

WR1204

Household Waste Prevention Evidence Review: L2 m5 – Policy Measures

A report for Defra's
Waste and Resources Evidence Programme

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L2 m5 Policy measures: *encouraging*

This paper explores the various policy measures uncovered by the evidence review which encourage waste prevention behaviours, under the following headings:

- Existing policies in Waste Strategy 2007
- Coverage of the evidence review
- Policy measures to encourage waste prevention action by stakeholders
- Policy measures for encouraging households to adopt waste prevention behaviour
- Possible impacts of policy measures
- Discussion of policy implications and issues

The selection of policy measures included in the review was shaped by what was found in the evidence base. The review is not a statement of policy; and the inclusion of or reference to any given policy should not be taken to imply that it has, or will be, endorsed by Defra as an option for England.

References for this paper are included at the end of the document: a full bibliography of all evidence sources included in the review is given in module [L3 m8/2 \(D\)](#). Modules providing further insight or detail in relation to policy measures are:

L1 m1 Executive Report, section 5	L2 m1 Technical Report, section 5 L2 m2 Policy context	L3 m5/1 (T) Future waste growth, modelling & decoupling ¹ L3 m5/2 (D) International review L3 m3/7 (T) Attitudes & behaviour –everyday actions around the home <i>(includes information on junk mail and carrier bags)</i>
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(D) denotes a briefing paper providing more background detail; (T) indicates a short focused topic briefing

1.1 Existing policies in Waste Strategy 2007

Waste Strategy 2007 (Table 8.6 p. 111) highlights the following policy measures that may encourage action on waste minimisation and prevention²:

- Landfill Allowance Trading Scheme (LATS);
- Allowing councils to incentivise recycling through household financial incentives;
- Performance indicators for councils;
- Landfill tax escalator;
- Restrictions on landfill;
- Material- or sector-based voluntary agreements;
- Implementation of EU producer responsibility directives;
- Government waste management and product procurement targets;
- New packaging targets after 2008; and
- Guidance and awareness measures, including through more visible recycling facilities in public places, activities with schools and use of voluntary sector.

¹ Reference to the impact of the growth of single-person households on the increase in waste arisings is made in this paper. It is discussed further in Brook Lyndhurst, 2007, WR0104; AEA et al., 2006, WR0107 and AEA Energy and Environment and the Future Foundation, 2007, WR0107.

² It is acknowledged that many of these measures relate to recycling and are therefore more pertinent for waste minimisation rather than prevention. Nevertheless they are highlighted in Waste Strategy 2007 as measures contributing to waste prevention even if at times indirectly.

There is no bespoke waste prevention target as such; but a greater focus than in previous policy is attributed to waste prevention through a new aspirational target to reduce the amount of household waste not re-used, recycled or composted by 50% from 450kg per person in 2000 to 225 kg in 2020. This is supported by new national performance indicators for local authorities (including for residual waste, and inclusion of reuse in diversion measures) which should encourage local authorities to focus on prevention as well as other landfill diversion options (see [L2 m2](#)).

1.2 Coverage of the evidence review

This review has sought to assemble the evidence that could be useful to the formulation of future policy; and to identify gaps in that evidence. The selection of policy measures included in the review was shaped by what was found in the evidence base. The review is not a statement of policy; and the inclusion of or reference to any given policy measure should not be taken to imply that it has, or will be, endorsed by Defra as an option for England. Future policy will need to be developed from an evidence-based platform; and it is hoped that this report provides such a platform.

The review was particularly concerned to find and examine documentary evidence that had investigated policy options that could have an impact on households or household waste prevention. These options could operate either directly upon householders; or indirectly, via targets and incentives that would influence the behaviour of stakeholders (local authorities, retailers or producers) and the products/services that they offer to consumers.

The review did not address broader policy measures, such as the landfill tax escalator or guidance and awareness measures listed above (as their focus is on other waste streams - e.g. business and school waste). The review included measures that:

- already operate in England but where evidence suggests that impact could be greater if implementation mechanisms are modified;
- are in place in other countries but not in England;
- are not in place anywhere in Europe but which one or more studies reviewed suggest might offer benefits as part of a waste prevention portfolio.

The review covers policies which would need to be co-ordinated at national level, and policies where local authorities would need to take a lead in implementation. The selection of policy measures included in the review was shaped by what was found in the evidence base.

It is also important to bear in mind the agreed scope of the review. Its purpose was to consolidate secondary evidence rather than to undertake primary investigation of the impact of policies, or to fill gaps in such data. **Very few studies** were found that explored the impact of policy measures, either singly or comparatively, though there is a great deal of descriptive information on what policies exist (see, for example, the International Review [L3 m5/2 \(D\)](#)). The most extensive source is Eunomia and the Environment Council's work on Household Waste Prevention Policy Research commissioned by Defra WREP (Eunomia Research and Consulting et al., 2007, WR0103). This is used as a central source in this paper, supplemented by the small amount of other secondary evidence located (including in the international review for this study, [L2 m5/2 \(D\)](#)).

The Eunomia et al. study conducted a review of how a variety of policy options might affect household waste prevention, or could be expected to influence it if introduced into the UK. The study drew on a

consultative process to identify a selection of 11 policies for detailed analysis. Analysis included quantitative estimates or projections of prevention potential. Other studies tended to cover one topic in depth (e.g. Gordon Mackie Associates Ltd, 2007), or to evaluate the potential of a number of policies based on best practice around the world (e.g. Salhofer et al, 2008)

The policy options identified in the evidence review are considered in the remainder of this paper under three headings:

- *Indirect - policy measures that could encourage waste prevention action by stakeholders* – those measures that are likely to send signals to producers, retailers and local authorities to design products and services that help households to prevent waste, and thus have an *indirect* effect on household waste;
- *Direct - policy measures for encouraging households to adopt waste prevention behaviour* – those measures that could have a *direct* influence on householder behaviour;
- *Impacts* – looking at the possible impacts of different policy measures, both direct and indirect.

1.3 Policy measures to encourage waste prevention action by stakeholders

What are the options available and who needs to be involved?

Table 1 outlines the policy options reviewed and who would need to be involved in implementation. An asterisk besides the policy option indicates that it was one of the measures assessed in detail by Eunomia et al (2007, WR0103). It should be noted that mandatory deposit schemes for reusable packaging were excluded from the scope of this study because they are covered in other Defra research³.

The status of the material in the table should also be recalled: the table presents information on a series of policy options derived from the research evidence reviewed. Inclusion of a policy measure in this evidence review should not be taken to imply that it has been or will be endorsed by Defra as an option for England. Further, in many cases Government provides a suite of measures or a 'toolkit' of options, from which local authorities can then select those most suitable for dealing with the challenges they face. Having provided the tools, Defra does not seek to force their take-up by authorities, preferring that they make decisions about what will work for them locally.

Policy option	Status	Who needs to be involved?
Home composting inclusion in LATS*	Under investigation	<ul style="list-style-type: none"> • National government • Local authorities • Environment Agency • WRAP • Devolved administrations • Households
Local authority targets for waste prevention, with a residual waste levy*	<p>Waste Strategy outlines target of reducing household waste not re-used, recycled or composted by 50% (from 450kg in 200) to 225kg per person in 2020 <i>Not a waste prevention target but a waste reduction target</i></p> <p>Some local authorities/regional partnerships are setting targets in plans (e.g. Kent)</p>	<ul style="list-style-type: none"> • National government • Local authorities • Environment Agency

³ ERM for Defra (2008), Review of Packaging Deposits Systems for the UK. WR1203.

Extended product warranties*		<ul style="list-style-type: none"> National government Manufacturers Retailers Reuse networks (e.g. Belgium)
Stimulating reuse of durable goods*	Re-use framework has been set up in Scotland Capacity building of third sector (reuse & recycling) through Defra/WRAP supported REconomy Community Interest Company	<ul style="list-style-type: none"> National government Local authorities Third sector agencies (e.g. FRN, CRNs, charity shops) Community waste sector Consumers WRAP
Minimum standards for appliances, including requirements for efficiency in product design training*		<ul style="list-style-type: none"> European Union National government Manufacturers Trading Standards Higher education WRAP
Mandatory use of rechargeable batteries in new products*	Ongoing implementation of EU Batteries Directive	<ul style="list-style-type: none"> National government Manufacturers/producers Retailers Importers
Policy option	Status	Who needs to be involved?
Producer responsibility schemes*	<p>Implementation of WEEE (Waste Electric and Electronic Equipment) Directive and other EU producer responsibility directives</p> <p>May have limited potential to influence household behaviour directly; main influence through changes in supply of products and infrastructure (e.g. reuse services)</p>	<ul style="list-style-type: none"> National government Producers WRAP Packaging industry Consumers
Reducing quantities of junk mail*	<p>The producer responsibility agreement signed in July 2003 between Defra and Direct Marketing Association (DMA) commits the industry to increase the proportion of direct marketing material (specifically addressed and unaddressed mail, and loose inserts in newspapers and magazines) going to recycling.⁴</p> <p>Though the Mailing Preference Service (MPS - opt-out for addressed mail) pre-dates this agreement its promotion is part of it.</p> <p>Waste Strategy 2007 outlined that the DMA would develop an opt-out system for unaddressed mail as well – this has taken the form of Your Choice launched in April 2008.⁵</p> <p>As outlined in Waste Strategy 2007 Defra and DMA jointly are currently exploring the potential of and alternatives to an opt-in system.⁶</p>	<ul style="list-style-type: none"> National government Royal Mail⁷ Direct Marketing Association Local authorities Households/Consumers Business Waste management sector
Collaborative procurement*	In the public sector 'joint procurement' and 'green procurement' is in practice (e.g. London Mayor's Green Procurement Code, Defra's procurement commitment)	<ul style="list-style-type: none"> National government Local authorities Contractors Manufacturers

⁴ <http://www.dma.org.uk/information/env-facts.asp> Accessed 28.04.2009

⁵ <http://www.dma.org.uk/sectors/d2d-choice.asp> Accessed 07.05.2009 This initiative went through a slow launch so at this point in time no impact data is available. It is acknowledged that there may be potential conflicts with communications material sent from Local Authorities to residents with an opt-out system for unaddressed mail. See L3 m3/7 (T) for details on consumer attitudes to junk mail in terms of waste prevention.

⁶ For example, with the launch of Sustainable Mail by Royal Mail which enables direct mailing activities to be more environmentally-friendly by aligning them to the new environmental standard for direct marketing called PAS 2020 launched in January 2009. <http://www.royalmail.com/portal/rm/content?catId=95100768&mediaId=89800754> Accessed on 07.05.2009.

⁷ It is acknowledged that the Royal Mail is not directly involved in the Agreement; it is nonetheless one of the main members of the DMA and it is considered important to include the Royal Mail as a stakeholder in initiatives targeted at reducing quantities of junk mail.

Implementation plans for waste prevention and re-use*	Part of the Waste Framework Directive which has just come into force	<ul style="list-style-type: none"> National government Local authorities Industry Consultants
Landfill Allowance Trading Scheme (LATS)	<p>Has been running since 2005 in England and provides waste disposal authorities an incentive to reduce the amount of biodegradable municipal waste sent to landfill</p> <p>Questions raised by stakeholders in this study as to relative incentives for recycling, reuse, and prevention (e.g. home composting) in overall target and reporting systems in England</p>	<ul style="list-style-type: none"> National government Waste collection authorities Waste disposal authorities Waste industry
Material- or sector-based voluntary agreements	Examples: Courtauld Commitment on packaging and food waste; Defra and British Retail Consortium agreement on reducing carrier bag use	<ul style="list-style-type: none"> National government WRAP Retailers Industry Consumers
Restrictions on landfill	Certain restrictions already apply (e.g. biodegradable municipal waste, hazardous waste) Some other countries have a wider range of material specific bans or outright bans ⁸	<ul style="list-style-type: none"> National government Local authorities
Policy option	Status	Who needs to be involved?
Performance indicators for councils	New local waste performance indicators, including reuse and weight based residual indicator, implications for local area agreements Carbon reduction in national indicator set – may encourage attention on waste and cross departmental working	<ul style="list-style-type: none"> National government Local authorities Reuse sector argues for greater joint working between waste & social services (see L2 m4/1 and L2m1 – chapter 4).

Table 1 Policy measures identified in the literature that can be used to encourage stakeholders to pursue waste prevention action and strategies. *(Please note that inclusion of a policy measure in this evidence review should not be taken to imply that it has been or will be endorsed by Defra as an option for England)*

In addition to the options above, one case was identified where differential VAT is being used (to stimulate reuse activity in Flanders)⁹. The House of Lords inquiry into waste prevention in 2008 similarly recommended VAT reductions for repair; but this is not currently legal in the UK (see L2 m2). In addition the International Review L3 m5/2 (D) highlighted that France is looking to impose a tax on disposable items, something discussed in the stakeholder workshops (see L3 m7/1 (D) Stakeholder views on waste prevention). In France, a 'picnic tax' is proposed on plastic and paper throwaway cutlery, cups and plates as part of drive to cut down on waste. A raft of other 'green' taxes may also be imposed including on batteries, televisions, washing machines and fridges, with tax breaks offered for more environmentally friendly alternatives.

⁸ This currently the subject of Defra-funded research by Green Alliance

⁹ OVAM (2008), Implementation plan for environmentally responsible household waste management – brochure. Accessed 27.04.2009 <http://www.ovam.be/jahia/Jahia/cache/off/pid/176?actionReq=actionPubDetail&fileItem=1591> For further details see L3m5/2 International review.

Case Study Box: Irish Plastic Bag Levy was introduced on the free lightweight plastic carrier bags in 2002. Approximately 1.2 billion plastic shopping bags were provided to residents free of charge (around 325 bags per person per annum) before the Irish Government introduced the 0.15€ per bag tax. The Irish Environmental Protection Agency reports that the levy resulted in a 90% reduction in plastic bag consumption, where shops reported handing out about 277 million fewer bags than normal. The levy now yields 19 million EUR in revenue each year towards the Environment Fund. The revenue is being used for environmental purposes and to mitigate the damage that had already been caused by the plastic bags. It is noted that the immediate impact of the levy on plastic bag saw a drop in consumption almost overnight but that in 2007 statistics indicated that the per capita consumption of plastic bags had started to increase again, consequently, the environmental levy on plastic shopping bags was increased. Opponents to the levy also state that it led to an increase in use of paper bags and purchase of bin-liners. *For more information and references see L3 m5/2 International review*

Barriers, opportunities and enabling conditions

A key barrier for promoting waste prevention identified in the evidence was a lack of co-ordination between the full range of stakeholders that could influence waste prevention.

The organisations identified in table 1, above, could (in theory) extend their policies and initiatives to include some of the options mentioned. However, Eunomia et al. (2007, WR0103, p. 362) suggest that *"there is perhaps a lack of coordination and strategic focus in the delivery of policies and in the deployment of the necessary resources to follow through on their implementation"*. The separation of household from commercial waste appears to be a particular barrier to waste prevention; as does lack of join between product, consumer and waste policy (i.e. whole lifecycle thinking and co-ordination of action through supply chains)¹⁰.

Following the results of a review of the needs and responsibilities of different delivery bodies, Defra is to bring all waste and resource delivery bodies under WRAP so this may go some way in addressing these issues¹¹. It is notable that no other country appears to have developed and fully implemented an integrated waste prevention policy addressing all aspects of the supply chain from production through to disposal. Few examples were cited where there was a specific lifecycle programme for individual materials (which some of the expert stakeholders (see [L2m7](#)) thought should be a priority). Table 2, overleaf, presents an assessment of the specific barriers (current and future), opportunities and enabling conditions for the main strategic level policy measures identified in the evidence base¹².

¹⁰ It should be noted that the Eunomia et al review was completed before the establishment of the Sustainable Products and Materials programme. Supply chain action is being co-ordinated for several key products through Defra's sustainable product roadmaps. <http://www.defra.gov.uk/environment/business/products/roadmaps/>.

¹¹ ENDS Report Bulletin, (March 26th 2009) DEFRA 'merges' waste and resource bodies.

¹² The abbreviations used in the table include: LA: local authority, LATS: landfill allowance trading scheme, BMW: biodegradable municipal waste, WP: waste prevention, Rechargeables: rechargeable batteries, DMA: Direct Marketing Association and MPS: Mailing Preference Service.

Policy option	Barriers	Opportunities	Enabling conditions	Sources
Home composting inclusion in LATS*	<ul style="list-style-type: none"> Current policy is biased towards food waste collection LAs with garden waste collections may find it difficult to divert waste to home composting 	<ul style="list-style-type: none"> Provides a financial incentive for LA to promote home composting Change LATS calculation and evaluate LA BMW directly via compositional analysis Participation in home composting found to have negative effect on residual waste arisings 	<ul style="list-style-type: none"> Including home composting in composting targets would be a start Opt-in home composting scheme Regular contact and feedback Instructions in how to make and use compost Access to face-to-face local advisers 	(Eunomia, 2007, WR0103) (Parfitt, 2006) (WRAP, 2007c)
Local authority targets for waste prevention*	<ul style="list-style-type: none"> Recycling and composting targets provide disincentives for WP Having a national target and any associated levy may mean that some LAs may find targets more difficult to achieve. Data suggests that residual waste per hh is higher in the north than in the south and east.¹³ 	<ul style="list-style-type: none"> Focus for action for supporting initiatives Residual waste targets fairer for multi-occupancy dwellings and flats compared to recycling and composting targets Targets may lead to lifestyle changes 	<ul style="list-style-type: none"> Could start with targets and then move to levies if necessary Range of initiatives needed to support targets Synergy with home composting policy 	(Eunomia, 2007, WR0103)
Extended product warranties*	<ul style="list-style-type: none"> Difficulty in measuring and categorising products for durability Not suitable for high "in-use" impact products 	<ul style="list-style-type: none"> Consumer is guaranteed durability of product 	<ul style="list-style-type: none"> Labelling of products for durability Best addressed at EU level as a compulsory system may be hard to police 	(Eunomia, 2007, WR0103)
Stimulating re-use of durable goods*	<ul style="list-style-type: none"> Consumption trends favours fast fashion Logistical issues with transport and storage Negative reputation and lack of warranties of pre-owned furniture 	<ul style="list-style-type: none"> Between ~15-30% of bulky waste is estimated to be reusable; reuse charities achieve higher rates Only 2-3% of LA bulky waste reused (<i>NB more detailed statistics in preparation by WRAP</i>) Social and economic benefits 	<ul style="list-style-type: none"> Need to raise the social acceptability of second hand goods – economic recession may help Infrastructure for a network of re-use centres (e.g. Flanders) Financial support to third sector organisations – reuse credits or similar plus start up and development finance Better integration of local authority and third sector services to enable more effective capture of bulky waste and a streamlined consumer offer Better links between consumer demand side and collection infrastructure, including consumer-facing promotion to make the system more visible 	(Eunomia, 2007, WR0103) See references used in L2 m4/1 and chapter 4 in L2 m1
Minimum standards for appliances*	<ul style="list-style-type: none"> Consumers and retailers are not familiar with EU Eco-Label – not widely diffused Fees and costs for companies of obtaining label 	<ul style="list-style-type: none"> Product labelling informs consumers' choices Recognised and independent label is more trustworthy than a self-certification scheme 	<ul style="list-style-type: none"> Could be built into the EU Eco-Label scheme 	(Eunomia, 2007, WR0103)

¹³ More information will be provided on these issues in this imminent report: Resource Futures (forthcoming) Municipal Waste Composition: A Review of Municipal Waste Component Analyses WR0119.

Policy option	Barriers	Opportunities	Enabling conditions	Sources
Mandatory use of rechargeable batteries in new products*	<ul style="list-style-type: none"> Switching to batteries with more harmful substances Rechargeables have a shorter shelf-life and discharge more quickly) – not always suitable 	<ul style="list-style-type: none"> Policy option would extend beyond households 	<ul style="list-style-type: none"> Need a law requiring the use of rechargeables or regulations banning use of single-use batteries through EU Batteries Directive implementation Raising targets for battery recycling 	(Eunomia, 2007, WR0103)
Reducing quantities of junk mail*	<ul style="list-style-type: none"> Current voluntary agreements are limited in their ability to prevent junk mail/waste Junk mail is a source of revenue for Royal Mail No support from DMA for MPS details to be on all direct mail No power for LAs in the UK to enforce “no junk mail” stickers, as in other countries 	<ul style="list-style-type: none"> Postage increases on bulk mail Tax or levy on junk mail Legislative backing of ‘no junk mail’ stickers Requiring all direct mail to have MPS details Need Royal Mail to join voluntary agreement 	<ul style="list-style-type: none"> Activist campaigns on limiting junk mail Opt-out option for households Suppression of inaccurate/out-of-date records Simplify the householders’ options Need to provide advice to LAs about communicating with residents without providing junk mail 	(Eunomia, 2007, WR0103) L3 m5/2 (D) International review
Producer responsibility schemes*	<ul style="list-style-type: none"> Monitoring of success is focused on recycling or reuse targets not WP Funds not transferred from producers to LAs 	<ul style="list-style-type: none"> Boost collection, reuse, recovery and recycling Influence product design, leading to less overall waste and less hazardous waste Expected revisions to the WEEE Directive 	<ul style="list-style-type: none"> Re-framing existing packaging regulations to include higher targets and the requirement to fund collections from households 	(Eunomia, 2007, WR0103) See references used in L2 m4/1 and chapter 4 in L2 m1
Collaborative procurement*	<ul style="list-style-type: none"> Limited impact on household waste Difficult to define low waste products as may have high energy use, toxicity, etc. 	<ul style="list-style-type: none"> Environmental criteria plays a role in all phases of public procurement procedure 	<ul style="list-style-type: none"> Works best when applied by a large number of public authorities – procurement networks 	(Eunomia, 2007, WR0103)
Implementation plans for WP *	<ul style="list-style-type: none"> Lack of synergy with recycling and composting targets and plans 	<ul style="list-style-type: none"> Room for innovation as it focuses on ends not means 	<ul style="list-style-type: none"> EU Waste Framework Directive requiring national waste prevention plans Need stakeholder participation and buy-in 	(Eunomia, 2007, WR0103)
Voluntary agreements	<ul style="list-style-type: none"> More conducive to meeting targets than waste reduction May conflict with profitability objectives of retailers 	<ul style="list-style-type: none"> Encouraging competition amongst retailers/manufacturers 	<ul style="list-style-type: none"> Cross-sector partnership working 	L3 m5/2 (D) International review

Table 2 Barriers, opportunities and enabling conditions for policy measures identified in the literature that can be used to encourage stakeholders to pursue waste prevention action and strategies. (Please note that inclusion of a policy measure in this evidence review should not be taken to imply that it has been or will be endorsed by Defra as an option for England)

1.4 Direct measures for encouraging households to adopt waste prevention behaviour

This section is concerned with three types of direct measure that would have an immediate and direct effect on the waste services offered to households, and therefore a likely immediate impact on public behaviour.

The three measures are: waste collection services; incentives; and charging. There has been considerable research into these measures, particularly the latter, and, in the interests of completeness, the findings from the evidence review are presented here.

Inclusion of a policy measure in this evidence review should not be taken to imply that it has been or will be endorsed by Defra as an option for England. As stated previously, the Government provides a suite of measures or a 'toolkit' of options, from which local authorities can then select those most suitable for dealing with the challenges they face. Having provided the tools, Defra does not seek to force their take-up by authorities, preferring that they make decisions about what will work for them locally. For example, powers to pilot financial incentives schemes in England were introduced in the Climate Change Act 2008. So far no authorities have chosen to put forward a proposal for a scheme, though the powers remain on the statute book for use if an authority decides that such an approach is right for its own circumstances.

Waste Collection Services

Measures such as alternate weekly collections and restrictions on residual bin capacity are already allowed in waste policy in England and are widely used. Those LAs with such measures are regularly found in the list of top performing waste authorities (WRAP, 2007).

However, **little was reported in the evidence reviewed in relation to the impacts of collection arrangements alone on waste reduction** (though there was extensive discussion of this in the stakeholder workshops: see L2 m7 and L3 m7/1(D)). Although there is unconsolidated practitioner research on the impacts of collection arrangements, the forthcoming Defra study on the effects of collection services on waste arisings¹⁴ will provide much more definitive evidence.

The same study is also expected to throw light on the kinds of wider and/or enabling conditions that would need to be in place in order for waste collection services to have the kind of hoped-for waste reduction effects. The literature reviewed for the present study – notably Gordon Mackie Associates Ltd, 2007 – identified such conditions as follows:

Service characteristic	Relationship to waste prevention
Incentive scheme ¹⁵	For example council tax rebates, prize draws, cash back incentives, cash rewards or discount. The inclusion of an incentive scheme may encourage new behaviours and/or engagement with new service provision.
Compulsory recycling	May help reduce residual waste and raise awareness of waste more generally.
Alternate weekly collections (AWC)	AWC restricts residual waste capacity and encourages waste prevention, reuse and home composting. AWC may also complement charging as charging tends to reduce the frequency of collections as well (see case study box on Hyndburn Council below)

¹⁴ Resource Futures for Defra WREP (forthcoming), Understanding Waste Growth at Local Level WR0121. For project details see: <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=15487#Description> which explains that "the aim of this project is to develop a set of detailed case studies to allow a more detailed understanding of reported household waste trends over a minimum period from 2001/02 – 2005/06, in relation to local waste policy influences".

¹⁵ See below for a further discussion on incentives.

Civic amenity (CA) sites or Household waste and recycling centres (HWRC) provision and restriction	Some limits on CA waste may be needed to encourage waste prevention rather than displacement e.g. charges at CA sites. This may need to apply to neighbouring local authorities' CA sites also, to prevent waste migration.
Bulky and garden waste collections	Local authorities which apply fees for these collections are already implementing a form of charging, which may be acting to reduce waste.

Table 3 Enabling conditions linked to waste collection services

More generally, and in the absence of definitive data on the matter, the case studies presented below give an indication of current practitioner perspectives on the possible benefits of using reconfigured waste collection services to bring about reductions in waste.

Case Study Box:

Waste Improvement Network conducted an informal survey in December 2008 asking councils to share what they had done to achieve low waste arisings or large decreases in waste arisings on the previous year. Responses suggested there is a genuine minimisation effect associated with introducing alternate weekly collections or other restrictions on residual waste. See Waste Improvement Network (2009).

Hyndburn Borough Council achieved the lowest rate of collected household waste per head across England for the year 2007/8. Hyndburn has reduced its waste arisings figure continuously in the past five years (currently at 293 kg collected residual household waste per person). A number of factors are thought to have contributed to this success:

- Alternate weekly collections with strict limit on bin size
- 'No side waste' policy
- Firm enforcement policy
- Excellent and consistent recycling service (full range of materials collected, available to every household)
- Close work with local schools
- High quality communications and calendars to residents, using national branding
- Support from residents and elected members
- Cross party support placing waste management above politics

<http://www.hyndburnbc.gov.uk/site/scripts/documents.php?categoryID=200084>

Incentives

Although the *principle* of incentives to encourage waste prevention behaviour is acknowledged in the literature, virtually no research was uncovered during the review that formally assessed incentives. Thus, while possibilities such as council tax rebates, prize draws, cash back incentives, cash rewards or discounts have been mooted (Gordon Mackie Associates Ltd, 2007), the review found nothing that related such possibilities either to individual waste prevention behaviours, nor to the potential impact such incentives might have.

Some evidence was uncovered on incentives for recycling - e.g. "Evaluation of local authority experience of operating household waste incentive schemes", AEAT for Defra (2005), and "A brief evaluation of pilot household waste recycling incentive schemes", Harder (2008) - and the UK's first recycling reward scheme (between the Royal Borough of Windsor and Maidenhead with waste management company Veolia Environmental Services and American firm RecycleBank) was due to start on 1 June¹⁶ - but, as set out in **L1m1** and **L3m1 (D)**, recycling falls outside the remit of this review.

The fact that such evidence is absent is clearly a gap - see **L2m8**.

¹⁶ See <http://www.recyclingwasteworld.co.uk/cgi-bin/go.pl/article/article.html?uid=42340> accessed 06.06.09

Charging

Again, in principle, an incentive would exist within a charging regime, the incentive being to avoid (or reduce exposure to) a charge through reducing waste.

The evidence base on householder charging is extensive, perhaps because it is in operation in many places internationally (see the international review [L3 m5/2 \(D\)](#)). The following key synthesis reviews were examined in this waste prevention evidence review:

- *Dunne et al., 2008* - through surveys and a literature review their research highlights many examples from Ireland, USA and Sweden of different charging systems and their impacts.
- *Eunomia Research and Consulting, 2006* - their review and modelling exercise looked at a myriad of charging systems including bin volume-based schemes, frequency-based schemes, volume and frequency based schemes, sack-based schemes, weight based schemes and bin volume, frequency and weight-based schemes covering 15 countries.
- *Gordon Mackie Associates Ltd, 2007* - pulled together evidence from case studies, a stakeholder survey and public attitude surveys to help CIWM formulate a position statement on direct and variable charging.
- *Skumatz 2008* - has been commenting on charging systems in the US for many years. Her article reviewed the research to date on a wide variety of issues related to PAYT systems in the US, including design, legislation, impacts, and implementation issues.

Reflecting what was found in the evidence base, the following sub-sections summarises the barriers and opportunities for charging and then look at the enabling conditions, which relate largely to the way in which charging and the overall set up of the collection service interact (or “allied practices” in the Gordon Mackie study).

As has already been mentioned, this option is not being pro-actively pursued by Defra, but is included in this review for the sake of completeness. Once again, its appearance in this document should not be taken as an implication of endorsement by Defra.

Barriers to the implementation of charging

Barriers and implementation issues are often specific to the type of charging framework adopted (e.g. whether weight based, charged-for sack based, or volume or bin size based) and this should be borne in mind in relation to the summary points flagged here. The following barriers and issues were identified in the studies reviewed:

- Potential increases in fly-tipping, illegal disposal and waste compaction (inside bins), (Dunne et al., 2008; Gordon Mackie Associates Ltd, 2007) though some sources disagree that this is a significant or continuing problem (see below);
- Waste displacement into other waste streams and other countries (Dunne et al., 2008; Gordon Mackie Associates Ltd, 2007);
- Possible equity issues in terms of impacts on low income and/or larger households (Skumatz, 2008; Gordon Mackie Associates Ltd, 2007; Dunne et al., 2008);
- Impacts on different types of housing stock (Gordon Mackie Associates Ltd, 2007);
- Potential problems if two neighbouring authorities introduce different types of charging systems system (Gordon Mackie Associates Ltd, 2007; Dunne et al., 2008);

- Weight-based charging may be preferred but may not be economically viable in certain rural areas (Dunne et al., 2008); and
- Difficulty in measuring impacts of charging schemes as they are often introduced in conjunction with other changes (Skumatz, 2008; Eunomia Research and Consulting et al., 2006).

The introduction of charging in Ireland led to an increase in fly-tipping and illegal disposal (e.g. backyard burning). Case studies (Gordon Mackie Associates Ltd, 2008, International review L3 m5/2 (D)). suggest that such problems tend to be teething problems and may be overcome through careful planning, education, enforcement and time.

Opportunities created by charging

In terms of opportunities for charging the following were identified:

- Charging may result in increased recycling and composting:
 - it can increase recycling rates by between 6 to 24%
 - and depending on scheme types and charge levels, the quantity of residual waste collected can fall by 10% and sometimes more (Eunomia Research and Consulting, 2006);
- Charging is a means of applying the 'polluter pays' principle through an economic instrument – i.e. each household pays according to each unit of 'cost' it incurs for the environment (i.e. the same principle as other utilities) and those who produce less residual waste pay less (depending on how the system is configured). This is especially relevant in the context of the Waste Framework Directive which suggest that 'producers' of waste should include households/consumers as well as manufacturers of products since both produce waste (Gordon Mackie Associates Ltd, 2007);
- Charging can encourage householders to understand the link between purchasing decisions and residual waste generation (Gordon Mackie Associates Ltd, 2007); and
- Charging may promote waste prevention, recycling and reuse, and encourage householders to treat waste management services in a similar manner to other utilities (e.g. energy and water).

In summary, direct charging may make the need to reduce residual waste more transparent and urgent, and the consumer pays for their own environmental impacts according to their individual 'use' of ecological services. Furthermore, whilst a 'charge' may appear at one level punitive, as we saw above, avoiding the charge – by producing less waste – constitutes an incentive.

Enabling Conditions for Change

A number of additional factors were identified in the literature that could have a role in bringing about changes in householder behaviour with respect to waste prevention, either as part of a package of waste service provision, as a complement to a charging/incentive system or, in some cases, in isolation.

The main factors were:

- Charging for residual waste collection would appear to be more acceptable if it is done by a private waste management company than by the local authority (Dunne et al., 2008);
- Research that in areas where high recycling is the norm or where a successful alternate weekly collection (AWC) is already in place, people are likely to already have some understanding of the need to limit residual waste generation (Gordon Mackie Associates Ltd, 2007);

- There is also a need to consider a range of container types, sizes and materials targeted for separate collection, as well as home composting (Gordon Mackie Associates Ltd, 2007; Skumatz, 2008);
- Incentives may need to be non-trivial to encourage diversion (Skumatz, 2008);
- Feedback and information about the system needs to be provided to residents and stakeholders (Skumatz, 2008);
- Charging may need to be supported by rewards for activities such as composting (Gordon Mackie Associates Ltd, 2007);
- Three of the four surveys reviewed by Gordon Mackie Associates seem to suggest that the majority of respondents would support some form of charging scheme, either varying in relation to council tax or as a new direct charge. Respondents also thought low recyclers/ high waste producers should be fined or pay more for their waste collection (Gordon Mackie Associates Ltd, 2007); and
- The literature suggests that stakeholders deem the public to be in opposition to charging more so than the public actually are.

1.5 Possible impacts of policy measures on household waste prevention

Table 4 over the following pages sets out the different impacts of the policy measures listed above, as far as they are reported. It needs to be noted that in many cases actual impacts were not available so estimates based on modelling and approximation are indicated.

Impacts of policy options to encourage waste prevention

Policy option	Waste prevention impacts	Sources
Home composting inclusion in LATS*	<ul style="list-style-type: none"> • WRAP's home composting programme believes the 1.7 million distributed compost bins) have diverted 530,000 tonnes of biodegradable municipal waste from landfill.¹⁷ • New recruits 220kg per household per year • Enhanced existing user 60kg per household per year¹⁸ • WRAP have estimated that by 2020 1.4 million tonnes of organic waste per year could be diverted through home composting • Cumulatively from 2004 to 2020 this totals 14.6 million tonnes diverted 	<ul style="list-style-type: none"> • (WRAP, 2007c) • (Parfitt, 2006) • (Eunomia Research and Consulting et al., 2007, WR0103)
Local authority targets for waste prevention *	<ul style="list-style-type: none"> • Estimates from modelling work suggest that implementing targets for 2020 might result in a reduction in excess of 3 million tonnes depending on the targets set. • The system operates by specifying a median figure for residual household waste per head: authorities producing more than this pay a levy, while authorities producing less than this receive a rebate. The scheme is thus revenue neutral; and by moving the target figure downwards over time [there are a number of different ways for doing this] can drive overall reductions in residual waste. • It needs to be noted that these figures are based on modelling work based on impact data from Flanders for targets and Wallonia in Belgium for levies. The modelling results suggest that without targets, total waste quantity (residual, recycled and composted) in England in 2019/2020 would be 31,823,595 tonnes, and with targets (no levy) 28,502,848 tonnes - difference of 3,320,748 tonnes. • The modelling also suggests that adding a levy to the above for missed targets would have no impact on total waste arisings, but a higher proportion would be recycled and composted. The target for residual waste is achieved faster in this case. 	<ul style="list-style-type: none"> • (Eunomia Research and Consulting et al., 2007, WR0103)

¹⁷ This comes from an article appended to the report (WRAP, 2007c): "DEFRA yet to be persuaded on home composting under LATS" in ENDS, February 2008, Issue 397, pp.17-18.

¹⁸ Recent surveys conducted in England and Scotland have shown the ratio of new to existing composters to be approximately 60:40 (WRAP, 2007c, p.3).

<p>Extended product warranties*</p>	<ul style="list-style-type: none"> • Uncertain – potential to influence both production and consumption patterns • Assuming that products with longer warranties last longer, the overall consumption of these products should decrease, while the potential for re-use increases – leading to less waste • Attention needs to be paid to impact on second hand goods • Waste modelling by AEA Technology et al (WR0107) showed that doubling product lifespan by 2020 could have a very significant impact on household waste (c. 6 million tonnes) 	<ul style="list-style-type: none"> • (Eunomia Research and Consulting et al., 2007, WR0103) • (AEA et al., 2006, WR0107) • L3 m5/2 (D) International review
<p>Stimulating re-use of durable goods*</p>	<ul style="list-style-type: none"> • 0.65 tonnes of bulky waste (Freecycle) per 1000 members per month (if scaled across London) • Flanders: 3.15 kg of reusable products sold in reuse centres in 2006 through accredited reuse centre infrastructure.¹⁹ • 3,777 tonnes (of furniture, appliances and IT equipment) reused annually in London by reuse organisations = 0.1 to 3.7 kg/hh/yr depending on borough • 90,000 tonnes of furniture reused through FROs, according to FRN • 250,000 tonnes of textiles a year through charity shops (average reuse + recycling 36 tonnes / year per shop). TRAIID puts the figure at approximately 200,000 tonnes. • Combined sources suggest total bulky & textile reuse estimated ~500,000 tonnes (see L2 m4/1). This figure currently being refined in WRAP research. • Scenarios based on best practice assumptions suggest up to 137K tonnes to 33.7K tonnes furniture reuse (in addition to baseline 85K tonnes) + 100K tonnes WEEE possible by 2025. • Consensus in evidence that greater integration/co-ordination between LAs and third sector could enhance reuse activity significantly, including service level agreements and payment of reuse credits. 	<ul style="list-style-type: none"> • (Eunomia Research and Consulting et al., 2007, WR0103) • (Widdicombe & Peake, 2008) • (LCRN, 2008) • L3 m5/2 (D) International review Sweden and Flanders
<p>Minimum standards for appliances *</p>	<ul style="list-style-type: none"> • The scenario developed suggests that a 10% enhancement of the average product lifetime in the EU would mean 10% less waste of durable household goods and 10% less resource use of new products – this would require minimum durability and weight standards, and could not be achieved through eco-labelling alone • Eco-labelling was, however, flagged in the literature as a means of communicating WP to consumers, including opportunities through reuse or carbon labelling schemes 	<ul style="list-style-type: none"> • (Eunomia Research and Consulting et al., 2007, WR0103) • L3 m5/2 (D) International review • (LCRN, 2008)
<p>Mandatory use of rechargeable batteries in new products*</p>	<ul style="list-style-type: none"> • Unclear whether positive or negative impact – total market as per UK battery sales of primary (disposable, one-way) batteries in 2003 was approximately 20,000 tonnes²⁰ 	<ul style="list-style-type: none"> • (Table 79, p. 308, Eunomia Research and Consulting et al., 2007, WR0103)
<p>Implementation plans for waste prevention and re-use*</p>	<ul style="list-style-type: none"> • Potentially significant • Dutch waste prevention policies reduced the total volume of waste by 20% (relative to economic growth) between 1985-2000. The focus was on commercial and industrial waste streams; household waste had grown slightly. • Copenhagen’s waste plan has reduced CO₂ by 40,000 tonnes 	<ul style="list-style-type: none"> • (Eunomia Research and Consulting et al., 2007, WR0103) • L3 m5/2 (D) International review
<p>Collaborative procurement*</p>	<ul style="list-style-type: none"> • There is potential to give impetus to product innovation, through the combination of collective buying power and careful tender specification – however, it is unclear as to how this would impact on waste prevention, let alone household waste prevention. • Example of OVAM’s web application on green procurement • Example in Defra’s EAF – BioRegional One Planet Products for the construction sector. Benefits were largely reduction in search costs for buyer club members rather than product costs. Little data on resource impacts. 	<ul style="list-style-type: none"> • (Eunomia Research and Consulting et al., 2007, WR0103) • L3 m5/2 (D) International review • EAF 2005-8 evaluation report²¹

¹⁹ Presentation by Vandenbussche provided in personal communication, Michael Warhurst 03.03.2009.

²⁰ Eunomia et al. investigated a policy option involving new products being required to be sold with rechargeable batteries, rather than single-use ones (primary batteries) in the form of a rechargeables mandate. The focus is on batteries (so-called portable batteries) weighing less than 1kg thus focusing on household items.

²¹ Brook Lyndhurst for Defra (2009), Environmental Action Fund (EAF): A Review of Sustainable Consumption and Production Projects (SCP2.2). http://randd.defra.gov.uk/Document.aspx?Document=EV02004_7823_FRP.pdf

<p>Reducing quantities of junk mail*</p>	<ul style="list-style-type: none"> • Defra and DMA voluntary agreement - includes no mechanism to reduce the number of items, or the amount of material associated with those items – its focus is recycling. In 2005 its target was for recycling of direct mail to reach 30%, it achieved 28%. In 2005, increased promotion of the MPS has seen awareness increase from 38% to 45% and registrations increase from 1.1 million to 2.7 million since the agreement came into effect. It is estimated that this alone has contributed to a reduction of around 25,000 tonnes pa of Direct Mail compared to 2003.²² More up-to-date figures September 2007) show that over 4 million households have registered with MPS (roughly 15% of all British households).²³ • Estimated potential 119,000 to 223,000 tonnes, some specifics: <ul style="list-style-type: none"> ◦ 'No junk mail' stickers <i>with legal enforcement</i> is calculated to potentially reduce junk mail by 112,500-187,500 tonnes per year if introduced in the UK (based on a similar scheme in Brussels) ◦ Opt-outs and suppression are currently estimated to prevent approximately 100,000 tonnes per year of junk mail (of which 73,570 comes from opting-out); promoting Mailing Preference Service is predicted to increase this to a total of 136,500 tonnes per year • If <i>all households</i> refused unaddressed advertising in Vienna this would mean that 13.5 kg/person/year of paper waste could be prevented 	<ul style="list-style-type: none"> • Waste Strategy 2007 – Annex C16 • (DMA, 2006 – see endnotes²⁴) • (Eunomia Research and Consulting et al., 2007, WR0103) • (Salhofer et al., 2008)
<p>Producer responsibility schemes*</p>	<ul style="list-style-type: none"> • Tonnage impact potentially significant in the case of packaging (estimated at 250,000 tonnes if estimates of 5 million tonnes of packaging waste for the UK are correct) • Salhofer et al found that related to the situation in Vienna in 1999, a compulsory quota of refillable beverage packaging of 60% would prevent 2.4 kg/cap/yr of waste, and a quota of 82% would result in a prevention of 12.1 kg/cap/yr (achieved through either tradable permits for one-way beverage packaging or by legally regulating mandatory quotas). • Revisions to the WEEE directive (increased targets for recovery and reuse – currently in draft) seen in literature as key driver for expansion of the reuse sector 	<ul style="list-style-type: none"> • (Eunomia Research and Consulting et al., 2007, WR0103) • (Salhofer et al., 2007) • (LCRN, 2008)
<p>Landfill Allowance Trading Scheme (LATS)</p>	<ul style="list-style-type: none"> • In 2007/08 waste disposal and unitary authorities in England landfilled 10.6 million tonnes of biodegradable municipal waste which takes England below the 11.2 million tonnes allowed in the Landfill Directive in the first target year 2009/10.²⁵ • Stakeholders and experts engaged in the review suggested further consideration needs to be given to relative incentives for recycling and prevention in local authority performance framework, and relative pricing of landfill versus other options. 	<ul style="list-style-type: none"> • (Environment Agency, 2008 – see endnotes) • Stakeholder dialogue (L2m7 and L3m7/1) • (LCRN, 2008)
<p>Material- or sector-based voluntary agreements</p>	<ul style="list-style-type: none"> • Courtauld Commitment has ended packaging growth in the grocery sector. 80,000 tonnes of packaging a year has been prevented thanks to the agreement.²⁶ • Pledge: UK's top grocery retailers, brands and manufacturers have committed to help reduce the amount of food the nation's householders through away by 155,000 tonnes by 2010²⁷ • In 2008 voluntary agreement with retailers on reducing carrier bags achieved a 23,000 tonne reduction in the weight of carrier bags issued and the total number of bags in circulation has reduced by 26% since 2006²⁸ 	<ul style="list-style-type: none"> • WRAP, 2008 – see footnote • For other examples see Finland and New Zealand in L3 m5/2 (D) International review

²² Royal Mail estimate that volumes have fallen from about 400m tonnes in 2003 to about 338m tonnes in 2008 and that the tonnes of direct mail material going to landfill has fallen from about 348m tonnes in 2003 to 170 m in 2008. There are several possible reasons for the trends, such as growth in electronic marketing, economics, increased MPS take up and increased recycling provision by local authorities. (Personal communication, Defra Producer Responsibility Unit, 08.05.2009).

²³ <http://www.stopjunkmail.org.uk/facts/default.php> Accessed online 08.05.2009.

²⁴ Direct Marketing Association (2006) Direct Marketing Producer Responsibility Progress report to end of 2005. [http://dma.org.uk/ attachments/resources/3064_S4.pdf](http://dma.org.uk/attachments/resources/3064_S4.pdf) Accessed 28.04.2009.

²⁵ Environment Agency (Nov. 2008), Report on the Landfill Allowances and Trading Scheme.

²⁶ WRAP (2008), Business plan 2006-08: Impact Review – Creating a world of difference. For information on the Courtauld Commitment's case studies see WRAP (2009), Courtauld Commitment Case Studies.

²⁷ http://www.wrap.org.uk/downloads/CC_Case_Studies_29_Jan_09_final.ffe46644.6249.pdf

²⁸ UK – grocery sector commits to reduce household food waste. RRF News Alert 03.02.2009.

²⁸ WRAP Press release (26.02.2009), Retailers exceed carrier bag reduction target. http://www.wrap.org.uk/wrap_corporate/news/retailers_exceed.html Accessed 15.03.09

<p>Restrictions on landfill</p>	<ul style="list-style-type: none"> • Difficult to differentiate recycling and prevention impacts in the literature. • Dutch landfill tax and landfill bans led to the amount of household waste being landfilled reducing from 35% in 1995 to 6% in 2003 (recycling increased by 30%). • San Francisco has achieved a 70% waste diversion from landfill 	<ul style="list-style-type: none"> • (Gordon Mackie Associates Ltd, 2007) • L3 m5/2 (D) International review
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Charging and financial incentive</p>	<p>Highly variable, some examples²⁹:</p> <ol style="list-style-type: none"> 1. County Managhan in Ireland switched from fixed rate to weight-based charging in 2003 (in conjunction with introducing kerbside recycling) and produced a 40% reduction in waste to landfill 2. In the USA, pay-as-you-throw (PAYT) has resulted in an average reduction of 28% 3. Another US study found that PAYT policy reduced waste generation by 187 kg per person per year, and increased recycling by 14kg per person per year. 4. National scenario modelling resulted in a reduction of waste collected by local authorities in England of between 1.8 and 3.3 million tonnes. 5. Depending on scheme types and charge levels, the quantity of waste collected can fall by 10% and sometimes more. 6. Charging per kg of waste collected in Cork has led to reduction in household waste collected from 1,200 kg per household in 2003 to 383 kg in 2005). By 2006 this is predicted to be around 360 kg. 7. The modelling exercise in the Gordon and Mackie Associates study suggested that the sack-based direct variable charging scheme would reduce total waste (including both recycling and composting) from 43,600 to 42,275 tonnes a year (19% reduction in residual), and the pay-by-weight scheme from 43,600 to 42,304 tonnes a year (28% reduction in residual) - both approximately a 3% overall reduction. (Hypothetical area of 50,000 households for each). 8. PAYT in the US is estimated to have led to the diversion of 4.6-8.3 million tonnes of waste from landfill to recycling, composting and source reduction. 9. Skumatz's work suggests that PAYT reduces residential MSW disposal by about 17% - with about 5-6% of this being diverted into recycling, 4-5% into garden waste collections and about 6% is due to source reduction. <ul style="list-style-type: none"> • A study conducted in 1995-1996 in the Netherlands reported that a 12-30% reduction in household waste owing to DIFTAR (differential tariff, PAYT) of which 3 to 12% was due to prevention. 	<ul style="list-style-type: none"> • 1-3: (Dunne et al., 2008) • 4-5: (Eunomia Research and Consulting, 2006) • 6-7: (Gordon Mackie Associates Ltd, 2007) • 8-9: (Skumatz, 2008) • 10: L3 m5/2 (D) International review <p>For more information on the Irish charging scheme see EPA 2008³⁰</p>

²⁹ The barriers related to charging particularly in the Irish example are discussed in section 1.4 below.

³⁰ Environmental Protection Agency (2008), A Nationwide Review of Pay-By-Use (PBU) Domestic Waste Collection Charges in Ireland. Report Series No.9 STRIVE Programme 2007-2013. This study investigated the implementation of PBU domestic waste charges in Ireland in order to discern their impact on domestic waste-management activities such as waste presentation, waste recycling and illegal waste diversion.

Waste collection services	<ul style="list-style-type: none"> • AWC can result in less total waste collected at the kerbside, with reduction of 3-4% reported. • WRAP's AWC guidance suggests that the weight of an average refuse bin in a fortnightly collection is 1.5 times the weight of a weekly collection rather than double (e.g. 17-22 kg fortnightly compared to 12-15kg weekly)³¹ • Waste Improvement Network's (WIN) survey responses suggest that there is minimisation effect associated with introducing AWC or other restrictions on residual waste. This minimisation effect of AWC with a strict regime of no side waste was clearly seen in Barnsley by a reduction of 11% in collected waste/person in 2007-08 – a unitary authority where Civic Amenity waste is included in figures and no promotion work or service change took place.³² • WRAP reports that AWC produces reductions of 4-13% in the tonnage of residual waste collected at kerbside due to reduced capacity and increased diversion of recyclables – this may not be the case if garden waste is accepted within the residual bin and some may be diverted to household waste and recycling centres (HWRCs) therefore there is a need to look at full impact across waste collection and disposal authorities.³³ 	<ul style="list-style-type: none"> • (Gordon Mackie Associates Ltd, 2007) • (WRAP, 2007 – see endnotes) • (WIN 2009 – see endnotes) • (WRAP 2008 – see endnotes) •
<p>Table 4 Reported actual or potential impacts of policy measures to encourage stakeholder action on waste prevention. <i>(Please note that inclusion of a policy measure in this evidence review should not be taken to imply that it has been or will be endorsed by Defra as an option for England)</i></p>		

Looking at the table above (and noting that the data are mainly scenarios or estimates), the measures that appear to have the most potential are:

- Local authority targets for waste prevention;
- A potentially significant but unknown contribution from implementation of local waste prevention plans, especially if business waste is included as well as household;
- Inclusion of home composting in LATS (though some consideration needs to be given to potential market saturation levels at the consumer end);
- Increasing product lifespans;
- Deepening producer responsibility;
- Expanding the reuse sector; and
- Junk mail policies.

Supplementary material drawn from the review augments the information presented in table 4 as follows:

Producer responsibility

An academic research thesis - which investigated the relationship between producer responsibility and local authority responsibility for packaging, WEEE (Waste Electric and Electronic Equipment) and batteries across Europe (with a detailed case-study review of systems in place in France, Ireland, Belgium (Flanders) and the UK) - found in these international examples that different roles and responsibilities were assigned to local authorities. For both packaging and WEEE, the study found that when local authorities are acknowledged as legitimate stakeholders, given autonomy at a regional level and included in the system with comprehensive contracts and control mechanisms, the results for extended producer responsibility are positive. Stakeholder communication and co-ordination, solid contractual agreements,

³¹ WRAP (2007), Alternate Weekly Collections Guidance.

³² WIN (2009), Results of Results of WIN survey December 2008: Experiences of local authorities with (1) lowest waste arisings/head; and (2) largest decrease in waste arisings/head on previous year (according to Defra stats for 2007/8).

[http://www.win.org.uk/userfiles/File/waste_arisings_survey_results_Dec08\(1\).doc](http://www.win.org.uk/userfiles/File/waste_arisings_survey_results_Dec08(1).doc) and WIN (2009), Case study Jan '09: Barnsley MBC introduce ABC & decrease collected household waste/head by >11% in one year!
http://www.win.org.uk/userfiles/File/Barnsley_waste_arisings_casestudy_Jan09.pdf Accessed on 16.03.09.

³³ Reed, Sue – WRAP (07.07.08). Alternate Weekly Collections – presentation given at RRF Conference on AWC.

evidence-based financing mechanisms and supplementary support for local authorities were all positive features identified in other national producer responsibility systems by a study from Imperial³⁴.

Eunomia et al (2007) also noted that local authorities tend to have a passive role in producer responsibility in the UK, often bearing collection costs that should fall more comprehensively than they do on the producers who produce the material. Deeper producer responsibility might, therefore, entail a more direct relationship between individual producers and the collection costs of the goods they supply, thereby encouraging them to consider how to prevent waste (e.g. through eco-design).

Strategic public communications campaigns

One option not covered in Eunomia's review, nor normally seen as a strategic 'policy option', was financial support for large scale public campaigns. These can be effective at raising the visibility of prevention and communicating what needs to be done, as demonstrated by Love Food Hate Waste which prevented 137,000 tonnes in its first year³⁵.

There are many international examples of creative and effective waste prevention campaigns that are publicly financed at city or region level (e.g. case studies reported in Waste Watch, 2006, WR0105; and Hampshire County Council and Brook Lyndhurst, 2008, WR0117, annex A; **International review L3 m5/2 (D)**). The Imperial study referenced above also established that many EU producer responsibility operators will co-fund such campaigns if they help them to meet their targets.

Ambitious restrictions on the production of waste

There are also a myriad of city-based innovative policies and initiatives on waste prevention (e.g. Millbrae City in California can be fined up to \$10,000 a day if they do not maintain the 50% reduction of waste to landfill achieved; or see case study box on Kamikatsu, Japan).

Case Study Box: Japan's pioneering waste town, Kamikatsu (population 2,000) made a declaration in 2003 to become Zero Waste by 2020 – the first in Japan. This resulted in stopping waste collections. Residents now have to compost all of their food waste and the rest of the waste can either be taken to local shops for recycling or to the Zero Waste Centre. At the Centre washed items can be sorted into 34 categories, which allows for categories as specific as razors, batteries, bottle tops and meat Styrofoam trays. Such a separation in turn yields quality materials that bring in a good economic return. Items which can be reused can be taken to the recycling store, which operates like a swap shop. *Adapted from Japan's Pioneering Waste Town, MRW, 19.09.08 Vol. 192 issue 12. p. 17.*

Voluntary agreements – the example of junk mail

Voluntary agreements are also another potentially important mechanism for encouraging changes in householder behaviour. As outlined above, the UK already has a voluntary agreement on junk mail but the French case below provides another example. (Case studies of local junk mail campaigns are included in **L2 m3 and L3 m3/7 (D)**). The Eunomia et al (2007) study flagged a number of options for increasing junk mail avoidance, including powers for authorities to enforce "no junk mail stickers" and/or deepen producer responsibility for direct mail (including through levy or taxation).

³⁴ Cahill, Rachel - Imperial College London, (September 2008), The Relationship between Producer Responsibility and Local Authority Responsibility for waste. Thesis report for MSc in Environmental Engineering & Sustainable Development from Imperial College London.

³⁵ Consumers save £300 million worth of food going to waste (14.01.09), WRAP Press Release, http://www.wrap.org.uk/wrap_corporate/news/consumers_save_300.html Accessed 19.03.2009.

Case Study Box: 'Stop Pub' - In France regulation from the Ministry of Environment states that as of February 2005 any person or company producing or ordering non-addressed mail or hand-outs and distributing them to the public directly into their letterboxes, without previous specific requirement or agreement will have to contribute to the collection, the sorting and the removal of the resulting waste paper. A case study was conducted to measure the amount of junk mail in household waste in different housing areas (small detached housing, rural and scattered rural) and thus evaluate the potential impact of 'Stop Pup' on residual waste and on separate waste collections. Given the compositional analysis undertaken it was concluded that banning junk and non-addressed mail from letterboxes should lead to a decrease in household waste of 2 to 4% (depending on housing type and location), with the impact on separately collected paper being approximately 20%. Given these figures the study concluded banning of junk mail seems to be limited in terms of the overall amount of household waste and that further action could be taken in the form of additional regulations for addressed mail advertising. Currently approximately 10% of French households use no-junk mail stickers.

Text adapted from Resse, 2005, for additional information see L3 m5/2 (D) International Review.

Impacts of different collection services

Only limited secondary evidence was found on the impacts of waste collection arrangements on prevention. Stakeholders engaged in the project (see L2m8) frequently reported that "evidence" exists but on further investigation we found that the evidence mainly exists in primary data held by individual local authorities that would require a dedicated research exercise to collate. It is worth noting that Defra WREP have commissioned Resource Futures to do an in-depth investigation on the factors that influence growth in municipal solid waste which will provide greater clarity on the effects of different collection systems on residual waste arisings (*Understanding Waste Growth at Local Authority Level*, WR0121)³⁶.

Impact of financial incentives and transparent charging

In thinking about charging, it is important to note that every local authority has different waste collection needs due to local characteristics (e.g. geography, housing stock, awareness etc.) which means there is no standard approach to either waste management in general, or to achieving waste prevention in particular, that applies everywhere (Gordon Mackie Associates Ltd, 2007). The Eunomia et al study on charging concluded that the evidence in respect of the impact of charging on waste prevention is highly variable; it varies according to the type of charging system and recycling system in place. The greatest reductions in the quantity of waste collected are where a collection service has free garden waste collections and the charging system introduces charges for this.

Furthermore, all authors note that it is difficult to measure the impacts of charging because they are often introduced in conjunction with other changes e.g. promotion work or collection changes. It is also difficult to separate out recycling and source reduction impacts in some cases.

The majority of studies assessed highlight price responsive behaviour; with the responses being weakest in the cases where systems are based on a volume only basis, whereas weight-based schemes appear to give the strongest effects (Eunomia Research and Consulting, 2006). Some research suggests weight-based schemes are better as they put pressure on householders to reduce waste, but they may be more costly as this can lead to more frequent collections than necessary; sack-based schemes are less costly but more open to fraud (Gordon Mackie Associates Ltd, 2007).

Defra has previously considered the option of direct charging at length and made provision for pilot incentives trials in the Climate Change Act. No local authority applied to be a pilot and Defra is not considering the implementation of direct charging for England.

Little was identified on affecting relative prices through taxation, and most of the 'evidence' on this was in the form of opinion from expert interviews and stakeholders. Issues flagged here were relative costs of

³⁶ Resource Futures for Defra WREP (forthcoming), *Understanding Waste Growth at Local Level* WR0121. For project details see: <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=15487#Description>

disposal options (i.e. landfill) making it hard to make a business case for prevention; and tax treatment of repair and reuse.

1.6 Discussion of implications and issues

Waste prevention is increasingly becoming incorporated into national, regional and local policy initiatives. There are clear legal definitions of waste prevention, although implementation is more vaguely defined and practised.

Lessons from international experience

As highlighted in the impact section above and echoed in our international review (L3 m5/2 (D)), it is difficult to demonstrate a consistent, direct and proportional link between specific policy measures and quantifiable waste prevention achievements. The international review highlights that the difficulty of attributing the impact of a specific waste prevention policy option lies in the high degree of linkages between:

- any one measure and different parts of the supply chain;
- any one measure and different waste streams;
- any one measure and different parts of the waste hierarchy;
- any one measure and another measure applied at the same time; and
- any one measure and external factors.

The international experience also suggests that the most effective and most frequently applied waste prevention policy measures come in a package including:

- waste prevention targets;
- producer responsibility;
- variable rate charging (pay as you throw) systems for householders' residual waste;
- intense public awareness/communications campaigns (long-term with deeper links to consumerism and short-term with emblematic targets);
- public sector funding pilot projects; and
- collaboration between public, private and third sector organisations.

Combinations of measures which target voluntary actions by households (e.g. food waste, junk mail, reuse), together with high level policy actions, may have the potential to prevent ~10% of total municipal waste (Enviros, 2004; ACR+, 2008; Salhofer et al., 2008). Of course, delivering effective household waste prevention would depend upon attaining reasonable participation by householders (for more information see the [International Review L3 m5/2 \(D\)](#)).

An OVAM study (2008) identified a number of policy instruments to promote environmentally conscious consumption (not specifically waste-focused). The instruments examined were labelling, quality marks, instore marketing, marketing outside the store, theme stores, consumer self-regulation, discount coupons, savings cards, promotional campaigns, eco tax, green payments, voluntary agreements, collective consumer agreements and industry self-regulation (OVAM, 2008).

The potential of these instruments was evaluated through literature reviews and expert stakeholder forums. The ones that were deemed most effective were: green payments (e.g. green investment by bank for all purchases on a credit card), voluntary agreements (e.g. for a given % of products to be environmentally friendly) and self-regulation by industry (OVAM, 2008).

The effectiveness of collective consumer agreements (between business and consumer organisations to protect the consumer) were not been assessed as they were too recent at the time of the study for there to be evidence; though it was an area which was deemed worthy of development (OVAM, 2008)

In addition to the general observation above about effective international practice, the International Review (L3 m5/2 (D)) states that it is clear that those countries that made a significant impact on municipal waste growth (Germany, the Netherlands, Denmark and Belgium) have in place a wide range of instruments and initiatives aimed (directly or indirectly) at waste prevention. In terms of policy instruments these generally include a significant number of the following:

- product eco-taxes;
- eco-labels;
- container reuse/deposit-refund schemes;
- variable-rate waste charging or rebates;
- high landfill taxes (relative to the UK); and
- disposal bans on certain materials.

Implications

In terms of lessons from international experience a significant measure present overseas but not in the UK which has measurable impact on waste prevention is charging. Eunomia et al. suggests that charging provides an economic incentive for behaviour change and was the "strongest policy to emerge from the research" (Eunomia Research and Consulting et al., 2007, WR0103, p. 363).

Currently the only two practical options available to local authorities are waste collection service design (where there are barriers to prioritising prevention) and campaigns. Following the lack of up-take of incentives pilots under the recent proposal, attention may swivel now to building a business case for waste prevention within local authority business planning, focusing on financial savings (Eunomia, expert interview,³⁷).

The following further implications can be drawn from the assessment of policy measures:

- The implementation of waste prevention plans through the EU Waste Framework Directive should help bring together key stakeholders to agree and design appropriate policy measures.
- Waste authorities are currently 'finding their feet' on strategic planning for waste prevention and there may be an opportunity to collate best practice from those that are further advanced, highlighting both opportunities and how to overcome barriers;
- As highlighted in the Eunomia et al. study, waste prevention targets potentially supported by a levy would provide strong signals and unambiguous incentive for action (as is partially done through LATS already). It may be worth reviewing how LATS can provide added impetus for prevention activities (if this has not been done already);
- Authors suggest there are quick wins in options such as junk mail and plastic bag reduction (supported by voluntary agreements) that are popular with the public and relatively straightforward to implement (Eunomia et al., 2007, WR0103). Since their tonnage impacts may not be that great (e.g. with bags) it will be important to maximise the 'foot in the door' effects of such initiatives on efforts to

³⁷ For particular examples see Eunomia for Defra (2005), A Practice Guide for the Development of Municipal Waste Management Strategies. <http://www.defra.gov.uk/environment/waste/localauth/practice-guidance/pdf/practice-guide.pdf> and Eunomia for GLA (2008), Key Actions to Reduce Waste in London. <http://london.gov.uk/gla/publications/environment/keyactionstoreducewaste-report.pdf>

educate the general public on the bigger impact activities. This will be especially so in local waste prevention campaigns;

- A policy requiring Extended Product Warranties is worth further investigation, potentially at the EU-level³⁸, but this would need to take into account any impact on reuse activity;
- Producer responsibility legislation has worked well in delivering high levels of recycling, though there is still limited evidence that it leads to significant prevention. Authors have suggested that linking producer responsibility to financial incentives may change this (Eunomia Research and Consulting et al., 2007, WR0103);
- A further consolidated review of the role and impact of financial incentives may be worthwhile, leaving aside household charging to focus on other types of direct incentive (e.g. reward cards, subsidies, prizes) and incentives to the services supporting household level prevention (e.g. reuse credits, campaign financing, differential VAT where an opportunity is created by the July 2008 EU review of the Principal VAT Directive - 2006/112/EC). Such a review would need to be wide in scope and probably involve primary evidence collection; and

³⁸ This policy was suggested and discussed at the Waste Stakeholder Group workshop on 03.03.09.

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For a complete list of references used in the International Review see L3 m5/2 (D).

Basis of this report

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