Written evidence received for the Environment Committee's investigation:

To what extent can financial incentives boost recycling rates?

May 2011

Contents

LONDONASSEMBLY

Environment Committee

City Hall
The Queen's Walk
London SE1 2AA
Switchboard: 020 7983 4000
Minicom: 020 7983 4458
Web: www.london.gov.uk

Our ref: CM/Env/Waste
Date: 9 September 2010

Dear

To what extent can financial incentives boost recycling rates?

The London Assembly's Environment Committee will hold a public session on **4 November 2010 at City Hall, at 10.00 am** to discuss the role of person al financial incentive schemes in boosting waste recycling rates

The agreed **terms of reference** for the inquiry are to:

1. Explore the impact of waste financial incentive schemes on recycling performance;
2. Consider whether waste financial incentive schemes are necessary to improve recycling rates;
3. Identify examples of best practice and lessons learned; and
4. Make recommendations on how waste financial incentives schemes might best be applied to London.

The Committee is seeking written comments, including research material, in advance of 4 November session and would like to invite you to submit your views. The closing date for receipt of submissions is **Wednesday 13 October 2010**. Please send your submission, preferably by email to Carmen Musonda, Scrutiny Manager at Carmen.Musonda@london.gov.uk or by post to the address shown above. Please limit your comments to four sides of A4 paper.

The Committee is keen to hear your views on the following questions we have flagged up for discussion. But please do let us know of other areas you think should also be considered during the course of the inquiry:

- Do financial incentives schemes lead to individual behavioural change to waste management over the long term?
- Does this type of intervention promote best practice recycling or can it lead to unintended consequences?
- Are there other approaches that could achieve the same aim (ie sustained behavioural change, leading to improved recycling performance) that should be considered first?
- What are the key considerations for local authorities thinking of implementing financial incentive schemes?

Direct telephone: 020 7983 4388 Fax: 020 7983 4437 Email: Darren.johnson@london.gov.uk

Invitations to participate in the session will be issued once we have received and considered the written submissions. The session should last approximately two hours.

If you need to discuss this request or require further information you can contact Carmen on 0207 983 4351. Please note that we are required to release copies of your written responses if members of the public or the media request them under the Freedom of Information Act 2000.

The Committee appreciates your help in this inquiry and looks forward to hearing from you.

Yours sincerely,

Darren Johnson AM

Chair of the Environment Committee

LONDONASSEMBLY

Environment Committee

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The Queen's Walk
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Our ref: CM/Env/Waste
Date: 9 September 2010

Dear

To what extent can financial incentives boost recycling rates?

The London Assembly's Environment Committee will hold a public session on **4 November 2010 at City Hall, at 10.00 am** to discuss the role of waste financial incentive schemes in boosting recycling rates. The Committee may invite you to participate in the session, which should last approximately two hours. I would be grateful if you could keep the morning of 4 November free. Officers will contact you nearer the time, with further details.

The agreed **terms of reference** for the inquiry are to:

1. Explore the impact of waste financial incentive schemes on recycling performance;
2. Consider whether waste financial incentive schemes are necessary to improve recycling rates;
3. Identify examples of best practice and lessons learned; and
4. Make recommendations on how waste financial incentives schemes might best be applied to London.

The Committee is seeking written comments, including research material, in advance of 4 November session and would like to invite you to submit your views. The closing date for receipt of submissions is **Wednesday 6 October 2010**. Please send your submission, preferably by email to Carmen Musonda, Scrutiny Manager at Carmen.Musonda@london.gov.uk or by post to the address shown above. Please limit your comments to four sides of A4 paper.

The Committee is keen to hear your views on the following questions we have flagged up for discussion. But please do let us know of other areas you think should also be considered during the course of the inquiry:

- Do financial incentives schemes lead to individual behavioural change to waste management over the long term?
- Does this type of intervention promote best practice recycling?
- Are there other approaches that could achieve the same aim (ie sustained behavioural change, leading to improved recycling performance) that should be considered first?
- What are the key considerations for London/boroughs in implementing financial incentive schemes?

Direct telephone: 020 7983 4388 Fax: 020 7983 4437 Email: Darren.johnson@london.gov.uk

We would also be grateful if you could tell us about financial incentive schemes that are operating borough and/or were trialled but discontinued. Please use the attached form as a guide to the type of information we are looking for.

If you need to discuss this request or require further information you can contact Carmen on 0207 983 4351. Please note that we are required to release copies of your written responses if members of the public or the media request them under the Freedom of Information Act 2000.

The Committee is aware that you will have contributed to a considerable number of consultation exercises in recent months, relating to waste management. **We greatly appreciate your help in this inquiry and look forward to hearing from you.**

Yours sincerely,

Darren Johnson AM

Chair of the Environment Committee

WASTE FINANCIAL INCENTIVE SCHEMES INFORMATION SHEET

Borough name……

Short description of scheme	Start date	End date & reason	Brief description of Comms strategy	Say how the recycling rates changed	What lessons did you learn and is there anything you would do differently?	Any other comments?

Direct telephone: 020 7983 4388 Fax: 020 7983 4437 Email: Darren.johnson@london.gov.uk

HILLINGDON
LONDON

Mr D Johnson AM
City Hall
The Queen's Walk
London
SE1 2AA

Our ref:

22nd September, 2010

Dear Mr Johnson,

Re: L B Hillingdon View on the Extent Financial Incentives Boost Recycling Rates

I am writing to you in response to your letter (ref CM/Env/Waste) seeking the view of local authorities on the role of personal financial incentives schemes in boosting waste recycling rates.

In general the view of Hillingdon is against the use of financial incentives for boosting recycling rates. To set the amount given at a realistic level based on the value of waste diverted, would result in a small incentive and one not great enough to stimulate much interest. To over inflate the incentive to increase public interest, would result in criticism for wasting tax payers money.

In response to the four questions posed;

Do financial incentive schemes lead to individual behavioural change to waste management over the long term? It is possible that the scheme may encourage people to recycle more, or start recycling during the time they are in operation. However, if the financial incentive is the only motivation for recycling, then this behaviour is very likely to stop once the incentive is withdrawn.

Does this type of intervention promote best practice recycling or can it lead to unintended consequences? This type of intervention may promote best practice, during the time it is applied. It may distort recycling activities if it is only applied to one or certain waste streams. Best practice would be based on people diverting the greatest range of items for recycling at all times.

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HILLINGDON
LONDON

Are there other approaches that could achieve the same aim (i.e. sustained behavioural change, leading to improved recycling performance) that should be considered first? The sustained behavioural change is in line with the approach of Hillingdon, so we agree with this statement.

What are the key considerations for local authorities thinking of implementing financial incentive schemes? The key consideration would be some form of cost benefit analysis to determine if the avoided cost of waste disposal / potential income from additional recyclables is greater than the cost of delivering the incentive scheme. It would be easier to justify the cost if you were confident that the incentive scheme brought about longer term behavioural change. However, the view of this authority is that incentive schemes do not bring about long term behavioural change.

Yours sincerely,

Robert Williams
Waste Development Manager

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London Borough of Hillingdon,
Block B, Central Depot, 128 Harlington Road, Hillingdon, UB8 3EU
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WASTE FINANCIAL INCENTIVE SCHEMES INFORMATION SHEET

London Borough of Ealing

Short description of scheme
£80,000 is being made available to the top recycling wards in Ealing.

Ealing is made of 23 wards, lead by the elected ward councillors. Participation monitoring was carried out in one recycling collection round in each of the 23 wards (using WRAP participation monitoring guidelines), the results of which will be aggregated to provide a total participation figure (in %) for each ward. This forms the baseline data for the scheme.

Participation monitoring will then be repeated in April 2011, and the 'top performing ward' and the three 'most improved' wards in terms of participation in recycling services will each receive £20,000 to help their ward forum pay for local environmental improvements, such as revamping a playground, installing new benches etc.

Start date
- The participation monitoring was carried out over a three-week period in September 2010, to establish baseline data for the scheme.
- The scheme was officially launched to residents in November 2010.
- A communications campaign will take place from November 2010-March 2011

End date & reason
- The second stage of monitoring will be carried out in April 2011 to establish which wards will be receiving prizes
- Results of the monitoring will be published to residents in May 2011
- The winning wards awarded with £20,000 each in June 2011.

N.B. If the scheme proves to be successful, the Council may look at making the scheme more permanent.

Brief description of Comms strategy
The recycling rewards comms strategy has three central principles; launch strategy, engagement activity and integrating the message into business-as-usual recycling campaigns.

A variety of marketing activities will be used including Around Ealing (monthly magazine distributed to residents), lamp post banners, Council website, local media, advertising wraps and business-as-usual recycling communications.

The key messages of the communication strategy are:
- By participating in the recycling services you could help your ward win £20,000 for environmental improvements
- The recycling services available are simple to use
- Recycling reduces landfill, conserves resources, saves energy and helps protect the environment

- Recycling and diverting waste from landfill can save the Council money in landfill tax and disposal costs

Say how the recycling rates changed
Unable to state at present – will be able to establish change in participation rates following the second round of monitoring in April 2011. Tonnages from kerbside services may also be monitored to see if there has been an increase in tonnage as a result of the reward scheme.

What lessons did you learn and is there anything you would do differently?
At time of writing scheme is about to be launched. See below for additional comments.

Any other comments?
The aim of the scheme is to increase participation in recycling services available to residents across the borough, and to encourage residents to fully utilise these services.

Participation in recycling services per ward was monitored as opposed to recycling tonnages, as this could lead to residents needlessly disposing of items that could be re-used, and the Council does not want to encourage residents to produce more waste.

All recycling rounds receiving the Council's kerbside recycling collection service were eligible for monitoring (approx 95,000 properties out of a total of 127,000). Flats were not included in the monitoring, as it is difficult to measure participation in the recycling services from residents living in flats as they are 'bring' schemes and it is not straightforward to determine who from the flats contributes to the recycling.

The Chartered Institution of Wastes Management

The Chartered Institution of Wastes Management (CIWM) is the professional body which represents around 7,000 waste management professionals, predominantly in the UK but also overseas. The CIWM sets the professional standards for individuals working in the waste management industry and has various grades of membership determined by education, qualification and experience.

To What Extent can Financial Incentives Boost Recycling Rates?

CIWM welcomes the opportunity to respond to the London Assembly's Environment Committee consultation on Financial Incentives. This is an area that CIWM has had an interest in over a number of years and even commissioned a study of other European countries to collate information on incentive schemes that were implemented and the effect on recycling and any other impact such schemes would have.

Terms of Reference

- Explore the impact of waste financial incentive schemes on recycling performance
- Consider whether waste financial incentive schemes are necessary to improve recycling rates
- Identify examples of best practice and lessons learned; and
- Make recommendations on how waste financial incentives schemes might best be applied to London.

Questions:

Do financial incentives schemes lead to individual behavioural change to waste management over the long term?

Yes there is evidence in many European countries that incentive schemes lead to individual behavioural change. Many schemes charge for residual waste and have a lower charge for recycling, incentivising residents to reduce the amount of waste put out for disposal and encouraging as much material to recycling.

There is the added advantage of waste reduction as well as recycling. See case study document *Waste Collection: To charge or not to charge?*

Does this type of intervention promote best practice recycling or can it lead to unintended consequences?

Belgium are being followed as a model by Welsh Assembly Government,
Fly-tipping is one unintended consequence of financial incentive; there is the tendency by some residents to avoid paying anything for waste disposal, consequently they fly-tip their waste, or put their waste in other people's containers. As noted in our study "*Much is made of the possibility of fly-tipping becoming a problem in the context of these schemes. Yet, as we shall see, this is not borne out by much of the experience. Indeed, what may happen in these contexts is that greater information is generated concerning a problem which already existed, and where that information is specific to households, the possibility exists for checking up on households whose behaviour is 'out of the ordinary'. Even so, one would expect that as with the 'positive performance' of such schemes, the downsides of such systems are also related to issues such as the quality of source separation schemes in place, and the degree to which enforcement issues are taken seriously*."

Financial incentives that reward for recycling could lead to more waste arising, people are not necessarily that effective at putting the right material out for recycling, leading to contamination. This contamination leads to more material being rejected for recycling and sent for disposal. Such incentives could also encourage less consideration being given to reduction, more material means more rewards.

Are there other approaches that could achieve the same aim (i.e. sustained behavioural change, leading to improved recycling performance) that should be considered first?

Intensive communication programme

What are the key considerations for local authorities thinking of implementing financial incentive schemes?

Local authorities have to consider the budget to implement financial incentive schemes. If the scheme is a reward based one there is the need for sponsors to cover the rewards along with the data collection of how much has been recycled, to monitor the effectiveness of the scheme.

If the financial incentive scheme includes charging then there needs to be a billing system and consideration for debt collection. Many local authorities already have billing for a number of other services but this one needs to relate to residual and recycling material.

If the local authority does not already have chipped bin systems in place this would have to be implemented to gather all the information required, if wheeled bins are being used.

If bags are being used for recyclable material then there needs to be a way of tagging the bags to show that a fee has been paid. The tags either have to be delivered to householders on payment or made available for residents to buy at shops, etc.

Whichever system is used there needs to be a database to handle the information, this will then make monitoring of the scheme effective and deliver data on arisings and material recycled.

“EUROCHARGE”

Waste Collection:

To Charge or not to Charge?

A Final Report to

IWM (EB)

Chartered Institution of Wastes Management
Environmental Body

eunomia
research & consulting

Supported by

Biffaward
investing in the environment

Project Partners

The project has been funded by **Biffaward**, a multi-million pound environment fund managed by the RSNC, which utilises landfill tax credits donated by Biffa Waste Services.

The Chartered Institution of Wastes Management (CIWM) is the pre-eminent body in the UK engaged in waste management issues. It represents 5,500 professional waste managers and aims to protect and enhance the environment through developing scientific, technical and management standards.

The LGA is the national voice for local authorities. Formed in 1997, its mission is to promote better local government. We work with and for our member authorities to realise a shared vision of local government that enables local people to shape a distinctive and better future for their locality and its communities. We aim to put local councils at the heart of the drive to improve public services.

IWM(EB) is a registered environmental body that sponsors original research, development, education and information dissemination projects in furtherance of professional and sustainable waste management practices.

This work was undertaken by Eunomia Research & Consulting Ltd., with assistance from Waste Watch. Both would like to thank Biffaward and CIWM for their financial support and the LGA for their support of the project.

All work other than the survey work was undertaken by **Eunomia Research & Consulting Ltd.** Eunomia is a consultancy specializing in waste policy, strategy and economics issues. The company carries out leading-edge research in discharging challenging projects intended to investigate how best to manage resources in a more sustainable manner.

Waste Watch is a leading environmental organisation promoting sustainable resource management in the UK by campaigning for all areas of society to: **reduce** resource consumption, maximise resource **reuse**, and increase the percentage of waste they **recycle**. The support provided to this project was in undertaking the survey with local authority representatives, delivered by the Policy, Research and Information team. The team aims to provide strategic analysis of information in support of the organisation's objectives.

“EUROCHARGE”

Charging Schemes for Waste Management and the Barriers to their Introduction in the UK

A Final Report to

IWM (EB)

Chartered Institution of Wastes Management
Environmental Body

eunomia
research & consulting

Supported by

Biffaward
investing in the environment

Acknowledgements

We would like to thank the Members of the Steering Group set up by the Chartered Institution of Wastes Management Environmental Body (IWM (EB)), Chaired by Dr. Cathy O'Brien (Environment Agency Wales, representing CIWM), and including Dr. Jane Beasley (CIWM), Tina Benfield (CIWM), Ivan Good (CIWM, and Project Manager), Jeff Cooper (Chair of the Scientific and Technical Committee of the International Solid Waste Association), Peter Jones (Biffa), Ian Halson (Harborough District Council) and Chris Brown (Cambridgeshire County Council) (both representing the Local Government Association). Critical comments of a helpful nature have been made throughout the study's progression.

We would also like to thank all those who agreed to take part in our interviews. We do not name them here. We would also like to thank the following individuals for their help in the course of this project:

Arno van Heusden (DAR)

Paul Dobbelaere (IVAGO)

Marco Ricci (Scuola Agraria del Parco di Monza)

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Dirk Lauwens (INCOVO)

Mike Pells (Plastic Omnium)

Bob Billington (Zoeller)

Wolfgang Schraut (Landratsamt Schweinfurt)

Christian Fottinger and Dirk Baltrusch (NBS)

The views expressed in the report are those of Eunomia Research and Consulting, and not those of the above parties.

Contents

1.0 Introduction

Eunomia Research & Consulting Ltd. was asked by the Chartered Institution of Wastes Management Environmental Body (IWM (EB)) to carry out the Eurocharge project. Research support for the study was provided by Waste Watch. This project was intended to identify the barriers to direct charging of UK householders for waste collection and disposal based upon a comparative analysis of European practice and feedback from local government members and officers.

This piece of research was given greater relevance through the involvement of both the Local Government Association and the Chartered Institution of Wastes Management. At a time when the UK stands at a turning point in terms of the management of materials in the waste stream, the lack of a mechanism to incentivise householders to take greater responsibility for their wastes potentially constitutes an obstacle to more sustainable waste management. This work seeks to compare experience in Europe with UK opinion regarding the obstacles to the introduction of direct charging at the local level, and to understand whether or not the effect of charging can be mimicked through appropriate design of collection systems.

This report is a summary of more extensive research which can be found on the CIWM website at http://www.ciwm.co.uk/pma/30**.**

1.1 Objectives

The objectives as set out in the Tender Document are:

1. To identify the barriers to implementation of direct charging in the UK and to make recommendations that can be used in the development of policy enabling this or some similar mechanism to be used to increase the participation of householders in recycling and to contribute to waste minimisation.
2. To identify ballpark revenue/administrative costs for direct charging relative to current collection costs.
3. From European experience, to highlight the perceived and actual benefits of direct charging.
4. To draw comparisons with the results of revised collection practice (e.g. reduction in bin size/alternate week collection of residual household waste) in the UK.

1.2 Defining DVR Charging Schemes

The concept of 'direct charging' is usually used, in English-speaking countries (and especially in the UK), to denote a form of charging in which refuse is charged for in relation to some measure –weight, volume, number of containers, or a combination of these – of the quantity put out for treatment / disposal.

Direct *charging* could, however, be used to refer to a situation in which citizens were simply billed directly for their waste collection and treatment / disposal independently of other services. There might be no variation in the fee with the level of service use. Although some levies of this nature do vary (for example, on the basis of house value, or on the basis of the number in the household), the service provided may not bear any relation to these. These are, however, user fees in that they are ear-marked for the service provided, and in this work, we allow these to fall within the definition of the term 'charge'.

More commonly, the term 'direct charging' is synonymous with the terms 'variable charging', 'unit pricing', and 'pay-as-you-throw'. Where charging schemes are designed so as to provide incentives for changes in household behaviour whilst retaining the goal of cost recovery, they usually do so by providing *differential* unit charges across the different parts of the overall collection system.

In this report, to describe this type of system, we use the term **Differential and Variable Rate (DVR) charging**. The rationale for this choice is to capture exactly what these schemes typically seek to achieve. They seek to ensure that the charge for refuse collection is varied in accordance with what is produced. They also seek to apply differential charges across the components of the collection system. The net effect is to:

a) encourage a reduction in waste set out for collection (through source reduction, home composting etc); and

b) to incentivise improvements in separation (and hence to encourage a more efficient utilisation of the separate collection infrastructure).

This term serves to convey the fact that the charge differentiates between unseparated and separated fractions (which is not always conveyed in the terminology used). Since this study seeks to identify and understand the barriers to the implementation of such systems, it is as well to ensure that the language used does not itself constitute an obstacle by conveying an impression that all waste, irrespective of how it is presented, will be charged for at the same variable rate. Whilst this is one possible design of a charging mechanism, it is not often employed.

1.3 Where Does it Happen?

DVR charging is becoming more widespread. The number of municipalities introducing variable rate schemes increases each year. The 'increasing trend' can be found in a number of countries, including the United States, Wallonia (Belgium), Italy, and the Netherlands. Municipalities in other countries have already introduced such schemes on a widespread basis. These include Germany, Austria, Luxembourg and Flanders (Belgium).

One Flemish report estimated the coverage of variable charging in 1999 for several countries / regions.[1] These were:

- Flanders: more than 50 % of municipalities;
- Brussels: 14 % of municipalities;
- The Netherlands: 22 % of municipalities[2];
- France: less than 10 % of municipalities;
- Luxembourg: 4 % of municipalities.

The widespread nature of charging schemes in Flanders has been assisted in part by attempts by the Flemish government to formulate recommendations for municipalities in respect of a uniform charging system. This is intended to avoid illegal dumping in neighbouring municipalities.

Proietti noted that DVR charging is already well established in Austria, Belgium, Finland, Germany, Luxembourg, Sweden and Switzerland:

1 BECO (1999) *Benchmarking of Flemish Waste Management Policy Compared with Neighbouring Waste Markets*, Study Commissioned by OVAM, May 1999.
2 In the Netherlands, 58 % of municipalities levy a fee for household waste services, which is calculated on the basis of the number of persons in a household.

- *'in some countries (Austria, Finland, Germany, Luxembourg, Sweden, Switzerland) Pay-as-you-throw systems are stable and largely applied with increase of electronic systems and adaptation of tariffs to encourage waste prevention*

- *Belgium and Italy are experiencing a very fast evolution in applying of fees;*

- *other countries (Denmark, France, Ireland, Netherlands) are evolving slowly, but the Ministers of Environment (France and Ireland) are in favour of larger application of fees;*

- *other countries are not applying fees, but this may change soon (United Kingdom and Portugal)."*[3]

A US study reported a fivefold increase in the number of municipalities adopting 'variable rate programs' between 1990 and 1996. By 2000, it was estimated that around 6,000 communities in the US were using variable charging and only 4 states in the US reported no such activity. It was estimated that the 6,000 communities covered 20% of the population.[4]

The Netherlands Waste Management Council (AOO) suggested that the number of municipalities adopting the 'DIFTAR' system (differential tariff) grew from under 20 in 1995 to over 120 in 2001, with the increase being 20% in the year 2000-2001. Currently, coverage is 25% of municipalities and 20% of households nationwide.[5]

The UK appears to be unique in preventing these systems through existing legislation (see Table 1), although some exceptions to the rule apply. For example, many local authorities make charges for bulky waste collection. Furthermore, to our knowledge (which is extensive with regard to landfill taxes), the UK is the only country with a landfill tax in place where DVR schemes are prohibited. This acts as a barrier to the effectiveness of the tax since the incentive to improve waste management performance can be conveyed to local authorities, but not to householders. Consequently, to the extent that this restricts the degree to which local authorities can influence household behaviour, the tax tends to operate more on the choice of disposal route made by the local authority than on the behaviour of households.

One might consider the existing state of affairs vis a vis financing systems for waste as an indicator of the 'maturity' of waste legislation. Although for many countries, the switch to DVR schemes today implies a switch from a specific fee which is paid to cover waste management costs, this might not always have been the case. It is interesting to note that the only countries where any municipal waste management services are financed through general municipal taxes are France, Greece, Portugal, Spain and parts of the United States. In each of the last two, this varies regionally, and indeed, in Spain, the first DVR schemes in the country are now in place. With the exception of the United States, if one adds the UK, these countries resemble 'a club' of the worst performers in respect of source separation in Europe. It is worth considering whether the lack of any DVR charging schemes is, if not a key explanatory variable in the poor performance of these countries, symptomatic of it. Other countries are increasingly *requiring* municipalities to ensure that fees for waste management encourage waste minimization and source separation. Sometimes, legislation explicitly refers to the Polluter Pays Principle. The UK legislation looks strangely at odds with this, the more so since it actually appears in the very place where one would have thought the Polluter Pays Principle would hold some sway, the *'Environmental Protection Act.'*

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[3] Stefano Proietti (2000) *The Application of local Taxes and Fees for the Collection of Household Waste: Local Authority Jurisdiction and Practice in Europe*, Report for the Association of Cities for Recycling, Brussels: ACR
[4] See Lisa Skumatz (2002) *Variable Rate or 'Pay-as-you-throw' Waste Management: Answers to Frequently Asked Questions*, Los Angeles: Reason Foundation, July 2002.
5 AOO (2001) Informatiebulletin 02: Afval Informatief, June 2001.

Table 1: Local Authority Competence for Levying Fees Directly for Waste Collection Services

Country	Competence	Legal basis
Austria	Yes	Article 8, paragraph 5 of the Constitutional Finance Law of 1948 (amended in 1966): the legislation of the *Länder* may authorise municipalities to charge certain fees; this legislation stipulates the essential elements of these fees, and especially their upper limit.
Belgium	Yes	Constitutional provisions supplemented by regional legislation.
Denmark	Yes	Article 48 of the "Environmental Protection Act" of 1998: "The local council can fix fees to cover costs in respect of: […] collection of waste […]".
Finland	Yes	Articles 28 and 29 of "Waste Act" 1072 of 3 December 1993: "Municipalities have the right to collect a waste tax to cover the costs of waste management and related tasks organised by them"; "The general grounds for setting the waste tax are the type, quality and quantity of the waste".
France	Yes	Article 14, paragraph 2, of Law no. 74-1129 of 30 December 1974: "Municipalities, groupings of municipalities and local public establishments responsible for collection of rubbish, waste and refuse may institute a fee based on the scale of the service provided."
Germany	Yes	Constitutional provisions supplemented by legislation of the *Länder*.
Greece	Yes	Article 1, paragraph 1 of Law 25/1975: taxes for management of waste and for electricity are calculated on the basis of the area occupied by each household multiplied by factors established by municipal councils.
Ireland	Yes	Article 2 of the "Local Government (Financial Provisions) Act" of 1983: local authorities may imposes fees for services provided, and Article 33 of the "Waste Management Act" of 1996 states that "Each local authority shall collect, or arrange for the collection of, household waste within its functional area".
Italy	Obligation	Article 49 of Legislative Decree no. 22 of 5 February 1997: the costs of management of municipal waste are covered by municipalities by means of the institution of a fee comprising a fixed portion in relation to the essential components of the service (investment and depreciation) and a variable portion based on the quantity of waste produced, the service provided and management costs, so as to cover all investment and operating costs.
Luxembourg	Obligation	Article 15 of the Law of 17 June 1997: "The cost of elimination of waste must be paid by […] the owner [of the waste]" and Article 17, paragraph 3: "[In relation to the management of household waste, bulky waste and comparable waste], taxes for services provided must correspond to actual production of waste and in particular to the type, weight and volume of waste. Moreover, they are based on the costs of the infrastructure to be introduced".
Netherlands	Yes	Article 15.33, paragraph 1, of the "Environmental Management Act" of 1993: "To cover the costs it incurs in connection with disposal of household waste, each municipality may institute a levy which may be imposed on persons who, […], actually use premises in respect of which an obligation to collect household waste applies [to municipalities]".
Portugal	Yes	Article 20 of Local Finance Law no. 42/98 of 6 August 1998: municipalities may charge fees for the collection of municipal waste. These fees may not, in principle, be lower than the direct and indirect costs of the services provided.
Spain	Yes	Article 25, paragraph 1 of Law 10/1998 of 21 April 1998: Public authorities may establish economic, financial and fiscal means to promote the prevention, reuse, recycling and other forms of recovery of waste.
Sweden	Yes	Article 27 of the Environmental Code of 1998: Municipalities may establish regulations that set fees for the collection […] of waste within their jurisdiction (paragraph 4). Fees may not exceed the total sum necessary to cover the costs of planning, investment and operation. The fee may be defined in such a manner as to promote reuse, recycling or other environmentally friendly ways of managing waste (paragraph 5).
Switzerland	Compulsory	Article 32a (introduced in 1997) of the federal Law on Environmental Protection of 1983: "The cantons shall ensure that the costs of disposal of municipal waste […] shall be charged, by means of emoluments or other taxes, to those who generate this waste".
United Kingdom	Prohibition	Article 45 of the "Environmental Act" of 1990: "No charge shall be made for the collection of household waste, except in cases prescribed in regulations made by the Secretary of State".

Source: Stefano Proietti (2000) The Application of local Taxes and Fees for the Collection of Household Waste: Local Authority Jurisdiction and Practice in Europe, Report for the Association of Cities for Recycling, Brussels: ACR.

2.0 CASE STUDIES FROM EXISTING LITERATURE

The following Section highlights some key findings from previous analysis of DVR schemes, described in greater detail in the full report. The figures below concentrate on some of the 'headline figures' associated with schemes implemented, these tending to be the effects on separation and on source reduction. The literature tends to be less comprehensive regarding issues of costs, and frequently, the collection systems are described only partially.

2.1 Belgium

A 1999 study carried out for the Flemish Waste Management Agency, OVAM, found that a variable household tax has a significant impact on the amount of residual household waste offered.[6] It was found that the introduction of a payment of €0.50 (£0.33) per grey waste bag purchased would lead, in an average commune, to a decrease in the amount of residual household waste offered of approximately 30 kg per inhabitant.

There are two avenues through which the residual waste collected is reduced:

1. Firstly, the charges for the bags leads householders to improve separation of materials. This means that the amount of waste which is separately collected increases significantly. This is called the separation effect. The separation effect is responsible for about 30% (or 9 kg) of the decrease in the amount of residual household waste offered; and

2. Secondly there is a reduction in waste set out for collection either through genuine preventative behaviour or through evasion. This is believed to account for, on average, 70% (or 21 kg) of the decrease in the quantity of residual waste.

The variable household tax (or retribution) does not simply reduce the amount of residual household waste offered, but there is some inverse correlation with the amount of bulky waste offered for collection. This conclusion arose from a model that looked for the correlation between the variable element of the waste fee and the amount of bulky waste offered for collection. Other parameters, such as whether or not municipalities had a strong policy on bulky waste, were not included in this model. It may be, therefore, that municipalities with higher fees for grey bags were also the ones that were more severe on the bulky waste fraction (for example, no door-to-door collection of bulky waste). Alternatively, it may be that there is a greater awareness amongst householders of the issues involved, or more bulky waste may be sent to re-use centres.

The effect of the introduction of a contribution scheme of €0.50 (£0.33) per grey waste on the total amount of municipal waste (= selective fractions + non-selective fractions) offered lies somewhere between 40 and 50 kg per inhabitant.[7] This is the net preventative and evasive-effect. This is equivalent to approximately 10% of waste per inhabitant in Flanders.

[6] The rest of this section is taken from D. Hogg (ed.) (2002) *Financing and Incentive Scheme for Municipal Waste Management: Case Studies*, Final Report to DG Environment the European Commission

[7] OVAM (1999) *The Effect Of Household Waste Taxes And Retributions On The Amount Of Household Waste Offered*, February 1999.

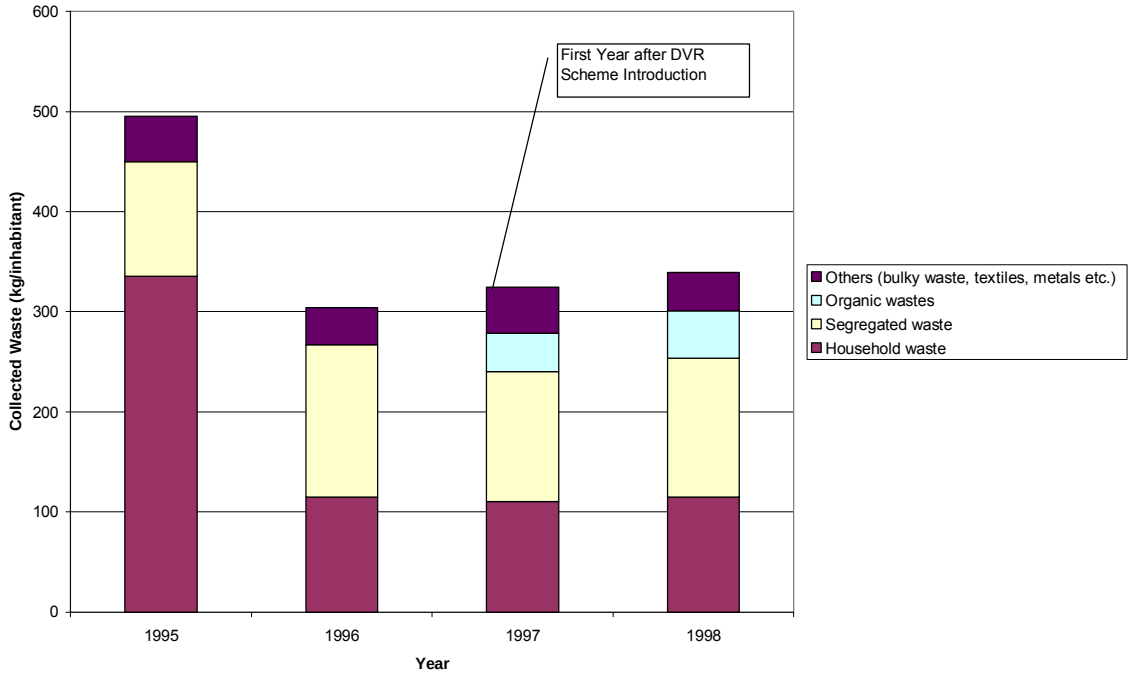
2.1.1 Dilbeek

A study of the municipality of Dilbeek was presented in a report by the Oko Institut for the European Commission.[8] Inhabitants of Dilbeek used to pay a general tax for the collection of their household wastes that did not correspond to the individual amount of waste produced by each household. Upon implementation of the new waste management system, the general tax for household wastes was replaced after a transition period of two years (1996-97) by a payment referring to the individual amount of waste produced by each household.

Since 1998, inhabitants of Dilbeek have paid an individual fee which varies according to the wastes that are collected by the municipality. In practice, the municipality of Dilbeek sells two kinds of plastic sacks, one for household waste and one for recyclable packaging waste. Each plastic sack costs between £0.56 and £0.72 according to its size and volume. The costs for the waste collection are included within this amount. The total waste disposal cost for each household varies according to the number of plastic sacks they need to get their waste collected.

Dilbeek reduced its quantity of residual waste from households by more than 60 % within only six months, in 1996. In total, the average household waste generated in Dilbeek fell from 495 kg/inh. in 1995 to 304 kg/inh. in 1996, implying a reduction of 39%(see Figure 1). At the same time, the Flemish average was around 490 kg/inhabitant. It should be remembered that Dilbeek is a high-income area of Belgium.

Figure 1: Waste Minimisation in Dilbeek



Source: Municipality of Dilbeek

The financial gains for the municipality of Dilbeek due to the lower amount of waste are impressive. In 1995, the costs of municipal waste management were €1.77 million (approx. £1.14 million), whereas in

[8] Oko Institut et al (1999) *Waste Prevention and Minimisation*, Final Report to DGXI, European Commission, 29 July 1999.

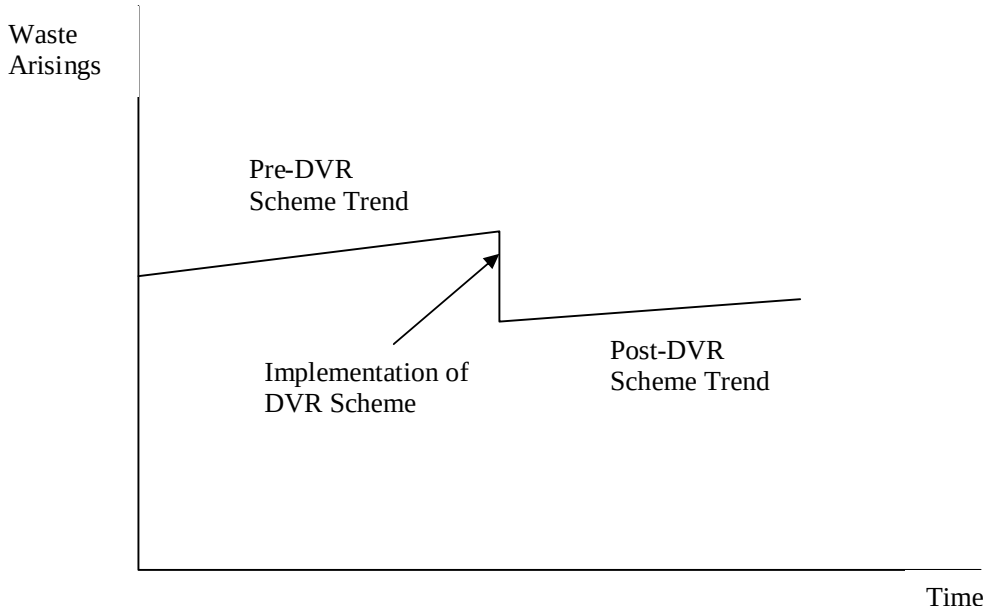
1996, total costs fell to €1.25 million (approx. £0.81 million). A further reduction to €1.24 million (approx. £0.80 million) was observed in 1997. Without the measures the costs are estimated to have been between €2.23 and €2.48 million (approx. £1.44 - £1.60 million). Also the collection fees paid by the population decreased with the waste prevention actions. In 1995, the inhabitants of Dilbeek paid €1.22 million (approx. £0.79 million), an average of €32.5 /inhabitant (approx. £20.97 / inhabitant). The costs dropped to €1.12 million (approx. £0.72 million), or €29.8 /inhabitant (approx. £19.23 / inhabitant), in 1996 and went further down to €1.08 million (approx. £0.70 million), or €28.8 /inhabitant (approx. £18.58 / inhabitant), in 1997. This means that the average costs per inhabitant decreased from €32.5 to €28.8, or from £20.97 to £18.58, between 1995 and 1997.

This study has been reported elsewhere as an example of how DVR charging schemes can work. Yet it is not clear, least of all, from the above figures, that it was the charging mechanism itself that played a pivotal role in the changes observed. Many changes were made either before, or during the period in which the new charge system was introduced. This makes it difficult to disaggregate the effects of the DVR scheme from the wider changes which were implemented.

The most significant changes occurred in the first year of full implementation of a number of measures which preceeded the DVR scheme's introduction (i.e. change in collection system, education / PR measures etc.). As such, rather than illustrating a significant impact of charging *per se*, the study appears to show the role which charging can play in supporting and sustaining a more comprehensive package of measures designed to incentivise more sustainable behaviour in respect of waste management. It would be interesting to speculate, for example, upon the degree to which performance would have been maintained in the absence of charging, or equivalently, whether additional expenditure on PR etc. would have been needed to maintain the level of performance over time observed under the new DVR charging scheme.

Note that even with the scheme, total waste arisings have crept up in the 1996-98 period. This suggests that DVR schemes may have a 'one-off' effect on arisings in which these effectively ratchet downwards. It may also be that they reduce the rate of growth which occurs following this one-off downward ratcheting in arisings. Figure 2 shows a hypothetical illustration of the effect of DVR schemes.

Figure 2: Hypothesised Effect of DVR Schemes



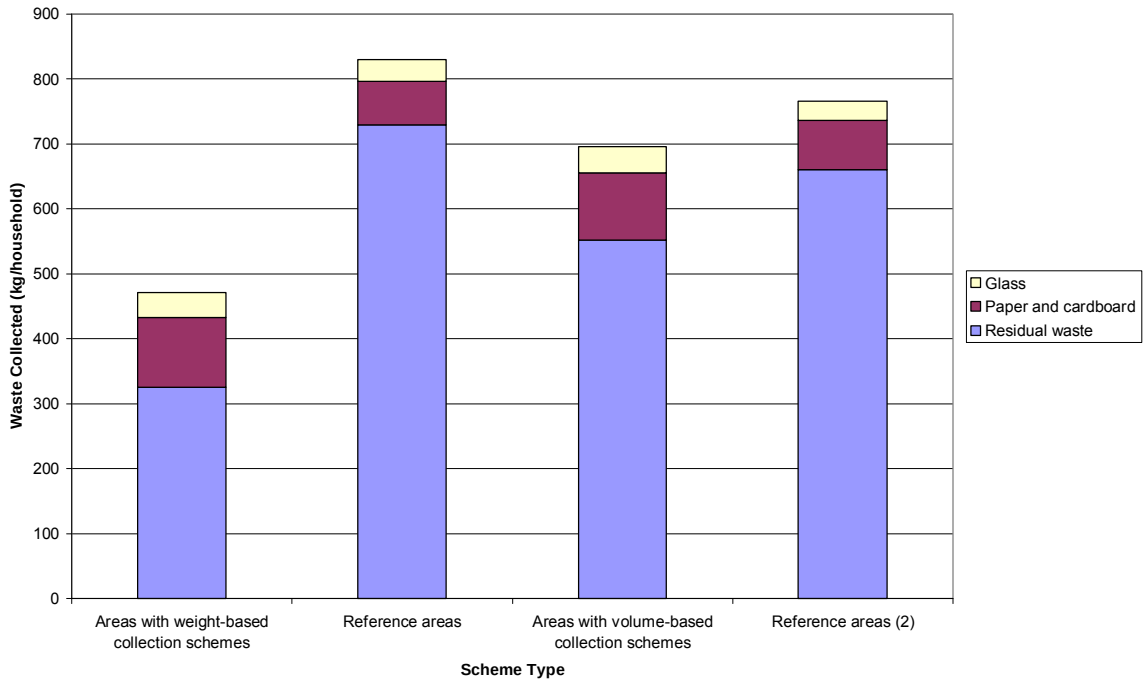
2.2 Denmark

One study looked at 5 municipalities that had introduced weight-based collection schemes and compared these to 5 municipalities without weight-based schemes.[9] Two different approaches, one based upon comparative data analysis and the other based upon a questionnaire, were used. Figure 3 shows the results from these systems. It is unusual for DVR schemes to be implemented in the absence of collections for biowaste. The Danish experience, which shows DVR schemes being implemented in the presence of relatively poor systems for separate collection, has produced some effects which are difficult to explain.

In local authority areas with weight-based schemes, the amount of domestic waste collected annually from each household averages 359 kg less than in the reference areas. The difference drops to 279 kg per household a year when allowance is made for there being a higher level of home composting in local authority areas with weight-based schemes than in reference areas.

59% of households in local authority areas with weight-based collection schemes say that they home compost virtually all fruit and vegetable remnants. The corresponding percentage in the reference areas is 21%. The total response rate of the questionnaire was 41%.

Figure 3: Collected Amount of Waste (calculated in kg per household in 1999).



The above study led to further questions being asked concerning the effects of weight-based schemes in Denmark. The second report incorporated information from three sub-studies carried out in the municipalities of Tinglev and Norre Rangstrup. The aim was basically to shed more light upon the issue of the fate of waste which the above study suggested appeared to 'disappear' in the case of weight-based schemes. Table 2 lists under various headings the amount of waste recorded in 2000 (up-scaled for one year).

[9] Danish Environmental Protection Agency (2000) Fordele og ulemper ved gebyrdifferentierede indsamlingssystemer for husholdningsaffald. *Miljøprojekt nr. 576*, 2000. (Study on the advantages and disadvantages of fee-differentiated waste collection schemes for domestic waste from households).

Table 2: Amount of Waste Recorded per Household

Category	Tinglev	Norre Rangstrup
Remaining waste (recorded by the waste analysis in 2001)	318 kg	532 kg
Paper and cardboard (2000)	106 kg	105 kg
Bottles and household glass (2000)	34 kg	32 kg
Remaining waste + paper and glass	458 kg	669 kg
Difference in amount of vegetable food waste and garden waste (0.593 kg + 0.093 kg) x 52 weeks	36 kg	-
Total refuse	494 kg	669 kg
Refuse in civic amenity container labelled "combustible" (up-scaled for one year)	74 kg	17 kg
Total	568 kg	685 kg

Source: Danish EPA

This study probably raises as many questions as it answers. Firstly, one has to ask whether the approach – a comparison of two authorities – is really an adequate one from which to draw general conclusions. Secondly, the overall analysis of waste collection (see Table 2) suggests that the separate collection infrastructure is not well-developed in either community. Only paper and card, and glass are collected separately. Thirdly, the attempt in Denmark to have households differentiate between materials which are 'combustible but not for recycling', and refuse, is one which seems likely to generate problems since who is to differentiate what should happen to mixed waste, and if the waste is not mixed, why is it 'combustible' rather than 'recyclable'? Presumably, the residual waste is also being incinerated, so it remains unclear as to why it is a problem for the overall system to have material arrive at a civic amenity container or at the doorstep when its ultimate fate is the same.

It might reasonably be asked, therefore, whether the issues being highlighted in the study are not ones which illustrate the shortcomings of the approach to waste collection and of the charging scheme in these areas rather than purporting to show possible problems with weight-based charging. These no doubt exist, but they are likely to be much greater where charges are applied with little scope for their avoidance as appears to be the situation in these cases.

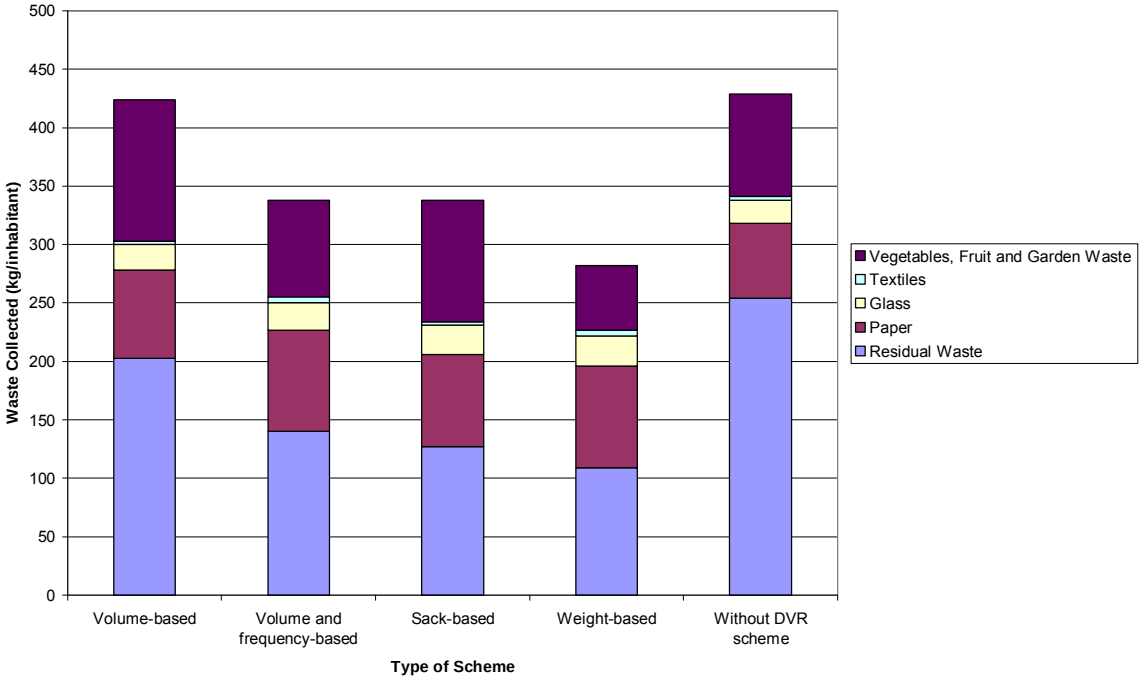
2.3 Netherlands

A study was undertaken for VROM by KPMG in 2001.[10] The principal objectives of the study were to understand the fate of the materials diverted from the residual waste stream, in particular, to understand the degree to which the reduction if refuse collected was due to a) 'positive' changes (in respect of genuine waste reduction) and b) 'negative' changes (in respect of evasive activities / illegal disposal).

3 types of each of 4 different DVR scheme were examined. Comparative results across the system types were reported in an AOO publication and are shown in Figure 4.

[10] KPMG Bureau voor Economische Argumentatie (2001) Gedragseffecten van Tariefdifferentiatie. The Hague: KPMG.

Figure 4: Quantities of Separated Waste and Refuse by Charge System Type, 1999



Source: AOO (2001) Afval Informatief, Informatiebulletin, 06, Juin 2001.

2.4 United States

Several studies of DVR charging schemes (usually referred to in the USA as variable rate pricing, unit pricing, or pay-as-you-throw) have been undertaken. Some of these look to assess householder response in terms of elasticities of demand for refuse disposal services with respect to changing price, and others have been undertaken on a cross-sectional basis, though frequently without reference to the degree to which 'responses' are based upon relative prices of the different collection routes (i.e. refuse and source separation).

One of the most recent studies was that carried out by Skumatz.[11] The results are shown in Table 3. These effects are not as great as one finds in many cases where DVR schemes are implemented in Europe. Specifically, many weight-based schemes report much higher reductions in waste collected. Skumatz reported in 2002 that no full-scale weight-based programmes were operating in the USA.

[11] SERA (2000) *Measuring Source Reduction: Pay as you Throw / Variable Rates as an Example*, Seattle: Skumatz Economic Research Associates.

Table 3: Source Reduction Estimates from Variable-rate Waste Disposal Programmes from Two Estimation Methods

	Community Comparison Method	Time Series Method
Total effect of variable-rate programme	16 %	17.3%
Minus recycling effect for variable rates	5-6%	6.9%
Minus garden-waste effect for variable rates	4-5%	4.6%
Leaves estimate of source-reduction effect attributable to variable rate programs	5-7% from source reduction	5.8% from source reduction

Source: SERA (2000) Measuring Source Reduction: Pay as you Throw / Variable Rates as an Example, Seattle: Skumatz Economic Research Associates.

The above analysis does not illustrate the effect of higher differentials. The Flemish study above illustrated how higher rates payable per bag can have an effect on the response of householders, and economic studies suggest the same. SERA have estimated that a $1 increase in rate differentials for 30 gallons of service (approx 65p per 140 l) increases recycling by 0.3%. A $4 (approx £2.50) differential was estimated to lead to an increase in recycling of approximately 3%.

In addition, estimates of how the structure of charges for different container capacities would affect behaviour were made. This form of 'tariff escalation' (proportionately higher rates for larger volumes) has been shown to be effective in cities such as Seattle. It is estimated that in systems where the unit payment increases by 10% for higher use rates, so recycling increases by 0.2%. This is an average figure. When communities employing high rates of tariff escalation (those with first containers priced 80% higher than second ones) were examined, this suggested a 4.4% increase in recycling.

3.0 NEW CASE STUDIES

Six case studies were carried out specifically for this study. These studies show a range of technologies and a range of experiences. They were:

1. Gent and Destelbergen (Flanders, Belgium) – a system based upon expensive sacks in the urban centre, and an identification-based system in the suburban area, where households are charged 'per emptying' of the bin;

2. Comuni de Navigli (Italy) – a system using a fixed fee and a variable element based purely on expensive sacks;

3. Treviso District (Italy) – where a fixed fee is paid in addition to a fee per emptying of the bin (using an identification system);

4. Landkreis Schweinfurt (Germany) – a system using identification and weight to levy a fee composed of a fixed element (though varying with the choice of bin size), a fee per emptying of the bin, and a weight based charge for the refuse and biowaste systems;

5. Nijmegen (Netherlands) - based upon expensive sacks; and

6. Fingal County (Ireland) – in which a tagged bin scheme is operating.

In the six systems operated above, it is important to understand the way the charge system operates on biowaste. In Nijmegen, there is no charge for biowaste collection. In Gent and Schweinfurt, there are charges. In Treviso and Comuni de Navigli, there is no charge, but discounts are applied for home composters. This is significant since when considered alongside the nature of the biowaste collection system, it appears to have a bearing on the potential for source reduction in the schemes. For example, in both Gent and Schweinfurt, a significant factor explaining source reduction is the reduction in biowaste collection achieved through the application of the DVR scheme. There appears to be an effect in Treviso also, but this is due to a discount applied for home composters. The Treviso scheme differs from that in Comuni de Navigli in that the latter never sought to include garden waste in the doorstep collection system. Hence, even though the Comuni de Navigli also seeks to offer discounts for home composters, the impacts of this incentive on tonnages collected is much less, more or less non-existent, in the area. This merely illustrates the significance of the pre-existing collection scheme in determining the level of dynamic effect one can expect from DVR schemes.[12]

Slightly less significant is the charging regime for other materials. In Gent, packaging waste collections are also charged for, albeit at much lower rates. Indeed, the Gent system uses a mix of tariffs depending upon the area of the City (inner or outer zone – see Table 4). On-vehicle identification systems are used to charge householders per emptying of a given bin in the outer areas, whilst in the inner area, an expensive sack system is used.

Table 4: Structure of Charging System Applied in Gent

Type of waste	Recipient	Volume	Price in BEF (£)
Refuse waste	Sack	15 l	15 (£0.24)
		60 l	25 (£0.40)
		60 l	50 (£0.81)
	Waste bin	40 l	35 (£0.56)
		60 l	50 (£0.81)
		120 l	100 (£1.61)
		240 l	200 (£3.23)
OSW	Biodegrad. sack	15 l	10 (£0.16)
		30 l	20 (£0.32)
	Waste bin	40 l	25 (£0.40)
		60 l	40 (£0.65)
		120 l	80 (£1.29)
		240 l	160 (£2.58)
PMD	Blue sack	60 l	5 (£0.08) max. 3 sacks
Paper/cardboard	-	-	No charge
Glass	-	-	No charge

Some charges are also levied at containerparks (the equivalent of CA sites). Whilst most fractions are accepted free of charge (no residual waste is accepted), bulky fractions and rubble are charged for.

[12] It also re-affirms the significance of the issue of biowaste collection in cost-optimisation of collection schemes, and in constraining growth in waste arisings. We have alluded to this elsewhere – see, for example, D. Hogg (ed.) (2002) *Costs for Municipal Waste Management in the EU*, Final Report by Eunomia Research & Consulting to DG Environment, European Commission; D. Hogg, D. Mansell and Network Recycling (2002) *Maximising Recycling Rates: Tackling Residuals*, Research for the Community Recycling Network by Eunomia Research & Consulting, Avon FoE and Network Recycling; D. Hogg and J. Hummel (2002) *The Legislative Driven Economic Framework Promoting MSW Recycling in the UK*, Final Report to the National Resources and Waste Forum, www.nrwf.org.

Figure 5: Charging Scheme for Households at Gent Containerparks (separate schemes apply to non-household waste)

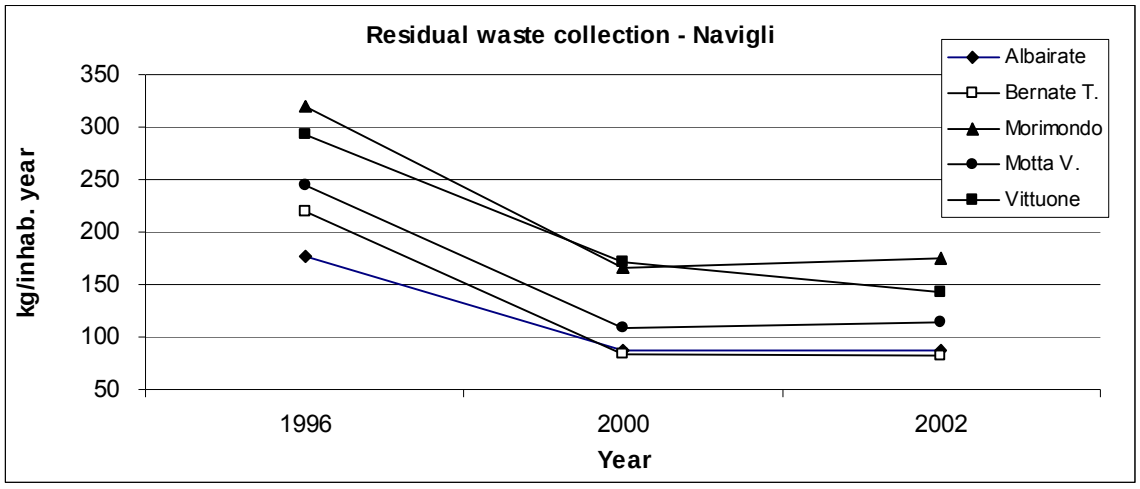
Table 5: Waste Charge for Households - Variable Charges are Estimated Costs– Treviso District (I)

Household	Fixed quota	Variable charge	Total Charge per HH (incl VAT and District tax)	After Reduction for Home Composting	
				only garden waste	food & garden waste
1 pers	€53.08 (£34.25)	€13.40 (£8.65)	75.12 (£48.46)	73.61 (£47.49)	70.58 (£45.53)
2 pers	€53.08 (£34.25)	€26.80 (£17.29)	90.26 (£58.23)	87.24 (£56.28)	81.18 (£52.37)
3 pers	€53.08 (£34.25)	€40.20 (£25.94)	105.41 (£68.01)	100.86 (£65.07)	91.78 (£59.21)
4 pers	€53.08 (£34.25)	€53.60 (£34.58)	120.55 (£77.77)	114.49 (£73.86)	102.38 (£66.05)
5 pers	€53.08 (£34.25)	€67.00 (£43.23)	135.69 (£87.54)	128.12 (£82.66)	112.98 (£72.89)
6 pers	€53.08 (£34.25)	€80.40 (£51.87)	150.83 (£97.31)	141.75 (£91.45)	123.58 (£79.73)

The systems also vary in the extent to which convenient source separation systems exist. In the area which had probably the best system in operation before the DVR scheme was introduced (Comuni de Navigli), the effects on waste quantities, both in terms of reduction and separation, appear to have been limited. The source separation of foodwaste (introduced since 1997) led to a sharp reduction in residual

waste production. On the surface, from the data available, it might appear that the application of a DVR charging system does not seem to further reduce the amount of residual waste, in comparison to the reduction achieved by introducing a quality system of source separation (the DVR scheme was introduced in 2001) (see Figure 6).

Figure 6: Evolution of Residual Waste Collected in (some) Municipalities of Navigli-District (between 1997-1999 door-to-door collection for foodwaste started; between 2001-2002 all municipalities applied a DVR Charge Scheme).



This, however, has to be set against the ongoing increase in the production of total waste. Hence, what appears to be happening here is that the DVR scheme is improving the accuracy of separation as carried out by different premises. Perhaps unsurprisingly given the nature of the system, it is the bulky wastes which are most affected by the scheme. More of this is being collected separately. It should be noted that in other studies such as those carried out in the US, since fly-tipping is often associated with bulky items, the implementation of quality bulky waste collections once DVR schemes are implemented is considered important both for maintaining fly-tipping at low rates, but also, for increasing rates of separate collection.

The effect of the introduction of the DVR scheme on the different routes for MSW collection is shown in detail for 2 of the 13 municipalities in Figure 7. This shows that waste separation and recycling appears to be principally affected by introducing the door-to-door collection of the strategically important (large proportion) waste fractions and less by the application of the DVR scheme.

By contrast, in Gent, increases in source separation occurred, though some of this must be attributed to ongoing changes in the collection infrastructure. The scheme was introduced in 1996. Table 6 shows how the DVR scheme helped to increase source separation rates. The authority also suggests that the scheme helps to stabilise waste arisings (i.e. waste collected is no longer rising).

In Treviso and Landkreis Schweinfurt, source reduction effects appear to be significant. In the former, a 13% reduction was accompanied by a 14% increase in separately collected materials, leading to a residual waste reduction of 27% (see Figure 8). In the latter, a reduction in residual waste collected of 43% was achieved (see Figure 9). Recycling rates increased from 64% before the DVR scheme to 76% after.

Figure 7: Evolution of Different Waste Fractions Collected Before (2000) and After (2002) Introducing a DVR Charge Scheme in 2 Municipalities of Navigli-District;

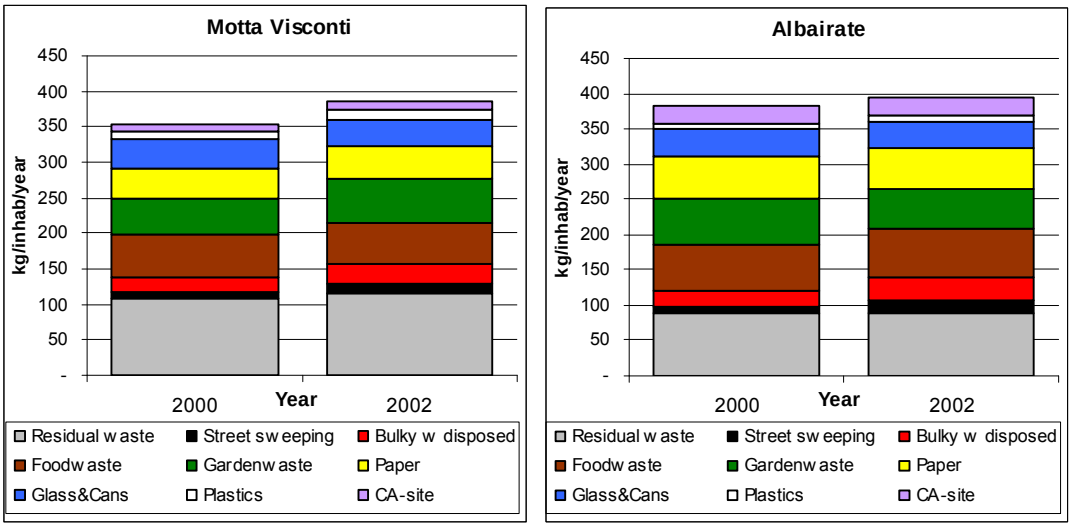


Table 6: Effects on Waste Production (figures are tonnes unless stated)

	1995	1996	1997	1998	1999
Total Refuse (1)					
Yearly tonnages					
Door-to-door	68,967	58,220	49,396	35,824	31,426
Bulky waste	4,466	10,846	10,468	10,874	8,663
Street cleansings	1,252	1500	1,600	1,651	2,271
TOTAL	**74,685**	**70,566**	**61464**	**48,349**	**42,360**
Kg per resident					
Door-to-door	300	253	219	160	140
Bulky waste	19	40	46	49	39
Street cleansings	6	7	7	7	10
TOTAL	**325**	**300**	**272**	**216**	**189**
Selectively Collected Waste (2)					
TOTAL	**30,954**	**36,764**	**47,598**	**58,701**	**66,941**
Kg per resident	135	160	211	261	299
Percentage of Total %	31	35	44	55	61
Total household waste (1+2) (tonnes) ton	**105,639**	**105,830**	**107,463**	**107,050**	**109,301**
kg per resident	**460**	**460**	**475**	**477**	**487**

Figure 8: Evolution of Different Waste Fractions Collected Before (2001) and After (2002) Introducing a DVR Charge in the TV2 District Area – Average Data for 18 Municipalities

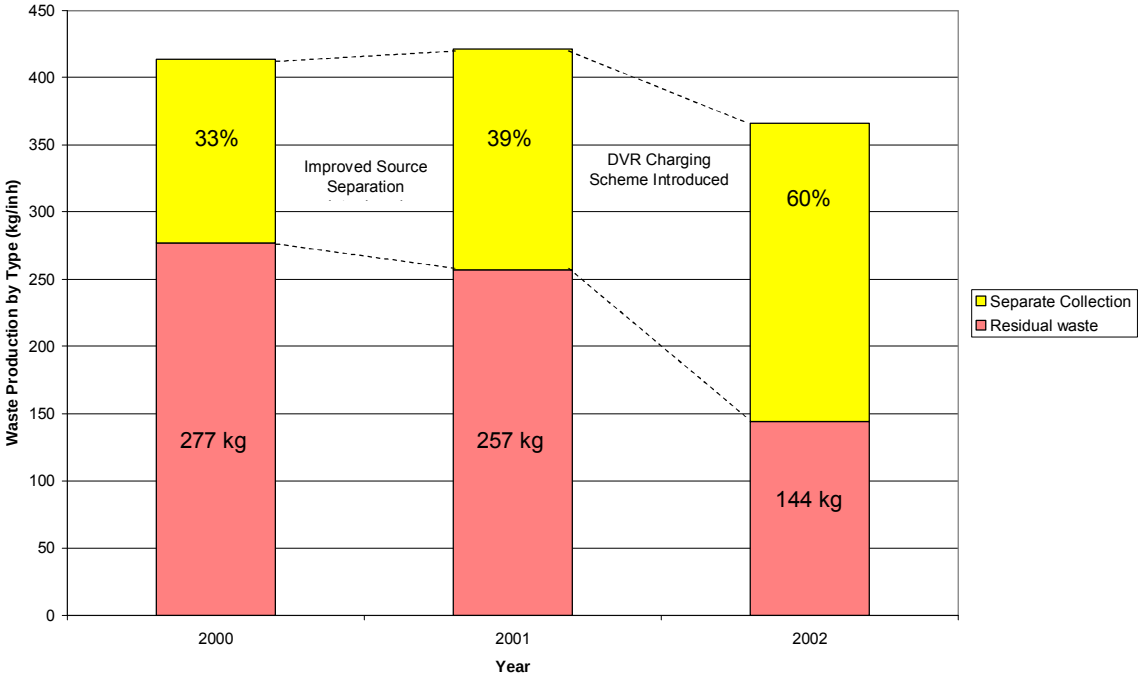
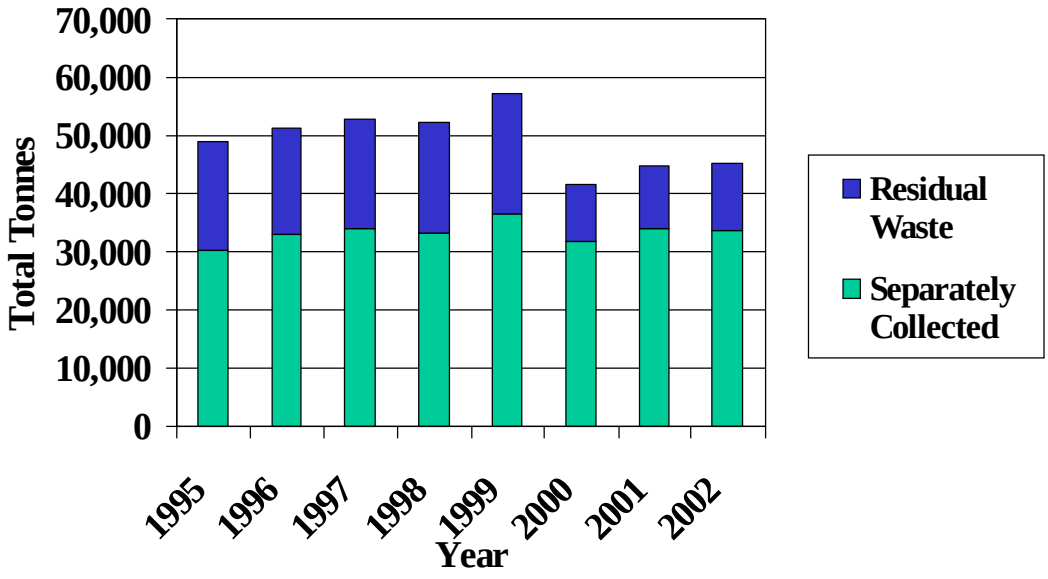


Figure 9: Net Effect of DVR Scheme on Waste Management System in Schweinfurt



The most awkward implementation was in Fingal where a combination of a lack of convenient source separation combined with the absence of appropriate legislation (enabling the local authority to implement sanctions against non-payers) has led to problems of non-payment.

The above comments suggest that the effects have to be understood in the context of the pre-existing source separation scheme. In schemes such as Comuni de Navigli, a system which operates well, and sets out to avoid collecting garden waste, reduces scope for a fall in the quantity of waste collected (because less of the waste collected prior to the scheme can be home composted). In the case of Landkreis Schweinfurt, households were able to reduce total waste quantities from already low levels principally through diverting material from the biowaste bin to their gardens. In Treviso and Gent, the effect of the system has been to improve source separation with some effect on total waste quantities.

Even where the effects on waste flows appear to be relatively insignificant, a number of less obvious benefits arise in the context of these systems. Firstly, awareness among the general public is deepened. Secondly, greater transparency in costs can be attained. Thirdly, the system's operation can be used as a tool to manage the performance of vehicle crews, but also to check on those households who apparently produce very little waste.

The most significant problems in any of the schemes have been those felt in Ireland, for reasons just discussed. In the other cases, fly-tipping is not entirely absent, though the degree to which the DVR scheme increases such activity is believed to be small (it was happening before).

In several of the cases, information provision in the run-up to (and in some cases, following) implementation has been accorded a significant priority. This is an important message for any local authority seeking to introduce such schemes. In Landkreis Schweinfurt, the time elapsing between the decision to implement the scheme and its full implementation was fourteen months, with a thirteen week information campaign targeted at each of 29 communities in the County. In the Italian schemes, information points are a significant element of the new costs incurred in the context of these schemes.

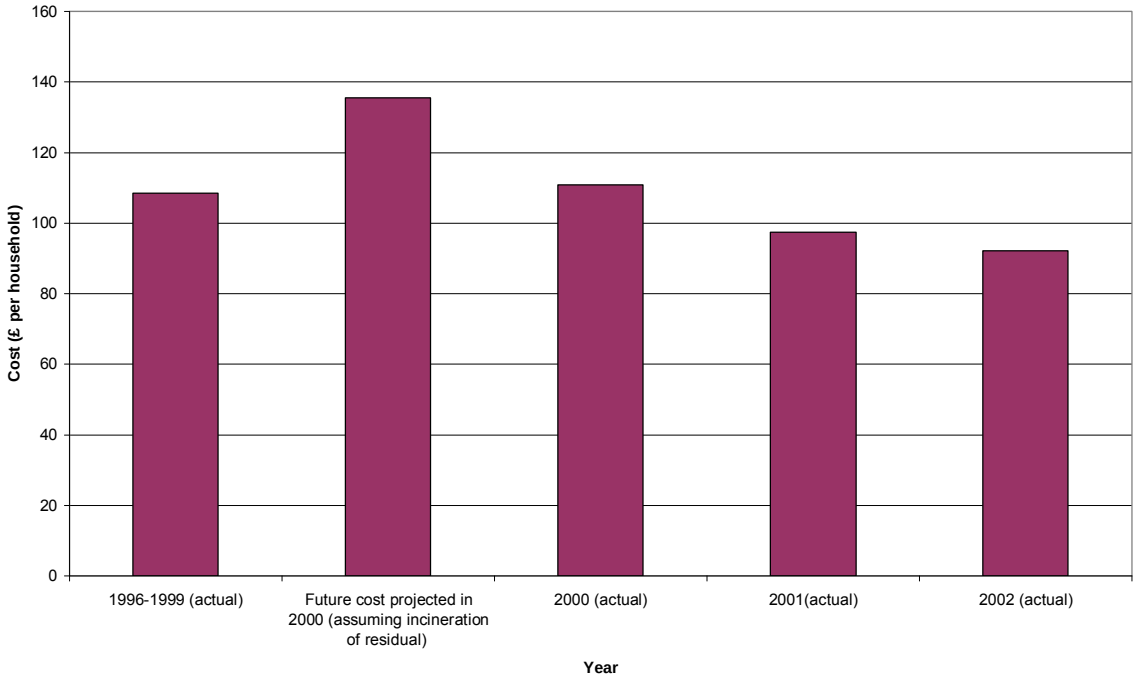
In the majority of the schemes, the cost profile of the systems is viewed favourably. This is especially the case in Gent, where the switch to the DVR scheme was effectively used to generate revenue for the joint public-private company to fund investments elsewhere in the overall waste management system. Even before one considers the revenues, however, the estimated effects of the scheme were to save money because of the avoided refuse collection and disposal costs implied by the system's effects. Savings of approximately £9.38 per household are estimated by the company responsible for the scheme, IVAGO (see Table 7).

Similarly, in Landkreis Schweinfurt, costs for householders have fallen and the system has reduced the costs of waste management for the municipality. Costs for households opting for a 120l bin for refuse and a 120l bin for biowaste are shown in Figure 10. This system – costing approximately £90 for a household opting for this service level – delivers a recycling and composting rate of the order 80%. No other revenue source is received, but the collection of packaging is paid for by the Duales Syteme Deutschland (the organization with responsibility for meeting Germany's packaging recycling and recovery targets).

Table 7: Total Costs, Savings and Revenues of DVR System in Gent (annual)

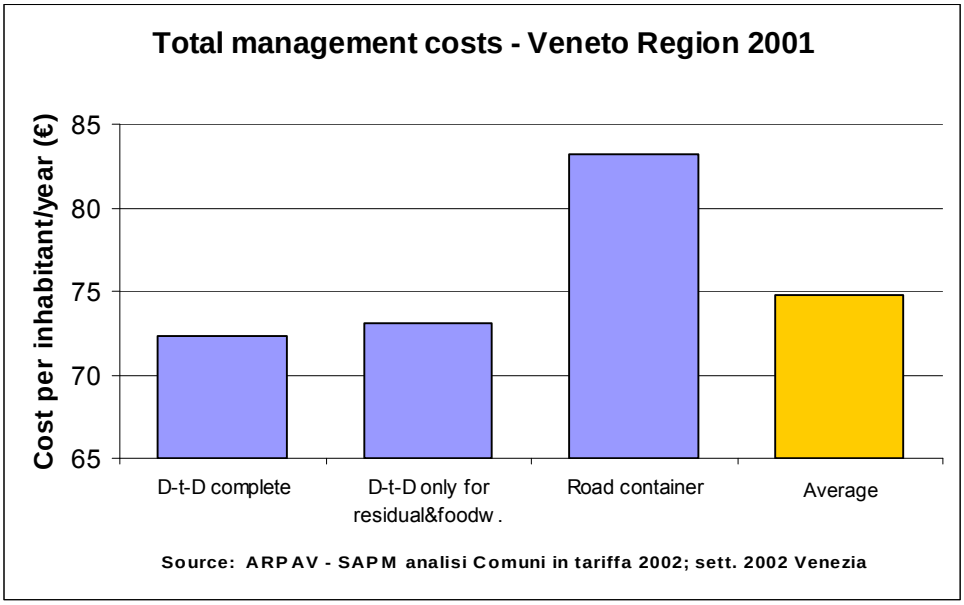
Cost Item	**Total Costs (€ and (£))**	**Costs (£/household, approx)**
EXTRA COSTS		
running Diftar system (third party)	€0.7 mn (£0.45 mn)	£4.11
extra in-house administration and follow up of container changes (4 people)	€0.15 mn (£0.1 mn)	£0.88
depreciation of containers	€0.35 mn (£0.23 mn)	£2.05
clean up from evasion of the charge system	€0.3 mn (£0.19 mn)	£1.76
AVOIDED COSTS OF TREATMENT		
- 16.600 tons residual waste	-€2.3 mn (-£1.48 mn)	-£13.49
- 2.400 tons organic waste	-0.2 mn (-£0.13 mn)	-£1.17
LOGISTICS SAVINGS		
fewer people and fewer lorries	-0.6 mn (£0.39 mn)	-£3.51
INCOME FOR TREASURY FROM CHARGES = **1**	€5.4 mn (£3.48 mn)	£31.67
TOTAL COSTS	€1.5 mn (£0.97 mn)	£8.80
TOTAL SAVINGS	€3.1 mn (£2.0 mn)	£18.18
COSTS NET OF SAVINGS = 2	**-€1.6 mn (-£1.0 mn)**	**-£9.38**
NET EFFECT ON REVENUES = **(1 – 2)**	+€7.0 mn +(£4.5 mn)	+£41.06

Figure 10: Costs for Households Using 120 l bin for Refuse and 120 l bin for Biowaste, Landkreis Schweinfurt (DVR scheme implemented in 2000)



The Italian experience is perhaps more relevant for the UK in this context since disposal fees tend to be not so dissimilar to those in the UK. Here, the focus has been on low-capital cost systems, using sack-based, or in exceptional cases, bin identification systems, as the implementing tools. There has been a tendency to steer clear of the higher capital cost on-vehicle weighing approaches. Again, the net effect of implementing DVR schemes in Italy tends to be a fall in overall costs. A qualitative evaluation of the Treviso experience compares the total management cost (£60 per inhabitant per year, or approximately £40 per inhabitant per year) in the district with those determined by the Environmental Agency of Veneto-Region for 2001 (ARPAV). The Agency analysed the financial plans of about 90 municipalities of the Region. Some of the municipalities considered are not applying DVR schemes. Even so, the (total) cost of the Treviso district are competitive with those of other waste management schemes of the same Region (see Figure 11).

Figure 11: Management Costs for Veneto Region, 2001



Evidence in this research, and in the German case study, suggests that the effect on waste arisings of weight-based systems may be greater. Much depends, however, on the magnitude of the incentive that can be safely applied (i.e. without jeopardizing revenue stability), and the scope for large incentives at current disposal costs in the UK may be somewhat limited. In addition, to the extent that there are still concerns regarding the 'disappearing waste' in DVR schemes, these are likely to be heightened in cases claiming high levels of source reduction. Even so, it is from our Landkreis Schweinfurt study that even close examination of the possible illegitimate routes which such wastes might have followed tends to support the view that through careful preparation and implementation, systems do not tend to generate the negative outcomes which many suspect that they must.

4.0 COSTS OF CHARGING SYSTEMS

The costs of charging systems are not amenable to easy generalizations. Of course, costs will vary with the nature of the system being implemented, but equally, in order to understand the *incremental* costs associated with the scheme's implementation, one needs to understand the new system in the context of what existed before. For example, if an authority sought to implement a weight based system, whether it was changing *from* a bin or a sack-based scheme would affect the incremental costs of implementation. In such cases, the collection system is effectively changing at the same time as the DVR scheme is implemented.

Generally, we differentiate between:

- **Static costs**, understood as the incremental costs of vehicle adaptation where relevant, incremental costs of additional staff time in collection process (tagging etc.) and in 'regulation' of scheme, enforcement, costs of administering the scheme (including additional time for admin staff and billing mechanisms); and

- **Dynamic costs**, understood to cover the overall impact on total system costs. This includes changes in cost associated with the impact of the scheme on the quantity of waste collected, such as changes in quantities of residual waste and materials separately collected, savings associated with waste reduction (in the context of measurement against what would have occurred in the absence of the scheme), savings associated with avoided residual waste collection and disposal, and any costs associated with additional clean-up / enforcement associated with policing attempts to evade the charge scheme.

Note that the costs net of the revenue generated by the DVR charge payments depend upon the way in which revenues are treated. Strictly speaking, if they are to be treated as a charge, the revenues should all be used to fund the service being provided.

A model was developed which projects the costs of specific systems under different assumptions concerning the collection system and disposal costs. The costs projected are simply representative costs and represent attempts to bring together information from system providers, case studies discussed above and elsewhere, and typical scheme impacts.

4.1 Results

4.1.1 Comparative Analysis

For comparison, we show below all systems performing with the same response. This is given as 6% source reduction, 5% increase in composting and 5% increase in recycling, in line with US systems. On the one hand, this analysis may be 'unfair' to the extent that it denies the differences in the systems. On the other, it has the merit of revealing some of the influences on costs.

In our modelling, the costs are much higher than is estimated for US systems. Note, however, the difference in the 'net costs before accounting for collection system changes', and the 'net increase' after accounting for these. The former situation show costs of the order £1.66 per inhabitant assuming relatively high billing costs, £2.50 per household spend on information provision and an additional £1.00 per household spent on follow up of evasion. These are relatively generous rates.

In most costings examined by us, relatively little account is taken of the change in costs of operating the separate collection systems. Whilst it is possible that these might exhibit no significiant increase before and after the DVR charging scheme's introduction, this would imply a relatively low efficiency of logistics prior in the pre-scheme phase. If it is the case that savings can be made on the refuse collection logistics, it seems correct, to us, to allow for a higher cost of collection of source separated fractions, and for the treatment of biowastes, in the wake of introducing DVR schemes. It is quite possible, however, that this might be 'discounted' as at least a more desirable expenditure increase than other means of treating municipal waste.

Even a £6.67 per household outlay for a 13% increase in recycling rate, and a 6% reduction in waste arisings might be considered 'good value for money'in the current context. The sack-based schemes deliver this for £4.07 per household. If one was to assume a landfill tax rate of £35 per tonne, and a background disposal cost of the order £50 per tonne, the net costs fall to £0.87 per household for the sack-based scheme and £3.47 for the weight-based scheme. We re-emphasise here that these are deliberately costed on the high side, but other schemes frequently start from a more healthy position than many UK authorities in terms of, for example, provision for informing and educating citizens.

Table 8: Comparative Analysis of DVR Schemes, Current Disposal Costs, Equal Dynamic Performance

	Weight-based	ID (expensive)	ID (cheap)	Sack
Source Reduction Effect	6%	6%	6%	6%
Recycling Effect	5%	5%	5%	5%
Effect on Separate Collection of Biowastes	5%	5%	5%	5%
Effect on Separate Collection of Recyclables	16%	16%	16%	16%
Disposal Cost (per tonne)	£30.00	£30.00	£30.00	£30.00
Efficiency of Logistical Savings	50%	50%	50%	50%
Total Cost Per Household (admin, incl. billing, and chip)	£3.07	£2.93	£2.93	£1.54
Savings on Refuse Collection (net of costs of equipping vehicle)	-£1.68	-£2.01	-£2.67	-£2.75
Savings on Refuse Disposal	-£4.80	-£4.80	-£4.80	-£4.80
Increase in Composting Costs (assuming 'meat included')	£2.00	£2.00	£2.00	£2.00
Additional Monitoring of Evasion	£1.00	£1.00	£1.00	£1.00
Information Provision	£2.50	£2.50	£2.50	£2.50
Net Costs Before Accounting for Collection System Changes	**£2.09**	**£1.62**	**£0.96**	**-£0.51**
Increase in Costs of Recycling Provision	£2.08	£2.08	£2.08	£2.08
Increase in Costs of Compost Collection Provision	£2.50	£2.50	£2.50	£2.50
Net Increase	**£6.67**	**£6.20**	**£5.54**	**£4.07**
Charge	£20.80	£27.60	£27.60	£31.20
Preceding Collection and Disposal	£66.04	£66.04	£66.04	£66.04
New Cost	£72.72	£72.24	£71.58	£70.11
Required Flat-rate fee	£51.92	£44.64	£43.98	£38.91
Source Separation Before DVR	32%	32%	32%	32%
Source Separation After DVR	45%	45%	45%	45%

It should be noted, however, that in studies undertaken, the impact of weight-based schemes in terms of source reduction tends to be greater than for other schemes. This would imply that although the weight-based systems appear relatively expensive in this comparison, the situation might be different if one accounted for the distinct dynamic effects of the various DVR schemes.

Clearly, the dynamic influence of any scheme depends upon many factors, not least of these being the nature of the incentive mechanism confronting householders, but also including the nature of the collection scheme prior to the DVR scheme's introduction. Below, in Table 9, we estimate the costs of systems delivering different rates of performance as set out in the top rows of the Table. The figures used reflect the effects of schemes studied in the full report.

As can be seen from the above, the net costs of more capital intense systems may be lower once the dynamic effects are factored in. The performance of the weight-based scheme assumed in the above Table assumes a charge is in place on biowaste collection, so that the increase in the quantity of material delivered into the biowaste collection is small. The effect is to increase home composting and improve the accuracy of separation of the biowaste which is not home composted.

Table 9: Comparative Analysis of DVR Schemes, Increased Disposal Costs, Equal Dynamic Performance

	Weight-based	ID (expensive)	ID (cheap)	Sack
Source Reduction Effect	25%	13%	13%	6%
Recycling Effect	5%	7%	7%	5%
Effect on Separate Collection of Biowastes	3%	7%	7%	5%
Effect on Separate Collection of Recyclables	33%	27%	27%	16%
Disposal Cost (per tonne)	£30.00	£30.00	£30.00	£30.00
Efficiency of Logistical Savings	50%	50%	50%	50%
Total Cost Per Household (admin, incl. billing, and chip)	£3.07	£2.93	£2.93	£1.54
Savings on Refuse Collection (net of costs of equipping vehicle)	-£5.77	-£4.47	-£5.04	-£2.75
Savings on Refuse Disposal	-£9.90	-£8.10	-£8.10	-£4.80
Increase in Composting Costs (assuming 'meat included')	£1.20	£2.80	£2.80	£2.00
Additional Monitoring of Evasion	£1.00	£1.00	£1.00	£1.00
Information Provision	£2.50	£2.50	£2.50	£2.50
Net Costs Before Accounting for Collection System Changes	**-£7.90**	**-£3.34**	**-£3.91**	**-£0.51**
Increase in Costs of Recycling Provision	£2.08	£2.92	£2.92	£2.08
Increase in Costs of Compost Collection Provision	£1.50	£3.50	£3.50	£2.50
Net Increase	**-£4.32**	**£3.07**	**£2.50**	**£4.07**
Charge	£14.00	£21.60	£21.60	£31.20
Preceding Collection and Disposal	£66.04	£66.04	£66.04	£66.04
New Cost	£61.72	£69.12	£68.55	£70.11
Required Flat-rate fee	£47.72	£47.52	£46.95	£38.91
Source Separation Before DVR	32%	32%	32%	32%
Source Separation After DVR	53%	53%	53%	45%

4.2 Summary

The costings set out above are not strictly accurate in respect of the increased costs of source separation infrastructure. These costs will be affected by the effects of the schemes on specific materials, notably, the material specific effects in respect of capture rates of source separated fractions. They do, however, give an indication of what might be achieved through such systems. Savings are clearly possible when employed, especially as the costs of residual waste management increase. In our Gent study, savings of the order £9 per household were estimated. In the Landkreis Schweinfurt system, the saving was closer to £4 per household, but this system started from a position of high recycling and already low residual waste per inhabitant.

The notion that DVR systems are expensive is not borne out by experience. The literature alludes to many instances where the dynamic effects of the system imply savings (notably on refuse collection and disposal) which outweigh the static costs associated with the scheme's introduction. Even the more sophisticated schemes may generate net savings. However, many of the reports do not obviously estimate the increase in collection costs which might be associated with the increased quantity of material collected through source separation routes. In our analysis above, the systems most likely to generate net savings are those which have effects on source reduction which are proportionately greater than their effects on the quantity of materials collected through source separation routes. In the literature, these tend to be the weight-based schemes, which generate larger reductions in waste arisings, but smaller effects on

the quantity of material collected for source separation (presumably because although the proportion of the available material which is collected separately may have increased, the quantity of material available for capture has fallen, so absolute quantities remain quite similar).

Given the dynamic effects, these systems appear, on average, to generate effects which are worth the potentially small, or even negative, marginal costs. Furthermore, from the local authority's point of view, any increase in cost can be offset by revenue generated by the charge (which is what charge revenue is intended for – i.e, funding the provision of a service). This may be a means by which to generate additional revenue to support other activities in the period immediately following implementation, including, for example, increased efforts in enforcement and prosecution in respect of fly-tipping where this is believed likely to be of concern. All experience, however, suggests that this is not a major issue. Fly-tipping is principally related to commercial and bulky wastes, so as long as provision for collection of the latter through bulky waste collections and recycling parks / CA sites is present, the problem can be kept in check. Other communities have found that one or two high-profile fines / prosecutions can also help to maintain discipline in this context.

Where DVR schemes are concerned, higher disposal costs are not so much necessary as desirable, since they accentuate the benefits of the avoided disposal costs occasioned by the increases in source separation and the source reduction driven by the charging scheme. At a £35 landfill tax, the DVR schemes begin to look much more cost-effective. The higher avoided disposal costs make the logic of such systems even more compelling.

It is interesting to speculate as to the effects of DVR schemes in the current context, and that of a higher disposal cost in future. The Strategy Unit Report recently suggested that it would like to see 30% of all local authorities trialling incentive schemes by 2006.[13] In what follows, we project the effects of this at current levels of arisings of municipal waste in the UK. We also calculate a benefit:cost ratio for the implementation of such schemes. [14]

The results are shown in Table 10. For a net cost of just over £14 million, benefits of £112-319 million are generated. This is associated with an increase in the national recycling rate from 32% to 37%, and a reduction in residual waste of 7% of the pre-scheme level. The implied benefit:cost ratio is between 8:1 and 22:1. Of course, at higher disposal costs, the benefit:cost ratio can become negative (since the net costs fall below zero). In this case, the net costs are negative, whilst generating the same benefits of £319 million are generated (see Table 11). The benefit cost ratio loses much of its meaning because of this net fall in costs.

[13] In the full report, we argue that so called 'positive incentive' schemes are likely to be a poor use of financial resources. They seem to require a fund to be developed to pay for the positive changes in behaviour before any change has been generated. They appear to be mechanisms designed to side-step the lack of the relevant enabling legislation allowing DVR schemes to be introduced. Furthermore, they establish 'disposal' as the norm, with separation being rewarded, whereas DVR schemes establish 'disposal' as something to be paid for, with separation behaviour being rewarded by collections which are either free, or lower in cost. This is an important distinction to be made if it is intended that recycling should become 'the norm' rather than something which people are paid to do.

[14] The environmental benefits are calculated on the basis of a review of published studies. Approximate figures are used for the benefits of recycling a typical tonne of waste (£100 per tonne), the benefits of composting a typical tonne of waste (approx £3 per tonne), and the benefits of source reduction (approx. £200 per tonne). Because source reduction may be due primarily to increases in home composting, low and figures are calculated on the basis that 20% and 100%, respectively, of the source reduction delivers the suggested benefit of £200 per tonne.

Table 10: Costs and Benefits of 30% Coverage of Households Through DVR Schemes, Current Disposal Costs

	Costs (per household unless stated)						
	Weight-based	ID (cap int)	ID (lab int)	Sack			
Dynamic Effect							
Source Redn	25%	13.00%	13.00%	6.00%			
Recycling	5%	7.00%	7.00%	5.00%			
Compost	3%	7.00%	7.00%	5.00%			
Net Resdual Effect	33%	27.00%	27.00%	16.00%			
Disposal Cost (per tonne)	£30.00	£30.00	£30.00	£30.00			
Efficiency of Logistical Savings	50%	50%	50%	50%			
Total Cost Per Household (admin, incl. billing, and chip)	£3.07	£2.93	£2.93	£1.54			
Savings on Refuse Collection (net of costs of equipping vehicle)	-£5.77	-£4.47	-£5.04	-£2.75			
Savings on Refuse Disposal	-£9.90	-£8.10	-£8.10	-£4.80			
Increase in Composting Costs	£1.20	£2.80	£2.80	£2.00			
Additional Monitoring of Evasion	£1.00	£1.00	£1.00	£1.00			
Information Provision	£2.50	£2.50	£2.50	£2.50			
Net Costs Before Accounting for Collection System Changes	**-£7.90**	**-£3.34**	**-£3.91**	**-£0.51**			
Increase in Costs of Recycling Provision	£2.08	£2.92	£2.92	£2.08			
Increase in Costs of Compost Collection Provision	£1.50	£3.50	£3.50	£2.50			
Net Increase	**-£4.32**	**£3.07**	**£2.50**	**£4.07**			
Charge	£14.00	£21.60	£21.60	£31.20			
Preceding Collection and Disposal	£66.04	£66.04	£66.04	£66.04			
New Cost	£61.72	£69.12	£68.55	£70.11			
Required Flat-rate fee	£47.72	£47.52	£46.95	£38.91			
Source Separation Before DVR	32%	32%	32%	32%	32%		
Source Separation After DVR	53%	53%	53%	45%	32%		
						TOTALS	
Current Waste Arisings (tonnes)	34,000,000	34,000,000	34,000,000	34,000,000	34,000,000	34,000,000	
Scenario 1							
Households Covered (24 million in total)	5%	5%	10%	10%	70%		
Waste Covered Before	1,700,000	1,700,000	3,400,000	3,400,000	23,800,000	34,000,000	
Recycling at 32%	544,000	544,000	1,088,000	1,088,000	7,616,000	10,880,000	32%
Residual Waste Before DVR	1,156,000	1,156,000	2,312,000	2,312,000	16,184,000	23,120,000	68%
Waste Arisings After	1,275,000	1,479,000	2,958,000	3,196,000	23,800,000	32,708,000	96%
Recycling After DVR	680,000	782,000	1,564,000	1,428,000	7,616,000	12,070,000	37%
Residual Waste After DVR	595,000	697,000	1,394,000	1,768,000	16,184,000	20,638,000	63%
Increase in Recycling Rate							5%
Reduction in Residual Waste (absolute)							2,482,000
Reduction in Residual Waste (as % original)							7%
Net Costs (£ millions)	-£5.18	£3.69	£6.01	£9.77	£0.00	£14.28	
Estimated Environmental Benefit, Recycling (£ millions)						£60.39	
Estimated Environmental Benefit, Source Reduction (low, £ millions)						£51.68	
Estimated Environmental Benefit, Source Reduction (high, £ millions)						£258.40	
Total Benefits (low, £ millions)						£112.07	
Total Benefits (high, £ millions)						£318.79	
Net Benefit:Cost Ratio (low)						7.85	
Net Benefit:Cost Ratio (high)						22.32	

Table 11: Costs and Benefits of 30% Coverage of Households Through DVR Schemes, Increased Disposal Costs

	Costs (per household unless stated)						
	Weight-based	ID (cap int)	ID (lab int)	Sack			
Dynamic Effect							
Source Redn	25%	13.00%	13.00%	6.00%			
Recycling	5%	7.00%	7.00%	5.00%			
Compost	3%	7.00%	7.00%	5.00%			
Net Resdual Effect	33%	27.00%	27.00%	16.00%			
Disposal Cost (per tonne)	£50.00	£50.00	£50.00	£50.00			
Efficiency of Logistical Savings	50%	50%	50%	50%			
Total Cost Per Household (admin, incl. billing, and chip)	£3.07	£2.93	£2.93	£1.54			
Savings on Refuse Collection (net of costs of equipping vehicle)	-£5.77	-£4.47	-£5.04	-£2.75			
Savings on Refuse Disposal	-£16.50	-£13.50	-£13.50	-£8.00			
Increase in Composting Costs	£1.20	£2.80	£2.80	£2.00			
Additional Monitoring of Evasion	£1.00	£1.00	£1.00	£1.00			
Information Provision	£2.50	£2.50	£2.50	£2.50			
Net Costs Before Accounting for Collection System Changes	**-£14.50**	**-£8.74**	**-£9.31**	**-£3.71**			
Increase in Costs of Recycling Provision	£2.08	£2.92	£2.92	£2.08			
Increase in Costs of Compost Collection Provision	£1.50	£3.50	£3.50	£2.50			
Net Increase	**-£10.92**	**-£2.33**	**-£2.90**	**£0.87**			
Charge	£14.00	£21.60	£21.60	£31.20			
Preceding Collection and Disposal	£79.64	£79.64	£79.64	£79.64			
New Cost	£68.72	£77.32	£76.75	£80.51			
Required Flat-rate fee	£54.72	£55.72	£55.15	£49.31			
Source Separation Before DVR	32%	32%	32%	32%	32%		
Source Separation After DVR	53%	53%	53%	45%	32%		
						TOTALS	
Current Waste Arisings (tonnes)	34,000,000	34,000,000	34,000,000	34,000,000	34,000,000	34,000,000	
Scenario 1							
Households Covered (24 million in total)	5%	5%	10%	10%	70%		
Waste Covered Before	1,700,000	1,700,000	3,400,000	3,400,000	23,800,000	34,000,000	
Recycling at 32%	544,000	544,000	1,088,000	1,088,000	7,616,000	10,880,000	32%
Residual Waste Before DVR	1,156,000	1,156,000	2,312,000	2,312,000	16,184,000	23,120,000	68%
Waste Arisings After	1,275,000	1,479,000	2,958,000	3,196,000	23,800,000	32,708,000	96%
Recycling After DVR	680,000	782,000	1,564,000	1,428,000	7,616,000	12,070,000	37%
Residual Waste After DVR	595,000	697,000	1,394,000	1,768,000	16,184,000	20,638,000	63%
Increase in Recycling Rate							5%
Reduction in Residual Waste (absolute)							2,482,000
Reduction in Residual Waste (as % original)							7%
Net Costs (£ millions)	-£13.10	-£2.79	-£6.95	£2.09	£0.00	-£20.76	
Estimated Environmental Benefit, Recycling (£ millions)						£60.39	
Estimated Environmental Benefit, Source Reduction (low, £ millions)						£51.68	
Estimated Environmental Benefit, Source Reduction (high, £ millions)						£258.40	
Total Benefits (low, £ millions)						£112.07	
Total Benefits (high, £ millions)						£318.79	
Net Benefit:Cost Ratio (low)						-5.40	
Net Benefit:Cost Ratio (high)						-15.36	

Once disposal costs are at £50 per tonne or so, than as household coverage is extended more uniformly, so the benefits increase, and the costs fall. Indeed, in net terms, the costs turn negative. At 70% coverage, in the Scenario below (Table 12), the benefits are estimated to be in the range £258-723 million. At the higher end of the range, this is approaching half the current bill for municipal waste management in the UK. This is a staggering figure, and one which places concerns regarding implementation costs into perspective. Residual waste requiring disposal falls by almost 6 million tonnes, or 16% of the total quantity of waste. Costs of implementation there may be, but the net financial costs are low, and negative at higher disposal costs. Factoring in external benefits makes not doing this seem a strange decision.

Of course, the modelling as carried out here is somewhat speculative. It makes certain assumptions concerning behavioural change which might not be borne out in practice. Indeed, as we have suggested elsewhere, responses are strongly conditioned by the ability of householders to respond in terms of source separation and opportunities for waste reduction. However, these figures are indicative of what is achieved in systems examined in this report.

One of the key constraints on adoption of DVR schemes in the UK at present would, or certainly *ought* to be, the relative paucity of high quality collection systems. Optimal functioning of these systems occurs in the context of separate collection systems for most of the key dry recyclable fractions, as well as

biowastes (either kitchen only, or kitchen and garden waste), at the doorstep, and with Civic Amenity sites being re-configured to collect separately a whole range of other materials besides.

Table 12: Costs and Benefits of 70% Coverage of Households Through DVR Schemes, Increased Disposal Costs

	Costs (per household unless stated)						
	Weight-based	ID (cap int)	ID (lab int)	Sack			
Dynamic Effect							
Source Redn	25%	13.00%	13.00%	6.00%			
Recycling	5%	7.00%	7.00%	5.00%			
Compost	3%	7.00%	7.00%	5.00%			
Net Resdual Effect	33%	27.00%	27.00%	16.00%			
Disposal Cost (per tonne)	£50.00	£50.00	£50.00	£50.00			
Efficiency of Logistical Savings	50%	50%	50%	50%			
Total Cost Per Household (admin, incl. billing, and chip)	£3.07	£2.93	£2.93	£1.54			
Savings on Refuse Collection (net of costs of equipping vehicle)	-£5.77	-£4.47	-£5.04	-£2.75			
Savings on Refuse Disposal	-£16.50	-£13.50	-£13.50	-£8.00			
Increase in Composting Costs	£1.20	£2.80	£2.80	£2.00			
Additional Monitoring of Evasion	£1.00	£1.00	£1.00	£1.00			
Information Provision	£2.50	£2.50	£2.50	£2.50			
Net Costs Before Accounting for Collection System Changes	**-£14.50**	**-£8.74**	**-£9.31**	**-£3.71**			
Increase in Costs of Recycling Provision	£2.08	£2.92	£2.92	£2.08			
Increase in Costs of Compost Collection Provision	£1.50	£3.50	£3.50	£2.50			
Net Increase	**-£10.92**	**-£2.33**	**-£2.90**	**£0.87**			
Charge	£14.00	£21.60	£21.60	£31.20			
Preceding Collection and Disposal	£79.64	£79.64	£79.64	£79.64			
New Cost	£68.72	£77.32	£76.75	£80.51			
Required Flat-rate fee	£54.72	£55.72	£55.15	£49.31			
Source Separation Before DVR	32%	32%	32%	32%	32%		
Source Separation After DVR	53%	53%	53%	45%	32%		
						TOTALS	
Current Waste Arisings (tonnes)	34,000,000	34,000,000	34,000,000	34,000,000	34,000,000	34,000,000	
Scenario 1							
Households Covered (24 million in total)	10%	10%	25%	25%	30%		
Waste Covered Before	3,400,000	3,400,000	8,500,000	8,500,000	10,200,000	34,000,000	
Recycling at 32%	1,088,000	1,088,000	2,720,000	2,720,000	3,264,000	10,880,000	32%
Residual Waste Before DVR	2,312,000	2,312,000	5,780,000	5,780,000	6,936,000	23,120,000	68%
Waste Arisings After	2,550,000	2,958,000	7,395,000	7,990,000	10,200,000	31,093,000	91%
Recycling After DVR	1,360,000	1,564,000	3,910,000	3,570,000	3,264,000	13,668,000	44%
Residual Waste After DVR	1,190,000	1,394,000	3,485,000	4,420,000	6,936,000	17,425,000	56%
Increase in Recycling Rate							12%
Reduction in Residual Waste (absolute)							5,695,000
Reduction in Residual Waste (as % original)							17%
Net Costs (£ millions)	-£26.21	-£5.58	-£17.38	£5.23	£0.00	-£43.94	
Estimated Environmental Benefit, Recycling (£ millions)						£141.49	
Estimated Environmental Benefit, Source Reduction (low, £ millions)						£116.28	
Estimated Environmental Benefit, Source Reduction (high, £ millions)						£581.40	
Total Benefits (low, £ millions)						£257.77	
Total Benefits (high, £ millions)						£722.89	
Net Benefit:Cost Ratio (low)						-5.87	
Net Benefit:Cost Ratio (high)						-16.45	

5.0 SURVEY OF LOCAL AUTHORITY REPRESENTATIVES

In order to inform our understanding of potential barriers to the implementation of DVR schemes in the UK, feedback has been sought from a number of local authority representatives. The survey focused primarily on collection authorities (WCAs) in the UK. The sample included one authority from each of Northern Ireland, Scotland and Wales. English WCAs were selected using a judgmental approach supplemented with an element of stratification to reflect the distribution of different types (one or two tier) of authorities. One Waste Disposal Authority was also included in the sample.

In total, 65 interviews were carried out with local authority representatives. In order to obtain a range of views from within a single authority, it was the intention to interview four individuals occupying specific positions within each organisation. In practice, it proved extremely difficult to arrange appointments with Chief Executives and out of the 24 contacted only 10 agreed to an interview. The majority declined on the basis that they were either too busy or did not generally participate in surveys. It also proved difficult to contact council leaders due to their multiple commitments.

The following interviews were carried out across a total of 24 authorities:

Chief Executives	10
Council Leaders	13
Heads of Waste Service	23
Environment Portfolio Holders	18
JWDA Chairman	1

Local authorities were selected to cover a range of authority types and included 2 London Boroughs, 2 Metropolitans, 4 Unitaries, 23 Waste Collection Authorities and 1 Waste Disposal Authority. The sample included authorities with low, medium and high recycling rates.

The questionnaire covered four main topic areas:

- general awareness of charging systems
- issues relating to existing approaches of local authorities to waste reduction and charging
- perceived obstacles, benefits and disbenefits associated with charging systems
- issues relating to the distribution of fixed and variable elements of the charge and its collection

The following sub-sections discuss some of the key issues arising from the interview process

5.1 Why Schemes Exist Elsewhere But Not in the UK

We asked those interviewed what they thought were the motivations behind the implementation of charging schemes in other countries (Figure 12). Most responded that they thought the schemes existed to generate incentives for households to recycle more and/or minimise waste.

When asked why these schemes do not exist in the UK, relatively few gave ‘the obvious’ answer that such schemes are prevented by law (see Figure 13). However, around 30% of respondents from all categories cited the lack of leadership and political will displayed at the national level.

The main reason given by all groups was the view that the public expect the costs of waste management to be included in the Council Tax as has traditionally been the case. Also ranking high was the view that

the political concerns of councillors prevented implementation. Direct charging was seen as a potential vote-loser.

Figure 12: Understanding of Motivation for Introducing Charging Schemes elsewhere

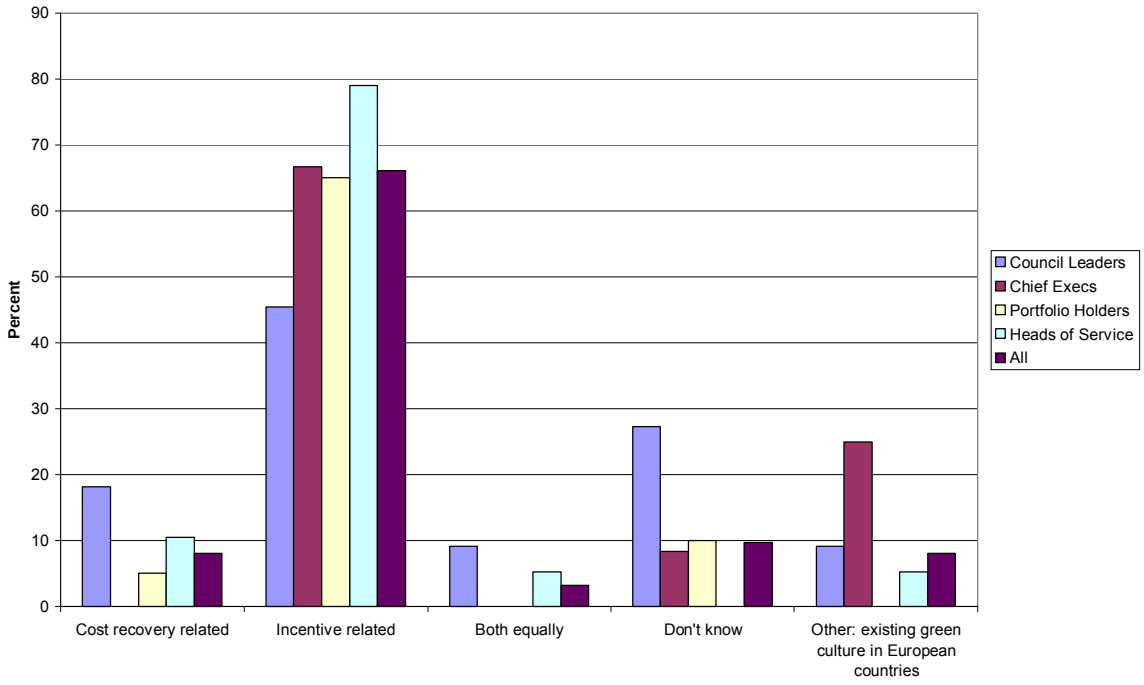
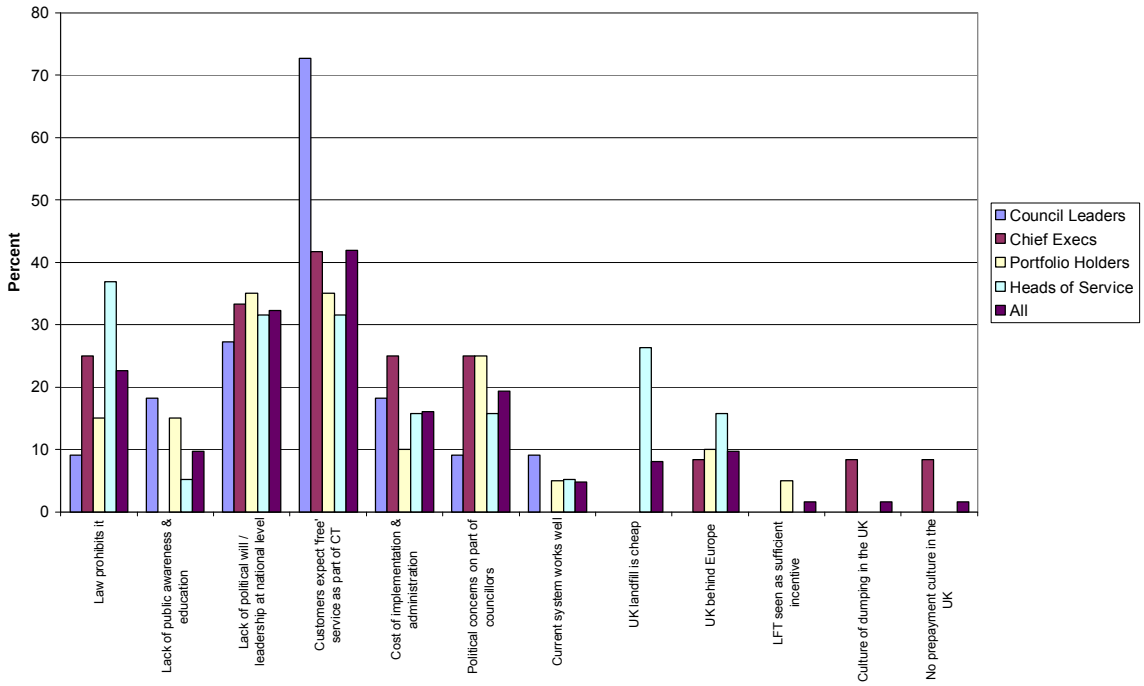


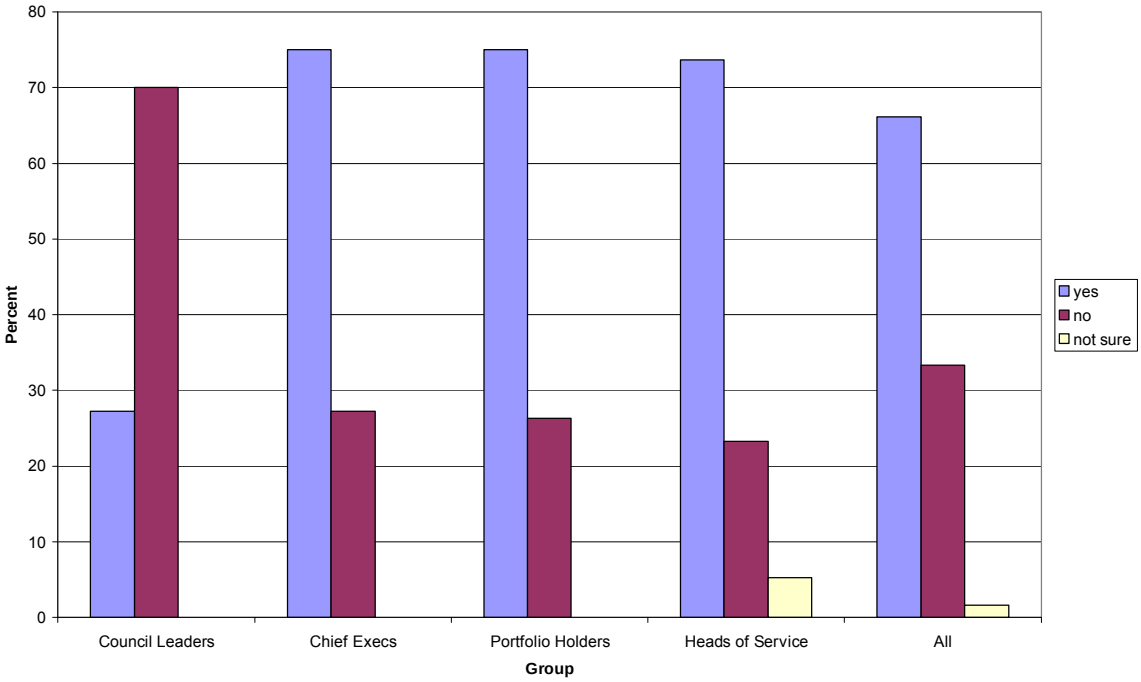
Figure 13: Reasons Given for why Charging Schemes do not Exist in the UK



5.2 Consideration of Charging Schemes

All respondents were asked whether their authority would consider implementing variable charging if local authorities were given the power to do so. Whereas just over 70% of Chief Executives stated that their authority would consider introducing such a system, the response of Council Leaders was almost completely the reverse, 70% holding the opposite view. As with Chief Executives 70% of Portfolio Holders and Heads of Waste Service thought that their authority would look to implement charging (Figure 14).

Figure 14: View as to Whether Authorities Would Consider Implementing Variable Charging



This reflects reasons expressed in answer to the question why charging systems currently do not exist in the UK (Figure 13), where approximately 20% of each Chief Executives, Heads of Waste Service and Portfolio Holders named political concerns on the part of elected members as an obstacle. Interestingly, Council Leaders were only half as likely as Portfolio Holders to cite political concerns as a barrier.

It is worth noting that a number of respondents, particularly among the Portfolio Holders and Chief Executives, felt that a charging system should only be introduced if it were imposed nationally by central government. The main reasons given for this view were that if direct charging were introduced by individual local authorities, public resistance and lack of understanding would be greater and there would also be an increased risk of illegal waste disposal across authority boundaries. A number of respondents also stated that the introduction of direct charging should be accompanied by a national education and awareness-raising campaign, which explained the motivations behind the scheme and the potential benefits to householders (such as cost savings through increased recycling and waste reduction).

5.3 Perceived Barriers to Implementing Charging Schemes

All respondents were asked to specify what they perceived to be the key obstacles to the implementation (as opposed to the operation) of charging systems. No prompts were given. They were then asked to score

these obstacles in terms of their significance on a scale of 1-5, with 5 representing a major barrier, and 1 representing barriers which were not at all significant.

Figure 15 shows the average weighted scores for each group and for the total sample. These have been derived by taking the total score for each category and dividing it by the number of respondents in the category. Figure 16 shows the percentage of respondents citing a particular obstacle. The two figures show a similar profile.

Consistent with the response to the question concerning why systems are not already in place in the UK, the key obstacles cited were the social and political barriers, and the perceived costs.[15] Environmental/health concerns were also commonly referred to. The obstacles most frequently cited by respondents from all groups were those related to social issues. Council Leaders in particular felt that these were of greatest significance with a weighted average score of 2.75.

The most commonly cited social concern was public disapproval of, and potential customer resistance to, direct charging. This is consistent with the perception that residents expect a 'free' waste collection and disposal service, which has traditionally been delivered by local authorities and paid for through the Council Tax. An overwhelming majority of Council Leaders (over 70%) also considered this as the main reason why such schemes do not exist in the UK (Figure 13). Chief Executives and Heads of Waste Service also felt that public resistance was a relatively significant barrier to the introduction of direct charging (approximate average score of 2.5).

A further social concern cited by respondents from all groups related to the potential impact of direct charging on socially disadvantaged groups. Respondents felt that direct charging might penalise large or low-income families or those with special needs (e.g. those in home-care) and that the charging system would have to be designed in such a way as to allow discounts or rebates for such groups.

[15] Barriers classed as *social* included 'protest / lobbying' and 'potential deprivation issue (regressive 'tax')'. *Political* barriers included responses reflecting concerns 'direct charge could be seen as additional tax', 'direct charge is a potential vote loser', 'direct charge will raise questions about what the rest of the council tax is spent on'. *Cost* barriers included concerns that the system 'costs too much to implement', that it needed to 'demonstrate cost effectiveness' and that the 'cost/benefit analysis' was not clear. *Legal* barriers include comments that it is against the law to introduce a direct charge for waste services. *Environmental / health* barriers included responses relating to increased fly-tipping, burning or hoarding of waste. Barriers classed as *technical and contractual* included responses relating to the 'management of systems logistics', 'supporting infrastructure', 'contract renegotiation' and 'time required for implementation'.

Figure 15: Average Weighted Score for specific Barriers to Implementation of Variable Charging Cited by Group

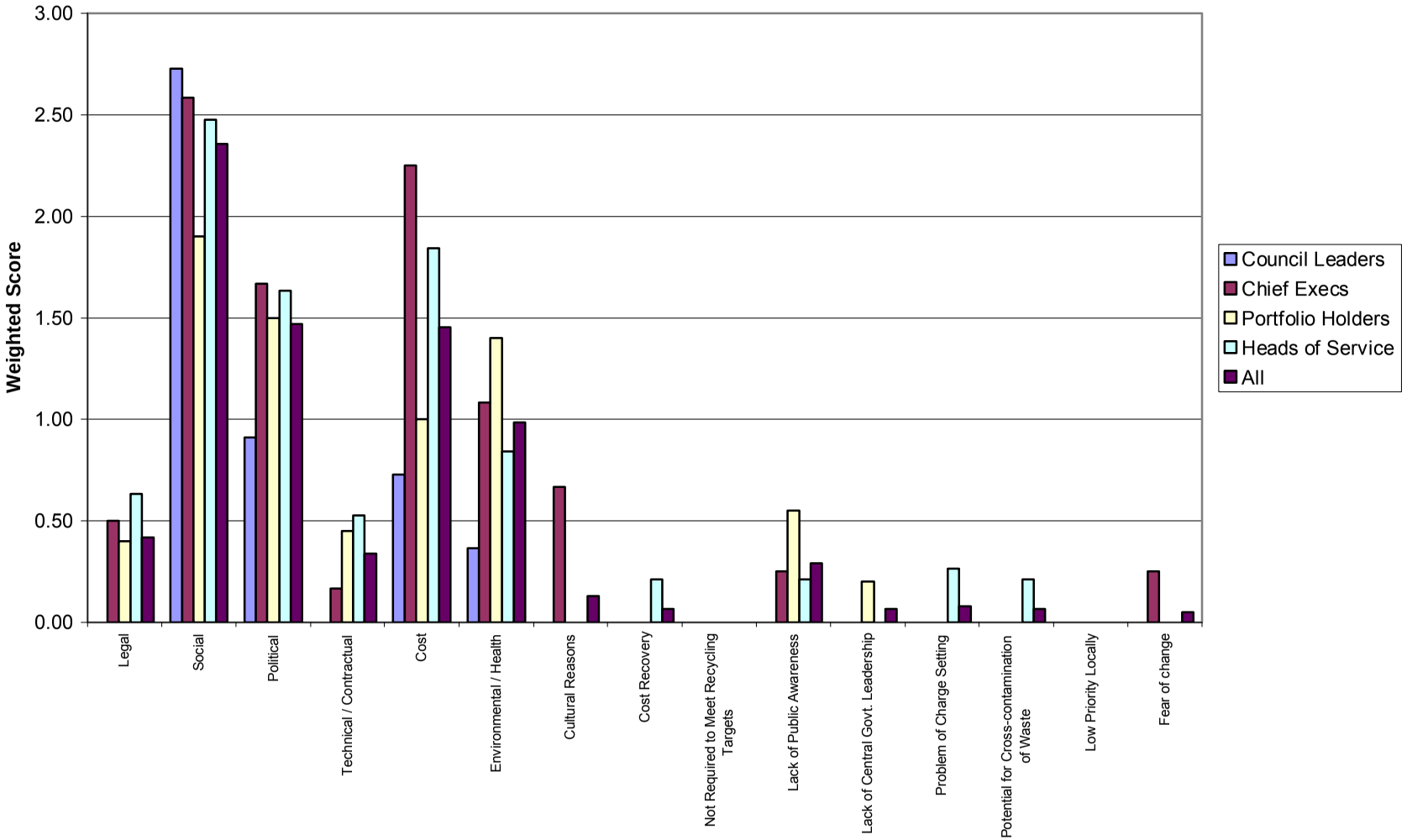
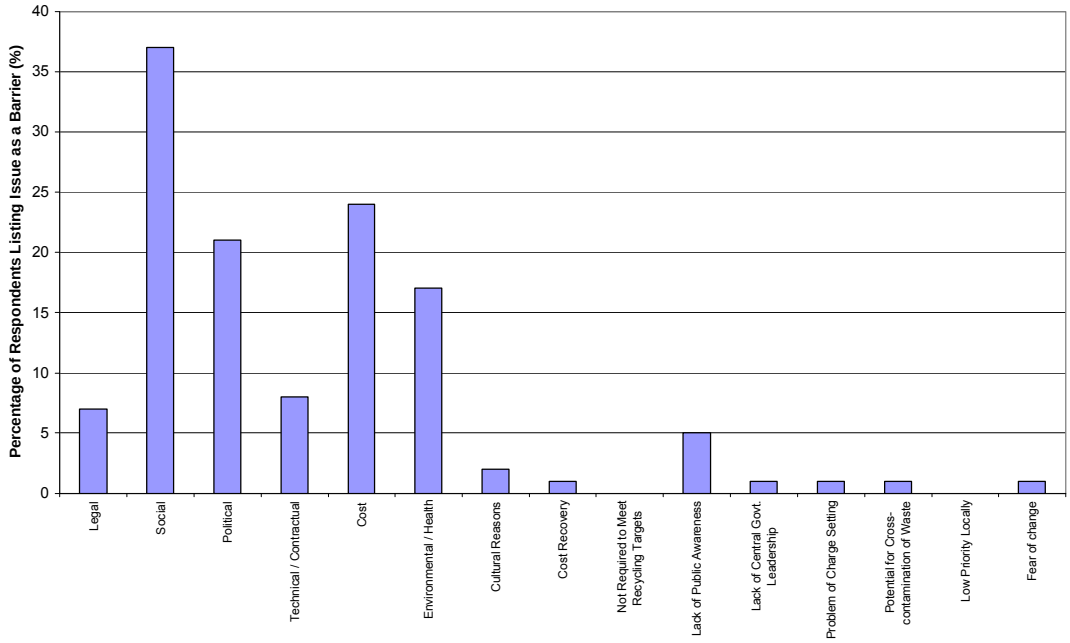


Figure 16: Percentage of Respondents in Total Sample Citing Specific Barriers



Political concerns, such as the perception of direct charging as an additional tax, were frequently cited by respondents from all groups. With a weighted average score in excess of 1.5, Chief Executives and Portfolio Holders attributed it the highest significance. Respondents also voiced concern that direct charging for waste services would raise questions about the remainder of the Council Tax and the services it provided.

Cost concerns featured most strongly among Chief Executives with a weighted average score of approximately 2.5. Heads of Waste Service also frequently cited the cost of implementation and administration of a charging system as a barrier to its introduction (1.8). By contrast, Council Leaders considered this a less significant barrier (0.6).

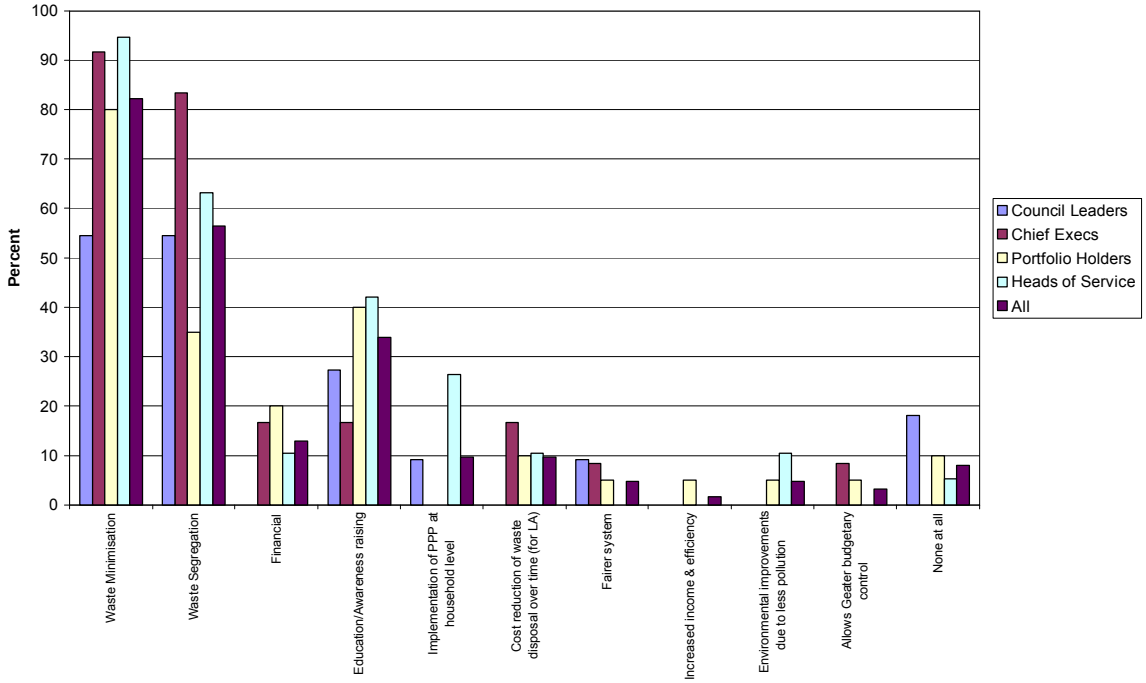
Environmental / health concerns associated with a potential increase in fly-tipping were also frequently mentioned by respondents from all groups. This concern featured predominantly among Portfolio Holders, with a weighted average score of approximately 1.5.

5.4 Benefits

All respondents were asked what they saw as the benefits associated with the operation of a variable charging system. There were no prompts for specific answers.

The overwhelming majority of respondents cited waste minimisation as the main benefit (see Figure 17). Over 90% of Heads of Waste Service and Chief Executives and 80% of Portfolio Holders felt that variable charging would contribute to a reduction in household waste. Only 55% of Council Leaders thought variable charging would have a significant impact on waste production.

Figure 17: Expected Benefits of a Variable Charging Scheme



Chief Executives were also the most optimistic of the groups with regards to the impact variable charging may have on waste segregation, with 82% expecting a reduction in residual waste and an increase in recycling. Among Heads of Waste Service, 62% cited this benefit, as did 55% of Council Leaders and 35% Portfolio Holders.

A significant number of respondents, particularly Heads of Waste Service (42%) and Portfolio Holders (40%), also expected that the introduction of variable charging would have a significant educational effect in terms of raising awareness of the 'true cost of waste'.

Financial benefits such as improved cost recovery and greater budgetary control were cited by Chief Executives, Portfolio Holders and Heads of Waste Service. Respondents from these groups, in particular Chief Executives (18%), anticipated that variable charging would in the long term also lead to a reduction in the cost of waste disposal for local authorities.

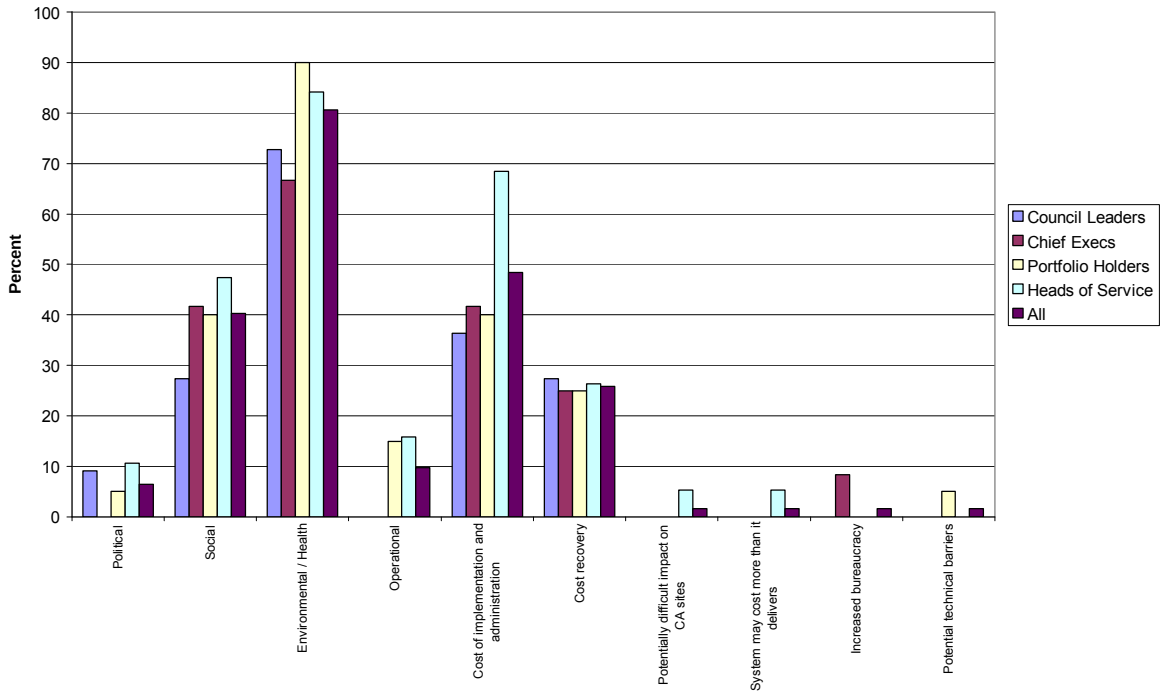
A number of respondents stated that they saw 'no merit at all' in variable charging systems. Council Leaders (20%) in particular expressed this view. Reasons cited included that a number of authorities had only recently undergone an extensive overhaul of their waste management system and the introduction of a new system was not a priority at this time. In addition, a number of respondents felt that their existing recycling collections were performing well and expected to reach government recycling targets without the implementation of variable charging.

5.5 Disbenefits

All respondents were asked to specify any potential disbenefits expected to arise through the operation a system of variable charging. No prompts were given.

The single most significant disbenefit perceived by all groups related to potential environmental / health issues (see Figure 18). The overwhelming majority of respondents, especially Portfolio Holders and Heads of Waste Service (90 and 85% respectively), expected a significant increase in illegal waste disposal, in particular fly-tipping.

Figure 18: Expected Disbenefits of a Variable Charging Scheme



The perceived cost of implementation and administration of a variable charging systems was also frequently cited by respondents from all groups. Heads of Waste Service expressed particular concern over cost with 59% citing it as a disbenefit. This reflects their specific responsibility for waste management and understanding of the budgetary constraints of local authorities. Related to this were concerns over charge recovery, cited by almost 30% of all respondents. In this context, respondents referred to potential charge avoidance by the public through illegal waste disposal. Furthermore, respondents expressed concerns over calculating the correct charge levels required to ensure cost recovery.

Potential social disbenefits were also named by respondents from all groups, but featured most strongly among Heads of Waste Service (48%) and Portfolio Holders (41%). Concerns expressed in this context reflect the perceived obstacles to implementation of direct charging systems in the UK. Respondents felt that there could be negative financial implications for large or low-income families, families with babies and householders with special needs. A number of respondents also expressed concerns regarding a potential increase in neighbourhood disputes over fly-tipping of waste into neighbour's bins.

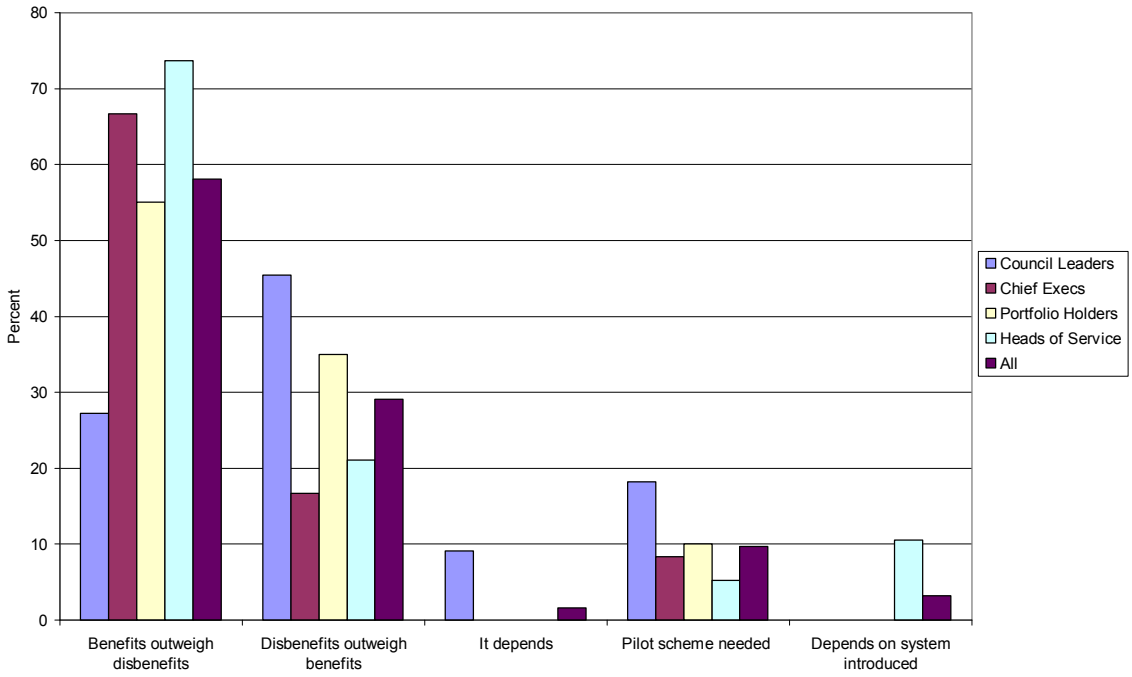
5.6 Net Benefits, or Net Disbenefits?

All respondents were asked whether they considered the benefits to be greater than any downside, or whether the opposite was the case.

As Figure 19 shows, the overall majority of respondents felt the benefits of variable charging outweighed any disbenefits. Approximately 60% of Heads of Waste Service and Chief Executives,

and more than 50% of Portfolio Holders felt that the benefits of variable charging would be greater than any disbenefits.

Figure 19: Would Benefits Outweigh Disbenefits?



However, 36% of Portfolio Holders believed that the disbenefits would outweigh the benefits. By contrast, only 24% of Heads of Waste Service and 18% of Chief Executives held this view. More than 10% of Heads of Waste Service felt the outcome would depend on the particular system introduced, as different systems had different advantages and disadvantages which would have to be evaluated.

Council Leaders, however, showed a more cautious response. Figure 19 shows that almost 45% felt the disbenefits would be greater than any benefits and 30% thought the opposite would be the case. Almost 20% stated that they would like to see a pilot scheme to assess the practicalities and merits of such systems. By contrast, 10% or less of respondents in other groups mentioned the need for a pilot scheme. In addition, Council Leaders stated that the outcome would depend on how quickly any benefits became apparent. This concern regarding the instant success of any new scheme adopted perhaps reflects a more short-term outlook among elected members'.

These results are consistent with respondents' attitudes towards a possible implementation of variable charging by their authority discussed above.

A large number of respondents from all groups – including those expecting net benefits – emphasised that ultimately the potential benefits depended very much on the type of system that was introduced and how it was implemented. Respondents also stressed the need for public education and awareness-raising to explain why the scheme was put in place.

5.7 Comment on Survey Findings

Care should be taken in seeking to extrapolate from our rather small sample to the UK as a whole. However, the intention was to seek more detailed information concerning knowledge of, and reactions to, DVR schemes.

5.7.1 General Awareness of Charging Systems

Although recycling is now being 'mainstreamed' in the UK, the awareness of DVR schemes is relatively low, with less than half of those responsible for waste being aware of systems other than weight-based schemes. Furthermore, the depth of knowledge is highly uneven, with many having apparently given little consideration to such schemes (unsurprisingly, perhaps, given the legislative situation), but with some having carried out their own studies on such schemes.

Perhaps reflecting the current situation in UK recycling systems, there was much greater interest in the incentive effect imparted by DVR schemes than the role they can play in cost recovery.

5.7.2 Issues Relating to Existing Approaches to Charging

The main reason given by all groups as to why charging schemes do not exist in the UK was that the public expect the cost of waste management to be included in the Council Tax, as has traditionally been the case. Also ranking high was the view that the political concerns of councillors prevented the implementation of charging schemes. Charging was seen as a potential vote-loser. Note however that fewer councillors held this view than representatives from other groups.

Heads of Waste Service cited the low cost of landfill as a reason why charging is not implemented in the UK. They also felt the UK was a long way behind Europe in waste management terms, and in moving towards implementation of charging schemes. Both Council Leaders and Chief Executives thought that a key issue was the costs of implementation and administration.

Interestingly, no one took the view that such schemes 'wouldn't work', or 'couldn't work', or gave other negative reactions concerning potential outcomes.

5.7.3 Perceived Obstacles, Benefits and Disbenefits Associated with Charging Systems

The survey identified that key barriers to the implementation of DVR schemes are considered to be those of a social/political nature, costs, and environmental/health issues. It is important to seek to understand the degree to which the barriers cited reflect experience elsewhere, and whether the obstacles are ones which are insurmountable, or ones which can be readily overcome.

As to the most commonly cited social concern, that of public disapproval of, and potential customer resistance to, direct charging, there are at least four possible underlying perspectives:

1. the issue is that of a perception that households would be 'charged twice' for waste?, or

2. the issue of significance is that of taking the charge for waste management out of the Council Tax, or

3. the issue is related to that of the public 'seeing what's left' in the Council Tax as being 'too much to pay' for the remaining non-waste services?, or

4. the issue is that of households being charged by some measure of how much waste is set out for disposal?

Certainly, the 'double-payment' issue is a non-issue. The aim can be made quite explicit – that the charge should cover the costs of waste management and that the Council Tax should fall by a corresponding amount (or it should be clearly demarcated on Council Tax bills).[16]

Since public resistance was cited as a relatively significant barrier to the introduction of direct charging (approximate average score of 2.5), and since the potential impact of direct charging on socially disadvantaged groups was also seen as significant, one would incline towards the view that it is the latter issue which is accorded greatest significance in respect of public response. The fact that direct charging for waste services would raise questions about the remainder of the Council Tax and the services it provided was accorded lesser significance, though it was certainly a concern.

To this end, one might reasonably dispute whether these are such significant barriers. Many different measures – free tags, rebates, free 'emptyings' etc., each allowing some 'free basic service' – are measures which can be applied in charging systems to offset any potentially regressive impacts. As such, this barrier is potentially overplayed. It can be (and is, in existing systems) overcome.

Equally, the corollary of a concern about the fact that the public might question 'the rest of the Council Tax' is that there is a corresponding desire to hide the true (low) costs of waste management to those who are in receipt of the service. At a time when a regime of 'Best Value' is sweeping through local authority service provision, it seems odd that one would seek to hide from citizens the true costs of individual services. Surely, the more people understand this, the more informed any debate about costs and value (Best, or otherwise) would become. The same ought to apply to the costs of the remaining services, and it seems to border on the undemocratic to exhibit duplicity in seeking to mask the true costs of the other services which Council Tax payments support. One of the advantages of DVR schemes is their cost transparency, but if such transparency is perceived as a threat, perhaps this ought to give rise to concerns of a different nature.

Cost concerns also featured as a barrier. Yet as we saw in Section 4.0, the costs are frequently over-estimated. Net of charge revenues, DVR schemes can be negative cost systems, and frequently are. This is because there is a strong tendency to view only the incremental costs of the equipment and the administration, without considering the dynamic effects of DVR charging systems. The dynamic effects, as we have seen, generate waste reduction, and improved segregation performance.

Environmental health concerns due to a potential increase in fly-tipping were also frequently mentioned by respondents from all groups. Once again, though in other countries, this is always perceived as a potential problem, the degree to which it actually arises as a major problem appears to be much lower. Experience elsewhere suggests that probably, people have better things to do with their time than to drive into the country with sacks of waste to dispose of material there (not least because the savings on a given sack are unlikely to be especially large). As long as good services for source separation (at the doorstep and at CA sites) are in place, and as long as enforcement is taken seriously as a potential issue, it seems that this is overplayed in the concerns of those seeking to implement schemes. The keys to reducing evasive behaviour are a) convenient and high quality recycling, composting and re-use / reduction schemes which offer an alternative to payment of the charge; and b) that enforcement is taken seriously, and is supported by sanctions (backed by the authority to apply them) applied by the local authority, especially in the period immediately following scheme introduction.

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[16] It seems unlikely to us that the existing Council Tax billing mechanism would be an appropriate way of collecting charges under DVR schemes since the billing tends to follow an annual cycle (even if payments may be made throughout the year). The variable elements of a charge are probably best collected more frequently.

The issue of public awareness and education is obviously an issue in any service change. It is especially important where charging systems are being introduced. UK local authorities have tended to be somewhat parsimonious in their spend in this area (though assistance through the landfill tax credits scheme has helped). This would be an issue of potential concern in UK authorities seeking to implement these schemes, and the respondents clearly felt that this would influence the way any scheme was perceived.

One of the most interesting conclusions to come from the above analysis is the clear distinction between Council Leaders and the other interviewees on the really key questions in the survey. Council leaders:

- Believe the disbenefits will outweigh the benefits; and
- Do not think they would introduce charging schemes, were they able to do so,

All other interviewee groups:

- Believe benefits will outweigh disbenefits; and
- Would seek to introduce a charging system were they able to do so.

This is made all the more interesting since the nature of the disbenefits cited by all groups are broadly similar.

This difference between groups found expression in other responses to key questions. The overwhelming majority of respondents cited waste minimisation as the main benefit. This was particularly true of Heads of Waste Service and Chief Executives. Fewer Council Leaders thought variable charging would have a significant impact on waste generation.

It would be tempting to conclude from this that even if the law allows charging systems to be introduced, it is the internal politics of local authorities, notably Council Leaders, as much as any other factor, which may be a major stumbling block for the introduction of charging schemes. It is not for no reason that some municipalities seek to implement these types of change quickly following Council elections!

5.7.4 Issues Relating to the Distribution of Fixed and Variable Elements of the Charge and its Collection

There was no clear preference for establishing the fixed or the variable aspect of the charge as the greater element. Respondents favouring a higher variable element emphasised the incentive effect of the charging system, stating that householders would be able to make savings by increasing their recycling rate and reducing the overall amount of waste set out. Respondents preferring a larger fixed element emphasised the greater fairness of such a charging system, as it would be less likely to penalise any particular social groups.

Experience from elsewhere suggests that a key issue here is revenue stability. The implementation of a DVR scheme should not rely so heavily on variable rates that the response generated from householders becomes so great that overall revenue declines significantly. A first priority is to ensure the total charge revenue covers the cost of the system. The way in which other Member States implement the requirements of the Packaging Directive are important from this perspective. Where specific fractions are effectively financed through the producer responsibility mechanism, the need to cover the costs of these clearly evaporates. This leaves fewer fractions for which fixed infrastructure costs must be recovered, enabling (at least in theory) a higher proportion of the overall fee to be charged on a variable basis.

Interestingly, comments regarding the benefits of charge differentiation vary widely and do not show a general consensus. A number of respondents favouring charges for segregated wastes emphasised that dry recyclables should be included as these collection costs also need to be covered by local authorities. It was commented that the rate for dry recyclables should be lower than that for residual waste. Other suggestions included that the system could feature a rebate or credit scheme to reward residents who participated in recycling, which would reinforce the incentive effect. A number of respondents specified that the fee should also include compostables, but that the rate applied should be lower than that for residual waste.

It would appear that in respect of dry recyclables, once again, producer responsibility can play a role. Evidently, the need to charge for packaging recycling in Germany does not exist since this is operated and paid for through the DSD system. In Belgium, where Fost-Plus covers some, though not all, of the costs of packaging collection, a variable charge is applied, but at a lower rate than for the residual waste fraction.

Since compostables are not readily covered by producer responsibility, the costs of their collection usually has to be met by municipalities. Most now seek to implement a system which encourages home composting, and where collections are for kitchen and garden waste, it is typical for this to happen through charging for biowaste collection. The other reason for doing this is so as not to encourage contamination of biowaste by refuse by making the differential so large that incentives to cross-contaminate are established.

6.0 INTERVIEWS WITH KEY STAKEHOLDERS

As part of the work undertaken, we conducted face-to-face interviews with a number of organizations with an interest in this area. The interviews conducted broadly reflected the line of questioning followed in the interviews with local authorities. Questions were deliberately retained to ensure consistency in some of the responses.

Our impression is that there is much better understanding of why these systems do not exist than of how these systems are, or can be, designed to operate. It is interesting that there is implied criticism of national and local government with regard to the degree of commitment to the issue of waste management. Equally, the degree to which interesting and innovative behaviour was encouraged was questioned, and some suggested it was unlikely to arise spontaneously.

Low commitment from central government was cited as an issue, whilst there was also a perception that it was difficult to retain the sort of high calibre staff within local authorities who might persuade local and national politicians of the desirability of at least allowing such schemes to be tested.

This is interesting given that in the local authority research, interviews revealed that some local authority officers have been engaged in exactly this sort of activity, pushing forward the idea with local politicians and drawing their attention to the potential benefits. Whilst this is far from universally the case, it does illustrate the fact that officers are aware of these types of scheme, and that some have been persuaded of the rationale for allowing trials to take place.

Most respondents felt that benefits would outweigh disbenefits though some respondents were more cautious, urging the need for UK-specific trials. In truth, the question concerning relative benefits and disbenefits depends heavily on the details of implementation, and the background service level against which the scheme is introduced.

Interesting responses were received to the questions regarding the balance between fixed and variable charge elements, with some being attracted by the prospect of a ‘strong incentive’, implying a large variable element. The problem with this approach is that it requires good judgement (or luck) if problems of revenue instability are to be avoided. It does illustrate, however,

a desire on the part of several respondents to see incentives in place for people to engage in source separation schemes provided by municipalities. Indeed, one respondent felt that the rationale for any scheme is made stronger where differential performance (in terms of materials capture) occurs across groups of householders – the DVR scheme is seen as a way of bringing all households more or less 'up to scratch'.

The mixed responses regarding fly-tipping reflect a general unease about the issue, possibly in the context of insufficient knowledge of what has occurred elsewhere. Opinion ranged from one who felt this was a major obstacle, to one who believed this was overplayed, it was an issue amenable to control. One commented that those who really felt it worthwhile to drive into the country to dispose of a black bag ought to have better things to do with their time.

Another issue arising in discussions concerned the possible loss of goodwill. This is an issue which has also been discussed in some of the Danish literature. One paper in particular argues that introducing charging systems can lead to citizens 'reframing' the conditions upon which they engage with recycling systems.[17] Before schemes, citizens engage in systems out of a sense of altruism and civic duty, as well as a sense of 'feeling good' that they have 'done their bit.' Introducing charging schemes can lead to them altering the mental model which they use to determine their participation in the scheme. Some citizens may resort to a 'cost-benefit' rationale, implying that if the incentive is weak, the good will of citizens in recycling 'for free' before the DVR scheme may be jeopardised. In the paper where this discussion appears, it is suggested that this raises some questions about the design of DVR schemes. Equally, it seems to us that this type of approach re-emphasises the importance of convenience in the provision of quality source separation schemes. This, along with information provision, can act to minimise the extent to which a reframing in cost-benefit terms actually jeopardises engagement with the scheme.

It is interesting to note, in respect of this last point, that many of our respondents thought that the way in which households would respond to the implementation of DVR schemes would be strongly influenced by the way in which the scheme was presented to households. Furthermore, several expressed concerns that the resources necessary to do this would be under-estimated in UK local authorities, given the low priority currently given to adequate promotion of existing source separation schemes in the UK.

7.0 RECOMMENDATIONS

7.1 Time to Change?

Our review of EU experience, and of EU approaches to charging for waste management clearly shows the UK to be out of step with all nations who are seeking to pursue sustainable waste management strategies. More and more nations and regions clearly see the importance of implementing the polluter pays principle at the household level. The only countries where any municipal waste management services are financed through general municipal taxes are France, Greece, Portugal, Spain and parts of the United States. In each of the last two, this varies regionally. With the exception of the United States, if one adds the UK, this looks like a list of the worst performers in respect of source separation in Europe.

In all other countries, and indeed, some of those mentioned, municipalities have competence for the levying of fees directly for waste management (though they do not necessarily relate the fee to the

[17] John Thorgersen (1994) *Monetary Incentives and Environmental Concern: Effects of a Differentiated Garbage Fee*, CeSaM Working Paper No.2, September 1994.

level of service use). The UK appears unique in prohibiting this. Spain is the latest EU country to have implemented DVR schemes (sack-based schemes in Catalunya).

We have estimated the net costs of introducing these systems across 30% of households in the UK allowing for the dynamic responses which can be expected flow from them. For a net cost of £14.28 million (at current disposal costs), we estimate external (environmental) benefits of between £112 and £319 million through the increases in source separation and the waste reduction which result. Waste requiring disposal falls by 2.35 million tonnes. As landfill tax increases, the net costs fall below zero as the avoided disposal costs increase. In other words, as landfill tax rates move towards the stated figure of £35 per tonne, these systems can generate significant environmental benefits at negative (net) cost.

The question is surely not so much one of 'if', but 'when?', and if one of the advantages of DVR charging schemes is that it makes people take responsibility for their waste, the answer to the question 'when?' ought to be 'as soon as possible'. This has been recognised by the Strategy Unit in its recent report, where it was stated that '*the Government should secure an early legislative opportunity to grant local authorities powers to implement incentive and charging schemes for waste if they want to do so'* (our emphasis). This would also be entirely in keeping with the current drive towards greater freedoms and flexibilities for local Government which one sees in other areas of service provision.

This is not to trivialise the real political barriers to change. These barriers, however, relate to issues of expedience, and to that of how to implement charging systems in the context of the existing framework for funding public services. Yet the potential advantages of DVR systems suggest that 'business as usual' has little to recommend it. So unless the decision has been made to maintain the existing financing framework *ad infinitum*, the decision to change ought to be taken sooner rather than later, subject to the political opportunities for such changes.

Of course, it would be desirable to have cross-party political support for this change. The potential benefits outlined in this report are of such significance in the strategic context that opposition on party political grounds would seem churlish. DVR schemes can be implemented in ways which do not harm the poor, and measures can be taken to discourage fly-tipping. What is needed is support for the message that DVR schemes, to the extent that they are used as mechanisms to fund public services, are not 'new taxes', but a different way of paying (and potentially, a way of paying less than one would otherwise have to).

Outside some of the more obvious political arguments, it is difficult to formulate good arguments for maintaining the existing situation, and for preventing experimentation with, and full-scale adoption of, DVR schemes. Change is always 'difficult' and will no doubt bring with it a degree of dissatisfaction amongst vocal minorities. But these are not arguments for not changing the existing situation.

7.2 Changing the Situation

Despite the potential benefits associated with introducing a DVR scheme, few seem willing to take the political decision to do so themselves. On the one hand, there is criticism concerning a lack of national leadership, and clearly, as long as the legislation appears to prevent such systems, the first decision that needs to be made is one which must be taken centrally. At the same time, whilst the majority interviewed in our survey foresaw greater benefits than disbenefits, some Portfolio Holders and Chief Executives in our survey clearly felt that it would be more straightforward to implement charging schemes if there was an obligation on them to do so. No one, it seems, wants to make the decision, even those who see merit in the results which flow from it.

In this context, it seems unlikely that Government would make such a system mandatory. A sensible approach to take would seem to be to change the existing legislation and allow local

authorities who wish to implement such schemes to do so. At the same time, some encouragement to implement such systems should be given, even if only in the form of formal recognition of the potential benefits which might flow from scheme implementation.

Alongside legislative changes which 'allow' DVR systems to be implemented, careful attention needs to be paid to the duties placed upon local authorities. The legislation should give to local authorities powers to:

1. decide not to collect where charges for refuse collection have not been paid (i.e., the duty placed upon local authorities must not be one which says 'collect from everyone irrespective of payment or non-payment' – this is the lesson of the Irish experience);
2. enforce the rigours of a specified system, and prosecute and fine evasive behaviour. This is the corollary of the previous point; and
3. require that households deliver their waste into the system operated by, or on behalf of, the local authority. This is intended to avoid a situation in which households by-pass the system by engaging directly with private contractors (who may offer a lower service level for a lower cost).

An important question is that of how to extricate 'waste management funding', in the form of DVR charging, from the existing system of funding for waste management services.

Unless a decision is taken to require all local authorities to implement DVR schemes (which seems neither likely, nor necessary), at any given time, some local authorities would have schemes in place, and others would not. Currently around a quarter of funds for public services are raised through the Council Tax, and three quarters comes from Central Government. These funds should be capable of being moved across services since they are not strictly earmarked for specific purposes. At the same time, decisions concerning the allocation of Central Government Grants have to be made on a fair basis across local authorities. If some authorities are raising revenue directly from citizens whilst others are not, the potential for making a fair allocation of the Central Government Grant are somewhat reduced.

It would seem to be necessary, in a situation where some local authorities implement DVR schemes and others do not, to take waste management out of the SSA formula, requiring the funding to be raised entirely from a combination of the Council Tax and charges levied directly upon householders. This would leave local authorities free to determine whether all, or only part of, the costs of waste management services, were to be raised outside of the Council Tax 'umbrella'. Such flexibility would appear to be useful given that administratively, different schemes have different billing requirements. Pre-paid sack-based schemes, for example, need not require any separate billing mechanism, so any fixed portion of the overall waste management service cost could be retained within the Council Tax billing mechanism. Weight-based schemes demand separate billing mechanisms, and the local authority would be left free to determine whether only the weight-based (variable) element, or a fixed element as well as the variable element were billed separately to the householder.

One argument against this is that the Council Tax might be strongly geared to changes in waste management services. Yet it is difficult to view this as a flaw in the system. Indeed, various comparators of local authority performance seek to highlight the costs of service provision, often, one suspects, in vain. In any case, it is difficult to see why this would be the case. At a cost of around £60 per household, the provision of waste management services is hardly a major determinant of the level of the Council Tax. Indeed, if very high quality systems were implemented against a backdrop of higher disposal costs, it should be entirely possible to maintain costs at £100 or less per household. Even at these levels, any implied increase in the Council Tax would still be a relatively small fraction of the current level. In the existing system, an increase in service costs of £40 per household per annum would be met in part, say to the tune of £10, through the Council

Tax. The increase under this system would be £40 per annum, a difference of £30 or 3% of the average band D Council Tax (around £1,000 per annum).

7.3 Informing Key Decision-makers

Our survey reveals many interesting things. One has been that the level of knowledge and understanding of these systems is quite varied. For example, less than half of those surveyed were aware of the different types of DVR scheme (pay per bag, frequency based, weight based etc.). In addition, it was clear from many of the interviews that the depth of knowledge is also limited, understandably since few have had cause to give such schemes serious consideration. Some of our interviews seemed to illustrate how respondents were able to identify ways of overcoming some of the potential downsides they themselves identified.

Evidently, if the decision was made to allow these schemes to be introduced, there is scope for providing information to local authorities, decision makers and the public. The significance of this appears to be that the more people understand DVR charging systems, the more accepting, and less resistant, they become of these systems.

We also believe that the careful use of language can play a role here in improving communication about these systems. Hence, a process of informing local authorities about these systems ought to go hand in hand with the changes to legislation which are required to enable DVR charging systems to be implemented.

In most countries, it would appear that the early movers take time to implement their system, and they do so in the context of some public disquiet. However, the more systems which are in place, it appears the more acceptable further systems become. This is part of a culture change in which pre-existing flat-rate systems come to be viewed as *less* fair and transparent than those which ask the heaviest users of the service to pay most. Even so, even in some countries where many schemes are already in place, however, municipalities frequently take time taken to inform citizens, and in some cases, as in our German case study, the time spent doing this can be significant.

7.4 The Necessity of Quality Collection Services

Strategy formulation and planning inquiries are still influenced by attempts to elicit 'the BPEO' for waste in what is inevitably a comparative static analysis of different waste management systems. What the preceding discussion suggests is that:

1. DVR charging systems have a potentially important role to play in reducing total waste collected, and in reducing residual waste; and
2. Such systems function best, and with fewest drawbacks, where they function in the context of quality source separation systems which are convenient for householders to use. The absence of these may lead to burning of waste, and incorrect separation.

This suggests that convenient provision for source separation has a role to play in *systems* which encourage waste minimisation. Static analyses tend to ignore the potential impact of collection systems upon the amount of waste collected. If systems which encourage minimisation are deemed to be the best environmental option, then given the low (potentially declining as landfill tax increases) costs of these DVR systems, it seems reasonable to argue that both quality doorstep collection services and DVR charging systems should be integral elements of any BPEO strategy.

It ought to be possible in many local authorities to reduce residual waste from its current level in the UK (of the order 400kg per inhabitant) to around, or below, 150kg per inhabitant.

7.5 A 'Right' System?

There is no 'right' system. Municipalities which have introduced these systems tend to swear by the one they use. Some of the evidence suggests that weight-based systems are the best ones in terms of putting pressure on waste generation. However, they are likely to be more costly in terms of billing requirements (especially since there is, currently, no direct billing mechanism in the UK for waste). Pay-per-bag schemes may be less costly in terms of billing, but they may be more open to fraud and they may not generate the same effects in terms of waste reduction. In our view, an important aspect of all schemes is that they ensure mechanisms are in place to reward home composting. Furthermore, it seems that there is plenty of room for innovative charge setting, as in our German case study, where a three-part tariff is set (a fixed element, a charge per emptying of a bin, and a charge based on weight).

There are some principles which have been established for introducing DVR schemes. The USEPA has produced several 'manuals' for local authorities seeking to introduce such schemes, and there is much that could be learned from this experience, though equally, the US has less experience with weight-based schemes than, say, Germany, Sweden, Denmark and the like.

German local authorities have tended to move more towards identification and weight-based schemes partly because of challenges municipalities anticipate from citizens (regarding billing), which pushes local authorities to seek digital recordings of weights and emptyings using read and write transponders. In countries with smaller municipalities, such as Italy, the possibilities for defraying the additional capital costs, and for re-optimising logistics, are somewhat reduced, and systems using lower capital outlays are used.

In the UK context, it would seem sensible for those on sack-based residual waste collections to keep these systems in place, and to opt for 'expensive sack' or 'tagged-sack' schemes such as that used in the Comuni de Navigli. In those currently using wheeled bin residual waste collection, on-vehicle weighing may not necessarily be the best system. Such systems tend to operate on collections which may be more frequent than they need to be. Systems based upon identification only leave it to the householder to present a bin for collection, and the charge is based upon a number of emptyings. Here, there is an incentive not to present the bin for collection until it is close to being full. In weight based schemes, no such incentive exists, implying that collections may be made with unnecessary frequency, increasing the costs of the residual waste collection system. Hence, systems of the type operated in the outer zones of Gent, and in Treviso, which rely on identification only, may be more appropriate, and less expensive, than weight-based systems. It is possible that the dynamic response might not be so strong. Our German case study appeared to have found a way of overcoming the possible shortcoming of weight-based systems alluded to above by using a charging system based on both frequency of emptying ***and*** weight. This is a particularly intelligent design.

It is important to bear in mind, whilst considering the nature of any DVR scheme, that the most important aspect of any waste management scheme is not the charging system, but the integration of all aspects of the system. Hence, there can be no substitute for careful consideration of the collection system itself. Our study has investigated a number of cases where source separation rates approach, or exceed, 60% (Gent, Comuni de Navigli, Treviso, Landkreis Schweinfurt, Nijmegen). Sadly, very few municipalities in the UK have systems in place today which could aspire to such levels of source separation. This suggests that few local authorities in the UK today could introduce DVR schemes without having to confront issues associated with evasion of the variable element of the charge. However, there is no reason why DVR systems should not be implemented swiftly after comprehensive collection schemes are in place, or indeed, at the same time as the collection system changes.

DVR systems rely upon, and appear to obtain, political support where they are introduced. They command greater financial transparency, they improve data capture, they can help to improve management of collection rounds, and they offer much-improved prospects for ensuring that commercial waste collected on municipal rounds is charged for at an appropriate rate. Allied to the other, more often-discussed benefits of DVR schemes (set out above), these advantages constitute a powerful argument for introducing legislation to enable DVR schemes to be used. There are potential downsides to these systems, but precisely because these are so well-known, they can be anticipated. Measures can be, and are, implemented to overcome these. As long as basic rules of design are followed, DVR schemes can play an important role in achieving key objectives of sustainable waste management in the UK.

ENFIELD, HACKNEY AND ISLINGTON

Aim of scheme

The aim of this scheme was to increase the use of bring banks by residents in estates of flats through the use of a Community Reward scheme.

Area features/demographics

The scheme ran in the London boroughs of Enfield, Hackney and Islington targeting 5,600 households (including controls) in a range of different types of flats. Each of the boroughs provides communal recycling containers for these properties.

The Borough wide recycling rates and rank in the Index of Multiple Deprivation are listed in the table below for each of the authorities.

	Recycling rate (2004-05)	Index of Multiple Deprivation
Enfield	23.63	93
Hackney	12.20	20
Islington	11.04	81

Scheme description

The three boroughs worked together to incentivise estates of flats. The project was based on specific estates throughout each borough and involved high, mid and low rise properties. Each estate had a comparable control estate. Both pilot and control estates are provided with communal containers for recyclables

Each month the estates, in each borough, with the greatest increase in recycling rates over a baseline level received a reward of £1,500 to be used by estates community groups, tenants associations etc. Each borough also provided an overall prize (£2,000) for the highest achieving estate overall at the end of the six month trial. These community awards could be used for increased sustainability such as landscape improvement, gardening works or the purchase of environmentally friendly products such as energy saving light bulbs.

Defra funding

Defra funding for this scheme was £43,500, which covered the prize fund, all publicity, promotion and communication material. This funding support from Defra equates to support of around £7.76 per household.

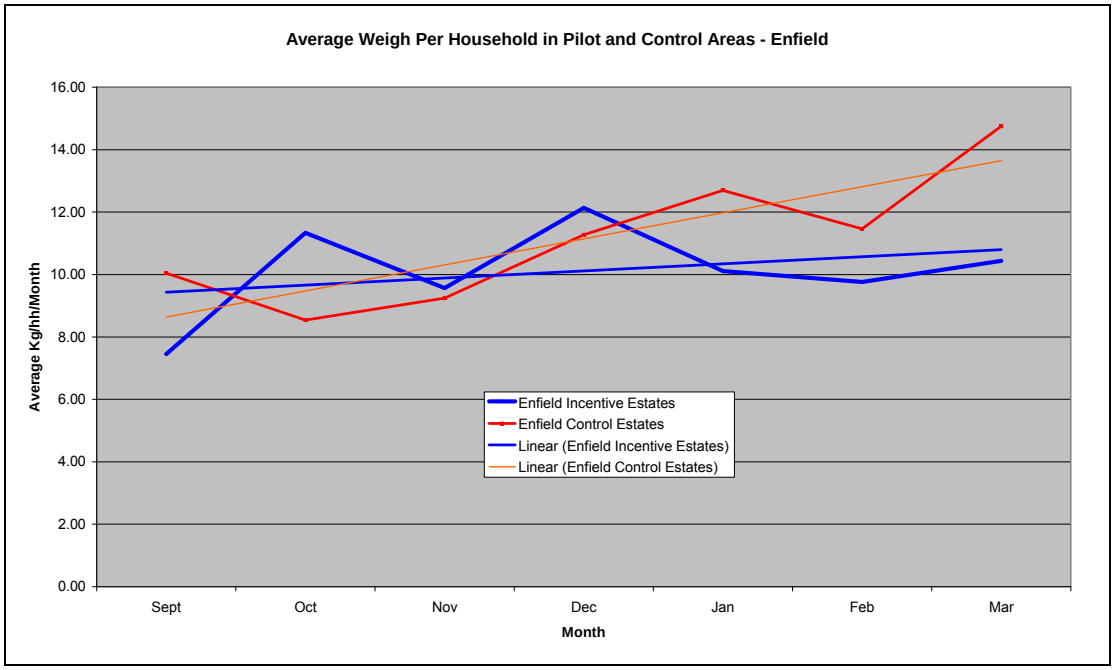
Monitoring mechanism used

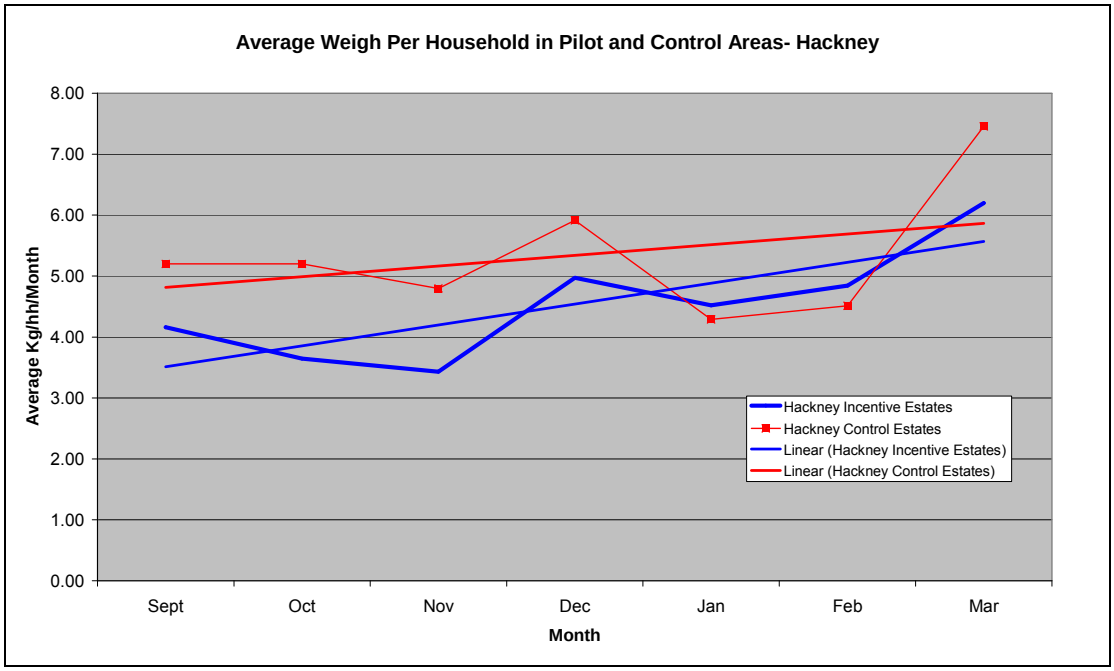
Due to the differening number of households on each estate the weight of recyclables collected per household was used to monitor success of the scheme.

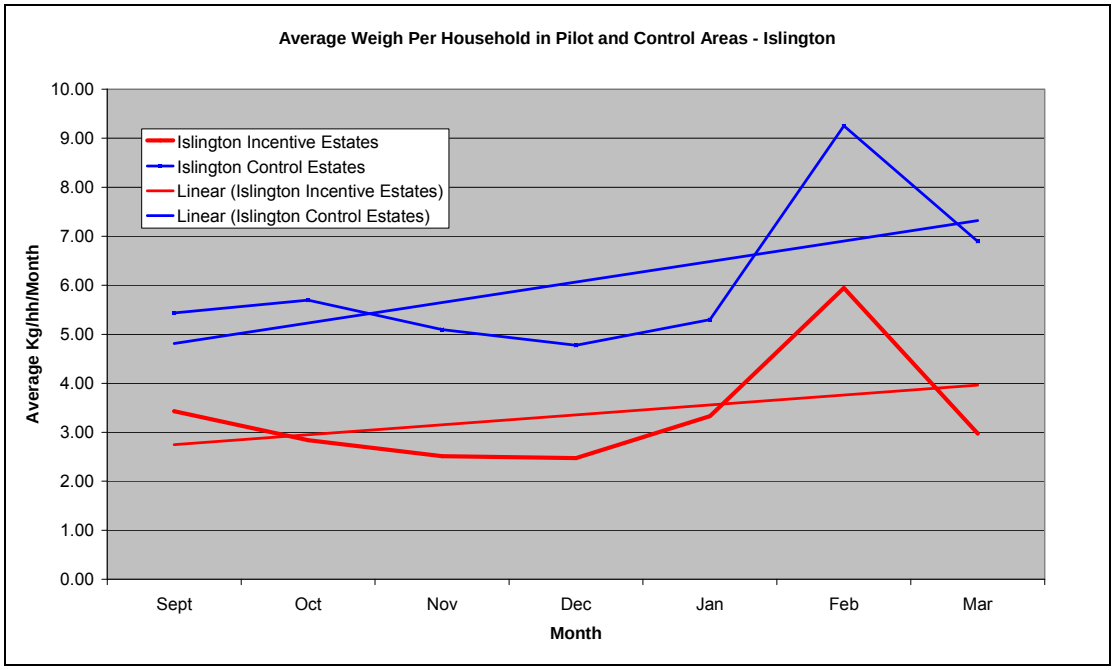
Key results

The three graphs below show the Kg/hh/month in the pilot and control areas of the 3 boroughs. It shows that: -

- In Enfield the average weigh of dry recyclables collected per household in the control areas has increased at a higher rate than in the trial areas.
- In Hackney and Islington the average weigh of dry recyclables collected per household in the trial areas has increased at a slightly (clarity with a number) higher rate than in the control areas.







It should be noted that these weights per household are based on fill levels of communal recycling bins, thus there is potential for a small margin or error to be present in these results.

A survey conducted in Islington (covering 170 households) showed that the majority of residents questioned did not feel an incentive would encourage them to recycle more, but a good reliable service would.

Conclusion

The results show that the amounts of recyclables collected in the pilot areas in Hackney and Islington has increased at a slightly (please clarify with a number) higher rate than in the control areas, which suggested the incentive has had a small positive impact on recycling behaviour. This increase however is so small that it may be due to the error margin of doing volumetric conversions.

This limited impact may be due to the low value of the community reward (an estate would have to have been the top performing authority for each of the 6th months to win the total prize money (for its borough) of £11,000.

Although the three boroughs have varying recycling rates and level of depravation, it is difficult to see from these results how these may have effected the impact of the incentive.

The results of the Islington survey suggest that a reliable service is more important than a community or individual finical reward.

Key lessons learned

Anecdotal evidence suggests that flats that had lower housing representative to tenant ratios showed better results. This suggests that having local individuals to whom the community have access to can help promote the scheme.

Feedback from the doorknockers that spoke to residents suggests that residents felt they would not see where the money would be spent meaning they thought they would not see or get to enjoy the benefit of it. For these householders a community reward may not be an incentive or the value of the reward may not have been large enough for householders to see what improvements it would bring and thus incentivise them to recycle.

Household Incentive Pilot Scheme (HIPS)

FINAL MONTHLY REPORT

(To be sent to **Carolyn Couch** (lawpp@defra.gsi.gov.uk) **no later than 13th April 2006**)

Section One

Local Authority:	London Borough of Islington	
Project Title:	Estates Incentives Scheme	**Reporting Period:** 1/09/2005 up to 31/03/2006

Overall Project Status

Project Status: ***(PIs input status here e.g. Red, Green)***	**Project Status Detail:** Please input any comments in the space provided below.
3	
Red: Overall the study was highly problematic. All Aspects required substantial attention and many problems were encountered that had a strong impact on the successful collection of data.	
Amber/Red: Overall the study was problematic. Some aspects required substantial attention and this had an impact on the successful collection of data.	The project was problematic in terms of data collection. Tick sheets were used and were difficult to obtain from crews in a timely fashion. Estate TMO etc were very slow at collecting prize funds and this was highly problematic for the final month of the project. In Islington the incentivised and control estates went to a door-to-door collection in February, however this was hugely problematic in terms of data collection. Overall we managed these problems and have still collected good usable data sets.
Amber/Green: Mixed – some aspects required substantial attention but overall the project ran well.	
Green: Good – Overall the project was very successful and ran with few problems.	

Section Two

Progress made during Last Month

Progress made against planned milestones on project schedule during the last month

Progress Made:

- Finalised all payments to very tight deadlines. Obtained data from contractors during a very problematic phase where the estates went to a door-to-door collection. Estates very please with their wins and we hope to hold a “Give and take day” at one of them

Major Success:

- Estates finally receiving payment and deciding on what they will spend funds on.

Major Issues:

- As mentioned above data collection during the change over was problematic. Will explain this in more detail further down.

Outlook

Please take this opportunity to inform us of your future plans to use incentives to promote waste reduction & recycling. Do you plan to carry on using the incentive you have just been piloting? Do you plan to stop using the incentive altogether or possible look at using alternative incentives?

- *This was a useful project for us to assess whether or not we would continue to use incentives. While we will not rule this out in the future we will have to carefully assess attitudes to incentives. Tonnage did not rise greatly for the incentivised estates. It might be useful to explore individual incentives as they may have a larger impact. In addition a questionnaire carried out in February of the campaign showed that the majority of residents questioned did not feel an incentive would encourage them to recycle more, but a good reliable service would. Details included.*

Section Three

End of Pilot Assessment From

Please now scroll down to the next page and complete t he 2-page final assessment form. The assessment form has been designed to gauge two key things:

1. How you feel you performed against each of t he success factors listed – please be honest, as this will provide us with very useful information.
2. Your opinion on how important each of the success factors was to the implementation and operation of your scheme.

Local Authority Incentive Schemes

We would be grateful if you could spend a few minutes completing this survey.

Please specify the type of incentive you used during the pilot scheme to encourage improved waste practices by householders, if you piloted both a financial/carrot and a voluntary/carrot then please complete the form for both incentives but colour code the asterisks (*,*) so that we can distinguish between each incentive.

	Please mark the box with an *			***Please specify:***
1.	Financial / Carrot	*	e.g. cash rewards; discounts; subsidies	Cash for estates tenants organisations
2.	Voluntary / Carrot		e.g. community rewards; charitable donations	

Please now provide your assessment of how well the success factors (listed below) were implemented during the operation of your scheme (Column A). Please also provide your opinion on how important each success factor was to the implementation of your pilot scheme (Column B). Please put an asterisks (*) in the box you select:

❖ **Stakeholder Commitment:** (commitment of all stakeholders to the success of the incentive scheme)

Success Factors	**A** Score your Performance					**B** How important was this factor to the success of your scheme?				
	Excellent	Good	Satisfactory	Poor	V-Poor	Critical	Very	Fairly	Low	Not at All
1. Support from top management?		*						*		
2. Support from Councilors?		*							*	
3. Support from Partners? (e.g. Oxfam, Save the Children, collection companies)			*			*				
4. Alignment with waste management policy/targets.		*					*			

Please provide any further comments below:

A critical factor in this scheme was the fact that our contractors do not have onboard weighing and do not routinely take note of bin volumes. They do of course have weighbridge tickets but these could not be used for this project. The crew used tick sheets, which were problematic to collect. Another critical factor was that fact that the project went door to door in February. This was not foreseen at the beginning of the project. This development meant that we had two sets of data to account for in some instances. These data sets had to be calibrated. We continued to collect data from bring sites and from door to door collections during this time period. However, we were able to compare door-to-door weights to bring site weights for a small section of estates in eth scheme, which is very useful information. Details to follow.

❖ **Ownership:** (overall drive, commitment from people operating the incentive scheme)

Success Factors	**A** Score your performance					**B** How important was this factor to the success of your scheme?				
	Excellent	Good	Satisfactory	Poor	V-Poor	Critical	Very	Fairly	Low	Not at All
5. Time commitment of staff (Full-Time, Long Term?)		*					*			
6. Drive of staff working on the incentive.		*					*			
7. Delivery from Partners.			*				*			

Comments: (e.g. who thought of the incentive? Is the incentive original or has it been done before?)

The three partners came up with the focus on estates recycling incentives. We chose this as we all wanted to focus more efforts on estates as we all felt we needed to target these areas more than kerbside properties. Also the housing stock from the three boroughs compared favorably well in terms of estates. This was an original incentive in Islington.

❖ **Financial funding:**

Success Factors	**A** Score your performance					**B** How important was this factor to the success of your scheme?				
	Excellent	Good	Satisfactory	Poor	V-Poor	Critical	Very	Fairly	Low	Not at all
8. Availability?	*						*			

	A					B				
	Score your performance					How important was this factor to the success of your scheme?				
	Excellent	Good	Satisfactory	Poor	V-Poor	Critical	Very	Fairly	Low	Not at all
9. Security into the future?			*							*
10. Appropriateness/realism?			*				*			

Comments:

Funds were very quick to come through and simplified the process greatly by having funding upfront. LBI ended up paying for some leaflets from our own budget however because of the initial delay. As a result we had to return "unspent" funds at the end. DEFRA were very helpful however with advise on money allocation and very efficient. This scheme worked well in terms of community involvement however in terms of recycling tonnage not as well. The funds will not be available internally to run this type of scheme in the foreseeable future. The idea of incentivising estates and estate tenant groups for recycling is really good which is why we wanted to run the project. The fact that we did not have din weigh equipment meant this scheme was labour intensive, however we hope to get bin weigh equipment and will certainly look at incentives for select groups when this happened such as schools, certain estates etc.

❖ **Project Management:** (Day to day management of the incentive scheme)

Success Factors	A					B				
	Score your performance					How important was this factor to the success of your scheme?				
	Excellent	Good	Satisfactory	Poor	V-Poor	Critical	Very	Fairly	Low	Not at all
11. Suitability of Specific management structure?			*				*			
12. Suitability of measurable objectives/aims?			*				*			
13. Achievability of objectives/aims?				*			*			
14. Alignment of objectives/aims with waste management policy?		*					*			
15. Suitability and realism of timescale.				*		*				
16. Quality of Risk Assessment in place.			*					*		

Comments:

The scheme was quite tight to deadlines at times and required a lot of project management especially at the end /beginning of each month, prize period.

❖ **Communication:** (Within Local Authority and to the community)

Success Factors	A					B				
	Score your performance					How important was this factor to the success of your scheme?				
	Excellent	Good	Satisfactory	Poor	V-Poor	Critical	Very	Fairly	Low	Not at all
17. Internal awareness of scheme.			*						*	
18. External awareness (i.e. publicity, awareness level)			*				*			

Comments (e.g. type of media used etc):

There were three sections of communications. The first involved a door knock and leaflet drop to all residents on the incentives scheme in October. This was followed up with a letter (mid December) to remind residents of the scheme and a free cloth bag to promote recycling in general. This letter also has some helpful tips on the back for a Recycling Christmas.
Next we door knocked in January and again in February with a questionnaire and free recycled pencil to promote recycling.

❖ **Value of the Incentive**

	A					B				
	Score your performance					How important was this factor to the success of your scheme?				
	Excellent	Good	Satisfactory	Poor	V-Poor	Critical	Very	Fairly	Low	Not at all
19. Rate the success of the incentive in promoting your scheme.				*				*		

Comments:

The incentive didn't really promote recycling hugely on the estates. The recycling did increase over all however part of this was due to change in collection method.

20. How was the success of the incentive monitored & evaluated? E.g. were there set targets for participation/tonnage recycled etc?

The project was deemed successful overall as we did succeed in increasing recycling tonnage and encouraging people to recycle more however when questioned the vast majority of people felt a good reliable service was the most important factor in encouraging recycling participation.

FWD
Food Waste Disposer Group

AMDEA™
The Association of Manufacturers of Domestic Appliances

Mr D Johnson
Chair of the Environment Committee
London Assembly
City Hall
The Queens Walk
LONDON
SE1 2AA

13 October 2010

Dear Mr Johnson

To what extent can financial incentives boost recycling rates?

AMDEA is the UK trade association for large and small domestic appliances. We represent manufacturers at UK, European and international level; with government and EU political institutions; in standards and approvals; with non-governmental organisations; with consumers and in the media. AMDEA protects and promotes its members' interests in all these fields.

Our members include the world's leading manufacturers of in-sink domestic food waste disposers, who draw on over 70 years of worldwide experience in the food waste disposal sector, the capture and recycling of municipal waste and the recovery of value from this waste stream.

Over the decades our members have accumulated (and continue to build) a formidable evidence base of scientific knowledge in the municipal waste management field - peer-reviewed research executed by academics and recognised experts around the world. In addition to these data, we count on the practical experience of their operations in over 80 countries including those societies, such as Sweden, considered to be at the forefront of sound environmental management.

We are grateful for this opportunity to share the scientific knowledge and practical experience gained as we firmly believe that any inquiry into boosting recycling rates should acknowledge the potentially crucial role of domestic food waste disposers (FWD) to capture and extract value from this waste stream, to remove it from contaminating dry recyclables and motivating citizens to participate in dry recyclable collection. We consider this is especially true in those areas with historically low recycling performance – high-rise flats and the most densely populated areas of London.

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Do financial incentive schemes lead to individual behavioural change over the long term?

In AMDEA's view the essence of successfully motivating citizens to recycle lies in making this task simple and achievable in practice. While financial incentives may induce behavioural change in the short term, and are certainly useful to encourage some people to try to do the right thing, continuity depends on simplifying what can be onerous and inconvenient tasks for some citizens; depending on their type of housing, state of health and "green" commitment.

The biggest challenge lies in high-rise buildings, multi-tenanted conversions and densely populated streets where terraced houses open straight onto the pavement. Living space is small and waste-storage space non-existent; both inside homes and on the doorstep. Any frustration at managing the most difficult waste stream – food waste - can be expected to lead in the long run to a reluctance or impatience to deal with dry recyclables.

In-sink food waste disposers (FWDs) are a convenient and user friendly solution for householders, particularly in flatted properties. They can grind practically all food waste to minute particles that are easily carried away by the wastewater system, directly to wastewater treatment works, all of which in London have anaerobic digestion (AD) plants or will have reinstated them soon. Most of the sewage sludge in the UK is treated by AD. The ease with which FWDs manage this task, in the kitchen, has proved to encourage citizens in Sweden to adopt behaviours that have cut municipal waste to landfill by 60%.

Are there other approaches that could achieve the same result (i.e. sustained behavioural change, leading to improved recycling performance) that should be considered first?

We suggest that removing food waste from the mix, by managing it when and where it is produced, at the kitchen sink, avoids contamination of other recyclables, reduces the burden for tenants and not least the weight, where other waste streams such as cans, cartons and newspapers need to be carried down flights of stairs. The ease with which they have managed their food waste is also more likely to create a positive attitude and along with this the necessary energy and enthusiasm for separating other recyclables.

In the context of the carbon footprint of FWDs, independent research (which we can make available) has demonstrated that this option is second to none and better than landfilling, incineration or centralised composting. They use minimal electricity, 2 – 3 kWh per year and via anaerobic digestion yield 25 times this amount of renewable electricity around 76 kWh per functioning unit per year. In addition to valuable biogas, fertiliser and soil improver can also be recovered from the output of FWDs, using existing anaerobic digestion infrastructure which is now used to treat most sewage sludge. The consensus from field studies is that additional water usage where FWD are installed is low - in the order of one lavatory flush (6 litres) per household per day.

Post-collection separation of dry-recyclables is a cost effective means of working towards a *zero waste economy* but the yield of reusable or recyclable materials is reduced/limited/compromised when wet, sticky, putrescible food waste contaminates the waste. FWDs remove this risk at the kitchen sink. When surveyed, users have consistently expressed high satisfaction rates (>90%).

Typically domestic FWDs last for 12 years and remain in the property when the tenants move on. In London with floating populations that move between boroughs and recycling regimes this continuity is an important long term benefit. FWDs are themselves 95% recyclable.

The best way to motivate most people to recycle more is to make it simple, convenient, odour-free and consistent with their household arrangements. The last might sound trivial but requiring people to have multiple bins inside and outside their homes can be resented, especially if they smell. Information that it is good for the planet and/or economy will motivate some people but not all.

Personal financial return is often a motivator as the following example from Surahammar, Sweden shows. In 1997 Surahammar introduced new waste charges which for kitchen food waste meant £0 per year for home-composters, £27 per year for an 8-year leasing contract for a FWD installed by the municipality and £209 per year for kerbside collection of kitchen waste. By late 1998 30% of households were using FWD, in 2008 this had increased to 50%, 30% were home composting and 20% had kerbside collection. There were drop-off bins for cardboard, glass, plastic and metal. Waste to landfill was cut from 3600 to 1400 tonnes/year. The wastewater treatment works' biogas increased by 46% but the load [cost] to the wastewater treatment plant did not change; the hypothesis is that the dissolved load was biodegraded by biofilms in the sewers, whereas particulate food particles passed through to the anaerobic digester.

Surahammar shows, that when FWD are included in the mix of options for food waste, the overall waste strategy enabled residents to decrease the waste sent to landfill to 40% of the amount sent before the strategy was deployed. 50% of residents found using a FWD was a convenient and hygienic option, 30% did home composting and 20% used kerbside collection for their kitchen waste. The reduction in contamination of residual waste and the improvement in separation of recyclables accounted for this very impressive performance.

This Surahammar case study has passed peer review and is in print for publication in the December issue of Water & Environment Journal. We can supply an advance copy and if helpful can also check if one of the authors, Dr Tim Evans, might be available to attend your public session on the 4 November.

What are the key considerations for local authorities thinking of implementing financial incentive schemes?

One key consideration is whether the incentive is cost effective, another is whether it induces long-lasting behaviour change.

The cost of domestic FWDs purchased in bulk is about £50 each. The typical life expectancy of a domestic FWD is 12 years, i.e. £4.20 per year. The cost of food waste collection and disposal to landfill is rising to about £170/tonne, if the typical quantity of food waste is 180 kg/household.year, that is £30.60 per year. In addition there is the increase in dry recyclable yield that can reasonably be expected and the increase renewable energy production at London's wastewater treatment works. These figures show that FWD satisfy the cost effectiveness criterion. At over 90% user satisfaction, FWD can be considered to satisfy the long-lasting behaviour change criterion as well.

For many householders, particularly those who are still unable or unwilling to recycle, managing waste and recycling are not compartmentalised issues. Negative or positive attitudes and enthusiasm to collaborate will be influenced by the hardest task set for them. Making food waste easy to manage and taking it off the kerbside in urban areas will give all other recycling policies a stronger chance of long term success.

Yours sincerely

Douglas Herbison
Chief Executive

CASE STUDY: Behaviour Change

"Paying the public to recycle"

Introduction

This paper summarises a pilot study that focuses upon the use of an incentivisation reward scheme seeking to change community recycling.

The strategic objective was to divert waste from landfill by incentivising households to increase the amount of residual waste recycled through the use of positive encouragement ('carrots') rather than legal sanction or the imposition of penalties ('sticks'). The net effect of this is to save the avoidable cost of landfill tax; reduce the impact upon Council tax; encourage sustainable behaviour; increase recycling; demonstrate community leadership and 'exemplar' status; encourage community-based environmental stewardship; and stimulate the local economy.

Background

The Royal Borough of Windsor and Maidenhead (RBWM) is a unitary borough with 142,000 residents, 66,000 households.

The social demography of the area is predominantly Acorn classes A, B and C; being perceived as an affluent area.

In terms of recycling performance RBWM is currently around 37%; has high consumption value generating ~700 kg/hh pa of waste arisings; and sending some 42,000 tpa to landfill.

In September 2008 RBWM embarked on a pioneer project to test out whether incentivisation was an effective intervention driver for encouraging and motivating households to increase the amount of waste recycled and decrease the amount of residual waste.

To facilitate the pilot scheme the Council supplied larger capacity (240 litre) wheeled bins in lieu of a twin box (56 litres each). The perceived benefits of the system was a rewards programme that linked the amount of recycled material (weight) to earning redeemable reward points through a network of national and local reward partners. In other words, the more one recycled, the greater the rewards earned up to a pre-determined capped number of points.

The Scheme

The recycling incentivisation scheme, the first in the UK, is based on 4 pillars of behavioural change: (i) design; (ii) communication; (iii) measurement; and (iv) rewards.

(i) Design:

- Making life easy (convenience) to the point of instilling habitual behaviour;
- Making recycling accessible and offering choice;
- Using community based marketing techniques;
- Focusing upon 'encouragement' and positive behaviours such as incentives, feel good factors and WIIFM?
- Taking into account past and present experiences through examining complaints, past experiences and problem resolution strategies.

(ii) Communication:

- Information and Education – Targeted and strategic press campaign coordinated with household outreach through letters from the council, and registration information that is consistent with the measurement;
- The use of language - How the desired action, the measurement and the achievements are described and communicated to the public. The belief was messages not only have to be relational to the achievements or actions made by the members, but also needed to speak to the self serving side of the rewards scheme while also positioning the resident as part of a bigger communal effort, as a socially conscious programme that has direct impact on the environment and communities. Essentially, the scheme makes it OK to be selfish, taking the guilt out of greed.

(iii) Measurement:

- A pre-occupation with relevant metrics was deemed important in order to demonstrate to participants the sense of achievement.
- To gauge the effectiveness of the scheme and to ensure objective evaluation of the key parameters of success the following basket of measures were agreed: reliability (chips and technology); weight-based data; activations; redemptions; reward points earned and redeemed; perceived monetary value earned; numbers of Reward partners; customer perception indices.
- Access to on-line accounts with real time measurement statistics of an individual's efforts translated into rewards and personal contribution to reducing environmental impacts.

(iv) Reward:

- Targeting local retailers and businesses, making sure that the local economic factor was considered when seeking out Reward Partners, focusing upon a mix of rewards to serve all residents, including donations to local schools.
- An appreciation of what works in Windsor does not necessarily work in Wales so in terms of consumerism ensuring a blend (choice) of rewards that reflect the characteristics and demographics of the community.

How The System Works

The system works by using state of the art technology. A Radio Frequency Identification (RFID) chip is embedded in a wheelie bin. The chip has a unique identification number that is scanned and assigned to the Unique Property Reference Number (UPRN) and encrypted codes. The waste collection vehicles are fitted with scanners and calibrated weigh cells that enable the bin to be lifted (on emptying) to be scanned, identified and assigned to a property and weighed. The weight is captured and entered on to a data base. Households that 'activate' their personalised accounts are married up with their weight data that is converted to reward points and entered as an entry on to their personalised activated account. On-line access to personalised accounts provides details on the reward points earned and participants choose from a list of rewards available offered by approximately 115 local Reward Partners.

Does Incentivisation Work?

The Customer's Perspective

- 91% found it easy to participate in the programme
- 69% found ordering rewards simple
- 72% thought the choice of rewards were great
- Average value of household rewards £135/pa

Recycling Performance

Appendix 1 shows the increase above a baseline figure of ~6kg/hh/pw, indicating an average 35% increase in weight of recycled materials collected over the pilot period.(as of 30th June 2010)

Participation & Economic Activity Summary

One of the objectives of the pilot scheme was to establish whether incentivisation was an effective intervention for stimulating economic growth. **Appendix 2** sets out some of the headline results that strongly suggest that the scheme has had a positive impact upon the local economy and is well supported by local residents earning and redeeming points through local outlets.

- Total number of potential HH 3,630
- Activation Rate 71%
- Reward Points earned 4,700,000
- Reward Points spent 609,250
- Spent Points value £40,60 0
- 'PV' of Reward Points earned £313,000
- 'PV' earned per HH £120

Independent Validation Study

Towards the end of the pilot scheme RBWM commissioned an independent waste composition analysis, the objective of which was to *ascertain* whether there are positive changes in the waste disposal behaviour of residents who have actively registered themselves onto the scheme.

The indicative results indicated:

(i) In terms of waste diversion:

- 95% (activated) presented residual waste for collection compared with 82% (non-activated) households.
- Activated households contained less residual waste (9.6 kg/hh/wk) than non-activated households (11.5kg/hh/wk).
- Around 24% of residual waste collected from non-activated kerbside properties could have been diverted to mixed kerbside recycling compared to 14% for activated households.
- 4.8% of residual waste from non-activated households was recyclable garden waste; compared with 3.1% from activated households.

(ii) In terms of recycling:

- 88% of activated h/h presented recycling bins compared with 82% of non-activated h/h.
- Activated h/h set out far more kerb side recycling at 6.8kg/hh/wk when compared with 5.0kg/hh/wk for non-activated h/h.
- Recycling material collected from non-activated h/h (16.2%) was seen to be far more contaminated that that from activated h/h (7.7%).
- The capture rate for all recycling materials for non-activated h/h was 65% compared with 83% for activated h/h.
- Capture rates for all individual recyclables were seen to be higher for activated h/h.
    - recyclable glass (92% activated; 68% - non-activated).
    - cardboard (83% activated; 57% - non-activated)
    - paper (82% activated; 60% - non-activated)
    - plastic bottles (76% activated; 69% - non-activated)
    - metals (70% activated; 65% - non-activated)

(iii) In terms of Costs and Financial Return:

- The costs associated with the Recyclebank scheme are based on one of two models: (a) a flat subscription fee levied per household irrespective of whether the account is 'activated'. This is also subject to a performance based sliding scale should the percentage of weight collected above a stated threshold be exceeded; and (b) a percentage of the landfill diversion savings. RBWM opted for the former i.e. flat fee option.
- Revenue costs to the Borough i.e. subscription costs, publicity and additional net processing savings have proved to be cost neutral based on a 25% increase in weight of recycled materials against an established baseline. The Borough is currently experiencing a 35% increase.
- Capital costs relate to the cost of the news bins; bin lifts and on-board scanning equipment and weigh cells. These costs need to be amortised over 10 and 8 years respectively.
- Given this was a 'pioneering' project all financial projections were founded upon sensitivity analysis.

The overall evaluation of the scheme across a basket of key performance indicators and set targets confirmed that incentivisation was an effective means of stimulating positive behaviour change in the 3800 participants in the pilot project. Consequently, RBWM agreed to roll out the scheme to all households in the Borough in two phases. Phase I is being rolled out to ~46,500 households with a completion date of end-November 2010; and Phase II to the remaining 13,000 households comprising multi-occupancy properties, narrow access, and properties receiving residual collections using refuse sacks. Phase II is due to be rolled out from December 2010 and will be based on a community-based, participatory scheme rather than one which is weight based. This represents a new technological solution to ensure there is community equality and fairness. This should provide interesting data around a scheme based on 'trust' and 'honesty'.

N.B. the graph illustrated in Appendix 1 : *Recycling Performance* is a running average from the onset of the pilot co-mingled scheme to present day (September 2010) and includes some of the Borough-wide roll out that commenced collections on 7th June 2010.

Way Forward

This pilot scheme has pioneered a fresh approach to changing people's behaviour through the use of incentives. There is little doubt at the local level it is perceived as a 'win-win-win' situation in terms of society-economics – environmental stimulus. But why has it been perceived so successful, surpassing any initial expectations and been so readily accepted by the community as a whole demonstrated through high levels of participation, activity and support?

There are a number of theories and models relating to behaviour change that might help explain the relative success of this particular program. However, few have given attention to models or theories that attempt to understand behaviour change within groups, organizations and whole communities. The design of programs to reach populations requires a respectful understanding of how those communities work, their barriers and constraints and enablers to change and what influences behaviours in general.

Mounting evidence suggests that behaviour change occurs in stages and movement through these stages is likely to be cyclical in nature, progressing through the stages of adoption, maintenance, relapse and re-adoption over time. The objective must be to instill a sense of habituation such that behaviours become sub-conscious and 'a way of life'. Certainly, an examination of the reasons for the success of the RBWM scheme when cross checked against a number of behaviour theories suggest there are strong links between the theoretical factors and the approach adopted by RBWM, consciously or otherwise.

Although the RBWM pilot scheme has been based on recycling, itself an ethical and socially acceptable behaviour, the opportunities to expand the concepts of this scheme to other areas are limitless once the system becomes publicly accepted and trusted. These opportunities might include, for example:

- Targeting incentivisation at 'reducing consumption' in more general terms.
- Waste minimisation – residual; launching organics collections;
- Carbon reduction;
- Contribution to climate change i.e. mitigation/adaptation;
- Transport – modal shifts;
- Health agenda – e.g. 'Get Fit'; CHD & obesity;
- Council tax rebates on a wider scale;
- School curricula;
- Wider sustainability agenda
- 'Big Society' agenda

The use of incentives as part of the evolving 'Big Society' agenda is being explored in more depth.

Summary

RBWM has pioneered a recycling incentivisation scheme to reward households for positive and sustainable behaviour - a community and individual behaviour change programme that is founded upon motivation and positive encouragement.
RBWM believes this pilot scheme has demonstrated that incentivisation can be used to change behaviour and be used as a publicly acceptable and effective policy intervention instrument.

The initiative has demonstrated that in the context of changing recycling behaviour the chosen incentivisation scheme:

- Significantly increases recycling rates
- Saves money on landfill and taxes
- Drives economic value for residents
- Stimulates local economy
- Offers significant opportunities to expand the concept into other areas

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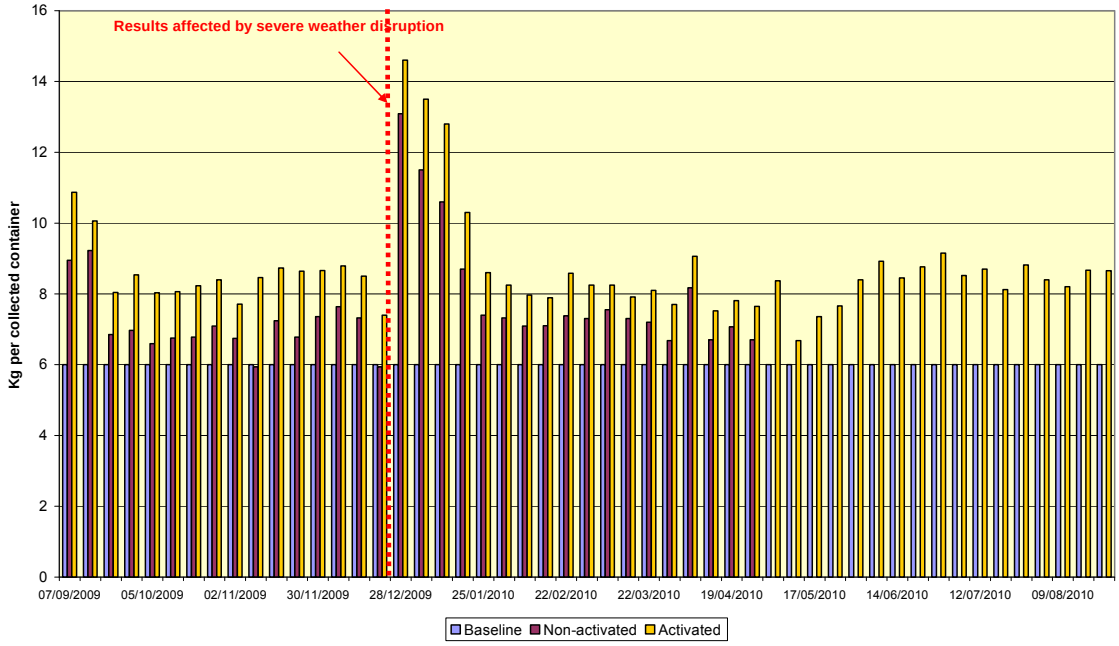
September 2010

Appendix 1: Recycling Performance



Appendix 2: Claimed Behaviour Change

SURVEY QUESTION	YES	NO	UNSURE / PROBABLY
Q1: Are you recycling *more* since the start of the programme?	70%	29%	1%
Q2: Are you recycling *more frequently* since the start of the programme?	51%	49%	-
Q3: Are you being more careful now of what is being recycled?	65%	34%	1%
Q4: Is everyone else getting involved in recycling now?	77% (EVERYONE)	15% (ADULTS)	8%
Q5: Will you try to recycle more because you can receive rewards now?	55%	15%	30%
Q6: Have you ordered rewards since joining the programme?	66%	34%	-
Q7: Does receiving Reward Points encourage you to recycle more?	50%	15%	35%
Q8: Would you say that rewards are a good reason to recycle?	78%	20%	2%

Waste Watch
Change the world around you

Consultation on financial incentives for recycling

Waste Watch response, 12 September 2010

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About Waste Watch

Waste Watch (registered charity no.1005417) is an independent, not-for-profit, environmental organisation specialising in promoting sustainable resource use across the UK. Our vision is of a less wasteful society, and we believe everyone has a part to play in reducing waste and living more sustainably.

Since it was established in 1987, Waste Watch has been promoting pro-environmental behaviour change through communications campaigns, community engagement and schools education programmes. Though our work has been primarily focused on waste and recycling, we are increasingly applying the knowledge and experience we have acquired across the sustainable behaviours spectrum.

We are funded by charitable trusts, the corporate sector, local and central government and individuals.

With nearly **20 years' experience** of working with the education and waste management sectors in the UK, we have accomplished some outstanding achievements. Waste Watch's successes include:

1980s

- Created first **National Directory of Recycling Information**

1990s

- Co-ordinated the first **national waste awareness week**
- Created first ever UK **Recycled Products Guide**
- Drew up **Manifesto for Market Development**, which lead to the formation of **WRAP (Waste and Resources Action Programme)**

2000s

- Launched the telephone recycling information service **Wasteline** and accompanying website **www.wasteonline.org.uk** (reaching over 70,000 visitors per month)
- Launched **Recycle Western Riverside**, the UK's largest regional public waste awareness campaign
- Created 'Rethink Rubbish' which led to the national **'Recycle Now'** campaign
- **Cycler**, the rapping robot, met his **one millionth child** after visiting over 5,000 schools

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Consultation questions

Waste Watch welcomes the opportunity to respond to London Assembly's Environment Committee consultation on the potential role of financial incentives in improving recycling performance.

Below we set out our views on each question, supported by evidence where possible.

1. Do financial incentives schemes lead to individual behaviour change to waste management over the long term?

Incentives can play an important role in encouraging householders, businesses and communities to reduce their waste and to increase recycling.

It is important to distinguish between different types of financial incentives such as

1. Variable charging for waste collection and disposal service

This type of scheme rewards households and businesses that reduce their overall waste generation through waste prevention and recycling. It works by applying variable direct charges for waste collection and disposal services based on weight or volume of residual waste set out. Many EU countries have this kind of scheme and it has been attributed with reductions in overall waste volumes and increased landfill diversion rates.

A study commissioned by the CIWM in 2003 supports this.[1] Costs of such schemes vary depending on the cost of disposal; however, with increasing landfill tax, costs of implementing such schemes reduce significantly. The effect on recycling and waste arisings depends on recycling performance at the start of the scheme – where performance is low at the outset, increases in recycling are likely to be greater that where the recycling rate is already high.

2. Deposit refund schemes

Deposit refund schemes for packaging waste have been shown to increase recycling rates in countries such as Germany. Here a universal point-of-purchase fee is levied on the packaging items targeted, which is refunded when the packaging item is returned to registered collection facilities.

Recent figures from the Deutsche Pfandsystem GmbH (German Deposit Scheme) put return rates for packaging with deposit, including high value materials such aluminium cans, at 89.5%.

A recent report by the Campaign for the Protection of Rural England (CPRE) has provided valuable insights into how such a system could work in the UK and how it would increase recycling.[2]

3. Financial payments for recycling set out

Schemes such as RecycleBank act as a loyalty scheme which lets recyclers collect points every time they set out recyclables for collection. The points collected are converted into shopping vouchers and other monetary incentives. To our knowledge no independent research has been undertaken to date to show evidence that this type of scheme increases recycling rates.

The trial scheme run by the Royal Borough of Windsor & Maidenhead showed increases in recycling yields by weight between 30-35% for households that had activated a RecycleBank

[1] *To charge or not to charge*, CIWM, 2003, http://www.ciwm.co.uk/mediastore/FILES/10529.pdf
[2] *Have we got the bottle?*, CPRE, September 2010

account. However, this did not necessarily translate into a corresponding increase in the borough's recycling rate as contamination with non-recyclable waste also increased. [3]

Reports from the US indicate an increase in recycling rates to around 40% but this has already been exceeded in the UK by around one quarter of local authorities, without the need to offer any such incentive. We also need a better grasp of the impact on different socio-economic groups – the maximum value that can be claimed is £100 worth of points, which is a very different proposition for a poor family than a wealthy one.

2. Does this type of intervention promote recycling best practice or can it lead to unintended consequences?

It is a common concern that charging for waste collections service will lead to increased fly-tipping. However, this is not borne out by the experience of countries using these systems, particularly where variable charging systems are combined with a deposit refund system for packaging.

Deposit refund schemes have a positive side effect in that they act as a deterrent to litter by putting a value on the packaging often discarded by consumers where no deposit is charged.

Financial incentive payments such as RecycleBank have a number of potential negative impacts which should be considered in an overall cost-benefit analysis. These include:

Impact on collections scheme: RecycleBank works best with co-mingled collections of recyclables where only one container needs to be weighed, scanned and emptied. This could act as a barrier to increasing separate collections of recyclables wastes, as envisaged by the revised Waste Framework Directive. The separate collection of recyclable wastes is crucial to achieve the quality of recycled materials required by UK reprocessors.

WRAP's 2009 *MRF Quality Assessment Study* includes quantitative and qualitative evidence that co-mingled material processed through MRFs still fails to meet the quality standard required by UK and mainland EU reprocessors. Standards may still be declining, according to reprocessor experience, and most MRFs do not appear to have taken notice of the quality imperative.

It is theoretically possible to implement a scheme like RecycleBank with a kerbside-sort scheme, but this would presumably be more costly as usually such schemes use at least two recycling containers to keep paper separate in order to ensure its market value and quality.

In Maidenhead and Windsor the scheme is to being trialled on garden waste – is this an appropriate material stream?

Costs to the taxpayer: The administrative costs of a scheme like RecycleBank need to be met by local authorities and ultimately the taxpayer. Any savings on landfill tax and other disposal will be offset by the RecycleBank's operating costs, whereas these saving could be realised in full if recycling had been increased through purely voluntary means. There are also likely to be start-up costs such as the introduction of bins with electronic chips that enable the collection of points.

Fairness and equal access: An essential requirement for the operation of RecycleBank is the identification of individual households' recycling receptacles to ensure reward points are allocated to the correct household. The main way of doing so is by providing householders

[3] 'RecycleBank trial exceeds expectations in Windsor', LetsRecycle.com, 9th February 2010, http://www.letsrecycle.com/do/ecco.py/view_item?listid=37&listcatid=5477&listitemid=54570

with electronically tagged bins, although reportedly there can be problems with matching the correct bin and household by the collection crew. The scheme can work for flats door-to-door collection schemes, whereby householders are provided with a disposable tag to tie onto their recycling bags. The same system can work for communal bins, provided the collection contractor has a system in place to separate the tags before the recycling bags are sent for reprocessing. However, this clearly constitutes an extra cost and additional layer of complexity for collection scheme operators.

People living in flats are often the very residents incentives need to target because of their lower propensity to recycle due to constraints as less convenient recycling facilities and lack of storage space within their homes.

It is also not fair that people, who are often on lower incomes, are excluded from the opportunity to benefit from financial incentives.

Doing the right thing: Evidence from focus group research we have undertaken for many local authorities in London and elsewhere shows that residents don't feel that 'throwing money at a problem' is always the best solution to increasing recycling. Furthermore, 'doing the right thing' has a feel-good factor associated with it and makes people feel more connected with their local community. This would be in the spirit of the Big Society ideal, where people do things for the good of their community and country rather than for personal financial gain.

This kind of financial incentive also sets a negative precedent for other pro-environmental behaviours in that people might expect to be paid for driving or flying less for example.

Increased contamination: As financial incentive schemes such as RecycleBank are weight-based, people might be tempted to increase the number of points collected by setting out items in their recycling bin that can't be recycled within the local scheme.

This has been borne out by the experience of the trial scheme operated in RB Windsor & Maidenhead where a 30-35% increase by weight was experienced as a result of the introduction of the RecycleBank scheme. However, a council representative was quick to point out the difference between collected material and increases in the local authority's recycling rate as not all the material set out could necessarily be recycled.[4]

Encourages more consumption and counter-acts waste prevention messages: There is also concern over the fact that increased recycling is rewarded with shopping vouchers which encourage increased consumption and thus increased waste arisings. This kind of mixed message is likely to counter-act any waste prevention messages that local authorities are promoting alongside their recycling campaigns.

3. Are there any other approaches that could achieve the same aim (i.e. sustained behavioural change, leading to improved recycling performance) that should be considered first?

We feel that current proposals favouring financial payments to individuals for recycling more should only be a last resort where other methods do not work.

As the rapid increase in recycling rates over the last decade have demonstrated, existing policies have been highly successful and recycling is now firmly embedded as a mainstream activity that individuals adopt voluntarily.

[4] 'RecycleBank trial exceeds expectations in Windsor', LetsRecycle.com, 9th February 2010, http://www.letsrecycle.com/do/ecco.py/view_item?listid=37&listcatid=5477&listitemid=54570

Other instruments such as residual waste bin size restrictions and alternate weekly collections of residual waste, combined with separate weekly collections of food waste, have even resulted in the reduction in the overall waste levels. In 2008/09, the top ten recycling authorities operated alternate weekly collections. An example of this is the innovative and well-designed recycling scheme of the Somerset Waste Partnership.

Community based incentives such as improved local environmental quality or community infrastructure, rather than individual material incentives, will result in longer-term behaviour change through changing values and social norms. This clearly chimes with the Coalition Government's Big Society principle.

Competitions between neighbourhoods have also been shown to embed norms and to encourage long-term behaviour change.[5]

We also believe that the national government should re-consider the introduction of a deposit refund scheme as part of its producer responsibility system. Deposit refund systems are also more socially equitable than financial incentives such as RecycleBank, as they are universally applied on a nation-wide basis and accessible to anyone.

A report produced for CIWM in 2007 sets out advantages and disadvantages of various different approaches. [6]

4. What are the key considerations for local authorities thinking of implementing financial incentive schemes?

Any local authority considering the introduction of financial incentive schemes needs to ensure that the existing recycling infrastructure, collection services and communications are working well. If incentives are introduced without these essential in place, there could be a backlash from residents feeling unable to participate in the scheme because of missed collections for example and communication will be vital to prevent increased contamination.

Local authorities should undertake cost benefit analyses that consider the costs of financial payments schemes compared to the cost of voluntary approaches as set out above. This analysis needs to include:

- administrative costs of the scheme
- start-up investments, e.g. equipping bins with electronic chips and collection vehicles with readers
- retraining of collection crew
- potential changes to existing recycling collection contracts
- cost of communication of service change and promoting the new scheme
- landfill tax savings
- additional income from increased quantities of recyclables (taking into account quality of the materials)
- potential increase in contamination and rejected loads
- different impact on lower and higher income households
- equality of access to the scheme, e.g. in hard to reach areas such as blocks of flats

[5] *The Surrey Scholar Project*, University of Surrey, 2005
[6] *Direct and variable charging for residual waste – Overview of key issues*, CIWM, 2007, http://www.ciwm.co.uk/mediastore/FILES/14030.pdf

Do financial incentive schemes lead to individual behavioural change to waste management over the long term?
Response: I am aware that some authorities have started financial schemes and found them to be successful. The behavioural change needs to be balanced with the financial impact after deducting outlay, and at what point it is deemed to be worth it. Whether they achieve behavioural change in the long term is best answered by those authorities. A financial incentive scheme would reward existing recyclers in addition to new ones (unless there was a complex system of deducting a threshold recycling level), which could be viewed as unnecessary expense.

Does this type of intervention promote best practice recycling or can it lead to unintended consequences?
Response: Any incentive scheme is likely to raise awareness of proper treatment of waste which is no bad thing. Whether it is best practice depends on individual circumstances. Those authorities who choose to have, for example, chipped wheelie bins can more easily measure wastes produced and calculate financial incentives accordingly; (whether or not this leads to adverse behaviour such as residents taking waste from elsewhere to raise their own recycling would best be answered by those authorities implementing such schemes). For those authorities who do not operate rigid containerised systems, or where it is almost impossible to allocate wastes presented to particular dwellings (because of the layout of properties for example) there is no practical way of allocating a financial incentive through kerbside recycling.

Are there other approaches that could achieve the same aim (ie sustained behavioural change, leading to improved recycling performance) that should be considered first?
Response: This mainly depends on the demographics and physical make up of properties in an authority. The Royal Borough of Kensington and Chelsea has a significant challenge in communicating effectively with our residents and businesses over waste issues because of the high transient population. Reaching the correct individual who is responsible for waste issues is difficult enough; once achieved, that person often moves on. The process involves constant revisits and repetition. It would be helpful if landlords and letting agents were *required* to ensure their tenants all received information relating to waste storage and presentation. It would also be helpful if all kitchens were equipped with the means to separate wastes easily, for example using trio bins or similar receptacles. At the moment this cannot be imposed, but it has the potential to make a significant difference if it were compulsory, say, for new developments or refurbishments. This could apply to domestic and commercial premises, especially

bearing in mind the proposed change in definition to municipal waste. National campaigns about waste issues help to drip feed messages. Taking a more regulatory approach, compulsory recycling schemes also reinforce the requirement to separate wastes and are possibly more viable where it is difficult to allocate financial incentives (even though it may be hard to track down producers, simply knowing it is a requirement to separate will lead to some people complying). Authorities could apply incentives to the whole street, for example by providing hanging baskets or some other environmental enhancement, but this is not simple, or cheap, to measure or administer.

What are the key considerations for local authorities thinking of implementing financial incentive schemes?
Response: In addition to the above, the process and cost of administration should be carefully thought through.

With regard to the table that was attached, we have not tried a financial incentive scheme at all in the past.

Kind regards

Kathy May
Head of Waste Management and Markets
Royal Borough of Kensington and Chelsea

WASTE FINANCIAL INCENTIVE SCHEMES INFORMATION SHEET

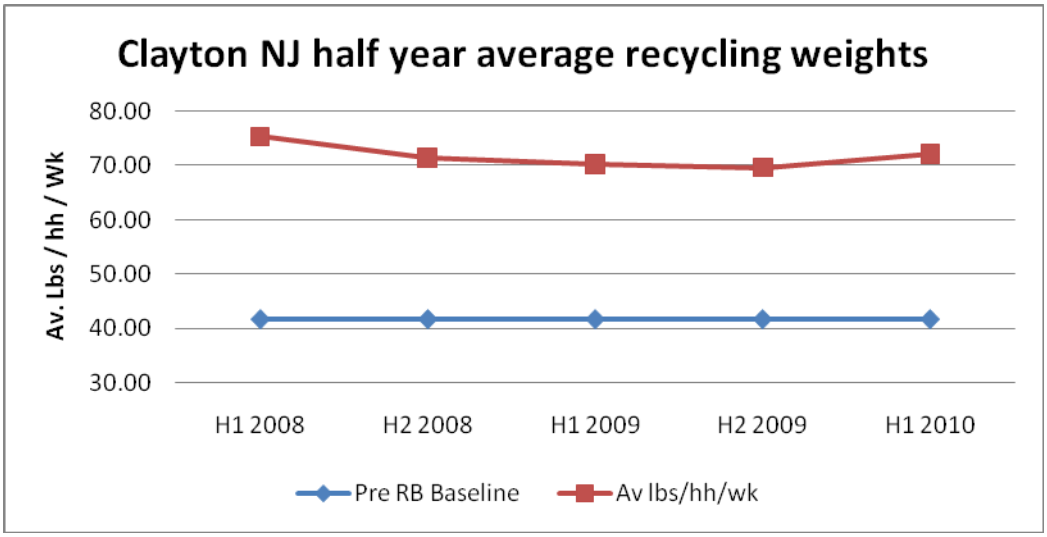
Borough Name: Haringey Council

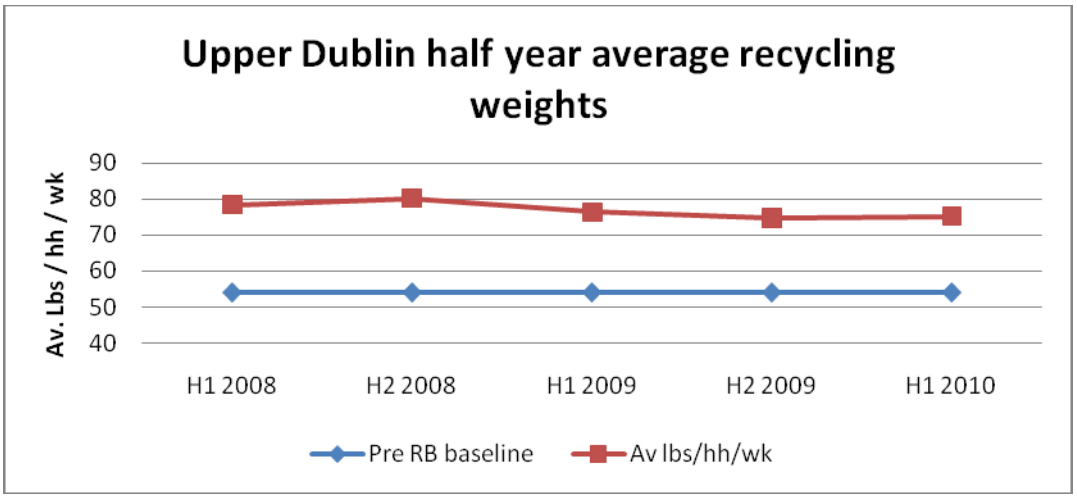
Short description of scheme	Start date	End date & reason	Brief description of communications strategy	Say how the recycling rates changed	What lessons did you learn and is there anything you would do differently?	Any other comments?
Defra Household Incentives Pilot Scheme (HIPS). £118k funding allocated to Haringey to run a multi-faceted scheme: - Prize draws (£100 each time) for those participating in the kerbside service. - Nomination-based Recycling Estate of the Year awards – three winning estates awarded £10k each for environmental improvements chosen by residents. - Nomination-based Recycler of the Year awards – winner and runners-up received a cash prize. - Making The Difference budgets for local resident-led projects increased by £5k in each of the seven Area Assemblies if boroughwide kerbside participation rates reached 60%. - Charity fund linked to recycling rate, with six organisations lined up to receive a share of a pot of up to £28k - Celebration and awards event (attended by Ben Bradshaw MP) at the end of the scheme	October 2005	March 2006, end of funding from Defra	- 'Recycle More' leaflet produced and delivered boroughwide. - Advertising on bus backs and at railway stations. - Successive articles in the council's Haringey People magazine. - Article in the Tenants Star publication for council housing tenants. - Attendance at Area Assemblies and other community meetings to promote the scheme. - Doorknocking by Participation Team on selected roads. - Press releases. - Coverage on BBC London radio and TV.	The **recycling rate** was 14% in 2004/5, rising to 18% in 2005/6. There were a number of other initiatives that will have contributed to this increase, including the introduction of collections of plastic bottles, cardboard and food waste from around half of all kerbside properties, and the launch of near-entry collections from some blocks of flats. The **participation rate** rose from 55% in July 2005 to 64% in February 2006.	The scheme gained a great deal of publicity and will have contributed in part to the 4% rise in the recycling rate over the space of a year. However, delays at Defra in confirming the allocation of funding meant that the entire scheme had to be implemented and completed in just 6 months. With such a short window there was no opportunity to carry out attitudinal surveys, assess the medium- and long-term impacts of the various elements of the scheme, or carry out other types of monitoring. It also proved to be quite difficult to attract nominations for the merit-based elements of the scheme, and the local media did not cover this aspect of the scheme as much as the prize draws and charity fund. These types of incentive were probably the least effective, so would not be repeated. Any incentives schemes run again along similar lines would need a longer period to enable the ongoing impacts to be measured. A more sustained communications/advertising approach would also be beneficial, potentially targeting different areas of the borough at a time to enable more effective monitoring.	

Response to the London Assembly

1) Do financial incentive schemes lead to individual behavioural change to waste management over the long term?

There is evidence to show that financial incentive schemes lead to sustained behavioural change over the long term. The RecycleBank programme has been available for kerbside recycling since initial tech trials in June 2009, and therefore two examples from the US from two of the longest serving clients are shown below. These examples relate to Clayton, New Jersey and Upper Dublin, Philadelphia:





The recycling performance of residents in both these municipalities is significantly higher than the pre-RecycleBank base line (shown in blue) and has continued at a consistent rate since the implementation of the programme. Please note that the total waste arisings for both municipalities was unavailable. We would suggest that the slight drop in recycling shown H1 2009 into H2 2009 would mirror a drop in the total waste arisings brought on by a reduction in consumption from the global economic downturn.

2) Does this type of intervention promote best practice recycling or can it lead to unintended consequences?

Response: We believe that rewards for recycling supports best practice. By incentivising recycling, there are three key benefits; households are generally more interested in recycling as there is now a tangible, personal benefit to recycling. In a recent survey, 82%* of RecycleBank customers claimed to be recycling more since the implementation of the programme. In addition we believe that this heightens awareness of the materials that can be recycled, leading to householders diverting recyclate from the residual waste stream towards the recycling waste stream, thus maximising the level of recycling diverted. In a recent survey, 74%* of customers surveyed are more careful of what's being recycled to make sure that they receive their points. Additionally residents are recycling more frequently as a result of joining the RecycleBank programme. In the same survey*, 70% of RecycleBank customers claimed to be recycling more frequently since starting on the RecycleBank programme.

There is no evidence of unintended consequences as a result of incentivising householders to recycle. A cap is applied to the number of points that an individual household can earn within any given month. This ensures that residents that may attempt to challenge the system by making their recyclate heavier than it is (e.g. filling plastic bottles with liquid or including soggy paper) aren't rewarded. In addition, there is no evidence to suggest that rewarding customers drives an increase in consumption. In fact in these tough and challenging financial times, there is evidence that customers are turning to coupons and vouchers in lieu of cash to maintain their spending power.

3) Are there other approaches that could achieve the same aim (i.e. sustained behavioural change, leading to improved recycling performance) that should be considered first?

Response: RecycleBank has evidence to prove that recycling performance with the programme can be increased over and above the benefits of implementing the fundamental building blocks of a recycling programme. It's important to ensure that residents are aware and educated and that the correct frequency of collection and capacity are available for residents. However, excellent recycling infrastructure, awareness and education of residents will take the level of recycling to a particular level, but we believe that incentivising residents to recycle can take recycling to higher levels.

In our trials with Halton Borough Council, we worked with an innovative and progressive local authority that had implemented service changes, educated residents and invested heavily in a communications campaign to increase recycling. Implementing the RecycleBank scheme helped take recycling in the Borough to a new level and in the trial; residents on the RecycleBank trial recycled 60% more weight than those without access to the scheme.

4) What are the key considerations for local authorities thinking of implementing financial incentive schemes?

There are a number of key considerations for local authorities when considering implementing financial incentive schemes, which we believe include:

- There may be a need to invest in some assets in order to implement an incentive scheme such as RecycleBank, e.g. weighing technology and RFID tags. However these costs are generally recovered over the lifetime of the contract as savings increase where landfill taxes will rise in future years.
- Understanding the authority's waste composition analysis is important to ensure that there is sufficient recyclate in the residual stream to create savings. If recycling rates cannot be driven much higher, then economic benefit is harder to establish.
- An engaging communications plan in place to make sure the scheme is clearly promoted to the residents. If residents don't know about it or how to use it properly, then the scheme will not be a success. A good incentives company such as RecycleBank should be able to provide this as part of their service.
- A robust baseline is important to ensure that the benefit of implementation of a financial incentive scheme, such as RecycleBank can be measured correctly.
- A customer care support process in place, residents will have queries and questions as they regularly use the scheme. They need to be responded to in a timely and accurate manner to ensure continued success of the scheme. Once again you should look for you incentives company to provide this.
- Financial incentive schemes, such as RecycleBank, can offer wider economic benefits. By working with local shops & businesses, individual reward programmes are created. These reward programmes will drive custom into local shops and businesses, supporting local economic development and employment.
- Programmes must offer a wide variety of reward partners, and give residents the ability to donate their points to good causes. The RecycleBank green schools programme allows residents to donate their points towards environmental grants which enable environmentally based projects to take place.
- Finally a financial incentives scheme, such as RecycleBank, can create a "halo" effect for local authorities. In a recent survey* of RecycleBank customers, 95% of customers said that they would recommend RecycleBank to friends and family. The positive equity from this recommendation reflects well on the local authority.
- Steps towards a waste minimisation programme.

*Survey of 1,777 residents of the RecycleBank programme from April and July 2010.

Estates Incentives Pilot Scheme - Residents survey form

Introduction

I am working for the local council, H&F, and I was wondering if I could speak to you about the local recycling scheme? I just have few questions I'd like to ask you.

Survey information

i	Surveyors name	
ii	Date	
iii	Block name	
iv	Flat number	

Estates recycling scheme

1 Do you use the recycling banks in the estate?

☐ Yes (complete section A) ☐ No (complete section B)

Section A. Uses estates recycling scheme

2 How often do you use the recycling banks?

☐ Everyday ☐ A few times a week ☐ Weekly

☐ Fortnightly ☐ Monthly ☐ Rarely

Other (please specify)

3 How do you store your recycling within your home?

What type of container do you use to take your recylables down to the bank? (plastic bag, box etc)

4 How often do you recycle the following materials in the estates recycling banks? (prompt resident with materials)

	Always	Sometimes	Rarely	Never	Never have any of this material to recycle
Newspaper / paper					
Magazines					
Cardboard					
Glass bottles/jars					
Drink & Food Cans					
Aerosols					
Plastic Bottles					

Other (please specify)

5 How would you rate the recycling bank scheme on this estate?

On a rating of 1 to 5 (1 being Poor and 5 being Very Good)

☐ Is it well promoted (enough information about the scheme provided)

☐ ease of access to the recycling banks

☐ is it clean/well maintained

Other Comments

NOW GO TO SECTION C

Section B. Does not use estates recycling scheme

1 **Why do you not use the recycling bank?**

- Not enough time
- Not interested in recycling
- Bring banks/bins are too full
- Bring banks are too far away
- Unaware of the scheme
- Scheme not convenient
- Other (please note reasons)

2 **Would you recycle if:**

You were provided with a reusable sack to store and carry your recyclables

If the recycle banks were closer

If the Estate could win a prize

NOW GO TO SECTION C

Section C. Ask all residents

1 **Which of the following would encourage you to recycle more?**

- More information about how to recycle
- More information about why to recycle
- Making recycling easier
- Entry into a lottery for recycling
- If recycling was made compulsory and you were fined if you did not recycle
- Paying for the amount of rubbish you produce

2 **What would you recommed to make recycling more effective on this estate?**

- No
- Yes (please specify)

3 **If this estate were to win some funding for improvements such as:**

a new or improved childrens play area
landscaping on the estate
landscaping or environmental improvements to local schools
landscaping or environmnetal improvements to community resources such as meeting rooms and halls

what improvements would you like to be made?

Please specify

Section D. Any other comments

THANK RESIDENT FOR COMPLETING SURVEY

Estates Incentives Pilot Scheme - Residents survey form

Introduction

I am working for the local council and I was wondering if I could speak to you about the local recycling scheme? I just have few questions I'd like to ask you.

Survey information

i	Surveyors name	
ii	Date	
iii	Block name	
iv	Flat number & floor	

Estates recycling scheme

1 Do you use the recycling banks in the estate?

☐ Yes (complete section A) ☐ No (complete section B)

Section A. Uses estates recycling scheme

2 How often do you use the recycling banks?

☐ Every day ☐ A few times a week ☐ Weekly

☐ Fortnightly ☐ Monthly ☐ Rarely

Other (please specify)

3 Are you aware of the recycling competition that your estate is taking part in? *(show flyer & explain)*

☐ Yes ☐ No ☐ Don't know

4a Did you receive one of these flyers or a letter from the council about the competition? *(show flyer)*

☐ Yes ☐ No ☐ Don't know

4b Yes - Has the competition and the chance of winning the money changed the way you think about recycling?

☐ Yes ☐ No ☐ Don't know

☐ Recycle more ☐ No effect - still recycle the same amount

Other (please specify)

5 How often do you recycle the following materials in the estates recycling banks? (prompt resident with materials)

	Always	Sometimes	Rarely	Never	Never have any of this material to recycle
Newspaper / paper					
Magazines					
Cardboard					
Glass bottles/jars					
Drink & Food Cans					
Aerosols					
Plastic Bottles					

Other (please specify)

6 How would you rate the recycling bank scheme on this estate?

On a rating of 1 to 5 (1 being Poor and 5 being Very Good)

☐ Is it well promoted (enough information about the scheme provided)

☐ ease of access to the recycling banks

☐ is it clean/well maintained

☐ Other Comments

NOW GO TO SECTION C

Section B. Does not use estates recycling scheme

7 **Why do you not use the recycling bank? -*open question***

- ☐ Not enough time
- ☐ Not interested in recycling
- ☐ Bring banks/bins are too full
- ☐ Bring banks are too far away
- ☐ Unaware of the recycling scheme
- ☐ Recycling scheme not convenient
- ☐ Other (please note reasons)

8 **Are you aware of the recycling competition that your estate is taking part in? *(show flyer & explain)***

☐ Yes ☐ No ☐ Don't know

9 **Did you receive one of these flyers or a letter from the council about the competition? *(show flyer)***

☐ Yes ☐ No ☐ Don't know

Yes - can I please ask why the competition and incentive of winning the money did not encourage you to recycle?

☐ Not interested ☐ Can not be bothered ☐ Don't know

Other (please specify)

10 **What would make you recycle?**

NOW GO TO SECTION C

Section C. Ask all residents

12 **What would you recommend to make recycling more effective on this estate?**

☐ Don't know

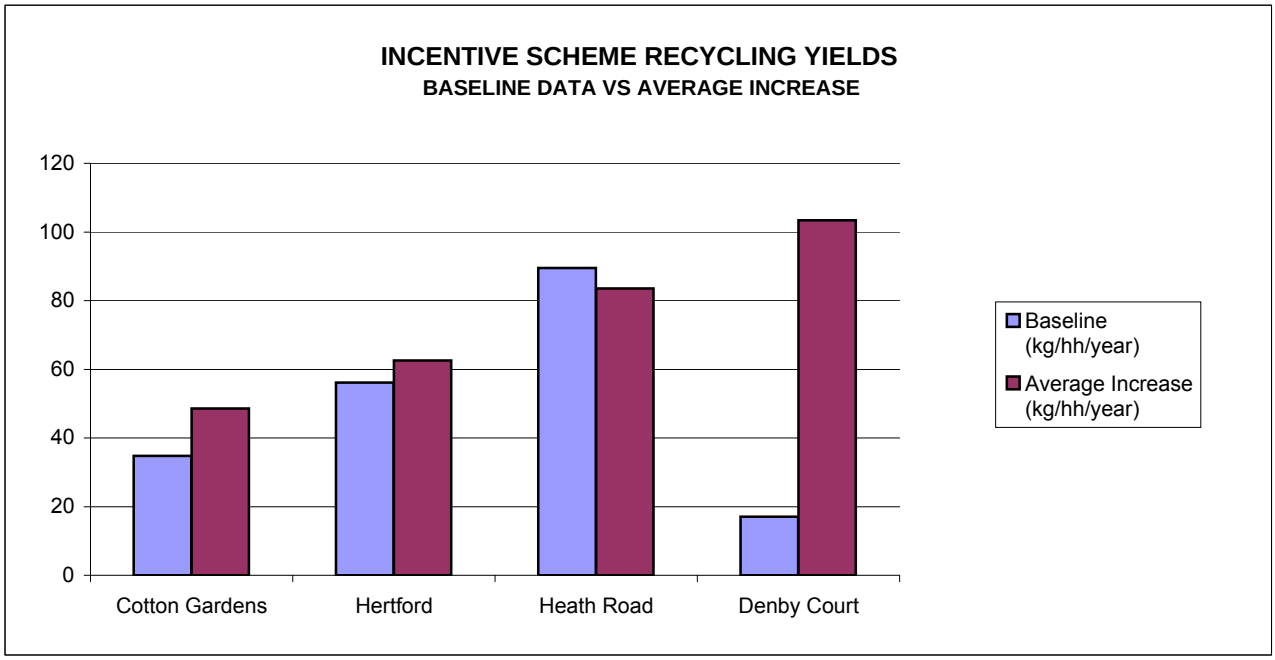
Prompts
more recycle bins
more information
Incentives

Section D. Any other comments

THANK RESIDENT FOR COMPLETING SURVEY

Cotton Gardens	45.18	35.13	65.39
Hertford	53.04	65.64	68.91
Heath Road	90	82.79	77.88
Denby Court	36.52	199.33	74.29

	Baseline (kg/hh/year)	Average Increase (kg/hh/year)
Cotton Gardens	34.81	48.57
Hertford	56.17	62.53
Heath Road	89.55	83.56
Denby Court	17.09	103.38



WASTE FINANCIAL INCENTIVE SCHEMES INFORMATION SHEET

Borough name: London Borough of Lambeth

Short description of scheme	Start date	End date and reason	Brief description of comms strategy	Say how recycling rates changed	What lessons did you learn and is there anything you would do differently?	Any other comments
£40,000 offered to the two estates that increased recycling tonnages the most (to be shared proportionally to level of increase). 4 estates took part in the scheme, funded by Defra. The incentive had to be spent on environmental improvements on the winning estates.	Dec-05	March 2006 (end of project)	Surveyed resident sample before and after offering the incentive; doortepped residents on participating estates plus delivered flyer explaining the scheme (see attached); information on website; posters telling residents how they were doing were displayed on estate display boards on a monthly basis; engagement with TRAs and managing agents	We used on-board weighing to measure recycling tonnages, but residual waste tonnages were not recorded (only recycling RCVs had on-board weighing systems installed). Recycling increased 74.51% compared to baseline tonnages gathered before the incentive was offered in December 2005. Tonnage monitoring was carried out until March 2006, when the scheme finished	It was very difficult to engage with some of the TRAs and managing agents, even though the amount offered was significant. The scheme was very successful in smaller blocks/estates, with a bigger community feel, but was not successful on estates with no active communities (see attached results for detailed information)	We were not able to record long-terms effects of the incentive due to problems with the on-board weighing systems.

WASTE FINANCIAL INCENTIVE SCHEMES INFORMATION SHEET

Borough name.....Tower Hamlets.....

Short description of scheme	Start date	End date & reason	Brief description of Comms strategy	Say how the recycling rates changed	What lessons did you learn and is there anything you would do differently?	Any other comments?
We ran a scheme with our previous contractor THCRC. We randomly selected some addresses in the borough and they would check if the household was recycling or not and they were recycling the correct items. If selected households were found to be participating we would write to them to thank them for recycling and to let them know that they had won £50 worth of shopping vouchers and they could get in touch with us to claim them.	2005	2006	Included information in general service leaflets and ran articles in East End Life newspaper	No measurement was undertaken	The scheme was quite admin intensive and relied on the contractor to undertake checks which meant having to remind them to check the correct properties at the right time Residents seemed happy to receive rewards for recycling	Not all households claimed their reward so it was admin intensive with apparently little impact We are now investigating a potential trial of recycle bank which would incentives all households in the trial area – rather than just those that are selected to win

RE: To what extent can financial incentives boost recycling rates?

Thank you for the chance to comment on the above as per Darren Johnson's letter of 9 September 2010.

Please see below LBH&F's response to the questions given:

1. **Do financial incentives schemes lead to individual behavioural change to waste management over the long term?**

   Evidence from trials and new schemes (e.g. those using Recycle Bank at Royal Borough of Windsor and Maidenhead and Halton) have shown recycling tonnage increases but have not been running long enough to determine whether they have initiated behavioural change. It is unclear whether increased recycling tonnages would be maintained were the incentive scheme to be removed.

2. **Does this type of intervention promote best practice recycling or can it lead to unintended consequences?**

   Providing incentives for residents to recycle more will help divert waste from landfill, but is not compatible with the waste hierarchy, according to which reusing and reducing waste are higher priorities. Therefore as well as recycling incentives, waste minimisation incentives should also be considered as part of this inquiry.

   A tonnage-based incentive scheme could also lead to increased contamination and lower quality recycling resulting from the "rush" to increase recycling in order to collect the incentive.

3. **Are there other approaches that could achieve the same aim (i.e. sustained behavioural change, leading to improved recycling performance) that should be considered first?**

   Improving recycling participation and capture rates from flats is a priority for many London Boroughs given that these types of multi-occupancy properties traditionally recycle far less than kerbside properties. The recycling infrastructure on estates must be improved, and consideration given to incentives to improve participation.

4. **What are the key considerations for local authorities thinking of implementing financial incentive schemes?**

   For Boroughs with large areas of traditional housing and containers compatible with RFID technology incentive schemes are being shown to increase recycling collected.

   For Hammersmith & Fulham there would be serious logistical issues with introducing an incentive scheme. Due to the nature of the Borough, the Council does not use a wheeled bin or box collection. Instead, it operates a collection of sacks for both refuse and co-mingled recycling from its street-level properties. Around 70% of households within the

Borough are flats, and these properties are provided with either recycling sack collections or collections from communal recycling bins.

In the case of sack collections from either street-level properties or flats, identifying which properties are/are not recycling is not possible without either:

1. The collection process being severely impeded due to operatives looking at address labels on sacks or scanning bar-coded sacks, or;
2. Significant financial investment. Conversations with experts from within the industry indicate that RFID technology can be incorporated into sack collections, but that this is still in the testing phase. Cost implications of such a scheme would be significant, with figures of £1 per bag being quoted – LBH&F currently uses in the region of 5 million bags pa. Retro-fitting technology to vehicles and the financial incentives themselves further add to the financial commitment required.

In the case of collections of communal recycling bins from flats which are shared by many different households, the Council cannot see how a personal financial incentive scheme could be implemented. Given that, in LBH&F this equates to 28% of all households, a significant proportion of the Borough would be excluded from a personal incentive scheme. Most of these households are contained on social housing estates where recycling performance is traditionally poor and where the greatest improvement in recycling is required. Some form of communal incentive scheme should therefore be investigated for these housing types.

Given the current economic climate, any incentive scheme would need to demonstrate the potential for cost savings or at least be cost-neutral. Given the issues described above it is difficult to see how this could be the case for LBH&F. The Royal Borough of Windsor and Maidenhead has indicated that in their case a 25% increase in recycling tonnage is required for the Recycle Bank scheme to become cost neutral. A similar target would be challenging for London Boroughs where street-level properties already have high participation rates and flats cannot be included in the scheme.

East London Waste Authority

Submission to:

London Assembly Environment Committee Investigation - How Can Financial Incentives Boost Recycling Rates?

1.0 Background

1.1 The East London Waste Authority is responsible for the disposal of municipal waste from the four London Boroughs of Newham, Redbridge, Barking & Dagenham and Havering. Whilst not listed as a consultee stakeholder of this inquiry, we would like to make the following submission.

1.2 Our comments are in no particular order and we would welcome the opportunity to take part in the inquiry on a more formal basis.

2.0 General comments

2.1 We note the list of stakeholders and research papers to be considered includes only one London borough representative, in addition to the Royal Borough of Windsor and Maidenhead. We consider that for this inquiry to reflect the breadth of waste management issues across London, a more representative group is required. This would help ensure any evidence is based on an appropriate range of demographics and service delivery types.

2.2 The inclusion of a representative from Tesco may be appropriate, as we understand their recycling incentive scheme resulted in some perverse outcomes that may usefully inform the inquiry. For example, as the scheme rewarded the recycling of each bottle and can, we have anecdotal reports that customers learned that cutting up their waste generated greater rewards. Thus, the scheme paid out more rewards than was necessary.

2.3 It would be interesting to identify whether any research is available on the impact on other consumer behaviour, such as customers buying more goods in order for them to claim the recycling reward. This contradicts the waste hierarchy aim of reducing waste.

2.4 We acknowledge the parallel review of recycling rates across London and consider the need for financial incentives to boost recycling may not be necessary if collection authorities adopted different collection methods. We have experience of introducing wheeled bins with a strict side waste policy, which reduced residual waste volumes. Also, we are aware of other local authorities significantly increasing recycling rates by introducing wheeled bins for the collection of recyclable materials. Combining this with alternate weekly collection and strict policies on residual side-waste encourages residents to recycle even more.

2.5 An effective, widespread media campaign may be more effective than a reward scheme. Residents may not be aware of the costs associated with waste management and may respond if they understand that reducing and recycling their household waste results in less likelihood of council tax increases and may result in a decrease. This in itself could be promoted as a financial incentive to council tax payers, with the advantage of no cost to authorities.

2.6 Whilst the issue of financial incentives for recycling is popular, for many authorities the focus now is on cost reduction. The greatest cost to local authorities in relation to waste management is that associated with disposal to landfill, so it may be more appropriate to consider incentive schemes for residual waste reduction. This still should increase recycling, it being one way for residents to reduce residual waste, but it focuses minds on reducing the waste burden and thus aligns better with the waste hierarchy.

3.0 Funding

3.1 We have identified a number of issues associated with the funding of the incentive payments.

3.2 Waste management activity is primarily funded through council tax. However, the funding may represent a relatively small amount of a household's council tax payment. Any savings arising from additional recycling activity will be a small part of this amount and may not be considered sufficient to act as an incentive. To pay incentives at a value above the savings achieved will require additional funding.

3.3 In addition, the cost of administering the scheme will need to be met from the savings or additional funding.

3.4 We are aware of waste PFI schemes, similar to ours, whereby the PFI contractor takes the risk and reward associated with finding markets for recyclate. This limits the potential of funding an incentive scheme from the sale of additional recyclate.

3.5 Whilst current schemes may be 'sponsored' by a private sector partner, the scope for such partnerships is likely to reduce the more widespread such schemes become, especially in the current economic climate.

3.6 A particular issue for our boroughs is that there would be minimal savings achieved by an increase in recycling because the technology we use to process the waste, removes recyclate such as glass and metals that is mixed with the residual waste. Whilst other recyclable materials such as plastics, paper, card or textiles that are mixed with the residual waste are not recycled, this mix is processed into fuel so is similarly not sent to landfill. Therefore, there are no landfill savings that could be used to fund a financial incentive scheme.

4.0 Participation

4.1 The success of any scheme relies on widespread participation. Each type of incentive scheme is likely to be attractive to different demographic groups. Therefore, multiple schemes may be required to help ensure the greatest participation. For example, offering a council tax discount is unlikely to incentivise a household in receipt of council tax benefit, or one household may not be interested in vouchers from a particular partner. The availability of multiple schemes is likely to require multiple administrative arrangements.

4.2 The nature of the administration may exclude certain residents. For example, a scheme that requires on-line registration and offers rewards via e-mail, limits membership to those with access to a computer. However, this may be the most cost-effective method of administration.

4.3 Transience may be an issue unless schemes are London-wide and allowed transfer of reward credits.

4.4 As we have alluded to above, recycling is not necessarily the most effective or efficient use of the waste resource. One type of financial incentive may be the ability to purchase energy from waste at a reduced rate. This may not reduce the amount of waste produced but may assist councils, planning authorities and residents when deciding about the construction of energy from waste plants and the ability to close the waste loop locally.

Paul Taylor
Managing Director
East London Waste Authority
paul.m.taylor@lbbd.gov.uk
07875 993 657

Dear David

Thank you for your reminder, and my apologies for not responding sooner. I would emphasise that this is an officer response, and thus doesn't represent Bromley's official policy on this subject.

In general, I am unconvinced that financial incentives, particularly those currently being promoted, are the most appropriate methodology to improve residents' recycling performance, or to promote the issue of waste minimisation.

For the average household, the cost of collecting and disposing of their waste will be in the realm of £120 per annum. A financial incentive scheme which offers rewards of over £200 per annum will surely distort residents' appreciation of the costs of managing their waste, and will promulgate the idea that a relatively modest change to their habits will be sufficient to resolve the matter.

The reality, in contrast, is surely that we need to educate and inform the public in the relative merits of various disposal options, promoting the waste hierarchy and explaining the negative impact on the environmental of their actions.

A recent WRAP report on food waste highlighted that the average family spends £700 per annum buying food only to throw it in the bin. Surely a comprehensive campaign to educate and inform consumers on the impact of their shopping habits would be a more sustainable approach than offering rewards to simply put this waste in a more appropriate bin.

Practically, there is the question of how much recycling performance can be increased in authorities where residents are already recycling at a high rate. The marginal improvement in an already high recycling rate is unlikely to justify the expense of introducing an incentive scheme.

There also seems to be little evidence available regarding the true cost of introducing incentive schemes. The provision of containers (predominantly wheelie bins), chips for the bins, on-board weighing equipment, appropriate IT systems and the accompanying changes to recycling methodology, represent substantial capital and operational costs.

Bromley's approach has been to provide better collection facilities, enabling residents to separate their waste into as wide a range of recyclables as possible, whilst avoiding over-burdening them with too many containers. In a trial covering 27,000 properties, we have introduce weekly food waste collections, with paper collection also weekly, whilst collections of residual waste, glass, cans and plastics are made every other week.

The result has been an increase in the kerbside recycling rate from 25% to 52%, a reduction of 45% in residual waste tonnage, and a fall of 8% in overall waste tonnage.

With over 83% of residents participating in the scheme, and 73% of them positively approving of the changes, this seems a more effective manner of engaging the public in helping us deal with their waste than simply offering a financial incentive which bears no direct relation to the costs involved in the process.

I feel that our approach encourages sustainable behavioural change by making residents more aware of their waste, provides facilities to enable them to deal with it appropriately, and by emphasising the volume of waste they are generating, encourages waste minimisation. I would thus suggest it represents a more efficient use of scarce resources than the resource-intensive requirements of the current iteration of incentive schemes.

I hope this information proves useful and at least contributes to the debate over this issue.

regards

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Dear Ms Musonda,

Re: Compulsory Recycling in Barnet

Thank you for your interest in Barnet Council's compulsory recycling scheme. Barnet Council provides a weekly kerbside recycling service to all 115,000 houses in the borough, using black and blue boxes. The remaining 23,000 households live in flats and are offered a flats recycling service. The multi-material kerbside recycling service was phased in over a six month period from October 2001. The kerbside service is carried out by our partner, May Gurney CIC (previously ECT Recycling CIC). The items collected on the kerbside scheme for houses are batteries (car and household), cans (including aerosols), foil, engine oil, glass bottles and jars, mobile phones, newspapers and magazines, shoes, textiles, plastic bottles and cardboard. The flats recycling service is for newspapers and magazines, cans, foil, glass bottles and jars, plastic bottles and cardboard.

Compulsory recycling was introduced to four wards (22,000 households) in Barnet on 1 April 2004, and on the 1 March 2005 the scheme went borough wide. On both occasions before the scheme started households were sent a letter signed by our Cabinet Member for Environment and a FAQ sheet.

Barnet has told its residents that cans, paper and glass bottles and jars must not be placed in the refuse wheeled bin, instead these items should be placed in the black recycling box for collection. The legislation that Barnet Council is using to specify what waste is put into what container is the Environmental Protection Act 1990, Part 2, Section 46. Before this scheme was introduced we obtained detailed advice from our legal section on the legality of introducing this scheme. In the Environmental Protection Act it states that a person who fails without reasonable excuse to comply shall be liable on summary conviction by a magistrate to a fine not exceeding level 3 on the standard scale. Level 3 on the standard scale is £1,000. Any fine would not be passed to the Council, it would be retained by the magistrates court. Barnet Council could claim for costs but it is not guaranteed that all or any of the costs would be paid. As a result of the Clean Neighbourhoods and Environment Act 2005 it is possible to issue fixed penalty notices for this offence as well.

To proceed with a prosecution, for failure to comply with the compulsory recycling scheme, the Council will have to prove that glass bottles and jars, paper and cans are being put in the general refuse wheeled bin. The Council is using participation in the black and blue box recycling scheme as a measure that a resident is not putting these recyclables in the general refuse wheeled bin. A resident could also comply with the scheme by taking their recyclables to another recycling facility e.g. bring banks or the civic amenity and recycling centre.

To successfully prosecute a household we will need to prove that cans, glass bottles and jars or paper are being put into the general refuse wheeled bin. This scheme does therefore not apply to those households who have shared refuse facilities i.e. flats, as we would not be able to prove who put what into the general refuse wheeled bin, particularly as these types of residences also tend to have shared refuse facilities.

We have two Recycling Assistants to assist in the monitoring of the compulsory recycling scheme, as well as other education and promotional work.

Non participation in the compulsory recycling scheme is currently monitored by looking at participation in the black and blue box recycling scheme on the scheduled collection day. In the monitored area, if a household fails to put out recycling containers for three consecutive weeks, then a letter is delivered to the property setting out our compulsory recycling scheme. These letters frequently result in requests for recycling boxes.

As a result of the compulsory recycling scheme we have recorded an increase in participation in the kerbside recycling scheme, with participation rates now regularly at least 85%.

I hope this information is useful.

Yours sincerely

Nicola Cross
Environmental Services Manager – Waste Strategy

Material change for a better environment

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WRAP's response to the London Assembly Environment Committee: To what extent can financial incentives boost recycling rates?

1. Do financial incentives schemes lead to individual behavioural change to waste management over the long term?

Financial incentive/reward schemes have not been running long enough in the UK to measure the long term effect on behaviour change. Local authorities that have trialled incentive/reward schemes in the past have found it difficult to isolate their success as in many cases service changes or other communications activities have occurred at the same time as the incentive scheme was introduced. There is only anecdotal evidence as yet that any short term impacts such as increases in participation or capture are sustained.

However, research conducted by WRAP on *Barriers to Recycling at Home* - http://www.wrap.org.uk/local_authorities/research_guidance/communications/barriers_to.html, - identified that residents that already recycle said they would be encouraged to recycle more by:

- Seeing the practical impact of recycling in their local area (86%)
- Feeling more appreciated by the Council (52%)
- Receiving an incentive for recycling (56%)
- Being fined for not recycling (34%)

These figures suggest that sections of the public could be encouraged to recycle, or recycle more, by a well targeted reward scheme provided the other barriers to recycling are also addressed (see below).

There is some wider evidence to suggest that community-based incentive schemes have had a positive impact on individual's behaviour. For example if a local community group benefits financially from the recycling of certain materials, residents in the community may be more likely to participate or participate more actively. However, there is no evidence to suggest that the incentives must be financial - or at least of financial benefit to them personally. These are an alternative to individual incentives and tend to be lower cost to operate.

2. Does this type of intervention promote best practice recycling or can it lead to unintended consequences?

Again there is not enough evidence within the UK to provide us with a firm answer. However some local authority officers have voiced their concern that such schemes could encourage more consumption and hence waste production. Depending on how they are set up schemes may promote quantity over quality and mean that materials collected are sent overseas for reprocessing.

Best practice recycling is achieved through good quality services that suit the circumstances of the local authority. The Waste Collection Commitment, jointly developed by WRAP and the LGA, http://www.wrap.org.uk/local_authorities/waste_commitment.html is based on research into residents' views on what they like and don't like about their services and in consultation with local authorities. From a resident's point of view, these are the principles which should underlie local waste and recycling collection services. If applied correctly these commitments address many of the barriers to recycling.

recycle

Are there other approaches that could achieve the same aim (i.e. sustained behavioural change, leading to improved recycling performance) that should be considered first?

WRAP's *Barriers to Recycling at Home* research identified four very different types of barriers which may hamper recycling performance and thus behaviour change:

- Situational barriers; including not having adequate containers, a lack of space for storage, unreliable collections, unable to get to bring sites;
- Behaviour, for example not having the space or systems in place in the home to recycle, being too busy with other preoccupations, difficulties in establishing routines for sorting waste and remembering to put it out;
- Lack of knowledge such as knowing what materials to put in which container, and understanding the basics of how the scheme works; and
- Attitudes and perceptions such as not accepting there is an environmental or other benefit, being resistant to householder sorting or not getting a personal motivational reward from recycling.

Apart from the opportunity to reward recycling behaviour, a key to improving performance is the provision of a good quality service that is simple and convenient for householders to use with the minimum of detailed rules and as much similarity to neighbouring services as possible. It should collect the key recyclable materials (e.g. paper, card, plastic bottles, cans, glass). A robust communications programme which clearly explains to people what services they receive and what materials they can and can't recycle locally is also essential. Restricting the capacity for residual waste either through providing smaller bins or reducing the frequency of collection has also been used successfully by many authorities.

Access to recycling facilities at home, at work and on the go and consistent messaging will also reinforce behaviours and help to normalise recycling.

3. What are the key considerations for local authorities thinking of implementing financial incentive schemes?

Do they have a good quality, reliable, accessible service in place and provide sufficient container capacity to cope with the potential increase in materials? Do they have the flexibility to increase capacity on their vehicles/at the depot/at the MRF?

Who is their target audience? Are they trying to encourage residents that do not recycle to take part, or to encourage medium recyclers to do more?

Is it a time limited / one-off scheme or is it to be embedded within the authority's approach to waste management? If it is time limited, they should have an exit strategy so residents are aware it will end. If it is longer term, there should be clarity on how they will finance and resource the scheme in the long term and how it can be constructed so as to incentivise continual improvement in performance. They should also consider whether it should form part of a wider scheme to incentivise other behaviours related to the broader corporate objectives of the Council.

the nappy alliance

an alliance of reusable nappy companies: promoting consumer choice and protecting the environment

The Nappy Alliance – briefing on waste reduction

The Nappy Alliance is the trade body for the re-usable nappies industry. It was set up in 2003 by independent providers and distributors of re-usable nappies to promote awareness of the key benefits of re-usable nappies, which include waste reduction, improved well being for babies and significant cost savings for parents of up to £600 per child.

Re-usable, or real, nappies are nappies that are washed and re-used, reducing both waste and cost, with parents saving up to £600 per child[1].

This paper briefly outlines the waste reduction benefits of re-usable nappies and how they fit in to a wider waste reduction strategy.

Local Authority spending

Waste collection and disposal is a significant cost burden on Local Authorities, who spend approximately £22 billion per year on waste collection and disposal in England[2], according to figures from the Chartered Institute of Public Finance and Accountancy. Waste reduction, therefore, offers an excellent opportunity for cost savings in local government. This means prioritising waste minimisation and re-use.

If a 10% conversion rate from disposable nappies to re-usable nappies was achieved across the UK, figures show that this would equate to Local Authority savings of around £5 million per annum.

As Government, both locally and nationally, seeks to encourage more environmentally friendly behaviours, it is important to ensure that policies do not create adverse unintended consequences. One possible area that runs this risk is in policies that solely incentivise recycling. While recycling is undeniably better for the environment than disposal or incineration, and should therefore be encouraged, it is both less environmentally friendly and more expensive than waste minimisation and re-use. Incentivising recycling while not rewarding or encouraging waste minimisation and reduced consumption runs the risk of dissuading people from using re-usable products or, for example, products with minimised packaging.

Landfill Reduction

Using re-usable nappies, as opposed to disposable nappies, can have a significant positive impact on the environment by reducing the amount we throw away.

In terms of landfill, disposable nappies have a significant impact on the environment. Nearly 3 billion disposable nappies are thrown away every year – around 8 million per day – making up almost 4% of all household waste, which adds to the UK's landfill site problems.

- Landfill sites represent an excessive use of land and are a potential source of water pollution.

[1] According to figures from 'What Mums Really Want', commissioned by Lifecycle Marketing, publishers of Emma's Diary, and conducted by independent research company Mum'sViews.

[2] CIPFA Finance and General Statistics 2008-09

- Landfill sites produce environmentally harmful greenhouse gases and account for 38% of total methane emissions, a significantly more environmentally harmful greenhouse gas even than carbon dioxide.
- According to the Environment Agency, the decomposition timescale for some of the materials and chemicals currently used in disposable nappies is more than 500 years.

Environmental Impact
Re-usable nappies not only help to alleviate the increasing problem of landfills, they can have a much wider positive environmental impact, as shown in the Environment Agency's 2008 revision of their Life Cycle Analysis Report on Nappies. The report showed that re-usable nappies can be up to around 40% better for the environment than disposable nappies.

EU Waste Framework Directive
Not only do re-usable nappies address this problem, but they are also aligned with the priorities of the revised EU Waste Framework Directive (WFD) - the document which sets the ground rules for waste management across Europe. The UK has until December 2010 to bring into force the laws and regulations necessary to comply with the WFD.

At the heart of the Directive is the waste hierarchy, which the provisions of the Directive state should act as a priority order in waste prevention, legislation and policy. The hierarchy includes 5 priority levels:

- Prevention;
- Preparing for re-use;
- Recycling;
- Other recovery - including energy recovery;
- Disposal.

The waste hierarchy calls for waste prevention to be the top priority of Government policy and legislation, with preparing for reuse the second priority. Re-usable nappies prevent waste and are re-used - they can even be kept and used for future children – the two top priorities for waste management. In contrast, disposable nappies are poor fuel for incineration and are therefore mainly disposed of, the last of the options in the hierarchy.

Conclusions

While encouraging recycling must form a key part of any waste management strategy, it is obvious that as the Government reviews UK waste policy, the priority must be on policies which encourage a minimisation of waste and the use of re-usable products.

The Nappy Alliance has a strong commitment to the environment and to facilitating environmentally friendly behaviours among parents and is keen to support policies that help to reduce waste by encouraging minimisation and re-use.

The Nappy Alliance is therefore calling on the Government to ensure that the waste management review prioritises waste minimisation and re-use policies rather than just incentivising recycling.

The Nappy Alliance
November 2010