Appendix A2  Policy Context and Related Research

This appendix provides an overview of waste prevention and behaviour change policy and research described in Section 1.2 of the main report. It is not designed to provide a full and comprehensive review, as this is beyond the scope of the project, but aims to bring to attention those policies and research that are considered most relevant in the current field. A list of further references is provided at the end of this appendix containing academic papers from 2000 onwards. The key areas covered in summary in this appendix are:

1. The policy context
   - Defra’s Waste and Resources Evidence Programme
   - Defra’s pro-environmental behaviour research
   - WRAP’s work
2. Research published in academic journals on household waste prevention

A2.1  The policy context

Improving the efficient use of resources and reducing carbon emissions is central to Defra’s work. The overarching challenge for Defra is to enable everyone to live within our environmental means, ensuring that the resources and environment that we need and enjoy are available for us all, now and in the future. Within this broad context, the prevention of waste and the encouragement of pro-environmental waste behaviours represent key policy challenges for Defra.

One of a number of broad themes which are priority research areas for the Sustainable Consumption and production (SCP) evidence base focuses on Sustainable Consumption by individuals and businesses. This evidence base is growing in breadth and scope with reports published setting out a baseline to understand people’s current behaviour. This evidence base also has the beginnings of clarifying what may move people towards more sustainable behaviours. The Consumption theme of the evidence base aims to:

- Provide a broad understanding of current behaviours, how to influence behaviour to more pro-environmental actions, the motivations and barriers to change and what will best achieve change at a household level;
- Provide the underlying evidence base necessary to develop sustainable consumption policy and inform the future development of the pro-environmental behaviour framework, through commissioning new social research and reviewing existing evidence;
- Build and enhance the existing evidence base on consumer behaviour.

The evidence supports policy makers and communication development in delivery of SCP across behavioural areas within Defra and more widely by others inside and beyond government.

The SCP research programme, commencing in financial year 08/09, will build and further extend the evidence base on consumer behaviour with a particular emphasis on moving towards the practical application of policies, initiatives and strategies to encourage more pro-environmental behavior across policy areas (e.g. food, energy, travel, waste, water).

Waste and Resources Evidence Strategy 2007-2011

The Waste Strategy for England 2007 sets out a framework for waste management in England, including recycling targets, incentives and actions to stimulate infrastructure investment. It also sets ‘reduction’ targets by putting more emphasis on reducing the amount of residual waste through waste prevention and reuse. The new target is to reduce the amount of waste not re-used, recycled or composted from over 22.2 million tonnes in 2000 by 29% to 15.8 million tonnes in 2010 with an aspiration to reduce it to 12.2 million tonnes in 2020 – a reduction of 45%. There is a clear need, not only to improve resource efficiency through recycling, but to encourage waste prevention and reuse in order to reduce (or prevent) household residual waste.

Defra’s Waste and Resources Evidence Programme (WREP) was initiated in 2003. The programme is now in its fifth year of providing, interpreting, analysing and disseminating research and wider waste and resources evidence. The overall aim of the programme, as stated in its second 3-year evidence strategy, is ‘to deliver a robust sustainable waste and resource management evidence base for informed policy

---

development, implementation, monitoring and evaluation, which incorporates an effective mechanism for assembling, analysing and communicating outputs".3

WREP's first 3-year R&D strategy highlighted household waste prevention as a particular area of focus. At the time, other aspects of waste prevention, including eco-design and industrial waste minimisation, were receiving considerable attention and funding (e.g. through the DTI-led environmental technology programme funded by Defra’s BREW programme). WREP's limited resources were thus directed at what was seen as a significant gap in coverage, namely household waste prevention.

WREP thus has a portfolio of research projects exploring household waste prevention and waste-related behaviour. The scope has varied from a detailed focus on current behaviour and understanding, to an evaluation of how different initiatives work in practice, to the development of technical solutions, and a consideration of the future direction of behaviour and policy. Most of these projects are now complete (or in the course of completion). A list of the Defra research projects is provided at the end of this appendix and further details on all projects and reports are available on the Defra website4.

WRAP’s work

WRAP is a not for profit company created in 2000 as part of the Government’s waste strategy across the UK. In more recently years, WRAP has placed a greater emphasis upon resource efficiency. WRAP has seven programmes of work, some of which incorporate waste prevention behaviours.

Waste prevention is central to WRAP’s retail programme. The programme aims to reduce packaging in retail products and tackle the food waste issue. It has a target to secure reductions in packaging waste of 80 000 tonnes per annum by 2008. In addition it plans to deliver 100 000 tonnes of food waste reduction by 2008. The behavioural change programme is mostly focused upon recycling but many good insights into designing public campaigns have come out of this research.

In July 2005, WRAP set up the Courtauld Commitment as an agreement between WRAP and the major retail organisations and leading suppliers. The Commitment will lead to new packaging solutions and technologies so that less rubbish ends up in the household bin. The agreement is a powerful vehicle for change and will result in real reductions in packaging and food waste.

WRAP’s research studies on food waste were designed to find out more about what food we waste, why we waste it and what can be done to change consumer attitudes and behaviour. These qualitative and quantitative studies include:

- A quantitative assessment of the nature, scale and origin of post consumer food waste arising in Great Britain 2006; survey of 2,939 householders into attitudes and behaviour relating to food purchasing, storage, consumption and disposal (Exodus Market Research).
- WRAP food behaviour consumer research; quantitative consumer research to explore household food behaviour, based on 1,862 interviews with GB households aged 16 and over (Brook Lyndhurst and ICM).
- Understanding consumer food management behaviour; qualitative research giving a summary of the findings of 10focus groups, investigating attitudes to food purchasing and disposal, as well as storage and consumption (Ipsos MORI Social Research Institute).
- Consumer research into self dispensing systems; a study examining perceptions of self-dispensing systems (Marketry).
- Market survey of packaging formats & technologies with food waste reduction potential: research into the potential for packaging solutions to help consumers better manage their food (Design Bridge and PMT Ltd).
- Internet site to reduce food waste: a report on the role of internet resources in helping consumer waste less food (The Brewery).

Defra’s wider pro-environmental behaviour change work

Defra has produced a range of guides for policy makers and practitioners that are based on current research. In “Tackling the Waste Challenge” (2006), Defra make clear that:

---

4 http://www.defra.gov.uk/ENVIRONMENT/waste/wip/research/index.htm
Behaviours are complex and non-linear. Each behaviour is determined by various (often interrelated) factors, many of which need addressing simultaneously to facilitate change;

- Different audiences, different segments of society in relation to environmental issues (see Defra “A Framework for Pro-Environmental Behaviours, 2008) behave differently, and require targeted and/or tailored interventions;
- The audience for a change intervention should not be regarded as a passive target. Policy-makers need to view target audiences and other key stakeholders as ‘actors’ at the heart of the change process;
- Feedback is vital to driving and sustaining change. Instead of understanding changing behaviour as a single event, it should be viewed as an ongoing process;
- Government policy needs to convey a consistent message and visibly pull in one direction. The suite of policies emerging from government needs to avoid contradictions in order to convey clear messages to target audiences. Which is the main message - prevention or recycling?

**Survey of Public Attitudes and Behaviours toward the Environment (2007)**

The Defra “Survey of Public Attitudes and Behaviours toward the Environment 2007” has been a major source of information on public attitudes towards the wider environment as well as waste management in England. In the area of attitudes towards reducing waste and increased recycling, six in ten people said they agreed with a ‘waste not, want not’ approach to life compared with just 13 per cent who disagreed.

For waste prevention behaviours, just over half those interviewed admitted to throwing food away, at least occasionally, because it had gone off, and almost one in three said they did this very often or quite often. Only 15 per cent claimed they never did this. There was a strong relationship with age, the frequency of wastage being highest among those aged 16-29 and lowest among those aged 65+. Consistent with their claimed ‘waste not want not’ approach to life, broadsheet readers and people living in rural areas were also less likely to say they threw food away on a regular basis. These facts justify the efforts being made by WRAP to run campaigns to target the reduction of the food waste component of Municipal Solid Waste.

For reuse behaviours, the two most common reuse behaviours were giving away things which were no longer wanted to charity or to friends and family (87 per cent agreed they did this), and reusing things like empty bottles, tubs, jars, envelopes and paper (78per cent did so at least some of the time, and around one in five did so always or very often). Slightly fewer, around six in ten, sometimes took their own shopping bag when shopping, with a quarter doing so always or very often. Around four in ten agreed that they often bought second-hand goods.

**A Framework for Pro-Environmental Behaviours (2008)** - see also Appendix 3

In January 2008 Defra published its framework for pro-environmental behaviour. This summarises the understanding of the evidence on consumer behaviour and is designed to support policy development and implementation in Defra, other Government departments and externally. The framework includes an extensive evidence base, 12 headline behaviour goals (arrived at through a process of stakeholder engagement), a core set of principles and approaches on achieving behaviour change, and an environmental segmentation model that divides the public into seven clusters each sharing a distinct set of environmental values, attitudes and beliefs. The framework also makes an initial assessment of policy implications by segments, goals and wider themes. Defra has developed an extensive analytical framework, based on available evidence, which has focused on developing an in-depth understanding of current behaviour and how to support more sustainable behaviours in the future.

Some important themes for policy makers to help drive forward the future agenda concerning pro-environmental behaviour, including waste prevention behaviour, include:

- **Use the mandate for action** - In terms of public understanding and attitudes, there is a mandate for government to take action – not to force radical changes in people’s current lifestyles so much as to help “green” those lifestyles and reduce their overall negative impacts.

- **Focus on behaviour** - Whilst radical lifestyle changes are unlikely, there is nonetheless scope to make significant progress on headline behaviour goals. The research again confirms the influence of personal recommendations and face to face contact in encouraging the adoption of new behaviours such as better energy management or take up of more sustainable products.

---

Put products at the centre - Notwithstanding issues about cost, the demand for and availability of high quality greener products is key and some themes emerge for interventions in this area.

Collective action - There is a need for more visibility to be given to the actions which government and business are already taking. Consistency of high-level messages (and campaign brands) should help – for example through more coalitions with and between mass membership organisations, widespread adoption of the “Act on CO₂” brand, and concentration on just a couple of issues/behaviours at any one time.

Widen the mandate - There is a role for government - or advisory bodies such as the Sustainable Development Commission - to play in continuing to explore the boundaries of the current mandate, for example stimulating policy debate on well-being, travel, consumerism, trade-offs between energy policy options and lifestyles, or personal carbon trading.

Next policy steps

Defra, in collaboration with other potential funding partners across the UK (e.g. the Economic and Social Research Council), is establishing an independent Research Centre. It is envisaged that the focus of the Centre would be on informing how UK society can move towards more environmentally sustainable patterns of consumption and ways of living. It would also research ways of achieving more effective pro-environmental behaviour to help to address the challenges faced by the UK in the wider world. If established, the Research Centre will provide the core evidence base for the pro-environmental framework and an important shared resource across Defra.

A Research Centre of this nature would represent a major new investment in independent, policy-relevant research. The proposed Centre would be designed to build upon and enhance existing UK research strengths, complement existing centres of expertise and other planned initiatives and help to build future research capacity. It is envisaged that the Centre would engage, and work in partnership with, a wide range of stakeholders at all stages of its research to facilitate, and promote dialogue on, the provision and utilisation of independent and high quality research and evidence.

A2.2 Related research

Academic literature, since 2000, has shown a small but gradual increase in the number of papers published on household waste prevention / minimisation. Even so the numbers of papers are much less than for recycling. In Science Direct (a major academic database) for 2000 – 2008, internationally, there were:

- 7 papers on Household Waste Prevention
- 8 papers on Household Waste Minimisation
- 6 papers on Household Waste Reuse
- 136 papers on Household Waste Recycling

The following papers have been selected for summary because they are representative of the majority, in academic journals, on issues concerning aspects of waste prevention and give an indication of the progress in research. Further references can be found at the end of this appendix.

Potentials for the prevention of municipal solid waste

Authors : Stefan Salhofer, Gudrun Obersteiner, Felicitas Schneider and Sandra Lebersorge

The authors comment upon the waste prevention potential in Vienna. They suggest that it is in order of 1-3% of MSW. They write:

“Waste prevention has been assigned the highest priority under European waste management law. However, the initiatives which have been taken so far have not reduced the regular annual increase in total waste arising across Europe. The purpose of this paper is to quantify and analyze in depth the prevention potential for selected case studies (advertising material, beverage packaging, diapers, food waste, waste from events). Only such measures are considered, which do not require a reduction of consumption. The prevention potentials for household waste in theory are exemplified for the city of Vienna, also with a view to barriers that may reduce the achievable prevention potential. The results show that the prevention potentials for the analyzed individual measures can reach an order of magnitude of some 10% of the relevant waste stream (e.g. advertising material, beverage packaging), or rather 1–3% of municipal solid waste.
**A geographically and socio-economically disaggregated local household consumption model for the UK**

Authors: A. Druckman, P. Sinclair and T. Jackson  
Journal: *Cleaner Production*, 16, 7, 870-880 (2008)

The authors point out the need to develop models to understand the trends in household consumption. Once this is done it is possible to develop policy and practice to address waste prevention. They write:

“A key challenge for local environmental and economic planning is to predict resource flows and material waste arisings at a high level of geographical localisation. This paper presents an approach to household consumption modelling in which the material demands of small socio-economically homogeneous neighbourhoods are estimated on the basis of consumer expenditure data in conjunction with Census data. Household waste arisings are estimated through incorporation of a household metabolism model. Selected material flows of consumer commodities, such as household appliances, carpets and clothing, are examined in case study areas representing extremes of relative deprivation, and neighbourhoods representing typical examples of the UK National Output Area Classification (OAC). The model will be of use in sustainable consumption policy-making and local waste strategy planning”.

**Waste minimisation: Home digestion trials of biodegradable waste**

Authors: M.L. Bench, R. Woodard, M.K. Harder and N. Stantzos  

The authors see waste minimisation as diversion from landfill, in the context of food waste. They place emphasis on the management of waste in the household context where householders switch from contributing to waste collection to treatment at home with a Green Cone food digester. They write:

“Minimisation of municipal solid waste and diversion from landfill are necessary for the UK to manage waste sustainably and achieve legislative compliance. A survey of householder attitudes and experiences of a trial for minimising household food waste from waste collection in the county of West Sussex, UK is described. The minimisation method used the Green Cone food digester, designed for garden installation. A postal questionnaire was distributed to 1000 householders who had bought a cone during the trial and a total of 433 responses were received. The main reason for people buying the Green Cone had been concerns about waste (88%), with 78% and 67% of respondents, respectively, claiming to have participated in recycling and home composting in the last 30 days. The waste material most frequently put in the digester was cooked food (91%), followed by fruit waste, vegetable matter and bones/meat. Some respondents were using it for garden and animal waste from pets. Most users found the Green Cone performed satisfactorily”.

**The use and disposal of household pesticides**

Authors: Charlotte N.B. Grey, Mark J. Nieuwenhuijsen, Jean Golding  

The authors raise the important question about the quality (e.g. hazardousness) of the waste as well as the quantity. Prevention of household hazardous waste is a key issue to policy makers. The authors write:

“In the UK very little is currently known about how non-occupational pesticides are being used or disposed of. Any use of pesticides is a potential risk factor for children’s exposure, and any potential exposure is likely to be reduced by the parents’ adopting precautionary behaviour when using these pesticide products. It is a public health concern that the instructions on the labels of products may not always be understood or followed, and further understanding of user behaviour is needed”.

**Determining the drivers for householder pro-environmental behaviour: waste minimisation compared to recycling**

Authors: Michele Tonglet, Paul S. Phillips and Margaret P. Bates  

The authors compare the drivers for waste minimisation compared to recycling using the Theory of Planned Behaviour. They suggest factors that may be used to promote waste minimisation practice. They say:
“Public participation in Local Authority schemes is key to increasing household recycling levels, however, the most effective way to reduce waste is to deal with it at source, through waste minimisation. Understanding waste minimisation behaviour is key to achieving sustainable waste management and householder based projects which are theoretically underpinned by cognitive psychology and are promoted by carefully designed marketing/communications, over the long-term, should result in reductions in Municipal Solid Waste (MSW). Cognitive psychological modelling can provide the means to identify the driving forces behind recycling and waste minimisation behaviour, and in a given area determine the main likely success factors. Once these factors have been established, cost-effective campaigns can be designed to maximise the outcome.

The Theory of Planned Behaviour provides a cognitive framework to understand and explain behaviour, and its use in this study has provided valuable insights into the factors which underpin recycling behaviour. The findings suggest that recycling attitudes are the major determinant of recycling behaviour, and that these attitudes are influenced firstly, by having the appropriate opportunities, facilities and knowledge to recycle, and secondly, by not being deterred by the issues of physically recycling (e.g. time, space and inconvenience). Previous recycling experience, and a concern for the community and the consequences of recycling, are also significant predictors of recycling behaviour. The findings also provide support for the proposition that recycling and waste minimisation through point of purchase and waste minimisation through repair or re-use represent different dimensions of waste management behaviour, and thus will require different strategies and messages. It is suggested that waste minimisation behaviour is likely to be influenced by a concern for the environment and the community, and is likely to be inhibited by perceptions of inconvenience and lack of time and knowledge.”

Factors influencing environmental attitudes and behaviors - A UK case study of household waste management

Author: Barr S

The author, a forefront academic in the UK, has examined a wide range of factors that help to predict waste management behaviour. Minimisation behaviour was found to differ markedly from recycling. The work suggests a range of messages to encourage the adoption of minimisation practice. The author says:

“Three waste management behaviours (waste prevention, reuse, and recycling) were examined with the use of a conceptual framework developed by the author. It was posited that environmental values, situational characteristics, and psychological factors all play a significant role in the prediction of waste management behaviour, within the context of a core intention-behaviour relationship. The framework was tested in a self-report questionnaire of 673 residents of Exeter, UK. It was found that the predictors of reduction, reuse, and recycling behaviour differed significantly, with reduction and reuse being predicted by underlying environmental values, knowledge, and concern-based variables. Recycling behaviour was, in contrast, characterised as highly normative behaviour. The use of the approach taken for investigating other environmental behaviours is examined”.

A2.3 Summary

Until more recently, waste prevention has had much lower research activity than recycling. However, waste prevention cannot be approached from one discipline alone. Alongside policy, strategy and traditional waste management approaches the psychology of behaviour is central. Therefore it is unlikely for useful publications to appear in traditional waste management journals, but more likely in those that are based upon consumer and psychological studies.
A2.4 References from academic journals


A2.4 References from professional publications


INCPEN. www.incpen.org/resource/userdata/ipv/Consumerattitudestostoppackagingsurvey.pdf

University of Paisley Environmental Technology Group Interim Report.


---

6 Where available access to a web site or ISBN has been provided. It should be noted that some of the web site links can become out of date and therefore unable to access.


### Household Waste Prevention and Behaviour Change Research Projects

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>CODE</th>
<th>PROJECT TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consolidating the evidence base</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individuals, households and communities</td>
<td>WR0508</td>
<td>Behaviour change: Scoping the way forward</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Individuals, households and communities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WR0114</td>
<td>Building greater understanding of the techniques and processes required to promote sustainable waste management through behaviour change programmes</td>
</tr>
<tr>
<td></td>
<td>WR0117</td>
<td>Developing a programme of practical waste minimisation schemes to take forward recent research on consumer behaviour and behavioural change</td>
</tr>
<tr>
<td></td>
<td>WR0504</td>
<td>Establishing the behaviour change evidence base to inform community-based waste prevention and recycling</td>
</tr>
<tr>
<td><strong>Measurement tools to analyse waste data and behaviour change</strong></td>
<td>WR0105</td>
<td>Project REDUCE Monitoring and Evaluation – Developing tools to measure waste prevention</td>
</tr>
<tr>
<td></td>
<td>WR0116</td>
<td>Household Waste Prevention Activity in Dorset</td>
</tr>
<tr>
<td><strong>Future lifestyle trends and forecasting</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WR0107</td>
<td>Modelling the Impact of Lifestyle Changes on Household Waste Arisings</td>
</tr>
<tr>
<td></td>
<td>WR0104</td>
<td>Lifestyle Scenarios: the Futures for Waste Composition</td>
</tr>
<tr>
<td></td>
<td>WR0112</td>
<td>Understanding Household Waste Prevention Behaviour</td>
</tr>
<tr>
<td><strong>Supply chain policy interaction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WR0103</td>
<td>Household Waste Prevention Policy Side Research Programme</td>
</tr>
<tr>
<td><strong>Resource use, technical solutions, social enterprises and community waste sector</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WR0106</td>
<td>Achieving household waste prevention and promoting sustainable resource use through product service systems</td>
</tr>
<tr>
<td></td>
<td>WR0502</td>
<td>Social enterprises and sustainable waste and resource management: evaluating impacts, capacities and opportunities</td>
</tr>
<tr>
<td></td>
<td>WR0113</td>
<td>Refillable packaging systems</td>
</tr>
<tr>
<td></td>
<td>WR0501</td>
<td>Replicating Success: Social enterprises and the waste sector in London</td>
</tr>
<tr>
<td></td>
<td>WR0506</td>
<td>Social and economic audit tools for use in the community and private waste sectors</td>
</tr>
<tr>
<td></td>
<td>WR0509</td>
<td>Attitudes to use of Organic Resources on Land</td>
</tr>
<tr>
<td></td>
<td>WR0209</td>
<td>Enhancing participation in kitchen waste collection schemes</td>
</tr>
<tr>
<td></td>
<td>WR0211</td>
<td>Unlocking the potential of community composting</td>
</tr>
<tr>
<td></td>
<td>WR0208</td>
<td>Organic waste consultation</td>
</tr>
</tbody>
</table>