

UK Plastic bottle recycling survey 2004



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RECOUP

Published by:

The Waste and Resources Action Programme

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Tel: 01295 819900 Fax: 01295 819911 www.wrap.org.uk

ISBN: 1-84405-076-9

Contents

1 Executive Summary	5
2 Methodology	6
2.1 Plastic bottle recycling activity	6
3 Plastic bottle recycling schemes	7
4 Collection infrastructure	8
5 Council expenditure on plastic bottle recycling	9
6 Bring collection schemes	10
7 Kerbside collection schemes	12
7.1 Container type	13
7.2 Frequency of collection	15
7.3 Relationship to refuse collection	16
8 Impact of local promotion	17
9 Planned developments	18
10 The potential of bottle recycling	19



Executive summary

Wrap commissioned Recoup to complete a national household plastic bottle recycling survey. This is the 10th such annual survey undertaken by Recoup. The results are based on responses and information from all 477 local authorities within the UK during November 2003.

Collections are now running at a rate of 25,000 tonnes/annum – 5.5% of the bottles in domestic household waste.

There has been a 50% growth in plastic bottle collection in the last 2 years. This is primarily the result of the expansion of kerbside collection programmes. 5.4 million households in the UK can now participate in kerbside collections that include plastic bottles, equating to 22% of all UK homes. More specifically, 24% of households in England, 5% in Scotland, 10% in Wales and 39% in Northern Ireland have a kerbside system including plastic bottles. In addition there are more than 220 council kerbside schemes running across the UK that do not yet include plastic bottles. This is an opportunity for future development.

The growth in facilities can in part be attributed to the growing pressures and incentives for councils to provide effective recycling programmes. Statutory recycling targets require councils to implement increasing recyclables collections, although arguably these targets are not yet high enough to strongly drive plastics collections. Increased funding through DEFRA's Waste Minimisation Fund in England and Wales, and the Strategic waste fund in Scotland is allowing local authorities to improve their recyclables collection facilities.

Councils and their contractors have a growing appreciation of the importance of sustainable waste management practices and improved understanding of effective operational techniques. These skills are vital to plan and gain the support for major recyclables management programmes. They are essential to ensure that new funds are used efficiently and successfully.

So it is not enough to simply offer a recyclables collection scheme that includes plastic bottles - this is only a starting point. The survey data re-enforces the two central priorities for action: the importance of improving the capture rates of bottles within existing kerbside collections and the need for kerbside collection systems to adopt efficient, long term operational approaches that will make performance improvements affordable.

Six out of ten UK local authorities now offer plastic bottle collection facilities; 22% of households in the UK have the opportunity to participate in kerbside collections that include plastic bottles - yet only 5.5% of plastic bottles used in the home are recycled. It is clear that by focussing on establishing 'the recycling habit' in communities and improving the public participation in current collection schemes, the tonnage of plastic bottles diverted from landfill and recycled could be more than doubled within the existing scheme infrastructure.

There is a growing level of investment in national and local communications campaigns designed to raise the participation levels of recyclables collection schemes. It is important that the design of collection schemes and operational resources available enable councils to keep pace with the growth in public participation that will result from these campaigns.

Collection and handling scheme design is critical to ensure that the successful increase of collections of recyclables remains affordable. As a result of the high demand for information on successful recycling schemes that include plastics a growing library of information is also available to demonstrate how to successfully collect plastics within comprehensive, integrated kerbside systems¹.

Even on the basis of the current kerbside collection scheme performance, the inclusion of plastic bottle collection in kerbside schemes throughout the UK would generate over 100,000 tonnes of plastic bottles for recycling. If properly implemented, this would create significant gains for the environment and the economy. It would also help boost the diversion from landfill of other recyclables and satisfy a well-recognised public demand.

Recent analysis indicates that UK councils are spending over £100m a year collecting and landfilling plastic bottles which, if sold, would achieve a value of £50m². Councils are already incurring significant costs to collect plastic bottles within the conventional refuse stream. The challenge is to get local authorities and contractors to recognise this as a real and ongoing cost to them, and organise the refuse and recyclables collections so that valuable dry recyclables such as plastic bottles can be efficiently diverted from landfill to new product manufacture. This report highlights how a growing number of councils are achieving this objective – the challenge is to successfully extend these techniques across the UK.

The information within this document covers all the main elements of household plastic bottle collection systems. It provides current performance data for both bring and kerbside schemes together with analysis of key operational parameters, promotions, costs, and predictions on future growth. It also highlights performance across the UK.

We would like to thank all recycling scheme managers who have taken the time to respond, and have allowed us to develop this document.

¹E.g. Recoup case studies (2003); <http://www.recoup.org>
D.Smith, L.Harrison and A.Simmons (1999) Survey of schemes in the United Kingdom collecting plastic bottles for recycling, Resources Conservation and Recycling 25, 17-34,

²WRAP technical reports;
<http://www.wrap.org.uk/reports.asp#plastics>
WRAP(2003) Plastic Bottle Recycling in The UK.

Methodology

Recoup contacted all council recycling managers in September 2003 by email to request participation in the survey. Recycling managers were encouraged to enter data directly into an electronic form accessible over the internet.

There was follow-up work during October and November 2003 to contact councils that did not respond to the initial invitation to participate. This was carried out by email and telephone. In a number of cases telephone interviews were used to gain responses.

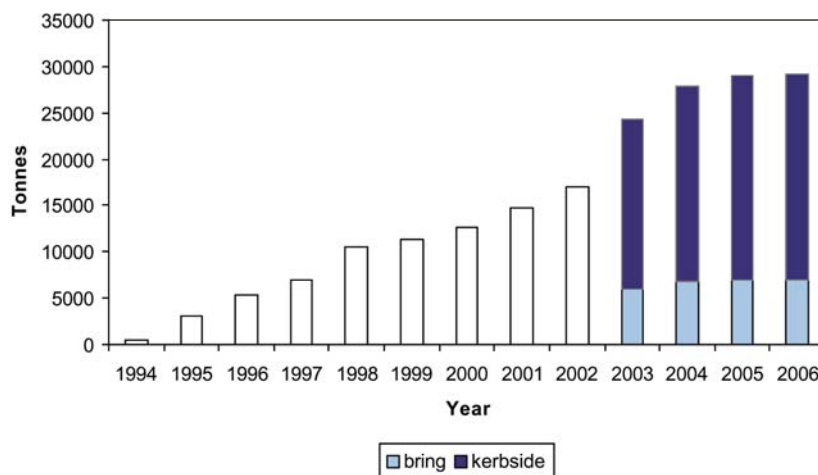
Data was sourced from all 477 UK councils. Data was reviewed and any apparent anomalies checked before analysis. Supporting and cross-reference information was also obtained from council websites and data from the Audit Commission, CIPFA and other sources to assist this process and later analysis³.

The survey generated a comprehensive data set for current collection scheme infrastructure. 40% of councils with plastic bottle collection programmes provided specific data on tonnages of plastic bottles recovered. 33% of councils provided data on scheme expenditure. Where a council did not provide specific tonnage data, appropriate average data from the reported data sets has been used to extrapolate total national results.

Plastic bottle recycling activity

At the end of 2003, plastic bottle collection levels in the UK had risen to an estimated rate of 24,300 tonnes per annum. This is equivalent to 486 million plastic bottles which have a volume of 810,000 cubic metres. It is a 50% increase on collection levels in 2001.

Figure 1: Household plastic bottle recovery in the UK



Approximately 18,000 tonnes/annum (75%) of the bottles are being recovered from kerbside collections; the remaining 6,000 tonnes (25%) from bring schemes. Responses from councils indicate a continuing growth in kerbside plastic bottle collections to 2005. Based on the current council declarations, we forecast that almost 30,000 tonnes/annum of plastic bottles will be collected by 2006.

The total equivalent level of household plastic bottles entering the UK household wastestream is c. 460,000 tonnes per year⁴. The recycling rate for plastic bottles from household sources is therefore 5.5% per annum.

This rate remains relatively low when compared to other major European countries and North America – indicating that there is clear potential for growth and opportunities to learn from extensive international experiences.

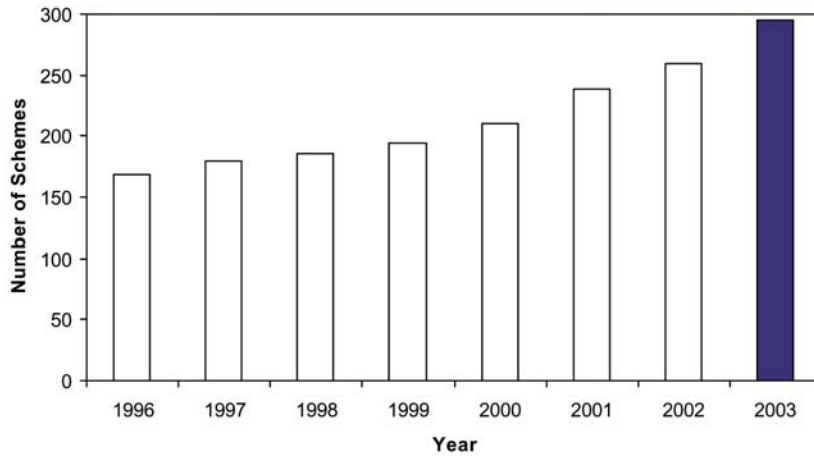
³Audit Commission (2002), Best Value Performance Indicators (BVPI) 2001-2002, <http://www.bvpi.gov.uk/interactive.asp>
CIPFA / IPF (2002), Waste Collection And Disposal Statistics, The Chartered Institute of Public Finance And Accountancy (CIPFA)

⁴Wastewatch (2003), Plastics In The UK Economy;

Plastic bottle recycling schemes

62% of UK councils now offer recyclables collection facilities for plastic bottles. From those surveyed, 295 local authority recycling managers confirmed plastic bottle collection facilities within their council area. This reveals a 24% increase in scheme numbers with 57 new schemes initiated since the beginning of 2002. 38% of UK local councils do not yet offer a recyclables collection service that includes plastic bottles to their charge-payers.

Figure 2: Number of UK local authorities with plastic bottle recycling

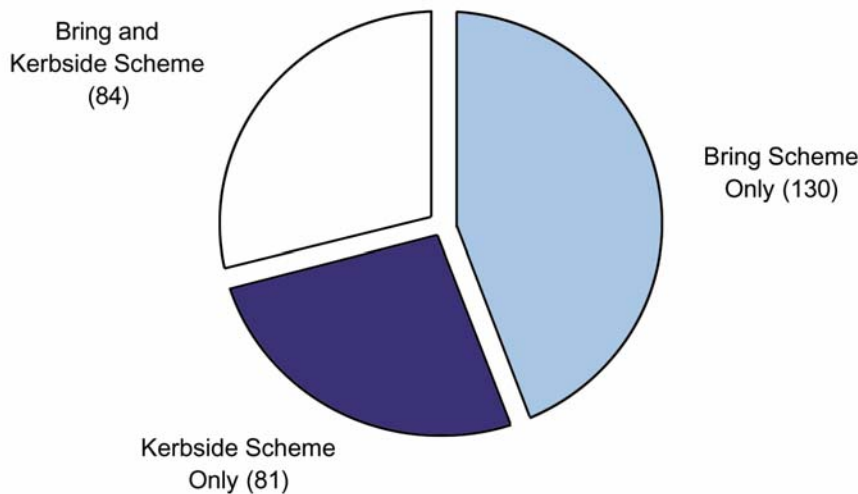


The two approaches to the collection of plastic bottles in the UK are bring banks and kerbside collections. Bring schemes (plastic bottle banks) are available in 214 (45%) local authority areas. There are now 3,400 sites where plastic bottles are collected through a network of 4,933 bottle banks. Kerbside collections including plastic bottles now occur in 165 (35%) local council areas. A total of 5.4 million households (22%) can have their recyclables, including plastic bottles, collected from the kerbside.

In many cases a combination of bring and kerbside collections are provided within a single council area to address local circumstances. 84 (18%) local authorities operate both kerbside and bring schemes within their council boundaries. Performance data confirms that the combination of both bring and kerbside will maximise material recovery rates in a given area.

Bring and kerbside scheme performance is reported in more detail later within this report.

Figure 3: Type of plastic bottle recycling scheme



(Number of schemes in brackets)

Collection infrastructure

Collection infrastructure for plastic bottles has grown in the UK since our last survey. Tables 1 and 2 show the current plastic bottle recycling activity by country.

England have 169 bring schemes and 133 kerbside schemes that include plastic bottles. These are spread across 238 local authority areas with 64 of those areas running both kerbside and bring collections. Overall, these schemes cover 60% of all English councils and generate the highest tonnage of bottles.

Wales have 13 local authorities with plastic bottle collection facilities, including 11 bring schemes and 7 kerbside schemes. This corresponds to 59% of Welsh local authorities.

Scotland have 65% of their councils collecting plastic bottles for recycling through 16 bring schemes and 12 kerbside schemes. Seven of those authorities run both scheme types.

Northern Ireland plastic bottle recycling comprises of 18 bring schemes and 13 kerbside schemes. This represents almost 90% of all local authorities in Northern Ireland, the highest ratio of the four countries.

Table 1 : Plastic bottle recycling activity by country

Country	Total No. Councils	Councils with plastic bottle collections	%	Number of councils with kerbside & bring collections both operating in area	%	Number of councils with bring collection only	%	Number of councils with kerbside collection only	%
England	397	238	60	64	16	105	27	69	17
Scotland	32	21	65	7	22	9	28	5	15
Wales	22	13	59	5	23	6	27	2	9
Northern Ireland	26	23	88	8	31	10	38	5	19
	477	295		84		130		81	

Table 2 : Plastic bottle recycling infrastructure by country

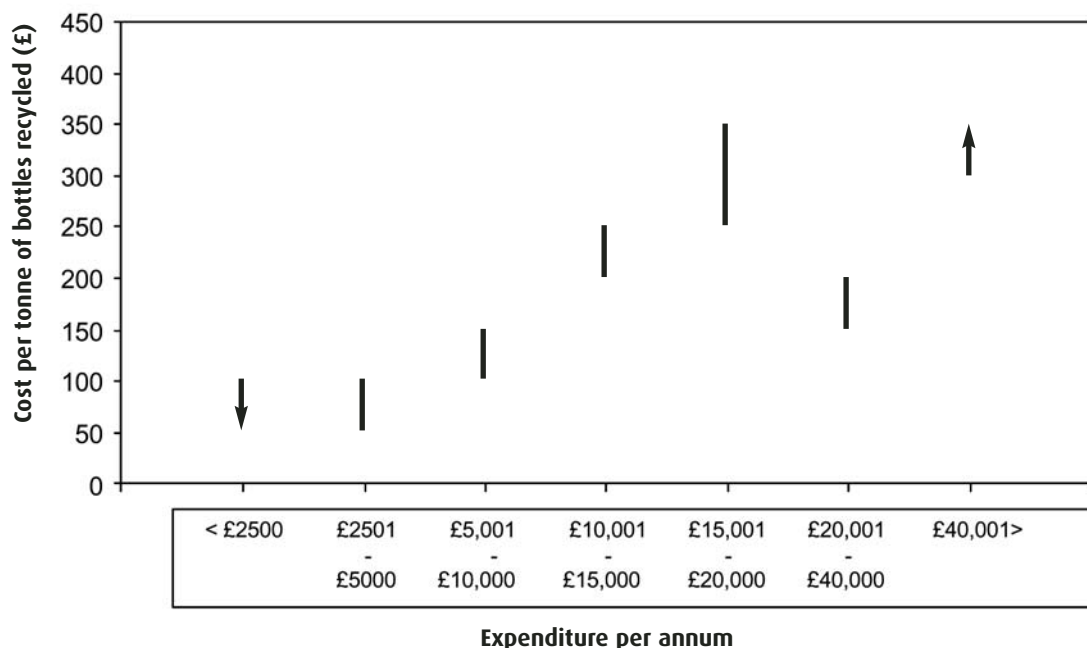
Country	Bring sites for plastics bottles	Average households per available site	Total number of households offered kerbside collection including plastic bottles	% of all households
ENGLAND	2823	7244	4,922,095	24
SCOTLAND	266	8233	112,946	5
WALES	107	11308	126,800	10
N IRELAND	169	3727	247,000	39

Council expenditure on plastic bottle recycling

Recycling managers were asked to indicate their current annual expenditure on plastic bottle recycling, choosing from a series of cost bands. 97 (33%) provided a response to this question.

We have analysed the relationship between declared costs and tonnages collected.

Figure 4: Associated plastic bottle recycling scheme costs



The reported costs for bring schemes systems were between £150 and £300 per tonne of bottles recycled. This is consistent with case studies⁵ that suggests average direct costs of £200 - £250 per tonne would be typical. Issues such as locality, household density, contractor availability, collection method and material market value will all influence the overall cost per tonne of plastic bottle recycling. This data suggests that where bring schemes are incurring direct costs above £300/tonne there may be inefficiencies in the system that could be beneficially resolved.

30 councils provided cost information specifically relating to kerbside collection schemes. The reported data implied net costs of £5-50/tonne. The actual data is inconclusive in terms of identifying kerbside plastic bottle recycling scheme economics. It is difficult to draw any firm conclusions other than that the perceived costs of plastic bottles within the kerbside schemes where cost data has been provided were substantially lower than the reported costs of bring schemes.

It may also be the case that little emphasis is placed on per-material cost allocations once kerbside schemes are in operation with the benchmarks referring to overall cost/tonne diverted. From specific schemes, costs of between £25 and £70 per household have been attributed to kerbside recycling collections that include plastic bottles⁶. It has found that almost no correlation exists between recycling rates and waste management expenditure. It is the design of the scheme that counts, not the amount of money expended on it⁷.

Anecdotally, it was noted that a significant minority of council recycling managers did not have data on tonnage of plastics collected or information on associated costs. Often we have been referred to contractors to gain such performance information. It is surprising that it appears the client is often not seeking or receiving key performance data from the contractor as this is a key performance benchmark.

⁵Recoup (2003) Bring scheme case studies including; Greater Manchester, Derby, Bromley and Sevenoaks (www.recoup.org)

⁶Recoup (2003) Kerbside case studies including Test Valley, Eastleigh, Bracknell Forest and Daventry Council. (www.recoup.org)

⁷Audit Commission (2002), Best Value Performance Indicators (BVPI) 2001-2002

Bring collection schemes

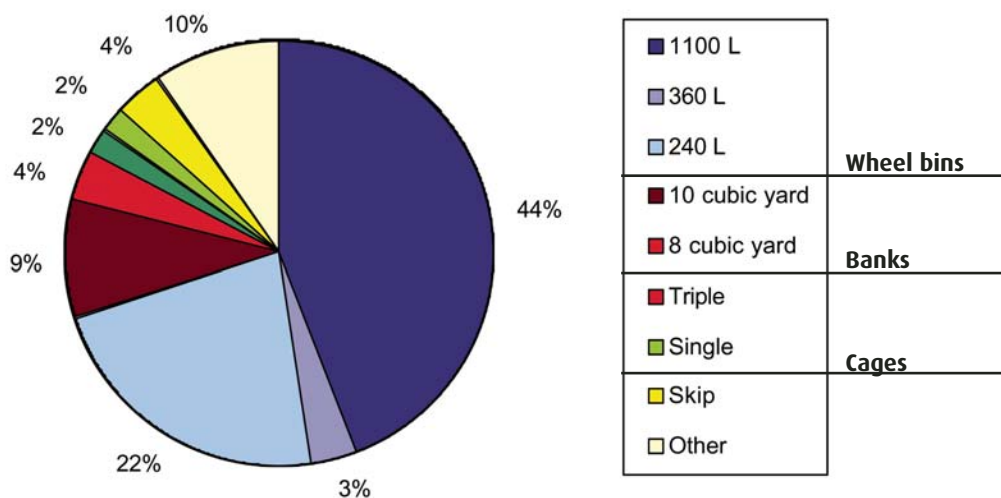
There are now 214 separate UK local authority areas with plastic bottle bring sites. There are in total 3,400 sites with 4,933 plastic bottle banks. This represents a 13% increase in the number of sites available in the past 2 years.

Bring schemes are generating some 6,000 tonnes per annum of recyclable plastic bottles (25% of the total supply). The rate of growth of tonnage collected through bring systems is significantly lower than the growth in kerbside collection. We anticipate that the proportion of bottles collected through bring schemes will continue to decline as a result of the strong growth in kerbside collections.

There are a range of different container types used in plastic bring schemes. They have generally been added as a separate bank to existing bring sites for other materials, although in a small number of cases plastic bottles are collected with cans and subsequently sorted at a central facility.

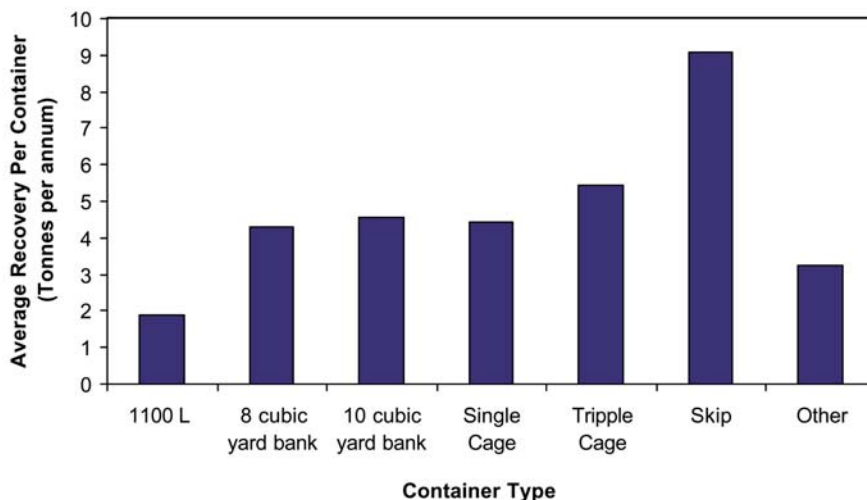
The main container options for plastic bottle collections include wheelbins, banks, netcages and skips. The 1100 litre wheelbin now accounts for 44% of all plastic bottle bring containers in the UK. Wheelbins as a whole represent almost 70% of bring containers, and remain the favoured option for many local authorities. Another 13% utilise square and robust metal recycling banks, whilst 14% use skips and other larger capacity containers.

Figure 5: Containers used for plastic bottle bring schemes



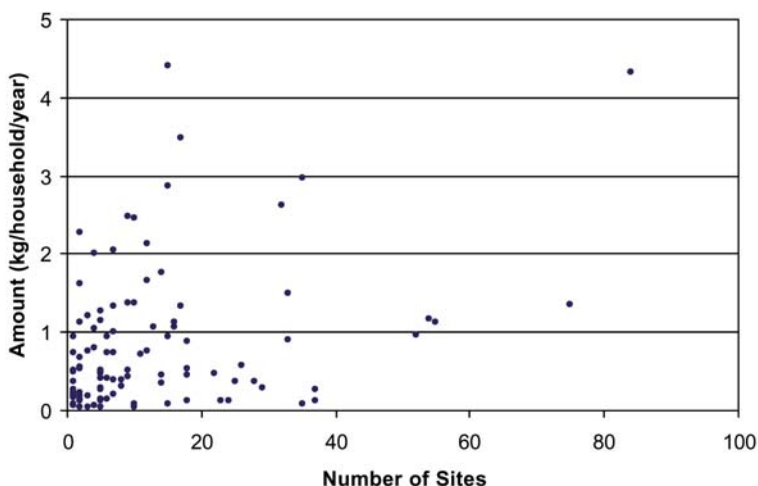
The average annual recovery per site is 1.75t of plastic bottles. Individual site performance will vary quite widely depending on the number and type of sites, and the catchment population. Based on our previous surveys large supermarket car parks and household waste recycling centres accounted for 56% of bring site locations. These can typically generate 4-16 tonnes per annum of bottles per site. In extreme cases of one or two large retail sites offering collections in an area without any other facilities, collections of 30t/site per year have been achieved. Container capacity and servicing frequencies should be planned accordingly.

Figure 6: Bring scheme recovery performance by container type



The number of sites has been plotted against recovery per household for more than 100 bring scheme datasets, and the variation in performance can be observed. 89% of the schemes fall within the thresholds of 3.5kg per household per year from less than 40 sites. Furthermore, 70% of schemes have under 20 sites and recover less than 1.5kg per household per year.

Figure 7: Bring scheme performance analysis



Irrespective of the number of sites, few bring schemes claimed to recover more than 2kg per household per annum. The loose correlation suggests that other factors such as type of site, local demographics and promotion also affect recovery rates. From analysis of specific schemes, it has been found that supermarket sites outperform other site types within the same scheme.

For example, there were a number of different types of recycling site in a recent bring trial in the Warrington area⁸. These included supermarket car parks, other retail car parks, generic car parks and civic amenity sites. When analysing a breakdown of performance by site type, the two supermarket locations accounted for 20% of the sites, but 35% of the material collected. This shows that locating recycling sites to maximise convenience and number of householders visiting will generate the highest recovery from bring collections.

⁸Recoup (2003) Plastic Bottle Collections Using Bank Compaction; Warrington Report

Kerbside collection schemes

There are now 165 kerbside schemes including plastic bottles in the UK representing 5.4 million households. This coverage of households has risen by almost a third (31%) since the end of 2001, and is equivalent to better than 1 in 5 UK households now having the opportunity to include plastic bottles in their local kerbside collection programme.

Participation in these schemes is essentially voluntary, so not all households within a scheme will participate. The reported participation rate for established schemes will vary between 20% and 90%. We calculate that the average capture rate of plastic bottles through current kerbside collection programmes is 18% - indicating the potential to achieve much greater levels of collection from the current kerbside infrastructure.

Understanding the mechanisms that influence kerbside systems is fundamental if effective practice is to be identified. This is especially crucial for plastic bottle recycling, with a number of variables influencing a scheme's economic efficiency and recovery performance.

To analyse the range of opportunities for kerbside recycling of bottles, each variable has been isolated to assess its prevalence and influence on plastic bottle recovery. Each local authority will have unique features within their kerbside scheme, yet common elements such as frequency of collection, associations with refuse collection and container type can be compared and analysed.

The analysis shows that alternative weekly refuse/recyclable collection programmes generate significantly higher levels of plastic bottles than schemes that run in addition to a weekly refuse collection service. The upper and lower 25% quartiles (i.e. mid 50% range of data) has been highlighted in each of the performance analysis graphs.

Statistical analysis of the data to establish 95% confidence intervals has been carried out. This provides useful predictive data for many types of scheme.

Providing a dedicated container improves performance. Promotion also has an important role in increasing householder involvement. Another important factor is the number of materials collected within a kerbside system. The number of materials collected also impacts on the participation rate⁹.

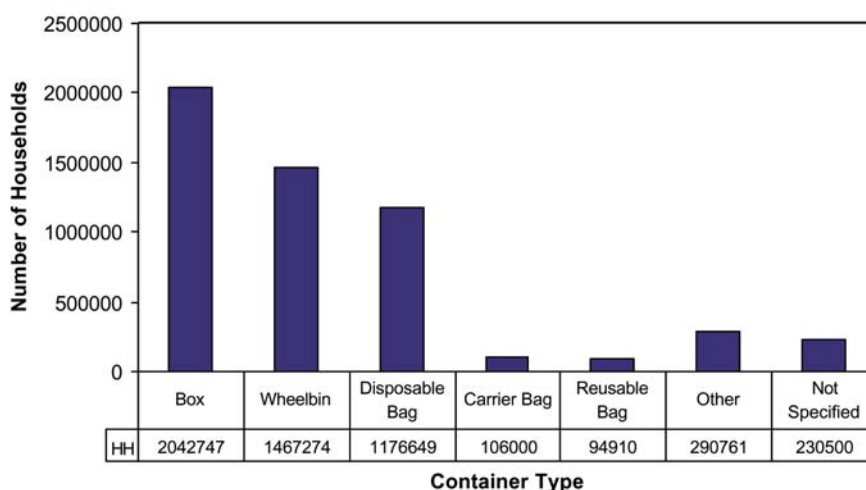
When questioned about the implications of adding plastics to kerbside collections, a number of issues were raised. It was found that adding plastic bottles to current collections improved recovery tonnage by up to 30% through increased participation rates. However, others reported that the inclusion of bottles increased contamination, reduced the performance of bring systems, and increased the number of tips required due to additional volume.



Container Type

40% of households receiving a kerbside service are provided with a box, typically with a 55 litre capacity. These may vary in colour, and some are also provided with lids. The box has historically been the container of choice for kerbside collections, and an additional 270,000 households have a kerbside box compared to the 2002 Survey.

Figure 8: Containers used for kerbside schemes including plastic bottles



The largest growth has been in the provision of wheelbins. More than 1.4 million households now have a kerbside wheelbin with a 120 or 240 litre capacity for the collection of recyclables. It is this additional capacity, along with some servicing benefits where on-vehicle sorting is not required, that has encouraged recycling managers to adopt a wheel bin system. The extra capacity that wheelbins provide is especially important when increasing volumes of recyclables, particularly plastic bottles, are collected within the scheme.

The third major container option used is a bag. These can either be supplied to the householder, or carrier bags can be used. Approximately 1.1 million households have separate collection of dry recyclables through this option. The system is especially popular where some initial segregation by the householder is preferred, and coloured recycling bags are provided for different materials. The 'clear/tinted supplied bag' system also assists with quality control at the kerbside and can speed up collections, although it increases handling requirements at a central facility. Kerbside collection bags can be separately baled and sold for recycling following use.

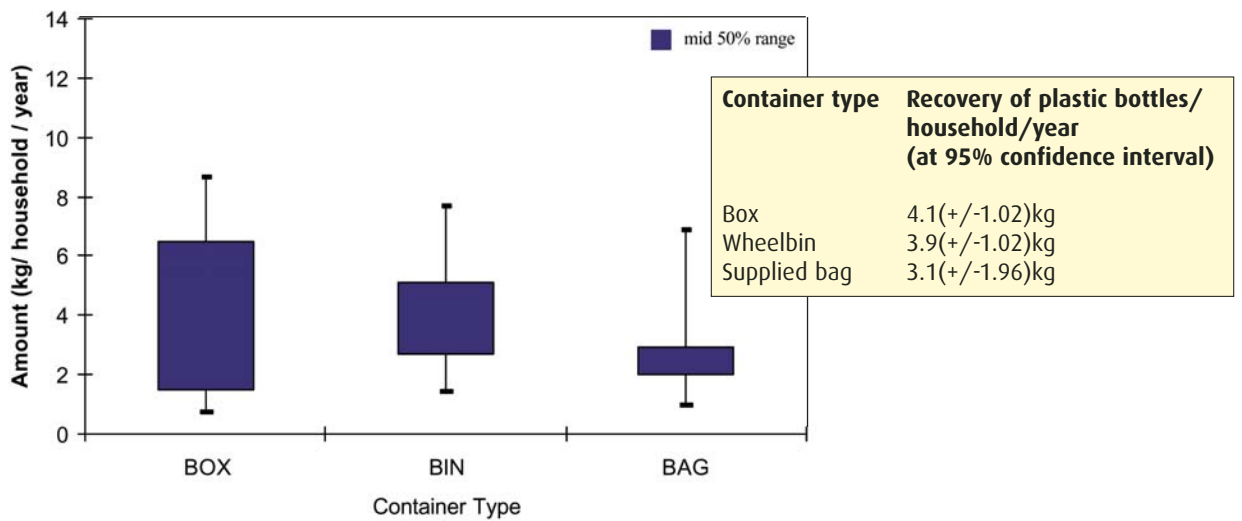
From the three main container types, an average recovery of 3.6kg of bottles per household per year can be observed. There are variations in scheme performance for each container type, but the box has the highest average recovery of 4.08kg per household per year. The performance of wheel bins has also improved from previous surveys, while the bag schemes show an average recovery per household of 3kg per year. Average recovery rates per household have increased from our last survey.

Kerbside collection schemes

The performance of individual schemes varies quite widely for each container type used. The highest performing schemes achieved in excess of 10kg/hh/annum of plastic bottles. The three lowest performing kerbside schemes generated less than 1kg/hh/annum of plastic bottles from households covered.

We performed an analysis of the data to identify a 95% confidence interval for each data set¹⁰. These are given below:

Figure 9: Kerbside bottle recovery performance by container type



It is important to note that we do not infer significant causality between recovery rates and container types from this data. There are other influences on the recovery, such as the amount of other materials collected, promotion and frequency of service. We do recognise that supplying a container is significantly better than requiring the householder to provide their own (e.g. a carrier bag). We also believe that the higher capacity of wheelbin and bag systems will facilitate improved overall recycling rates as single box systems limit the quantity of recyclables that a household can store.

¹⁰ i.e. It would be expected that 95% of results for that category would fall within the confidence ranges given.

Frequency of collection

A factor in recycling schemes is the frequency that the container is collected. This will also have a controlling influence on the type of container as capacity becomes an issue. A weekly or fortnightly collection is most common. Other collection frequencies include an alternate service where refuse is collected in week 1 and recyclables in week 2, a service every fourth week on a specified day, or a service completed on a set day each month.

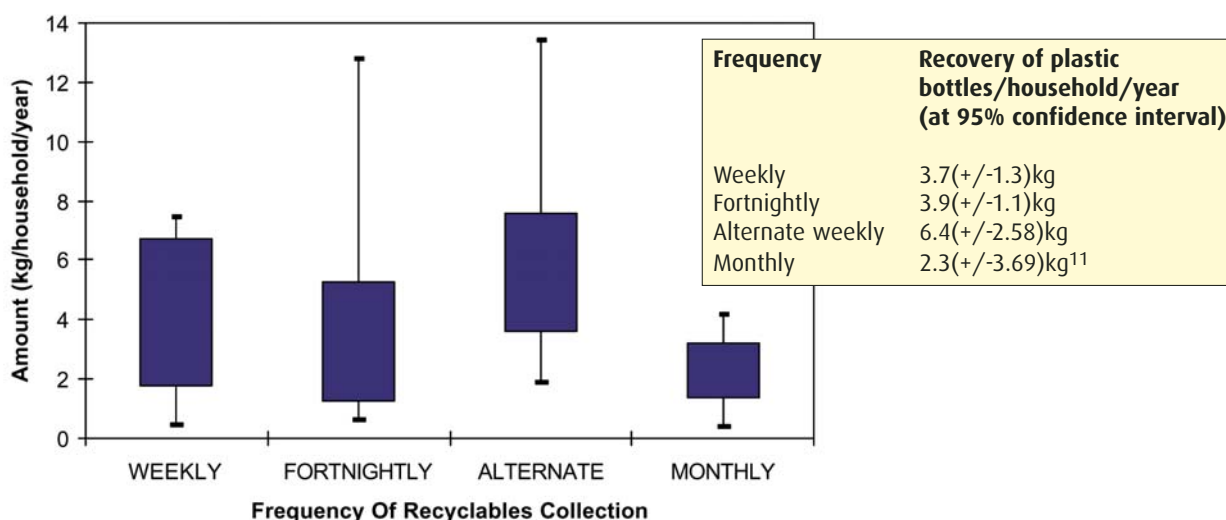
Table 3: Frequency of kerbside collection

	Box	Wheelbin	Bag	Other	Not specified	TOTAL
Weekly	442650	31200	752449	90000		1316299
Fortnightly	1430449	1032444	482110	200761		3145764
Alternate	108300	225630	90700		6000	430630
Monthly	18000	136000	40000			194000
Other	43348	30000				73348
Not specified					248800	248800
TOTAL	2042747	1455274	1365259	290761	254800	5408841

A fortnightly collection of recyclables is particularly popular as it reduces servicing costs per household compared to weekly collections, whilst achieving comparable performance. Of the 3.6 million households that receive a fortnightly recyclables collection including plastic bottles, 430,000 (12%) also have a fortnightly collection of refuse. This alternate collection maximises resources and minimises service costs of refuse and recycling operations. It also generates better recovery of all recyclables per household – some 15% more collected per household/annum than the average from weekly collections!

The container capacity has an obvious relationship with collection frequency. Table 3 shows that a greater proportion of box schemes operate a weekly or fortnightly collection, while wheel bins tend to have a collection frequency of fortnightly or lower due to a larger capacity. Bag systems are the only container where weekly collections are most popular, although the versatility of bags also allow them to be collected at less frequent intervals since there is not an issue with limited capacities providing householders can easily restock their supplies of 'recycling bags'.

Figure 10: Kerbside bottle recovery performance by frequency of collection



¹¹Large spread results from small and diverse data set

Kerbside collection schemes

Relationship to refuse collection

Kerbside schemes that operate with an alternating fortnightly collection of recyclables then refuse do show the best average recovery rate of 6.4kg per household per year. Monthly collections recovered some 40% less weight of plastic bottles per household than weekly or fortnightly collections. Fortnightly kerbside collections reported marginally better performance than weekly collections, generating slightly a slightly higher (0.2kg/hh/year) yield of plastic bottles per household per annum. This variation in the data was not found to be statistically significant. This is a change from previous research, which showed weekly collections generated 15% greater weight of bottles than fortnightly collections. We conclude that this demonstrates the importance of other factors in addition collection frequency to the overall success of the scheme. The alternate weekly collections also performed better than collections on the same day as a separate refuse service. Both these options performed better than kerbside collections made on a different day to traditional refuse collection.

Figure 11: Kerbside scheme relationship to refuse collection

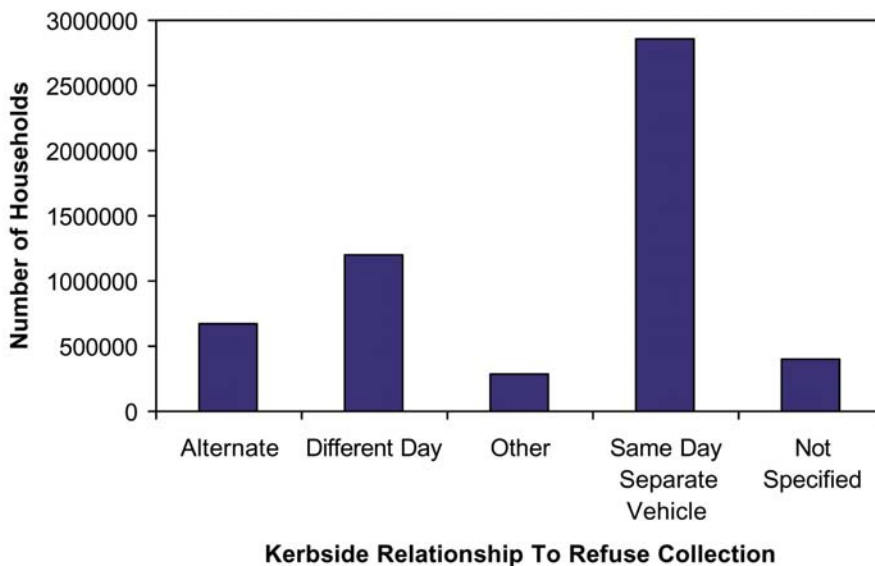
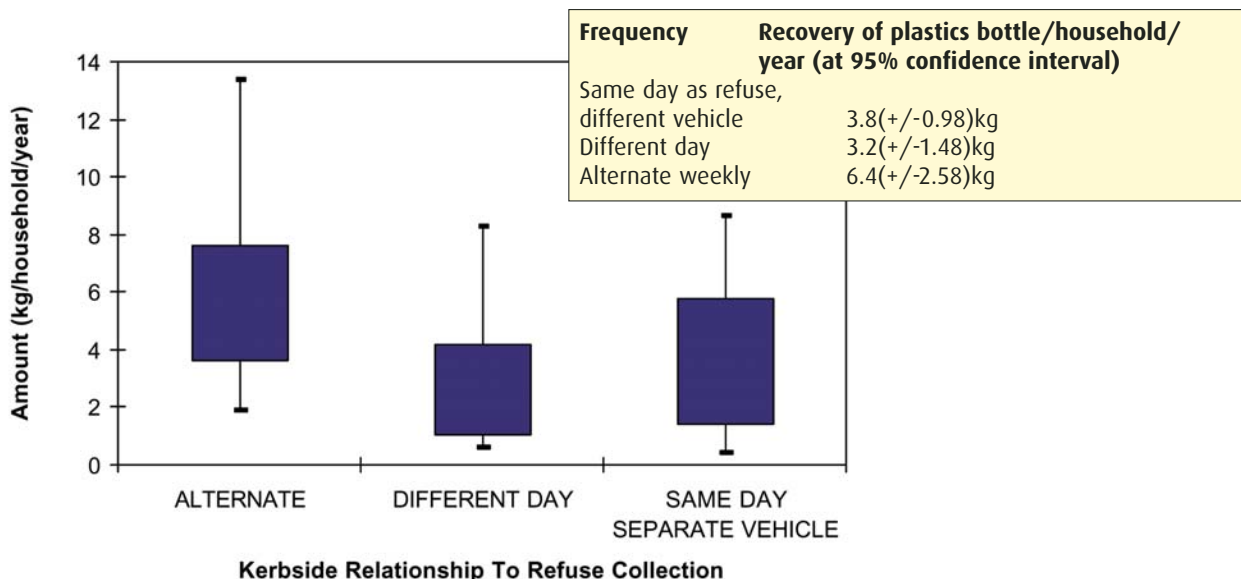


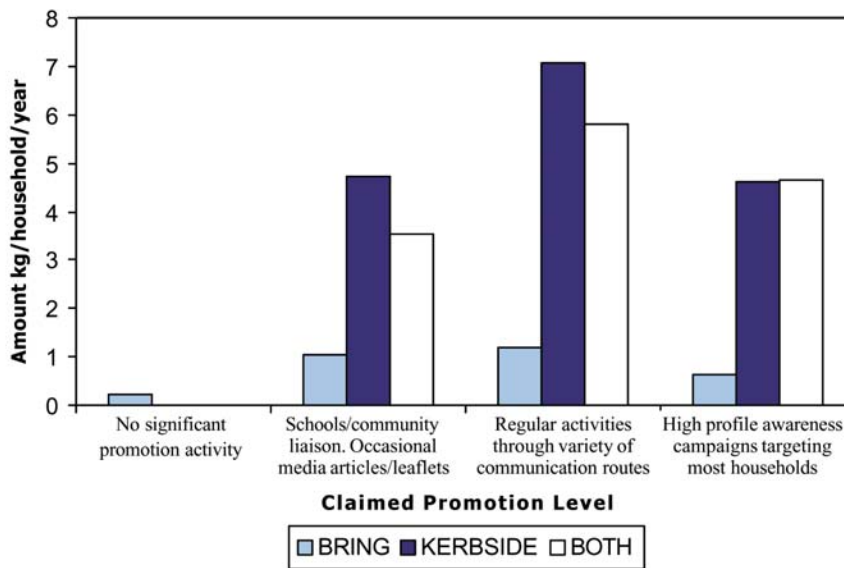
Figure 12: Kerbside bottle recovery performance by relationship to refuse collection



Impact of local promotion

Local authorities were asked to rate the level of promotion associated with their recycling systems. Of the 345 local authorities who responded, 90% did claim to have some scheme promotion. Of those, 72% had either regular promotion activities, or some promotion through schools and community liaison. 18% indicated that their promotions were “high profile, targeting the majority of households through a structured campaign”. A direct cost of promoting plastic bottle recycling cannot be attained as promotions of all materials recycling is generally completed at the same time.

Figure 13: Plastic bottle recovery performance in relationship to promotional activity



Plastic bottle recovery levels and recycling rates¹² were logged against the reported level of promotion. Kerbside schemes with no or limited promotion activity did not recover more than 4.5kg of bottles per household per year on average. The kerbside schemes with higher levels of promotion¹³ achieved above average performance - between 5kg and 7kg of bottles per household per year. No clear correlation was found between promotion activities and performance

Even with reportedly high promotion campaigns, some schemes performed below average levels¹⁴. This suggests that the quantity of promotion is not the primary driver of scheme performance, although high quality promotion activity gives the potential to achieve higher performance if other factors such as scheme design and operation are efficient.

Future resourcing priorities

When council recycling managers were asked how they would use increased financial resources to improve plastics recycling, three main areas were identified. 24% indicated that they would develop local sorting facilities and markets for plastics, a further 22% would focus on promotion activity. An additional 14% would spend additional funds on improving and expanding the collection infrastructure. This reflects recognition of the opportunity to reduce costs through appropriate infrastructure and the need to ensure public participation in current schemes through improved public awareness.

¹²Derived from Audit Commission data, 2001/2.

¹³Promotion levels were gauged by local authorities using a five tier tickbox system ranging from no significant promotion, to high profile campaign targeting the majority of households

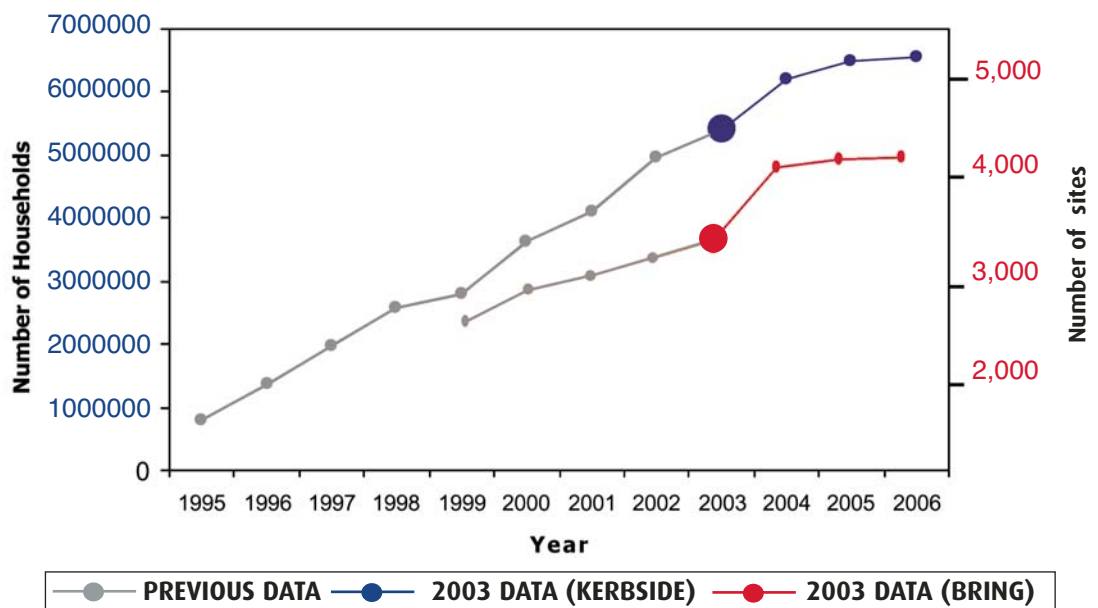
¹⁴<0.5 kg/hh/year bring, <4kg/hh/yr kerbside

Planned developments

The potential growth of UK plastic bottle recycling infrastructure can be assessed through feedback from recycling managers. The reported planned developments can be used to analyse growth within both bring and kerbside systems. The continual year on year growth of plastic bottle recycling schemes is strengthened by the availability of increased Government funding for recycling, improved technologies and targets.

There are currently 5.4 million households receiving a kerbside collection of recyclables in the UK. This is a 31% rise within the past two years, and represents 21% of UK households. The provision of bottle recycling within kerbside collections is set to exceed 6.4 million households during 2005. This will represent over a quarter of all UK households.

Figure 14: UK scheme coverage over time including planned growth



It is anticipated that actual plastic bottle recycling activity will be greater than the reported projections¹⁵. We believe that there are a number of other kerbside schemes not accounted for within this data where it is hoped that funding can be used to implement plastic recycling in the near future, but where plans or funding do not currently exist.

The number of bring sites has also risen to 3365 sites across the UK, a 12% increase since the beginning of 2002. The plans again suggest a continued rise in bring facilities over the next year as new sites and schemes are developed, with an total of 4100 sites expected to be operational by 2005.

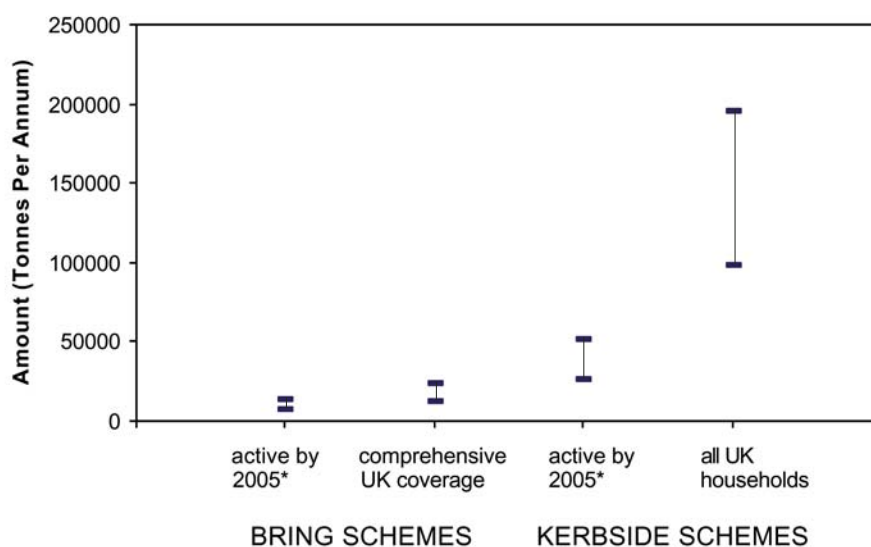
Both kerbside and bring system infrastructure will be improved during 2004, and this is reflected in the enhanced tonnage recovery estimates. However, it is not unreasonable to assume that there will be other local authority areas that consider plastic recycling opportunities over the coming years. We believe that the relatively small increases in scheme coverage and bottle recovery shown after 2004 are likely to be understated.

¹⁵Scheme coverage and recovery level predictions for plastic bottles within the previous three Recoup UK bottle recycling surveys have typically outperformed reported expectations by 5 -10%.

The potential of bottle recycling

We have already identified that there are wide variations in performance of current collection schemes, and that there is potential for significantly improved performance of the existing infrastructure. The following graph highlights the potential collection levels that could be realistically achieved by the adoption of bring and kerbside schemes across the UK based on currently levels of performance. This highlights the importance of a comprehensive infrastructure for plastic bottle recycling; and also reinforces the advantage of extensive, well promoted kerbside collections in improving recycling and maximising recycling opportunity.

Figure 15: Potential scenarios for UK plastic bottle recycling



* including currently planned schemes

From the graph, it can be assumed that approximately 33,000 tonnes of plastic bottles will be collected through the current planned activities by the end of 2005. The majority of this material will be recovered through the kerbside systems. If these schemes achieved good performance levels with bring activity recovering 1kg per household per annum, and kerbside collecting 8kg per household per annum, a total recovery of 66,000 tonnes of bottles may be achievable from the planned infrastructure. The performance level will also be dependant on greater communications and improved convenience for the householder. At this level of performance, planned activity could generate up to 13% recycling of bottles in the household waste stream by the end of 2005.

The future of plastic bottle recycling

There are many influential factors that will effect the current and future collections of plastic bottles for recycling. What is clear is the need for a focus on good practice and the removal of scheme inefficiencies to optimise current systems. As a point of reference, 62% of local authorities have schemes, but are only recycling 5.5% of bottles consumed.

As well as developing new schemes, there is a need to encourage local authorities to improve schemes through best practice information and guidance, and to raise the average participation rate for kerbside through increased communication with householders. More could be achieved in terms of recovery by improving performance, rather than extending plastic bottle recycling scheme coverage.

From this work we conclude that it is important to move emphasis towards kerbside systems which on average outperform bring schemes by 4:1; to provide suitable alternatives to households unable to participate in kerbside such as tenemental properties; to encourage scheme users to recycle all their bottles; and to provide local authorities with the information required to achieve sustainable, cost effective plastic bottle recycling.

