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SID 5 Research Project Final Report

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Project identification

1. Defra Project code: WR0105
2. Project title: Project REDUCE Monitoring and Evaluation – Developing tools to measure waste prevention
3. Contractor organisation(s): Waste Watch, 56- 64 Leonard Street, London, EC2A 4LT
4. Total Defra project costs (agreed fixed price): £ 118,377.50
5. Project: start date ..... November 2005
   end date ..... December 2007

6. It is Defra's intention to publish this form.
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Executive Summary

7. The executive summary must not exceed 2 sides in total of A4 and should be understandable to the intelligent non-scientist. It should cover the main objectives, methods and findings of the research, together with any other significant events and options for new work.

This research was commissioned and funded by Defra. The views expressed reflect the research findings and the author's interpretation. The inclusion of or reference to any particular policy in this report should not be taken to imply that it has, or will be, endorsed by Defra.

Project objectives
The main objective of this project was to assess and test the possibility of producing a common set of tools or indicators that can be widely used by local authorities, central funding agencies and other stakeholders to measure the relative and absolute impact of waste prevention initiatives. The specific objectives were:

Phase A

1. To map and critically assess the current range of waste prevention activities and associated monitoring and evaluation (M&E) methodologies currently used in the UK, particularly in relation to their efficacy and ease of use.

2. To develop a set of common waste prevention measurement tools and associated indicators to be used by local authorities and other stakeholders working in the area of waste prevention.

Phase B

3. To trial the set of monitoring tools and indicators developed in Phase A through three household waste prevention initiatives carried out in the Western Riverside area of London (made up of the 4 London boroughs of Hammersmith and Fulham, Kensington and Chelsea, Wandsworth and Lambeth).

Phase C

4. To bring together existing UK and European waste prevention experience

The second and third objectives of this project were only partially fulfilled. Beyond recording common and best practice among waste prevention practitioners, it proved difficult to develop a definitive set of monitoring & evaluation tools and associated indicators because the research showed that there is

currently limited capacity to deliver far-reaching waste prevention initiatives targeting UK householders and to measure their impact accurately. Early findings from ongoing pilot projects undertaken under Defra's Environmental Action Fund scheme 2005-08 corroborate this. Waste Watch also encountered difficulties in delivering the intended three waste prevention initiatives. Two projects, described briefly in this report, were carried out successfully. However, an initiative to engage with retailers failed due to reasons beyond Waste Watch's control, which are outlined in further detail below.

Summary of research findings

Waste prevention and reduction in the context of household waste, particularly from a consumer product perspective, presents three points of intervention: at the point of purchase or delivery, during useful life of a product and at the point of disposal.

The scoping research for this project identified a range of common approaches to facilitate waste prevention and associated changes in behaviour. In each situation, initiatives sought to engender different types of behaviour, using a range of methods to influence consumers' decision-making processes. The initiatives reviewed represent a mix of pilot trials, mature schemes and research studies.

Although monitoring and evaluation were undertaken by all initiatives, there were wide variations in the scope and scale. The extent and design of the monitoring regime was usually determined by the purpose of the initiative.

Projects conceived as ***pilot trials*** or ***research studies***, by their nature, tend to have more rigorous regimes in place. As measurement is an integral part of such projects, a greater proportion of funding will be dedicated to it. Usually, both output and outcome data is captured using a range of complimentary qualitative and quantitative techniques. Projects combining quantitative and qualitative measurement include a number of recent large-scale projects, which aim to test a range of behaviour change techniques in the area of waste prevention.

Long-term schemes, on the other hand, are predominantly concerned with delivery. Fewer resources tend to be available to these projects and consequently a smaller proportion will be dedicated to monitoring and evaluation. Performance assessment is therefore likely to focus on easier to measure *outputs*. For example, the most common method of monitoring home composting schemes is to record the number of composting bins sold or given out.

Just as monitoring regimes varied among the projects and schemes reviewed, approaches to evaluation also showed diversity. Once again, ***research projects*** tended to have a more rigorous approach to evaluation. The aim of evaluation for research projects was usually to assess the effectiveness and replicability of specific delivery approaches, the opportunities for scaling up and cost-effectiveness. Evaluation therefore formed part of the purpose of the project and was in-built from the outset.

For ***ongoing schemes*** the purpose of evaluation was usually to track progress against targets. In most cases, data was gathered on a regular and ongoing basis, but evaluation took place fairly infrequently. The way in which data was used and evaluated was not always transparent. Some schemes used regular research to measure impact and effectiveness.

Many projects reported that monitoring and evaluation in general, and measuring waste reduction and prevention in particular, constituted a genuine difficulty in assessing the success of their project. Interviewees highlighted a range of specific problems and barriers arising for a number of reasons, including insufficient funds or budget allocation for monitoring and evaluation; insufficient staff capacity to carry out the proposed monitoring activities; non-availability of data; unsuitable format of data available and unforeseen problems during data gathering.

Most projects followed best practice by selecting monitoring techniques early on as part of the overall project design. Some projects, however, faced problems in implementing monitoring methodologies in practice.

Awareness of the cost of monitoring and evaluation

In a similar vein, projects were not always able to estimate the cost of monitoring, both in terms of financial support and staff resources. Only in a few cases did the project budgets separately account for the proportion spent on monitoring and evaluation. These figures were usually not readily available or staff time spent on monitoring activities was not considered.

Fitness for purpose

The main difficulty faced by many projects was to devise monitoring regimes that were 'fit for purpose'. Most projects chose monitoring techniques that appeared most practical under the specific circumstances,

but were not always the most effective.

Use of volunteers
The use of volunteers, often in pilot projects, can pose problems for the reliability or representativeness of results.

Where recruitment of volunteers for waste prevention activities is through self-selection, the sample is likely to contain a disproportionate number of people with high environmental awareness and pro-environmental behaviour compared to the general public.

Attribution of impacts
A major difficulty in impact evaluation is to establish to which degree recorded changes in waste arisings can be attributed to specific interventions.

A general challenge represented by monitoring and evaluation is to devise methodologies that are 'fit for purpose'. This can be defined as methodologies which are capable of providing evidence of the impact of the campaign without requiring a disproportionate amount of project resources. Projects should consider accounting for the proportion of the budget that will be dedicated to monitoring and evaluation as a separate cost item. Staff time spent on M&E activities should also be considered independently. Best practice would therefore include that M&E regimes are devised as part of the project development process.

Methodologies need to be chosen to *reflect targets and objectives*, so that progress can be monitored against these. Both *output* and *outcome* targets need to be included to provide reliable impact measurement. A seemingly obvious point is that monitoring data needs to be used for regular evaluation.

A range of *measurement techniques* need to be chosen to provide validation. For example, where qualitative measures such as self-reporting surveys or self-weighing are used, other more objective, quantitative measures need to be used so that results can be verified.

In many cases, waste tonnage diversion can only be assumed or extrapolated, as the 'counterfactual' cannot be measured directly. While this is an acceptable practice, assumptions need to be based on *sufficiently large samples* or a range of comparable scenarios to be reliable.

Another essential issue is the availability of data. It is recommended to undertake *formative evaluations* which not only consider the delivery mechanisms of the project, but also examine the availability of data from a range of sources and the format this data is available in. This would flag up issues such as a mismatch in collection rounds which will impact on the usability of existing data. It will also show where original research or measurement needs to be undertaken.

Where new waste prevention initiatives are introduced, *baseline data* should be gathered for a sufficient period prior to the project in order to show the resulting change. It is recommended that at least one year's worth of baseline data is available, so that seasonal changes can be accounted for.

Where possible, *control populations* should be used as a way of showing what would have happened in the absence of the initiatives. The challenge here is to find comparable populations and to minimise other factors which may have an impact on waste arisings.

Monitoring and evaluation also needs to take place over sufficiently long periods to demonstrate both the *short-term* and the *long-term impacts* of initiatives.

In addition to the existing projects, a small number of well-resourced research studies should be undertaken to further explore the applicability of specific measurement tools.

As set out under Objective 3 of this project, Waste Watch intended to trial two waste prevention initiatives and associated M&E methodologies in the London Western Riverside boroughs as part of the 'Recycle Western Riverside' (RWR) campaign. 'Recycle Western Riverside' is a five-year Western Riverside Waste Authority initiative within the London boroughs of Hammersmith & Fulham, Lambeth, Wandsworth and the Royal Borough of Kensington and Chelsea.

The first, the 'What Not to Waste' (WNtW) project, was a two-month initiative directly engaging households in waste prevention and minimisation activities. The aim of the WNtW project was to test the effectiveness of directly engaging households in a single waste prevention initiative and the impact this has on reducing overall waste output and changing waste behaviour.

A total of 16 participating households were selected from across the four Western Riverside boroughs, with four from each borough. Each household was given three fortnightly missions to reduce their waste and to adopt more sustainable consumption habits. Households received assistance, advice and ongoing support in the form of information packs, home visits by RWR support officers, training workshops with RWR staff and equipment. The performance of all households was monitored over the duration of the project using waste auditing and weighing at the start and the end of the project and pre- and post questionnaire surveys with the participants.

Although the waste reduction theme was only introduced in week 3 of the challenge, almost all participating households reduced their total waste arisings over the duration of the project, from a total of 173kg per week at the outset of the project to 113kg after the completion of the final challenge.

There was a significant change in the proportion of waste recycled, with participants recycling an average of 58 percent at the end of the project compared to an initial 39 percent. Contamination also decreased significantly from 7 percent at the beginning of the project to 1.7 percent at the end.

Other behavioural impacts the project has had include a reduction in the use of one-way plastic carrier bags (62 percent to 7 percent) and a corresponding increase in 'Bags for Life' being used to carry shopping (93 percent at the end of the project).

Data was monitored for the duration of the campaign, i.e. an eight-week period. While the data gathered showed significant changes during this time, the short duration of the initiative clearly does not allow any assumptions to be made in terms of sustained long-term behaviour change.

However, the results of the project demonstrated that by providing ongoing hands-on support and relevant advice, behaviour change can be achieved. The local community focus of the initiative was particularly important, as the participants' achievements served as an example of what other residents in the borough can do to reduce their own environmental impact by making simple changes to their daily lives.

The second initiative was called 'Test the Water' (TtW), a waste prevention campaign specifically designed to reduce plastic bottle waste by promoting tap water as a more environmentally sustainable and equally healthy alternative to bottled water and to test whether this was effective in reducing overall waste output and changing waste behaviour.

The campaign was developed with the intention of recruiting up to 200 volunteers to participate in a two-week long challenge to switch from drinking bottled water to only tap water. The challenge was aimed at regular bottled water consumers only, which for the purpose of this initiative was defined as those drinking more than 2 bottles per week.

The 'Test the Water' initiative had three key objectives:

- to investigate participants' propensity for switching from bottled to tap water
- to investigate bottled water consumption patterns
- to raise awareness of other waste prevention activities

The most effective way of monitoring these objectives was deemed to be by undertaking before and after questionnaire surveys with challenge participants to establish attitudinal and behavioural change.

The results of the campaign demonstrate that TtW was successful in achieving its aims and objectives. In all, 654 taste tests were performed and 166 people signed the pledge to give up bottled water for two weeks. Taste tests were offered to prove that most people could not tell the difference between tap and bottled water. Only 22% of people taking the test could tell the difference, which surprised many participants and proved to be an effective method of convincing them that they do not need to drink bottled water.

The 'pledge' of giving up bottled water for two weeks was offered to highlight to regular bottled water drinkers the many other benefits of tap water. 83% of participants taking the pledge were convinced of the benefits of drinking tap water and will continue to give up bottled water, largely because it saved them money and they were doing their bit for the environment. This has had a positive influence on waste behaviour and overall waste output as more than three quarters of participants claim that they now produce less overall rubbish as a result of the campaign and 73% of participants now think about other waste prevention activities they can do in the home to reduce their rubbish.

Due to the limitations experienced, it is recommended that for future campaigns the length of project duration is extended to include more time for monitoring and a longer period for the challenge of giving up

bottled water. It is also recommended that a more personal interaction with participants might be more beneficial as it could better deliver the intended support throughout the project (for example telephone conversations rather than emails).

For both projects, staff and funding constraints as well as tight delivery timescales meant that the scope of the project was limited. The results therefore only provide a snapshot of the behaviour change potential resulting from personalised interaction with householders but cannot demonstrate long-term sustained behaviour change.

Project Report to Defra

8. As a guide this report should be no longer than 20 sides of A4. This report is to provide Defra with details of the outputs of the research project for internal purposes; to meet the terms of the contract; and to allow Defra to publish details of the outputs to meet Environmental Information Regulation or Freedom of Information obligations. This short report to Defra does not preclude contractors from also seeking to publish a full, formal scientific report/paper in an appropriate scientific or other journal/publication. Indeed, Defra actively encourages such publications as part of the contract terms. The report to Defra should include:
   - the scientific objectives as set out in the contract;
   - the extent to which the objectives set out in the contract have been met;
   - details of methods used and the results obtained, including statistical analysis (if appropriate);
   - a discussion of the results and their reliability;
   - the main implications of the findings;
   - possible future work; and
   - any action resulting from the research (e.g. IP, Knowledge Transfer).

This research was commissioned and funded by Defra. The views expressed reflect the research findings and the author's interpretation. The inclusion of or reference to any particular policy in this report should not be taken to imply that it has, or will be, endorsed by Defra.

Research objectives and methods

The main objective of this project was to assess and test the possibility of producing a common set of tools or indicators that can be widely used by local authorities, central funding agencies and other stakeholders to measure the relative and absolute impact of waste prevention initiatives. The specific objectives were:

Phase A

1. To map and critically assess the current range of waste prevention activities and associated monitoring and evaluation (M&E) methodologies currently used in the UK, particularly in relation to their efficacy and ease of use.

A project stakeholder group (PSG) including representatives from the community, commercial and public sector, as well as academia was formed to ensure that a wide range of waste prevention and associated monitoring approaches was included in the mapping exercise. A wider stakeholder involvement approach ensured not only that a range of existing waste prevention activities from all sectors were considered, but also that feedback and buy-in from relevant stakeholders was secured from the outset of the project.

The PSG was also used to ensure that the programme was sufficiently focused upon local and central government needs. The first PSG meeting was convened following the scoping exercise with the dual aim to

identify the range of recent and current waste prevention activities and initiatives in the UK and to develop criteria for the selection of a range of these activities for detailed review.

It was intended that the review and evaluation of the different waste prevention activities and associated monitoring and evaluation approaches would be carried out by conducting qualitative interviews with users - up to a maximum of 5 users per measurement technique/ waste stream. A report on the findings of this research would be produced and presented to the PSG.

2. To develop a set of common waste prevention measurement tools and associated indicators to be used by local authorities and other stakeholders working in the area of waste prevention.

This was developed with the help of the PSG and based on the findings of the research produced as part of the first objective.

Phase B

3. To trial the set of monitoring tools and indicators developed in Phase A through three household waste prevention initiatives carried out in the Western Riverside area of London (made up of the 4 London boroughs of Hammersmith and Fulham, Kensington and Chelsea, Wandsworth and Lambeth).

Two waste prevention initiatives were undertaken as part of a five-year programme of recycling and waste prevention campaign in the Western Riverside waste authority area of London. Following the completion of the initiatives, Waste Watch produced a report on the practicability and ease of use of the monitoring tools and indicators applied. This fed into this overall report produced at the end of the REDUCE Monitoring and Evaluation project.

Phase C

4. To bring together existing UK and European waste prevention experience

The third phase of the project involved the amalgamation of the findings of the desk-based and primary research undertaken in Phases A and B and other UK based experience.

Further interviews were conducted with key stakeholders and experts to assess their recent experience in delivering practical waste prevention initiatives and measuring their impact. More novel monitoring and evaluation approaches recently proposed were also examined and, where possible, evidence for their validity provided. This was done to reflect the practical progress in this area since the original research and to include advances in thinking. Interviewees were drawn from the existing project stakeholder group, as well as other UK experts in this area.

In addition, interviews and a literature review were conducted with European organisations involved in previous and current waste prevention initiatives, such as ACR+, Espace Environnement and the European Environmental Bureau.

This report contains a summary of the case study research undertaken to fulfil the first, second and third project objectives.

The second and third objectives of this project were only partially fulfilled. Beyond recording common and best practice among waste prevention practitioners, it proved difficult to develop a definitive set of monitoring & evaluation tools and associated indicators because the research showed that there is currently limited capacity to deliver far-reaching waste prevention initiatives targeting UK householders and to measure their impact accurately. Early finding from ongoing pilot projects undertaken under Defra's Environmental Action Fund scheme 2005-08 corroborate this. Waste Watch also encountered difficulties in delivering the intended three waste prevention initiatives. Two projects, described briefly in this report, were carried out successfully. However, an initiative to engage with retailers failed due to reasons beyond Waste Watch's control, which are outlined in further detail below.

Phase A – Case study research

Introduction

Waste prevention differs from waste minimisation in that the point of intervention is before products or materials become waste. Waste prevention initiatives include *avoidance*, *reduction* and *reuse* initiatives. A range of definitions of waste prevention has been developed by a number of stakeholder organisations representing both waste management practitioners and policy makers. At international level, the Working Group on Waste Prevention and Recycling of the Organisation for Economic Co-operation and Development (OECD) has

presented the following definition: 'Waste prevention aims to reduce the amount, hazard character or energy content of products or materials before they enter the waste stream.' (1) The European Commission's definition of waste prevention (2) includes both quantitative and qualitative prevention with quantitative prevention referring to a reduction of the **amount** of waste generated and qualitative prevention referring to a reduction of the **hazardousness** of waste generated. In the UK, the National Resource & Waste Forum has focused on the prevention of household waste and defines this as follows: 'Minimising the quantity (weight and volume) and hazardousness of household-derived waste generated in a defined community for collection by any party.' (3)

The definitions of waste prevention presented above raise a number of important concerns, which need to be addressed in the development of effective measurement tools and indicators for waste prevention. First, as the OECD paper points out, waste prevention 'can only be measured indirectly as a counterfactual (i.e. as the amount of waste that probably would have been generated in the absence of a waste prevention policy).' (4) Standard indicators employed to measure waste diversion, such as recycling rates and tonnages, are therefore inadequate in the context of waste prevention. Second, waste prevention policies, as defined by the OECD and the European Commission, are predominantly focused at the pre-waste stage, namely at product design and usage/re-usage. This 'up-stream' focus is particularly important where *qualitative* waste prevention, i.e. the reduction of the risks to the environment and human health and the energy content of the waste, is the aim. In the context of household waste, waste prevention policy initiatives will target consumer behaviour, with *quantitative* waste reduction and product reuse being the focus.

The present study reports on the research findings of the first element of the project. The research findings from the second element of the project can be found in Annexes 1 and 2 published alongside this report.[1]

The study is framed by its focus on household waste. Although household waste arisings are clearly dependent on factors, which are beyond the control of householders, such as the material and energy use of products, consumer behaviour also plays an important role in waste prevention and resource use reduction.

A wide range of initiatives exist which aim to influence consumer behaviour at different points of intervention, namely at the point of purchase, during the useful life of a product and at the point of disposal. These are discussed in further detail in the Overview section of the report. The types of initiatives reviewed for this report are summarised below.

Table 1 – Types of waste prevention initiatives reviewed

Types of initiatives	**Waste streams targeted**
Home composting schemes	• Green garden waste • Organic / kitchen waste
Reuse schemes	• Waste electrical and electronic equipment (WEEE) • Furniture • Bicycles • DIY and garden tools • Paint • Toys • Books • Textiles • Wood
Reusable nappy schemes (including laundry scheme)	• Nappies
'Smart' or 'Waste aware' shopping campaigns	• Packaging including cardboard, paper, glass and plastics • WEEE • Household batteries • Miscellaneous single use goods
'No junk mail' campaigns	• Paper

[1] Please see 'WR0105 "Project REDUCE Monitoring and Evaluation" – Annex 1: Campaign Evaluation Report "What Not to Waste"' and 'WR0105 "Project REDUCE Monitoring and Evaluation" – Annex 2: Campaign Evaluation Report "Test the Water"'

Types of initiatives	Waste streams targeted
'Snub' (Say no to unwanted bags) campaigns	• Plastic carrier bags
Replacing goods with services/ equipment hire	• DIY and garden tools • WEEE • Nappies
Substituting one-way packaging with refillables/ returnables	• Plastic milk and drinks bottles • Shower and bath products • Detergent bottles

Methodology

The research undertaken for the first element of the Reduce M&E project was carried out in three stages: case study selection, information gathering and analysis and presentation of the results.

Table 2 – Research methodology

Stage	Activities
Case study selection	Desk-based review to identify potential case studies
	Stakeholder workshop to identify potential case studies and discuss selection criteria
	Collation of potential case studies and further desk-based information gathering
	Consolidation of selection criteria
	Final selection of case studies
Information gathering	Design of semi-structured questionnaire
	Telephone interviews
Analysis and interpretation of results	Analysis of information
	Preparation of written case studies
	Preparation of summary report

Case study selection

A desk review was undertaken to identify a range of past and present waste prevention initiatives in the UK. This included both a literature review and an internet search which returned information on a large number of projects, schemes and campaigns.

In addition, a stakeholder workshop was held and attendees were invited to identify further potential case studies drawing on their own and others' experience of delivering waste prevention initiatives. Stakeholders were also asked to discuss the selection criteria for the case studies with a view to identifying which kind of information would be most relevant to stakeholders' specific interest.

The final selection of case studies was informed by the scope of the research and the desirability of including a range of initiatives targeting the different components of the household waste stream. Further desk-based research on the initiatives identified was carried out to refine the selection.

The factors considered in the selection process are discussed in turn below.

Monitoring and evaluation regime

Unsurprisingly, this was identified as the overriding selection factor since monitoring and evaluation of waste prevention is the primary focus of the study. Therefore, we selected initiatives that were known for applying best practice or for pioneering new approaches both to waste prevention and to measuring the impact of their activities.

Delivery agents

Both stakeholders and the project team considered it desirable to include case studies of a range of different delivery agents. These include community waste sector organisations, local authorities, non-governmental organisations, academic institutions, trade associations as well as partnerships between two or more of these.

Types of initiatives

The desk-research identified a range of different types of waste prevention projects, schemes and campaigns. These differed according to:

- range and type of household waste targeted – ranging from a single waste type (e.g. disposable nappies) to comprehensive approaches
- type of tools used to facilitate behaviour change - communication and marketing, provision of information, provision of infrastructure or practical tools;
- points of intervention - point of purchase, during use or point of disposal
- maturity of the scheme - pilot projects or long-standing schemes
- purpose of the initiative or project – research or delivery

The final selection of the case studies was geared towards including examples across the breadth of these different types of initiatives.

Replicability

Stakeholders were particularly concerned about the replicability of initiatives. In particular, the availability of information on cost-effectiveness was considered important in determining whether projects could be transferred to other context.

Longitudinality

Stakeholders were concerned that the selection should include longer-term projects, which aim to measure impact over time to establish whether behaviour change is sustained.

Practical considerations

From a more pragmatic point of view, the case study selection took into account the availability of interviewees for participation in the study. A degree of self-selection was involved in the reuse schemes, where projects were approached through their industry networks and asked to volunteer to participate.

Details of the case studies are included in this report were relevant. Full case study reports will not be published but can be made available from Waste Watch on request.

Information gathering

The case studies are based on semi-structured interviews with staff of the main organisations involved in the delivery of the individual initiatives.

An interview questionnaire was developed to ensure a uniform approach to data gathering and the comparability of information between case studies. All interviews were carried out by telephone.

The questionnaire was designed to capture as much detail as possible on the following broad areas:

- objectives of the initiative
- approaches to waste prevention and behaviour change
- project budget and resources
- monitoring and evaluation methodology and barriers to and opportunities for the use of specific techniques
- lessons learnt
- measured results and outcomes of the initiative

Additional sources of information, such as project reports and strategy documents, were also used where available.

Data limitations

The case studies present the information available at the time of the interviews, which were carried out between April and June 2006.

As anticipated, the data availability varied between individual initiatives and information gaps exist in a number of areas. Some of the reasons for this included:

- staff responsible for the delivery of initiatives no longer worked for the organisation
- reports relating to past initiatives were no longer available, resulting in limited access to information on the specific of the initiative
- initiatives were in the early stages of development or implementation, thus no or only limited performance data was available to date
- initiatives had limited financial and staff resources leading to the curtailment of intended monitoring regimes
- intended monitoring techniques were found not to be practicable

As expected, a decisive factor in the development and implementation of rigorous monitoring and evaluation regimes was the purpose of the initiative. Pilot or research trials are likely to have far more rigorous monitoring and evaluation arrangements in place as they are designed to investigate the factors influencing the effectiveness of particular approaches to waste prevention. On the other hand, for ongoing schemes, where objectives are based around delivery, monitoring and evaluation tends to be more minimal.

Overview - Facilitating household waste reduction and prevention

The scoping research for this project identified a range of common approaches to facilitating waste prevention and associated changes in behaviour.

Delivery agents

Many of the existing initiatives are being delivered by community waste sector organisations, but increasingly local authorities are also involved in promoting and delivering household waste prevention activities. In addition, non-governmental organisations and academic institutions involved in waste management research make up another, if somewhat smaller, group of delivery agents.

The scoping research showed that in the past, waste reduction initiatives tended to focus on a single household waste type, such as disposable nappies, organic waste or furniture. These tended to have grown out of local community networks or have been instigated by local activists.

More recently, local authorities are beginning to formulate more comprehensive multi-pronged approaches to household waste prevention. Often these use existing community networks and services. In some cases, the overall initiatives are developed in partnership with local authorities but delivered by local non-governmental organisations such as the British Trust of Conservation Volunteers (BTCV) or the Women's Environmental Network (WEN). Collaborations between trade bodies such as the Association of Charity Shops and community waste sector groups are also taking place.

The availability of government funding has also spawned a range of projects, which focus on investigating the behaviour change factors involved in waste prevention and reduction and trialling these on a larger scale. Examples of this include initiatives by Dorset County Council and Hampshire County Council, which are funded through Defra's Waste and Resources Evidence Programme, and the Ross-shire Waste Action Network (RoWAN) in the Scottish Highlands.

Types of initiatives

As touched on earlier, waste prevention and reduction in the context of household waste, particularly from a consumer product perspective, presents three points of intervention:

- at the point of purchase or delivery
- during useful life of a product
- at the point of disposal

In each situation, initiatives seek to engender different types of behaviour, using a range of methods to influence consumers' decision-making processes. As pointed out earlier, the initiatives reviewed represent a mix of pilot trials, mature schemes and research studies. The purpose of the latter is either to establish the effectiveness of specific behaviour change techniques (e.g. Dorset and Hampshire) or to investigate the behavioural motivations and the potential for change (e.g. East Surrey Hospital real nappy trial).

The initiatives and behaviour change techniques used can be broadly categorised as follows:

Table 3 – Overview of type of initiatives reviewed

Point of intervention	Type of initiative	Behaviour change techniques	Case study example*
Point of purchase or delivery	Smart Shopping initiatives	• Smart Shopping guides • Product displays/signage • Roadshows and displays • Doorstepping • Pledges	• Dorset County Council • Hampshire County Council • Lewes District Council • RoWAN • Surrey County Council • Warwickshire County Council • Waste Watch
	Real nappy schemes	• Provision of trial nappy packs • Provision of subsidies or credit facilities • Cashback incentives • Provision of practical advice/home visits • Demonstrations	• East Surrey Hospital • Forth Valley Real Nappy Network • Gloucestershire County Council • London Borough of Enfield • St Helen's Borough Council
	Refillable products or returnable packaging	• Provision of refillable products • Smart Shopping guides • In-store displays • Product displays/signage • Roadshows and displays	• Dorset County Council • Hampshire County Council • WyeCycle • Women's Environmental Network
	Replacing goods with services or equipment hire	• Smart Shopping guides • Hire services directories • Provision of hire service • Doorstepping	• Dorset County Council • Hampshire County Council • Lewes District Council • RoWAN
	No junk mail campaigns	• Action packs or guides • Information leaflets	• Gloucestershire County Council • Lewes District Council • London Borough of Enfield • Recycle Western Riverside • Wiltshire Wildlife Trust
During useful life of product	Reuse schemes	• Provision of collection, repair and refurbishment services • Reuse directories • Promotion of reuse	• Association of Charity Shops • Hampshire County Council • Lewes District Council • London Borough of Enfield • RoWAN
	'Snub' (Say no to unwanted bags) campaigns	• Roadshows and displays • Leaflet campaigns • Promotional give-aways of reusable bags	• Recycle Western Riverside
Point of disposal	Home composting schemes	• Sale of discounted or subsidised home composting bins • Provision of free home composting bins • Provision of information and practical advice	• Buchan Countryside Group • Dorset County Council • Gloucestershire County Council • Hampshire County Council • Lewes District Council • London Borough of Enfield • RoWAN

Point of intervention	Type of initiative	Behaviour change techniques	Case study example*
	Variable charging or restriction of residual waste collection capacity	• Provision of limited residual waste capacity • Provision of additional collection receptacles at a charge	• Blaby District Council

* The case studies relate to the type of initiative rather than the behaviour change techniques used. In each case study, one or more of the listed techniques will have been used. In addition, many of the case study projects focusing on behaviour change are in the early stages of implementation and techniques are in the process of development or refinement and may therefore not be listed here.

As outlined in Table 3 above, a range of common techniques are used to promote and facilitate waste reduction and prevention behaviour.

The majority of initiatives contained an element of ***information provision***. Techniques used varied from more costly roadshows and displays to less resource intensive leaflet and posters campaigns.

Practical advice or training is involved in many initiatives focusing on one specific type of household waste, such as nappies and organic waste. For example, real or reusable nappies are usually promoted through demonstration events at antenatal classes, toddlers groups or 'Nappucino' mornings, as well as in maternity wards or by midwives. The provision of trial nappy packs, which enable parents to test the suitability of reusable nappies without the initial outlay, is also common. Home composting is another area, which often involves training courses or the provision of guidance materials to enable householders to develop the required knowledge and skills. Unusually, Dorset County Council are using doorstepping as a tool to provide practical waste prevention advice to householders.

This is often offered in combination with ***incentives*** or ***subsidised equipment***. For example, cashback incentives or discounts may be given to parents ordering real nappy packs (e.g. St Helen's 'Bum Deal plus' scheme) or registering for laundry services. Similarly, the sale of discounted home composting bins has been the main feature of most home composting initiatives, including the WRAP home composting schemes in Gloucestershire, West Sussex, Lewes and Enfield.

A small number of initiatives have employed ***task setting with self-reporting/monitoring*** as behaviour change tools. For example, Hampshire County Council's 'Small changes, big difference' project engages a large number of volunteers who are given monthly waste prevention and reduction tasks. Project participants are asked to report on the activities they have carried out and keep a diary detailing their experience, highlighting particular difficulties. Similarly, the 'Village Initiative Project' by the Buchan Countryside Group provided direct hands-on support to householders in undertaking a wide range of waste prevention and reduction measures. Residents' compliance and performance was monitored through weekly waste analysis.

The Ross-shire Waste Action Network (RoWAN) 'Waste-free households' and 'Waste-free refuse collection vehicle' projects can be considered hybrids. The latter is a large-scale version of the first project, which aimed to facilitate waste reduction through a variety of indirect support mechanisms. Monitoring does not rely on self-reporting but takes place through the weighing of residual waste arisings using electronically tagged bins and collection vehicles fitted with on-board weighing equipment.

Common approaches to monitoring and evaluation

Data types

A recent OECD paper on waste prevention states succinctly the difficulty in measuring waste reduction and prevention: it 'can only be measured indirectly as a counterfactual (i.e. as the amount of waste that probably would have been generated in the absence of a waste prevention policy).' (5) Standard indicators employed to measure waste diversion, such as recycling rates and tonnages, are therefore inadequate in the context of waste prevention.

The National Resource and Waste Forum (NRWF) *Household Waste Prevention Toolkit* (6) proposes a number of generic ways in which the impact of waste prevention campaigns can be assessed. These include measuring the following aspects of waste prevention:

- changes in total waste arisings and comparing them to control areas or general trends
- amount of materials diverted from the waste stream through specific waste prevention or minimisation initiatives, e.g. reuse or composting schemes

- uptake of specific services contributing to waste prevention, e.g. reusable nappy schemes or equipment hire

- awareness of initiatives and declared behaviour

Data measuring the impact of behaviour change initiatives can be divided into two broad types: outcome and output data. ***Outcome data*** aims to capture whether the initiative has led to a change in behaviour in the target group and, in the case of waste prevention, has in turn resulted in a measurable reduction in residual waste arisings. ***Output data*** relates to the project deliverables, such as the number of information leaflets disseminated or the uptake of a particular scheme such as home composting. Often this kind of data is used as a proxy measure to assess impact.

As set out by the NRWF toolkit, this can be measured through ***quantitative information*** including residual waste and recycling tonnages or material capture rates. ***Qualitative measures*** used to assess the behaviour change dimension include attitudinal or awareness surveys and diaries reporting behaviour.

Gathering exclusively either quantitative or qualitative data is unlikely to produce conclusive results. For example, measuring waste tonnages alone will not shed light on the causes for changes in arisings, making it impossible to attribute them to the intervention. Inversely, attitudinal and behavioural surveys alone cannot serve as evidence of behaviour change unless they can be correlated to quantitative measures. In combination, however, quantitative and qualitative data can be used to build a more reliable picture of the impact of a specific initiative.

Monitoring processes
Although monitoring and evaluation are undertaken by all initiatives, there are wide variations in the scope and scale. The extent and design of the monitoring regime is usually determined by the purpose of the initiative.

Projects conceived as ***pilot trials*** or ***research studies***, by their nature, tend to have more rigorous regimes in place. As measurement is an integral part of such projects, a greater proportion of funding will be dedicated to it. Usually, both output and outcome data is captured using a range of complimentary qualitative and quantitative techniques.

Projects combining quantitative and qualitative measurement include a number of recent large-scale projects, which aim to test a range of behaviour change techniques in the area of waste prevention. Participants in Hampshire County Council's 'Small changes, big difference' project are asked to keep a diary of the waste prevention tasks they have carried out and to record the weight of their weekly household waste arisings. It is intended to recruit a total of 3,000 householders, representing five typical 'moments of change' in people's lifetimes, to participate in the project until autumn 2007.

The Ross-shire Waste Action Network (RoWAN) 'Waste-free refuse vehicle' project is targeting a similar number of residents. Here electronically tagged bins and collection vehicles fitted with on-board weighing equipment are used to monitor waste arisings. In the preceding pilot study with approximately 100 households, RoWAN had relied on self-reporting of waste arisings by participants. A major problem encountered was that over the course of the project period a number of households dropped out or discontinued to record their waste arisings. To address this problem, statistical analysis was used to verify the robustness of the results (further details in the case study section).

Using on-board weighing, it is possible to gather accurate and reliable data, which can be analysed in a number of ways to provide either general trends or trends of individual households. Lewes District Council intended to use on-board weighing to monitor the impact of its current waste prevention campaign, but has to date failed to secure funding for the retro-fitting of bins and collection vehicles with the necessary equipment.

On a smaller scale, as part of the Buchan Countryside's 'Village Initiative' project, project participants' residual waste was collected separately and analysed on a weekly basis to establish the extent of reduction and the types of waste householders found most difficult to tackle.

Dorset County Council's waste prevention project makes use of control groups to measure the 'counterfactual'. A programme of communicating and facilitating household waste prevention is being rolled out in five pilot areas, each with one or two control areas. The 'matched' pair areas are largely consistent in their socio-economic and demographic make-up, making it possible to estimate the amount of waste that would have been generated in the absence of the initiative.

Other research studies focused on one specific type of waste. For example, University of Surrey's study in East Surrey Hospital investigated whether the use of reusable nappies in maternity wards would influence whether parents chose disposable or reusable nappies. Focusing on the behaviour change dimension, the project relied

predominantly on qualitative surveys of mothers on the maternity wards, but also used quantitative measures such as the number of parents using reusable nappies.

Long-term schemes, on the other hand, are predominantly concerned with delivery. Fewer resources tend to be available to these projects and consequently a smaller proportion will be dedicated to monitoring and evaluation. Performance assessment is therefore likely to focus on easier to measure *outputs*. For example, many nappy schemes simply registered the number of parents requesting discounted nappy packs or subscribing to a laundry service. Waste arisings avoided are estimated using a formula of the average nappy waste produced by each baby during its nappy-wearing life. However, parents may discontinue using reusable nappies or replace them with disposable ones occasionally. Only few schemes used follow-up surveys to establish whether this was the case. Without a more detailed knowledge of lapse rates and usage patterns, these estimates should be considered maximum achievable rates rather than actual diversion.

Similarly, the most common method of monitoring home composting schemes is to record the number of composting bins sold or given out. Wiltshire Wildlife Trust has developed an annual survey to establish the impact of the scheme. The first survey, in 2003, was undertaken prior to the promotional campaign to provide a baseline of existing home composting activity in the county. The annual follow-up surveys followed the same methodology as the first, but additional questions on composting cardboard and paper and lapsed composting behaviour were included in the 2005 questionnaire to provide information on the range of materials diverted and actual home composting behaviour.

However, as Julian Parfitt, formerly of WRAP, points out in his recent paper: 'Many UK local authorities have attempted to estimate home composting diversion factors with widely different results ranging from 25 to 500 kg per household per year. However, the overwhelming majority of these estimates do not contain any primary research and none of the approaches have attempted to make a distinction between 'new recruits' and 'enhanced existing' home composting activity. Furthermore, for the minority of cases underpinned by research, there is confusion over which aspect of diversion is being quantified.' (7)

WRAP's home composting scheme aims to address this issue by developing a consistent diversion methodology based on data collected across a broad range of different areas. A range of models were developed to test the variables underlying residual waste arisings, including participation in home composting, household characteristics and waste management service provision variables. Results from the modelling were then used to estimate quantities of waste not collected by the municipal system as a result of home composting participation. This modelling approach was undertaken at individual household level using questionnaire surveys, waste analysis and other data sources and at the district level, using data obtained at the individual Waste Collection Authority (WCA) level.

A range of home composting schemes reviewed for this study are WRAP partners and anticipate using WRAP's methodology in the future to assess the impact of their schemes.

Evaluation

Just as monitoring regimes varied among the projects and schemes reviewed, approaches to evaluation also showed diversity. Once again, ***research projects*** tended to have a more rigorous approach to evaluation. The aim of evaluation here is usually to assess the effectiveness and replicability of specific delivery approaches, the opportunities for scaling up and cost-effectiveness. Evaluation therefore forms part of the purpose of the project and is in-built from the outset.

These kinds of projects, such as Hampshire and Dorset, sometimes contracted expert consultants to develop and carry out both the monitoring and the final evaluation. Alternatively, as in Lewes, in-house support from statistical analysts was sought. In some cases, such as the Surrey Hospital real nappy project, the project was devised and undertaken by academic institutions specialising in research.

For ***ongoing schemes*** the purpose of evaluation is usually to track progress against targets. In most cases, data was gathered on a regular and ongoing basis, but evaluation took place fairly infrequently. The way in which data was used and evaluated was not always transparent.

Some schemes use regular research to measure impact and effectiveness. Wiltshire Wildlife Trust commissioned an annual survey of new and existing participants in its home composting scheme. The information obtained was used to assess the effectiveness of the approach and to refine it and to evaluate the factors motivating home composting behaviour.

Table 4 below outlines the most common monitoring techniques or tools used in the types of initiatives reviewed.

Table 4 – Common monitoring techniques

	Type of intitiative	Behaviour change indicator	Monitoring technique								
			Output focused				*Outcome focused*				
			No. of publications disseminated	*Opportunities to see*	*No. of individuals contacted/visited*	*No. of individuals registered on scheme*	*Uptake of equipment/service/product*	*Weight/no. of items collected*	*No. of subscribers to Mail Preference Service (MPS)*	*No. of individuals/households participating - observed*	*No. of individuals/households participating - self-reported*
Point of delivery/purchase	Smart Shopping	Smart Shopping guide	■								
		Product display/signage		■							
		Roadshows and displays		■	■						
		Doorstepping			■						
		Pledges			■						
	Real nappy schemes	Provision of discounted nappy packs/laundry service				■	■				
		Provision of subsidies or credit facilities				■					
		Cashback incentives				■					
		Provision of information and practical advise			■						
	Refillable products or returnable packaging	Provision of refillable products					■				
		Smart Shopping guides	■								
		Product displays/signage		■							
		Supermarket roadshows and displays		■							
	Replacing goods with services or equipment hire	Smart Shopping guides	■								
		Hire services directories					■				
		Provision of hire services					■				
	No junk mail campaigns	Action pack or guides	■								
		Provision of MPS subscription cards/information							■		
		Information leaflets	■								
During useful life or product	Reuse schemes	Provision of collection, repair and refurbishment services					■	■			■
		Reuse directories	■								
		Information leaflets and posters	■	■							
	Snub' (Say no to unwanted bags) campaigns	Roadshows and displays		■							
		Leaflet campaigns	■								
		Promotional give-aways (of reuseable bags)					■				
Point of disposal	Home composting schemes	Provision of (subsidised/discounted) compost bins				■	■				
		Provision of information and practical advice			■						■
	Variable charging or restriction of residual waste collection	Provision of limited residual waste capacity				■				■	
		Provision of additional collection receptacles at extra charge					■				

Specific problems and barriers encountered

Many projects reported that monitoring and evaluation in general, and measuring waste reduction and prevention in particular, constituted a genuine difficulty in assessing the success of their project. Interviewees highlighted a range of specific problems and barriers arising for a number of reasons, including:

- insufficient funds or budget allocation for monitoring and evaluation
- insufficient staff capacity to carry out the proposed monitoring activities
- non-availability of data
- unsuitable format of data available
- unforeseen problems during data gathering

Implementing monitoring methodologies and availability of data

Most projects followed best practice by selecting monitoring techniques early on as part of the overall project design. Some projects, however, faced problems in implementing monitoring methodologies in practice.

The Women's Environmental Network (WEN) 'Empty isn't the end' project aimed to encourage residents of the London Borough of Tower Hamlets to return glass milk bottles to their local shops. WEN hoped to assess the impact of the three-month campaign by recruiting shopkeepers to keep a log of the number of bottles returned on a daily basis. It was also intended to interview shop staff about customers' reaction to the campaign. This proved difficult, however, due to alternating shift patterns, staff turnover and changes in shop ownership.

The project also intended to establish a baseline of the average number of bottle returns in Tower Hamlets with data provided by Dairy Crest and milk distributors supplying local shops. Dairy Crest has no method for monitoring the returns of milk bottles and data could not be obtained from distributors as their sales data does not relate to specific boroughs and shops in Tower Hamlets are supplied by a range of different distributors.

Waste Watch's 'Take Home Action on Waste' project aimed to increase recycling and household waste prevention through waste education in schools. The project methodology was devised to ensure that the catchment areas of the schools involved largely overlapped with recycling collection rounds to allow an assessment of the project's impact on the recycling rates. Waste reduction rates were to be judged by comparing the growth trends for recyclables and residuals. However, the project team found that residual waste collection rounds boundaries differed from the collection rounds for recyclables, making it impossible to directly compare the two.

Dorset County Council encountered a similar problem in its pilot and control areas, since collection rounds for recyclables differed from residuals collection rounds, making it difficult to compare the two data sets. Recyclables arisings were nevertheless monitored to provide a complete picture of waste generation trends. Furthermore, waste arisings data relating to household waste only (i.e. excluding any municipal waste collected from businesses on the same collection round) was only available in one of the pilot and control area pair.

Awareness of the cost of monitoring and evaluation
In a similar vein, projects were not always able to estimate the cost of monitoring, both in terms of financial support and staff resources. For example, WEN undertook a baseline survey of the quantity of reusable glass milk bottles disposed of by residents through Tower Hamlet's kerbside recycling scheme. However, due to budgetary and staff time constraints, it was not possible to repeat the survey at the end of the campaign and this important indicator could not be used to gauge the project's success.

Only in a few cases did the project budgets separately account for the proportion spent on monitoring and evaluation. These figures were usually not readily available, or staff time spent on monitoring activities was not considered.

Fitness for purpose
The main difficulty faced by many projects then was to devise monitoring regimes that were 'fit for purpose'. Most projects chose monitoring techniques that appeared most practical under the specific circumstances, but were not always the most effective.

As touched on earlier, many long-term nappy or home composting schemes opt for recording the number of sales as the primary monitoring tool. Either due to lack of resources or capacity, there is usually a lack of follow-up surveys to establish lapse rates or usage patterns, which need to be taken into account to gauge actual diversion rates.

As discussed above, this issue has been recognised by WRAP and local authorities will be able to use its forthcoming home composting diversion model to make more realistic assessments of the impact of their home composting schemes.

The Association of Charity Shops (ACS) used self-completion surveys with shop staff to gauge the impact of its 'Choose to reuse' publicity campaign which aimed to increase the quantity and the quality of donations to charity shops. Sales staff and volunteers were asked to make an intuitive assessment of the level of donations, as more rigorous monitoring would be considered too onerous and complex.

Use of volunteers
The use of volunteers, often in pilot projects, can pose problems for the reliability or representativeness of results.

Where recruitment of volunteers for waste prevention activities is through self-selection, the sample is likely to contain a disproportionate number of people with high environmental awareness and pro-environmental behaviour compared to the general public. RoWAN's 'Waste-free households' pilot project was affected by this kind of sample bias, but impact expectations were adjusted accordingly in the wider roll-out.

Both the RoWAN pilot project and Hampshire County Council's 'Small changes, big difference' project relied on participating households to measure their weekly waste arisings. This kind of self-monitoring by volunteers can present obstacles to reliable measurement. A number of RoWAN's volunteer households stopped measuring their waste and the number of monitoring forms received dropped by almost 50 percent by the end of the project. This raised questions about the robustness of the dataset, which RoWAN addressed by applying a number of statistical significance tests. RoWAN also received a number of erroneous submissions from volunteer households. These were reviewed on a case by case basis and if necessary removed from the dataset.

At the time of this report, Hampshire County Council faced similar problems due to difficulties in recruiting the desired sample of 600 volunteers in time for the project start. Approximately 160 participants had started the pilot project while recruitment was continuing. As a result, participants would have started keeping their diaries at different points in the project cycle, making it difficult to compare the data. The project team was developing a way to address the resulting data problem.

Attribution of impacts
A major difficulty in impact evaluation is to establish to which degree recorded changes in waste arisings can be attributed to specific interventions. For example, the Association of Charity Shops cited awareness of a range of factors other than their campaign likely to influence the level of donations to charity such as international disaster or emergency appeals as well as national or local campaigns by individual charities.

In Dorset, to minimise the potential impact of factors external to the campaign, attention was given to selecting areas that had consistent recycling infrastructure and services that were unlikely to change over the lifespan of the research (18 months either side of the trial). Other factors considered in the selection of pilot and control areas were locations of Household Waste Recycling Centres and new residential and retail developments, which may impact on waste arisings.

Conclusions & recommendations from the UK case studies

A general challenge represented by monitoring and evaluation is to devise methodologies that are 'fit for purpose'. This can be defined as methodologies which are capable of providing evidence of the impact of the campaign without requiring a disproportionate amount of project resources. Projects should consider accounting for the proportion of the budget that will be dedicated to monitoring and evaluation as a separate cost item. Staff time spent on M&E activities should also be considered independently. Best practice would therefore include that M&E regimes are devised as part of the project development process.

Methodologies need to be chosen to *reflect targets and objectives*, so that progress can be monitored against these. Both *output* and *outcome* targets need to be included to provide reliable impact measurement.

A seemingly obvious point is that monitoring data needs to be used for regular evaluation.

A range of *measurement techniques* need to be chosen to provide validation. For example, where qualitative measures such as self-reporting surveys or self-weighing are used, other more objective, quantitative measures need to be used so that results can be verified.

In many cases, waste tonnage diversion can only be assumed or extrapolated, as the 'counterfactual' cannot be measured directly. While this is an acceptable practice, assumptions need to be based on *sufficiently large samples* or a range of comparable scenarios (e.g. the WRAP composting trials) to be reliable.

Another essential issue is the availability of data. It is recommended to undertake *formative evaluations* which not only consider the delivery mechanisms of the project, but also examine the availability of data from a range of sources and the format this data is available in. This would flag up issues such as a mismatch in collection rounds which will impact on the usability of existing data. It will also show where original research or measurement needs to be undertaken.

Where new waste prevention initiatives are introduced, *baseline data* should be gathered for a sufficient period prior to the project in order to show the resulting change. It is recommended that at least one year's worth of baseline data is available, so that seasonal changes can be accounted for.

Where possible, *control populations* should be used as a way of showing what would have happened in the absence of the initiatives. The challenge here is to find comparable populations and to minimise other factors which may have an impact on waste arisings.

Monitoring and evaluation also needs to take place over sufficiently long periods to demonstrate both the *short-term* and the *long-term impacts* of initiatives.

In addition to the existing projects, a small number of well-resourced research studies should be undertaken to further explore the applicability of specific measurement tools.

Phase B - Waste Watch pilot projects

As set out under Objective 3 of this project, Waste Watch intended to trial two waste prevention initiatives and associated M&E methodologies in the London Western Riverside boroughs as part of the 'Recycle Western Riverside' campaign. 'Recycle Western Riverside' is a five-year Western Riverside Waste Authority initiative within the London boroughs of Hammersmith & Fulham, Lambeth, Wandsworth and the Royal Borough of Kensington and Chelsea.

The campaign aimed to increase recycling, reduce rubbish produced and encourage purchase of recycled products. Waste Watch delivered all communication and community education activities and London Remade

delivered market development, green procurement and technical support services. The campaign was funded by Cory Environmental through the Landfill Tax Credit Scheme.

The trial projects took inspiration from approaches used successfully by Project REDUCE in Europe, particularly by the Belgian NGO Espace Environnement, and selected specific waste prevention activities that were considered to be relevant and feasible for Western Riverside residents and fitted with the overall objectives of the RWR campaign.

Waste prevention initiative 1: 'What Not to Waste'

Project methodology

The 'What Not to Waste' (WNtW) project was a two-month initiative directly engaging households in waste prevention and minimisation activities. The aim of the WNtW project was to test the effectiveness of directly engaging households in a single waste prevention initiative and the impact this has on reducing overall waste output and changing waste behaviour.

Project approach

The WNtW project was conceived and marketed as a one-off initiative to inform the development of future campaigns and initiatives focusing on waste prevention and behaviour change. The WNtW project methodology was guided by the operational capacity of the RWR team, including the financial resources and number of staff available. The latter had a bearing particularly on the number of households it was possible to engage in the project as it was envisaged to provide a high level of support throughout the project. The project was also required to involve an equal number of households in each of the four Western Riverside boroughs. Under the circumstances, it proved difficult to achieve a sizeable and representative sample to provide robust research results.

A total of 16 participating households were selected from across the four Western Riverside boroughs, with four from each borough. The project targeted four specific resident groups, which were shown to have below average recycling rates in a MORI report commissioned by the RWR Team in 2005, and are generally considered to be 'hard-to-reach' in terms of recycling communication: Black and Asian Minority Ethnic (BAME), parents with children, residents living on estates and 16-24 year olds. Other criteria were also considered, including low participation and awareness of recycling and waste prevention, perceived receptiveness to change, willingness to participate for the entire length of the campaign and willingness to participate in publicity events.

Each household was given three fortnightly missions to reduce their waste and to adopt more sustainable consumption habits. Households received assistance, advice and ongoing support in the form of information packs, home visits by RWR support officers, training workshops with RWR staff and equipment. The performance of all households was monitored over the duration of the campaign.

Participants were recruited using existing contacts to environmental and community groups in the boroughs, such as the local Time Bank. Despite access to this network, it proved difficult to engage a large number of people and most of the interested people were more likely to have a high environmental awareness. For example, of the participating households, only three did not recycle any of their waste at the start of the challenge. However, many of those recycling did not always use the collection systems correctly or consistently. None had attempted to undertake any waste prevention activities.

The challenges and activities were chosen specifically to make it as easy as possible for participants to complete them, so as to highlight that everyone can do something to reduce their waste generation. Each participating household was given fortnightly challenges focused on the three core campaign aims of 'recycle', 'reduce' and 'reuse'. The project was launched by events in each of the four boroughs, which were attended by the participating households and representatives from the respective local authorities, as well as local media.

The challenges were introduced to participants in three stages (one per fortnight), rather than all at once, so as to gradually raise the level of difficulty. Written instructions were given at the start of each challenge to provide key information and a reference point to which they could refer to at any point throughout the initiative.

At the start of each challenge, participants received an in-home briefing from the Project Support Officers, who were also on hand throughout the challenges to provide advice and support. In total, each participating household received five home visits

During the first week of the eight-week initiative, Project Support Officers (PSOs) visited participants in their homes to train them on how to separate their waste correctly and how to store it for weekly weighing. The first challenge was then introduced in Week 2 of the project and involved educating households to correctly use the kerbside collection system provided by the local authorities by separating all their recyclable materials into their recycling sack and composting all kitchen and garden waste. Participants were invited to a composting workshop

run by the London Community Recycling Network to enable them to make the most of their home composting equipment. The workshop was attended by four households.

Challenge two focused on educating households how to reduce their waste by preventing junk mail, shopping smarter and reusing shopping bags. Participating households were also provided with £50 vouchers from the Natural Collection to enable them to buy recycled and more sustainable products.

The final challenge focused on reuse, for example donating or swapping unwanted items, buying second-hand items and recycled products. The project team provided households with advice and information on charity shops in their area and one of the participants, a new mother, became particularly interested in reusable nappies, prompting her to become involved in a local nappy network. Another participant also held a very successful 'Reuse Party' with friends and family.

Participants were given equipment and materials that were considered to be useful to successfully complete the challenges, such as kitchen caddies, spring balances, 'No junk mail' and 'Return to sender' stickers and reusable cotton bags. Participants were also able to select other optional equipment and materials including composting bins and wormeries, can crushers and dual indoor bins.

To support the participating households and reinforce messages about recycling and sustainable waste management, the WNtW Challenge also involved a number of additional activities such as site visits to Mucking Landfill Site and to Grosvenor Materials Recycling Facility.

The project was concluded by a final publicity event held at the London Eye. All project participants were invited to a ride in a private capsule, which had been hired for the occasion. This kind of event was chosen both to reward the participants for completing the challenge and to maximise attention by the Western Riverside and London media.

Monitoring & evaluation
As the project aimed to test the effectiveness of a range of household waste prevention initiatives and engagement techniques, evaluation formed an integral part of the project. Evaluation and monitoring methods adopted during the campaign were selected to measure the impact that waste prevention activities had on changing waste behaviour and overall waste output.

The four PSOs, who delivered the participant engagement component, were trained in undertaking waste audits. Each household was audited by one of the PSOs prior to the first challenge and after the completion of the final challenge. This was to assess the change in the types of waste disposed of by the participants, evaluate their recycling performance and find out which kinds of materials were still deemed difficult to recycle or reduce. Waste audits were also used to determine contamination, which was defined as any items not included in the council's recycling collection and was measured as a weight-based percentage.

Initial waste audits were performed over two days by different staff members and as a result some inconsistencies occurred in the recording of data. Where there was incomplete data, this was removed from the calculations to prevent bias. In addition, waste audit collection weeks for both audits fell on a Bank Holiday weekend. An average was therefore taken for households away on holiday for any days of the collection week.

Participants were also asked to weigh their residual waste and recyclables every time they put a bag out for collection to monitor any changes over the three challenges. However, participants did not always remember to weigh their waste, leading to inconsistency in the data obtained. As a result, this method was not considered effective at monitoring waste production levels over the campaign and was not included in the overall report.

All participants completed a questionnaire survey prior to the first challenge, which focused on their knowledge of and attitudes to recycling and waste prevention as well as waste and shopping habits. This survey was repeated after the final challenge. Participants were also asked to complete an evaluation questionnaire for each challenge to provide information on the effectiveness and uptake of specific activities and to monitor any changes in attitudes and behaviour of participants as a result of the individual challenges. It was not possible to obtain a complete set of attitudinal data and evaluation data, however. While the first pre-survey questionnaire was administered face-to-face, the post-survey was posted to participants for self-completion. As a result, three households did not return the second questionnaire, the final evaluation or the monitoring and evaluation form. Results from the questionnaire surveys were only included in this report if both sets of data were obtained. For all other data, results were based on the average of responses that were received.

Two envelopes were provided to each household to collect all junk mail received for each month of the challenge. Envelopes were weighed to evaluate any changes to the volume of mail received. However, this method of evaluating the volume of junk mail proved to be ineffective. Some households had already signed up to the MPS and had a 'No Junk Mail' sticker on the door so this measurement was not applicable to them. Participants also

forgot to collect all their junk mail. An average was calculated from those who successfully collected their junk mail, for all other households.

As the monitoring activities formed part of the PSOs' and Waste Prevention Officer's staff time, no separate budget allocation was made and no data is available on the amount of time spent on monitoring and evaluation activities.

Project results
Although the waste reduction theme was only introduced in week 3 of the challenge, almost all participating households reduced their total waste arisings over the duration of the project, from a total of 173kg per week at the outset of the project to 113kg after the completion of the final challenge.

There has been a significant change in the proportion of waste recycled, with participants recycling an average of 58 percent at the end of the project compared to an initial 39 percent. Contamination also decreased significantly from 7 percent at the beginning of the project to 1.7 percent at the end.

Other behavioural impacts the project has had include a reduction in the use of one-way plastic carrier bags (62 percent to 7 percent) and a corresponding increase in 'Bags for Life' being used to carry shopping (93 percent at the end of the project).

Data was monitored for the duration of the campaign, i.e. an eight-week period. While the data gathered showed significant changes during this time, the short duration of the initiative clearly does not allow any assumptions to be made in terms of sustained long-term behaviour change.

From a practical delivery perspective, the project also required greater than anticipated input from the PSOs. For example, fewer home visits per household had been expected to be carried out, but the number was increased as a result of requests for greater support from the participating households.

However, the results of the project demonstrated that by providing ongoing hands-on support and relevant advice, behaviour change can be achieved. The local community focus of the initiative was particularly important, as the participants' achievements serve as an example of what other residents in the borough can do to reduce their own environmental impact by making simple changes to their daily lives.

Waste prevention initiative 2: 'Test the water'
Project methodology
'Test the water' is a waste prevention campaign specifically designed to raise public awareness of the benefits of tap water. Its aim was to reduce plastic bottle waste by promoting tap water as a more environmentally sustainable and equally healthy alternative to bottled water and to test whether this was effective in reducing overall waste output and changing waste behaviour.

The campaign was developed with the intention of recruiting up to 200 volunteers to participate in a two-week long challenge to switch from drinking bottled water to only tap water. The challenge was aimed at regular bottled water consumers only, which for the purpose of this initiative was defined as those drinking more than 2 bottles per week. As the campaign focussed on signing up regular bottled water drinkers only, the impact of the campaign on consumption patterns and waste reduction behaviour was solely based on one select group of the general public and should not be taken as an indication of overall trends of the overall community.

Due to Western Riverside project delivery timescales, the recruitment roadshows had to be held within a period of two and a half weeks. In addition, staff availability over this time was only nine days, thereby reducing the number of events it was possible to hold. As a result, a lower number of volunteers than initially envisaged were recruited to participate in the challenge. Furthermore, staffing issues meant that three recruitment events where not fully staffed. This reduced the number of taste tests carried out and consequently the number of challenge participants recruited.

Participants were asked to provide an email address so that they could gain the full benefit of the email alerts sent throughout the two-week challenge. However, overall, only half of those who initially signed up to the challenge provided working email addresses. Participants without email access did not have any interaction with the project team except a phone call at the end of the challenge to complete the final questionnaire. These differences in interaction may have influenced the continued involvement by participants and their successful completion of the challenge.

Monitoring & evaluation
The aim of this aspect of the Reduce M&E project was to trial specific waste prevention initiatives and develop appropriate measurement tools suited to the initiatives.

The 'Test the Water' initiative had three key objectives:

- to investigate participants' propensity for switching from bottled to tap water
- to investigate bottled water consumption patterns
- to raise awareness of other waste prevention activities

The most effective way of monitoring these objectives was deemed to be by undertaking before and after questionnaire surveys with challenge participants to establish attitudinal and behavioural change.

Due to the limitations of this initiative in terms of duration and staff resources available, it was anticipated that the monitoring methodology would have to rely partially on self-monitoring by the challenge participants. The survey therefore had to balance the requirements of being rigorous while not being too onerous to be completed by the participants. The survey questions also had to be phrased to be easily understood without requiring further clarification.

Initial survey
The initial questionnaire survey was completed by all challenge participants, who agreed to give up bottled water for the duration of the challenge (two weeks). It was carried out by PSOs at the recruitment events and results were recorded directly onto a PDA (Personal Digital Assistant) and collated into a database.

The initial survey consisted of a series of short multiple choice questions covering the following:

- bottled water consumption patterns
- reasons for drinking bottled water
- tap water consumption
- disposal of plastic bottle waste

Post-challenge survey
The post-challenge survey was self-completed and sent via email, at the end of the two week challenge, to all participants with an email address. Participants without an email address were telephoned by the Waste Prevention Officer, who carried out the survey over the phone.

The post-challenge survey aimed to establish the individual experience of the participants during the challenge including several additional questions on waste prevention:

- Whether participants were successful in giving up bottled water for the duration of the challenge
- How much bottled water they consumed during that period and why
- Daily tap water consumption
- Impact on overall water consumption
- Disposal of plastic bottle waste
- Whether the challenge had made participants think about other ways of preventing waste in the home
- If so, which kind of waste prevention activities they undertake
- Whether they will continue drinking tap water instead of bottled water
- Which were the main barriers to drinking tap water
- Involvement of others in the challenge

Only 30 post-challenge questionnaires were received back or completed over the telephone. This constitutes a response rate of less than 20%. Thus the results outlined below only provide a limited snapshot of the impact that the initiative has had.

Project results
As a pilot project, TtW aimed to evaluate whether a single waste prevention activity could be successful at changing waste behaviour and reducing overall waste output. It also set out to evaluate whether a single waste prevention message would result in the uptake of other waste prevention activities by challengers involved in the campaign. The project was developed to achieve three key objectives; to investigate bottled water consumption patterns, to convince bottled water drinkers of the benefits of tap water and to raise awareness of waste prevention activities.

The results of the campaign demonstrate that TtW was successful in achieving its aims and objectives. In all, 654 taste tests were performed and 166 people signed the pledge to give up bottled water for two weeks. Taste tests were offered to prove that most people could not tell the difference between tap and bottled water. Only 22% of people taking the test could tell the difference, which surprised many participants and proved to be an effective method of convincing them that they do not need to drink bottled water.

The 'pledge' of giving up bottled water for two weeks was offered to highlight to regular bottled water drinkers the many other benefits of tap water. 83% of participants taking the pledge were convinced of the benefits of drinking tap water and will continue to give up bottled water, largely because it saved them money and they were doing their bit for the environment. This has had a positive influence on waste behaviour and overall waste output as more than three quarters of participants claim that they now produce less overall rubbish as a result of the campaign and 73% of participants now think about other waste prevention activities they can do in the home to reduce their rubbish.

Due to the limitations experienced, it is recommended that for future campaigns the length of project duration is extended to include more time for monitoring and a longer period for the challenge of giving up bottled water. It is also recommended that participants are required to give more personal details to include a working email address and telephone number and home or work address. It might also be more beneficial to telephone participants throughout the challenge rather than relying solely on email addresses for interaction.

In summary, engaging with the public worked extremely well, and the public were receptive to the message. Follow up and the provision of contact details are issues that need to be addressed for the future. The campaign had an impact, and if reinforced could make a very positive contribution to behaviour change and waste reduction in this field.

For both projects, staff and funding constraints as well as tight delivery timescales meant that the scope of the project was limited. The results therefore only provide a snapshot of the behaviour change potential resulting from personalised interaction with householders but cannot demonstrate long-term sustained behaviour change.

Phase C: Comparing UK and international experience in measuring waste prevention

Wider UK experience

The primary and action research undertaken as part of this project has shown that measuring waste prevention remains a challenge both on a theoretical, but particularly on a practical level.

As outlined in this report, in the UK, to date waste prevention initiatives have predominantly revolved around the types of initiatives outlined in Table 1. Monitoring and evaluation are undertaken by all initiatives reviewed in this report, but there are wide variations in the scope and scale. Generally, the extent and design of monitoring regimes is determined by the purpose of the initiative.

Two of the case study projects by Hampshire County Council and Dorset County Council have trialled innovative approaches to waste prevention initiatives and the measurement of their impact. While these projects are not due to report their findings until early 2008, some preliminary comments have been made available for inclusion in the present report.

Dorset County Council, which trialled initiatives in two pilot areas and measured their impact using control areas of similar socio-demographic make-up, highlighted the following 'lessons learnt' as a result of their project: (8)

- Monitoring waste reduction properly is expensive and requires a longer period of time to confirm impact
- While the 'Acorn' classification (A Classification of Residential Neighbourhoods) is a useful tool for marketing purposes, it is not entirely representative of waste behaviour
- Pre-campaign surveys give a good indication to the type of campaign that will work
- Promote reduction *topics*, e.g. 'junk mail' rather than using the words 'reduction' and 'waste'
- Reduction campaigns must be ongoing to have a continuing impact

European experience

Waste Watch also collaborated with Belgian NGO Espace Environnement in an effort to exchange experience and replicate and adapt approaches which have proven successful elsewhere. Espace Environnement has been engaged in practical waste prevention work for a number of years and has developed a range of successful approaches. Most notably, the NGO has worked with over 80 retailers across Belgium and France to introduce on-shelf labelling for products that generate less packaging waste.

Espace chose 26 product pairs (each of the same brand), based on the frequency of purchase, number of units purchased per month and availability of a less packaged alternative. As shown in the photos below, blue labels were placed around the price label to indicate that one of each pair generates proportionally less packaging than the other, either through buying larger or bulk quantities (e.g. coffee), choosing refillables or concentrates (e.g. liquid detergents), choosing glass containers over plastic and buying items with returnable packaging (e.g. soft drink bottles).

Source: *Evaluation quantitive d'un outil de sensibilisation: les etiquettes 'Achats futes, dechets limites'*, Espace Environnement, March 2005

Nine stores participated in the labelling exercise, with each store displaying the labels for 26 product pairs for one month. In addition, 52 supermarkets were recruited to act as a control sample with no labelling taking place in these outlets.

Through monthly sales records for individual products, which made available by all the supermarkets participating in the study, Espace Environnement were able to determine the impact of this initiative. Four indicators were developed as follows:

- ***Indicator 1 – Number of units sold of the less packaged alternative***

$$I_1 = \frac{\text{Units sold in same month in 2003}}{\text{Units sold in same month 2004}}$$

- ***Indicator 2 – Number of units sold of less packaged alternative compared to products with more packaging***

$$I_2 = \frac{I_1 \text{ Less packaged product}}{I_1 \text{ More packaged product}}$$

- ***Indicator 3 – Ratio of units sold of less packaged products in labelled and non-labelled stores***

$$I_3 = \frac{I_1 \text{ (Labelled stores)} - I_1 \text{ (Non-labelled stores)}}{I_1 \text{ (Labelled stores)} - I_1 \text{ (Non-labelled stores)}}$$

- ***Indicator 4 – Ratio of units sold of less and more packaged products in labelled and non-labelled stores***

$$I_4 = \frac{I_2 \text{ (Labelled stores)} - I_2 \text{ (Non-labelled stores)}}{I_2 \text{ (Labelled stores)} - I_2 \text{ (Non-labelled stores)}}$$

A rise in the numbers of labelled products was considered as a 'positive', whereas the inverse was considered 'negative'. Using this classification and the formulae outlined above Espace arrived at the following results for Indicator 4 (9):

Table 5 – Results recorded for Indicator 4 by Espace Environnement

Location	Number of			Percentage	
	Positives	Negatives	without change	Positive	Negative
Couillet	12	7	7	63.2	36.8
Courcelles	15	3	8	83.3	16.7
Dampremy	12	7	7	63.2	36.8
Gosselies	12	6	8	66.7	33.3
Marchienne-au-Port	12	7	7	63.2	36.8
Monceau-sur-Sambre	11	8	7	57.9	42.1
Mont-sure-Marchienne	11	8	7	57.9	42.1
Roux	11	10	5	52.4	47.6
Ville de Charleroi	16	6	4	72.7	27.3

Source: *Evaluation quantitive d'un outil de sensibilisation: les etiquettes 'Achats futes, dechets limites'*, Espace Environnement, March 2005

Espace reported that the overall analysis conclusively showed that, in comparison to the control group of 52 stores where no labelling took place and the same period in the previous year, there was a noticeable growth in sales of the labelled products as illustrated by the figures provided in Table 5.

Waste Watch experience

Waste Watch attempted to implement a similar initiative with retailers across the London Western Riverside region. However, it was difficult to engage effectively with individual supermarket branches for a number of reasons. Issues that came to light were:

- the autonomy of local stores to act without the authority of the head office
- commercial confidentiality
- concerns about endorsing one product over another

This highlighted significant cultural differences between the UK and Belgium and that a multitude of factors need to be taken into account when transferring approaches from one country to another.

The policy context also plays an important role in this area of waste management in that many European countries, including Belgium, have well-established 'pay as you throw' schemes for household waste, which frame both the official debate on waste prevention and individual householders' actions.

The London trial projects undertaken by Waste Watch, described in detail in Annexes 1 and 2, attempted to reduce waste arisings at source by directly engaging with householders on the entire spectrum of waste prevention initiatives outlined above, as well as on the single issue of plastic bottle waste.

As outlined in the individual project reports, a number of barriers similar to those reported by other projects were encountered in measuring the outcomes of these projects. These included having to rely on data gathering by volunteer participants and on surveys of claimed behaviour.

USA experience

The United States Environmental Protection Agency (EPA) measures waste prevention or 'source reduction' at national level by linking waste generation to Personal Consumption Expenditure (PCE).(10)

This methodology focuses on waste generation *rates*, rather than absolute values. By using PCE waste generation can be linked to growth in consumer spending. PCE was selected because it is most closely associated to waste generation. This is both on an intuitive level because 'consumer spending reflects the goods and products, including food, and their packaging that are purchased, used, and ultimately discarded as MSW,' (11) and because PCE was found to have the closest statistical correlation to waste generation in comparison to population (waste generated per capita) and GDP (waste generated per million dollars spent by consumers). PCE is also more adequate because per capita generation of MSW is not constant over time as a GDP link might imply, but is a direct result of some type of economic activity.

Using information for a baseline year, the EPA measures source reduction as the difference between the amount of waste that would have been generated in a given year, had the relationship between waste generation and consumer spending remained the same as in the base year, and the actual amount of waste generated in the given year.

Source reduction in X year =

Projected waste generation (using base year generation rate) – Actual waste generation in X year

An advantage of using this measure is that source reduction for specific 'functional product groupings' or market activity, rather than purely for materials, can be measured. This is helpful in establishing whether material

substitution, such as replacing aluminium with glass packaging or vice versa, has led to source reduction or expansion within a particular market or production sector.

While this approach to measuring waste prevention is not suitable to measure the impact of local level waste prevention campaigns focused on specific types of household waste, this kind of measurement might be found effective in overall monitoring of larger scale regional or national campaigns. A growing number of UK waste partnerships, such as Somerset Waste Partnership, Kent Waste Partnership and Project Integra in Hampshire, are developing coordinated waste prevention and behaviour change strategies which target the whole spectrum of municipal waste and may benefit from linking waste generation with PCE on a county or regional level.

In a response to the consultation on the European Union *Thematic Strategy on Waste Prevention and Recycling*, the European Environmental Bureau (EEB) suggests that targets are set for waste prevention similar to those for recycling and recovery, together with legally binding implementing measures. (12) To monitor progress against these targets, a set of indicators should be developed. Following the OECD's 'Pressure-State-Response' model, EEB proposes a range of indicators as follows.

These indicators include both generation and avoidance potential. The latter would be measured through waste composition analysis as is already undertaken by many local authorities to monitor the reduction of recyclables wastes present in waste for landfill.

Table 6 – Pressure indicators proposed by EEB

TITLE	OBJECTIVE(S)	UNIT	CALCULATION METHOD
TARGET INDICATOR *Direct pressure indicator MSW*[14]	Measure the evolution in quantities of municipal solid waste	kg/head/yr	Weight of MSW per capita
Decoupling indicator "MSW"[15]	Estimate whether consumption tends towards the decoupling sought by the EU	Index[16]	Annual weight divided by consumption expenditure of households and administrations[17] divided by the population
TARGET INDICATOR *Direct pressure indicator "industrial waste"*[18]	Measure evolution of industrial waste quantities	kg/head/yr	Weight of industrial waste / population
TARGET INDICATOR *Decoupling indicator for industrial waste*	Measure whether the prevention policies are leading to the GNP/waste decoupling sought by the EC (6th EAP)	Index	For each sector, per year: weight of waste / units or revenue of sector, divided by the population
TARGET INDICATOR *Direct pressure indicator "hazardous waste*[19]	Measure the evolution of hazardous waste quantities	kg/year	Weight of hazardous waste produced[20]
Avoidance potential indicator for MSW[21]	Measure in certain representative areas (rural, urban…) waste which could "easily" be avoided if the citizens were well aware	Number of units (weighted)	**See main text.** Characterisation of certain avoidable products in the waste bin.
Avoidance potential indicator for industrial waste[22]	Measure for a representative panel of volunteer firms from different sectors of activity, waste avoided by use of alternative measures[23]	Number of units of product or substance avoided	Measure the tons avoided by the panel, and estimate economies, and extrapolate to the national market (cf. Czech experience)
Resource savings – reduced abiotic material flows	Traditional material flows accounting – mineral, metals etc	Tons	See EEB paper on thematic strategy on natural resources [24]
Resource savings – reduced "BAD quality = non certified" biotic material flows	Material accounting distinguishing between certified biotic flows and non-certified biotic flows – wood etc	Tons	See EEB paper on thematic strategy on natural resources
Dematerialisation of consumption indicator (could also be considered a response indicator)	Estimate evolution in purchasing behaviour	EURO	Total spent on private consumption per capita divided by total spent on sustainable products or services (list of "sustainable purchases" to be made with NGOs & Member States)

Source: *Working document: Elaboration of EEB proposals for concrete EU level waste prevention measures to be committed to in the Thematic Strategy on Waste Prevention and Recycling*, European Environmental Bureau, April 2004, pp. 14 – 15 (**N.b.** reference to 'main text' refers to the original document rather than the present document.)

EEB suggest that for household (and commercial) waste, a consensual list of products, whose presence could 'easily' be reduced by using alternatives, could be drawn up and progress monitored against this list. Examples of these are as follows:

- Wearable clothing
- Biowaste easily compostable at home
- Drinks containers of less than 50 cl capacity
- Unopened food
- Supermarket bags
- Construction material in good condition, even in very small quantities
- Batteries, medicines and their packaging, other hazardous waste
- Toys in good condition
- Recent books
- Single-use products (if multiple use equivalents exist), including nappies

State indicators
Similar to the OECD's position, the EEB concludes that state indicators are difficult to apply in the context of waste prevention and as they usually involve complex, and subsequently costly, extrapolations to allow the measurement of (indirect) emissions and impacts as a result of the avoidance policy. For this reason, the EEB, as the OECD, do not present any state indicators.

Response indicators
Here the EEB proposed a range of interesting indicators, which extend beyond the usual hard measurements.

EEB places particular emphasis in stakeholder participation in waste prevention schemes, as behaviour change is a prerequisite for waste prevention. Indicators here may include resident's awareness of the waste prevention strategy, intention to change production patterns, shopping and use habits and actual changes in behaviour. EEB propose that the latter is to be measured through surveys, i.e. reported behaviour. However, it could also be observed through trials or sample populations.

Similar views on the importance of waste minimisation have been expressed in the UK. For example Mike Read of Beyond Recycling argues that waste prevention, and associated targets alongside those for recycling, must now be placed at the top of the agenda by central government and local authorities as recycling alone does not offer a long-term solution to the waste and resource management challenge facing the UK.

Table 7 – Response indicators proposed by EEB

TITLE	OBJECTIVE(S)	UNIT	EVALUATION METHOD
Political will indicator[25]	Estimate political commitment of States	YES / NO YES / NO %	- Plans established with deadlines and reporting obligations? - Targets fixed, backed up by legal and regulatory measures? - Quantitative and qualitative projections of waste trends (waste prevention) - Prohibition of hazardous substances - % of the population whose local authorities have translated national targets into prevention plans - % of the population covered by a PAYT system
Indicator of resources mobilised	Measure the means mobilised by the Member States	EURO	Total annual sum per head dedicated to prevention (budgets, salaries… for State and local authority interventions) Level of activity of reporting to public on waste prevention
Indicator of the dynamic of the policy	Measure the number of stakeholders concerned by the prevention programmes	%	% of firms participating in prevention programmes % of administrations participating
Indicator of the breadth of the policy	Estimate the capacity of States to generate interventions covering the globality of the "production-consumption" chain	%	- % of firms having committed to an eco-design programme - % of sustainable purchases / total public purchases - % of shops or businesses having run, in that year, a campaign in favour of sustainable consumption - % of inhabitants practising home composting
Indicator of stakeholder participation	Estimate (by surveys) the modifications in stakeholder behaviour	%	**See following paragraph**

Source: EEB, ibid. pp. 16-17 (**N.b.** reference to 'following paragraph' refers to the original document rather than the present document.)

The Way Forward

We may have to accept that it is unrealistic to expect the same level of evidence for waste prevention as for recycling. However, the difficulties encountered in measuring waste prevention should not form a barrier to requiring progress al local and national level.

Indeed, an increased focus on waste prevention would make a more explicit link between the waste management and sustainable consumption and production agendas. Projects such as that undertaken by Espace Environnement demonstrate to consumers that their purchasing decisions directly influence the amount of waste they produce.

It also highlights that making headway into achieving waste prevention requires cooperation between a wide range of actors, including producers, retailers, public institutions, NGOs and consumer bodies, and a multi-pronged rather than a single issue approach.

References to published material

9. This section should be used to record links (hypertext links where possible) or references to other published material generated by, or relating to this project.

1 OECD, *OECD workshop on waste prevention: towards performance indicators, (8-10 October 2001, OECD Headquarters, Paris)*, August 2002, p. 12

2 European Commission, *Communication from the European Commission: Towards a thematic strategy on the prevention and recycling of waste*, Brussels, May 2003, p. 16

3 National Resource and Waste Forum, *Household waste prevention toolkit*, August 2004

4 OECD, *Towards waste prevention performance indicators,* September 2004, p. 67

5 ibid.

6 National Resource and Waste Forum, *Household waste prevention toolkit*, August 2004, p. A-17

7 Dr Julian Parfitt, *Home composting versus 'collect and treat' options for biodegradable municipal wastes ~ towards a more level playing field?*, April 2006, p.7

8 Communication with Marten Gregory, Waste Reduction Officer, Dorset County Council, December 2007

9 Espace Environnement, *Evaluation quantitive d'un outil de sensibilisation: les etiquettes 'Achats futes, dechets limites'*, March 2005

10 Environmental Protection Agency (USA), *National Source Reduction Characterization Report – For Municipal Solid Waste in the United States*, November 1999

11 Ibid, pp. 8-9

12 European Environmental Bureau, *Working document: Elaboration of EEB proposals for concrete EU level waste prevention measures to be committed to in the Thematic Strategy on Waste Prevention and Recycling*, April 2004

13 Mike Read (Beyond Recycling), *Why we must go beyond recycling,* May 2007