

# 2009



## UK Household Plastics Packaging Collection Survey

September 2009

RECUP 

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This work was commissioned by Recoup and sponsored by Reckitt Benckiser Group plc ([www.reckittbenckiser.com](http://www.reckittbenckiser.com)) using data gathered from UK local authorities and waste management companies. The content and analysis contained in this document is based on the information received.

While every effort has been made to ensure the accuracy of the contents of this publication, Recoup can accept no responsibility or liability for any errors or omissions. Opinions expressed and recommendations provided herein are offered for the purpose of guidance only.

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Recoup (Recycling of Used Plastics Limited) is a leading authority on plastics waste management, providing expertise and guidance to a wide range of clients across the plastics supply, use and disposal chain. Set up in 1990 as an independent organisation, Recoup's charitable status is supported by a network of members and project sponsorship activities.

Recoup works to maximise plastics recycling through stimulating the development of sustainable plastics waste management, including the improvement of plastics collection schemes across the UK, undertaking research and analysis to identify good practices and remove barriers to the adoption of efficient recycling systems.

Recoup also owns and operates a plastic recyclables trading business, Recoup Services Limited. This provides a marketing and collection service to suppliers of baled plastics. The net income from the activities carried out by Recoup Services is donated to Recoup.





# Foreword

The Recoup 2009 survey covers a broader scope of plastics packaging recycling information than in previous years. The additional topics include: non bottle household plastics collections; recycling on the go; and a survey on Materials Reclamation Facilities (MRFs). This enhanced level of information provides a more in-depth understanding of how household plastics packaging recycling is developing in the UK.

Data in this survey relates to 2008 and shows plastic collection levels have risen to 238,768 tonnes of which 22,701 tonnes was a non-bottle packaging fraction. As part of the survey, account has been taken of the growth in plastic packaging entering the market over recent years and the survey indicates a steady increase in the number of schemes collecting non bottle packaging (pots, tubs and trays). Where no infrastructure exists to segregate the non bottle fraction there are concerns relating to material quality, the value of baled materials, availability of end markets, and the unnecessary additional costs of an extended route to landfill or incineration.

Recycling on the go schemes have increased during 2008 and provide a further opportunity to capture material which would previously have been lost to landfill. It is encouraging to see the efforts now being made by local authorities and industry to develop this area of bottle recovery.

In 2008 approximately 40% of plastic bottles from the household waste stream were collected for recycling. With the high level of infrastructure now in place to collect, sort and bale plastic bottles a key challenge for the UK moving forward is to increase household participation and achieve higher recovery rates. Demand for recovered plastic bottles remains strong with higher prices paid for segregated clear PET and natural HDPE baled bottles.

I hope that the information contained within the Survey will provide stakeholders across the supply chain with useful information about the current progress of household plastics packaging recycling in the UK.

I am pleased to recognise and thank Reckitt Benckiser plc for sponsoring the 2009 survey and to acknowledge their ongoing support for Recoup. Finally, this survey would not be possible without the information supplied by the 404 recycling scheme managers who responded to our request for information. Thank you all for your very valuable input into this survey.

**John Simmons**  
Chief Executive Officer

The information collected for the 2009 survey is based on 2008 data and forms the basis of this document, which is the 15<sup>th</sup> local authority plastics collection report. The purpose of this report is to inform stakeholders including local authorities, waste management companies and reprocessors on current plastic packaging collection methods and practices. The report also details collection rates and the future plans of local authorities in respect of plastics recycling.

In March 2009, Recoup distributed an online Household Plastics Packaging Collection Survey to all UK local authorities to ascertain the levels of plastics packaging collection in 2008. As in the past the reaction to the survey was extremely positive with 380 responses from Waste Collection Authorities (WCA's) and a further 24 responses from Waste Disposal Authorities (WDA's). The information submitted and the associated analysis within this report will be of particular relevance to those associated with local and national government together with those in industry who have interests and responsibilities in developing sustainable plastics packaging recycling from the domestic waste stream.

Where only partial data has been received or no data submitted Recoup has, as in previous years, completed an estimated dataset based on a number of factors including householders serviced by plastic bottle collection schemes, bring sites available and previous year's survey responses, or in some cases by applying reasonable assumptions and average performance data.

## 2008 Household Plastic Packaging Recycling Rates

The analysis of the 2008 survey data indicates that a total of 238,768 tonnes of plastic packaging was collected from bring and kerbside schemes for recycling by the waste collection and disposal authorities.

Of the 238,768 tonnes of plastic packaging collected, 216,067 tonnes was reported as plastic bottles. This figure represents an additional 34,180 tonnes of plastic bottles when compared to the 181,887 tonnes figure for 2007 or a 19% increase in year on year bottle collections.

The total UK plastic bottle consumption within the household waste streams for 2008 and used in this report is 557,000 tonnes<sup>1</sup> indicating a recycling rate of 39%. Despite adjustments made in consumption data, this still demonstrates an increase compared with the previous year. An additional 2,920 tonnes of bottles were collected from recycling 'on the go' services.

This year local authorities were asked to differentiate their collection of plastic bottles between 'bring', 'kerbside' and recycle 'on the go' schemes, with the latter becoming more prevalent since the DEFRA consultation document in 2007. This survey has also sought to split the levels of plastics collected between plastic bottles and other household plastics packaging, such as pots, tubs and trays.

**Breakdown Of Recycled Tonnage By Scheme And Packaging Type**

	Plastic Bottles (tonnes)	Non Bottle Plastic Packaging (tonnes)	TOTAL (tonnes)
<b>Bring</b>	44,181	3,910	48,091
<b>Kerbside</b>	168,966	18,791	187,757
<b>Recycle 'on the go'</b>	2,920	0	2,920
<b>TOTAL</b>	216,067	22,701	238,768

## Bring Scheme Performance

This year's data identified that the current bring collection tonnage for plastic bottles is now 44,181 tonnes including 5,801 tonnes from household waste recycling centres operated by waste disposal authorities. An additional 2,920 tonnes of bottles was attributed to recycle 'on the go' activities.

The total number of bring sites actively collecting plastic bottles is now reported as 6,746. The 2007 data indicated that approximately 34,500 tonnes of plastic bottles were collected through the bring schemes suggesting a 28% recovery increase for 2008.

## Kerbside Scheme Performance

In 2008, 168,966 tonnes of plastic bottles were collected through kerbside schemes. This shows an increase of 21,561 tonnes on the previous year – representing a 13% increase. This increase has occurred due to a number of local authorities introducing kerbside collection for the first time, the expansion of some schemes and overall

<sup>1</sup> Using 2005 reported UK domestic bottle consumption data of 525,000t and assuming 2% year on year increase.



performance improvements of existing services. The total number of local authorities now offering plastic bottle collections through kerbside has risen from 304 in 2007 to 321 in 2008. Kerbside schemes in 2008 provided collection services for some 18 million households representing an additional 4 million households on 2007.

### Collection of Non Bottle Plastics Packaging For Recycling

The 2008 survey requested additional information on the types of materials collected by local authorities. Of the 380 responding local authorities, 49 indicated that they are now actively collecting other plastics through kerbside schemes in addition to plastic bottles. A further 35 local authorities indicated that they were collecting 'other plastics packaging' through their bring schemes.

The total reported tonnage for 'other plastic packaging', increasingly being referred to as 'mixed plastics', and typically including pots, tubs, trays and plastic film (but not plastic bottles) was 22,701 tonnes. This includes 1,505 tonnes being collected by WDA's through household waste recycling centres. Whilst this reported figure is accepted and incorporated into the overall collection figures, for 2008 there is known to be some schemes collecting 'mixed plastics' which are then baled with plastic bottles. This would impact on the overall individual tonnages reported for plastic bottles and mixed plastics.

The information provided in the survey suggests an increase of mixed plastics on the 2007 data of 109% , but this is based on a relatively low 2007 figure and the inability to accurately identify, in some cases, what is the level of mixed plastics being collected. It is reasonable to believe that the 22,701 tonnes figure reported for 2008 is understated. Greater use of material assessment checks are needed to quantify the extent of mixed plastics in baled bottles.

### Reported Perceptions of Running Plastic Bottle Collections

A total of 209 local authorities provided a response on how their plastic bottle collection scheme was considered to be working. 160 authorities indicated that their schemes were running smoothly. A further 46 suggested that there were minor problems with the schemes, whilst 3 stated that there were major problems in running a plastics recycling scheme. The overall response indicated that the infrastructure and support required to launch and sustainably operate a plastics collection scheme is available and understood by most local authorities.

As part of the survey, those local authorities not collecting plastic bottles via kerbside were asked to indicate the main reasons which prevented them offering this service. The most common reason given was the cost implications of changing existing kerbside schemes to collect plastic bottles. The second most common reason was the fact that the local authorities have a focus on collecting the heavier recyclables in order to achieve their recycling rates and as a consequence of this, the collection of lighter waste fractions which can be recycled have lower priority.

### Sale of Material

The collection and recycling of plastics from the domestic waste stream remains primarily focused on plastic bottles. Local authorities tend to target the collection of all bottle formats e.g. HDPE and PET bottles both in clear / natural and in various colours. These are sometimes segregated by material type and colour before baling. In the last two years UK markets for non segregated baled bottles have developed as new PRF's (Plastics Reclamation Facilities) have been commissioned. However a high proportion of non segregated baled bottles are still exported to the Far East. Demand for this product is strong with suppliers unable to meet commercial demands.

Of those schemes which are collecting 'other' plastic packaging in addition to plastic bottles, the over-riding majority indicated that whilst the material was collected in a mixed format, they were intended to be sold to market as a lower grade of bottles. The development of PRF's has allowed this approach to expand. No MRFs identified at the time of the survey confirmed their ability to segregate bottle fractions from other plastic packaging formats.

### Planned Developments

Only a small proportion of local authorities were able to provide information relating to future scheme developments. The responses received suggested that kerbside schemes would recover 194,000 tonnes of bottles in 2011 representing a further 25,000 additional tonnes. Increased kerbside participation by householders was discussed with some local authorities who felt that a 10% improvement per annum over the next few years could be achieved based on promotion initiatives. If this could be realised the collected tonnage from kerbside in 2011 could reach over 257,000 tonnes. Additional information indicated that 146 new schemes are planned for WEEE recycling, 79 recycle 'on the go' initiatives, and 218 new schools recycling schemes are planned to be launched.

### New Technologies

Of the new technologies which were identified, local authorities reported there were 3 key areas for development over the forthcoming years. Energy from Waste plants (EfW), Gasification plants and also Mechanical Biological Treatment plants (MBT) have all been indicated by the local authorities as the planned developments which are likely to be introduced. The 155 Local Authorities responding to this question indicated that they are planning to implement these waste management facilities over a time period between 2010 and 2020.

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## Overview of Plastic Bottle Collection Schemes

Over the past 5 years recyclables collection schemes including plastic bottles have experienced a significant level of growth. This is principally due to the development of new collection contracts, more opportunities to transfer mixed recyclables collected to suitable sorting facilities and increasingly competitive end markets.

The predominant method for the collection of recyclables in the UK is via kerbside schemes. Prior to the increase in this type of system, local authorities were reliant on bring schemes for plastic bottle collections. Bring schemes offer local residents the opportunity to remove their recyclables from the household waste stream and deposit them at a central collection point. They are still used in many areas and continue to form a part of the recyclable collection infrastructure which local authorities offer.

Kerbside and bring collections form the basis of recovering recyclables from householders in the UK. But there are now other methods being adopted by local authorities to extend the recycling opportunity both for consumers and businesses. There are separate sections in this report reviewing recycling 'on the go' and trade waste service opportunities that have developed. The information specifically relating to waste disposal authorities has also been separated for clarity.

### Consumption Statistics

The key survey data is based on comparing reported recycling tonnage with consumption estimates. It is this data that needs to be corrected to reflect best estimated packaging trends and ensure that 2008 bottle recycling rates are not overstated.

In 2006 a detailed review of plastics packaging consumption was completed. This indicated that 548,000 tonnes of plastic bottles were consumed in 2005. It was expected that up to 23,000 tonnes was consumed outside of the home, leaving 525,000 tonnes entering the domestic waste and recycling systems.

Packaging trends are frequently debated with between 0% and 5% per annum growth indicated. This report has applied a 2% annual packaging growth rate for plastics. This is inclusive of any packaging reduction projects, light weighting activities, and substitution of other materials.

Therefore, the actual expected UK consumption rate for plastic bottles in 2008 was 581,500 tonnes of which an estimated 557,000 tonnes entered the household waste stream.

### Plastic Bottle Collection Growth

The total quantity of plastic bottles collected by waste collection authorities in the UK in 2008 is 216,067 tonnes. Based upon last year's reported figure of 181,887 tonnes, this new figure represents an increase of 34,180 tonnes of bottles or approximately a 19% growth in the number of collected bottles.

Approximately 557,000 tonnes of plastic bottles were consumed in the UK through the household stream during 2008. The 216,067 tonnes represents a collection rate of 39% of all bottles consumed in the households. This is a 4% increase against the previous year's survey, despite the consumption rates being increased. In 2005, 2006 and 2007 the collection rates were 13%, 20% and 35% respectively.

216,067 tonnes represents approximately 4,753 million plastic bottles<sup>2</sup>, which is an increase of 752 million plastic bottles collected compared to the previous year.

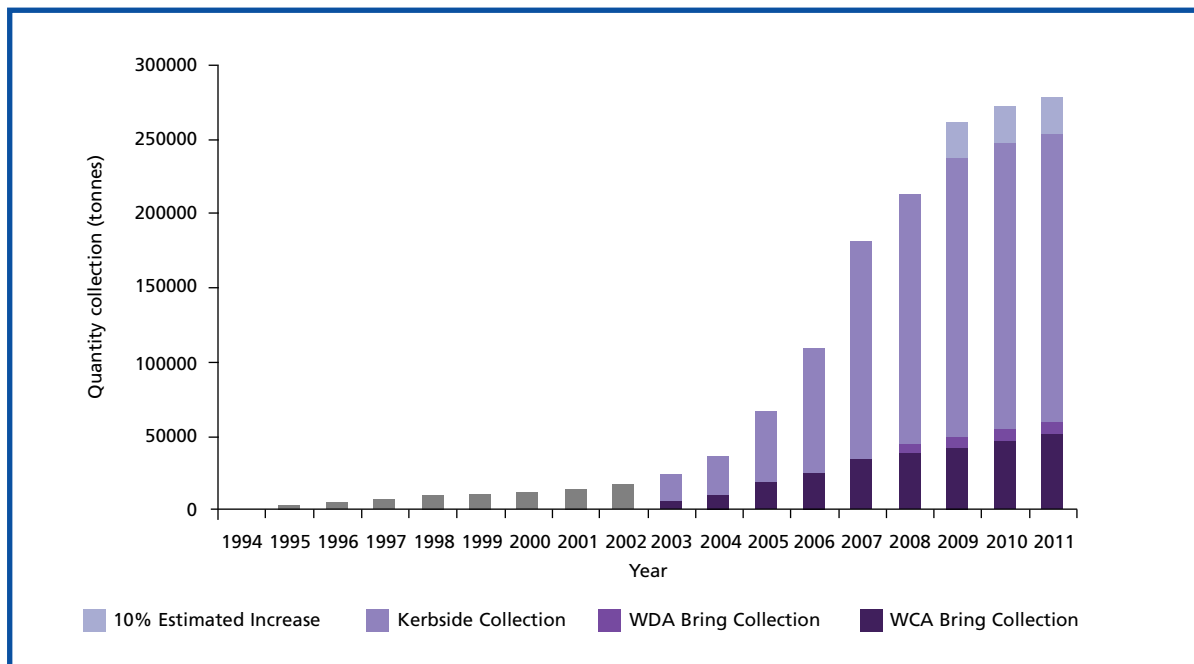
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<sup>2</sup> Based on 22,000 bottles per tonne



Figure 1 charts the growth in plastic bottle collection quantities since 1995. Kerbside collections for plastic bottles were first introduced in the 1990's, but they grew rapidly with the development of kerbside collection schemes in recent years. The collection quantities reported are split between kerbside and bring collection schemes from 2003 onwards.

**Figure 1 : Growth In Plastic Bottle Collections, By Bring And Kerbside Schemes**



The total tonnage can be divided up to show the amount of materials which are collected through both the kerbside and bring collection schemes. 2008 data indicates that 168,966 tonnes (78%) of plastic bottles were collected through the kerbside schemes and 47,101 tonnes (22%) were collected from bring schemes and recycle 'on the go' systems.

### Forecasting Future Plastic Bottle Collection Tonnage

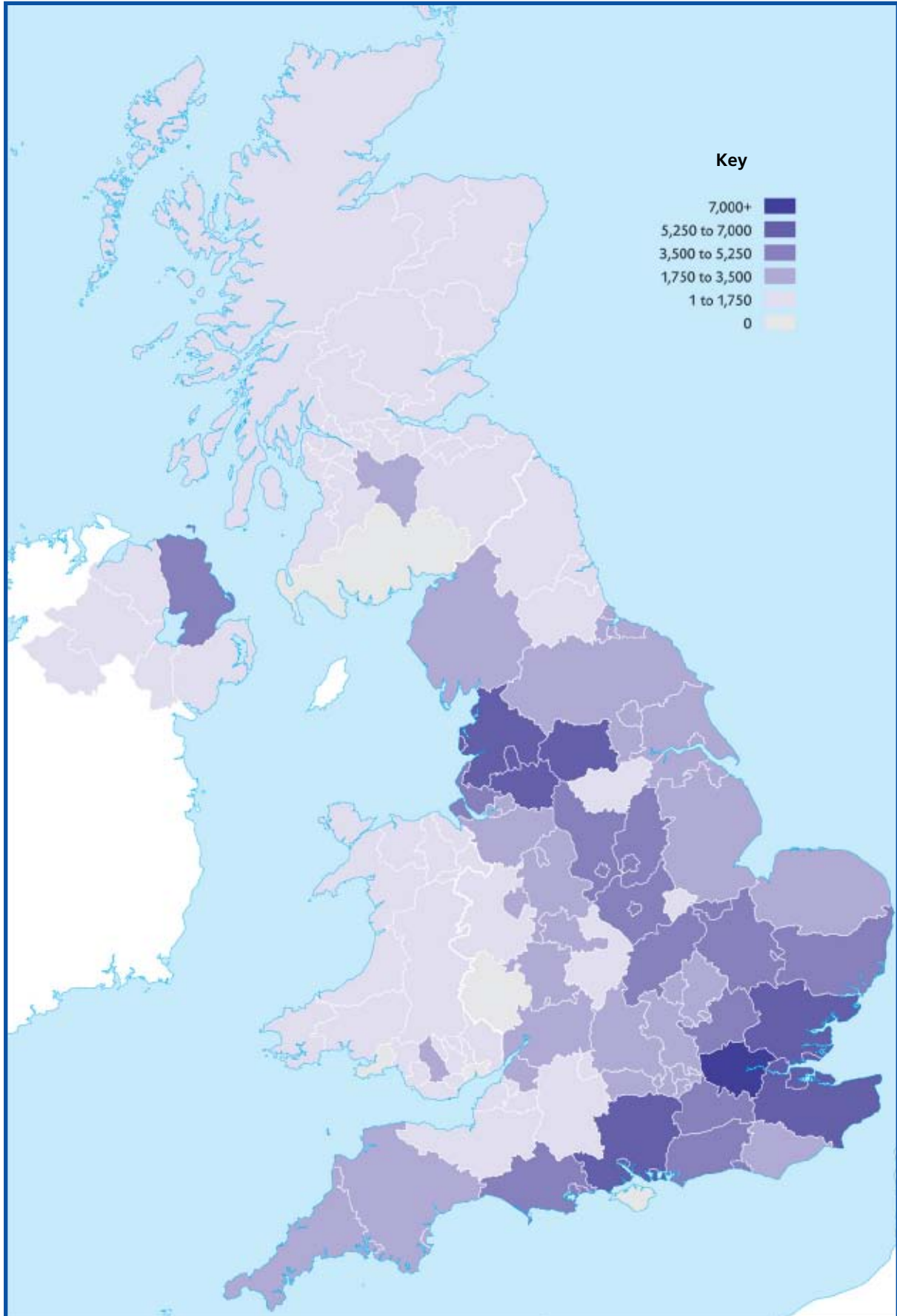
The previous report forecasted a total collection of 264,000 tonnes for 2008, based upon the levels of previous year's growth being replicated. Whilst this has not been achieved, the reported data still represents significant progress.

Previously, reports also suggested projected growth forecasts for 2008 – 2010 of 50%, 71% and 94% respectively. In view of the shortfall between the projected and actual collection rates this year, it is anticipated that for 2009 and 2010, there will be some further growth in plastic bottle collection schemes but not at the rates previously indicated. Recoup predicts that the 2009 bottle collection rate is likely to exceed 250,000 tonnes.





Figure 2 : Plastic Bottles Collected For Recycling By County (tonnes)

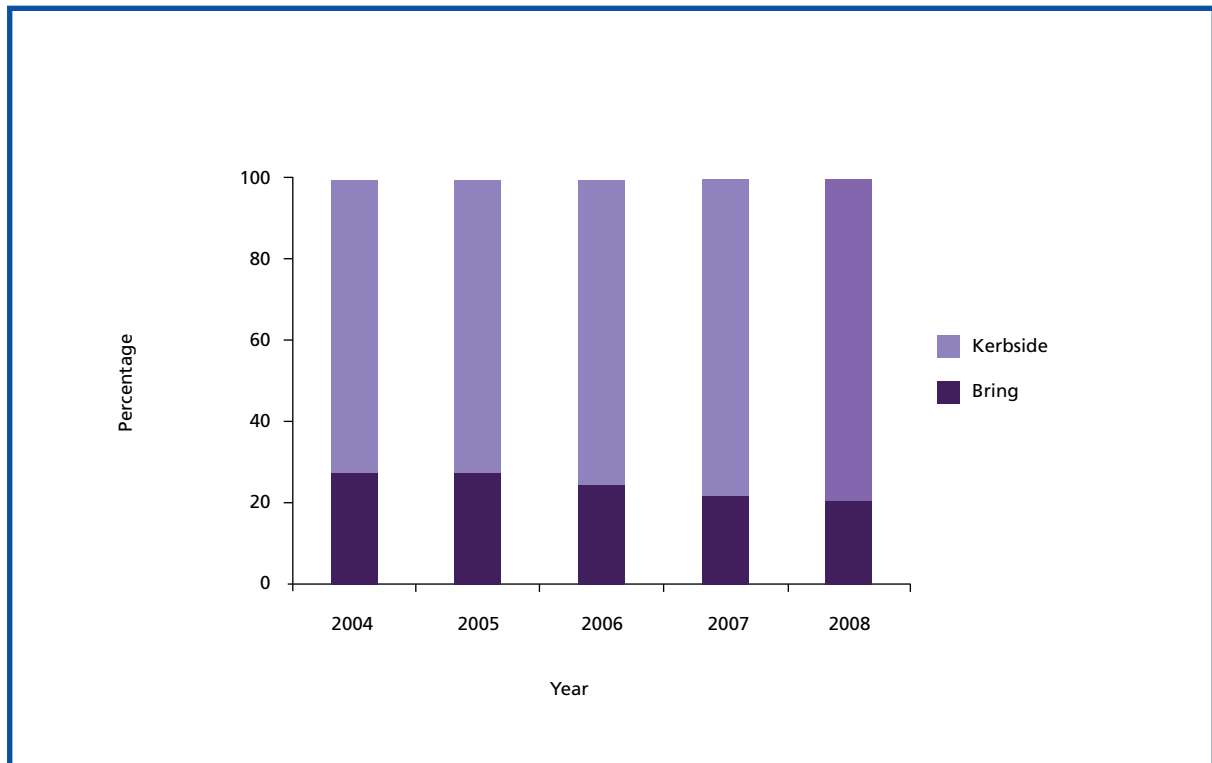




### Types of Collection Scheme

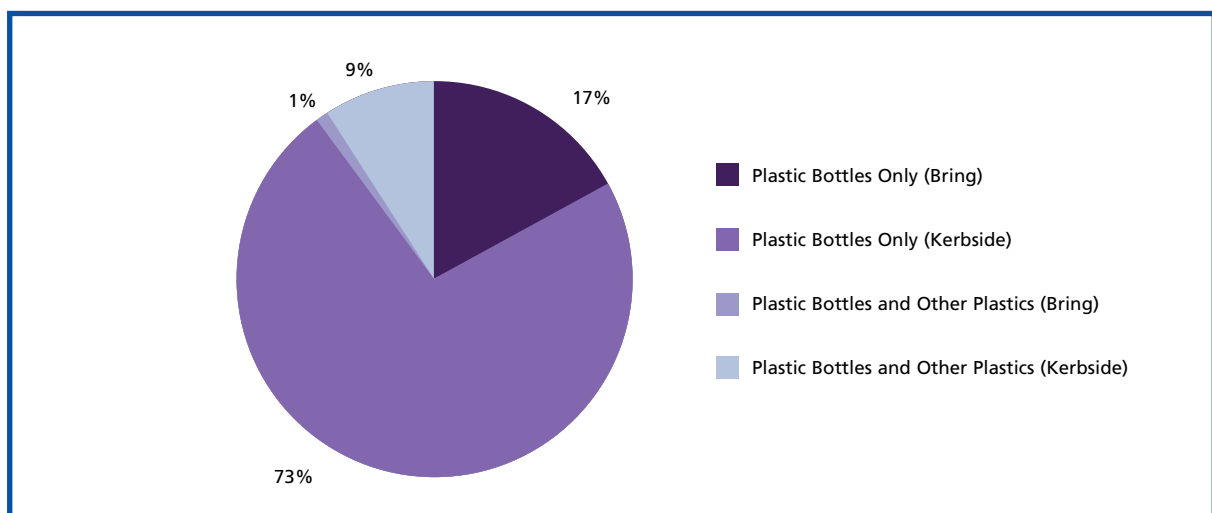
Figure 3 shows the trends of how plastic bottles have been collected over the past 5 years through the kerbside and bring schemes. This figure clearly demonstrates that the kerbside schemes are increasingly the primary contributor to plastic bottle collection levels. This year's analysis indicates that at least 18 million households now have a bottle collection scheme provided to them as part of the kerbside collections.

**Figure 3 : Proportion Of Plastic Bottles Collected Through Bring And Kerbside Schemes**



The graph in figure 3 shows the percentage splits of how much plastic is being collected and through which collection method the material is derived. It is clear to see that the kerbside collection of plastic bottles are not only well established as the primary collection method, but continues to develop and grow. The tonnage of plastic bottles collected through the bring schemes, whilst experiencing some growth on last year, is beginning to plateau. This is largely as a result of an increasing number of kerbside schemes which have been introduced over the past 12 months, enabling householders to recycle their plastic bottles more easily without the need to travel to a public recycling point. This can be seen in figure 4 below.

**Figure 4 : Percentage Of Plastics Packaging Collected By Scheme Type**





## Plastic Bottle Collection Infrastructure Summary

The table below (figure 5) shows the breakdown of plastic bottle collections by country and infrastructure. The two main collection schemes offered to householders by the local authorities are kerbside collection schemes and bring schemes.

**Figure 5 : Breakdown Of Plastic Bottles Collections By Country And Infrastructure**

Country	Households (millions)	Local Authorities	Bring Schemes		Kerbside Schemes	
			Number of LA's	Number of Sites	Number of LA's	Number of Households (millions)
England	21.1	395	226	5192	253	14.8
Northern Ireland	0.7	26	14	121	25	0.6
Scotland	2.3	32	17	1319	25	1.8
Wales	1.2	22	14	114	18	0.9
<b>Total</b>	<b>25.3</b>	<b>475<sup>3</sup></b>	<b>271</b>	<b>6746</b>	<b>321</b>	<b>18.1</b>

The regional bottle collection data is illustrated in figure 6 with a further breakdown of total plastics collected shown in the table at figure 7. This table splits data by collection scheme and also by country. As percentage totals of the overall amount of plastics collected demonstrate, England account for 83% of plastic bottles collected through the bring schemes and 82% of bottles collected through the kerbside schemes. The table also shows the comparison of plastic bottle collections between the 2007 and 2008 reported datasets.

The data indicates that there has been growth in the plastic tonnage collected by the local authorities in 2008. Whilst in certain areas there has been significant levels of growth, for Wales, the amount of plastic bottles collected through the bring schemes has dropped when compared against the 2007 data. This is almost certainly attributed to the increase in the amount of material now collected through the kerbside schemes, a factor which is likely to affect all bring schemes in future years.

<sup>3</sup> Recoup are aware of a number of changes to local authority structure which has reduced the number of UK local authorities. These changes were implemented in 2009 so have not been incorporated into this survey as it is based on 2008 activity.



Figure 6 : Plastic Bottles Collected for Recycling By Region (tonnes)

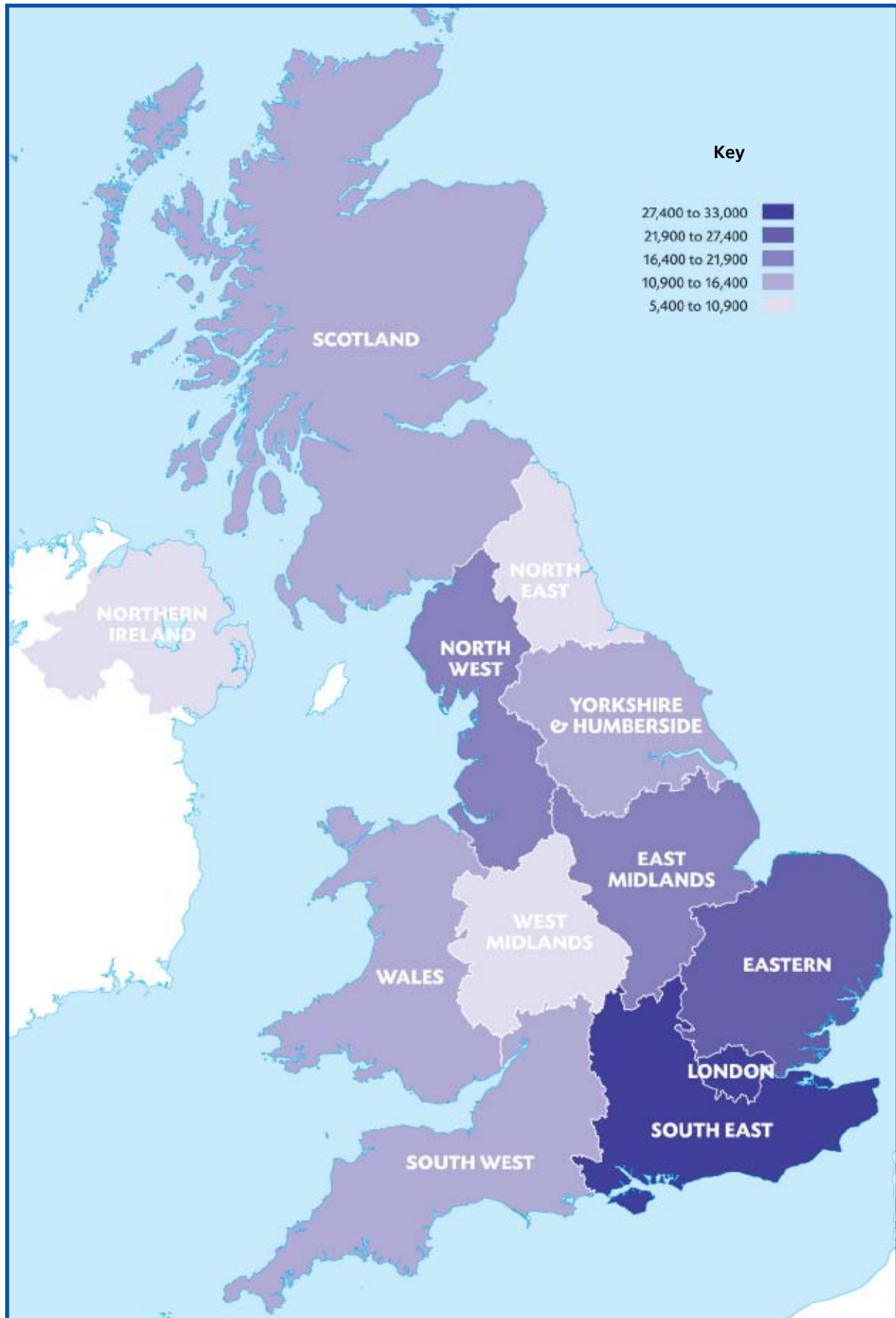




Figure 7 : Breakdown Of Plastic Bottle Collections By Country (tonnes)

<b>UK</b>	Total Quantity of Plastic Bottles Collected in 2007	181,887
	Through Bring Schemes	34,482
	Through Kerbside Schemes	147,405
	<b>Total Quantity of Plastic Bottles Collected in 2008</b>	<b>207,346</b>
	Through Bring Schemes	38,380
	Through Kerbside Schemes	168,966
<b>England</b>	Total Quantity of Plastic Bottles Collected in 2007	147,643
	Through Bring Schemes	27,155
	Through Kerbside Schemes	120,489
	<b>Total Quantity of Plastic Bottles Collected in 2008</b>	<b>169,779</b>
	Through Bring Schemes	31,972
	Through Kerbside Schemes	137,807
<b>Northern Ireland</b>	Total Quantity of Plastic Bottles Collected in 2007	10,521
	Through Bring Schemes	2,817
	Through Kerbside Schemes	7,705
	<b>Total Quantity of Plastic Bottles Collected in 2008</b>	<b>9,014</b>
	Through Bring Schemes	218
	Through Kerbside Schemes	8,796
<b>Scotland</b>	Total Quantity of Plastic Bottles Collected in 2007	11,956
	Through Bring Schemes	2,584
	Through Kerbside Schemes	9,373
	<b>Total Quantity of Plastic Bottles Collected in 2008</b>	<b>14,785</b>
	Through Bring Schemes	4,020
	Through Kerbside Schemes	10,765
<b>Wales</b>	Total Quantity of Plastic Bottles Collected in 2007	11,766
	Through Bring Schemes	1,927
	Through Kerbside Schemes	9,839
	<b>Total Quantity of Plastic Bottles Collected in 2008</b>	<b>13,768</b>
	Through Bring Schemes	2,168
	Through Kerbside Schemes	11,600
<b>WDA</b>	<b>Total Quantity of Plastic Bottles Collected in 2008</b>	<b>5,801</b>
<b>On The Go</b>	<b>Total Quantity of Plastic Bottles Collected in 2008</b>	<b>2,920</b>

## Ten years of development

The majority of this document reports on what is happening now, but it can be equally as important to look back and review where we have come from. It is easy to forget how rapidly plastic bottle recycling has developed, and how the approach and key data has changed.

The 1999 survey existed only as a dataset based on 1998 recycling data and supporting presentation, produced from a one side questionnaire posted or faxed to each of the UK local authorities. Looking back, it's interesting to see how some of the key data has changed, but how other information has remained constant.

As you would expect, the number of bottle collection schemes has significantly increased since 1998. But more importantly the infrastructure has also grown with fewer local authorities offering a token service consisting of one or two bring sites only. The emphasis has changed from bring to kerbside. Households with access to kerbside bottle collection has increased from 2.8 million in 1998 to 18.1 million in 2008, resulting in an increase in kerbside recovered bottle tonnage in the past 10 years from 6,200t to 169,000t.

But it is not just the number of schemes that has allowed such a dramatic increase. The performance of kerbside has also improved in terms of recovery per household. Without this improvement which has been driven by more funding, more understanding, increasing targets and increasing consumer demand, kerbside today would be recovering 130,000t less if applying 1998 average kerbside performance data (2.2kg/hh/yr).

The best performing bring schemes from 1998 are comparable with today's performance levels – achieving just over 1,000t per year recovery levels. The 900 tonnes achieved by the highest performing kerbside schemes in 1998 is noticeably less than the 1,700t + achieved by a number of kerbside schemes in 2008. However the influence of reduced refuse collection frequency, increasing levels of mixed plastics and other contamination within the bottles must be considered, and makes direct comparisons difficult.

**Figure 8 : Comparisons Between 1998 Survey Data And 2008 Survey Data**

	1999	2009
<b>Number of bottle schemes</b>	194	321 kerbside / 235 bring
<b>Bottle tonnage reported</b>	11,300t	216,067t
<b>Bring / Kerbside tonnage split</b>	4,740t bring / 6,260t ks	44,181 bring / 168,966t ks
<b>Number of mixed plastic schemes</b>	Unrecorded	49
<b>Households with kerbside bottle collection</b>	2.8 million	18 million
<b>Kerbside average bottle recovery per household per year</b>	2.2kg	10.5kg
<b>New kerbside schemes coming online</b>	70	17
<b>Schemes stopped collecting bottles</b>	7	0
<b>Baled mixed bottles market value</b>	£20 - £50	£60 - £160
<b>Plastic PRN value</b>	£25-40	£15 - £20
<b>Average crude oil cost per barrel</b>	\$20	\$70
<b>Estimated average bottle contamination levels</b>	1% - 5%	1% - 45%
<b>Most common reasons for not collecting bottles</b>	1) Insufficient funds 2) Not confident of markets	1) Cost implications for changing scheme set up 2) Focus on collecting heavier materials to meet targets

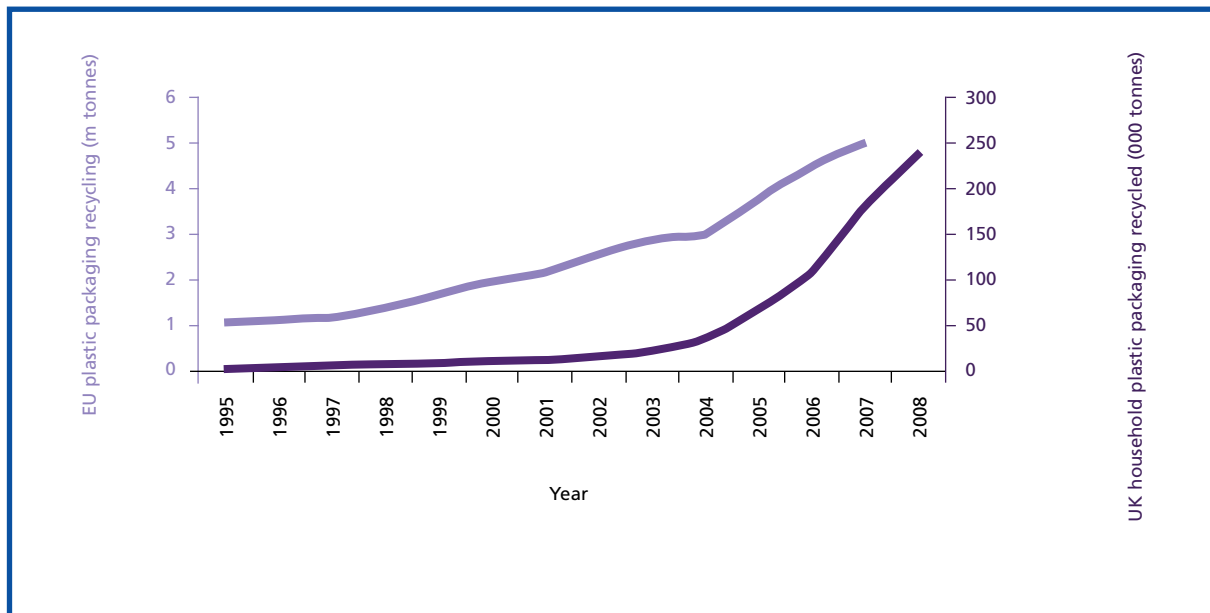
## Benchmarking UK Plastics Recycling

We have witnessed substantial increases in UK household plastic collections over the past five years, driven by increasing bottle collections. But how does this compare to the collection of household plastics in other countries.



There is a strong growth trend in household plastic recycling and energy recovery in Europe. Figure 9 shows the comparative mechanical recycling of household plastics growth rates in Europe alongside UK data. This suggests that the UK were behind average growth rates until 2004, at which time significant growth has been witnessed – above the European average. This has been driven to date by bottle collection, together with increasing collections of other household packaging plastics.

**Figure 9 : EU Plastics Packaging Tonnage Mechanically Recycled vs UK Household Plastic Packaging Recycling Data**

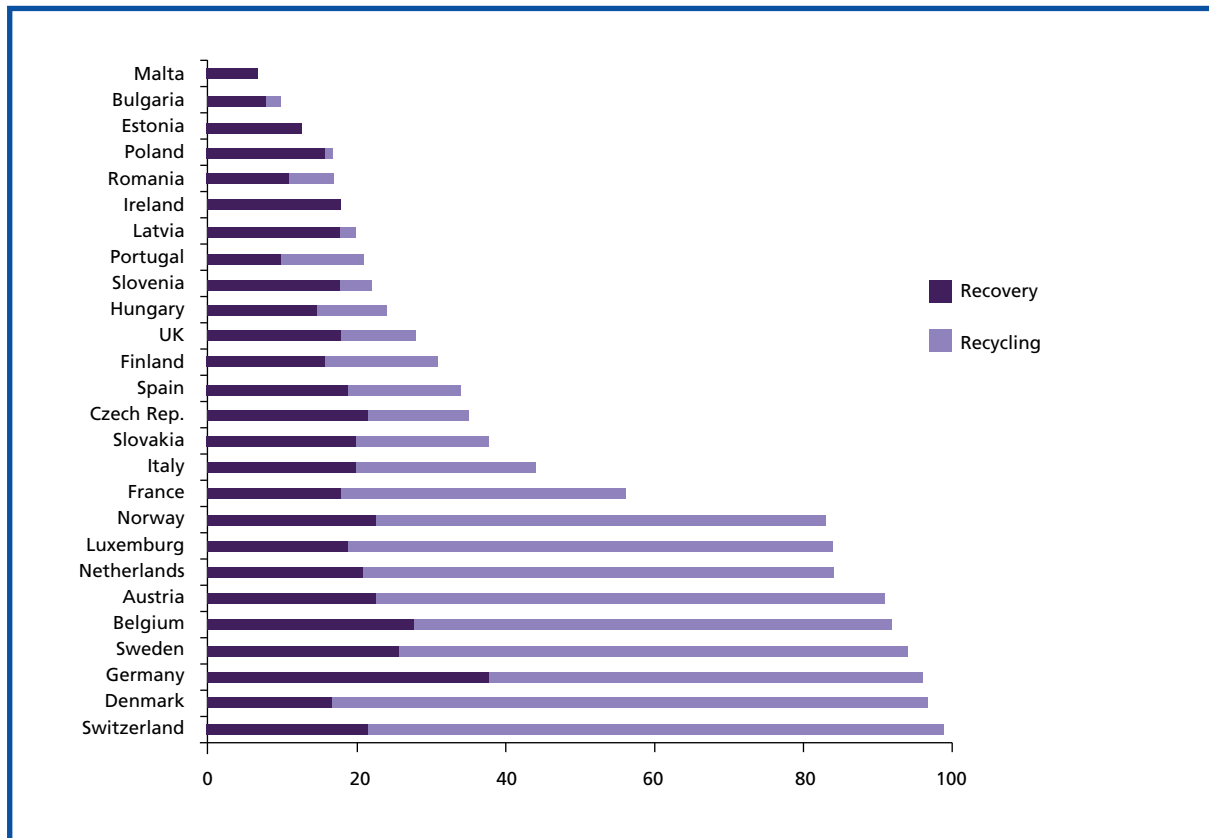


The UK were ranked 16 from 29 based on plastics packaging tonnage recovered in Europe in 2007 although this combined both recycling and energy recovery. While the UK are recovering an estimated 22% of household plastics packaging, there are nine countries achieving above 80% recovery.

When considering the overall plastics packaging recycling rate in isolation (18%), the UK achieve a marginally better rank of 15 from 29, but more importantly no country achieves more than 40% mechanical recycling rates. This is a clear indication that the UK has scope to further develop plastic recycling activity, although it is accepted that the different financial support mechanisms for recycling activity will be a key influence on recycling levels. Individual recycling levels in countries with no deposit system of between 10% and 70% are reported, while those who do have a deposit based recovery system can reach over 90% recycling levels for particular components of the household plastics packaging stream such as PET bottles.



Figure 10 : Recycling And Energy Recovery Rate Per Country In The EU<sup>4</sup>



It is reported that 43% of all used PET bottles were collected for recycling in 2007 from the EU27+NO/CH countries – 1.2 million tonnes. Based on typical UK composition data, the UK contributed an estimated 90,000 tonnes or 7.5% to this total. However this represents less than 30% of UK PET bottles being recovered.

The following three solutions for improving plastic landfill diversion should be applied in order of priority. The primary driver must be the collection of more plastic bottles as they are in high demand both in the UK and from export markets, end markets are already developed, there is a good knowledge base, and lots of experience from 15 years of collection and handling activities. The next stage is then to sustainably develop other plastics packaging recycling opportunities, without disrupting any existing recycling activities.

Currently there are attempts in the UK to reverse the European trend suggesting that high energy recovery rates are directly linked to high recycling rates. Investment and government assistance for both research and site development for 'mixed plastics' recycling is stimulating this opportunity. But EfW still needs to be considered as an alternative to landfill for the unrecyclable component of mixed plastics, with the UK EfW opportunity dependent on a range of factors including strategic and political steer, the siting of the facilities and the conversion efficiencies. Integrated resource management including an element of energy recovery will be inevitable if we are to maximise avoidance of landfilling plastics packaging.

<sup>4</sup>Data extracted from The Compelling Facts About Plastics 2007, published October 2008.





Looking further afield, there are various reported recycling levels for household plastics. The information is provided with references, but the methodology and robustness of the data collection has not been verified by Recoup.



### USA<sup>5</sup>

In 2007 the US generated an estimated 12.7m tonnes of household plastics packaging of which 2.84m tonnes related to PET bottles. The PET bottle collection rate in this year was 816k tonnes (24.6%) which was a 10% increase on 2006 data.

Interestingly, the estimated increase in PET bottle consumption was 5% in 2007 when compared to the previous year, which was attributed to strong sales of bottled water and energy drinks. While 2% is the accepted generic figure for UK packaging arisings, Recoup believe that PET bottle consumption is likely to outperform this average, in line with USA expectations.

The latest HDPE data relates to 2006, with 425,500 tonnes recycled from the 1.6m tonnes estimated arisings – a 26.7% HDPE bottle recycling rate.



### Australia<sup>6</sup>

Approximately 205,000 tonnes of packaging was recycled in 2007 from the 627,000 tonnes arisings – a 32.7% recycling rate. More specifically 123,569 tonnes was attributed to household plastic packaging which represented a 15% increase from 2006.

64% of the collected plastics were recycled in Australia with the remaining plastics exported. It was recognised that the Asian market is the main recipient of exported plastics and more brokerage companies were being set up to facilitate the export activity.



### South America<sup>7</sup>

PET is the dominant bottle type in both the Brazil and Argentina household waste streams. Information from Brazil indicates a recycling level of 53.5% for PET bottles with 231k tonnes recycled from 432k tonnes put into the market.



Overview data from Argentina suggests that 48,000 tonnes of PET bottles were recycled in 2006 from a consumption rate of 177,500 tonnes – a recycling rate of 27% for PET bottles.



### South Africa<sup>8</sup>

In 2008, 1.2 million tonnes of plastic were consumed, of which 700,000 tonnes was for packaging applications. 180,000 tonnes were recovered and used in the manufacture of new products including 30% of the packaging produced being recycled. None of the plastic collected for recycling was exported. Post-consumer PET (mainly bottles) recycled in 2006 was 15,000 tonnes and 43% of local authorities support / offer collection facilities.

However, only Cape Town City currently has a strong municipal post consumer collection project running and it is proving effective. It is hoped that this is the forerunner for all other major and medium sized towns and cities. The smaller municipalities mostly lack any resources or capacity to collect refuse and litter in some areas of South Africa is a significant problem.

<sup>5</sup> PET data taken from 2007 report on post consumer PET container recycling activity' published by NAPCOR and the APR. HDPE data provided by the Container Recycling Institute. All US data converted to metrics for purposes of comparison.

<sup>6</sup> 2008 National Plastics Recycling Survey (Australia), Hyder Consulting Pty Ltd.

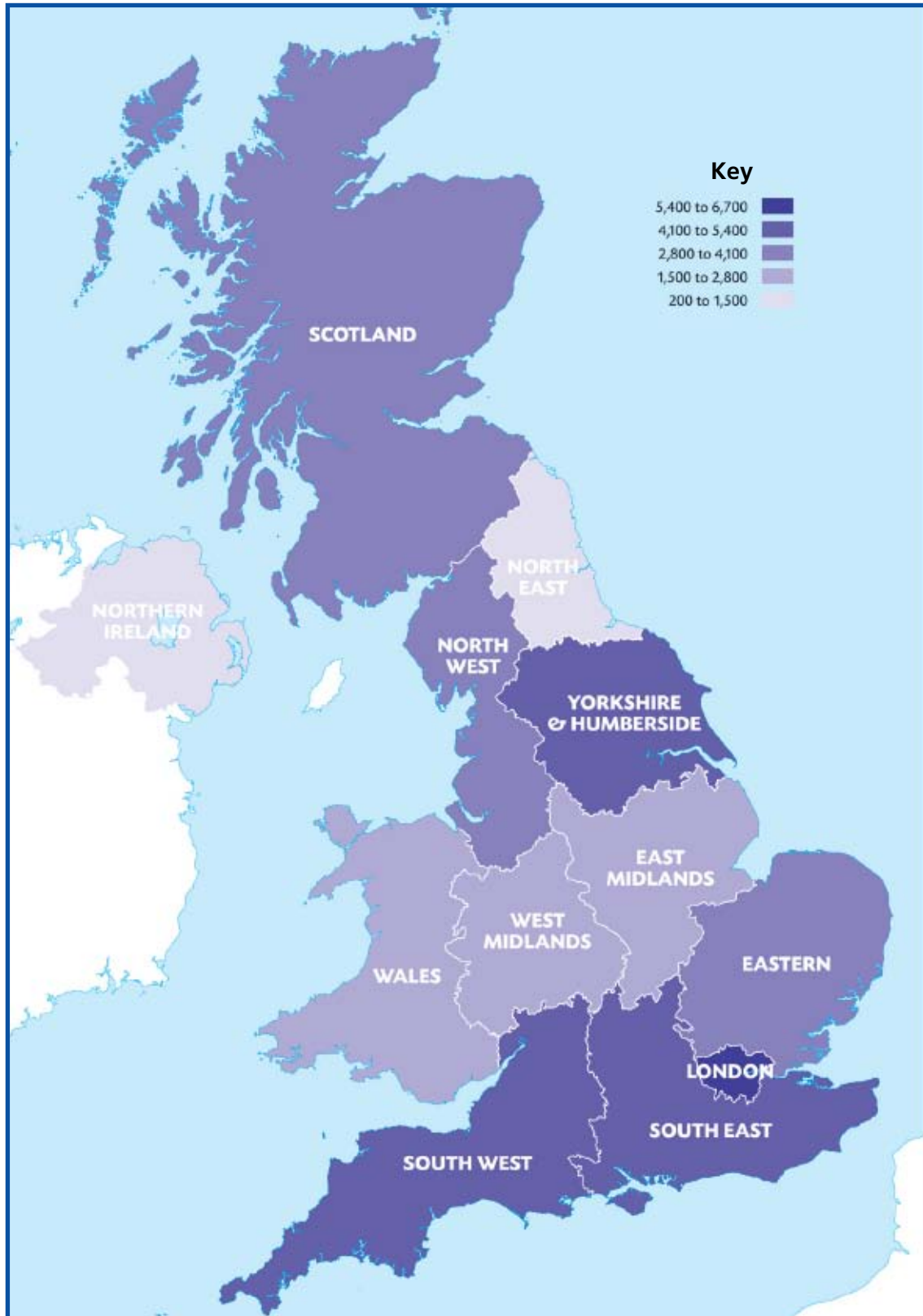
<sup>7</sup> Brazil PET recycling data from ABIPET (Brazilian Association of PET Manufacturers), Argentina PET recycling data from ARPET (Not for profit group formed by PET supply chain organisations)

<sup>8</sup> Information provided by The Soul Foundation, South Africa, and The Plastic Federation of South Africa (Plasfed)

## Plastic Bottle Collections from Bring Sites

This section of the report looks at UK bring collection schemes and includes data on container type, recovery performance and expenditure. There are now 235 separate UK waste collection authority areas with plastic bottle bring sites. The total estimated quantity of bottles collected through the bring sites in 2008 is 38,380 tonnes which represents an increase of 10% from 2007 data. There are 9,087 sites reported in total with 6,403 sites collecting plastic bottles.

Figure 11 : Bring Scheme Plastic Bottles Collected By Region (tonnes)

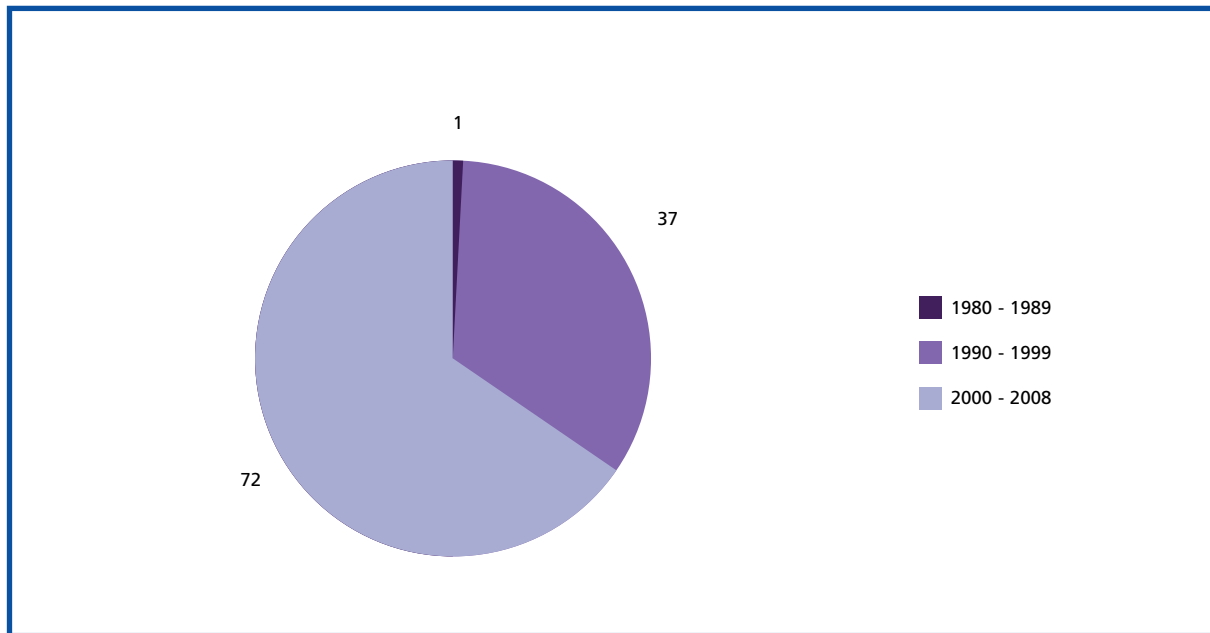




### When Were Plastic Bottle Bring Schemes Introduced

Despite perceptions that bring schemes were the traditional method of bottle collection, 80% of plastic bottle bring schemes were actually introduced after the year 2000. One fifth of all bring schemes running today were set up in 2003. There appears to be no correlation between the year of scheme introduction and the tonnages collected.

**Figure 12 : Number Of Plastic Bottle Bring Schemes Introduced Over Time**



### Container Types Used

Survey respondents indicated the type of plastic bottle bring containers used in their local authority area. Eight main bring container types were specified which are listed below in figure 13. The most common type of unit was the 1100 litre wheel bin followed by the 10 cubic yard bank. This corresponds with previous results, as the lower capacity bins with a smaller footprint become more common.

A further 19% of local authorities stated they use 'other' types of bring container. In reality this represents the increasingly common 1280 litre wheel bins, and also schemes which use more than one type of unit. This is particularly the case with unitary authorities that use skips at larger household waste recycling centres and smaller containers at additional bring sites. Local authorities will use the type and size of unit that most suits their needs and this will be dependent upon the type of site, available collection vehicle and the frequency of use by consumers.

**Figure 13 : Container Types Used By Local Authorities For Bottle Collection**

Type of Container	% LA's	Approximate Capacity (m <sup>3</sup> )
10 cubic yard bank	23	7.65
1100 litre wheel bin	40	1.1
240 litre wheel bin	2	0.24
360 litre wheel bin	2	0.36
Single netcage	2	3.54
Triple netcage	1	10.6
Skip	11	9 - 36
Other	19	



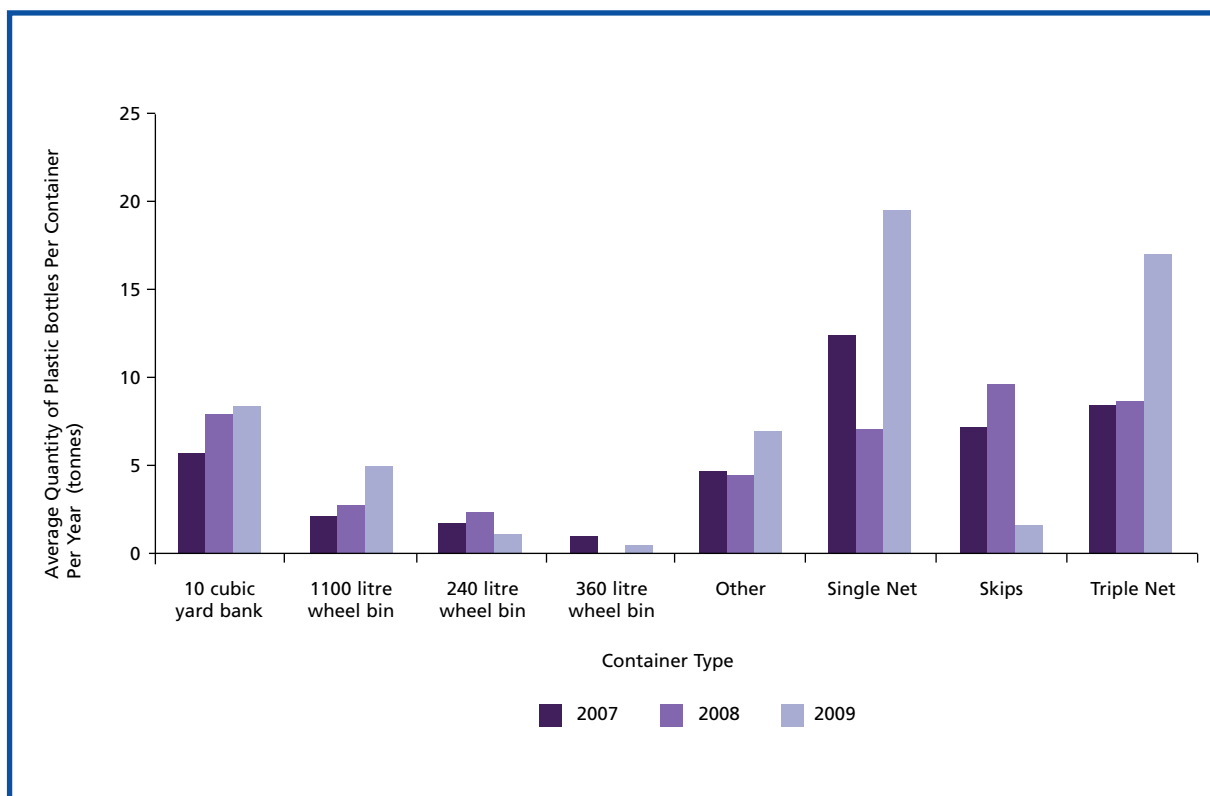
Bring scheme collection containers

Figure 14 shows that the sites using larger capacity container types tend to collect higher quantities of plastic bottles. For example, the net cages recover more plastic bottles per site than wheel bins or banks based on the data provided. While these larger container types should require less frequent servicing, they are not suitable for all bring sites particularly where space is limited. However there are other benefits of using a net cage system such as the removal of the need for a bespoke collection vehicle.

The container recovery tonnage will also be affected by the number of bring sites in a scheme and the ratio of households to sites. A comprehensive network of sites is likely to reduce the performance of individual sites, but recover a higher tonnage overall as it is easier for consumers to access the service.

While skips generally offer a higher capacity, limited datasets were received this year. Therefore the performance data reported in the previous two surveys (7-10 tonnes per site) is likely to be more indicative of skip tonnage recovery levels.

Figure 14 : Bring Scheme Recovery Performance By Container Type (average tonnage per container)



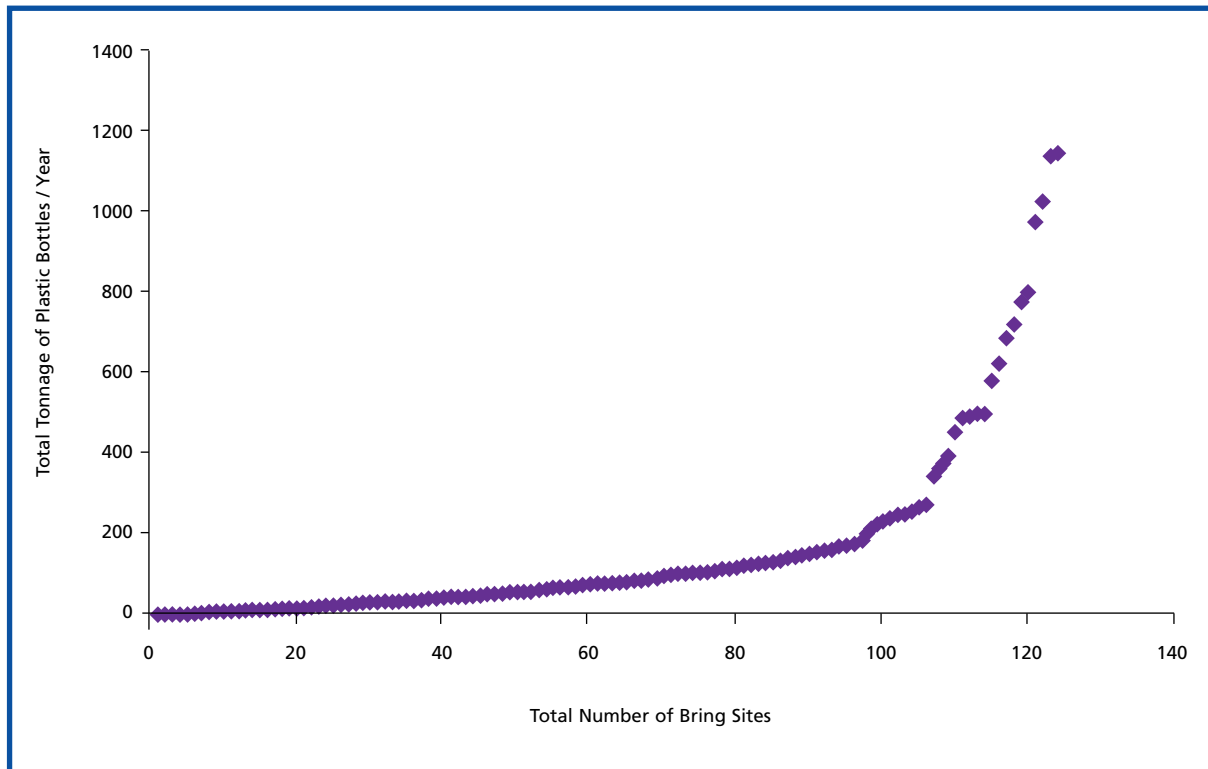


### Bring Scheme Performance

The number of bring sites has been plotted against the average total tonnage of plastic bottles collected by individual bring schemes. This is based on actual reported data for 2008 (120 datasets).

There is a link as expected between the number of sites and tonnage recovered. As a benchmark, a bring scheme will not normally achieve more than 100 tonnes per year with less than 60 sites, and is unlikely to recover more than 200 tonnes per year with less than 100 sites.

**Figure 15 : Bring Scheme Performance Analysis (number of sites vs performance) For Bottles**

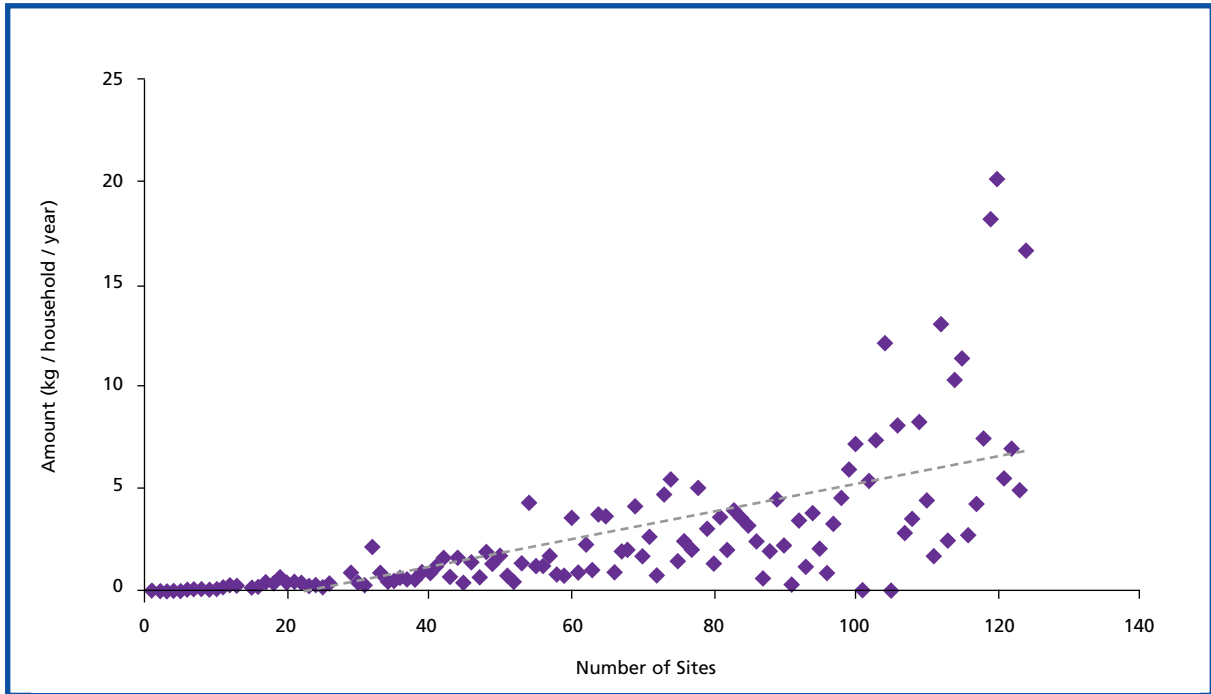


There is a clear relationship between the bring site service provision and the performance of the scheme in terms of kg/hh/year. As the trend line on figure 16 shows, there is a visible increase in performance when more than 20 sites are provided. This is enhanced as the number of sites increases, with an average performance above 5 kg/hh/year for those bring schemes with more than 100 sites.

Strong consumer messages can impact both the quality of material and the capacity of the container. Previous Recoup research has demonstrated that if all bottles are squashed, twice as many bottles can be deposited in the same capacity container. This in turn could noticeably reduce collection frequency required and the associated bring servicing costs.



Figure 16 : Bring Scheme Performance Analysis (no. of sites vs. amount kg/hh/year) For Bottles



### Expenditure

Approximately 40% of local authorities responded when asked to identify the costs associated with their plastic bottle bring schemes. Of those positive responses the largest proportion stated expenditure was less than £10,000 per year (13%) as shown in figure 17. A further 16% indicated that their budget was unknown.

Figure 18 provides the average yearly tonnage recovery against the scheme expenditure. While the data shows that expenditure of more than £40,000 per year on a plastic bottle bring scheme produces the highest average recovery level of 323 tonnes per year, there is no clear link between lower expenditure bands and tonnage recovery. This indicates that smaller bring schemes have other primary factors influencing performance levels.

Figure 17 : Expenditure On Bring Schemes By % Of Local Authority

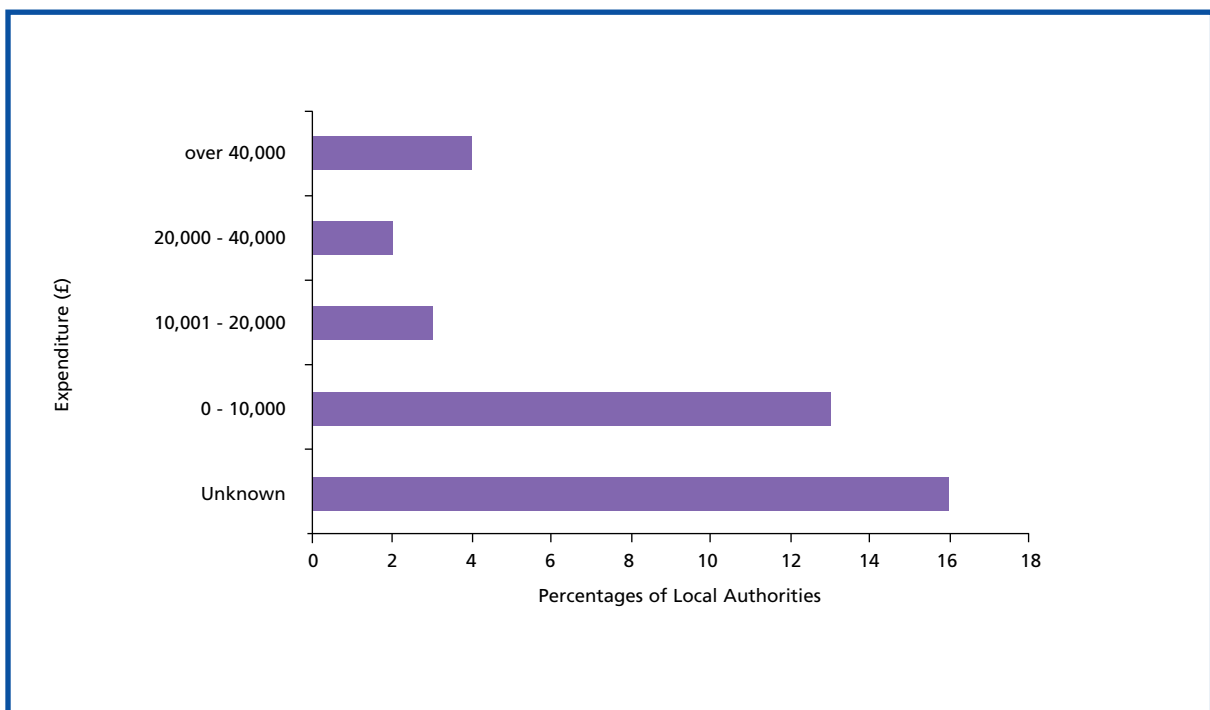




Figure 18 : Expenditure vs Quantities Of Plastic Bottles Collected.

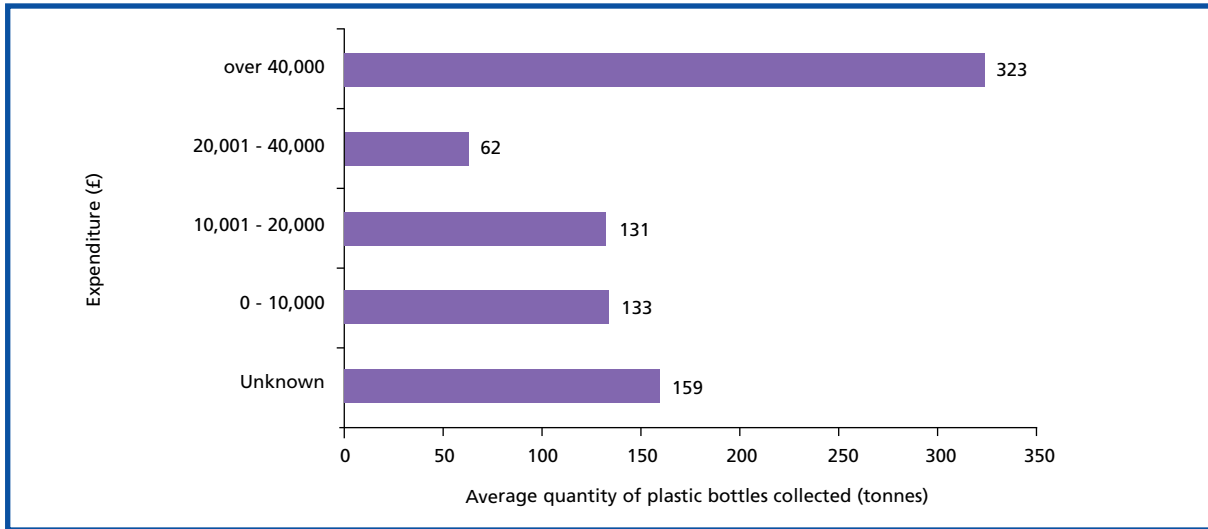


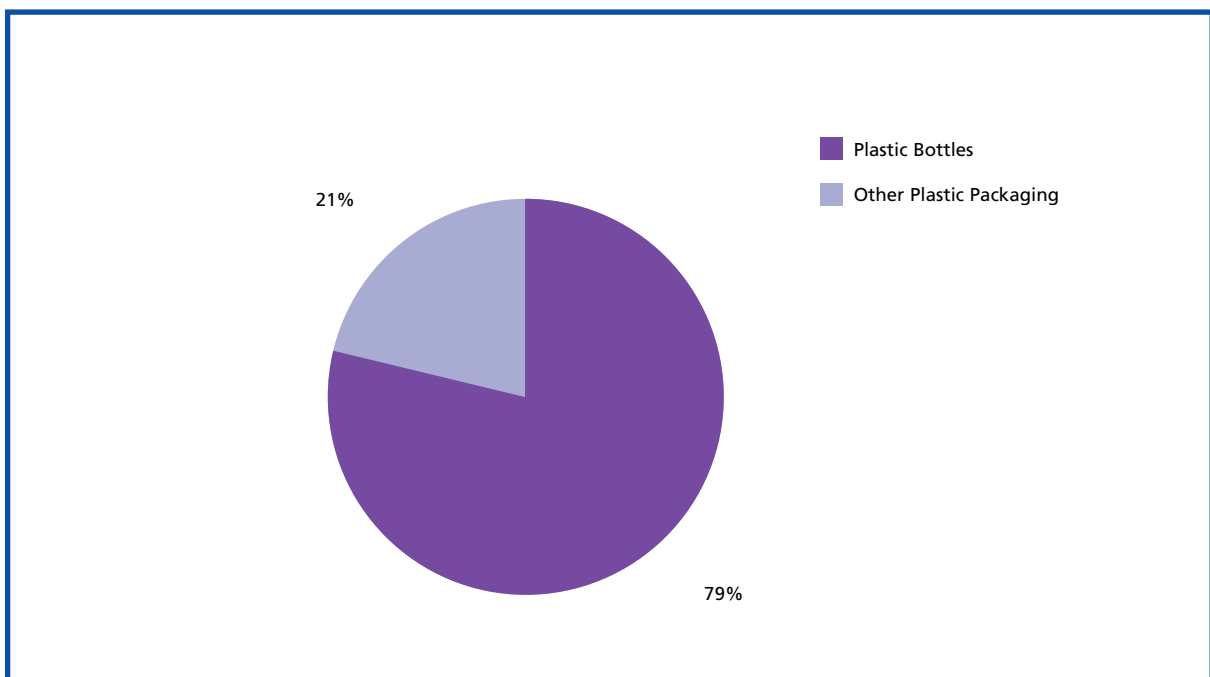
Figure 19 : Expenditure On Bring Schemes And Quantities Collected

Expenditure (£)	Average Tonnage	Number of Datasets
0-10,000	133	39
10,001 - 20,000	131	13
20,001 - 40,000	62	7
Over 40,000	323	11

### Plastic Bottle Collections From Household Waste Recycling Centres

The survey was also issued to Waste Disposal Authorities to capture information on plastic packaging recovered through household waste recycling centres. The data indicated that 5,801 tonnes of plastic packaging was collected from 244 sites across 24 WDA's. Figure 20 shows the split between plastic bottles and 'other' plastic packaging collected.

Figure 20 : Split Between Plastic Bottles And Other Household Packaging Collected At WDA Operated Bring Schemes.





### Recoup's view

Bring schemes still have a vital supporting role in the development of plastic bottle collections. While a number of bring schemes are operated successfully alongside kerbside bottle collections, others are a stand alone service.

With high consumer demand, increasing recycling targets, rising landfill costs, and a developing UK bottle reprocessing capacity, plastic bottles should be integrated into kerbside schemes at the earliest opportunity. The performance of a bring scheme cannot match a kerbside scheme, but it can act as a short term solution until operational or contractual arrangements allow a review of an existing kerbside service. Bring schemes can also provide a supplementary service in the longer term, particularly where the capacity of the kerbside container is limited, or where, due to location, kerbside collections pose major operational difficulties.

Recoup fully appreciate the low absolute costs of a bring scheme although few operate at an expenditure less than £150/tonne due to the high servicing and handling costs when compared to the tonnage recovered.



## Plastic Bottle Collection from Kerbside Schemes

This section of the report presents further analysis into local authority plastic bottle kerbside collection schemes. There are now 321 kerbside schemes including plastic bottles in the UK, representing 18.1 million households collecting 168,966 tonnes of plastic bottles, an increase of 13% from 2007.

Understanding the factors that affect kerbside systems is fundamental if effective practices are to be identified and implemented. This is especially crucial for plastic bottle recycling, with a number of variables influencing a scheme's operational efficiency, plastic recovery performance and cost.

Figure 21a : Kerbside Total Plastic Bottle Tonnage Recovery By County

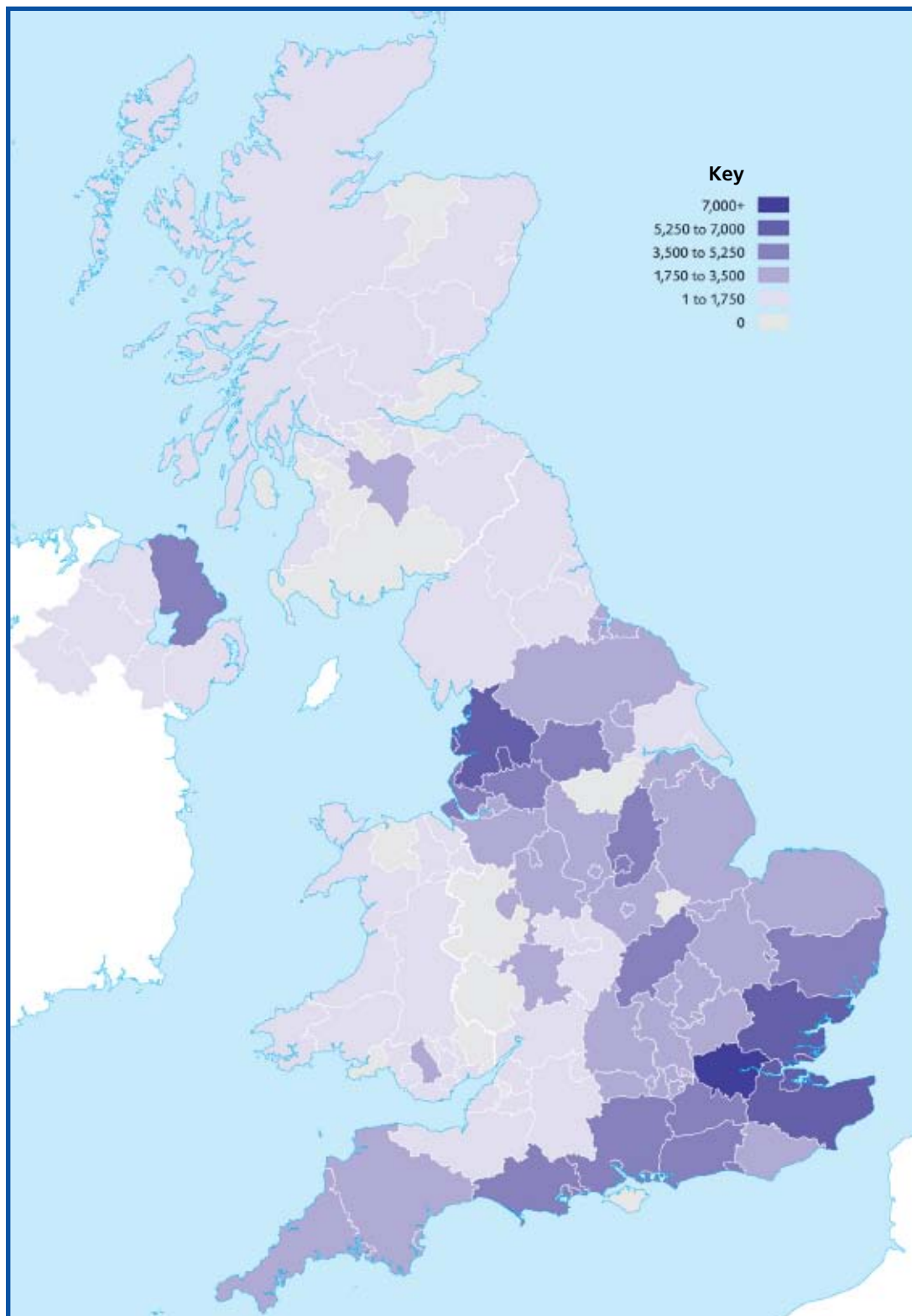
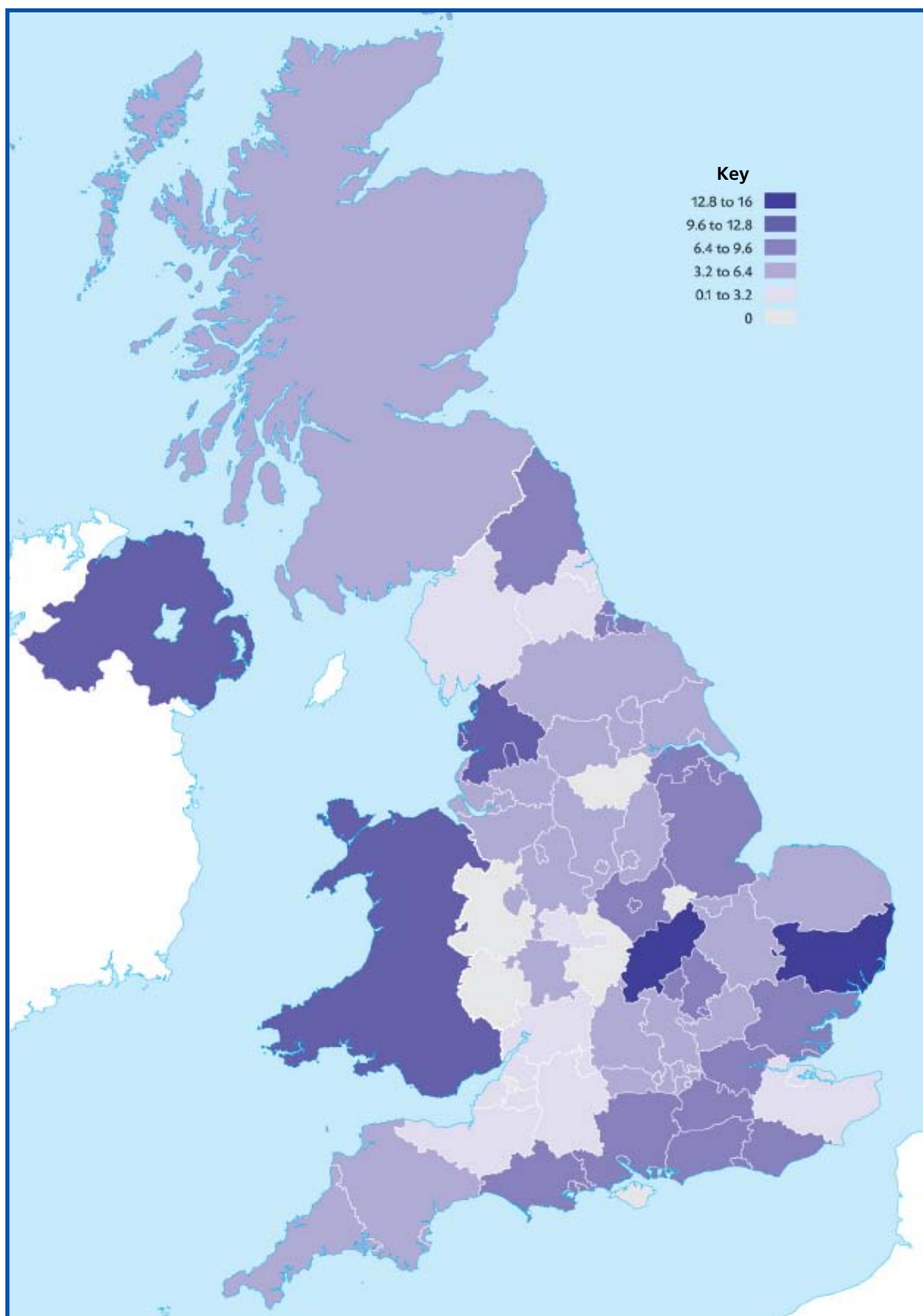




Figure 21b : Kerbside Plastic Bottle Tonnage Recovery By County (average kg/household/year)





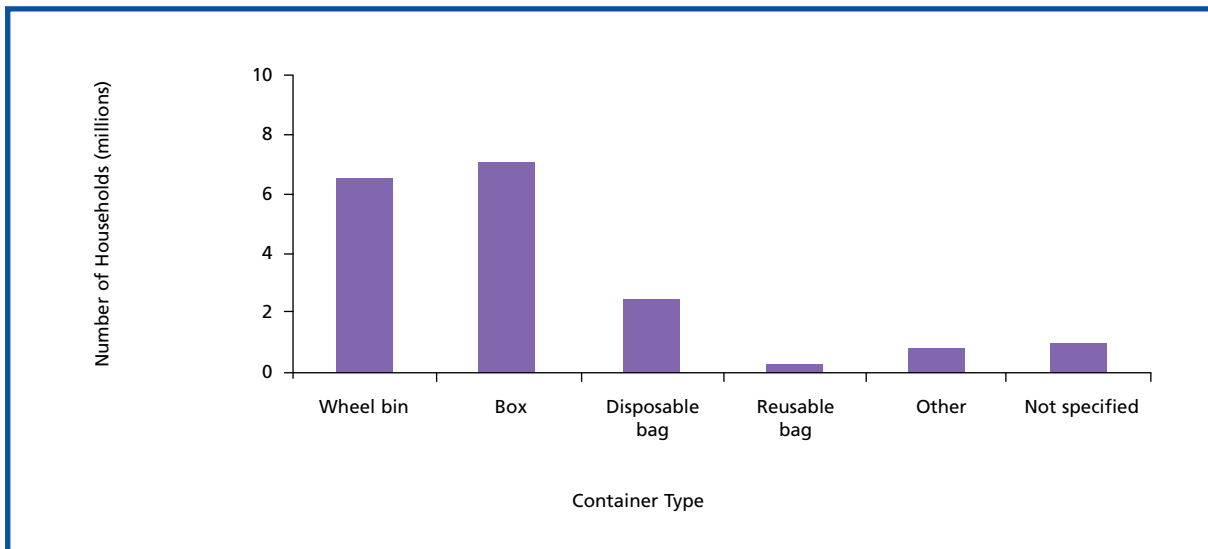
### Container Type

Historically, the most popular container type used for kerbside collections which include plastic bottles has been the box. This has continued with a box provided to 39% of the households in the UK with a bottle kerbside scheme; wheel bins accounted for 36% of the households followed by disposable bags, 13% of the households. Some local authorities are using different systems within their service area requiring different container types. Figure 22 shows the number of households using each type of recyclables collection container.

Boxes typically have a 55 litre capacity whilst wheel bins have either 120 or 240 litre capacity. It is also common practice to have different coloured containers to distinguish between waste, recyclables and organic material. Some also adopt a number of colours for different recycling containers where source separated although colour coding of kerbside containers is not standardised across the UK.

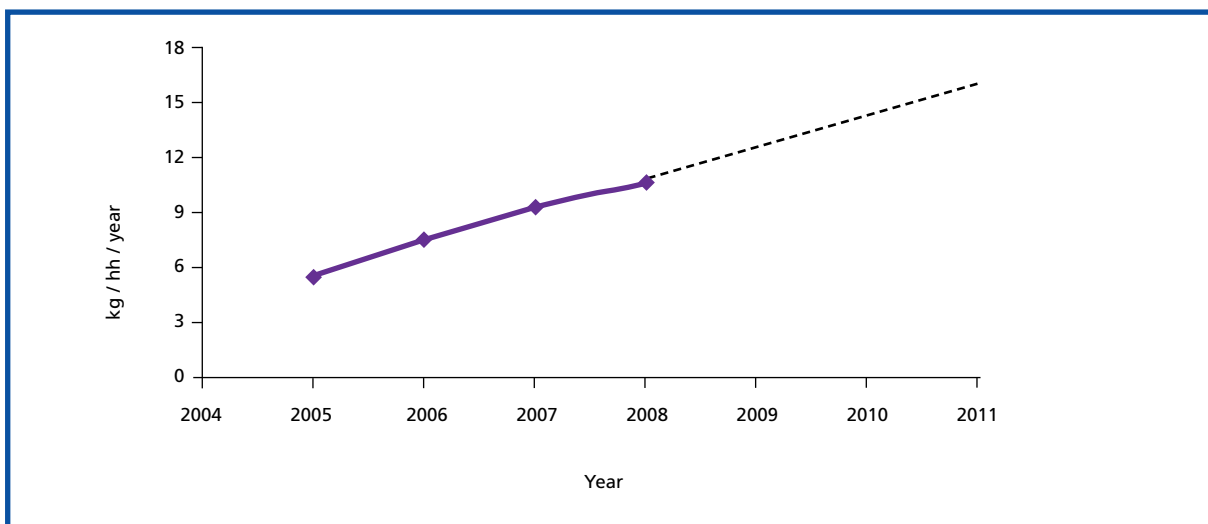
Of the respondents that reported 'other', (14 local authorities) half were using box and bags whilst about a fifth were using a box and wheel bins; one local authority was using a mix of a box, bag and wheel bin.

**Figure 22 : Kerbside Containers Used For Collection Of Recyclables Including Plastic Bottles**



The 2009 survey data also suggests that recovery rates of plastic bottles from kerbside collections in 2008 has improved when compared to the previous years. On average, local authorities collected approximately 10.5 kg of plastic bottles per household per year, an increase of 1.2 kg from 2007. Figure 23 indicates the plastic bottle recovery rates over time.

**Figure 23 : Kerbside Recovery Rates Of Plastic Bottles Per Household From 2005 to 2008 (and estimated growth for 2009 to 2011)**





When considering the weight of plastic bottles collected per household per year (kg/hh/yr), this year's analysis indicated that disposable bags had a marginally higher average performance rate when compared to wheel bins and boxes. The data has been analysed to give a 95% confidence interval and it is presented below<sup>9,10</sup>:

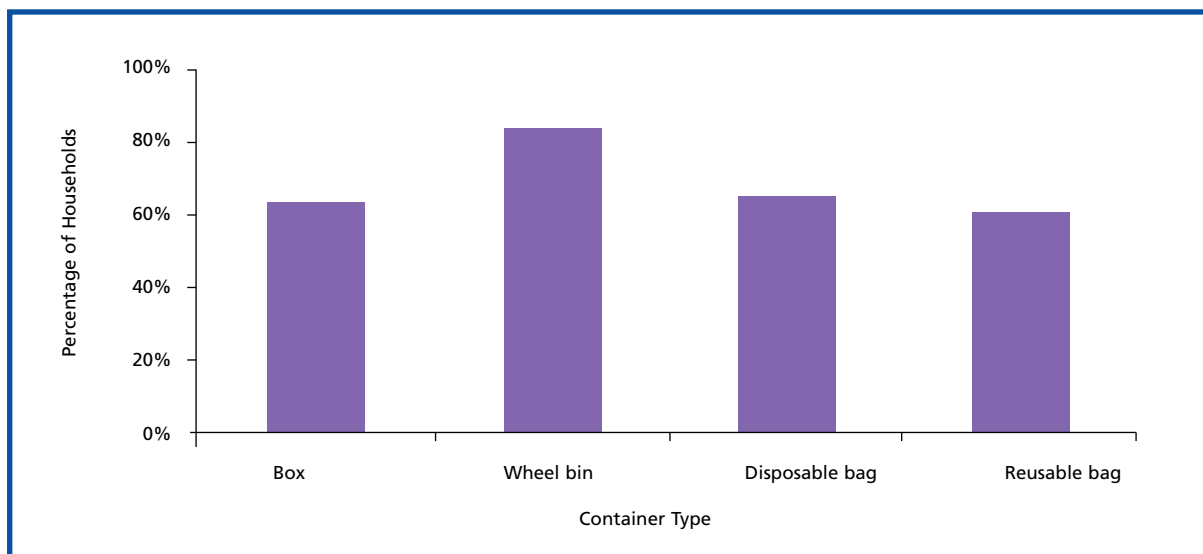
- Bag – 11.8 (+/- 1.7) kg/hh/yr
- Bin – 11.5 (+/- 1.4) kg/hh/yr
- Box – 9.7 (+/- 1.0) kg/hh/yr

This means, for example, that there is a 95% probability that a local authority's kg/hh/year recovery level for a bag kerbside plastic bottle collection will be within +/- 1.7 kg of the 11.8 kg/hh/yr average performance reported. It is observed from this data that container type as a single factor does not significantly influence plastic bottle collection levels. Recovery rates can be influenced by a number of factors such as quantity of other materials collected, scheme promotion and frequency of collection. It is reasonable to expect that the higher capacity of wheel bins and bags can facilitate improved overall recycling rates, compared to single box systems which may limit the quantity of recyclables that an individual household can store.

### Participation Rates

This year's survey also demonstrated that average household participation rates by container type was higher for localities operating wheel bins, with an average 84% participation. Average participation rates were similar for disposable bags (65%), boxes (64%) and reusable bags (61%). Participation rates reported to Recoup always vary widely but whilst scheme participation is not compulsory, factors such as frequency of refuse collection and householder communication can significantly affect scheme participation levels. Figure 24 shows the average kerbside participation rate by container type.

**Figure 24 : Average Kerbside Participation Rate By Container Type**



### Frequency of Recyclables Collection

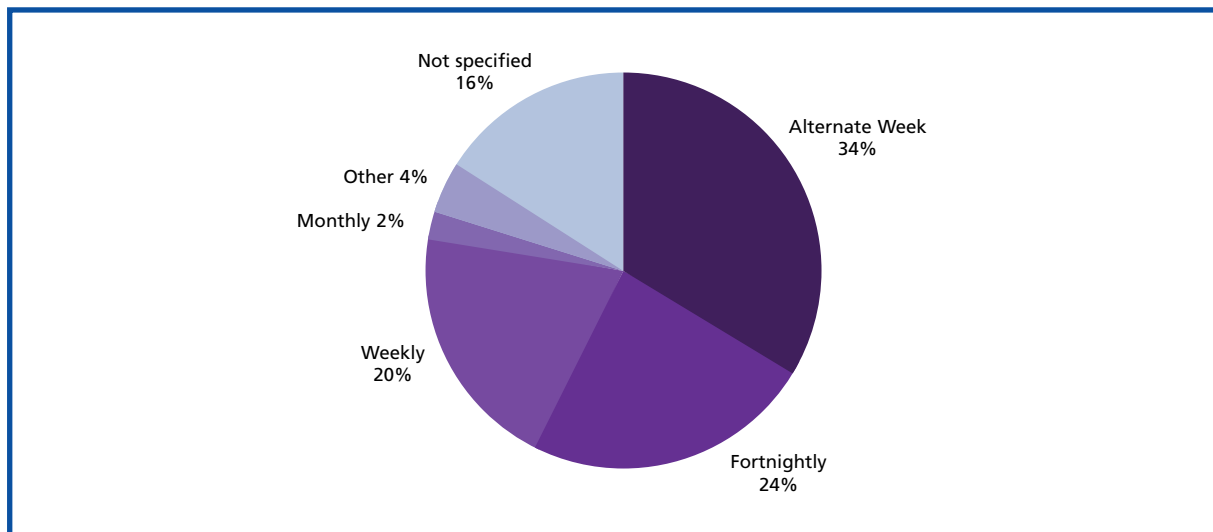
The frequency of recyclables collection is an important aspect of a kerbside scheme. When considering the number of local authorities providing each type of service, the reported data showed alternate weekly collection schemes as the most popular (34%) followed by fortnightly collection (24%) and weekly collection (20%). This is illustrated in figure 25. When considering the number of households receiving each service level, the most popular alternate weekly recyclables collection is provided to 27% of households with a plastic bottle kerbside service. A fortnightly recyclables collection service accounts for a further 26% and a weekly collection is provided to 21% of households.

<sup>9</sup> Reusable bags were not included on this analysis due to the small number of responses using this type of collection system.

<sup>10</sup> Data reported on this analysis was based on actual 2008 responses from local authorities only (Estimated or 2007 data was excluded).



**Figure 25 : Frequency Of Recyclables Collection**



Only 7 local authorities indicated a monthly kerbside collection service with the majority of these supplying wheel bins. Of the respondents that reported “other” service frequencies (13 local authorities), 5 were operating a combination of service frequencies, 2 were operating twice weekly collections, 1 carried out collections every four weeks and the remainder did not specify their collection frequencies. Compaction of the recycled material in the vehicle occurred in 42% of local authorities whilst 36% collected without compacting. This will be closely connected to the scheme type and collection vehicle with more opportunity for compaction of commingled recyclables. Figure 26 below provides an overview of the kerbside service data.

Considering the frequency of kerbside collection by container type and number of households, wheel bins are most frequently collected alternate weekly whilst boxes are fortnightly; bags are most commonly collected weekly. When compared to last year’s data, the pattern is similar; however, the overall number of households provided with boxes decreased whilst wheel bins and bags increased.

**Figure 26 : Frequency Of Kerbside Recyclables Collection, By Container Type And Number Of Households**

Frequency	Container					Total
	Box	Wheelbin	Bag	Other	Not Specified	
Alternate Weekly	1,250,182	3,173,038	285,014	219,250	0	4,927,484
Fortnightly	2,802,982	1,651,402	456,169	187,500	62,000	5,160,053
Weekly	2,448,898	160,676	1,226,007	55,000	0	3,890,581
Monthly	0	764,147	55,000	0	0	819,147
On Request	0	0	0	0	58,551	58,551
Other	427,536	330,000	96,951	141,690	0	996,177
Not Specified	594,498	774,110	288,500	178,350	798,093	2,189,441
Grand Total	7,524,096	6,853,373	2,407,641	781,790	918,644	18,041,434

Regarding the performance by frequency of recyclables collection, this year’s analysis showed alternate weekly and weekly collections have higher average performance rates for the collection of plastic bottles, when compared to fortnightly collection. The data has been analysed to give a 95% confidence interval and it is presented below.<sup>11,12</sup>

- Alternate Weekly – 12.8 (+/- 1.6) kg/hh/yr
- Fortnightly – 8.3 (+/- 1.2) kg/hh/yr
- Weekly – 12.6 (+/- 1.4) kg/hh/yr

<sup>11</sup> Number of datasets: alternate week, 78; fortnightly, 47; weekly, 36; monthly, 3.

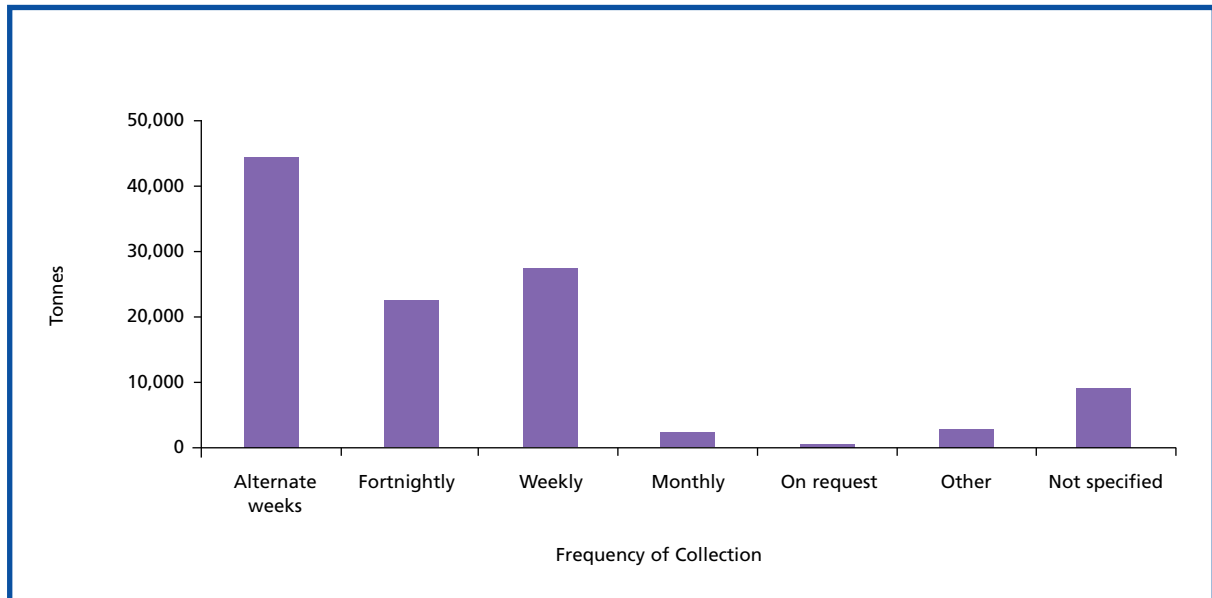
<sup>12</sup> Data reported on this analysis was based on actual responses from local authorities only (estimated or 2007 data was excluded).



This means, for example, that there is a 95% probability that a local authority's average kg/hh/year recovery level for an alternate weekly kerbside service will be within +/- 1.6 kg of the 12.8 kg/hh/yr average performance reported.

When taking into account the total weight of plastic bottles recovered through the different service types, alternate weekly systems collected over 44,000 tonnes, with weekly and fortnightly collections recovering 27,000 and 22,000 tonnes per year respectively. This is shown in figure 27 below.

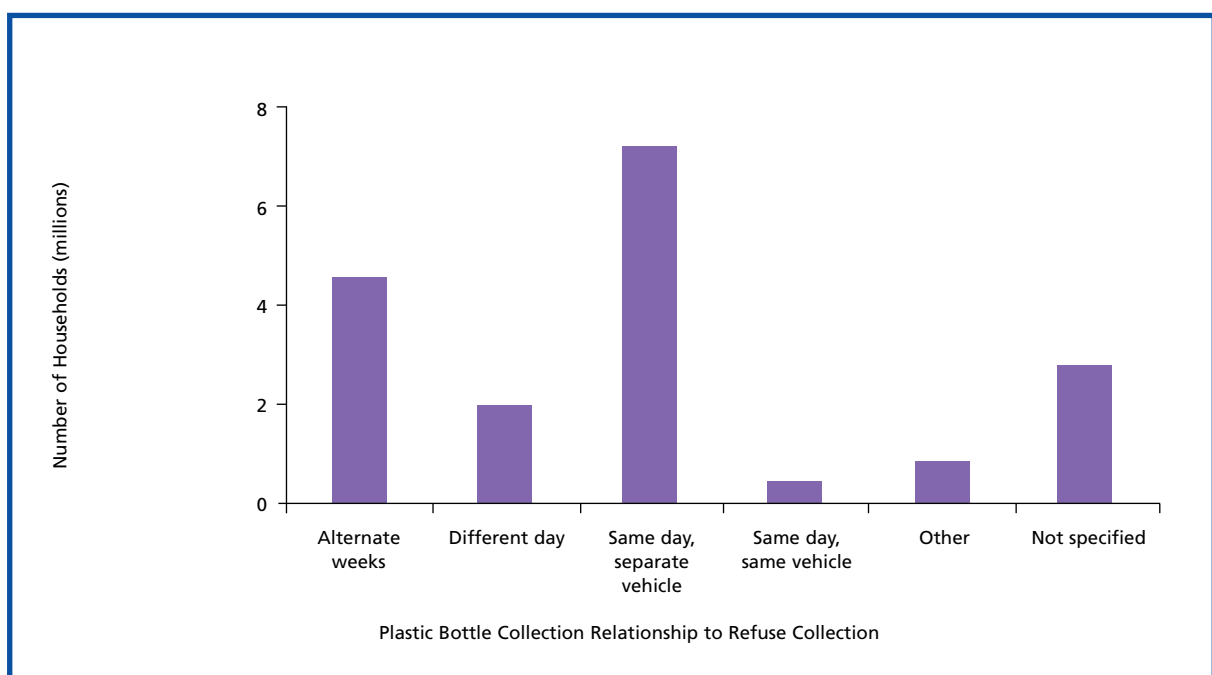
**Figure 27 : Refuse Collection Frequency For Local Authorities With Kerbside Plastic Bottle Recycling Service**



### Recyclables and Residual Container Collection Relationships

The preferred choice with regard to kerbside recycling collection in relation to refuse collection was a same day service using a separate vehicle, accounting for a third of local authorities (7.2 million households). Alternate weekly collection was the second most popular option followed by different days (30% and 11% of the local authorities, respectively).

**Figure 28 : Kerbside Collection Scheme Frequencies, By Number Of Households Covered**





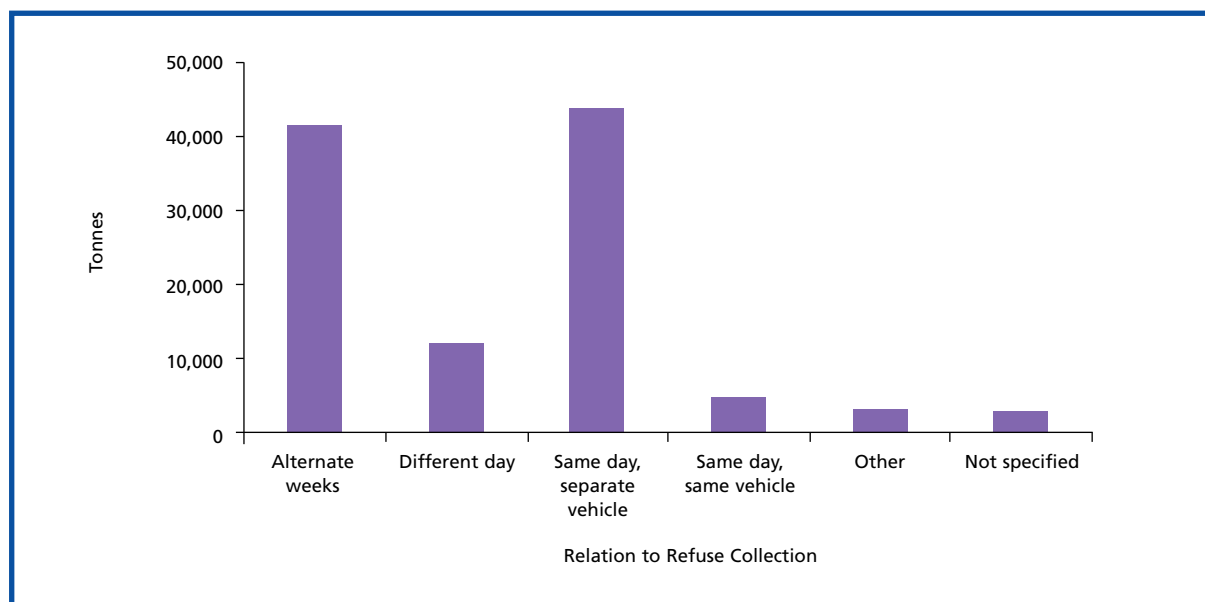
When considering the kerbside performance by relationship with refuse collection, alternate weekly collections appeared to have the highest average performance level, with just over 12 kg/hh/yr. The average reported performance of same day collections with a separate vehicle was just over 10 kg/hh/yr. In 2007 alternate weekly collections were also the best performers with just over 11 kg/hh/yr<sup>13</sup>.

- Alternate Weekly: 12.3 (+/- 1.4) kg/hh/yr
- Different Day: 8.7 (+/- 1.7) kg/hh/yr
- Same Day, Separate Vehicle: 10.3 (+/- 1.1) kg/hh/yr

When reviewing the relationship between recyclables and refuse collections, the data shows for example, that there is a 95% probability that a local authority's average kg/hh/year recovery level for an alternate weekly kerbside service will be within +/- 1.4 kg of the 12.3 kg/hh/yr average performance reported.

When considering the total weight of plastic collected against the refuse collection service, same day collections with separate vehicle accounted for just under 44,000 tonnes, followed by alternate weekly with 42,000 tonnes; different day accounted for just over 12,000 tonnes.

**Figure 29 : Recyclables Collection Relationship To Refuse Collection**



*Kerbside Wheel Bin*



*Kerbside Box*

<sup>13</sup> Data reported on this analysis was based on actual responses from local authorities.



### Recoup's view

It is very encouraging that a considerable increase on local authorities providing kerbside plastic bottle collection has been reported this year. Overall plastic bottle collection levels are now close to 40%. Although it sounds impressive, over 60% of all plastic bottles consumed in the UK are still being sent to landfill. It is imperative that local authorities increase kerbside bottle recycling infrastructure where possible as the primary method of increasing plastic bottle collections. Continuing and developing communications to encourage householders to use the recycling services provided will also be key.

Regarding the method of collection, the data in this section of the report shows that kerbside schemes can achieve good bottle recovery performance levels irrespective of the method of collection. Recoup do not advocate one collection type over another, as there is clear evidence to show that all approaches can achieve suitable quality levels if the handling and sorting facilities are correctly configured and operated. It is acknowledged that mechanisms such as reducing refuse collection frequency is likely to encourage higher scheme participation.

Different designs of kerbside collection system are being used by local authorities within the UK to collect recyclables which usually includes paper, cans and plastic bottles. The most common option is kerbside sorting followed by single stream commingled and twin stream commingled.

- kerbside sorting – material sorted by material type at kerbside into a vehicle with different compartments;
- single stream commingled – materials collected in a single compartment vehicle and sorted at the material reclamation facility (MRF);
- twin stream commingled – households sort materials in two different categories, usually fibres (paper/cardboard), and containers (plastic/cans) that are collected by a vehicle with different compartments.<sup>14</sup>

According to the report *Kerbside Recycling: Indicative Costs and Performance*<sup>15</sup> (WRAP, 2008), around 44% of kerbside collection were sorting the material at the kerbside whilst 35% operated single stream commingled collections and 11% operated two stream partially commingled collections (the remaining could not be classified within these categories).

The guidance *Choosing the Right Recycling Collection System*<sup>16</sup> (WRAP, 2009), demonstrated that there is no agreement regarding which option is the best as specific characteristics of each locality has to be taken into consideration. It says that some attributes should be considered such as cost efficiency, cost effectiveness, quality of the material and public acceptability. Health and safety issues should also be considered<sup>17,18</sup>. The guidance suggested that kerbside sorting systems offer reliable quality material and lower net costs; on the other hand, two stream commingled have advantages over single stream.

Additional research was launched by the Campaign for Real Recycling, producing the *Dry Recycling Collection Hierarchy*<sup>19</sup> (2009) that analysed the most sustainable and cost effective method of collecting recyclables in which kerbside source separation was considered the most preferable followed by triple stream and twin stream collection.

<sup>14</sup> A small fraction of kerbside schemes are introducing glass as part of a twin stream or commingled collection.

<sup>15</sup> [http://www.wrap.org.uk/downloads/Kerbside\\_collection\\_report\\_160608.8ac033b6.5504.pdf](http://www.wrap.org.uk/downloads/Kerbside_collection_report_160608.8ac033b6.5504.pdf)

<sup>16</sup> [http://www.wrap.org.uk/downloads/Choosing\\_the\\_right\\_recycling\\_collection\\_system.99f6c7c5.7179.pdf](http://www.wrap.org.uk/downloads/Choosing_the_right_recycling_collection_system.99f6c7c5.7179.pdf)

<sup>17</sup> *Manual Handling in Kerbside Collection and Sorting of Recyclables, 2006* - [http://www.hse.gov.uk/research/hsl\\_pdf/2006/hsl0625.pdf](http://www.hse.gov.uk/research/hsl_pdf/2006/hsl0625.pdf)

<sup>18</sup> *Safe Waste and Recycling Collection Services, 2009* - <http://www.hse.gov.uk/pubns/waste23.pdf>

<sup>19</sup> [http://www.realrecycling.org.uk/resources/Recycling\\_collection\\_hierarchy.pdf](http://www.realrecycling.org.uk/resources/Recycling_collection_hierarchy.pdf)



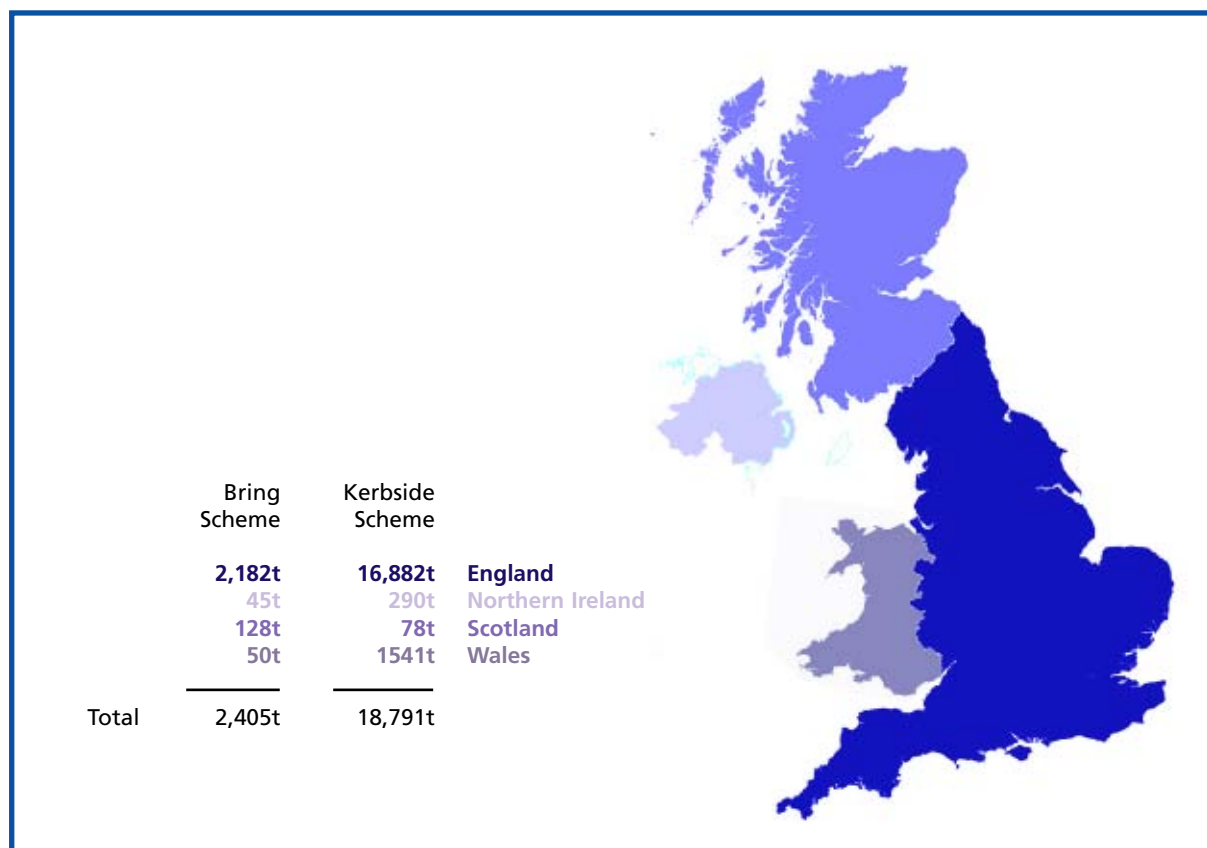
## Non Bottle Household Plastic Collections

From the survey data collected, a total of 49 local authorities indicated that they are now actively collecting non bottle plastic packaging for recycling through their kerbside service, in addition to the collection of plastic bottles. This fraction includes all plastics packaging such as pots, tubs, trays and films found in household waste. Previous year's surveys have shown the number of authorities collecting 'other' plastics packaging to be higher than this year's total. Additional time has been taken by Recoup to clarify different interpretations of mixed plastics packaging, and identify the difference between an active collection of mixed plastic packaging, compared to a passive collection within a material stream still defined as bottles only. Recoup assume that the non bottle plastics collected within these passive schemes will generally be a contaminant within bottles and is therefore not counted.

In addition to the 49 kerbside schemes, 35 local authorities also indicated that they are collecting 'other plastics packaging' through their bring schemes.

Household non bottle plastics packaging takes many different forms and as a result, it is very difficult for local authorities to communicate the message effectively to householders. As a result, those authorities who are collecting other plastics will generally accept all formats of plastic packaging as this alleviates the need for complex consumer messages. However this approach does not match up with Recoup guidance on recyclable plastics packaging<sup>20</sup>. This is based on only collecting the items which can be handled and reprocessed in a commercially operating facility. The most common forms of other plastics are pots, tubs, trays, packaging films and other plastic wrappings which are used to package food. Figure 30 shows the breakdown of non bottle plastic packaging collections by scheme type and country, and figure 32 indicates the split of plastic types by format, scheme type and number of local authorities.

**Figure 30 : Breakdown Of Non Bottle Household Plastic Packaging Collection Tonnage By Country (tonnes)**

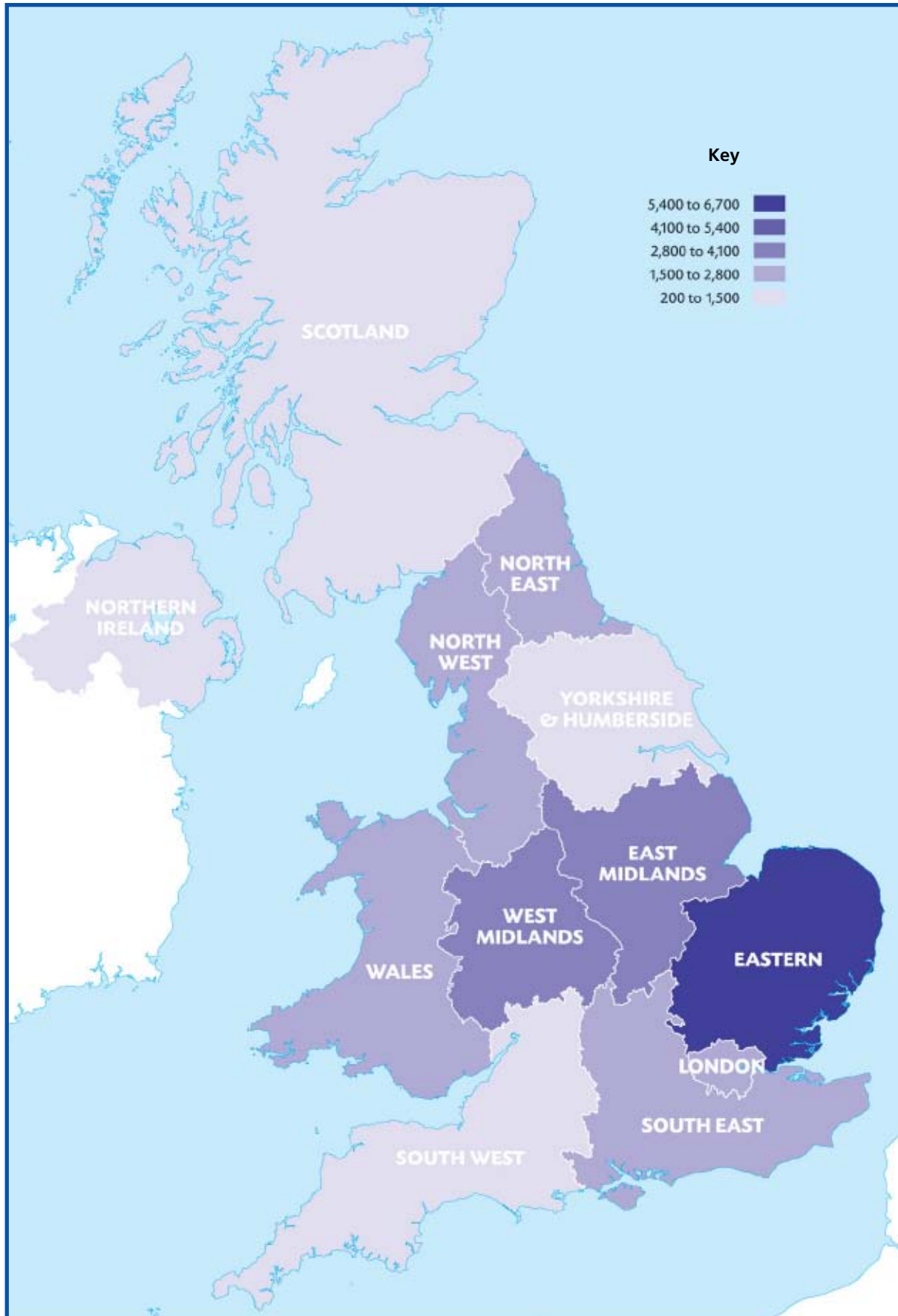


Since the previous report, the overall collection rate percentages for each type of plastic packaging has increased. The total material collected represents a 109% increase on last year's data. This can be attributed to not only an increase in the number of bring sites that are now operational, but perhaps more significantly, the total number of households that now benefit from an extended plastics collection scheme. There are now almost 4 million householders who are able to recycle a wider range of plastics through their kerbside collection schemes.

<sup>20</sup> Domestic mixed plastics packaging recycling guide <http://www.recoupservicesltd.com/assets/20090311122511.pdf>



Figure 31 : Non Bottle Plastics Packaging Collected By Region (tonnes)





The increase in local authorities collecting non bottle plastics packaging suggests infrastructure developments which enable the authorities to collect these material types. With recycling of plastics becoming an increasingly significant issue for householders, and bespoke sorting facilities coming online that can handle a wider mix of plastics packaging, local authorities are now looking where possible to extend their recycling schemes to recover a wider range of plastics. Figure 32 shows the comparisons between this year's collected information and that of the previous year's report.

**Figure 32 : Comparison Between 2007 And 2008 Data For Non Bottle Plastics Packaging Collections**

	Carrier Bags		Packaging Films		Pots, Tubs & Trays		Dense Plastics	
	2008 Data %	2007 Data %	2008 Data %	2007 Data %	2008 Data %	2007 Data %	2008 Data %	2007 Data %
Other plastics collections								
Bring schemes	6%	7%	5%	3%	10%	5%	4%	2%
Kerbside schemes	9%	6%	6%	2%	19%	7%	2%	1%
Total schemes	15%	13%	11%	5%	29%	12%	6%	3%

Of the 49 schemes which are actively collecting non bottle plastics through kerbside, 46 of these are directly compacting the materials within rear loading collection vehicles (RCV). The plastic bottles would form part of this compaction process and not be segregated from the other plastics.

When asked to outline how well the collection schemes for non bottle plastic packaging were running, responses were received from 65 authorities as outlined in Figure 33.

**Figure 33 : How Well Is Non Bottle Plastic Collection Running**

How well is your collection scheme for 'other' plastics currently running?	Number and % of Authority Respondents
Running smoothly	45 (69%)
Minor problems	13 (20%)
Major problems	1 (2%)
Other	6 (9%)

When compared to the 2008 report, the responses received were almost identical. The overriding majority of recycling officers indicated that their scheme was running smoothly and without difficulty. Only 1 scheme was identified as having major problems and this was the same scheme as indicated in the 2008 report.

Having identified how well the collection schemes were running, the local authorities were asked to categorise any difficulties with the service. The responses received were broken down into the sections in Figure 34.

**Figure 34 : Difficulties With Non Bottle Collection Services**

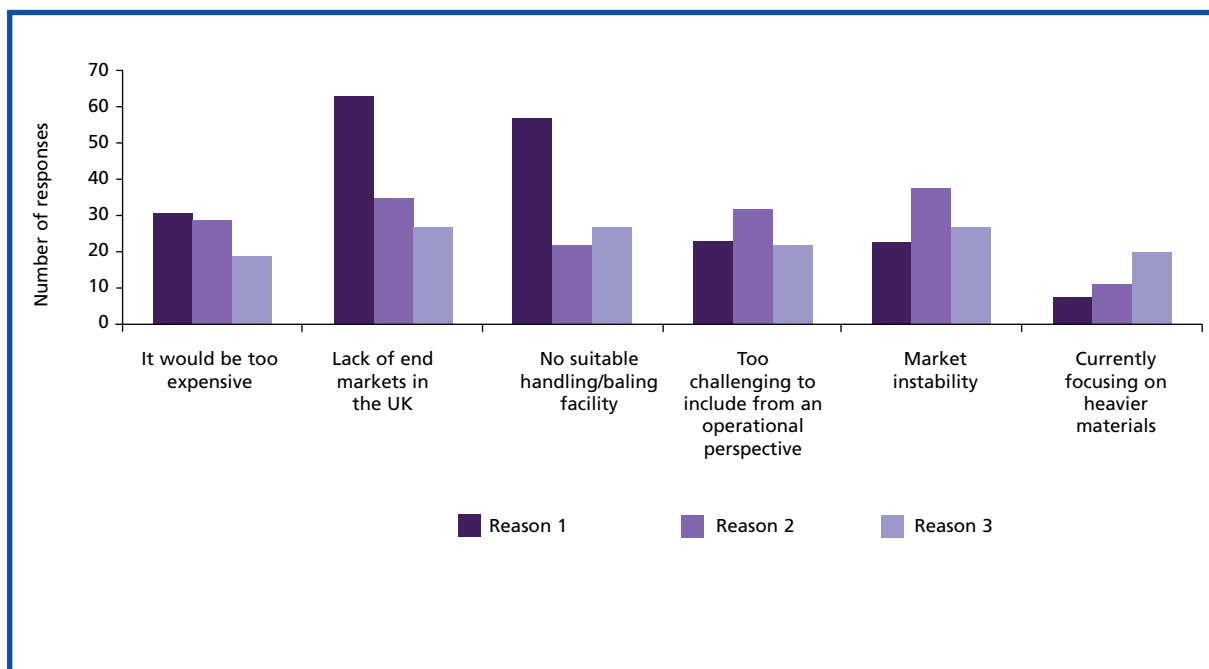
Difficulties with the collection scheme for 'other' household plastic packaging	Number and % of Authority Respondents
Material quality	15 (23%)
Finding an end market for material	6 (9%)
Market reliability	9 (14%)
Operational aspects	21 (32%)
Scheme too expensive	7 (11%)
Other	7(11%)



Of those WDA's who responded to the survey, only three indicated that they are actively collecting non bottle plastic packaging. Whilst 1,505 tonnes is reported to be 'other plastics packaging' from household waste recycling centres, there is a very strong likelihood that a proportion of this figure will actually be plastic bottles and also non packaging plastics such as garden furniture, paint containers and plant pots.

Finally, those local authorities not collecting mixed packaging were asked for the reasons why they have currently not implemented such a scheme. A number of key reasons were offered to the recycling officers as part of the survey. These were then ranked in order of priority. Figure 35 charts the information received and the number of responses which were received against each attributable reason. The two most common issues related to the lack of end markets and no suitable handling facility.

**Figure 35 : Factors Preventing A Collection Scheme For Non Bottle Household Plastics**



### Recoup's View

Mixed plastics have seen a steady increase in the number of collection schemes, and a much quicker rise in attention from across the supply chain, fuelled by consumer focus, media coverage and reprocessor concerns. Recoup have released some basic mixed plastics recycling guidance to provide a starting point from which to develop. But there are a number of concerns linked to mixed plastics recycling including possible impact on system costs, the use of on pack labelling, material quality and end markets, and work is continuing to remove some of the perceived and very real barriers that sustainable and effective mixed plastics recycling currently presents. Questions are being asked as to whether the merits of continuing to push towards recycling mixed plastics may be outweighed by the need for greater bottle collection and higher quality collected materials.

The market for plastic bottles is quality / price sensitive and from that perspective, we would be keen to see bottle quality improved and maintained. Other plastics should only be collected for recycling where there are clear commercial sorting and recycling opportunities, and minimal risk of contaminating other collected and sorted materials.

A growing number of local authorities are starting to collect plastic bottles in town centres and other areas of high public footfall. This is to try and expand the opportunity for consumers to recycle even when they are outside of the home, to capture and recycle plastics that are discarded at these locations.

A total of 2,920 tonnes of plastic bottles were collected from recycle 'on the go' schemes in 35 local authority areas. These schemes were identified as collecting either plastic bottles or mixed bottles and cans. It has been widely recognised that the public are increasingly seeking the opportunity to recycle post consumer packaging whilst 'on the go'. Local Authorities for many years have operated bring schemes for collection but these public sites are not always accessible to consumers when 'on the go'.

In 2007, DEFRA launched a consultation for recycling 'on the go'. This did not propose any amendments to legislation and sought to encourage the voluntary take up of public-place collection schemes. Comments were invited on proposals for a Voluntary Code of Practice and a Good Practice Guide for organisations looking to provide public use recycle bins. Shortly after the results were published, DEFRA formally released these documents, which can now be obtained from the DEFRA website<sup>21</sup>.

There are a number of methods by which a particular location can introduce such a recycling scheme. Traditionally the consumer has been able to responsibly dispose of waste using regular waste bins. Expanding this approach by the provision of recycling containers can then build upon the recycling messages already given to consumers for their household waste. However, some locations are very keen to offer some form of incentive to the public for engaging with their recycling scheme. In these circumstances the traditional collection method has been replaced by an automated collection unit, otherwise known as reverse vending.

Aside from local authority led initiatives, a number of well known product manufacturers and retailers have developed and funded recycle 'on the go' projects to explore the opportunity and provide their consumers with an additional recycling option. Recoup have been involved in a number of these initiatives and more information on this subject can be obtained from the Recoup team.



High Street Recycling



Events Recycling

### Recoup's view

Recoup are supportive of local authorities introducing 'on the go' opportunities. These schemes will compliment the existing bring and kerbside collection infrastructure and recover more plastic bottles for recycling. With the very strong and almost immediately recognisable Recyclenow brand, consumers are now much more aware than ever before about the benefits of recycling. Both traditional collection methods using visible recycling units and Reverse Vending technology have their place and role to play in helping achieve greater behavioural change and increases in recyclate material being collected. Re-emphasising key messages and educating people on the benefits of recycling is an integral part of maintaining and increasing collection levels.

The DEFRA consultation document targeting 'on the go' recycling has clearly had a significant impact. Local authorities along with other industry representatives are now embracing this concept. Until recently the opportunity for recycling away from home has been limited but the collected tonnages which these new schemes are generating are proof enough that where a recycle 'on the go' scheme has been installed, the overall participation levels will progressively be worth the effort. With increasing landfill tax costs the ongoing operational costs for recycling 'on the go' schemes can be nominal or even cost neutral when compared to a simple refuse collection system. We are optimistic that the growth in plastic bottle tonnage recovered from 'on the go' recycling will grow over the forthcoming years. Many other recycle 'on the go' initiatives such as Recycle Zone ([www.recycle-zone.co.uk](http://www.recycle-zone.co.uk)) have not been captured as part of this local authority survey.

<sup>21</sup> <http://www.defra.gov.uk/environment/waste/strategy/factsheets/bins.htm>

Trade recyclables collections are becoming more common. Usually as a paid service delivered by the local authority or a third party, this allows trade recyclables which are similar to household recyclables such as paper, cans and plastics to be recovered.

This years survey results confirmed that:

- Trade recycling services (bring or collection) had increased from 121 schemes to 148 on the previous year
- Residual trade waste services (bring or collection) had risen from 230 to 236 schemes
- Trade recycling schemes where 2-4 material types were being collected had increased from 71 to 85

It is clear from these increases that local authorities are now steadily extending their provision for trade waste schemes and where a collection scheme is not offered, a suitable recycle 'on the go', or bring facility may be installed.

The BREW centre for Local Authorities (Business Resource Efficiency and Waste) conduct an annual survey of all the English local authorities with the purpose of monitoring the provision of a trade waste collection and recycling service<sup>22</sup>.

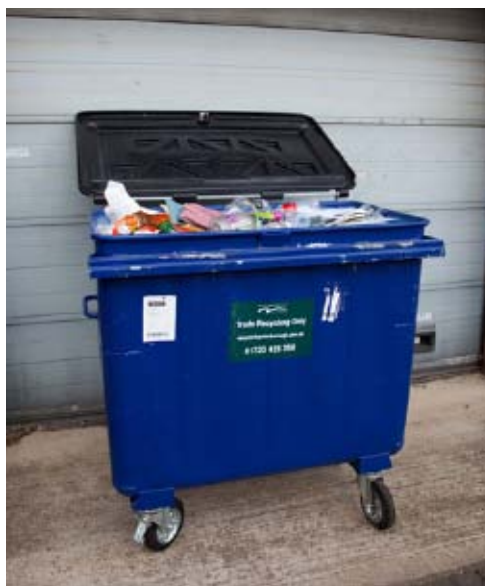
This indicated that of all the English local authorities:

- 60% offer a residual trade waste service
- 81% of these services are operated directly by the local authority and not a private contractor
- 20 local authorities are providing a bring scheme site where trade recycling is included
- 51% of local authorities are now offering waste reduction advice to businesses when approached and requested to do so

Through the research of trade waste recycling schemes, good practice examples can be provided to local authorities which could encourage them to consider adopting such a scheme.

With almost a 20% increase in the number of schemes now offering the collection of 2-4 material types, this can be nothing less than highly encouraging. With best practice now being adopted by new local authorities setting up schemes, we would anticipate that next year's growth would be very similar to what has been experienced last year.

**Figure 36 : Recoup Trade Recycling Bin Supplied By Peterborough City Council**



<sup>22</sup> Full BREW report at <http://www.lga.gov.uk/lga/aio/1822191>

### Plastic Bottles

The majority of plastics collected for recycling from the household waste streams are plastic bottles. While there are a number of polymer types, most bottles are made from either PET or HDPE material.

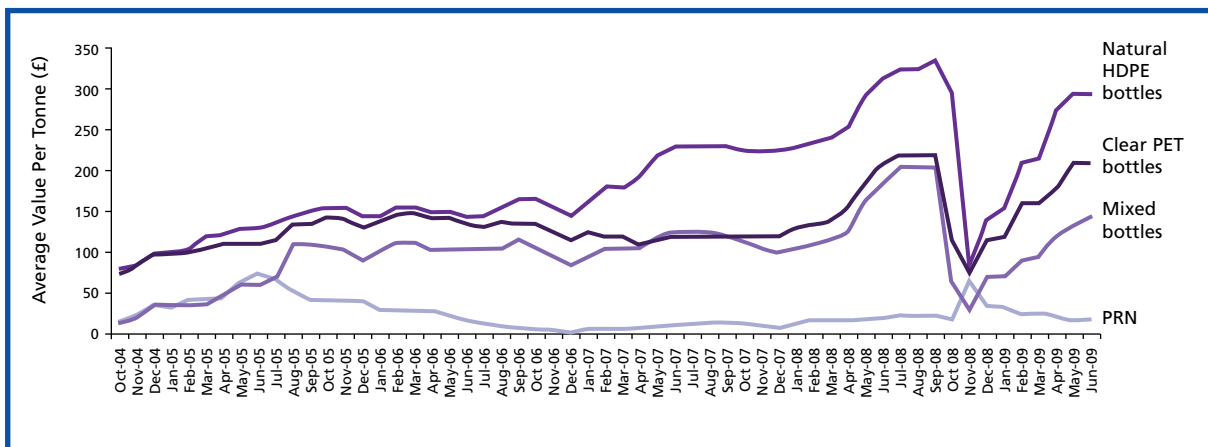
There is a wide variation of bottle composition data which is subject to a number of variables such as location, collection scheme type, season, and how the scheme is communicated to householders. But as a general guide, mixed plastic bottles will consist of 1/3 Clear PET, 1/3 Natural HDPE and 1/3 coloured bottles (PET and HDPE). When sold to market the baled material should contain no more than 5% contamination, although much higher levels of contamination are reported from some local authorities and plastic reprocessors.

Of 120 responses, 63 local authorities use spot markets and a further 57 have a contract for plastic sales. The plastic bottle prices graph in figure 37 shows reported bottle values for the past five years. From 200 responses, 144 local authorities identified that they sell mixed plastic bottles and 56 sell polymer sorted bottles to end markets.

The average value per tonne for all bottle fractions has risen over time, although the two year period between January 2007 and the present has been more volatile, resulting in a market crash during Autumn 2008. While the prices have quickly corrected in the first half of 2009, future market price trends are less predictable. Additional factors such as the growing UK reprocessing infrastructure mean that the impact of another export market crash is unclear, particularly if more UK plastic reprocessors can accept the material quality being presented both direct from schemes and after MRF sorting.

It is widely reported and acknowledged that the cost of oil as a raw material, production costs, virgin polymer prices and market demand will all influence the value of household waste plastic collected for recycling.

**Figure 37 : Reported Values Of Key Plastic Bottle Grades Since 2004**



It is estimated that 75% of the UK collected bottles are exported but the survey data does not support this. Of 184 survey responses, 35 identified that their plastic bottles were sold to export markets, but a further 149 (81%) stated that they sold bottles to a UK market.

We believe that this contradiction can be easily explained. There are a number of facilities in the UK that either re-bale or complete some initial sorting on the bottle material before selling the baled material to export markets.



A number of reprocessors have expressed concerns to Recoup regarding increasing levels of contamination within the bottle material, the main cause being other non bottle plastics. To assess this issue, figure 38 looks at the difference between the lower and upper reported values offered for each bottle fraction over time<sup>23</sup>. The trend shows less than £30 range in 2004 has increased to more than £40 in 2009, and this differential is even greater for mixed bottles where ranges have increased to above £80 on average, see figure 39. This is almost certainly a result of the increasing levels of contamination that can be found particularly in mixed bottles from some collection schemes, and the various grading systems adopted by reprocessors to try and manage this through tiered pricing. The markets and opportunities for household non bottle plastics packaging recycling is less well defined, and the topic of much research and debate. Since the markets are still in development there are no definitive price ranges for mixed plastics, although they do impact on bottle values prices as discussed above.

Figure 38 : Trendline Of Value Range Across Polymer Types

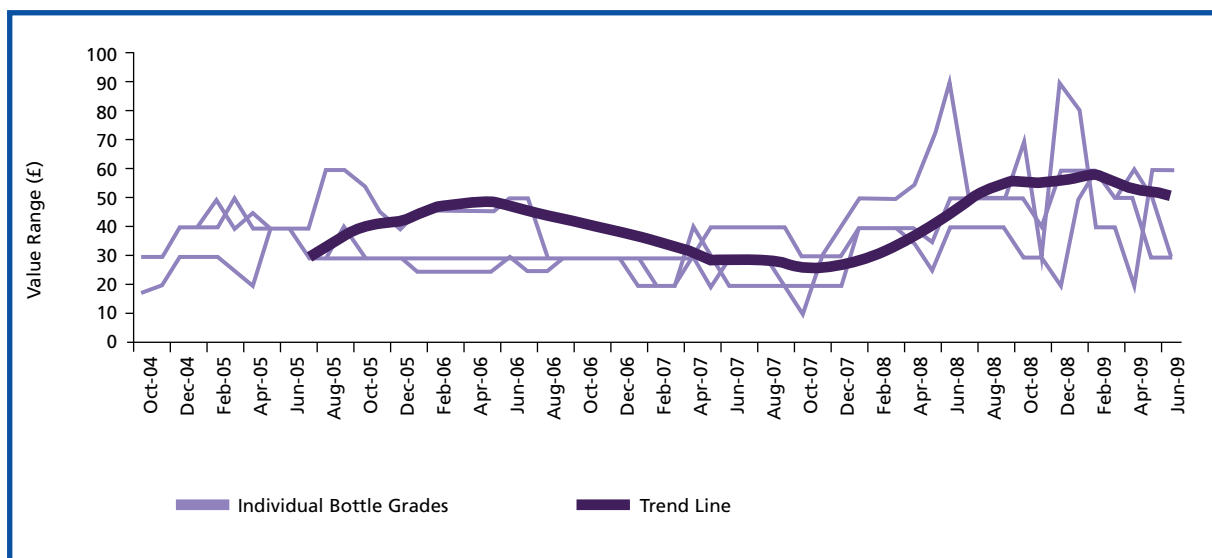
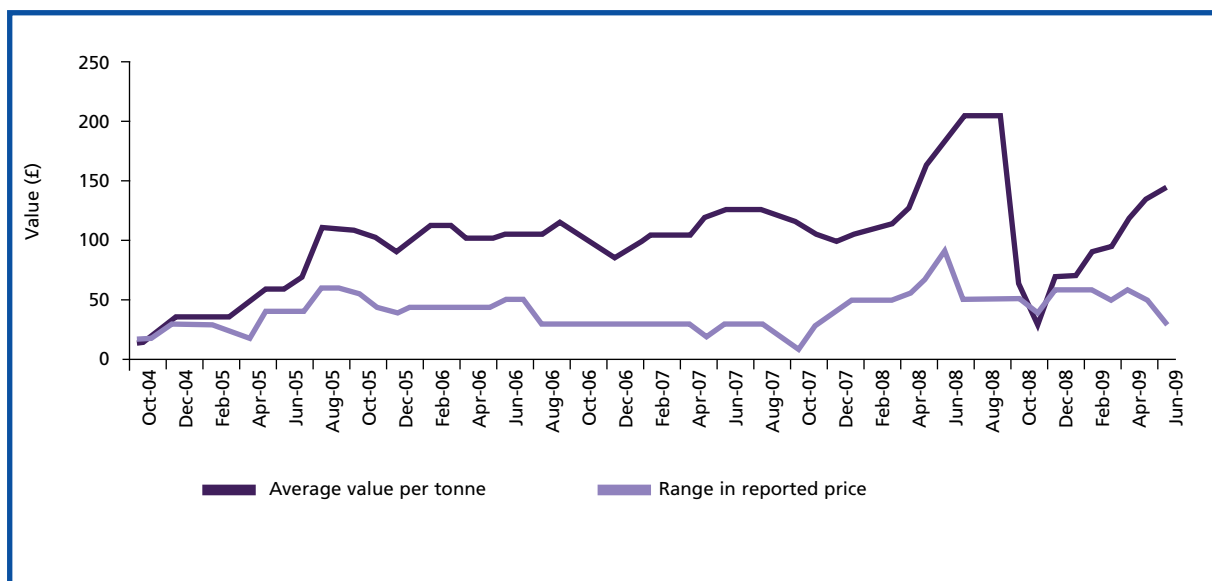


Figure 39 : Trendline Of Average Price Per Tonne Against Report Price For Mixed Plastics Bottles



<sup>23</sup> As reported by letsrecycle.com

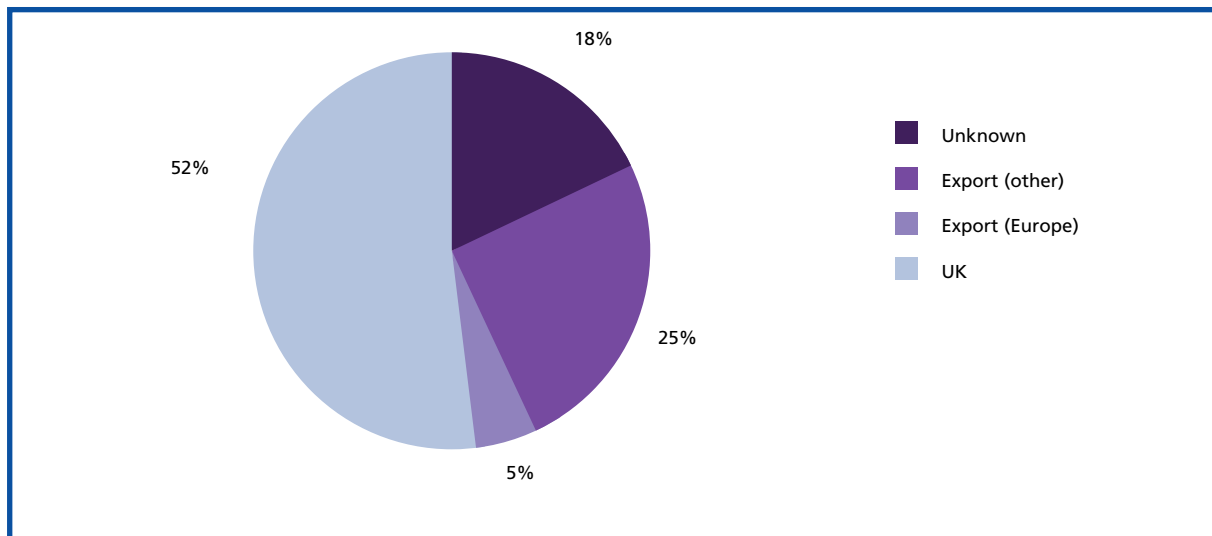




## Non Bottle Plastics Packaging

Last year's data suggested that almost 75% of recycling officers reported that they did not know what happened to the 'other' plastics once it had been sold. Figure 40 shows that more were able to report this year on the end market for the non bottle plastics. 52% of respondents indicated that their material was recycled in the UK, and 30% stated that the non bottle plastics were exported for recycling. Whilst some of this material could be incinerated or used for mixed plastic applications in the UK, it is felt that the export rate for this material is under reported.

Figure 40 : Primary Markets For Other Household Plastics Packaging



### Recoup's View

Recoup view the export market as a necessary part of growing the critical mass of bottles collected for recycling and this has led to increased confidence for investment in the new UK reprocessing facilities. However it can be argued that export markets have also led to an overall reduction in material quality, and continued reliance on the export market at the current rate provides the UK with less control of market prices, understanding of pricing fluctuations and ability to audit end markets.

The existing UK plastic bottle reprocessors also require feedstock. The majority of these sites will only process one polymer type and are more sensitive to contamination than export markets. Some have installed automatic sorting equipment to allow them to accept mixed plastic bottles. A number of recent and planned end market developments in the UK for both PET and HDPE bottles, including possible food grade applications, will also drive up demand to recover more plastic bottles and sell to local markets.

The packaging recovery note (PRN) value for plastic bottles has generally declined from mid 2005 onwards as a result of the UK meeting its packaging obligations. Unless measures are introduced to increase or split the packaging target, it is unlikely that the PRN value will rise above £25 / tonne<sup>24</sup>.

There is growing demand for other plastic packaging to be recycled, but this should only be considered where end markets can be audited and the collection and handling activity does not have a negative affect on existing materials recycling activities. That said, the levels of mixed plastics already present in bottle fractions suggests that the UK must find sustainable solutions for mixed plastics as a matter of urgency.

<sup>24</sup> PRN availability will be affected if the end markets are restricted. This statement does not account for end of year corrections where prices may become artificially inflated, or where export markets close for a significant length of time.

In addition to the existing and planned plastic collection schemes, there are a number of waste treatment and processing technologies being investigated by local authorities.

Survey respondents were asked to indicate any new waste management systems being considered or implemented in their area. While these developments will be driven by the need for landfill avoidance and pre-treatment of waste, they may also provide the opportunity to divert more plastics away from landfill.

### New Technologies

Of the 380 Waste Collection Authorities who actively responded to this year's survey, 155 stated that they are planning to introduce some form of new technology to handle waste over the next 10 years.

The primary new technologies being investigated or implemented included:

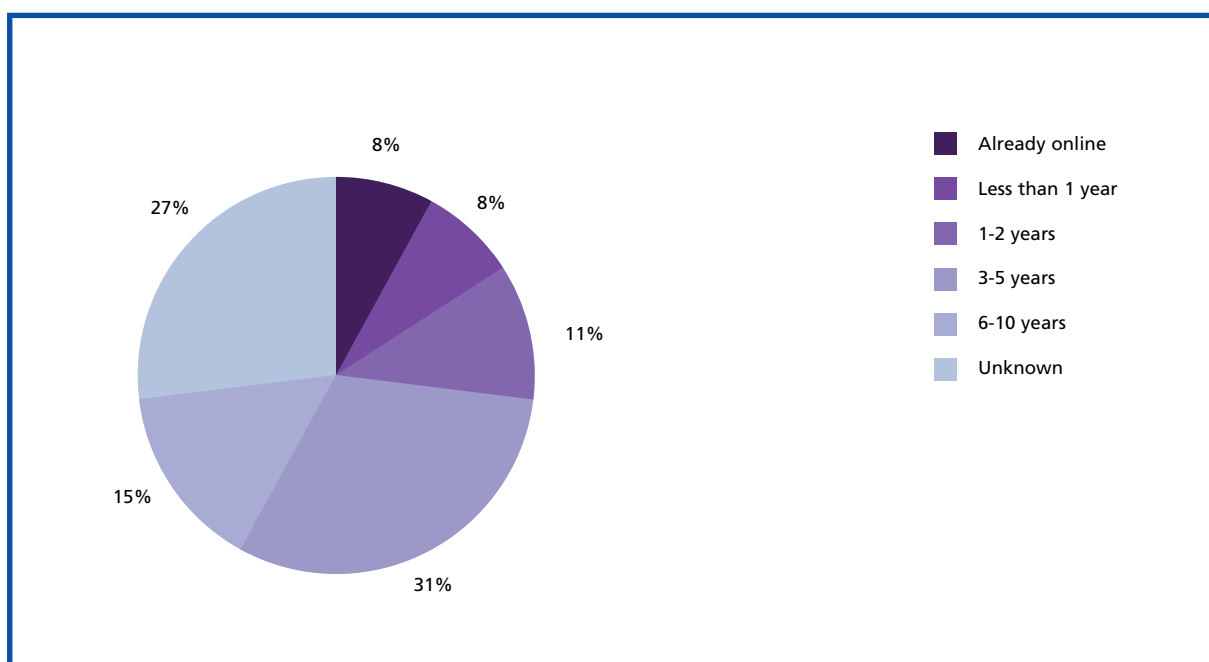
- Energy from Waste plants (EfW)
- Mechanical Biological Treatment plants (MBT)
- Gasification plants

Whilst the current economic climate is having wide reaching effects on industry, it is clear that the options which have been planned some time ago to change the ways in which household waste is handled are still very much at the forefront of local authority thinking. Figure 41 shows the timescale indicated by the local authorities for the planned implementation.

The graph shows that 27% of the planned implementations are either already online or will be commissioned within the next 2 years. A further 31% are planned for implementation within the next 3 - 5 years. The 27% of authorities who were unable to commit to a timescale had done so as they are continuing to investigate which technology would be the most appropriate.

The majority of the 155 local authorities who are intending to implement new technologies also indicated that whilst the plans are in development to introduce new methods of waste handling, very few of these plans will impact upon the existing collection schemes for recovering plastics packaging.

**Figure 41 : Breakdown Of When The New Technologies (EfW, MBT and Gasification) Are Intended To Be Operational**





## Other Plastics Collection Schemes

In addition to the provision for collecting plastic bottles and other plastics packaging through kerbside and bring schemes, many local authorities have started to implement or consider implementing further schemes to increase the amount of plastics recycled within their respective areas.

As part of this year's survey, local authorities were canvassed as to which initiatives they were looking to introduce and over what time period. Figure 42 shows the 3 main schemes which the local authorities are either already implementing or would be looking to implement over the coming years. As highlighted within section 7 of this report, local authorities are now launching more on the go schemes within their areas, thereby providing consumers with the opportunity to recycle their plastic packaging irrespective of where they are.

Figure 42 indicates that the primary focus is on developing recycling schemes in both 'on the go' environments and schools. The key drivers behind these schemes are not only the tonnage of recyclable waste which is generated, but also the desire of those who populate these locations to engage with a recycling scheme. Household recycling systems are an accepted part of everyday life, so these developments are simply extending the recycling opportunity. These systems are developed using well established collection and handling methods, so tend to focus on plastic bottles, paper and cans.

Figure 42 - Timescales For Implementing New Schemes

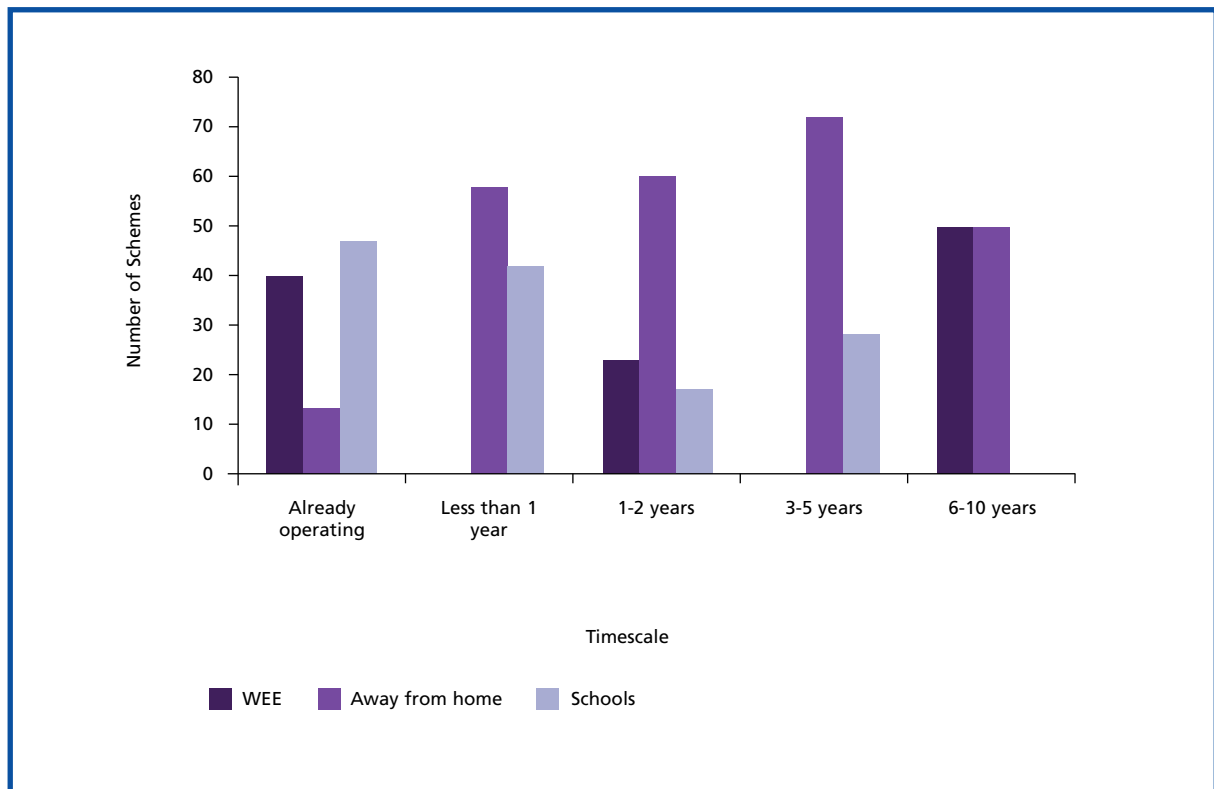
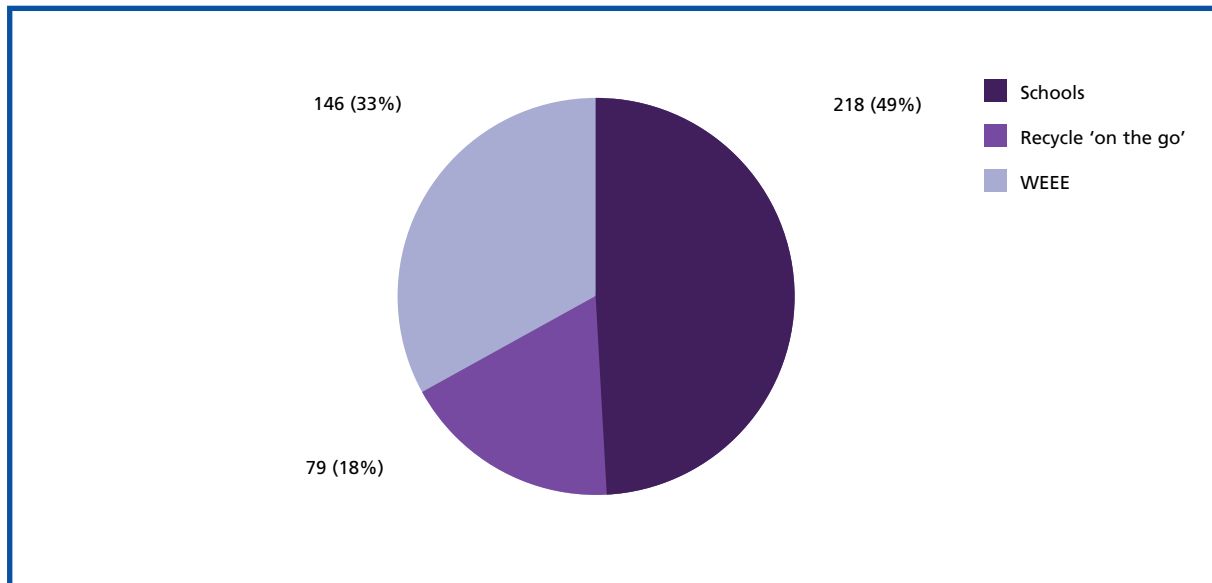




Figure 43 shows the number of operational and planned collection initiatives by type of scheme. Schools recycling services are the most common extended scheme which the local authorities have engaged with. There are 218 local authorities either already providing a recycling scheme for schools or are planning to introduce one over the coming years. In most cases this service is integrated into an existing bring or kerbside collection scheme.

**Figure 43 : Numbers Of Already Operating Or Planned Implementation Of New Schemes**



## Planned Developments and Potential for Future Plastic Packaging Collections

**Bring Schemes**

Since 2005, the collection of plastic bottles through bring scheme sites has experienced a year on year growth of approximately 20%. This year's data indicates that 44,181 tonnes of plastic bottles have been collected through the bring schemes, which represents an increase of 28%.

What is clearly visible from the information received is that bring schemes are a supplement rather than an alternative to kerbside collections if the key aim is to increase the tonnage of plastic bottles collected. The reported developments of bring scheme sites are nominal during the next three years. Therefore, greater than 40,000 tonnes of bottles can be expected from bring schemes on an annual basis until 2011.

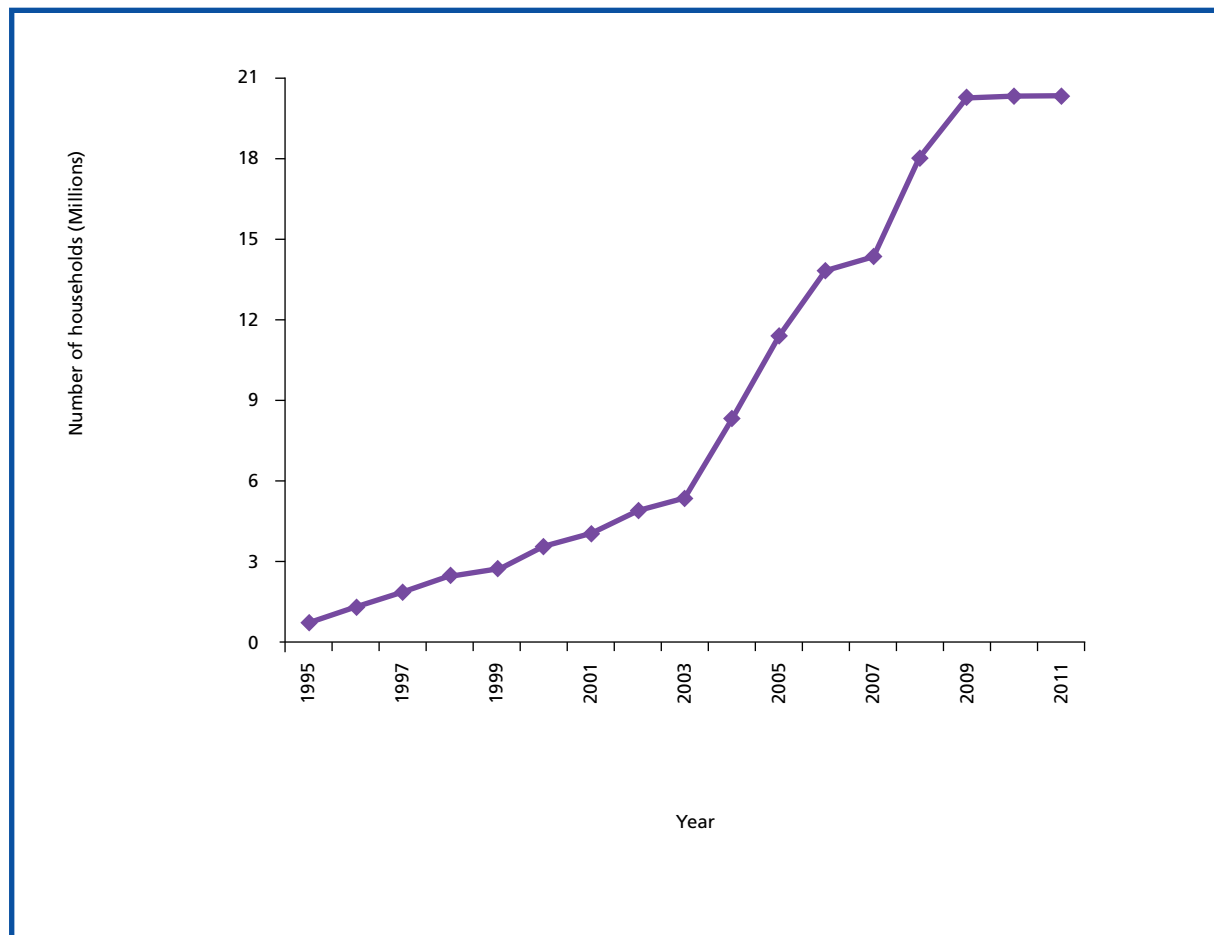
The WDA's were also asked for their plans until 2011 with respect to the collection of plastics. The data indicates that 289 new sites will be introduced for plastic bottles over this period. The new sites will nominally increase the overall plastic bottle recovery levels as many will be introduced in areas which have a kerbside or bring scheme service through the WCA.

**Kerbside Schemes**

The recovery of plastic bottles as part of kerbside collection schemes have seen dramatic growth since 2005. This year, kerbside collection has experienced a further growth of 13% to 168,966 tonnes. Kerbside schemes continue to grow as a result of many factors. New collections are being launched ever year, existing schemes are being expanded upon, and more local authorities are now adopting good practices to maximise system efficiency and tonnage recovery.

The growth of kerbside service infrastructure since 1995 and the estimated growth potential until 2011 is shown in figure 44. The estimation was based on reported plans from local authorities as well as a 10% additional increase to account for population growth and local authorities that did not have plans confirmed at the time of the survey.

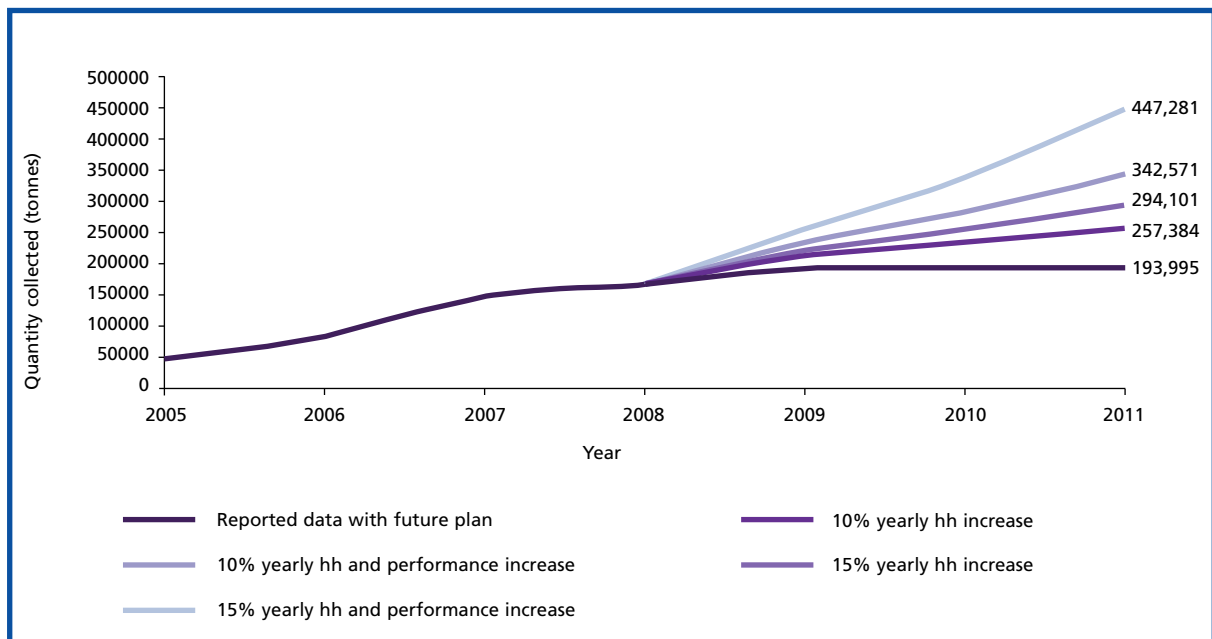
**Figure 44 : UK Plastic Bottle Kerbside Scheme Coverage Over Time, Including Planned Growth**





The data regarding new kerbside collections suggests that an annual bottle collection rate of approximately 194,000 tonnes can be expected by 2011. This should be considered as indicative only as some local authorities were not able to provide details at the time of the survey. If the yearly growth in number of households receiving kerbside plastic bottle collections can be increased by a further 10% per year from 2009 onwards, the quantity of plastic bottles collected from kerbside in 2011 would increase to over 257,000 tonnes. If a yearly 10% increase in overall kg/hh/yr performance across all schemes was also realised, the estimated plastic bottle collection would be over 342,000 tonnes by 2011. This information is illustrated in figure 45.

**Figure 45 : Kerbside Plastic Bottle Collection Growth Estimates Based On Actual Data And Inferred Infrastructure And Performance Increases.**



### Development of Non Bottle Plastics Packaging Collections

There is now an increasing trend from local authorities to include 'other' plastics packaging in the kerbside recycling collection scheme. It is more difficult to gauge the development of mixed plastics recycling, and therefore future collection rates are also difficult to predict. While future increased tonnage of 'other' plastics packaging is expected, the scale of this increase will be largely dependent on market values, and the growth in handling and recycling opportunities.

In 2008 there were a number of new reprocessing and sorting facilities which became operational, increasing the capacity to process more plastics packaging commonly found in the household waste bin. As this infrastructure continues to change, the ability for local authorities to collect more material will occur.



## Recoup's View

Whilst the tonnage levels in respect of plastic bottle collections continue to rise, the overall figures represent a 39% recycling rate. The predicted increases in bottle recovery are encouraging, but there is a need to further increase the tonnage of plastic bottles collected for recycling. Expanding kerbside systems and improving scheme performance will be the two key factors in achieving this. The planned implementation of new collection schemes through schools and 'on the go' environments over the next 3 years should also help to boost recovery levels.

The most recent packaging strategy<sup>25</sup> incorporates the main issues currently facing the successful development of UK plastics recycling. Issues reviewed include design for recycling, material quality, increasing tonnage collected, additional resources for environment agencies, and looking at ways to make the current PRN system work harder for the industry.

Given that quality plays such a major role in the new packaging strategy, there is a need to decouple the two targets of increasing plastic bottle recycling, and widening the collection of other plastic types from households.

The carbon impacts shown in the strategy give a clear indication that low weight high volume plastic could no longer be seen as the poor relation when it comes to collection priorities. Linking greater carbon savings with closing the loop is an admirable long term goal, but irrespective of carbon or tonnage targets, there will still be a need for a range of end of life options for plastics including bottle to bottle, piping, strapping, benches and even energy from waste for the fraction that we cannot recycle.

This is particularly applicable as we try to develop non bottle plastic recycling opportunities. Putting the targets and goals to one side, we have a very real and current need to supply increasing tonnage of the right quality plastic into the rapidly developing UK sorting and reprocessing infrastructure.

Administered by Plastics Europe, The British Plastics Federation (BPF) and the Packaging and Films Association (PAFA), the aim of the 'plastics 2020 challenge'<sup>26</sup> is to double plastics packaging recycling by 2020. The principle of the 'plastics 2020 challenge' is laudable, as is the opportunity to re-engage and inform relevant stakeholders of the recent and continued work to develop UK plastics recycling and resource efficiency – messages which can sometimes be lost due to the sheer amount of activity in the waste and recycling sector.

It will be interesting to see whether the packaging strategy and initiatives such as the 'plastics 2020 challenge' will be able to gain enough support to turn discussions and opportunities into tangible actions and measurable results.

<sup>25</sup> <http://www.defra.gov.uk/environment/waste/topics/packaging/strategy.htm>

<sup>26</sup> <http://www.plastics2020challenge.com>

# Section 12

## Materials Reclamation Facilities Survey (MRFs)

The majority of household plastics packaging collected within the UK are processed by Materials Reclamation Facilities (MRFs). As part of the 2009 survey, work was undertaken to identify from a number of UK MRFs, current operational capabilities.

Waste management companies, local authorities and small independent sorting facilities were approached to be included within the MRF survey. A number of facilities considered that the type of information requested was commercially sensitive and declined to provide data. The following data is based on 15 respondents and is considered to provide a reasonable indication of current UK MRF capabilities. Please note the MRF survey data shown below does not take account of any source segregated material. Figure 46 identifies 134 MRF locations identified in the survey<sup>27</sup> and the locations of those operators who assisted in providing data.

When discussing mixed plastics packaging, this fraction includes all plastics packaging such as pots, tubs, trays and films found in the household waste stream. It does not include non packaging plastics.

**Figure 46 : MRF location map**



<sup>27</sup>Existing available MRF databases were found to be incomplete or inaccurate. While the database compiled for this survey is not exhaustive, it is expected to cover the majority of existing multi material UK MRFs at the time of publication.



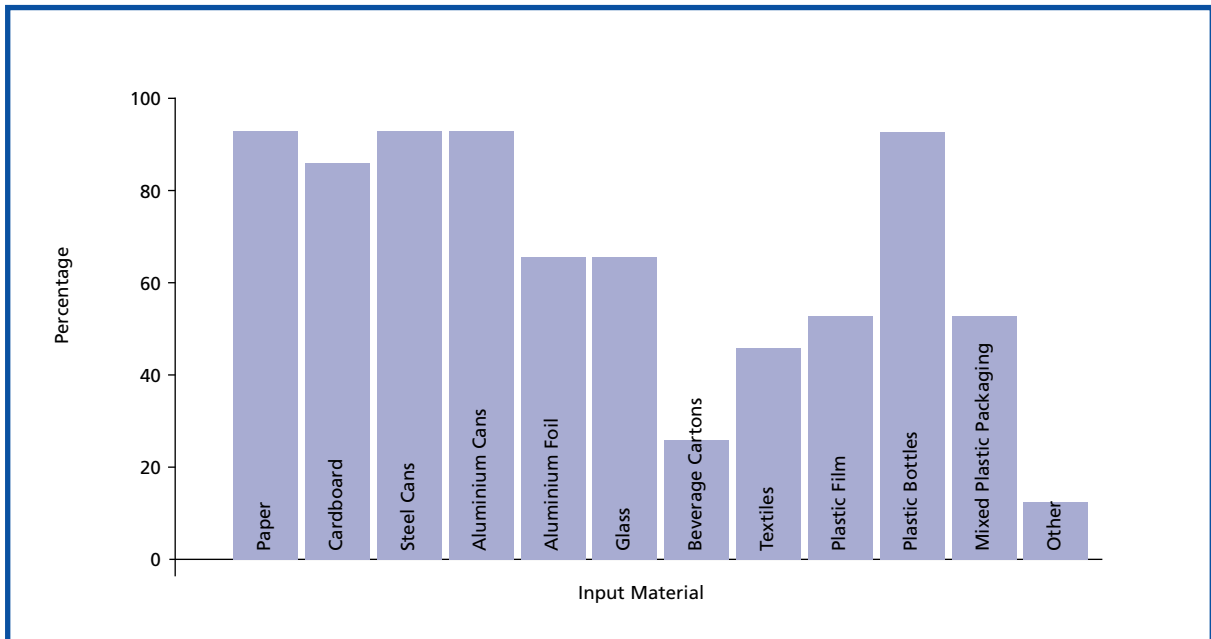


Figure 47 shows that over 90% of the facilities surveyed process plastic bottles within a co-mingled input stream. In addition over 50% also process mixed plastic containers and / or plastic film.

Of the facilities processing plastic bottles only 45% perform any degree of polymer and / or colour segregation. (See Figure 48). Only 17% of the facilities performing a segregation activity on the plastic bottle fraction use automated systems. (See Figure 49).

In overall terms this suggests that 8% of MRFs have automated plastic bottle sorting, 33% provide manual segregation of plastic bottles, 52% perform no plastic bottle segregation and 7% do not process plastic bottles within the MRF

**Figure 47 : Material Types Present Within The Input Streams Of MRFs Surveyed**



*Near infrared automated sorting*



*Typical MRF sorting facility*



Figure 48 : MRF Segregated/Non Segregated Levels for Plastic Bottles Fraction

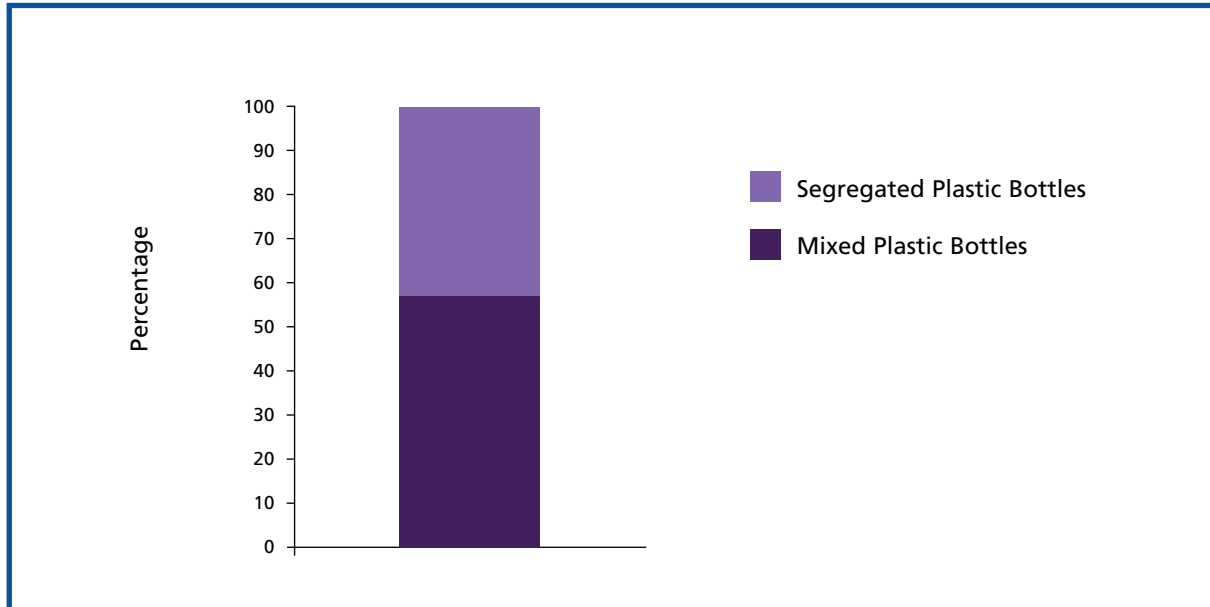
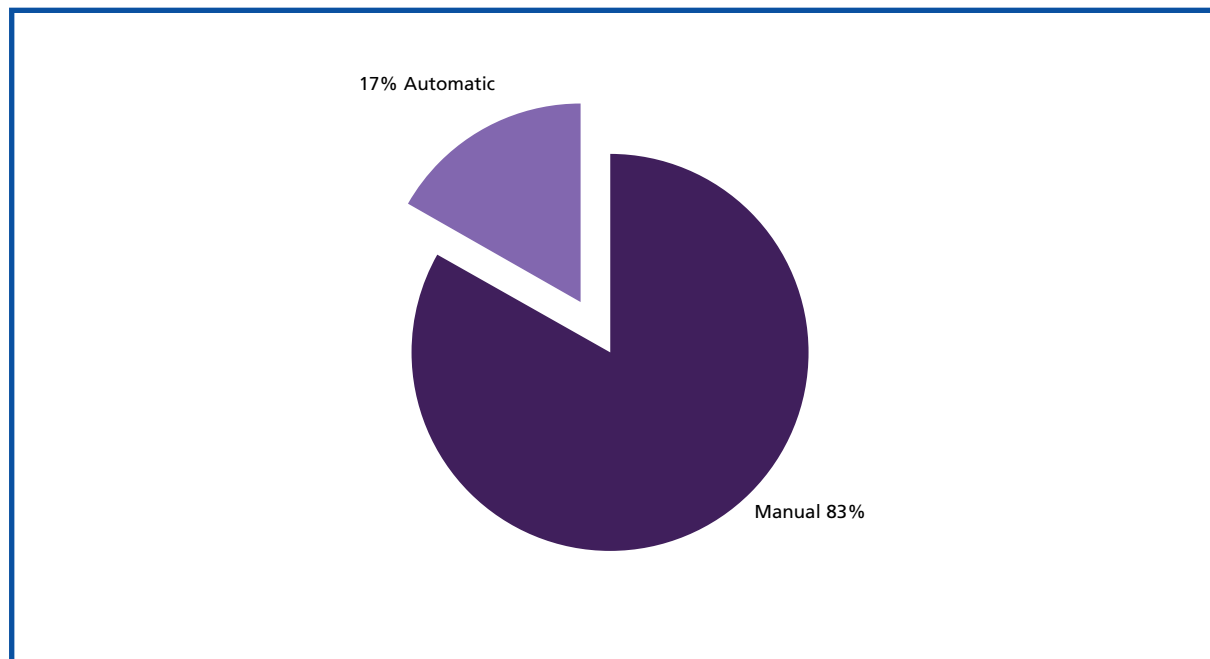


Figure 49 : Plastic Bottle Segregation Methods Within UK MRFs



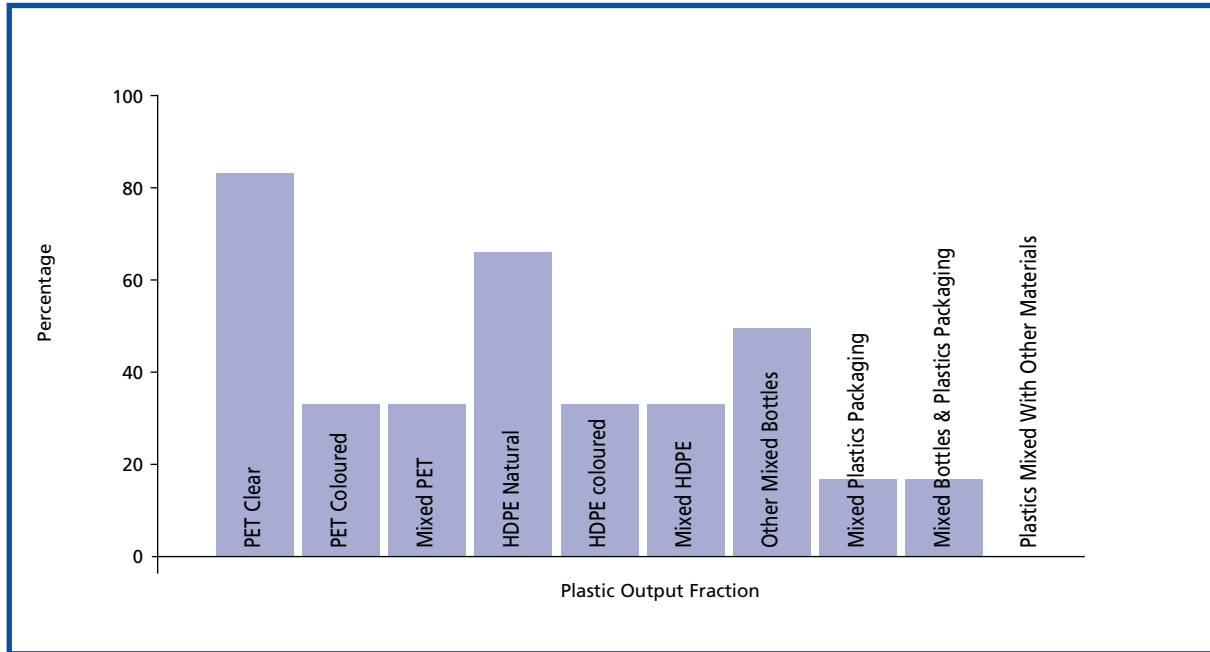
Of those facilities choosing to segregate the plastic bottle stream, PET Clear and HDPE Natural are the polymer/colour output types chosen by most MRFs as shown in Figure 50.

This graph also shows that 25% of the MRFs segregating their plastic bottles as well as segregating clear PET and Natural HDPE also segregate other bottle polymer/colour types. This suggests that less than 10% of UK MRFs segregate coloured HDPE and coloured PET.

Natural HDPE and Clear PET are not only operationally easier to manually identify and remove from a mixed bottle stream but also command the highest end market prices. Figure 50 illustrates that half those MRFs collecting mixed plastics separate these from the mixed plastic bottles.

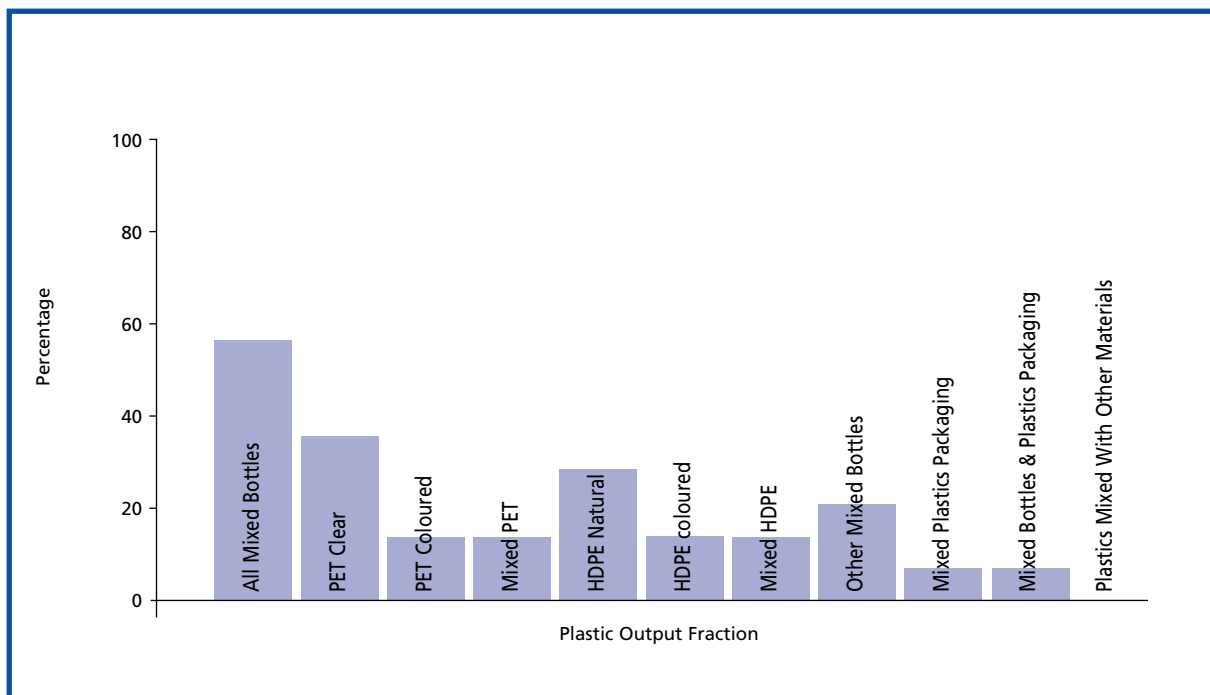


Figure 50 : Plastic Material Output Fractions from UK MRFs Segregating Plastics



To provide an indication of the plastic output fractions from UK MRFs including those MRFs that do not perform any plastic segregation within the facility the graph below (See Figure 51) shows the various percentage output fractions for identified material types/colours. This shows that all 'mixed bottles', clear PET and natural HDPE grades are, as would be expected, the main output plastic fractions from UK MRFs.

Figure 51 : Plastic Material Outputs from UK MRFs





### Recoup's View

This section of the report only provides a snap shot of current MRF activities, but gives a useful insight into the trends and activities adopted by UK facilities to effectively handle plastics packaging. As a critical part of a viable recycling process particularly when recyclables are collected commingled, the handling and sorting of recyclables is approached in a number of ways depending on throughput requirements against the equipment specification, resource pressures, and availability of capital funds. While some MRF's produce plastic outputs to the lowest marketable quality, others produce very high quality segregated plastic packaging outputs which attract premium market prices. It is the latter that tend to be more protected when markets are restricted or values are low.

With the development of dedicated plastic reclamation facilities (PRF's), a MRF can justifiably produce a mixed grade of plastic packaging as the PRF is specifically designed to provide an additional plastic sorting stage before reprocessing. Irrespective of whether a MRF sells plastic outputs to a PRF or direct to a reprocessor, good practice dictates that all sites should work to to a minimum grade of plastic output nominally containing no more than 5% contamination, with the individual PRF or reprocessor identifying which material inputs are acceptable and which are not. It must also be considered that any non bottle items such as pots, tubs and trays is classed as contamination in a bottle output

## Household Plastics Packaging Collection Awards 2009

In recognition of those local authorities operating the best performing UK household plastic collection schemes in 2008, Recoup have initiated the Household Plastics Packaging Collection Awards to recognise their efforts.

Based on total tonnage recovery and tonnage per household, the following local authorities have been recognised this year based on best tonnage recovery by country, most improved scheme and best new scheme.

**Figure 52 : Household Plastics Packaging Collection Awards Listing**

Category	Local Authority	Scheme Type
Best Performing Bring Scheme in England	Sheffield	Bring
Best Performing Kerbside Scheme in England	St Edmundsbury	Kerbside
Best Performing Bring Scheme in Wales	Torfaen	Bring
Best Performing Kerbside Scheme in Wales	Newport	Kerbside
Best Performing Bring Scheme in Scotland	West Dunbartonshire	Bring
Best Performing Kerbside Scheme in Scotland	South Lanarkshire	Kerbside
Best Performing Bring Scheme in Northern Ireland	Newry & Mourne	Bring
Best Performing Kerbside Scheme in Northern Ireland	Belfast	Kerbside
Best Scheme Improver	Wakefield	Kerbside
Best New Scheme	Birmingham	Kerbside



*Presentation of award certificates to representatives of St Edmundsbury Borough Council (left) and Birmingham City Council (right)*

## Packaging Recycling Solutions – A Cross Sector Approach.

### Recyclability by Design

Climate change and sustainable development are two of the biggest issues facing society today. It is therefore, increasingly important for companies to reduce the environmental impacts of products and services through their whole life cycle. Companies failing to address environmental performance in product design and development will find it increasingly difficult to compete in the global market.

The aim of this document is to encourage designers and manufacturers of packaging to consider recycling possibilities, provide guidelines for those wishing to make their packaging more recyclable and to provide information to prevent their packaging inadvertently interfering with existing plastic recycling streams. It introduces a better understanding of the environmental implications of design decisions, thus promoting good environmental practices but without unnecessarily restricting choice.

Following these guidelines should also provide an important contribution to help ensure that packaging is compliant with relevant legislation / agreements, that recycling costs are minimised and that societal expectations and company practices are matched in the area of plastics packaging recycling. The document however is designed to go beyond being a simple aid to legal compliance: It provides up-to-date guidelines that can be used to support a process of continuous environmental improvement, a key element of both Sustainable Development and Corporate Social Responsibility.

Whilst design guidelines have already been produced by a number of industry associations, this work, for the first time, pulls together into one simple document commonly agreed best practice and provides the business case for following the guidelines.

The RbD document includes information around key issues impacting on packaging and design including colour, residues, labels, glues, sleeves, composites, pigments, inks, caps and closures together with specific guidelines by polymer type.

This work has been published by Recoup in consultation with experts in the plastics packaging and design industry. The document will be periodically updated and readers can access the most up-to-date version at the following web address [www.recoup.org/design/rbdv2](http://www.recoup.org/design/rbdv2) The document also provides reference to key industry organisations and web sites dealing with the recyclability and recycling of plastics packaging in both Europe and the USA.

Revised edition 2009



**Plastics Packaging  
Recyclability by Design**

An essential guide for all those involved in development, design, marketing and procurement



**1. General**

The incorporation of PET into the design of PET bottles, caps and closures should be done in a way that ensures the material is suitable for recycling. This means that the design should not include any features that would prevent the material from being recycled. This includes avoiding the use of non-recyclable materials, such as PVC, and ensuring that the design is compatible with the recycling process.

**1.1. Material / Material Combinations**

Combinations which generate extra components during separation should be avoided. This includes combinations of PET with other materials, such as PVC, which are difficult to separate. The design should also avoid the use of materials that are not accepted by the recycling process, such as PVC, and ensure that the design is compatible with the recycling process.

**1.2. Barriers / Coatings**

New PET bottles incorporating barrier or barrier materials to further improve barrier performance are continuing to be developed and will in some time challenge existing recycling streams. PET multi-layer coatings are not widely fully compatible with current recycling technologies and the volume of PET bottles with barrier coatings is increasing. It is difficult to separate PET with barrier coatings from other PET bottles and this may result in lower recycling rates. PET bottles with barrier coatings should be designed to be compatible with the recycling process. This includes avoiding the use of materials that are not accepted by the recycling process, such as PVC, and ensuring that the design is compatible with the recycling process.

**1.3. Colour**

New colours incorporating PET are being developed and this may challenge existing recycling streams. PET multi-layer coatings are not widely fully compatible with current recycling technologies and the volume of PET bottles with barrier coatings is increasing. It is difficult to separate PET with barrier coatings from other PET bottles and this may result in lower recycling rates. PET bottles with barrier coatings should be designed to be compatible with the recycling process. This includes avoiding the use of materials that are not accepted by the recycling process, such as PVC, and ensuring that the design is compatible with the recycling process.

**PET Material-specific guidelines**

Material-specific guidelines for PET bottles, caps and closures. The document provides detailed information on the design and development of PET packaging to ensure it is suitable for recycling. It covers topics such as material combinations, barriers, coatings, and colours. The document is intended for designers and manufacturers of PET packaging and provides a comprehensive guide to the requirements for PET packaging to be recycled.



## Household Mixed Plastics Packaging

### Recoup Guidance Document

The opportunity to recycle domestic mixed plastics packaging is a key hot topic across the plastic supply chain so Recoup have released a guidance leaflet. We did not want to produce a specification for mixed plastics because there are too many variables and uncertainties at the present time. However there was a need to have a position statement from which we can work.

These mixed plastic guidelines are aimed at collectors and handlers with the intention of providing coordinated and consistent information. It is hoped that the guidance will be used by those already collecting a range of plastics packaging from households, and also by anyone looking to develop household mixed plastics packaging recycling systems. The guidance is based only on what is actually happening in commercial facilities, and was reviewed and endorsed by two leading reprocessors before publication, AWS and J&A Young. It focuses on the reality of what can be collected and recycled now. We must ensure that consumer and industry confidence in plastic recycling is maintained, so when plastics packaging has been collected for recycling, it is actually recycled.



### Plastics Packaging Collection, Sorting and Reprocessing Projects (CSR)

To build on existing information already available from Recoup and industry experts, the CSR online resource will be launched in 2009. This will be a unique resource which dovetails with the Survey 2009 and RbD 2009 to provide a set of independent resources for the guidance and development of plastics packaging recycling.

The focus of the project is on all domestic plastics packaging including bottle and non bottle items. However while these items will inevitably be collected together where a mixed plastic scheme exists, the work will consider issues of markets, quality and contamination for the various components of the plastics packaging collected, particularly within the sorting and reprocessing stages of recycling.

The information will also look towards European and global practices in plastics packaging waste management and recycling, identifying key synergies, differences between each approach and possible key learnings.

The online resource will take the key themes of collection, sorting and reprocessing, but add depth through case studies, videos and investigation into some of the hot topics and discussion points which are currently surrounding plastics recycling development. CSR will build on existing information with bespoke research, providing guidance on what to collect, how to communicate, scheme options, sorting and handling opportunities, material values and end markets.

- BPEO – Best Practicable Environmental Option
- EfW – Energy from Waste
- EPS – Expanded Polystyrene
- EU – European Union
- HDPE – High Density Polyethylene
- HWRC – Household Waste Recycling Centre
- kg/hh/yr – Kilograms per household per year
- KPI – Key Performance Indicator
- L – Litres
- LA – Local Authority
- LDPE – Low Density Polyethylene
- m<sup>3</sup> – cubic metres
- MBT – Mechanical Biological Treatment.
- MRF – Materials Reclamation Facility
- NIR – Near Infra Red
- PE – Polyethylene
- PET – Polyethylene terephthalate
- PERNs – Packaging Export Recovery Notes
- PO – Polyolefins
- PP – Polypropylene
- PRF – Plastics Reclamation Facility
- PRNs – Packaging Recovery Notes
- PS – Polystyrene
- PVC – Polyvinylchloride
- QA – Quality Assurance
- RDF – Refuse Derived Fuel
- TPA – Tonnes per annum
- TPH – Tonnes per hour
- UA – Unitary Authority
- UK – United Kingdom
- WCA – Waste Collection Authority
- WDA – Waste Disposal Authority
- WEEE – Waste Electrical and Electronic Equipment



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# UK Household Plastics Packaging Collection Survey 2009



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