaning that behaviours would form independently of them).
- This mismatch between attitudes and behaviours means that attitudes are not a sufficient precondition for waste prevention behaviour.

The authors conclude that (Tucker & Douglas, 2007, WR0112):

- Attitudes do not seem to be preventing people from preventing waste, but it is simply the case that other behavioural drivers are stronger.

The attitude-behaviour relationship is not straightforward

There is some evidence from the work by Tucker and Douglas (2006b, WR0112) that different attitudes or classes of attitudes influence different behaviours or classes of behaviours in different ways.

- As already noted, the highest correlations were found between specific attitudes and overall level of waste prevention behaviour (as opposed to specific attitudes and specific behaviours), suggesting that most attitudes give some (weak) support to a range of behaviours (Tucker and Douglas, 2006b, WR0112).
- The authors also suggest that behaviours rarely increase monotonically with attitude, and this relationship can involve unexpected turning points (Tucker & Douglas, 2006b, WR0112).
- The most significant specific attitudes to predict waste prevention behaviour were acceptance of personal responsibility, embarrassment over second-hand goods, and knowledge of how to prevent waste (Tucker and Douglas, 2006b, WR0112).
- Investigating whether a combination of attitudes (as opposed to specific individual attitudes) could be used to predict behaviour, using stepwise regression, found that a sense of duty, guilt, satisfaction from reducing waste (these two form the more emotional components of the construct 'acceptance of personal responsibility') and lack of embarrassment over buying second-hand goods were the most significant predictors of both overall waste prevention behaviour as well as of many individual waste prevention behaviours (Tucker and Douglas, 2006b, WR0112).
- The authors refer to previous literature which has suggested that there are various levels of attitudes: from general attitudes with little impact on behaviour to highly behaviour-specific attitudes which can have a direct impact on behaviour (Tucker & Douglas, 2007, WR0112). Their own research suggests that the most important attitudes may in fact be those at the level of behavioural groups (as opposed to individual behaviours – e.g. private reuse, as opposed to reuse of paper or reuse of jars). Behaviour-specific attitudes appear to be less strongly involved in supporting behaviours, due to the stronger influence of other factors (Tucker, 2007b, WR0112).
- Pro-environmental attitudes also tend to be most strongly related to behaviours which have little impact on people's daily lives, rather than to behaviours with higher financial and psychological impacts – but it tends to be the latter which have the greatest environmental impacts (Tucker & Douglas, 2006a, WR0112).

Implications

Tucker (2007b, WR0112) suggests that points of intervention to influence waste prevention attitudes may be best targeted at the behavioural class level (private reuse, minimising new buy and valorisation of unwanted goods, point of purchase decisions, and use of long-life products), rather than at the level of specific behaviours, because these are influenced by a number of specific external pressures and factors.

1.9 Context

The external context – local facilitating conditions, and real or perceived barriers, constraints and costs – can influence waste prevention behaviour, as it determines the level of ease or difficulty in undertaking any particular behaviour (Tucker & Douglas, 2006a, WR0112).

- The literature review carried out by Tucker and Douglas (2007, WR0112) found that many researchers consider contextual factors to moderate the impact of attitudes on behaviour.

- They report that the literature suggests neither behavioural manipulation (e.g. rewards) nor education is effective in changing behaviour, and instead enabling infrastructure is a more effective trigger – they give as examples a kerbside collection and a compost bin promotion.
- The authors themselves go on to state that they feel the context may be more important than attitudes in determining behaviour, especially in the case of waste prevention.

Interestingly, it appears that the enabling infrastructure associated with the context for another waste management behaviour, recycling, has an influence on waste prevention behaviour:

- Barr (2007) reports that access to a recycling collection appears to have a negative influence on intentions and willingness to reduce and reuse.
- He finds, however, that those with a recycling collection who had recycled before its introduction were more likely to engage in waste reduction.
- He suggests that those who had not previously recycled, but started doing so upon receiving the collection, may have begun to feel that they were now “doing their bit”, and therefore had no need to reduce their waste.

It is also worth noting that with a range of waste prevention behaviours, there are no specific contextual factors or external enablers that can be used to facilitate them, and this is reflected in some of the findings of the reviewed research:

- Barr et al. (2005) refer to their own earlier work which investigated participation in 20 waste management activities in Exeter (n=673) in 1999, and which found that the behaviours conformed to the three-tier structure of reduce, reuse and recycle. Contextual factors were found to have more of an influence on recycling behaviours than on reduction and reuse behaviours, while the latter two were more strongly influenced by underlying environmental values and socio-demographics.
- Tonglet et al. (2004), partly in contrast with the above, conclude from their research that while overall waste minimisation behaviour is influenced mainly by concern for the environment and community, contextual factors appear to play a role in influencing repair and reuse behaviours in particular (together with the ability to perform the behaviour), and waste prevention purchase behaviours may contain a moral element.

Some practical examples of how context influences participation in waste prevention behaviour include:

- Gray and Toleman (2006) note that the theory of planned behaviour appears to explain composting behaviour particularly well, and one of the requirements for the uptake of the behaviour, according to this model, is conducive circumstances (alongside positive attitudes/perceptions and self-efficacy).
- In terms of perceived external constraints, Gray and Toleman (2006) also suggest that in some cases where people claim lack of space as a barrier to composting, this could simply be a misconception that could be overcome.
- In addition, Watson (2008) notes that a ‘bag for life’ trial (no details given) found bag reuse to have “significant contextual determinants”, although this is not discussed further.

Working in groups and empowerment

There is some evidence in the literature that working in groups to achieve waste prevention can empower people and help them to feel motivated:

- Nye & Burgess (2008, WR0114) found that GAP's EcoTeams helped participants to overcome their sense of disempowerment in the face of environmental problems, through working together in small groups.
- Similarly, WRAP and the Women's Institute (2008) considered that when the Love Food Champions participants talked through practical actions with others, they began to feel empowered to take action.

1.10 Convenience

Convenience is a sub-category under context, which has already been discussed above, because the level of convenience for any particular behaviour arises out of the local facilitating conditions (context) for that behaviour (Tucker & Douglas, 2007, WR0112). However, as it is quite a prominent sub-category it is worth unpacking this motivation further.

- Tonglet et al. (2004) note that inconvenience or a perception of inconvenience constrains waste prevention behaviours.
- Tucker and Douglas (2007, WR0112) feel the literature suggests that people's behavioural patterns are related to the level of difficulty or convenience/inconvenience of different waste prevention behaviours.
- Tucker and Douglas (2007, WR0112) also state that convenience is one of the important motivators for waste prevention behaviours – more so than a desire to reduce waste.

Examples of how convenience influences behaviour

- With respect to reuse behaviours, Barr (2007) suggests that perceptions of convenience, together with 'motivation to respond' (combining a belief that an action is worthwhile with gaining intrinsic satisfaction from taking action), mediates the influence of core values and concern on reuse behaviour
- ACS (2006) also studies reuse behaviours, and found that 3.9% of their respondents felt that reuse should be made easier to encourage people to take action; of these respondents (n=39) 23.1% suggested that this could be achieved by putting collection bins in a shopping area, while 20.5% suggested door-to-door collections.
- Reasons given, during qualitative research, for using a 'bag for life' include (Andrew Irving Associates, 2005):
 - 'Bags for life' are larger and hold more
 - They are more durable
 - They are better for carrying heavy items
 - Gusseted base makes it more stable in car
- Reasons why people buy refills include that they are smaller, lighter and easier to carry, they take up less room, and are easy to use (Lee et al., 2008).
- Drivers identified for buying loose produce include that it is easy to try new products, as one can buy a small quantity (James Ross Consulting et al., 2008).
- Convenience was, in one survey, found to be a major predictor of behaviour with respect to nappies, as people tend to choose disposables over reusable nappies for reasons of convenience (Tucker & Douglas, 2006a, WR0112).

- Convenience has also been cited as one of the reasons for using a doorstep milk delivery service (Watson, 2008).

1.11 Environmental concern

There is evidence in the literature of environmental concern being one of the drivers behind general waste prevention behaviour:

- Tonglet et al. (2004) found that waste minimisation behaviour in general was influenced by concern for the environment and for the community.
- Tonglet et al. (2004) also refer to work by Barr et al. (2001) which found that waste minimisation behaviour is driven by knowledge of environmental issues and concern about the consequences of waste (compared to recycling, which is influenced by convenience, knowledge, and access to a kerbside collection).
- Barr (2007) found that concern about waste issues, perception of the waste problem and a sense of threat to the self all are associated with an intention to reduce waste, as well as with actual waste reduction behaviour.
- Barr also notes that core ecocentric values and concern (though mediated by other factors) seem to underlay reuse behaviour (Barr, 2007).
- Watson (2008) refer to work carried out in Exeter, which found that private reuse behaviour was predicted by concern-based variables, in addition to environmental values and knowledge.

There are also a number of examples of environmental concern influencing specific waste prevention behaviours:

- A survey of 200 volunteers found that 24% chose refillable products because they felt that refillable packaging was better for the environment (Lofthouse & Bhamra, 2006b, WR0113).
- In a survey of reusable nappy behaviours, some of the interviewed mothers suggested that their partner's interest in environmental issues was a major reason in choosing reusable nappies (Tucker & Douglas, 2006a, WR0112).
- WRAP's (2007a) study of home composting behaviour found that environmental reasons (and in particular reducing landfill) were mentioned as a motivator for taking up the council's compost bin offer by 26.1% of respondents (n=261, unprompted).
- When asked what they thought of a list of possible messages about composting, respondents liked environmental messages (WRAP, 2007a).
 - The top three were: 'Good for the environment' (40.2%), 'A good way of getting rid of waste' – e.g. cost-effective, no trips to recycling sites, no need to wait for collection (19.8%) and 'Reduces waste to landfill' (10.9%).
 - Respondents tended to think that an environmental message would be good as it is a current "hot topic".
- The 2005 National Home Composting Survey found that reasons for composting varied widely, but that environmental concern, cited by 29% as a reason for composting, seemed to play a role in increasing composting activity – although gardening activity appeared to be the crucial predictor of composting behaviour (Gray & Toleman, 2006).
- ACS (2006) found that 5.4% cited environmental reasons for having bought something at a charity shop or furniture reuse organisation (n=720, unprompted, multiple answers possible); personal and social reasons were more common.

- Waste Watch (2007b, WR0105) report that of those who switched to tap water after taking their 'Test the Water' challenge and continued to drink tap water afterwards, 40% gave 'doing their bit for the environment' as one of their reasons.
- LCRN's (undated) research with reuse organisations and local authority representatives found a consensus that the potential supply of items for reuse, as well as demand for reused items, were both growing, and this was put down to increasing awareness of the environmental benefits of reuse.
- OVAM (2008) report that 11% of consumers have been found to make their consumption choices on the basis of the environmental credentials of products, although they point out that the actual figure may be lower as some of this could be "wishful thinking". However, they also refer to what appears to be an increasing interest among consumers in green and ethical issues, which suggests that environmental motivations could be becoming more prominent. (It is also worth noting that these figures and trends may not apply in the UK.)

Watson (2008) points out that our understanding of the role of environmental concern in influencing waste prevention behaviours can be affected by the research method. If people are asked directly about their concern for the environment, they will voice concern, but if the question is phrased to ask why they buy reused goods, environmental concern is a less prominent reason, if mentioned at all.

1.12 Experience

Previous experience of a specific waste management behaviour (or of a related behaviour) is one of the variables that has been found to influence an individual's current participation in that behaviour (Barr, 2007). Tucker (2007a, WR0112) suggests that prolonged experience of a behaviour can influence an individual's fundamental attitudes towards that behaviour, thus reinforcing it. Tucker also states that regular participation in a behaviour can help to make that particular behaviour a habit.

The importance of experience in driving waste prevention behaviour is noted in a number of sources:

- Tucker and Douglas (2006b, WR0112) found past behaviour to be a highly significant predictor of current behaviour, along with a number of other variables including duty, satisfaction, guilt, and lack of embarrassment over second-hand goods.
- Barr et al. (2005) suggest that the reason why older people are more likely to undertake waste reduction behaviours (see annex 10.2) is that they lived through post World War II rationing and the 'make do and mend' culture.
- Tucker and Douglas (2006a, WR0112) refer to research carried out in a hospital setting, which suggested that early experience of reusable nappies in a supportive environment can help to build parents' confidence and make them more likely to use reusable nappies.
- Tucker (2007a, WR0112) refers to his previous work which found that upon starting home composting, many people had fairly neutral views on the personal costs this behaviour would entail, but after gaining some experience in composting they began to perceive the costs to be low – i.e. they saw the behaviour as convenient (which could in turn reinforce participation).

1.13 Incentives

Evidence on the success of incentives in motivating waste prevention behaviour appears to be limited to the success of subsidised compost bins to motivate uptake of composting.

- WRAP (2007a) found that the low cost of the compost bin was an important motivator for 30.0% of those taking up the subsidised compost bin offer (n=261; unprompted).

- In the same survey, some of the non-composters (n=1,025; unprompted) thought that a free WRAP compost bin (19.6%) or a low cost WRAP compost bin (5.9%) could encourage them to start composting.
 - Looking at just the 642 non-composters who indicated that they could be persuaded to start composting, 31.3% thought that a free WRAP compost bin could encourage them to start, while 9.4% thought that a low cost bin would encourage them.
- Gray and Toleman (2006) point out that the increase in composting among households with access to a garden, which has been observed between 1997 and 2005, is consistent with the increase in distribution of low-cost compost bins and composting promotions, which suggest that these may at least in part be driving composting behaviour. They also note that there is evidence in the literature that lower-cost compost bins could increase participation in home composting.

Tucker and Douglas (2007, WR0112) state that their literature review suggests behavioural manipulation through rewards (a different type of incentive) does not work, but incentives involving enabling infrastructure – such as subsidised compost bins – seem to be effective.

1.14 Fun

There is some evidence that enjoying particular waste prevention behaviours can motivate participation.

- Watson (2008) refers to work which has suggested that second-hand purchases at car boot sales can be about “fun, sociality and the considered pursuit of distinctive style” and “the possibilities of surprise and spontaneity”.
- WRAP and the Women’s Institute (2008) found that one of the factors that kept the participants of their Love Food Champions programme motivated was that they found the practical activities fun.
- Lee et al. (2008) note that one of the reasons why people buy refills is that they think they are fun to use.

Watson (2008) discusses the role of fun as a motivator for second-hand purchases in detail.

- Watson points out that although second-hand retail channels have traditionally been seen as the domain of the less affluent, research suggests a substantial proportion of charity shop and car boot sale shoppers are relatively affluent, and they use these alternative retail outlets because they enjoy doing so.
- These social groups perceive different meanings in second-hand items – they are more likely to think of them as retro or vintage, compared to other social groups who may buy second hand for reasons of financial necessity.
- Some research suggests that the motivation of enjoying second-hand shopping only applies to the relatively affluent. Watson considers that “it can take a certain amount of ‘cultural capital’ - associated with higher levels of education and social background - to be prepared to engage creatively with second hand retail environments” (p. 16).

1.15 Knowledge

Individual knowledge, about the need for action, behavioural options and how to carry out specific options, has an influence on waste prevention behaviour. Barr (2007) divides knowledge into two types:

- Environmental knowledge is more abstract knowledge about the state of the environment and related problems such as waste.

- Behavioural knowledge is more concrete knowledge about action, and a significant prerequisite for pro-environmental behaviour.

Barr (2007) then goes on to investigate how these two types of knowledge influence waste prevention behaviour, and finds that:

- The influence of knowledge is significant, but:
 - The effect of abstract knowledge is weak.
 - For reduction behaviour, policy knowledge is important (as opposed to concrete how-to knowledge, which is important for recycling).

Other evidence of the influence of knowledge on behaviour includes:

- Tonglet et al. (2004) refer to work by Barr et al. (2001) which found that waste minimisation behaviour was partly driven by knowledge of environmental issues and concern about the consequences of waste (i.e. they are value-based behaviours, compared to recycling which is influenced by convenience, knowledge, and access to a kerbside collection).
- Tucker and Douglas (2006b, WR0112) found that one of the significant predictor variables of waste prevention behaviour was knowledge of how to prevent waste.
- Barr (2007) also found evidence that knowledge (especially of sustainable development and Local Agenda 21) was one of the predictors of waste prevention behaviour. Knowledge sources also had an influence.
- Watson (2008) refers to a large scale survey (no sample size given) in Exeter, which found that reuse behaviour (e.g. reuse of paper, packaging etc.) was partly predicted by knowledge, together with environmental values and concern.

There is also some evidence in the literature on how knowledge can motivate waste prevention behaviour, mainly with respect to composting:

- Tucker and Douglas (2006a, WR0112) report that although few people appear to seek advice on composting, those who do tend to experience less problems and may be less likely to give up composting.
- WRAP (2007a) found that the provision of advice or information on composting may help to motivate some people to start composting: 7.6% of the non-composting respondents (n=1,025) thought that advice on how to make compost might encourage them to start, while 3.8% said the same of receiving advice on which materials to compost, and 2.5% suggested advice on how to use the compost.
- Gray and Toleman (2006) report that 5% of non-composting households (n=11,102) would consider composting if they received advice on making compost.

There are also some references to how the provision of information may help to overcome existing barriers to waste prevention:

- WRAP (2007b) suggest that better understanding of food storage and management could enable people to waste less food.
- Gray and Toleman (2006) suggest that provision of information could encourage those non-composters who claim not to know how to compost to start.

1.16 Perceptions

Perceptions, related to one or more of the other influencing factors – such as perceptions of costs, convenience and practical problems – can influence waste prevention behaviour. Perceptions are not discussed here in detail, as this is an issue that spans across practically all of the other motivating factors. Rather, the purpose of this section is to flag that perceptions can be as important, if not more

so, as the other factors – for example, perceptions of costs play a role, as do real costs – and to note any specific examples from the literature.

- WRAP (2007b) report that one of the things that people report they like about loose produce is that it is fresher – which is really a question of perception.
- Watson (2008) points out that second-hand items can have different ‘meanings’ to different people – again a question of perception.
- Barr (2007) refers to Roberts (1996) who stated that ‘response efficacy’ or a belief that an action makes a difference is likely to be "decisive in the promotion of environmentally sound behaviours from an individualistic perspective".

1.17 Visibility

Visibility of waste prevention behaviour, or of the waste itself, can create motivations for taking action in a number of ways:

- As already noted, Tucker and Douglas (2006a, WR0112) point out that for social norms to influence behaviour, the behaviour needs to be visible or somehow related to social interactions.
- The evaluation of GAP’s EcoTeams found that the process of weighing their waste brought to life for the participants the connections between their consumption practices and the waste they produce, focusing their attention on waste prevention (Nye & Burgess, 2008, WR0114).
- Similarly, Tucker and Douglas (2006a, WR0112) point out that composting provides constant visual feedback.
- Equally, Brook Lyndhurst’s investigation into enhancing participation in kitchen (food) waste collections found that being made visually aware of the food thrown away then encouraged people to waste less (Brook Lyndhurst, forthcoming, WR0209).

1.18 Behavioural triggers and spillover

Some of the reviewed literature investigated behavioural triggers. Tucker and Douglas (2007, WR0112) included a question in their survey about what had triggered behaviour change among those respondents who claimed to have intensified their waste prevention behaviour over the previous two years (which included over 80% of the sample). Other authors have also touched on this question.

External triggers

These external triggers are linked to the context related motivations discussed earlier. Tucker and Douglas (2006b, 2007, WR0112) report that approximately half of their respondents mentioned an external source as the trigger of their intensified waste prevention behaviour:

- The majority of these referred to the local council.
- Around a quarter mentioned TV or radio.
- A smaller number identified environmental or campaigning organisations.
- 22% mentioned newspapers or magazines.
- It was much less common to say friends or family had an influence
- Respondents were particularly unlikely to say that their neighbours had influenced their behaviour.
- Three respondents claimed to be doing more waste prevention as a result of a reduced residual waste collection frequency.

Other evidence of external triggers includes:

- Gray and Toleman (2006) report that 6% of respondents said they compost as a direct result of the council's promotional campaign.

- AEA et al. (2008, WR0116) report that junk mail was a popular issue among the residents targeted by Dorset's waste prevention campaign, and it provided a 'hook' for engaging people, with action on junk mail then catalysing interest in other waste prevention behaviours.

ACS (2006) investigated potential triggers for encouraging reuse, and asked respondents what they thought would motivate people to reuse more via charity shops and furniture reuse organisations. The responses focused on providing external triggers:

- 28.5% suggested advertisements or features on TV.
- 26.3% suggested increased information on how to use these retail channels.
- 24.9% suggested increased information on what they do and how this is beneficial.

Behavioural spillover and internal triggers

In the survey carried out by Tucker and Douglas (2006b, 2007, WR0112), approximately half of respondents stated that the triggers they experienced were not external. Instead, they put their behaviour change down to being the 'next natural step' from what they were already doing:

- This was usually combined with another trigger.
- For 5% of respondents, however, behavioural spillover was the only reason they identified for intensifying their waste prevention activity.

The authors point out that it may be the case that there was an initial external trigger, but the respondents have forgotten what it was.

Some of the volunteered reasons for intensifying waste prevention behaviour included general environmental concern (Tucker & Douglas, 2006b, WR0112).

Moments of change as triggers

Changes in life stage, through sometimes identified as a trigger of behaviour change in the survey by Tucker and Douglas (2006b, WR0112), were less common.

- 18% claimed that life stage changes had triggered their intensified waste prevention behaviour.
- Moving house and retirement appear to be the commonest triggers of this type.
- Having a baby was a less common trigger.

No link was found between particular moments of change and particular waste prevention behaviours.

Brook Lyndhurst's (2008) evaluation of the Small Differences Big Changes project for Hampshire County Council used pilots looking at four key stages in people's lives: retirement, schools, new parents and workplace. The New Parents pilot demonstrated the most scope for engaging people through a 'moment of change'. The opportunity appeared to be most pronounced for those having their first child, and particularly in the immediate pre-natal period.

Multiple triggers

Many of the survey respondents in the Tucker & Douglas research identified more than one trigger, and the authors note that their average waste prevention behaviour score tended to increase with the number of triggers experienced. They go on to suggest that the triggers may be 'wearing away' the barriers and raising awareness, until a final trigger sparks behaviour change (Tucker & Douglas, 2006b, WR0112). In addition, they also suggest that the number and timing of triggers can be important in this process (Tucker & Douglas, 2007, WR0112).

Some respondents had 'always' prevented waste

Tucker and Douglas (2006b, WR0112) also found that some of their respondents claimed to have always been carrying out waste prevention behaviours:

- 32% of respondents claimed to have always been carrying out waste prevention behaviours (some of whom had also experienced external triggers).
- 7.5% claimed to always been carrying out waste prevention behaviours, while never experiencing any external triggers.

Differences in triggers and behaviours

Tucker and Douglas (2006b, WR0112) found certain types of triggers to be more strongly linked to certain behaviours than others:

- Those who had been triggered by newspaper and magazine articles to intensify their waste prevention behaviour had multiple stronger behaviours, with the exception of reuse behaviours.
- The influence of friends was more strongly linked to reuse behaviours.

Intensity of engagement in waste prevention also varied depending on the type of trigger experienced (Tucker & Douglas, 2006b, WR0112):

- Those who claimed to have always carried out waste prevention behaviours were found to be more engaged in all waste prevention behaviours considered (as well as having stronger attitudes) than those who had recently changed their behaviour as a result of behavioural spillover.
- Those taking the 'next natural step' (i.e. spillover) were in turn more engaged in waste prevention behaviour than those who had experienced external or no triggers.

Demographic differences in triggers were (Tucker & Douglas, 2006b, WR0112):

- A larger proportion of young adults without children said that their behaviour change was triggered by family and friends, while fewer said that the council had acted as the trigger.
- Older people, and particularly the retired, were the most likely to say they had always carried out waste prevention behaviours.

Data issues

It is worth noting here the caution that Tucker and Douglas (2006b, WR0112) attach to the results of their survey on behavioural triggers. Respondents were asked about triggers for waste prevention behaviours, and some reported that the new recycling collection introduced by the council had triggered a change in their behaviour – suggesting that there was some confusion among the respondents over what waste prevention encompasses, and it is likely that some were thinking of recycling when responding to the question about triggers.

This means that the influence of the council may not be as strong as suggested by the results reported above, as many respondents may be thinking of the council's recycling collection when reporting that the council was the trigger for their behavioural change. The authors note that the only true waste prevention behaviour which was more common among those respondents acknowledging the council as a trigger was using their own shopping bag.

Behavioural spillover

Behavioural spillover is worth taking a separate look at, because although there is little specific evidence for this in the reviewed literature, there are some interesting points that merit attention.

- Tucker and Douglas (2007, WR0112) note that there is evidence in the literature for behavioural spillover being responsible for behaviour change, though some of it is circumstantial.
 - For example, some of the evidence suggests that composting appears to be correlated with lower quantities of overall household waste (more than the impact of composting diversion) – possibly indicating a spillover from composting to other waste prevention behaviours (Tucker & Douglas, 2006a, WR0112).
- Barr (2007) found that although access to a recycling collection appeared to make people less willing to reduce their waste, previous experience of recycling appeared to, in contrast, enhance their willingness to reduce and reuse waste – in effect, recycling behaviour was spilling over into waste prevention behaviour:
 - Those with a recycling collection who had recycled before its introduction were more likely to reduce their waste. (As already discussed above, the author suggests that those who had only started recycling upon receiving the recycling bin now felt that they were doing their bit and therefore had no need to reduce their waste further.

Brook Lyndhurst, The Open University and University of Surrey are currently undertaking a study on catalyst behaviours for Defra (forthcoming) to further assess and understand the existence of spillover behaviours.²

1.19 Interactions between motivations

Any specific waste prevention behaviour is clearly going to be driven by a combination of motivations. Some practical examples include:

- Tucker and Douglas (2006a, WR0112) refer to research into the drivers of the purchase of cloth nappies, which found that actual purchase was predicted by the intention to purchase, and this in turn was related to awareness of environmental consequences and the evaluation of individual consequences (these last two factors were unrelated, and greater emphasis on the first would promote environmentally conscious purchasing behaviour, while the second would do the opposite). In addition, awareness of environmental consequences was supported by a strong value of self-transcendence. The social norm to use disposables could override environmental considerations, and the private nature of individual consequences meant little pressure to behave environmentally responsibly.
- Watson (2008) notes that research has shown that a “complex range of motives and values ... converge in charity shops and the goods they sell” (p. 5).

A number of theoretical models exist which attempt to explain the relationships of the different motivations to one another and to behaviour. One example is the Theory of Planned Behaviour (TPB):

- Tonglet et al. (2004) used this to investigate waste prevention behaviour. The model postulates that behaviour is directly influenced by an intention to act, while intentions are influenced by the following factors:
 - Attitude towards the behaviour (favourable / unfavourable evaluation of performing the behaviour)
 - Subjective norm (perception of social pressure to act or not to act)
 - Perceived behavioural control (perception of ability to undertake the behaviour)
 - Other factors (e.g. past experience) have an indirect influence through these components.

² <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=16324> Accessed online 12.05.2009.

As suggested by the TPB, some of the motivating factors or drivers can also influence one another, as well as influencing the behaviour directly:

- Tucker (2007b, WR0112) notes that experience of a behaviour can influence various attitudes at various speeds, for example:
 - Experience can quickly influence quantification of personal costs.
 - Negative perceptions can develop through negative experiences over slightly longer timescales.
 - Habit formation through experience can take a long time.
- Tucker also notes that past experience, which is a strong factor in influencing current behaviour, may be strongly coupled with attitudes (Tucker, 2007b, WR0112).

There is also some evidence that internal motivations lead to stronger waste prevention behaviours than external motivations:

- The literature review by Tucker and Douglas (2006a, WR0112) found evidence that intrinsic motivations appeared to be more common than extrinsic motivations for source reduction of waste.
- Their own survey supported these findings and suggested that self-motivation tended to lead to stronger waste prevention behaviours than external motivation (Tucker & Douglas, 2006b, WR0112).
- Barr (2007) also points out that intrinsic motivation, arising from satisfaction at carrying out the behaviour, has been argued to be the primary motivator of environmental behaviour, while extrinsic motivation is less likely to promote long-term behaviour change.

Some waste prevention behaviours may be easier to motivate than others:

- The literature reviewed by Tucker and Douglas (2007, WR0112) suggested that people are in general more willing to change their waste prevention behaviour at home than when out shopping.
- Tucker (2007a, 2007b, WR0112) points out that many opportunities for household waste prevention re-occur on a more or less regular basis (e.g. grocery shopping, repairing broken equipment, etc), and suggests that if a motivating stimulus occurs just before or coincides with such an opportunity, its salience will be high and it can influence behaviour. However, it can be more difficult to motivate those behaviours where opportunities to take action are infrequent (e.g. hire instead of buy)
- In addition, behaviours that involve *not* undertaking a behaviour (e.g. avoid premature replacement of goods) are likely to be very difficult to motivate externally (Tucker, 2007b, WR0112).

Some of the recommendations on motivating waste prevention behaviour to come out of the literature include:

- Tucker (2007b, WR0112) points out that modelling suggests interventions to stimulate behaviour change may have very different impacts on different behaviours.
- In the main report (Tucker & Douglas, 2007, WR0112), the authors suggest that a social marketing approach could be used to sell waste prevention behaviours on their actual attributes –

environmental or not – although they feel that a moral or environmental dimension could help to reinforce people’s behavioural choices.

- To be effective, interventions need to focus on the most sensitive or on the dominant driver of the behaviour in question (Tucker, 2007b, WR0112).
- OVAM (2008) consider the shop floor to be the crucial moment for influencing consumer purchasing choices.
- Resources for Change et al. (2008a) investigated a number of case studies, one of which was Wiltshire Wildlife Trust who strongly believed that promoting waste minimisation as part of a wider “package” of sustainable lifestyles increased participation and helped to reach more people than would be the case if their work simply focused on waste.

2 Barriers to household waste prevention

As the types of waste prevention behaviours are multiple and varied and their motivations are equally so, the barriers to waste prevention behaviours almost mirror the above-mentioned motivations.

Some barriers to waste prevention are embedded in the nature of waste prevention itself; whilst others can be separately distinguished. Although researchers tend to be in general agreement as to which factors influence waste prevention behaviour, there is no consensus on the relative importance of each factor and how the individual factors are linked together (Tucker & Douglas, 2007, WR0112).

In this section, we first present evidence on what is known about the barriers that seem to be inherent to the nature of waste prevention, before turning (from section 2.1 onwards) to the separately distinguishable barriers.

Nature of waste prevention

The nature of waste prevention is such that, as a concept, it can be difficult for the public to understand and for policy-makers and campaigners to promote and encourage.

There appears to be a general lack of awareness of waste prevention among the public.

- Tucker and Douglas (2006a, WR0112) note that waste prevention does not appear to be part of normal household waste management routines, and there is even a lack of recognition of waste prevention behaviours forming part of the “environmental toolkit”.
- They also note that people tend to overlook the importance of the purchasing stage – where many important waste prevention behaviours take place – and focus instead on the disposal of waste, i.e. on recycling (Tucker & Douglas, 2006a, WR0112).
- In addition, where waste issues come into the picture at the purchasing stage in terms of packaging and labelling, people’s main concern appears to be recyclable packaging – because they are comfortable and familiar with the concept and know to look for it (Tucker & Douglas, 2006a, WR0112).

When asked directly about waste prevention, there is evidence that the public do not have a clear understanding of the term.

- Tucker and Douglas (2007, WR0112) point out that a number of surveys have shown the public do not really understand what waste prevention means:

- Many think it means recycling.
- Some include energy and water conservation in their definition.
- The authors' own survey (Tucker & Douglas, 2006b, WR0112) showed there to be a lack of understanding of which activities contribute to preventing waste; when asked to list any other activities the respondents carried out "to reduce their waste":
 - Relatively few respondents were able to name waste prevention behaviours they were undertaking in addition to those on the list presented to them: 27.2% claimed to do something in addition to the questionnaire options.
 - Among those, the most popular response was recycling (59% of those who responded to the question).
 - Composting (which the authors excluded from their definition of waste prevention) was also a fairly common response.
 - Some respondents referred to energy or water conservation activities in the home, or to other environmentally related (non-waste) behaviours.
 - Only 7% of the responses to this question were actually to do with waste reduction.
- Tucker and Douglas (2006a, WR0112) also refer to two surveys by Waste Aware Scotland and Waste Aware Hertfordshire, which found that:
 - Waste prevention was often perceived to equate to recycling.
 - People tend to be unable to name waste prevention activities when asked, but if given a list of them, they recognise some as things that they do.

Why is waste prevention as a concept so difficult to understand?

- Tucker and Douglas (2007, WR0112) point out that many waste prevention behaviours are not behaviours as such, but instead they are about not carrying out other behaviours.
- People's familiarity with recycling may also have something to do with this – when thinking about or talking about waste, many of the source suggest that people tend to fixate on recycling (e.g. Tucker & Douglas, 2007, WR0112) while ignoring all other angles.
- The disconnect between the idea of 'waste' and the locations where many waste prevention behaviours take place (e.g. when making purchasing choices) may also add to this effect: when people are asked to think about waste issues, they automatically focus on disposal (e.g. the Love Food Champions participants expressed an interest in learning about food waste collections) and find it difficult to think about waste outside of that context (e.g. in the context of shopping).
- Why is waste prevention difficult to encourage and promote?
- One of the reasons why waste prevention behaviours are difficult to facilitate externally is that they lack any tangible infrastructure (Tucker & Douglas, 2006a, WR0112).
- Many waste prevention behaviours also lack other positive behavioural drivers (Tucker & Douglas, 2007, WR0112).
- In addition, waste prevention behaviours tend to lack feedback cues (Tucker & Douglas, 2006a, WR0112).
- Because waste prevention involves a number of (often unrelated) behaviours, different barriers may apply to each, and they may all need to be overcome by different motivations and cues (Tucker & Douglas, 2006a, WR0112). Someone who is motivated to undertake waste prevention may still only carry out some of the relevant behaviours, but not all – although a motivated individual will undertake more behaviours than a non-motivated one (Tucker & Douglas, 2007,

WR0112). Waste prevention behaviours can involve a number of decision points, all of which have different influences acting on them and different barriers to overcome (Tucker & Douglas, 2006a, WR0112).

- In many cases, there can be a distancing effect between the point at which the decision is made to undertake a waste prevention behaviour, and the point at which the decision can be put into practice – for example, a decision on smart shopping can only be put into practice when shopping – and good intentions could be forgotten in the meantime (Tucker & Douglas, 2007, WR0112).
 - Tucker's (2007b, WR0112) modelling scenarios suggest that interventions to encourage waste prevention behaviours will have smaller impacts the less frequent the behaviour is – and especially if they have highly specific and even less frequent sub-behaviours (e.g. hire instead of buy).
 - He suggests that in order to encourage people to not replace goods before necessary, massive repeat intervention may be required (Tucker, 2007b, WR0112).
- Much of the terminology used (at the strategic level) to talk about waste prevention is fairly technical and may not have stable and transparent meanings to people that they can apply in their daily lives (Watson, 2008).
 - For example, AEA et al. (2008, WR0116) report finding that 'SMART Shopping' as a term was considered by the public to be too generic to apply and feel enthusiastic about.

Again there is no particular ranking of these barriers. In the literature apathy, responsibility, inconvenience, cost, sense of powerlessness and social norms more were amongst the most frequently cited barriers. The rest of the paper unpacks the detail behind the barriers discussed in the literature as follows:

- 2.1 Apathy;
- 2.2 Responsibility;
- 2.3 Inconvenience;
- 2.4 Cost;
- 2.5 Sense of powerlessness and weak self efficacy;
- 2.6 Norms;
- 2.7 Consumer identity: lifestyle and consumer priority;
- 2.8 Habits and forgetting;
- 2.9 Experience;
- 2.10 Practical barriers;
- 2.11 Lack of knowledge and skills;
- 2.12 Preferences;
- 2.13 Lack of time;
- 2.14 Fears and lack of trust; and
- 2.15 Perceptions.

2.1 Apathy

Lack of motivation, or an apathetic attitude, towards waste prevention behaviours can create a barrier to their uptake (acknowledged e.g. by Maycox, 2003, cited in Tonglet et al., 2004). Some examples from the literature include:

- WRAP's (2007b) research suggests that many people are simply uninterested in the food waste problem. Of those who are uninterested:
 - Many say they do not throw much food away

- More than 1/4 do not consider food waste a problem
- Ipsos MORI (2008a) found that out of those who were aware of the MPS but had not registered (n=535):
 - 18% were not bothered by direct mail
 - 17% had not thought about it
 - 13% were considering it but had not got round to it
- Ipsos MORI (2008a) found that only 9% of those respondents who receive direct mail addressed to the household (n=1,635), 11% of those who receive unaddressed mail (n=1,499) and 3% of those who receive free newspapers (n=1,403) said they would take action to prevent them being delivered.
- Tucker and Douglas (2006a, WR0112) also suggest that one possible reason for the low proportion of the public having registered with the MPS is inertia, due to it being an opt-in service.
- Lofthouse and Bhamra (2006a, WR0113) note that the uptake of refillable products is dependent on customer motivation and participation, and James Ross Consulting and Butcher & Gundersen (2008) also point out that apathetic or 'can't be bothered' attitudes can prevent the uptake of refillables.
- Angus et al. (2008, WR0106) cite lack of interest in the environmental performance of product service systems as a barrier to their uptake.

There are also examples in the literature of some anti waste prevention attitudes that are stronger than merely apathetic:

- Tucker and Douglas (2006a, WR0112) refer to the Waste Aware Hertfordshire survey, which found that 16% of respondents (no sample details given) said they would not do anything more to reduce waste.
- Ipsos MORI (2008a) found that out of those who were aware of the MPS but had not registered (n=535):
 - 20% said they were too busy.
 - 15% were not interested.
- In addition, when asked which source they would prefer to receive more information from about the MPS, 8% said they were not interested in finding out more (Ipsos MORI, 2008a).
- WRAP's (2007b) research found that of those who are uninterested in food waste problems:
 - 1/5 say it cannot be avoided
 - 1/5 would prefer to throw away food rather than risk food poisoning (especially those with children)
 - 15% say they have other things to think about

2.2 Responsibility

A common argument against engaging in certain waste prevention behaviours is that it is 'someone else's responsibility'. Such a belief can act as a barrier to waste prevention, or as a convenient excuse.

- Ascribing responsibility to someone else is a common argument with respect to packaging waste. Tucker and Douglas (2007, WR0112) note that supermarkets in particular are commonly perceived as encouraging consumption and waste, and that many people believe packaging to be unavoidable

from their point of view, and consider it to be the retailers' and manufacturers' responsibility to reduce packaging waste.

- Manufacturers are also blamed for a number of waste-related problems with a number of products:
 - Obara (2005) found that people felt manufacturers designed their products to be difficult to repair, forcing disposal and purchase of a replacement; they also voiced opinions that manufacturers should bear more responsibility for unsustainable product design.
 - Tucker and Douglas (2006a, WR0112) point out that people also tend to think that it is up to manufacturers to develop non-hazardous alternatives to standard products.
- Food waste is often blamed on supermarkets by consumers:
 - WRAP and the Women's Institute (2008) found that the Love Food Champions participants felt food promotions were encouraging consumer waste.
 - They also felt supermarkets and brands were not assisting customers to cut back on waste, and suggested they should do things like provide in-store advice or recipes (WRAP & the Women's Institute, 2008).
- The participants of the Love Food Champions project also brought up other food waste –related issues in their discussions, which hint at evading responsibility for their own food waste:
 - They discussed whether schools had a role to play in teaching children more about food, where it comes from and how it is used at home; and
 - They also highlighted a desire to understand more about food waste collections – how they are done, why, and how the waste is used to e.g. generate energy (WRAP & the Women's Institute, 2008).

2.3 Inconvenience

A number of authors have noted that inconvenience, or perception of inconvenience, can inhibit waste prevention behaviour (e.g. Tonglet et al., 2004; Tucker & Douglas, 2007, WR0112). Tucker and Douglas (2006a, WR0112) refer to research by the NCC on sustainable consumption, which suggested that people tend to overestimate the inconvenience involved with sustainable behaviours – which suggests that perceived inconvenience may be a greater barrier than actual inconvenience.

Inconvenience as a barrier to the use of refillables has been mentioned by a number of researchers:

- James Ross Consulting and Butcher & Gundersen (2008) report on some of the potential inconvenience-related problems that consumers may have with refillable products, and conclude that for refillable packaging to be accepted it needs to be simple and easy to use:
 - Pouch refills can be difficult to handle, as they are often floppy and collapse when decanting, making a mess.
 - Potential for spillage and complexity have been found to be problematic with respect to refillable health and beauty products.
 - Impracticality of some refills (e.g. difficult to open, not recloseable leading to spillage, or otherwise poorly designed) can make consumers feel they are not worth the hassle.
- Lofthouse and Bhamra (2006a, WR0113) also point out that refillable products can be potentially inconvenient to consumers, because they need to run out before they can be refilled. Consequently, consumers may stockpile smaller refillables at home, leading to no overall reduction in material use or in waste to landfill.

- Watson (2008) also notes that use of refills requires organisation and planning, with implications for convenience, which can create a barrier to the use of refillable products.

Inconvenience has also been noted as a barrier to the use of self-dispensing systems:

- WRAP (2007b) point out that self-dispensing systems are seen by some as messy.
- James Ross Consulting et al. (2008) report that consumers voice concern about whether self-dispensing systems for liquid products would be messy – with 36% of survey respondents stating that they would feel uncomfortable buying liquid health and beauty products sold via self-dispensers.

Another area where inconvenience commonly crops up as a barrier is composting:

- Inconvenience cited directly as a reason:
 - Tucker and Douglas (2006a, WR0112) note that a perception of composting requiring a lot of effort creates a barrier to engagement.
 - They also refer to some survey work which found that the effort, inconvenience or bother involved in composting was given as a reason for not composting all possible waste by 18% of respondents (Tucker & Douglas, 2006a, WR0112).
 - Gray and Toleman (2006) report that the second most common reason given by non-composters as to why a low-cost compost bin would not motivate them to compost was that it was too much effort, cited by 32%.
- Inconvenience implied as a reason:
 - WRAP (2007a) report that some of their survey respondents used a garden waste collection because they felt it was easier than composting.
 - They also note that some respondents said they did not compost all compostable waste because bad weather prevented them from taking it out to the compost bin (WRAP, 2007a).
- Finally, Gray and Toleman (2006) found one of the reasons for not being interested in a subsidised compost bin to be that composting was considered too much effort, cited by 32% of those who were uninterested.

Other waste prevention behaviours where inconvenience is a barrier to action are:

- Product service systems: People tend to perceive ownership of a product more convenient than using PSS (Angus et al., 2008, WR0106; Gottberg et al., 2008, WR0106).
- Reusable nappies: Tucker and Douglas (2006a, WR0112) refer to research in Surrey which found that:
 - Of the respondents using disposable nappies, 93.7% used them for convenience reasons, and 71% stated that they did not want to wash reusable nappies
 - Focus group research with young parents found that they tended to think disposable nappies were easier to use than reusable nappies.
- Donating for reuse: ACS (2006) found that 12% (n=997) considered donating to a charity shop or furniture reuse organisation to be 'not very' or 'not at all' convenient, and of these 8% had donated at least once – suggesting that a perception that donating is inconvenient is a barrier to donation.

2.4 Cost

Watson (2008) points out that although attitudinal surveys suggest people are willing to pay more for environmentally friendly products, behavioural studies suggest that the opposite is really the case – the relative cost of different waste prevention options is therefore likely to influence people's behaviour. Tucker and Douglas (2006a, WR0112) refer to research by the NCC on sustainable consumption, which concluded that attitudes to costs are complex (and can mask barriers related to inconvenience and lack of awareness).

Much of the evidence in the literature on cost-related barriers to uptake of waste prevention options is in the area of product service systems, refillables and food:

- For product service systems (PSS), the (sometimes perceived) additional cost can be a barrier:
 - If households are unwilling or unable to pay for PSS – in effect, unwilling or unable to substitute disposable income for spare time (Angus et al., 2008, WR0106).
 - Householders may have negative perceptions of the reparability of household goods, as well as of the cost-effectiveness of such repairs (Gottberg et al., 2008, WR0106).
- In the case of refillables, it appears that the main barrier is the lack of a substantive cost saving:
 - Lofthouse and Bhamra (2006a, WR0113) point out that refillable dispensers are often low-cost or even free, meaning that consumers may choose to buy a new dispenser every time rather than the refill. In other cases, the initial cost of the primary pack can be off-putting.
 - James Ross Consulting and Butcher & Gundersen (2008) also note that the refill is often only marginally cheaper than the primary pack, which provides little cost incentive for buying refills. (The authors point out that in other parts of the world, such as America, Asia Pacific and Europe, there is a greater market share for 'value' products than in comparison to the UK, and refills offer a significant saving to the consumer.)
 - They also consider that UK consumers will need some kind of financial incentive to accept refillable products, because social behaviour in the UK tends towards low cost / good value products.
- For food, not only are there no financial signals driving waste prevention, but the opposite can be the case as the low cost of food can encourage additional waste:
 - Increasing affluence and increasing purchasing power contribute to over-shopping (WRAP, 2007b; Salhofer et al., 2008). WRAP (2007b) note that increasing affluence and decreasing price of food mean that spending on food accounts for 10% of disposable income today, compared to 15% ten years ago.
 - Low food prices, driven by competition between supermarkets, can also encourage consumers to buy too much (WRAP, 2007b; Woodard and Harder, undated).
 - Supermarket promotions, such as 'buy one get one free' and larger packs, can also encourage people to buy more food than they need (Brook Lyndhurst., cited in WRAP, 2007b; WRAP, 2007b; WRAP & the Women's Institute, 2008; Salhofer et al., 2008).
- Other examples of cost-related issues creating barriers to waste prevention behaviours include:
 - Increasing availability of cheaper furniture could reduce opportunities for reuse, because these items tend to be of poorer quality and durability (Eunomia Research and Consulting et al., 2007, WR0103).

- The declining cost of new goods, combined with consumers' tendency to perceive remanufactured goods as having intrinsically less value than new goods, is likely to present barriers to the uptake of remanufactured products (Watson, 2008).
- Research in Surrey found that 56% of parents with nappy-age children saw the expense of a nappy laundering service as a barrier to the use of reusable nappies (Tucker & Douglas, 2006a, WR0112).
- Watson (2008) refers to a survey (no sample details given) which found that 68% cited cost as a reason for not getting items repaired.
- AEA et al. (2008, WR0116) report that a rise in the price of home compost bins in Dorset led to a decrease in sales (although they also note that sales had already reached a peak).
- James Ross Consulting et al. (2008) note that when buying in bulk, goods are usually priced per kilogramme, and consumers can find it difficult to compare prices with conventional supermarket prices, if this information is not available.

2.5 Sense of powerlessness and weak self-efficacy

A sense of powerlessness can discourage people from engaging in waste prevention behaviours. Many people feel that their contribution, either to the waste problem or to the solution, is marginal. In particular, the effect of a specific behaviour can seem so insignificant that it appears not to be worthwhile (Tucker & Douglas, 2007, WR0112). This is also linked to responsibility as discussed as above.

- One consequence of this is that people tend to pass responsibility (see discussion below) on to someone else – for example in the case of packaging they tend to consider retailers to be responsible and individual consumers to be powerless (Tucker & Douglas, 2007, WR0112).
- Tucker and Douglas (2006a, WR0112) also refer to a survey which found that despite parents being aware of the nappy/landfill problem, they were unlikely to act on this, because their perception that there was a lack of collective action overcame any individual motivations to choose reusable nappies.

2.6 Norms

The influence of social norms has been commented on in the literature as a potential barrier to waste prevention behaviour (e.g. Maycox, 2003, cited in Tonglet et al., 2004).

- Tucker and Douglas (2006a, WR0112) note that many waste prevention behaviours tend to be undertaken in private, which means that there generally is no explicit social norm influencing them, and no social pressure to 'do the done thing'.
 - Source reduction in general, and purchases and packaging specifically are identified in their literature review as private choices, unlikely to be influenced by social norms.
- On the other hand, they also note that where waste prevention behaviours are or become public, there is a danger that a social stigma is attached to them.
- In addition, some pro-environmental behaviours may in fact go against the prevailing social norms, which means that the norm discourages participation in those behaviours (Tucker and Douglas, 2006a, WR0112).

Social norms can work against waste prevention in different ways:

- Lack of social norm for waste prevention:
 - With respect to food, for example, WRAP (2007b) consider there to be a lack of social and ethical pressures in today's society to avoid waste, and suggest that this is due to most of the population (apart from the over-65s, who waste less food than younger generations) not having experienced food shortages, which makes the whole issue seem irrelevant.
 - Reuse behaviours have low visibility, which constrains demand (LCRN, undated).
- Social norm encourages behaviour that goes against waste prevention goals:
 - Tucker and Douglas (2006a, WR0112) report on surveys which found that respondents were replacing their electrical and electronic items before they were broken, for reasons of social approval.
 - There is a social norm driving behaviour towards low cost options, which can inhibit the use of refillable packaging unless financial incentives are used to encourage them (James Ross Consulting & Butcher & Gundersen, 2008).
 - Watson (2008) refers to WRAP's work on carrier bags, which found that carrier bag use is embedded in the norms of shopping environments, as well as being associated with identity and status.

Examples of waste prevention behaviours where social norms create barriers are:

- Refillable packaging – social behaviour can be a barrier (James Ross Consulting & Butcher & Gundersen, 2008).
- Bag reuse – research had suggested people feel no pressure from the supermarkets to reuse bags, and staff were not perceived to be promoting reusable bags (Andrew Irving Associates, 2005).
- Embarrassment over second-hand goods is a barrier to buying reused goods (Tucker & Douglas, 2006b, WR0112).

Norms can have different levels of influence, depending not only on the waste prevention behaviour in question, but also where different products are concerned, and the social position and attitudes of the consumer.

- Watson (2008), for example, comments on the social stigma associated with second-hand good varies:
 - Fear of stigma appears more likely with those goods most associated with charitable means of distribution - white goods and furniture - and especially for people most concerned not to appear in need of charity.
 - Research in Australia has suggested that some people, due to having experienced poverty, always buy new goods because they associate second hand goods with poverty.
 - A survey of UK homeowners (sample size not given) found that 14% of respondents would feel 'very' embarrassed and 7% 'slightly' embarrassed to tell friends they had bought an item second hand.

There is also evidence that some waste prevention behaviours are not inhibited by the influence of social norms:

- Waste Watch (2007b, WR0105) challenged their 'Test the Water' participants to give up bottled water for two weeks. The follow-up survey (n=30) found that only 3.3% (i.e. two respondents) felt that social pressure from others to drink bottled water was a barrier to giving up bottled water successfully during the challenge.

Watson (2008) makes an interesting point about the difficulties of making reuse a social norm. He points out that, currently, one of the main target audiences of reused items is that section of the population who want to be outside of the mainstream of consumption – and this creates obvious difficulties for mainstreaming reuse.

Moral motivations

The issue here is not so much that people might consider the alternatives to waste prevention behaviours to be the moral options, but rather that, unlike recycling, there are no strong moral codes supporting waste prevention behaviours, with the exception of donating to charity (Tucker & Douglas, 2007, WR0112).

2.7 Consumer identity: Lifestyles and consumer priorities

People's lifestyles can create barriers to waste prevention, in the sense that their priorities lie elsewhere and can often be in conflict with the goals of waste prevention.

Some examples of how lifestyles either make it difficult to prevent waste or even encourage waste are:

- Food waste:
 - Impulsive food shopping (WRAP, 2007b; Salhofer et al., 2008; Woodard & Harder, undated) – WRAP (2007b) note that chilled food are the biggest category;
 - Variety-seeking behaviour of modern households (Salhofer et al., 2008);
 - Buying more perishable foods (often due to trying to be healthier) (WRAP, 2007b);
 - Ad hoc clearing out of stored products (WRAP, 2007b);
 - Fluid work and social patterns – especially of young professionals (WRAP, 2007b)
 - Eating patterns are becoming more unpredictable: meals are being prepared more quickly, and people are more likely to eat alone, making meal planning more difficult (WRAP, 2007b).
- Refillables:
 - Brand loyalty means consumers may be unlikely to switch from a non-refillable to a refillable product (James Ross Consulting & Butcher & Gundersen, 2008)
 - Change in consumer behaviour to alcohol consumption at home has meant that refillable systems have found it increasingly difficult to compete against single trip containers (due to the reluctance of supermarkets to participate) and instead the 'open loop' nature of consumption results in low trip rates and a focus on recycling (Lee et al., 2008)
 - Decline in doorstep delivery of milk as consumers have switched to supermarkets (Lee et al., 2008)
 - In addition, changes to single-trip packaging have coincided with changing consumption patterns, facilitating them – e.g. increased consumption away from home leads to a preference for lightweight packaging (Lee et al., 2008)
- Bulk buying:
 - Consumers have concerns over quality because bulk goods are typically unbranded (James Ross Consulting et al., 2008).

The desire to own 'stuff' also creates a barrier to waste prevention, and has been commented on in detail with respect to product service systems:

- Angus et al. (2008, WR0106) report that while householders are interested in consuming PSS, they are reluctant to consume these as substitutes for products, preferring to both own the product and use the PSS as a complement to it.
 - The convenience, flexibility and accessibility of this approach was highlighted as an important reason.
 - The problem with this scenario is that significant waste prevention is only achieved when: (a) either PSS are consumed as a substitute, or (b) PSS are used as a complement to lightweight household goods which are kept by households until the end of their functional life.
- Product ownership was also identified as a barrier to PSS uptake by (Gottberg et al., 2008, WR0106), who also comment on the issues of PSS as complementary to products, and product weight.

The tendency to regularly replace and renew 'stuff' also has implications for waste prevention goals:

- James Ross Consulting & Butcher & Gundersen (2008) point out that the UK is "in the grip of a 'throw away' culture" (p. 16), and that consumers tend to shop frequently, buying small quantities with little interest in bulk refills.
- Eunomia Research and Consulting et al. (2007, WR0103) note that changing trends in furniture are likely to create barriers to reuse, as items of furniture are of lower quality and have lower durability – therefore less reusable. As new furniture becomes cheaper, there are also fewer incentives to buy reused furniture.
- LCRN (undated) note that particularly with respect to technology, for example computers, demand for reused items is driven down by rapid development of the technologies, because people have very high expectations from such items.
- ACS (2006) found that one of the reasons for not buying items from charity shops or furniture reuse organisations was simply 'not buying second hand items', cited by 16.7% of respondents (n=276; unprompted; multiple answers possible).

Some of the literature also points to advertising and marketing as driving these kinds of lifestyle trends:

- Tucker and Douglas (2006a, WR0112) note that external pressures, such as advertising, can override normal habits as well as any waste prevention –related motivations.
- Retail promotions, such as 'buy one get one free' can encourage people to over-shop and buy more food than they need, leading to waste (WRAP, 2007b; Salhofer et al., 2008).
- Salhofer et al. (2008) also refer to the power of advertising in driving the use of disposable nappies, which are promoted more than reusable nappies.

Tucker and Douglas (2006a, WR0112) refer to research which has suggested that consumers are unlikely to change their shopping behaviours – many of which involve the issues discussed above.

Demographic and life stage changes

Certain lifestyle trends drive high rates of waste generation and thus create barriers to waste prevention:

- Tucker and Douglas (2006a, WR0112) note that some of the reasons given in the literature for waste growth being higher than GDP growth are rising incomes and changing lifestyles.
- They also note that DIY and furniture waste are expected to increase with changing demographics, more single-person households and decreasing household mobility as house prices rise (Tucker & Douglas, 2006a, WR0112).
- AEA et al. (2006, WR0107) investigated the barriers to lowering rates of waste growth, and concluded that these include:
 - Increasing numbers of households, particularly smaller households;
 - Rising real incomes and spending on waste-generating products; and
 - Lifestyle choices, in particular of well-off single people in middle age.

Life stage changes, which are elsewhere investigated as triggers of waste prevention behaviour, can also create barriers:

- Tucker and Douglas (2006a, WR0112) note that moving house is a common reason for giving up composting.
- They also point out that older people may find composting difficult.
- WRAP (2007a) similarly found that old age or ill health were barriers to composting for 4.0% of their respondents.

2.8 Habits and forgetting

Habits

Habits are often found to be the main causal factors of behaviour. This has implications for waste prevention, because established habits can inhibit the uptake of new behaviours (Tucker & Douglas, 2006b, 2007, WR0112). Tucker (2007a, WR0112) points out that both habits and spur-of-the-moment decisions influence people's behaviour – and spur-of-the-moment decisions can also affect waste prevention goals.

- Tucker and Douglas (2006a, WR0112) state that the literature suggests purchase choices can become routine, which leaves little room for the influence of waste prevention drivers.
 - They refer to a study in Germany and Denmark, which found that despite people being aware of the environmental impacts of packaging, these considerations were put aside in a shopping environment where there were so many more cues and messages to influence them that they made their shopping choices based on habits (Tucker & Douglas, 2007, WR0112).
- They also refer to research carried out by the NCC on sustainable consumption, which found that people consider their established habits to form barriers to change (Tucker & Douglas, 2006a, WR0112).
- In addition, they refer to research by Brook Lyndhurst in London (no sample size given), which found that people tended to see their shopping, cooking and eating habits as fixed, and did not

consider it possible to change their habits in order to avoid excess packaging (Tucker & Douglas, 2006a, WR0112).

- Waste Watch (2007b, WR0105) give the specific example of their 'Test the Water' challenge which encouraged participants to give up bottled water for two weeks. Many of the difficulties experienced were related to overcoming existing habits and establishing new ones (n=30):
 - Not remembering to bring a refillable bottle (33.3%)
 - Overcoming the habit of buying or drinking bottled water (23.3%)
 - Not remembering to chill tap water (13.3%)

In contrast, on some occasions strong counter-pressures can also lead to any established habitual waste prevention behaviours being abandoned:

- There is evidence that most food waste occurs when buying for special occasions – a situation where normal habits and routines are suspended (Tucker & Douglas, 2007, WR0112).

Forgetting

There is some evidence in the literature that forgetting to carry out certain waste prevention behaviours is a barrier to engaging in them. The evidence for this is mainly focused on those behaviours that involve either overcoming an existing habit or instilling a new habit.

- Waste Watch (2007b, WR0105) ran a two-week challenge for participants to give up bottled water (in order to prevent plastic bottle waste). Some of the reasons given by participants (n=30) for drinking bottled water during the two-week period were:
 - Forgetting their reusable water bottle (33.3%)
 - Not remembering not to drink or buy bottled water (23.3%)
 - Not remembering to chill tap water (13.3%)

Tucker and Douglas (2006a, WR0112) refer to research which has found that forgetting can also prevent composting behaviour – given as a reason for not composting all possible waste by 34% of respondents (no sample details given).

2.9 Experience

Negative experiences of waste prevention behaviours can spark negative perceptions of the behaviour, leading to drop-out and creating barriers for renewed uptake (Tucker and Douglas, 2007, WR0112).

Most of the evidence in this area comes from composting studies:

- Negative experiences of composting – either of the behaviour itself or of the end product – are common reason for drop-out from this behaviour (Tucker & Douglas, 2006a, WR0112).
- Tucker and Douglas (2006a, WR0112) point out that it seems the attitudes of composting drop-outs are more erratic over time than those of established composters, with some negative views intensifying over time – suggesting that negative experiences had a negative impact on attitudes, which then led to a change in behaviour.
- Tucker and Douglas (2006a, WR0112) also refer to a survey of households in Moray who had volunteered to receive a green cone between 1994 and 2000 (drop-out rate of 40%, no sample size given) which found that many of the reasons for drop-out involved negative experiences:
 - Problems with flies (35%)

- Too slow (23%)
- Not enough ingredients (21%)
- Could not move the cone (19%)
- Too smelly (17%)

2.10 Practical barriers

The context in which waste prevention behaviour takes place can affect behaviour. Tucker and Douglas (2007, WR0112) describe the context as the local constraints and facilitating conditions, and note that together these determine the level of difficulty of taking up the waste prevention behaviour in question.

Practical barriers to home composting

Practical barriers to composting among non-composters:

- WRAP (2007a) found the following barriers to composting:
 - Insufficient garden size (29.1%)
 - No need for compost (13.9%)
 - Not enough waste (10.8%)
 - Ill health / too old (4.0%)
 - Rats / vermin (2.0%)
- Gray and Toleman (2006) found similar reasons (n=11,102):
 - Insufficient garden size 33%
 - Not enough waste 21%
 - No need for compost 17%
 - Poor health or old age 14%

Practical problems which led to dropping out from home composting:

- WRAP (2007a) found that among those who used to compost but stopped (n=272, multiple response possible):
 - Moving home was the most common reason (31.7%)
 - Insufficient garden space was mentioned by 13.7%, many of whom indicated that putting in gravel or decking had both reduced the space available for a compost bin as well as lessened their need for compost
 - Problems with vermin were referred to by 8.6%
- Gray and Toleman (2006) found slightly different reasons among past composters (n=1,741; multiple response possible):
 - Insufficient garden size (46%)
 - Poor health or old age (19%)
 - No need for compost (14%)
- Tucker (2007a, WR0112) refers to his own previous work which followed cohorts of composters, and found that many of those whose perception that composting attracts flies increased during the first year (suggesting that they experienced practical problems with flies) ended up dropping out of composting in the second year.

- Tucker and Douglas (2006a, WR0112) refer to a survey of green cone users among Moray households who had volunteered to receive a green cone between 1994 and 2000, which found the following reasons for drop-out:
 - Problems with flies (35%)
 - Too slow (23%)
 - Not enough ingredients (21%)
 - Could not move the cone (19%)
 - It was too smelly (17%)

Reasons for not composting all compostable waste:

- WRAP (2007a) note that the reasons for not composting all compostable waste include (percentages not reported):
 - Home composting container not being large enough for all compostable waste
 - Food or garden waste is fed to pets
- Tucker and Douglas (2006a, WR0112) note that they include (sample details not given):
 - Not having enough kitchen waste to make it worthwhile (39%)
 - Feeding scraps to pets (1%)

Gray and Toleman (2006) found the main reason for not being interested in a subsidised compost bin to be insufficient garden space, cited by 42% of those who were uninterested.

Practical barriers to reuse

Practical barriers to reuse similarly include difficulties within the individuals' own sphere, but also wider patterns and trends which can make it more difficult for consumers to practise reuse behaviours.

- Practical barriers in the personal sphere:
 - A common reason for not donating to charity shops or furniture reuse organisations was not having things worth giving away, cited by 21.7% of those respondents in the ACS (2006) survey who said they never do this (n=106).
- External constraints:
 - LCRN (undated) consider the range of different procedures in reuse services and the variance in types of items accepted to potentially lead to confusion among the public, making reuse more difficult.
 - Tucker and Douglas (2006a, WR0112) point out that the proportion of textile waste which is reusable could decline in the near future, due to a general decline in the quality of new clothing on the market.

Practical barriers to the use of refillable products

The barriers reported in this area tend to fall under the 'external' category:

- James Ross Consulting and Butcher & Gundersen (2008) state that one of the reasons why refillable products have failed in the past is that they tend to be poorly designed and impractical – for example, problems with re-closeability of the refill pack can lead to product spilling.

- They also note that UK homes (unlike those in the US where bulk refills are more commonly used) are relatively small and not designed to store bulk containers (James Ross Consulting & Butcher & Gundersen, 2008).

Practical barriers to other waste prevention behaviours

- Tucker and Douglas (2006a, WR0112) note that practical constraints can limit the extent to which consumers can make low-waste purchasing choices.
- WRAP (2007b) note that lack of storage space can limit people's ability to reduce food waste, as they may not be able to store all leftovers.
- Waste Watch (2007b, WR0105) report that the greatest difficulty their participants came across in trying to give up bottled water was finding opportunities for filling their water bottle when they were away from home, cited by 40% of the follow-up survey respondents (n=30; multiple answers possible). For a small minority, fitting the reusable bottle in a bag was also a problem.
- Tucker and Douglas (2006a, WR0112) note that the quantity of newspaper inserts is increasing, which makes prevention of this type of paper waste more difficult.

Health and safety concerns

Consumer concerns over health and safety issues can create barriers to engaging in some waste prevention behaviours. These concerns are associated with refillable packaging and self-dispensing systems, food waste due to concern over use-by dates, and perceptions that reused or second-hand items could be unhygienic or contaminated. At times these health and safety concerns can become practical barriers.

- Refillable packaging:
 - Woodard and Harder (undated) cite Lofthouse and Bhamra (2006) who identified health and safety concerns as barriers to use of refillable packaging.
 - James Ross Consulting and Butcher & Gundersen (2008) looked at health and beauty products specifically, and identified issues of hygiene and cleanliness as barriers to the use of refillable packaging.
 - They also note that with products with limited shelf-life, the transfer of use-by dates from the refill to the primary pack, and the associated risk of contamination, can create barriers to the use of refills (James Ross Consulting & Butcher & Gundersen, 2008).
- Self-dispensing systems in general:
 - WRAP (2007b) note that people can have reservations about self-dispensing systems, as many consider them unhygienic.
 - James Ross Consulting et al. (2008) report that 34% of those who had not previously used self-dispensing systems considered them to be unhygienic.
- Self-dispensing systems (food):
 - James Ross Consulting et al. (2008) refer to research in the US which found that some consumers were uncomfortable about the use of self-dispensing bulk bins for food, because they were concerned about hygiene and possible contamination, but that if store staff packaged bulk food for them, they were happy to purchase it.
 - They also note that consumers were concerned about freshness of self-dispensable bulk food, because sell-by dates could not be attached to it (James Ross Consulting et al., 2008).

- Food waste:
 - WRAP (2007b) refer to work by Brook Lyndhurst which found that high sensitivity to food hygiene, including use-by or best before dates, can lead to food waste.
 - High sensitivity to food hygiene is not uncommon: as already noted elsewhere, 1/5 of those who are unconcerned about food waste state that they would prefer to throw away food rather than risk food poisoning – and this attitude is particularly common among households with children.
- Reuse:
 - Waste Watch (2007b, WR0105) report that a small minority of the participants of their 'Test the Water' challenge were concerned over the health and safety of reusable water bottles, which made it difficult for them to give up bottled water.
 - Perceptions that supermarket bags are no longer clean after being used to carry food prevent people from reusing them for other types of shopping (Watson, 2008)
 - Watson (2008) reports that perceptions (or evidence) of a second-hand item having been in contact with other people creates a barrier to reuse, and refers to a survey (no sample details given) which found that none of the respondents were willing to buy second-hand underwear, and only a small number would be prepared to buy second-hand nightwear and bedding. He also notes that mattresses have been found to be the least popular item of furniture to buy second hand.

2.11 Lack of knowledge and skills

Lack of knowledge of waste prevention options, lack of knowledge about how to carry them out, and lack of the necessary skills can all create barriers to the uptake of waste prevention behaviours (Tonglet et al., 2004; Tucker, 2007a, WR0112; Tucker & Douglas, 2006a, WR0112). These barriers are apparent with respect to a number of waste prevention behaviours:

Food

WRAP (2007b) state that most people are unaware of the food waste problem. They point out that people do not tend to make a connection between food waste and environmental problems or carbon emissions (instead, they are more concerned about the impact of packaging):

- 40% of people thought throwing away food was not an issue, because it is 'natural and biodegradable'.
- Nearly 3/4 thought packaging was more of a problem than food waste.

There is a body of work which draws attention to the lack of skills requires to prevent food waste, including:

- Insufficient planning ahead (Salhofer et al., 2008).
- Lack of knowledge about storage (WRAP, 2007b; Woodard & Harder, undated; Salhofer et al., 2008), e.g.:
 - Appropriate storage methods;
 - Importance of keeping food at the right temperature;
 - What can be frozen;
 - Fridge temperature (often too warm);
 - Inability to use ingredients already at home.
- Poor storage management, including (Brook Lyndhurst, cited in WRAP, 2007b):

- Not eating food in date order: at least 1/6 throw away food because it is past its use-by date;
 - Ad hoc clearing out of stored products;
 - Interestingly, they also note that although people check use-by dates when shopping, they do not keep track of these at home.
- Preparing more food than is required (Woodard & Harder, undated).
 - Lack of knowledge (or willingness) about using leftovers (WRAP, 2007b).

WRAP (2007b) drawn attention to home economics skills in general, and note that:

- People who feel more proficient in their planning and cooking skills claim to throw away less food.
- But only 1/4 are comfortable across all four food management areas.

Lack of understanding of guidance dates has been found to create problems in preventing food waste:

- High sensitivity to food hygiene, including over-zealous attention to use by / best before dates can encourage food waste (Brook Lyndhurst, cited in WRAP, 2007b).
- Research has suggested that only 1/3 people correctly interpret 'use by' and 'best before' dated, while more than 1/4 think that food past its 'best before' date could be unsafe and should be thrown away (FSA, cited by WRAP, 2007b).

Work by WRAP and the Women's Institute (2008) on the Love Food Champions project give some interesting insights in terms of the kind of information consumers *think* they need about food waste:

- Participants felt that they did not have enough information about the importance of packaging and food waste.
- Participants also felt that grocery retailers and brands should assist customers to cut back on waste, by providing in-store advice or recipes.
- They also highlighted a desire to understand more about food waste collections: how they are done, why, and about using the waste to generate energy.

Composting

- Tucker and Douglas (2006a, WR0112) refer to a survey which found that 11% of respondents (no sample details given) gave as their reason for not composting all possible waste were that they did not know what they could compost with their garden waste.
- Not having thought about composting before (i.e. not being aware of it as an option) has also been identified as a reason for not composting in surveys (e.g. Tucker & Douglas, 2006a, WR0112).
 - WRAP (2007a) investigated reasons for not composting, and found that 36.0% of those who had never composted or had stopped (n=272) gave reasons categorised under 'other', and many of these were to do with never having thought about composting before.
- Tucker and Douglas (2006a, WR0112) also report that only a small proportion of people (they refer to a figure of 15%) seek advice on composting – and those who do not may be more likely to drop out.
- There is also evidence that lack of awareness of compost bin promotions is preventing people from taking up composting: Gray and Toleman (2006) found that only 16% of non-composters were aware that subsidised compost bins were available, compared to 24% across the whole sample.

- Tucker and Douglas (2006a, WR0112) refer to a survey of green cone users in Moray, which found that 40% of users were putting garden waste in their green cone, which it was not meant for. They suggest this may have caused practical problems which would then have led to drop-out from green cone use.

Nappies

- Salhofer et al. (2008) suggest that people may not be using reusable nappies due to not being aware of the availability of subsidies and not knowing enough about the handling of reusable nappies.
- Research in Surrey found that of those respondents using disposable nappies, 7% said they did not know of any alternatives (Tucker & Douglas, 2006a, WR0112).

Reuse

- ACS (2006) found that of those who say they never donate to charity shops or furniture reuse organisations (n=106), 22.6% say this is because they had never thought about it.
- They also found that of those who say they never buy from charity shops or furniture reuse organisations (n=276)
 - 23.2% say this is because they never think of going in; and
 - 4.3% had never heard of furniture projects.
- Tucker and Douglas (2006a, WR0112) refer to a survey in Cardiff which suggested that people were unaware of how they could dispose of small items of WEEE (as opposed to larger items which they knew could be collected by the council).
- LCRN (undated) point out that the low visibility of reuse and lack of publicity about reuse options restrict demand for reused items.

Junk mail

- Tucker and Douglas (2006a, WR0112) suggest that possible reasons for the low proportion of the public having registered with the MPS (they quote 15%) include lack of awareness about the service.
- Ipsos MORI (2008a) found that:
 - 38% of survey respondents were not aware that “companies that send sales and marketing materials by post are obliged not to target anyone who has registered that they do not wish to receive such post”, while 3% were not sure whether they knew this;
 - 50% of respondents had not heard of the MPS, and 4% were not sure whether they had;
 - 71% had never heard of the Direct Marketing Association;
 - Of those who were aware of the MPS but had not registered (n=535), 17% said this was because they had not thought about it.

Product service systems

The above examples discuss lack of knowledge or skills as barriers to waste prevention. In the case of product service systems, knowledge can in fact inhibit waste prevention behaviour:

- Households with the necessary skills to complete the tasks which could potentially be replaced by PSS are less likely to take up the PSS (Angus et al., 2008, WR0106).

Hazardous waste

Tucker and Douglas (2006a, WR0112) note that many people do not consider household hazardous waste to be particularly hazardous, with the exception of batteries and oil, which are commonly recognised as hazardous. This lack of awareness could potentially create barriers to prevention of hazardous household waste.

2.12 Preferences

People's preferences can create barriers to waste prevention behaviour, if their preferred option works against waste prevention goals. One of the areas where this is most evident is with respect to junk mail, but it can also apply to other waste prevention behaviours.

Preferences as a barrier to preventing junk mail

- A survey by Ipsos MORI (2008a) for the DMA found that a proportion of the public are happy to receive or positively enjoy receiving junk mail:
 - Of those who receive sales and marketing addressed to the household (n=1,635), 5% enjoy receiving it and 13% are happy to receive it.
 - Of those who receive unaddressed mail (n=1,499), 1% enjoy receiving it and 6% are happy to receive it.
 - Of those who receive free newspapers (n=1,403), 19% enjoy receiving them and 41% are happy to receive them.
- Tucker and Douglas (2006a, WR0112) note that some surveys suggest people are happy to receive direct mail, and their own work (Tucker & Douglas, 2006b, WR0112) found that 9% of respondents had not taken action to stop junk mail for this reason.
- Salhofer et al. (2008) note that research in Vienna found 47% stating explicitly that they wanted to receive junk mail.

Preferences as a barrier to other waste prevention behaviours

- WRAP (2007b) note that unwillingness to use leftovers can create a barrier to food waste prevention, as can changes of mind about what to eat.
- They also refer to work by Brook Lyndhurst which identified not liking the food prepared as a cause of food waste – and point out that this reason came up in 22% of families with children (WRAP, 2007b).
- Gray and Toleman (2006) found that preferring to take garden waste to the HWRC was given as a reason for not composting at home by 12% of past composters (n=1,741) and 7% of non-composters (n=11,102).
- ACS (2006) found that of those who say they never donate to charity shops or furniture reuse organisations (n=106; unprompted), 10.4% said they prefer to give items to their family or friends, and 8.5% said they prefer to sell items.
- Angus et al. (2008, WR0106) point out that enjoyment of certain tasks can create a barrier to the uptake of related product service systems – for example, people who enjoy gardening are unlikely to take up a garden maintenance service.
- Waste Watch (2007b, WR0105) report that of their 'Test the Water' participants 33.3% (n=30) found adapting to the taste of tap water to be a challenge in giving up bottled water.
- Tucker and Douglas (2006a, WR0112) note that concern over the appearance of electrical and electronic items can lead people to replace them prematurely for aesthetic reasons.

2.13 Lack of time

Lack of time, real or perceived, can create a barrier to waste prevention behaviours, and has been commented on in a number of sources (e.g. Tonglet et al., 2004). Tucker (2007a, WR0112) points out

that people may make trade-offs between different behaviours, which means that some could find time for some waste prevention behaviours while others will struggle. There is also some evidence (e.g. OVAM, 2008) that people are likely to become ever more pressed for time (e.g. due to work pressures) which does not bode well for waste prevention.

Lack of time appears to be a common barrier which crops up with respect to a number of different waste prevention behaviours:

- Self-dispensing systems:
 - James Ross Consulting et al. (2008) found that 34% of those who had not used self-dispensing systems considered them to be time-consuming, while 26% stated outright that they take too much time to use.
 - Research by WRAP (2007b) also found that consumers were concerned about self-dispensing systems being time-consuming.
- Food waste:
 - Lack of time for planning has been identified as a contributor to food waste (WRAP, 2007b).
 - WRAP (2007b) also note that of those who are unconcerned about food waste, 15% say they have 'other things to think about'.
 - Salhofer et al. (2008) also comment on the shortage of time as a cause of food waste.
- Composting:
 - Tucker and Douglas (2006a, WR0112) note that a perception that composting requires a lot time is a barrier to taking it up, and that this perception is correlated with not composting.
 - WRAP (2007a) report that 11.1% of respondents thought composting was too time-consuming.
 - Similarly, Gray and Toleman (2006) found that 11% of past composters (n=1,741) and 13% of non-composters (n=11,102) gave as their reason for not composting that they had no time for this.
 - Finally, WRAP (2007a) also note that there was a strong feeling among their respondents that only those who were already interested in gardening and had the time and space for composting would be catalysed by the composting campaign.
- Refillables:
 - James Ross Consulting and Butcher & Gundersen (2008) report that many consumers say they are too busy to select the appropriate refills and take the time to refill the original packaging.
 - Watson (2008) also notes that the time commitment, involving organisation and planning, created a barrier to the use of refillables.
- Reuse:
 - ACS (2006) found that among those who stated they never donate to charity shops or furniture reuse organisations (n=106; unprompted), the most common reason was not having the time, cited by 28.3% of respondents.
- Junk mail:
 - Among those who were aware of the MPS but had not registered (n=535) the most common reason for not registering (unprompted, multiple answers possible) was being too busy, cited by 20% of respondents (Ipsos MORI, 2008a).

- Smart shopping:
 - Obara (2005) found that people tended to feel they often did not have time to choose alternatives, e.g. with less packaging.
- Bulk buying:
 - This type of shopping requires the consumer to pick out the items they want and pack them, therefore taking more time than standard supermarket shopping, which is a potential barrier (James Ross Consulting et al., 2008).

2.14 Fears and lack of trust

Consumers may have a range of worries and fears about waste prevention behaviours (or the associated products) which create barriers to the uptake of these behaviours. These fears are often combined with a lack of trust in another stakeholder.

- Self-dispensing systems:
 - Research in the US has suggested that consumers feel uncomfortable with self-dispensing bulk bins due to fears of contamination – but that if staff packaged up the product they were happy to purchase it (James Ross Consulting et al., 2008).
 - In New Zealand, consumers have also been found to have concerns over the quality of self-dispensed bulk goods, because these are typically unbranded (James Ross Consulting et al., 2008).
 - Another issue is the difficulty of providing the consumer with information such as nutritional content and sell-by date on self-dispensed products, which can make them feel suspicious of the product (WRAP, 2007b; James Ross Consulting et al., 2008).
 - Consumers may also be worried about the quality and freshness of self-dispensed products (James Ross Consulting et al., 2008).
- Refillables:
 - Consumers may have fears about becoming tied to a refillable system, reducing their own future choices (Watson, 2008).
 - They may also be concerned about being susceptible to a company collapsing or deciding not to supply refills (Watson, 2008).
 - James Ross Consulting and Butcher & Gundersen (2008) pick up on this latter point and stress that consumers need to feel assured that the appropriate refill packs will be available to them in the long term.
- Reuse:
 - Watson (2008) notes that there is evidence of limited trust in remanufactured products, referring to a study (no sample details given) which found that over 80% of respondents believed retreaded tyres to be less safe than new tyres, while almost the same proportion said they would never buy retreaded tyres. He also notes that the literature suggests remanufactured goods have intrinsically less value to the consumer than new goods.
 - Eunomia Research and Consulting et al. (2007, WR0103) also point out that the negative reputation of second-hand goods and the lack of warranties create barrier to purchasing items second hand.
- Other waste prevention behaviours
 - Angus et al. (2008, WR0106) note that if consumers do not trust the competence of a product service system provider, they are unlikely to take it up.
 - Watson (2008) notes that, especially among men, there is a concern that long-life products may become technologically obsolete, which can be a barrier to their purchase.

On a final note, Tucker and Douglas (2006a, WR0112) state that there is a pervasive lack of trust in advertised environmental claims – which could present problems in trying to promote low-waste options to the general public.

2.15 Perceptions

Perceptions of waste prevention behaviours can present barriers to undertaking those behaviours. In some cases, perceptions may be misconceptions (Tucker, 2007a, WR0112) and in other cases they may stem from negative experiences of the behaviour in question, which can spark drop-out and prevent re-engagement with the behaviour (Tucker & Douglas, 2007, WR0112).

Waste prevention behaviours can be prevented by a perception that the behaviour will have negative implications, e.g. in terms of costs or other impacts:

- As already noted, householders may have negative perceptions of the reparability of household goods and the cost-effectiveness of such repairs, creating a potential barrier to the uptake of product service systems (Gottberg et al., 2008, WR0106).
- Tucker and Douglas (2006a, WR0112) refer to a survey among households in Montgomery County, Maryland (n=1,100), which found that a common barrier to "grasscycling" (leaving grass clippings on the lawn) was a perception that this would damage the lawn, held by 54% of respondents.

A perception that a particular waste prevention behaviour is difficult or impossible to undertake can also create a barrier:

- Obara (2005) found in her survey that the majority of householders believed they had limited ability to minimise waste in many waste streams for example, they felt they had no control over packaging waste and were largely powerless to minimise it.
- Tucker and Douglas (2006a, WR0112) refer to work by the NCC on sustainable consumption, which found that people perceive their habits as barrier to change.
- They also cite Brook Lyndhurst (2002), who found that people tended to consider their habits to be fixed and not changeable – and some of these habits may work against waste prevention goals.
- James Ross Consulting and Butcher & Gundersen (2008) note that consumers with a fear of technology are reluctant to buy items they perceive to be difficult to use – such as refillable products – and they go on to say that this may particularly apply to the elderly or infirm.

A perception that the individual is already doing as much as they can to prevent waste, or that they are doing little to generate waste and therefore do not need to prevent it, can also be a barrier:

- WRAP (2007b) report that people are likely to waste much more food than they perceive themselves to be wasting. They refer to a survey by Brook Lyndhurst and ICM, carried out for WRAP (n=1,862), which found that 90% of respondents claimed to waste 'some', 'a small amount', 'hardly any' or 'no' food – but these are more than likely to be under-estimates, as the remaining 10% of respondents would have to waste almost all of the food they buy in order for the totals to add up to the actual levels of food waste in the UK.

Perceptions as barriers to composting

- Tucker (2007a, WR0112) points out that people who do not compost have been found to have the strongest prejudices about it.
- Perceptions that prevent people from composting include:

- Composting requires lots of space/time/effort, needs a lot of waste, attracts vermin, is unsightly and/or smelly (Tucker & Douglas, 2006a, WR0112).
- Home composting is only relevant for households with an allotment or a vegetable patch (WRAP, 2007a).
- Using a garden waste collection is easier than composting and having 'yet another bin' (WRAP, 2007a).
- Gray and Toleman (2006) also suggest that the increase in kerbside collections of food and garden waste (as local authorities aim to meet their targets) could give people the impression that home composting is not necessary and that the collections are more convenient, although they also note that the take-up of compost bin offers has continued.
- Reasons for not composting all compostable waste include choosing not to put certain things into the compost bin (e.g. citrus fruit) due to perceptions that it will reduce compost quality or harm the mix if present in large quantity (WRAP, 2007a):
- Gray and Toleman (2006) report that insufficient garden space was the most common reason (multiple answers possible) given by both non-composters (33%; n=11,102) and past composters (46% n=1,741), and the authors suggest that, at least in some cases, this may be a misconception.

Perceptions as barriers to reuse

- LCRN (undated) discuss some of the potential barriers to donation behaviours, and note that public perceptions of what is suitable for reuse can often be lower than the perceptions of the reuse sector. Consequently, the reuse sector tends to do 'gate-keeping' checks on incoming furniture – this hurdle can discourage people from donating. (An additional pitfall here is that public perceptions of what is reusable can lead to non-reusable items being donated to charity shops, which then need to be disposed of as waste.)
- Watson (2008) points out that although the perception that broken or unwanted goods still hold some value can encourage reuse on the one hand, it can also form a barrier to reuse, because many people will hoard broken and unwanted items at home precisely because they are perceived to have value. This is a particular problem in the case of fast-developing technologies, because these types of items need to be passed on for reuse quickly before they lose their value.
- In terms of buying second-hand, ACS (2006) report that reasons for not buying from charity shops or furniture reuse organisations include (n=276; unprompted, multiple answers possible):
 - Having found or believing that they have 'nothing I would want' (34.4%)
 - Thinking the shops are unappealing or unattractive (17.8%)
- A perception that pre-owned furniture has a negative reputation can also be a barrier to buying second-hand items (Eunomia Research and Consulting et al., 2007, WR0103).
- Watson (2008) reports that a perception (or evidence) of second-hand items being 'contaminated' or having been in contact with other people creates a barrier to reuse. Watson refers to a survey (no sample details given) which found that all respondents stated they would not buy second hand underwear, and many added nightwear and bedding to this, and to another survey which found mattresses to be the least popular item of furniture item to obtain second hand.
- Watson also notes that such perceptions of reused items not being 'clean' also apply to supermarket bags, which people tend to be reluctant to reuse for other purposes after they have been used to carry fresh produce (Watson, 2008).
- Finally, Watson also suggests that the perception of deposit systems being old-fashioned could present barriers to the use of reusable and refillable products (Watson, 2008).

Table 1 – Details of Motivations & Barriers			
Behaviour	Motivations cited in literature	Potential motivations cited in literature	Barriers cited in literature
Home composting	<p>The National Home Composting Survey 2005 found that the reasons for composting varied widely, but the more common reasons were (Gray & Toleman, 2006):</p> <ul style="list-style-type: none"> • Wanting or needing compost (30%) • Environmental reasons (29%) • Increased interest in gardening (28%) • Received a subsidised compost bin via council promotion (19%) <p>Other reasons included (Gray & Toleman, 2006):</p> <ul style="list-style-type: none"> • Better access to a garden or encouragement from friends (cited by 5-10% of householders) • Direct result of a council promotional campaign (6%) <p>Motivations for taking up the subsidised compost bin offer (n=261; unprompted; WRAP, 2007a):</p> <ul style="list-style-type: none"> • Low cost (30.0%) • Environmental reasons, esp. reducing landfill (26.1%) • Council leaflet or promotion (15.9%) • A good way of getting rid of waste (12.7%) • Saving money on compost (8.5%) • Replacing or adding to an existing compost bin (6.7%) • Easy ordering or delivery (6.4%) • Makes for a beautiful garden (4.2%) • Improves the soil (3.5%) • Replaces or adds to a compost heap (3.2%) • Given for free by the council (1.8%) • Was already at the house (1.8%) • Separate collections restricted (0.4%) • Received as a present (0.4%) <p>Reasons identified in the literature (Tucker & Douglas, 2006a, WR0112):</p> <ul style="list-style-type: none"> • Waste reduction • Environmental reasons • Personal satisfaction • Developing the soil • Gardening 	<p>Of those who are currently not composting (n=1,025; unprompted; multiple response) the following would persuade them to start (WRAP, 2007a):</p> <ul style="list-style-type: none"> • Nothing (37.4%) • If had a bigger garden (19.8%) • A free WRAP compost bin (19.6%) • Other (9.7%) • Advice on how to make compost (7.6%) • Low cost WRAP compost bin (5.9%) • Advice on which materials to compost (3.8%) • Information on how to use the compost (2.5%) • If the council stopped their separate collections for garden waste (2.2%) • If the council stopped accepting garden waste in residual bins (1.0%) • Better size or style of bin (0.3%) • If there were no facilities at CA site (0.1%) <p>Those who had stopped composting tended to say they would consider re-starting once settled into their new home (WRAP, 2007a).</p>	<p>Reasons for not composting (WRAP, 2007a):</p> <ul style="list-style-type: none"> • The most common category of reasons was 'other' (36%), many of which were to do with never having thought about it. • Garden too small (29.1%) • No need for compost (13.9%) • Too time consuming (11.1%) • Not enough waste (10.8%) • Council collects separately (8.8%) • Ill health / too old (4.0%) • Too messy / smelly (3.4%) • Rats / vermin (2.0%) • Don't know which materials to compost (1.2%) • Prefer to buy compost (1.1%) • Council takes waste with regular (0.7%) • Worried about kids (0.6%) • Prefer to use CA site (0.4%) <p>Barriers to composting (WRAP, 2007a):</p> <ul style="list-style-type: none"> • Perception that home composting is only relevant for households with an allotment or a vegetable patch • Some respondents thought using a garden waste collection was easier than composting • Some did not want 'yet another bin' • Some people said they were too old or too frail <p>Reasons for not home composting (non-composters, n=11,102, multiple answers possible; Gray & Toleman, 2006):</p> <ul style="list-style-type: none"> • Insufficient garden space (33%) • Do not generate enough waste (21%) • No need for compost (17%) • Stopped gardening / not a gardener (16%) • Poor health / old age (14%) • Council takes waste in separate collection for recycling (14%) • No time to compost (13%) • Don't know how to make compost (8%) • Prefer to take waste to HWRC (7%) • Council takes waste in general collection (5%) • Messy / smelly (4%) • Attracts pests / vermin (2%)

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Behaviour	Motivations cited in literature	Potential motivations cited in literature	Barriers cited in literature
	<p>Theory of Planned Behaviour (cited in Gray & Toleman, 2006, as explaining composting behaviour particularly well):</p> <ul style="list-style-type: none"> • Positive attitudes/perceptions • Conducive circumstances • Self-efficacy 	<p>When asked what would encourage the non-composters (n=11,102, unprompted) to start composting (Gray & Toleman, 2006):</p> <ul style="list-style-type: none"> • Nothing (66%; 55% among past composters) • Low cost compost bin (14%) • Access to a bigger garden (13%) • Advice on how to make compost (5%) • If kitchen and/or garden waste collections were stopped (4%) <p>When asked what they thought of a list of possible messages about composting (prompted), respondents liked environmental messages (n=1,291; WRAP, 2007a):</p> <ul style="list-style-type: none"> • Good for the environment (40.2%) • Good way to get rid of waste (19.8%) • Reduces waste to landfill (10.9%) • Good for your garden (10.5%) • Easy to do (8.7%) • Makes for a beautiful garden (8.5%) • Saves money on compost (8.2%) • None (6.2%) • Not messy or unhygienic (3.3%) • Saves time and effort (1.9%) • Other (1.7%) 	<p>Reasons for not home composting (past composters, n=1,741, multiple answers possible; Gray & Toleman, 2006):</p> <ul style="list-style-type: none"> • Insufficient garden size (46%) • Poor health / old age (19%) • Stopped gardening / not a gardener (18%) • Council takes waste in separate collection for recycling (15%) • Previous attempts to compost were unsuccessful (15%) • No need for compost (14%) • Prefer to take waste to HWRCs (12%) • No time to compost (11%) • Messy / smelly (10%) • Do not generate enough waste (8%) • Attracts pests / vermin (7%) • Council takes waste in general collection (6%) <p>Barriers to composting (Tucker & Douglas, 2006a, WR0112):</p> <ul style="list-style-type: none"> • Perceptions that composting requires lots of space/time/effort, needs a lot of waste, attracts vermin or is unsightly • Not having use for compost • Fear of odour • Not having thought about it • Old age • Moving house (reason for giving up composting) <p>Reasons for not composting all compostable waste (WRAP, 2007a):</p> <ul style="list-style-type: none"> • Home composting container is not large enough for all compostable waste • People choose not to put certain things into the compost bin (e.g. citrus fruit) due to perceptions that it will reduce compost quality or harm the mix if present in large quantity • Weather can prevent people from taking stuff to the compost bin • Food or garden waste is fed to pets <p>Reasons for not composting all compostable waste (Tucker & Douglas, 2006a, WR0112):</p> <ul style="list-style-type: none"> • Forgetfulness (34%) • Effort/inconvenience/bother (18%) • Not enough kitchen waste to make it worthwhile (39%) • Not knowing what they could compost with their garden waste (11%) • Feeding scraps to pets (1%) <p>Reasons for stopping composting (WRAP, 2007a):</p>

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Behaviour	Motivations cited in literature	Potential motivations cited in literature	Barriers cited in literature
			<ul style="list-style-type: none"> • Moved house (31.7%) • Other (28.8%) • Garden too small (13.7%) • Rats / vermin (8.6%) • Ill health / too old (7.9%) • Not successful (7.2%) • Council collects separately (5.8%) • Too messy / smelly (4.3%) • Not enough waste (4.3%) • Too time-consuming (4.3%) • No need for the compost (2.9%) • Stopped gardening (2.2%) • Parents did and respondent moved out (1.4%) • Worried about kids (0.7%) <p>Reasons for drop-out from green cones (Tucker & Douglas, 2006a, WR0112):</p> <ul style="list-style-type: none"> • Problems with flies (35%) • Too slow (23%) • Not enough ingredients (21%) • Could not move the cone (19%) • Too smelly (17%) • Too much effort (5%) • Other minority reasons included lack of space and no longer having a garden <p>Main reasons for not being motivated by a subsidised compost bin offer (Gray & Toleman, 2006):</p> <ul style="list-style-type: none"> • Not enough space (42%) • Too much effort (32%) <p>Negative experiences can have a negative impact on attitudes, which can influence behaviour (Tucker & Douglas, 2006a, WR0112).</p> <p>Problems with flies (Tucker, 2007a, WR0112). Only 16% of non-composters were aware that subsidised compost bins were available, compared to 24% of whole sample (Gray & Toleman, 2006).</p> <p>A rise in the price of home compost bins in Dorset led to a decrease in sales – although sales had already reached a peak (AEA et al., 2008, WR0116).</p> <p>Grasscycling: perception that this would damage the lawn (Tucker & Douglas, 2006a, WR0112).</p>

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Behaviour	Motivations cited in literature	Potential motivations cited in literature	Barriers cited in literature
Junk mail	<p>Reasons for signing up to the MPS (n=294; unprompted; Ipsos MORI, 2008a):</p> <ul style="list-style-type: none"> To stop unwanted junk mail (95%) Environmental reasons / waste of paper (9%) To maintain privacy (8%) Other (2%) Friend's recommendation (1%) Don't know / can't remember (1%) Following a bereavement to stop mailings (<1%) 		<p>Reasons for not registering with the MPS despite being aware of it (n=535; unprompted; multiple answers possible; Ipsos MORI, 2008a):</p> <ul style="list-style-type: none"> Too busy (20%) Not bothered by direct mail (18%) Not having thought about it (17%) Not being interested (15%) Considering it but not having got round to it (13%) Other (6%) Not knowing who to contact (5%) Not sure if it works (4%) Only just moved and not got round to it yet (4%) Don't know (4%) Don't receive any direct mail (1%) 'No junk mail' sticker works sufficiently well (1%) Think there is a charge (1%) <p>Of those who were aware of the MPS but not registered (n=535), 8% said they were not interested in finding out more about the MPS (Ipsos MORI, 2008a). Lack of awareness (Ipsos MORI, 2008a):</p> <ul style="list-style-type: none"> 38% of respondents were not aware that "companies that send sales and marketing materials by post are obliged not to target anyone who has registered that they do not wish to receive such post" 3% were not sure if they knew this 50% of respondents had not heard of the MPS 4% were not sure if they had 71% had never heard of the DMA <p>Possible barriers may be lack of awareness or inertia (Tucker & Douglas, 2006a, WR0112).</p> <p>Some people enjoy or are happy to receive junk mail (Ipsos MORI, 2008a):</p> <ul style="list-style-type: none"> 5% enjoy receiving and 13% are happy to receive sales and marketing addressed to the household (n=1,635) 1% enjoy and 6% are happy to receive unaddressed mail (n=1,499) 19% enjoy and 41% are happy to receive free newspapers (n=1,403) <p>Some surveys suggest people are happy to receive direct mail (Tucker & Douglas, 2006a, WR0112). Just over 9% (n=1,463) say they like junk mail so have taken no action to stop it (Tucker & Douglas, 2006b, WR0112). Survey in Vienna revealed that 47% explicitly stated they wanted to receive junk mail (Salhofer et al., 2008).</p>

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Behaviour	Motivations cited in literature	Potential motivations cited in literature	Barriers cited in literature
Donation behaviours	<p>Motivations for donating to charity shop and/or furniture reuse organisation (n=890; unprompted; multiple answers possible; ACS, 2006)</p> <ul style="list-style-type: none"> To support charity (48.7%) Belief that item has further use (36%) To save space (20.8%) Right thing to do / could not bear to waste (13.6%) No extra effort (11.1%) To support family / friends (10.6%) Environmental concerns (6.5%) Other (6.5%) Feel guilty if not (5.2%) Good for future generations / children (4.3%) To reduce pollution (3.7%) Good for the economy (3.3%) Want to reduce rubbish disposal (3.0%) Item was still fashionable (1.1%) Don't know (0.1%) <p>Sense of responsibility to unwanted goods which are perceived to have remaining embedded value (Watson, 2008).</p> <p>Increasing awareness of the environmental benefits of reuse (LCRN, undated)</p>	<p>Ideas that people feel would motivate the general population to reuse via charity shops and furniture reuse organisations more (n=997; unprompted?, ACS, 2006):</p> <ul style="list-style-type: none"> Advertisements or features on TV (28.5%) Increased information on how to use shops and projects (26.3%) Increased information on what shops / projects do and how it is beneficial (24.9%) Advertisements / features in newspapers (15.9%) Increased information on where shops / projects are located (10.5%) Nothing can be done, as people either do it or they will not (9.3%) Increased information on the environmental benefits of reuse (8.7%) Advertisements / features on radio (8.1%) Implementation of reward schemes / prizes for reuse (6.0%) Improve the image / make cleaner (5.3%) Other (4.2%) Make it easier / more convenient (3.9%) Advertisements / information in community (3.3%) Lower the prices (2.8%) Advertisements / information in charity shops (2.5%) Display evidence of where the money or items goes, or of results (1.6%) Don't know (1.2%) 	<p>Reasons for not donating to charity shops or furniture reuse organisations (n=106; unprompted; ACS, 2006):</p> <ul style="list-style-type: none"> No time (28.3%) Never thought of it (22.6%) Never have things worth giving away (21.7%) Too much effort (13.2%) Prefer to give to family / friends (10.4%) Prefer to sell (8.5%) No collections from house (7.5%) Store unwanted things (6.6%) Can't get to charity shop (4.7%) Don't believe / trust in charity (3.8%) Items are too unfashionable / old (2.8%) <p>12% (n=997) considered donating to a charity shop or furniture reuse organisation to be 'not very' or 'not at all' convenient, and of these 8% had donated at least once (ACS, 2006).</p> <p>Hoarding behaviour – possibly due to knowing that broken items have some further value, but they need to be donated before going out of date (Watson, 2008).</p> <p>Possibly storing things until a seasonal clearout (ACS, 2006).</p> <p>A survey in Cardiff suggested that people were unaware of safe ways to dispose of small items of WEEE (Tucker & Douglas, 2006a, WR0112).</p> <p>Public perceptions of what is suitable for reuse are usually lower than perceptions of the reuse sector, and the 'gate-keeping' checks on incoming furniture by FROs can provide a disincentive for people using the collection service. Public perceptions of what can be reused can lead to non-reusable items being donated to charity shops which then need to be disposed of as waste (LCRN, undated).</p> <p>Different procedures in reuse services and variance in types of items accepted – potential for confusion (LCRN, undated).</p> <p>Decline in the quality of new clothing on the market makes reuse problematic (Tucker & Douglas, 2006a, WR0112).</p> <p>Increasing availability of cheaper, poorer quality and less durable, which is less suited to reuse (Eunomia Research and Consulting et al., 2007, WR0103).</p>

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		<ul style="list-style-type: none"> • Improve the quality / wider range (1.1%) <p>Of those who said reuse needs to be made easier (n=39; unprompted):</p> <ul style="list-style-type: none"> • Put collection bins in shopping area (23.1%) • Door-to-door collections (20.5%) • Information about collections (17.9%) • Make opening times more convenient (12.8%) • Have drop-off points for cars (12.8%) • More information on what to donate (2.6%) 	
Buying second-hand	<p>ACS (2006) found the following reasons for buying from charity shops or furniture reuse organisations (n=720, unprompted, multiple answers possible):</p> <ul style="list-style-type: none"> • Good value / low prices (68.5%) • Want to support charity (42.1%) • Wide range of items for sale (18.3%) • More original / unusual (15.4%) • Find collectors' items (9.2%) • Other (8.3%) • Support local community (5.8%) • Environmentally friendly (5.4%) • More ethical (4.4%) • Fun / friendly places to be (2.8%) <p>Watson (2008) notes that the relatively low price of remanufactured, repaired and reused goods is considered a dominant motivation in the literature, although it is manifested in a number of different ways.</p> <p>Research into motivations for participation in Freecycle has had contradicting results (Watson, 2008):</p> <ul style="list-style-type: none"> • Some suggests that participants are 		<p>Reasons for not buying from charity shops or furniture reuse organisations (n=276; unprompted; ACS, 2006):</p> <ul style="list-style-type: none"> • Nothing that would want (34.4%) • Never think of going in (23.2%) • Unappealing / unattractive shops (17.8%) • Don't buy second-hand (16.7%) • Low quality (8.3%) • Cheaper elsewhere (6.5%) • Prefer new / fashionable / modern things (6.5%) • Items should be left for less fortunate (5.4%) • Never heard of furniture projects (4.3%) • Difficult to get to (3.3%) • No reason (2.2%) • Never goes shopping (1.4%) • Shops not open when go shopping (1.1%) • Poor range (0.7%) • Don't trust charities (0.7%) • Prefer to give money to charity (0.4%) • Receive items from family / friends (0.4%) <p>The authors note that there is a wider spread in the above data, compared to the reasons for not donating, and they consider that this suggests people are less certain about why they don't shop in these outlets than they are about why they don't donate (ACS,2006).</p>

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	<p>'downshifters' pursuing anti-materialistic values.</p> <ul style="list-style-type: none"> Other work suggests the above are in a minority, and mainstream consumerist priorities are more common – buying second-hand items is a means of getting more or higher status items on a lower budget. <p>Pursuit of distinctiveness, uniqueness and individuality, esp. where items provide opportunities for displaying identity, e.g. clothes, furnishings and ornaments (Watson, 2008)</p> <ul style="list-style-type: none"> With antiques, previous ownership can be part of what is valued. It provides opportunities for a deliberately anti-consumerist, anti-corporate or ethical consumption identity. It also provides an opportunity to be part of the mainstream for those who cannot afford to or do not want to pay high street prices. <p>Opportunities to find vintage clothing; to support the charity (LCRN, undated)</p> <p>Other reasons (Watson, 2008):</p> <ul style="list-style-type: none"> Financial necessity Fun <p>Increasing awareness of the environmental benefits of reuse (LCRN, undated)</p>		<p>Social stigma is associated with second-hand goods - the extent varies depending on the product concerned and the social position and attitudes of the consumer (Watson, 2008):</p> <ul style="list-style-type: none"> More fear of stigma with goods most associated with charitable means of distribution - white goods and furniture - and especially for people most concerned not to appear in need of charity. Some people who have experienced poverty say they always buy new goods because they associate second hand goods with poverty. 14% of UK homeowners say they would feel 'very' embarrassed and 7% 'slightly' embarrassed to tell friends they had bought an item second hand. <p>Negative reputation, lack of warranties (Eunomia Research and Consulting et al., 2007, WR0103).</p> <p>Embarrassment (Tucker & Douglas, 2006b, WR0112).</p> <p>Perceptions or evidence of a second-hand item having been in contact with other people – e.g. mattresses are the least popular item of second-hand furniture (Watson, 2008).</p> <p>Demand for reused computers in particular is driven down by rapidly changing technology and people's high expectations from computers (LCRN, undated).</p> <p>Low visibility of reuse and lack of publicity about reuse options create constraints for demand (LCRN, undated).</p>
Reuse / general	<p>Convenience, effort, feelings that the action is worthwhile, a sense of satisfaction from reusing (Barr, 2007).</p> <p>Ecocentric values (Barr, 2007).</p> <p>Ability to perform the behaviour, contextual factors (Tonglet et al., 2004).</p> <p>Environmental values, knowledge and concern (Watson, 2008).</p> <p>Influence of friends (Tucker & Douglas, 2006b,</p>	<p>Salisbury (2008) hints that having a major national brand promoting re-use could be of use.</p>	<p>Perceptions that supermarket bags are no longer clean after being used to carry food prevent people from reusing them for other types of shopping (Watson, 2008).</p> <p>Doorstep recycling and the idea of deposit systems being old-fashioned (Watson, 2008).</p>

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	<p>WR0112).</p> <p>Reuse of milk bottles / delivery (Watson, 2008):</p> <ul style="list-style-type: none"> • Convenience • Avoidance of moral issues re: disposal • Milk bottle as a symbol of community 		
Reusable bags	<p>Main reasons for buying a 'bag for life' (n=437; unprompted; Andrew Irving Associates, 2005):</p> <ul style="list-style-type: none"> • Wanted a stronger bag (66%) • Wanted a bag that can be reused for grocery shopping (8%) • It is more attractive (6%) • No free bags available (4%) • Wanted a bag that can be reused for other things (not groceries) (3%) • Reusable bags are better for the environment (3%) • Single use bags are a waste (3%) • Other reasons (3%) • The bags are cheap (1%) • The bags are bigger (1%) • Encouraged to buy by check-out staff (1%) • Don't know / NA (1%) • Encouraged to buy it by seeing information in store (<1%) • The shop gives you a new one when it wears out (<1%) <p>All reasons (multiple answers possible) for buying a 'bag for life' (n=437; unprompted; Andrew Irving Associates, 2005):</p> <ul style="list-style-type: none"> • Wanted a stronger bag (73%) • Wanted a bag that can be reused for grocery shopping (24%) • Reusable bags are better for the environment (14%) • Wanted a bag that can be reused for other things (not groceries) (13%) • It is more attractive (8%) • The bags are cheap (8%) • Single use bags are a waste (6%) • No free bags available (5%) • Other reasons (5%) 	<p>The reason that would be most likely to persuade respondents to buy and use a 'bag for life' (n=1,048; prompted; Andrew Irving Associates, 2005):</p> <ul style="list-style-type: none"> • The bags are stronger and unlikely to split (27%) • It is better for the environment (19%) • The bags can be reused many times (11%) • Less plastic waste into landfill (8%) • Helps to reduce litter from bags (8%) • Helps to protect wildlife (7%) • Wider, more comfortable handles (6%) • Helps to reduce use of natural resources (3%) • More attractive than ordinary bags (1%) <p>Of measures to promote the use of 'bags for life', the following would be the most likely to persuade respondents to start using them (n=1,048; prompted, Andrew Irving Associates, 2005):</p> <ul style="list-style-type: none"> • If had to pay for normal bags (33%) • If a small donation was made to a local charity or school every time the bag is used (18%) • If bag reuse was rewarded 	<p>Those who say they will 'probably not' or 'definitely not' use 'bags for life' in future give as their reasons that (n=460; unprompted; Andrew Irving Associates, 2005):</p> <ul style="list-style-type: none"> • Would forget / don't want to take them (30%) • Have to pay for them / prefer free ones (21%) • Ordinary ones are easier / more convenient to use (14%) • Use bags for other things (11%) • Other (8%) • Not attractive / not masculine / depends on design (4%) • Use a car / trolley etc (4%) • Use own bag (4%) • Unspecific "wouldn't use" (4%) • Don't buy much at once / no need (3%) • DK / NA (3%) • Don't want lots at home (2%) • Not a good shape / bulky (1%) • Use a car / boxes etc (1%) <p>Reasons for not reusing 'bag for life' despite owning one (n=298; unprompted; Andrew Irving Associates, 2005)</p> <ul style="list-style-type: none"> • Forget to take them (67%) • Use them for other things (22%) • It broke (3%) • Do not buy much heavy shopping (2%) • Have to take too many with you (2%) • Can buy another at checkout when want to use one (2%) • Do not like to be seen with them / not fashionable (1%) • Use free ones (1%) • Use own bags / boxes (1%) • Would not take it into a different supermarket (<1%) <p>Lack of awareness / relevance (n=1,048; Andrew Irving Associates, 2005):</p> <ul style="list-style-type: none"> • 15% of respondents had not seen stronger plastic bags on sale. • 37% had not seen or heard of 'bags for life'. • 61% agree (30% strongly and 31% slightly) with the statement "at the supermarket checkout I do not think about waste or recycling"

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	<ul style="list-style-type: none"> The bags are bigger (4%) Encouraged to buy by check-out staff (3%) The shop gives you a new one when it wears out (2%) Don't know / NA (1%) Encouraged to buy it by seeing information in store (1%) <p>Andrew Irving Associates (2005) also note that of the 25 respondents shopping at supermarkets which charge for bags, 18 had a reusable bag – i.e. cost as a possible motivator.</p> <p>Reasons given for using a 'bag for life' in the qualitative research stage (Andrew Irving Associates, 2005):</p> <ul style="list-style-type: none"> Larger bag – holds more Better for carrying heavy/heavier items More durable Gusseted base makes it more stable in car Does not cost very much for a more durable bag Better for the environment than single use bags Got into the habit <p>Routines / habits and norms (Watson, 2008)</p> <p>Price can also be used to encourage re-use, e.g. by charging for single-use bags (Watson, 2008).</p> <p>How people remember to bring their 'bag for life' shopping (n=138; unprompted; Andrew Irving Associates, 2005)</p> <ul style="list-style-type: none"> Keep in handbag / pocket (28%) Keep in trolley / car (28%) Just do / it's a habit (25%) Don't know / NA (9%) Keep in same place – e.g. by front door (8%) With shopping list (4%) Other (4%) 	<ul style="list-style-type: none"> by a small discount off shopping (10%) If was told more about the environmental damage caused by bags (9%) If had free vouchers for a 'bag for life' for a limited time (8%) If was rewarded with loyalty points for bag reuse (5%) If they looked more appealing (3%) <p>Those who say they will 'probably' or 'definitely' use a 'bag for life' in future give as their reasons that (n=353; unprompted; Andrew Irving Associates, 2005):</p> <ul style="list-style-type: none"> It is stronger, less likely to tear, or can carry heavy items (36%) Already using them (19%) Better for the environment (16%) Saves on waste (9%) Can be used again for other shopping (8%) Other (6%) It's a bag for life / they will give you a new one (4%) Only costs 10p (4%) Would forget / don't want to take with me (4%) Less to have around (3%) They are bigger (3%) Has a stronger handle (3%) Like to recycle (3%) DK / NA (3%) Feel I ought to / good idea (2%) Less litter (2%) 	<p>when I'm using their free carrier bags".</p> <p>Lack of pressure from supermarkets to reuse bags (Andrew Irving Associates, 2005). 67% agree (34% strongly and 33% slightly) with the statement "prefer to use extra free bags to [protect shopping] than to use fewer and risk damaging items" (n=1,048; Andrew Irving Associates, 2005).</p> <p>"Systems, routines and norms of shopping environments", issues of "identity, status and display" (Watson, 2008; p. 7).</p>

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Behaviour	Motivations cited in literature	Potential motivations cited in literature	Barriers cited in literature
		<ul style="list-style-type: none"> • Less landfill waste (2%) • Would if they start charging for bags (1%) • Good to put things in / reuse (1%) • More attractive (1%) • Helps to reduce the use of natural resources (1%) 	
Buy refills	<p>Reasons for using refillable products (Lee et al., 2008):</p> <ul style="list-style-type: none"> • Smaller, lighter and easier to carry • Take up less room • Ease of use/delivery • Product quality • Good past experience • Brand loyalty • To reduce waste • Altruism • Fun • Considered the norm • Cost • Clear reason for the product to be sold as a refill <p>24% (n=200 volunteers) chose refillable products because they felt that refillable packaging was better for the environment (Lofthouse & Bhamra, 2006b, WR0113).</p> <p>Lower price of refillables compared to new products has been found to be a popular attribute of refillables (Watson, 2008).</p> <p>Perceived good value of refillables over the standard products (evidence from US; James Ross Consulting & Butcher & Gundersen, 2008).</p>		<p>Barriers to use of refills (Lofthouse & Bhamra, 2006a, WR0113):</p> <ul style="list-style-type: none"> • Dispensers often given out free / low cost, meaning new dispenser may be bought every time rather than just the refills. • Product has to run out before can be refilled – inconvenient for consumers. • As a result of the above, consumers may stockpile smaller refillables at home (may have no impact on amount of waste to landfill). • Possible lack of customer motivation and participation. • Potential inconvenience. • Initial cost can be off-putting. <p>Barriers to use of refills (James Ross Consulting & Butcher & Gundersen, 2008):</p> <ul style="list-style-type: none"> • Many UK consumers are conservative • Consumer lifestyles impose time constraints (too busy to select refills and refill original packaging) • UK is in the grip of a 'throw away' culture • UK modern houses are relatively small, with less space to store bulk refills • UK consumers generally shop frequently, buying smaller quantities with less interest in bulk refills • Consumers with a fear of technology are reluctant to buy items they perceive to be difficult to use • Consumers need to be assured of availability of refill packs in long term • Social behaviour towards low cost / value offerings in the UK means incentives are needed to encourage the adoption of refill packaging <p>Barriers to use of pouch refills (James Ross Consulting & Butcher & Gundersen, 2008):</p> <ul style="list-style-type: none"> • Handling issues (pouches are often floppy and collapse when decanting leading to mess) • Cannot be stacked easily

Table 1 – Details of Motivations & Barriers			
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			<ul style="list-style-type: none"> • Can take up more shelf space than a carton • The availability of refills is not widespread and appears dependent on store size / shelf space as well as demand • In most cases the refill pack is only marginally cheaper than the primary pack <p>Barriers to using refillable health and beauty products (James Ross Consulting & Butcher & Gundersen, 2008):</p> <ul style="list-style-type: none"> • Hygiene • Cleanliness • Spillage • Complexity • Brand loyalty <p>Barriers to use of refills (Lofthouse & Bhamra, 2006, cited in Woodard & Harder, undated):</p> <ul style="list-style-type: none"> • Health and safety concerns • Price <p>Relatively low market share for 'value' products (James Ross Consulting & Butcher & Gundersen, 2008).</p> <p>Organisation, planning and time commitment required (Watson, 2008).</p> <p>Doorstep recycling and the idea of deposit systems being old-fashioned (Watson, 2008).</p> <p>Fears about becoming tied to a reuse system, concern about reducing future choices, being susceptible to a company collapsing or deciding not to supply refills (Watson, 2008).</p> <p>Reasons for failure of previous refill systems in the UK (James Ross Consulting & Butcher & Gundersen, 2008):</p> <ul style="list-style-type: none"> • Inconvenience / hassle (e.g. difficult to open) • Apathy, "can't be bothered" attitude • Impracticality: poorly designed refill packs • Re-closeability: product spilling • Limited shelf life of refill packs, transfer of use-by date from refill to primary pack, risk of contamination • Transport, stackability and storage • Cost <p>Other factors that may work against the acceptance of refill packs in the UK (James Ross Consulting & Butcher & Gundersen, 2008):</p>

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			<ul style="list-style-type: none"> • Lack of consumer incentive • Complexity in use • Social behaviour <p>Reasons for the decline in refills in the UK (Lee et al., 2008):</p> <ul style="list-style-type: none"> • Change in consumer behaviour to alcohol consumption at home • Refillable systems have found it difficult to compete against single trip containers due to the reluctance of supermarkets to participate • The open loop nature of consumption resulting in low trip rates and the focus on recycling • The growth in supermarkets and the decline in doorstep delivery of milk • Improvements in single trip packaging to coincide with changing consumption patterns e.g. increased consumption away from the home meaning a preference for lightweight packaging
Self dispense / loose produce	<p>Reasons why people like self-dispensing systems (James Ross Consulting et al., 2008):</p> <ul style="list-style-type: none"> • Main reason is that they can choose how much they want, allowing them to try new products and reduce waste • Other reasons are: <ul style="list-style-type: none"> ○ Less packaging ○ Can buy as much as you want ○ Cheaper ○ Can see what you're getting ○ Easy to try new products as can buy only a small quantity <p>Things that people like about self-dispensing systems (WRAP, 2007b):</p> <ul style="list-style-type: none"> • Being able to control amounts bought • Being able to touch and smell things • A perception that loose goods are cheaper and fresher <p>Evidence from Australia and New Zealand (James Ross Consulting et al., 2008):</p> <ul style="list-style-type: none"> • Value for money • Low cost 		<p>Concerns over self-dispensing systems (James Ross Consulting et al., 2008):</p> <ul style="list-style-type: none"> • 34% think they are time-consuming and unhygienic • 26% think that it takes too much time • 18% have concerns about packaging <p>Barriers to use of self-dispensing systems (James Ross Consulting et al., 2008):</p> <ul style="list-style-type: none"> • Unhygienic • No information about the product e.g. brand, nutritional content • No sell by date • Quality may not be good • Freshness <p>Concerns over self-dispensing systems (WRAP, 2007b):</p> <ul style="list-style-type: none"> • Perception that they are unhygienic • Messy • Time-consuming • Concern that there may be no opportunity to give the consumer information about the product <p>Concern that self-dispensing systems for liquids would be too messy (James Ross Consulting et al., 2008).</p> <p>Some evidence from the US that consumers feared contamination, but were happy if staff packaged up bulk food (James Ross Consulting et al., 2008).</p>

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Buying in bulk			<p>Barriers to buying in bulk (James Ross Consulting et al., 2008):</p> <ul style="list-style-type: none"> • Concerns over quality (bulk goods are typically unbranded) • Requires the consumer to pick and pack so takes more time • Goods sold per kg, making comparisons to conventional supermarkets difficult and potentially confusing
Nappies	<p>Evidence from the literature (Tucker & Douglas, 2006a, WR0112):</p> <ul style="list-style-type: none"> • 'Perceived behavioural control' i.e. relative personal costs/convenience plus self-efficacy • Early experience of reusable nappies in a supportive environment • Partner's interest in environmental issues 		<p>Reasons for using disposable nappies (Tucker & Douglas, 2006a, WR0112):</p> <ul style="list-style-type: none"> • Convenience (93.7%) • Unaware of alternatives (7%) • Not wanting to wash reusable nappies (71%) • Expense of a nappy laundering service (56%) <p>Reasons for using disposable nappies (qualitative research; Tucker & Douglas, 2006a, WR0112):</p> <ul style="list-style-type: none"> • Easier to use <p>Perceived lack of collective action, overcoming individual motivations and responsibilities (Tucker & Douglas, 2006a, WR0112).</p> <p>Potential reasons for low uptake up reusable nappies in Vienna (Salhofer et al., 2008):</p> <ul style="list-style-type: none"> • Lack of information about the availability of subsidies • Greater need for information about the handling of reusable nappies • Competition generated from the professional promotion of one-way nappies • Urban areas in Vienna being less willing to wash reusable nappies than people in rural areas • Also found some immigrant groups to be hard to reach given language/cultural barriers

Table 1 – Details of Motivations & Barriers			
Behaviour	Motivations cited in literature	Potential motivations cited in literature	Barriers cited in literature
Smart shopping	<p>Purchasing behaviour in general is influenced by (OVAM, 2008):</p> <ul style="list-style-type: none"> • Routines • Rooted ideas • Status • Lifestyles • Price/quality ratio is important <p>11% of consumers (non-UK) have been found to make their consumption choices on the basis of the environmental credentials of products (OVAM, 2008)</p>		<p>Purchasing behaviour in general is influenced by (OVAM, 2008):</p> <ul style="list-style-type: none"> • Routines • Rooted ideas • Status • Lifestyles • Price/quality ratio is important <p>Barriers to preventing waste through shopping choices (Tucker & Douglas, 2006a, WR0112):</p> <ul style="list-style-type: none"> • Habitual routines • Lack of trust in advertised environmental claims • Ascribing responsibility for packaging to retailers and manufacturers <p>Barriers to preventing waste through shopping choices (Obara, 2005):</p> <ul style="list-style-type: none"> • Lack of time for choosing alternatives (e.g. with less packaging) • Sense of lack of control / being powerless to minimise packaging <p>Habit (Brook Lyndhurst, cited in Tucker & Douglas, 2006a, WR0112).</p> <p>Lack of normative influence on purchases and packaging choices, because these are private choices (Tucker & Douglas, 2006a, WR0112).</p> <p>Perception that packaging is unavoidable and the retailer’s responsibility (Tucker & Douglas, 2007, WR0112).</p> <p>Situational factors can limit choice (Tucker & Douglas, 2006a, WR0112).</p> <p>People tend to overlook the importance of the purchasing phase to sustainable consumption (focus on disposal i.e. recycling) (Tucker & Douglas, 2006a, WR0112).</p> <p>“Smart shopping” as a term was too generic to inspire enthusiasm (AEA et al., 2008, WR0116).</p> <p>Unfamiliarity with waste prevention can mean that people are more likely to look for recyclable packaging than "low waste packaging" (Tucker & Douglas, 2006a, WR0112).</p>
Food waste prevention	<p>Things that motivated Love Food Champions participants (WRAP & The Women’s Institute, 2008):</p> <ul style="list-style-type: none"> • Fun • Feeling empowered through collective action • Embedding new habits into daily lives through forming new friendships 		<p>Reasons for food waste (Brook Lyndhurst, cited in WRAP, 2007b):</p> <ul style="list-style-type: none"> • Buying too much (e.g. BOGOFs, bigger packs) • Buying more perishable foods (often due to trying to be more healthy) • Poor storage management, including not eating in date order (at least 1/6 throw away food because it is past its use-by date) • Impulse buys (chilled food is the biggest category)

Table 1 – Details of Motivations & Barriers			
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			<ul style="list-style-type: none"> • Ad hoc clearing out of stored products • High sensitivity to food hygiene and use by / best before dates • Preparing too much food • Not liking the food prepared (reason in 22% of families with children) • Lack of time for planning • Fluid work and social patterns (especially with young professionals) <p>Main reasons for food waste (WRAP, 2007b) were buying more than needed and throwing away edible food. The underlying reasons vary:</p> <ul style="list-style-type: none"> • Change of mind / change of plan • Unwillingness or lack of knowledge about using leftovers • Lack of storage space or knowledge of storage methods (e.g. lack of knowledge of the importance of keeping food at the right temperature and of what can be frozen, fridges too warm, inability to use what was already at home) <p>Reasons for food waste (Salhofer et al., 2008):</p> <ul style="list-style-type: none"> • Variety-seeking behaviour of modern households • Increase in purchasing power • Impulsive food shopping • Supermarket promotions • Insufficient planning • Insufficient competence in appropriate storage • Shortage of time <p>Lack of awareness, lack of interest (WRAP, 2007b).</p> <p>Of those who are unconcerned about food waste (WRAP, 2007b):</p> <ul style="list-style-type: none"> • Many say they do not throw much away • More than 1/4 do not consider it a problem • 1/5 say it can't be avoided • 1/5 would prefer to throw away food rather than risk food poisoning (especially those with children) • 15% say they have other things to think about <p>Lack of knowledge (WRAP, 2007b):</p> <ul style="list-style-type: none"> • 40% of people thought throwing away food was not an issue, because it is 'natural and biodegradable' • Nearly 3/4 thought packaging was more of a problem than food waste <p>Lack of understanding of 'use by' and 'best before' dated (FSA, cited by WRAP, 2007b).</p>

Table 1 – Details of Motivations & Barriers			
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			<p>Food promotions perceived to encourage waste (WRAP & the Women’s Institute, 2008).</p> <p>Retail promotions may encourage people to buy more than needed - e.g. impulse buys (WRAP, 2007b).</p> <p>Increasing affluence, decreasing cost of food, driven further by competition between supermarkets (WRAP, 2007b).</p> <p>Buying too much and impulse buying (due to food being cheap), preparing too much, improper food storage (Woodard & Harder, undated).</p> <p>External pressures and cues can override any (waste prevention) motivations and lead to the suspension of normal habits (Tucker & Douglas, 2006a, WR0112).</p> <p>Poor home economics skills (WRAP, 2007b).</p> <p>Participants felt they did not have enough information on the importance of packaging and food waste (WRAP & the Women’s Institute, 2008).</p>
PSS	A key reason for buying in to product service systems is to access products which are otherwise unaffordable (Watson, 2008).		<p>Barriers to uptake of PSS (Angus et al., 2008, WR0106)</p> <ul style="list-style-type: none"> • Relative cost of PSS: householders may be unwilling or unable to substitute disposable income for spare time. • Competence - when householders may have the necessary competence to complete the task themselves to the standard they desire, or they may have doubts in the competence of the PSS provider. • Enjoyment of the tasks hinders uptake of PSS e.g. garden maintenance. • Ownership of household goods required to complete the task can make PSS uptake less likely – there is a reluctance to consumer PSS as an alternative to products and people prefer them as complements. • Lack of interest in environmental performance. • Lack of convenience, in particular flexibility and availability. <p>Barriers to uptake of PSS (Gottberg et al., 2008, WR0106):</p> <ul style="list-style-type: none"> • Product ownership, and use of PSS as a complement • Inconvenience of PSS compared to self-service • Negative perceptions of reparability of household goods and cost-effectiveness of such repairs

Table 1 – Details of Motivations & Barriers

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Drink tap water (reduces plastic bottle waste)	Reasons given for switching from bottled to tap water and continuing to do so (n=30; Waste Watch, 2007b, WR0105): <ul style="list-style-type: none"> • Saves money (43.3%) • The challenge convinced me (40%) • Doing my bit for the environment (40%) • More convenient than bottled water (33.3%) • Reduces waste (20%) • Good for health (16.7%) 		Reasons for drinking bottled water during the 2-week challenge (n=30; Waste Watch, 2007b; WR0105): <ul style="list-style-type: none"> • Difficulties refilling water bottle when not at home (40%) • Forgetting reusable water bottle (33.3%) • Adapting to taste of tap water (33.3%) • Remembering not to drink or buy bottled water (23.3%) • Remembering to chill tap water (13.3%) • None 13.3% • Other 6.7% • Pressure from others to drink bottled water (3.3%) • Health and safety of reusing water bottles, and problems fitting a reusable bottle in a bag were problems for a minority
Repair			Cost, cited by 68% of respondents in one survey (no details given; Watson, 2008).
Buy remanufactured			Declining cost of new goods, consumers' tendency to perceive remanufactured goods as having intrinsically less value than new goods (Watson, 2008). Limited trust in remanufactured products – e.g. one study (no sample details given) found over 80% of respondents believed retreaded tyres were less safe than new tyres, and almost the same proportion said they would never buy retreaded tyres (Watson, 2008).
Reduce hazardousness of waste			Many people don't consider household hazardous waste to be particularly hazardous, except batteries and oil which are commonly recognised (Tucker & Douglas, 2006a, WR0112). People tend to think it's up to manufacturers to develop non-hazardous alternatives (Tucker & Douglas, 2006a, WR0112).
Avoid early replacement of goods			Reasons for replacing items early (Tucker & Douglas, 2006a, WR0112): <ul style="list-style-type: none"> • Concern about the appearance of items • Aesthetics • Social approval
Long-life products			Worry about products becoming technologically obsolete (especially among men) (Watson, 2008).

3 References

A full bibliography is given in Waste prevention bibliography (L3 m8/2 (D)).

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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.