

# 2011



## UK Household Plastics Packaging Collection Survey

# UK Household Plastics Packaging Collection Survey 2011

This work was commissioned by Recoup and sponsored by Nampak Plastics ([www.eu.nampak.com](http://www.eu.nampak.com)) and Wellman International Limited ([www.wellman-intl.com](http://www.wellman-intl.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



Recoup (Recycling of Used Plastics Limited),  
1 Metro Centre, Welbeck Way, Woodston, Peterborough, UK, PE2 7UH  
t: +44 (0)1733 390021 e: [enquiry@recoup.org](mailto:enquiry@recoup.org) w: [www.recoup.org](http://www.recoup.org)

Recoup is the leading authority on plastics packaging recycling, providing expertise and guidance to a wide range of clients and members across the plastics supply, use and recycling chain. Established in 1990, Recoup is a not for profit organisation built on a network of members (including Nampak and Wellman).

Recoup deliver research, project management and policy review activities for its members and clients, working to maximise plastics packaging recycling by stimulating the development of sustainable plastics waste management practices. This includes the improvement of plastics collection and sorting activities across the UK, undertaking bespoke research to identify good practices and remove barriers to the adoption of efficient recycling systems.

Recoup also own a plastic recyclables trading subsidiary, RSL, which provides a marketing and collection service to suppliers of baled plastics.

# Contents

Survey Sponsors

Foreword ..... 4

Key Data ..... 6

Section 1 Overview of Plastics Packaging Collection Schemes..... 9

Section 2 Planned Developments and Future Plastics Packaging Collection Estimates..... 17

Section 3 UK Household Plastics Packaging Recycling: 10 Years of Progress ..... 21

Section 4 Plastic Bottle Collection from Kerbside Schemes..... 22

Section 5 Plastic Bottle Collection from Bring Sites..... 28

Section 6 Collection of Non Bottle Plastics Packaging For Recycling..... 31

Section 7 Local Authority Communications and Guidance ..... 34

Section 8 Plastic Sales and Markets..... 36

Section 9 Benchmarking UK Household Plastics Packaging Collections..... 38

Table of Figures ..... 40

# Survey Sponsor



Nampak Plastics is the UK's leading plastic milk bottle manufacturer and its strong environmental credentials include a total commitment to the principles of recycling.

The company led the market in reducing the environmental impacts of producing and consuming liquid milk and, with its partners, produced the world's first post-consumer recycled milk bottle. Nampak

continues to lead the industry in sustainable milk packaging through the inclusion of at least 10% recycled material (rHDPE) in all the milk bottles it produces in the UK and Ireland.

Nampak is on track to increase its levels of recycled content ahead of the targets set in the Dairy Roadmap for the inclusion of up to 30% rHDPE by 2015 and 50% by 2020. It has conducted blow moulding processing trials under manufacturing conditions on the addition of increased levels of rHDPE into all the milk bottles it produces. These trials build on the study Nampak commissioned by the University of Bradford in 2010 to investigate the effects of adding increasing levels of rHDPE to virgin material. Both the research and manufacturing trials confirm that the addition of between 30 - 50% recycled content is feasible.

This spring, Nampak launched Infini, a major evolution in the design of the plastic milk bottle. The new bottle has been specifically designed to be lightweighted, offering an average 15% weight saving across the range, with specific bottle sizes achieving savings as high as 21%, whilst at the same time continuing to meet current performance specifications. In addition, the new bottle is fully recyclable so consumers can recycle it in exactly the same way as the standard bottle.

Nampak Plastics welcomes Recoup's findings that 76% of HDPE milk bottles are recycled. This builds on last year's significant increase and demonstrates the public's continued commitment to plastic bottle recycling.

James Crick, Business Development Director at Nampak, comments: "All our milk bottles are 100% recyclable and are easy for consumers to recycle in their kerbside collections. Through closed-loop recycling they can be processed into rHDPE for use in new bottles and, in replacing virgin material with recycled content, Nampak is helping to divert recycled material from landfill.

"To enable recycling rates to increase further, it is of fundamental importance that the government encourages investment in recycling and that both local authorities and consumers maintain their commitment. Nampak is playing its part in educating the public through its educational based website [www.bottle2bottle.com](http://www.bottle2bottle.com)."

Nampak has been a Recoup member company since 2000 and James Crick sits on the organisation's board.



# Survey Sponsor



## Wellman Recycling

Post collection, bales of plastic bottles or PET (polyethylene terephthalate) bottles are delivered to our flake production facilities at Verdun and Spijk, where the bottles are sorted by colour and material type. Wellman International recycles 52 bottles per second.

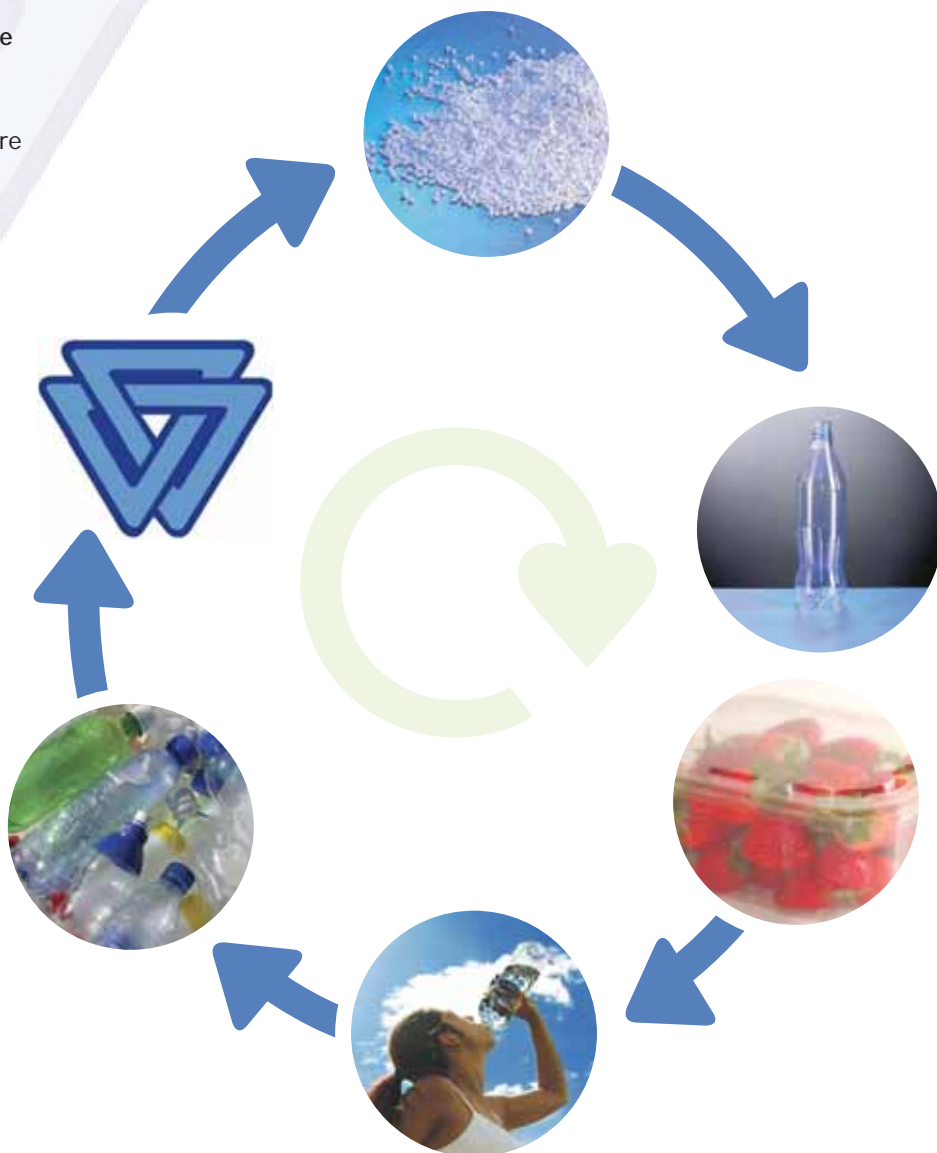
The sorted bottles are ground into flake, washed, rinsed and dried. The combined capacity of our two flake production facilities at Verdun and Spijk is 70,000 tonne of flake per annum.

Recycled PET flakes are then used for the production of packaging products such as bottles and thermoformed sheet, and also used at our fibre production facility in Cavan, Ireland, where the flake is used as the raw material to produce our polyester staple fibre.

Wellman can recover up to 100% of polyester components from end-of-life products. Products developed from Wellman Fibre can be re-introduced into the raw material stream and once again made into Wellman Fibre.

### Sustainable benefits of Wellman Fibre

- 1.6 billion post consumer bottles recycled annually to make our fibre
  - equivalent to 200,000 barrels of oil saved annually
  - eliminates 300,000 tonne of harmful air emissions
- Carbon footprint is 4 times lower than virgin PET
- Suitable for closed loop recycling uses
- Based on 40 years of recycling and sustainable experience
- Accessibility to independently accredited Life Cycle Assessment data
- Traceability of Raw Materials
- Certification to confirm maximum recycled content
- LCA carried out by the Science, Technology and Society Group, Copernicus Institute, Utrecht University



# Foreword



**The 2011 edition of the Recoup survey was once again produced and delivered exclusively by the Recoup team with sponsorship this year from Nampak Plastics and Wellman Recycling. This document provides us with the next exciting chapter in the development of UK household plastics recycling. The levels of response and detail are rarely found in a survey of this kind. For this, I am very grateful to the majority of UK local authority recycling teams who took the time to respond to our requests and have made this research so worthwhile.**

The comprehensive approach taken allows for a definitive overview of the continually developing household plastics packaging recycling activity in the UK. The 2011 report is a key reference document and the most complete source of information regarding plastics packaging collection in the UK, allowing stakeholders across the plastic supply and disposal chain to better understand how the recycling opportunity is developing, and obtain valuable data in the development of plastics recycling policies, strategies and projects.

The report is widely used as an essential tool for understanding, interpreting and analysing household plastics packaging recycling in the UK. The published preliminary data has already generated a great deal of positive UK and international coverage, reporting an encouraging plastic bottle recovery rate of over 281,000 tonnes collected in 2010. The vast majority of UK local authorities provide some form of plastic bottle collection. An increasing number are also collecting non-bottle plastics packaging which has seen another high increase in comparison with previous data, with over 76,000 tonnes collected.

The various components of a successful UK plastic bottle recycling roadmap are falling into place, including a holistic kerbside collection infrastructure, good supporting UK and EU markets for the material generated, and support from an ever more astute supply chain whose own policies are helping to drive forward the recycling and sustainability agenda.

Despite plastic bottle recycling rates increasing beyond even the most optimistic predictions over the last ten years, there is still much work to be done. The estimated cost of landfilling or treating the bottles placed in residual bins in 2010 is £24m. Even more startling in the current economic climate is the inherent £60m value that these bottles would attract from reprocessors. In case there is any doubt, used plastic bottles are most definitely a resource.

I would accept there are costs and contractual issues associated with introducing and expanding plastic bottle collections, but the economic argument alongside political, consumer and environmental drivers mean that there are only a minority of local authorities left that do not collect plastic bottles from kerbside for recycling.

I have a number of key policy items that I believe should be adopted immediately into a UK plastic recycling strategy.

- There is an urgent and immediate need to meet the demands of established UK bottle reprocessors. By 2017, the UK should aim to collect 480kt of plastic bottles for recycling - this equates to a 70% bottle recycling rate. This is very ambitious even with wide-scale industry and supply chain support, but I believe it is achievable with the right investment, co-ordination and approach.
- Alongside this is the need to develop and maintain the bottle quality generated by local authorities and their contractors. I believe that this means that sorting facilities must produce plastic bottle bales that meet longstanding Recoup recommended contamination levels of not more than 5% non bottles.
- The collection of non-bottle plastics packaging is important and should continue. However, a by-product of the bottle quality requirements is the collection of non bottle plastics only where sorting facilities have the necessary equipment and resource to separate this fraction, and where clear end market opportunities exist. The sorting infrastructure must be capable of effectively handling the non-bottle plastics without detriment, either financially or operationally, to the existing recycling systems.
- Local authorities must take responsibility for the end destination of all household plastics collected for recycling, and hold their service providers to account. The UK infrastructure to sort and reprocess the increasing non bottle plastic collections is clearly inadequate at the moment, which is causing inefficiency within sorting and reprocessing facilities, and also encouraging export to markets where sorting costs are lower.
- All plastics are a potential resource and simply landfilling these materials is increasingly not an option. Energy from waste should also be reserved only for those plastics which cannot be mechanically recycled in a commercially viable way. By 2013 we will have new plastic packaging recycling targets which need to be both ambitious and realistic.
- Standardisation of collection and sorting systems may not be possible, but instructions to householders need to be more consistent, whether collecting plastic bottles or a wider range of plastics packaging. Summary guidance has been provided in this document. Furthermore, there should be a designated dry recyclables collection bin colour across the UK, to be adopted as new and existing schemes replace their existing collection units. Source separate collections can adopt 'recycle now' colour coding.

Recoup will continue to push all stakeholders to ensure that the plastic packaging journey is both sustainable and viable in the short and longer term.



**Stuart Foster**  
Chief Executive Officer



# Key Data

## 2010 Household Plastic Packaging Recycling Rates

- Estimated 580,000 tonnes of plastic bottles entered the UK household waste and recycling systems in 2010.
- Inferred 500,000 to 600,000 tonnes of non bottle rigid plastic packaging entered the household waste and recycling systems in 2010.
- A total of 357,461 tonnes of household plastic packaging were reported as collected for recycling in 2010. This includes 281,097 tonnes of plastic bottles and 76,364 tonnes of non-bottle rigids.
- This indicates a collection increase of 18,000 tonnes of bottles, and 36,000 tonnes of non bottle rigids during 2010.
- The collection and consumption data indicate a plastic bottle recycling rate of 48.5% for 2010. The data also suggests a non-bottle rigids recycling rate of between 12% and 15%.
- The 281,097 tonnes collected represents approximately 6,184 million plastic bottles collected for recycling, based on 22,000 bottles in one tonne. This is 400 million plastic bottles more than the previous year.
- The data indicates that England accounts for 79% of total UK plastic bottle collections with Scotland, Wales and Northern Ireland representing 8%, 6% and 3.6% respectively. These proportions are broadly in line the UK population split.

## Forecasting Future Plastics Packaging Collection Tonnage

- The future plans disclosed to Recoup through this year's survey suggest that an estimated 425,000 tonnes of plastics packaging will be collected for recycling in 2011 and 468,000 tonnes in 2012 could be achievable.
- It is more likely that non bottle rigids will show a higher collection growth level as schemes become established.
- By 2020 it is estimated that the UK could collect 431,000 tonnes of bottles for recycling using available data. This reflects a 61% bottle recycling rate. If the yearly bottle collection performance can be enhanced by 20% from the current profile, this would result in the collection of 507,000 tonnes of bottles for recycling – a 71% bottle recycling rate.

## Bring Schemes

- There are a total of 250 waste collection and unitary authorities with a plastic bring scheme which represents 8,801 sites across the UK. In total, 52,406 tonnes of plastics were collected through bring schemes in 2010.



- In total, there are 269 UK local authorities from the 404 surveyed that collect bottles as part of their bring service (67%). Of those, 57 also collect non bottle rigids (14%). This relates to a plastic bring infrastructure of 8,801 sites with 81% of those collecting only bottles.
- There are 186 of these bring schemes which collect only plastic bottles, with 47,265 tonnes of plastic bottles being collected. In addition 5,141 tonnes of non bottle rigids were also recovered through 64 of the local authorities.

## Kerbside Collections

- There are now 365 kerbside collection schemes including plastic bottles in the UK, representing 21.7 million households serviced. These schemes collected 233,832 tonnes of plastic bottles for recycling in 2010, an increase of 8% from 2009.
- There are 114 local authorities also collecting non bottle rigids from kerbside.
- Kerbside bottle collection infrastructure witnessed dramatic growth between 2005 (47kt) and 2009 (215kt).
- The plastic kerbside infrastructure covers almost 22 million of the estimated 26 million households in the UK (85%). Just over 7 million of those households (27% of all UK households) can also place their non bottle rigid plastics in the recyclables collection container. This equates to 28% of UK local authorities with a kerbside non bottle rigid recycling collection.
- The highest total kerbside bottle tonnage collected was from the South East with over 35,500 tonnes, representing 15% of the total UK bottles collected.
- The 2010 data suggests that average bottle collection rate per household from those with a plastic bottle kerbside service is 11.6 kg, an increase of 0.4 kg (3.5%) from 2009.
- Local authorities not collecting plastic bottles as part of the kerbside service were asked for the main reason why it had not been implemented. The most common issues highlighted were related to current inflexibility with the collection contract or with the collection vehicle limitations, with specific reference to kerbside sorting.
- Since the previous report, the overall collection rate percentage for non-bottle plastic packaging has significantly increased. The kerbside non bottle tonnage collected represents a 101% increase on last year's data – an increase of over 35,000 tonnes.
- Where the service is provided, the average material collection rate is reported as 8.53kg of non bottle plastic per household per year.
- Local authorities collecting non bottle rigid plastics through kerbside were asked how they communicate the recycling message. From 110 responses, 55 use the term 'pots, tubs and trays' as endorsed by Recoup, 47 use various levels of product descriptions (soup tubs, yogurt pots, etc), and 8 use plastic polymer codes. Some exclude expanded polystyrene, black plastics, oil and paint containers and expanded foam trays.

## Barriers To The Implementation Of Non Bottle Rigid Collections

- Local authorities not collecting non-bottle plastics packaging were asked for the main reason why they have currently not implemented such a scheme. From 127 responses a number of key reasons were provided.
- The most common issues related to lack of end markets and perceived operational challenges. In addition 61 local authorities with bottle collection schemes stated that they will not be introducing non bottle plastic collections without providing a specific reason.

## End Markets For The Collected Plastic

- Survey respondents were asked to indicate where their plastic material was sold. For plastic bottles, 53% identified a UK market, 7% export market, and 39% were not aware of the end market.
- When requesting end markets used for non bottle rigids, 32% suggested a UK reprocessor was used. A further 56% were not aware or willing to disclose the end market.

## European Union Plastics Packaging Recycling and Recovery Rates

- Recycling performance across EU countries range between 15% and 30% in most cases, energy recovery levels show a much wider range (0% and 75%).
- The UK were ranked 20 from 29 countries, based on plastics packaging tonnage recovered in Europe in 2010, although this combined both recycling and energy recovery.
- When considering the recycling rate in isolation the UK achieved a marginally better rank of 15 from 29, up from 17th in 2009. No EU country achieved higher than 36% mechanical plastic recycling rates.

## The Value of Plastic

- The 281,097 tonnes of bottles collected for recycling represents a potential value of approximately £60 million. Over 6,500 million household plastic bottles remain un-recycled costing in the region of £24m in disposal costs.
- While the markets and values for non bottle rigids are yet to develop, this fraction is likely to attract a positive value of £50 per tonne if not contaminated. The inferred minimum of 424kt of household non bottle rigids not recycled will incur disposal costs of £34 million per annum.

# Section 1

## Overview of Plastics Packaging Collection Schemes

The information collected for the 2011 Survey was based on 2010 data provided by the majority of UK local authorities. This is the 17th local authority report undertaken by Recoup. The report is a concise review of the services in place for the collection of household plastics packaging for recycling. It is produced to inform stakeholders on current plastics packaging levels, collection methods and practices. The report also details potential future collection rates, approaches to communications, and perceptions of the plastics packaging recycling opportunity.

In 2011, Recoup distributed the online UK Household Plastics Packaging Collection Survey to all waste collection authorities and unitary authorities in the UK to establish the latest levels of plastics packaging collection. The reaction to the survey was once again extremely positive with a high number of responses from more than 400 local authorities contacted. The information submitted and the associated analysis within this report will be of particular relevance to those involved in local and national government together with those in industry who have interests and responsibilities in developing sustainable plastics packaging recycling.

Where only partial data or no data has been submitted Recoup has, as in previous years, completed an estimated dataset based on a number of factors including households serviced by plastic bottle collection schemes, bring sites available, previous year's responses, or in some cases by applying reasonable assumptions and average performance data. This estimation was only used to calculate overall tonnage collected; all other analyses in this report were based on actual responses only.

The main types of plastics packaging present in the recyclables fraction can be separated into plastic bottles and non-bottle rigid plastics packaging. The latter will be referred to as non-bottle rigids in this report, and commonly represents plastic pots, tubs and trays. This report does not cover commercial or industrial packaging, or flexible plastics which are not, and should not be intentionally collected through the current household kerbside or bring scheme infrastructure.

### Consumption Statistics

The key collection data can be combined with best available consumption data to provide percentage recycling rates. As with previous years, this data needs to be updated to reflect best estimated packaging trends and ensure that 2010 plastics packaging recycling rates are not overstated.

A detailed review of plastics packaging consumption was completed indicating that 548,000 tonnes of plastic bottles were consumed in 2005. It was expected that up to 23,000 tonnes were consumed outside of the home, leaving 525,000 tonnes entering the household waste and recycling systems.

Packaging trends are frequently debated with between 0% and 5% per annum growth indicated. This report has assumed a 2% annual growth rate for plastic bottle packaging. Despite ongoing pack light-weighting activities, plastics packaging consumption is believed to have grown. This is due to a number of factors including substitution from other materials, and consumer behaviour and product purchasing trends during difficult economic conditions.

Therefore, the estimated UK consumption rate for plastic bottles in 2010 was 605,000 tonnes of which an estimated 580,000 tonnes entered the household waste and recycling systems.

The non bottle rigid consumption rate is based on best available data but there is a higher degree of uncertainty compared to plastic bottles arisings. It has been inferred from various stakeholders and plastic supply chain groups that 500,000 - 600,000 tonnes would be a reasonable estimate for non bottle rigid plastics packaging entering the household waste and recycling systems.

## 2010 Household Plastics Packaging Recycling Rates

Recoup are pleased to confirm that a total of 357,461 tonnes of household plastics packaging were reported as collected for recycling in 2010. This includes 281,097 tonnes of plastic bottles and 76,364 tonnes of non-bottle rigids. This indicates a collection increase of 18,000 tonnes of bottles, and 36,000 tonnes of non bottle rigids during 2010.

The collection and consumption data indicate a plastic bottle recycling rate of 48.5% for 2010. The data also suggests a non-bottle rigids recycling rate of between 12% and 15%.

Even when adjustments to consumption data are considered, this still demonstrates a moderate bottle recycling rate increase compared with the previous year, and significant increases in non bottle rigid collection rates.

**Figure 1: Breakdown of recycled tonnage by scheme and packaging type**

	Plastic Bottles (tonnes)	Non-Bottle Plastics Packaging (tonnes)	TOTAL (tonnes)
Bring	47,265	5,141	52,406
Kerbside	233,832	71,223	305,055
TOTAL	281,097	76,364	357,461

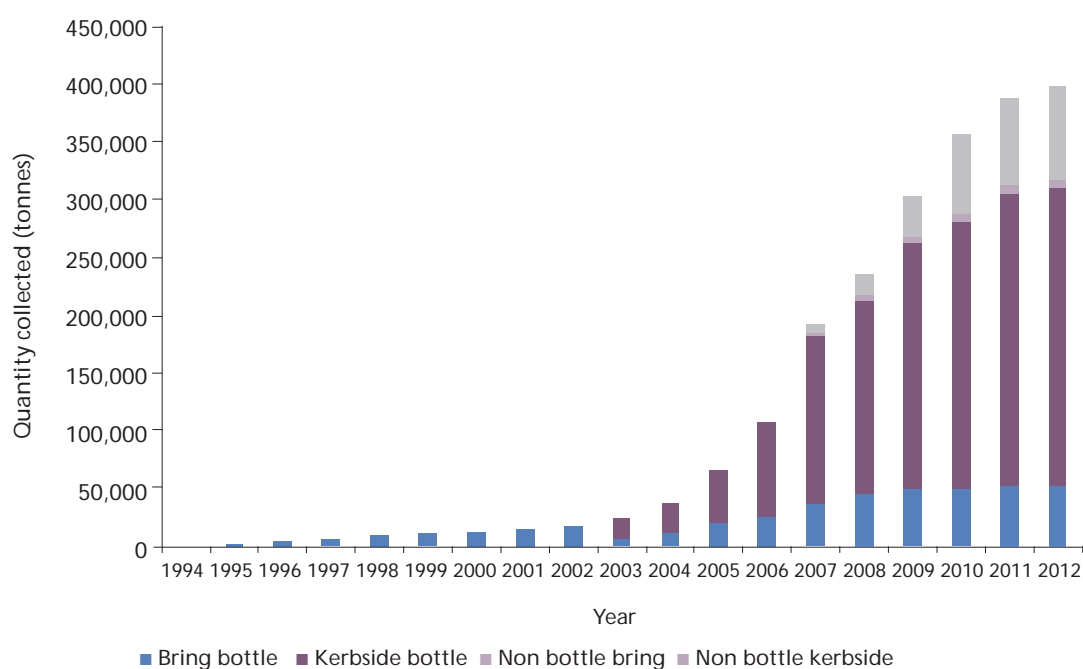
The 281,097 tonnes represents approximately 6,184 million plastic bottles collected for recycling, based on 22,000 bottles in one tonne. This is some 400 million plastic bottles more than the previous year. However, this also suggests that over 6,500 million plastic bottles remain un-recycled once consumed so further improvements are needed. Those un-recycled bottles are thought to cost in the region of £24m in disposal costs, and have a potential value of £60m. Some bottles in the residual fraction will go to energy from waste, but the disposal costs have been assumed to be in line with landfill costs for the purposes of this calculation.

In many cases, rigid non bottle plastics have been a more recent addition to recyclables collections, increasing from 22kt to 40kt to 76kt within the last 3 years. While the markets and values are yet to develop fully, the inferred 424kt of pots, tubs and trays which were not recycled can attract a positive value, and where not collected for recycling will incur disposal costs of £34m per annum.

The values for plastics will fluctuate over time and be dependent on a number of conditions, not least the quality level, but are based on baled material delivered to a reprocessor. The disposal costs are based on landfill fees of £80 per tonne which are expected to continue increasing in the coming years.

The growth in household plastics packaging collection quantities since 1994 is demonstrated in Figure 2. The collection quantities reported are split between kerbside and bring collection schemes from 2003 onwards, and also differentiates between bottles and non bottle rigids from 2007 onwards. Future planned increases in collection are also shown for 2011 and 2012 where declared by local authorities.

Figure 2: Growth in household plastics packaging collections, by bring and kerbside schemes

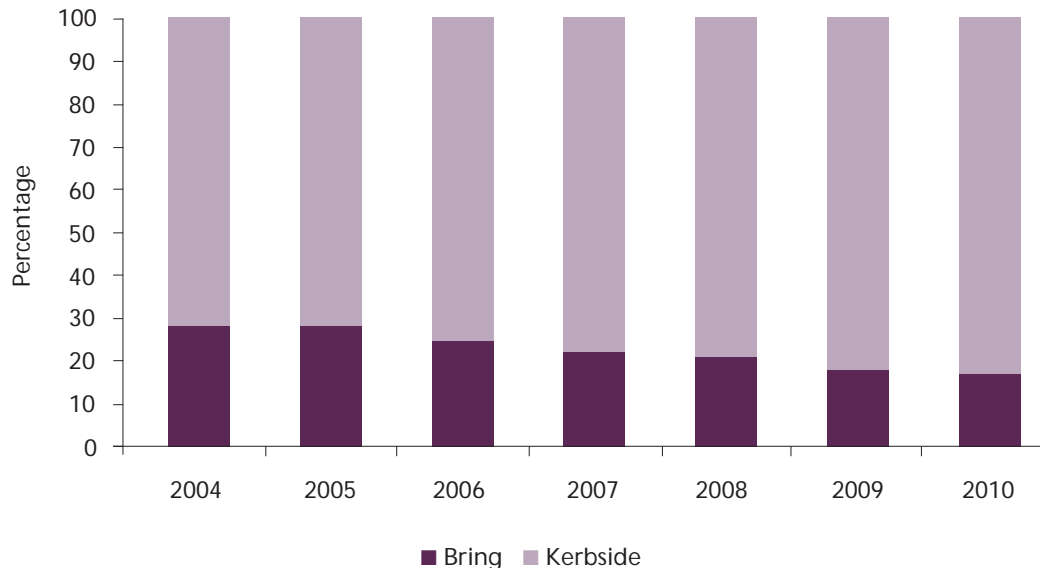


The two household recyclables collection methods used by local authorities are bring and kerbside schemes. Originally most household plastics packaging recycling collections were achieved by asking the public to place their materials into containers placed in public locations such as supermarket sites and car parks. These are termed bring sites. Over the past 10 years there has also been a significant growth in the use of kerbside collection systems which provide a recyclables collection service on the householders' doorstep. With these systems, a number of variations have occurred in terms of collection container, service frequency, and communications. These are explored later in this report.

It is not uncommon for local authorities to employ both systems to maximise the recycling opportunity, but the majority of the tonnage recovered is through the kerbside method. The type of plastics packaging collected through these systems has also generally been restricted in line with downstream development of suitable handling facilities and reprocessing options.

The total tonnage can be segmented to show the amount of materials which are collected through the kerbside and bring collection schemes. The 2010 data indicates that 233,832 tonnes (83%) of collected plastic bottles were derived through the kerbside schemes and 47,265 tonnes (17%) were collected from bring schemes. Furthermore, 71,223 tonnes (93%) of the collected non bottle rigids were sourced through kerbside schemes.

Figure 3: Percentage of plastic bottles collected through bring and kerbside schemes



The graph in Figure 3 shows the percentage split of how much plastic is being collected and through which collection method the material is derived. It is clear that the kerbside collection of plastic bottles is not only well established as the primary collection method, but continues to develop and grow. The tonnage of plastic bottles collected in 2009 through the bring schemes, whilst experiencing some growth on 2008, is beginning to reach a 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.

During 2010, recyclables collection schemes including plastics experienced further increases. Such growth was only possible with the development of new collection contracts, more opportunities to transfer collected mixed recyclables to suitable sorting facilities and increasingly competitive end markets particularly for bottles.

Kerbside collection schemes are the predominant method for the collection of plastics packaging in the UK. Bring schemes are also sometimes used instead of, or alongside kerbside, to form part of the recyclables collection infrastructure which local authorities offer.

Figures 4 and 5 provides data by scheme and material type, and illustrates the role of kerbside as the key mechanism for recovering household plastics packaging. The proportions have changed with the development of non bottle rigid collections.

Figure 4: Percentage of plastics packaging collected by scheme type (tonnage)

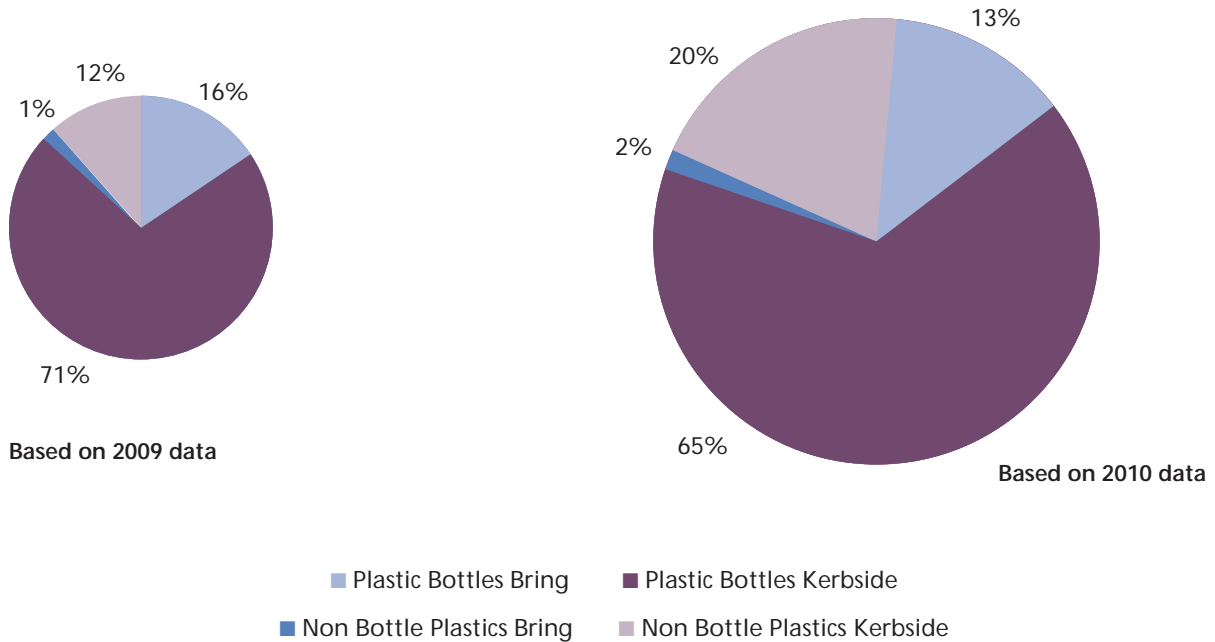


Figure 5: Changes in collection rates between 2009 and 2010 by plastic format and collection scheme type

	Bring Schemes		Kerbside Schemes	
	Tonnes	% change	Tonnes	% change
Bottle	- 208	- 0.5%	+ 18,256	+ 8.5%
Non Bottle Rigid	+ 220	+ 4.5%	+ 35,781	+ 101%

### Plastic Bottle Collection Infrastructure Summary

The table in figure 6 shows the breakdown of plastic bottle collections by country and infrastructure for 2010. Figure 7 provides data relating specifically to those local authority services that collect both bottles and non bottle rigids.

In total, there are 269 UK local authorities from the 404 surveyed that collect bottles as part of their bring service (67%). Of those, 57 also collect non bottle rigids (14%). This relates to a plastic bring infrastructure of 8,801 sites with 81% of those collecting only bottles.

A total of 365 local authorities (90%) collect bottles as part of their kerbside service, with 114 of those also collecting non bottle rigids. This equates to 28% of UK local authorities with a kerbside non bottle rigid recycling collection. The plastic kerbside infrastructure covers almost 22 million of the estimated 26 million households in the UK (85%). Just over 7 million of those households (27% of all UK households) can also place their non bottle rigid plastics in the recyclables collection container.

**Figure 6: Breakdown of plastic bottle only collections by country and infrastructure**

Country	Bring Schemes		Kerbside Schemes	
	Number of local authorities	Number of sites	Number of local authorities	Number of households (millions)
England	168	5,042	198	12.2
Scotland	19	1,768	21	1.3
Wales	14	254	9	0.4
N Ireland	11	78	20	0.7
Total	212	7,142	248	14.6

**Figure 7: Breakdown of bottle collections that also include non bottle rigid collections by country and infrastructure**

Country	Bring Schemes		Kerbside Schemes	
	Number of local authorities	Number of sites	Number of local authorities	Number of households (millions)
England	46	1,382	90	5.8
Scotland	4	93	7	0.5
Wales	6	182	11	0.7
N Ireland	1	2	6	0.1
Total	57	1,659	114	7.1

The tonnage relating to the bring and kerbside bottle collection infrastructure is provided in figure 8, together with the percentage changes from the 2009 data.

The reported tonnage from UK bring systems overall have not changed significantly from the previous year. The English and Scottish collections have increased and the Welsh and Northern Irish collections decreased. These changes are negligible in tonnage terms.

Every country reported increases in kerbside bottle collection ranging from 1.3% to 19.5% growth. All demonstrated overall increases in bottle collections with England, Scotland and Wales reporting kerbside collection growth of over 10% compared with the previous year.

A consolidated estimated tonnage is provided in the table to cover WDA plastic collection from HWRC sites, and also 'recycle on the go' schemes which are combined with the household material as part of the local authority recyclables collection service.



Figure 8: Breakdown of plastic bottle collections by country (in tonnes) in 2010 and respective changes (by %) in comparison with 2009 data

UK	Total Quantity of Plastic Bottles Collected in 2009	263,049	
	Through Bring Schemes	47,473	
	Through Kerbside Schemes	215,576	
	<b>Total Quantity of Plastic Bottles Collected in 2010</b>	<b>281,097</b>	<b>▲ 6.9%</b>
	Through Bring Schemes	47,265	▲ 0.5%
	Through Kerbside Schemes	233,832	▲ 8.5%
England	Total Quantity of Plastic Bottles Collected in 2009	209,185	
	Through Bring Schemes	31,878	
	Through Kerbside Schemes	177,307	
	<b>Total Quantity of Plastic Bottles Collected in 2010</b>	<b>222,781</b>	<b>▲ 6.5%</b>
	Through Bring Schemes	32,295	▲ 1.3%
	Through Kerbside Schemes	190,486	▲ 7.4%
Northern Ireland	Total Quantity of Plastic Bottles Collected in 2009	9,921	
	Through Bring Schemes	694	
	Through Kerbside Schemes	9,227	
	<b>Total Quantity of Plastic Bottles Collected in 2010</b>	<b>10,034</b>	<b>▲ 1.1%</b>
	Through Bring Schemes	691	▼ 0.5%
	Through Kerbside Schemes	9,344	▲ 1.3%
Scotland	Total Quantity of Plastic Bottles Collected in 2009	19,852	
	Through Bring Schemes	3,862	
	Through Kerbside Schemes	15,990	
	<b>Total Quantity of Plastic Bottles Collected in 2010</b>	<b>22,450</b>	<b>▲ 13.1%</b>
	Through Bring Schemes	4,045	▲ 4.7%
	Through Kerbside Schemes	18,406	▲ 15.1%
Wales	Total Quantity of Plastic Bottles Collected in 2009	15,291	
	Through Bring Schemes	2,239	
	Through Kerbside Schemes	13,052	
	<b>Total Quantity of Plastic Bottles Collected in 2010</b>	<b>16,885</b>	<b>▲ 10.4%</b>
	Through Bring Schemes	1,288	▼ 57.5%
	Through Kerbside Schemes	15,597	▲ 19.5%
WDA	Estimated WDA and ROTG collections	8,946	

The plastic collection data indicates that England accounts for 79% of total UK plastic bottle collections with Scotland, Wales and Northern Ireland representing 8%, 6% and 3.6% respectively. These proportions are broadly in line the UK population split. Figure 9 provides the proportions of bottle collection per country across Bring, Kerbside, overall collections and also per capita.

Figure 9: Percentage comparisons of bring and kerbside bottle collection by tonnage and per capita

Country	Bring bottles as % split	Kerbside bottles as % split	Overall bottles as % of total	Population as % of UK total
England	68.3	81.4	79.2	83.8
Northern Ireland	1.5	4.0	3.6	2.9
Scotland	8.6	7.9	8.0	8.4
Wales	2.7	6.7	6.0	4.9
Unspecified UK WDA and ROTG	18.9	n/a	3.2	n/a



### Forecasting Future Plastics Packaging Collection Tonnage

The previous report forecast a total collection based upon the reported planned scheme developments and inferred additional growth. This suggested 267,605 tonnes of bottles and 52,220 tonnes of non bottle rigids would be collected in 2010. Recoup then add an additional 10%, 31,983 in this case, to account for expected additional tonnage from improvements in existing schemes. This indicated a total of 351,808 tonnes.

The actual 2010 data of 357,461 suggests that the reported developments from the previous year were mostly implemented, and that further collection schemes, and increased performance from existing schemes were realised. This is with particular reference to increasing non bottle rigid collections beyond the disclosed developments. This data was not necessarily expected to be accurate due to potential financial restrictions on local authorities which may have restricted or reduced short term plastic collection plans. The actual 2010 data was within 5,600 tonnes of the previous report estimate and should provide confidence in the Recoup survey data provided each year.

The future plans disclosed to Recoup through this survey, and historic under-reporting of collection developments by 10% each year suggest that an estimated 425,000 tonnes of plastic packaging collection in 2011 and 467,000 tonnes in 2012 could be achievable. However, Recoup are also aware of growing interest in extending current bottle schemes to also collect non bottle rigid items.

**Figure 10: Estimates of plastics packaging collections in 2011 and 2012**

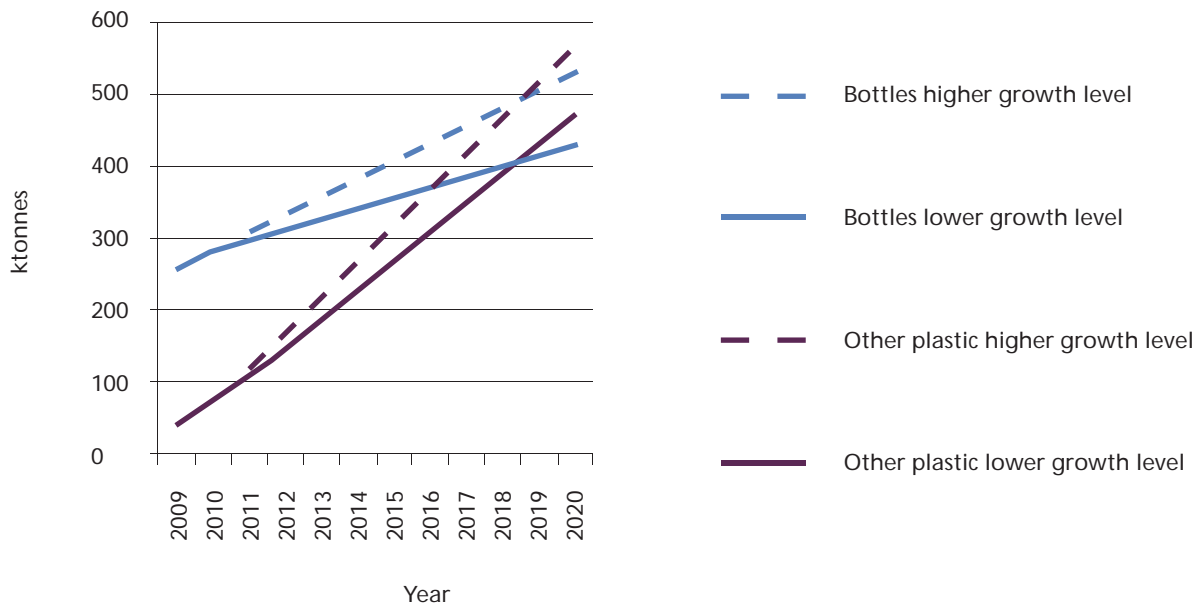
	2010 estimate from previous survey	2010 actual	2011 estimate	2012 estimate
Bring	52,220	52,406	57,357	63,187
Kerbside	299,588	305,055	330,000	340,325
TOTAL	351,808	357,461	387,000	399,000
+ 10% per annum	-	-	425,000	467,000

While longer term profiling of packaging collections is difficult due to so many practical, economic and political variables, we can use recent collection trends to set out potential future collection levels. This growth is with particular reference to kerbside systems, with the assumption that bring scheme tonnages will remain constant to 2020. It is noticeable that bring schemes are increasingly regarded as an additional, rather than alternative service to kerbside collections.

Figure 11 illustrates the potential collection rates based on a lower and higher trend profile. Recoup's best guess is that the bottle collections are more likely to follow the lower trend line which still shows modest year on year collection growth even when taking increasing consumption rates into account. This would represent a 61% plastic bottle collection rate by 2020. It is more likely that non bottle rigids will move towards the higher collection growth, which could lead to bottle tonnage being overtaken by non bottle rigid tonnage as early as 2016.

It should be noted that if both bottle and non bottle rigid trends follow the same trend scenario (upper or lower), we would still expect to see the non bottle rigid tonnage overtake bottle tonnage from 2019 onwards.

Figure 11: Projected household plastics packaging collection growth to 2020



While trend analysis can be a useful tool, Recoup firmly believe that the actual proportion of non bottle rigid plastics collection will not exceed bottle collections even in the longer term. While the recyclability of this fraction will be improved through rationalising sustainable pack design choices, and further handling and end market infrastructure developments, it will still be inherently more complex than the bottle fraction in terms of size, shape, polymer and properties. Development of the opportunity to send some of the UK non bottle rigid fraction to energy from waste or feedstock recycling, as is common in other EU countries, may change the perceived collection trends.

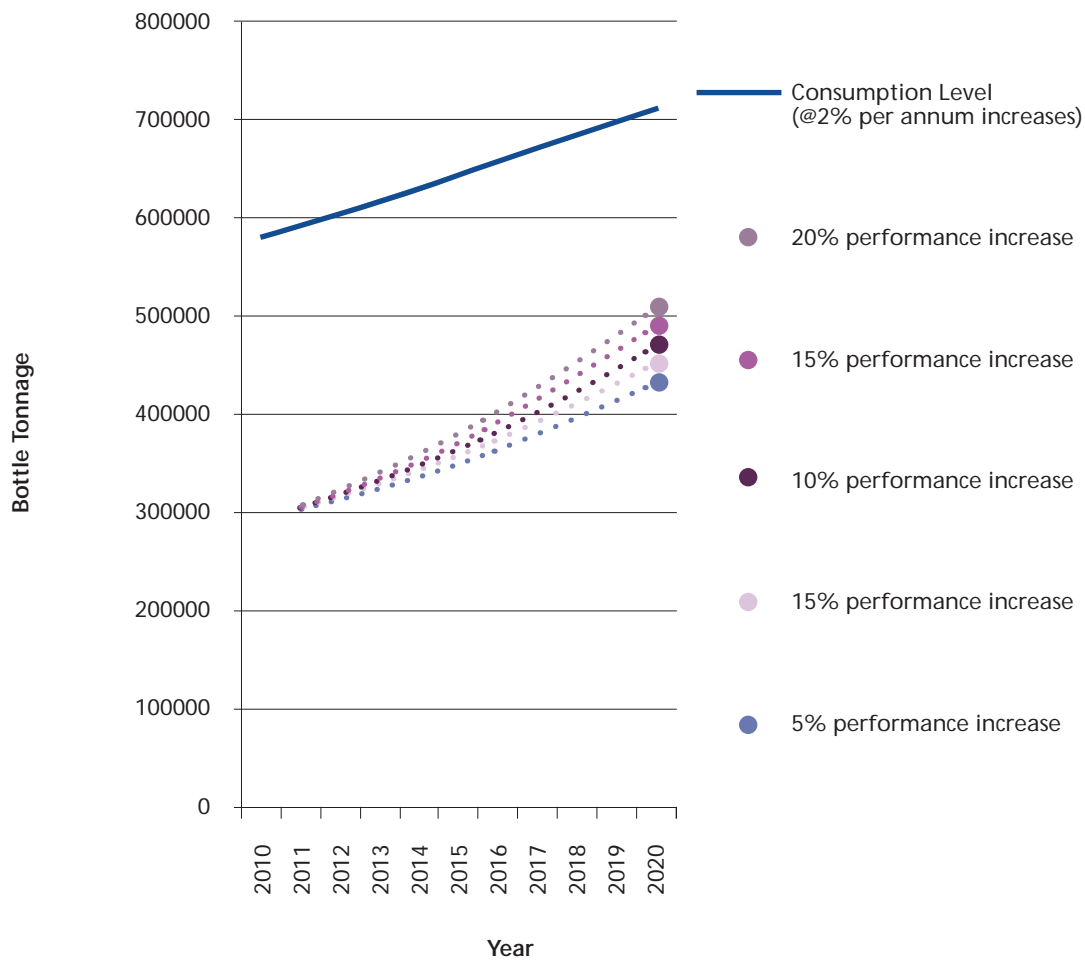
### Specific Bottle Collection Development Opportunities

There is a critical need to boost the plastic bottle collection levels to meet potential bottle recycling targets of 70% or more, and satisfy increasing market demand for bottle material. It has already been acknowledged that kerbside collection will be the primary method of achieving this. The expected growth of bottle collection infrastructure between 2011 and 2020 is shown in Figure 12. This is based on different levels of kerbside bottle collection, and a fixed 60,000 tonnes per year being collected through bring systems.

The data suggests that a bottle collection rate of approximately 308,000 tonnes can be expected in 2012. This should be considered as indicative only as some local authorities are not able to disclose future plans at the time of this survey. By 2020 it is estimated that the UK could collect 431,000 tonnes of bottles for recycling using available data. This reflects a 61% bottle recycling rate. If the yearly bottle collection performance can be enhanced by 20% from the current profile, this would result in the collection of 507,000 tonnes of bottles for recycling – a 71% bottle recycling rate.

The challenge will be to realise this performance increase which may be achieved through further infrastructure improvements, improving existing collection service offerings, or most likely engaging more householders to use the plastic recycling services already provided and to recycle all bottles. This should be a key aim for the plastic bottle supply, collection and reprocessing chain.

**Figure 12: Kerbside plastic bottle collection growth estimates based on actual data and inferred infrastructure and performance increases**



### **If the Majority of UK Householders Already have Access to a Kerbside Plastic Bottle Collection Scheme in 2010, Why is the Bottle Collection Rate at 48.5%?**

The majority of UK local authorities now offer facilities for people to recycle their plastic bottles, and 48.5% of plastic bottles are recycled. It is accepted that a limited number of these systems only represent a low number of bring collection points or a trial kerbside in a limited area, so the opportunity for the householder to recycle is significantly reduced from a practical perspective in these areas. However, a discrepancy still remains between the extensive collection infrastructure and collection rates.

Recoup have recognised for a long time that kerbside schemes, where the service is provided on the householders doorstep, encourages higher levels of plastic bottle collection. Referring to the latest reported bottle kerbside infrastructure, around 83% of UK households are covered.

Despite the significant growth in consumer interest in the environment, householder kerbside scheme participation levels still vary, so some householders do not use the kerbside service even when provided. This suggests that while bottle collection growth can be further encouraged through refinements to collection systems and infrastructure provision, much greater emphasis will need to be placed on communications and behaviour change in order to significantly boost UK bottle collections over the next five years.

From extensive material assessments of bottles collected by local authorities, it appears that some bottles are more likely to be recycled than others from the household. So, for example, an HDPE milk bottle or PET drink bottle in the kitchen is more likely to be recycled than a shampoo bottle in the bathroom. Studies commissioned by Nampak have corroborated this trend, with over 30% of plastic bottle samples by weight being natural HDPE milk bottles.

### Household Film Collection

From this year's Survey responses, Recoup estimate that up to 40 local authority collection systems include some film collection. A high proportion of these schemes actually use a bag for the collection of recyclables, and only accept carrier bags within the collection.

There are negligible amounts of household flexible plastics packaging collected for recycling. There are a number of practical barriers which prevent this material being compatible with many existing UK collection and MRF systems. Further work is required to find alternative solutions to collect and handle the flexible material, and Recoup will support activities in this area but only as a secondary research activity, with increasing bottle collection and development of non bottle rigid sorting and reprocessing remaining the priorities.



The household plastic collection infrastructure and capture rates are still developing, but it is easy to forget how far the plastic recycling opportunity has developed in the last 10 years. To put the progression into perspective, this section looks back at the 2001 Recoup Survey.

Based on 2000 data, the 2001 Survey identified that 12,715 tonnes of plastic bottles were collected for recycling at that time. This represented a 3% recycling rate.

The focus was to continue developing the bottle collection infrastructure, and this was the first year that Recoup were asked to convey the message that there was a strong demand from reprocessors for bottle material including a growing interest from UK reprocessors.

The kerbside scheme opportunity was being offered to 3.7 million households and there were 2,850 bring sites. Another key priority was to maintain quality levels at historic Recoup thresholds of maximum 5% non-bottle contamination within a bottle bale.

The infrastructure for handling bottles was more disjointed and tended to be smaller facilities, relying more on manual sorting systems. The local authorities were more likely to have greater control over their plastic material and higher awareness of the end markets.

The market values for baled bottles has increased significantly since 2000, but the range of prices has also widened due to the greater variety of contamination levels that did not exist ten years ago.

So in terms of infrastructure, tonnage recovery and increasing range of plastics collected, the UK have made significant progress. However, the way in which the systems have developed have also led to increased contamination, less recycling chain visibility for local authorities, low PRN subsidy, and poorly aligned consumer communications.

Figure 13: Comparison of 2000 to 2010 data

	2000	2010
Total Plastic Packaging Collection	12,715	357,461
<i>Of which bottles</i>	12,715	281,097
<i>Of which non bottle rigids</i>	0	76,364
Number of hh on kerbside	3.7 million	21.7 million
Bring Sites	2,850	8,801
Market Value		
Mixed Bottles	£30 to £60	£100 to £200
Clear PET	£120	£300
Natural HDPE	£120	£270
Pots tubs and trays	n/a	£ -50 to + £50
PRN Average Value For Year	£30	£3
Estimated UK v Export ratio	20 : 80	40 : 60

This section of the report presents analysis into local authority plastic bottle kerbside collection schemes. Based on this year's responses, there are now 365 kerbside collection schemes including plastic bottles in the UK, representing 21.7 million households serviced. These schemes collected 233,832 tonnes of plastic bottles for recycling in 2010, an increase of 8% from 2009.

Kerbside bottle collection infrastructure witnessed dramatic growth between 2005 (47kt) and 2009 (215kt). Several factors can be attributed to this increase including new services being launched, existing schemes being expanded, and local authorities adopting more efficient systems and more extensive communications which has boosted tonnage recovery.

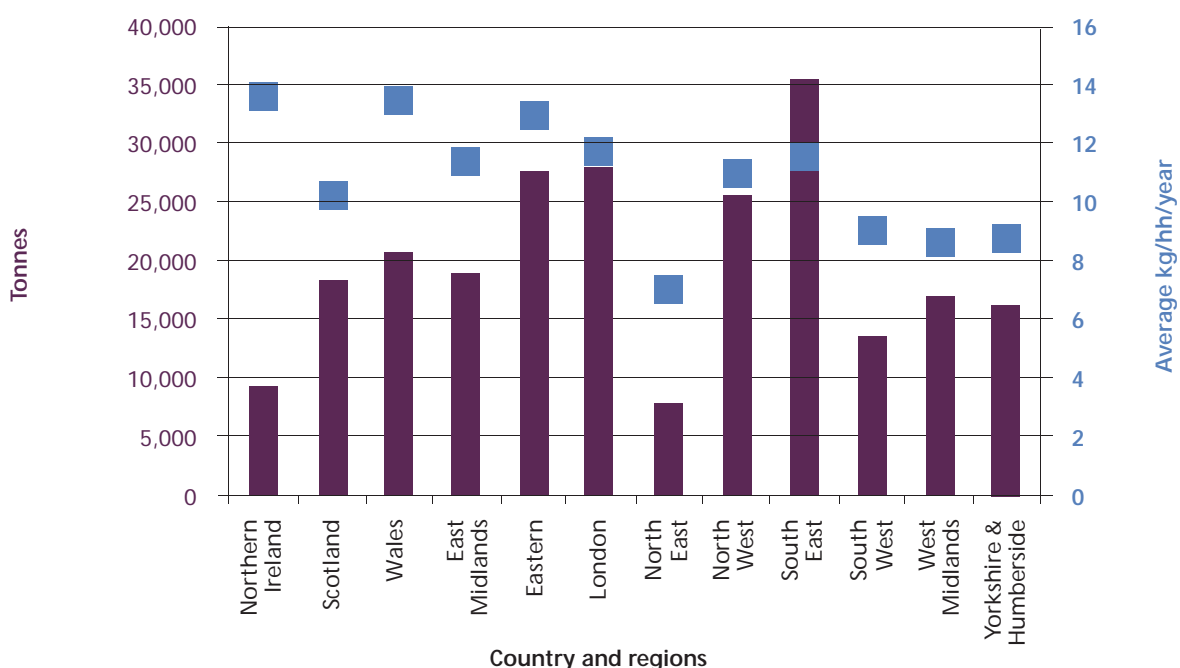
Understanding the factors that affect kerbside systems is fundamental if effective practices are to be identified and implemented. This is especially crucial for plastic recycling with a number of variables influencing a scheme's operational efficiency, recovery performance and cost.

### Kerbside Collections By Country and Region

Figure 14 provides a breakdown of kerbside bottle collection by region as categorised on the Directgov website. The information relates to the two key data points of total tonnage collected and also average collection per household per year.

The highest total kerbside bottle tonnage collected was from the South East with over 35,500 tonnes, representing 15% of the total UK bottles collected. The biggest increase was reported in the West Midlands where an additional 4,000 tonnes of bottles was reported as collected for recycling compared to 2009 data. Three areas demonstrated average kerbside recovery per household in 2010 of above 13kg, including Wales, Northern Ireland and Eastern England.

Figure 14: Kerbside plastic bottle recovery in 2010 (tonnes) and average collected per household (kg) by country and region





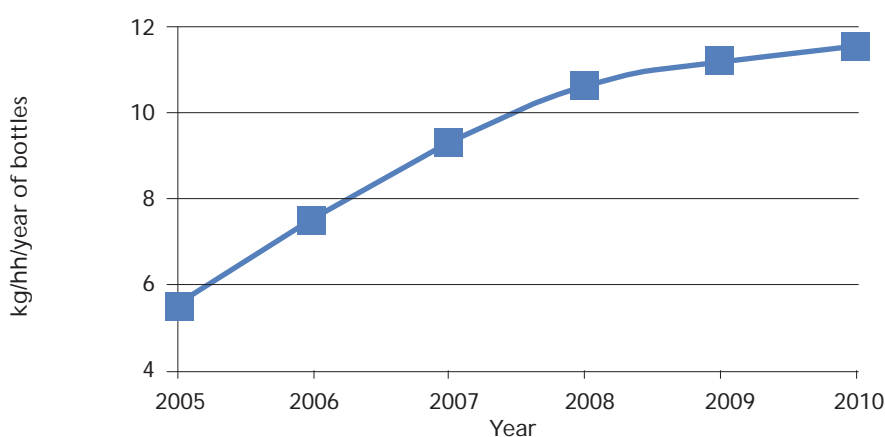
Data related to figure 14:

Region	Total bottles collected (tonnes)	Average bottles collected (kg/hh/year)
East Midlands	18,815	11.5
Eastern	27,714	13.0
London	27,975	11.8
North East	7,871	7.1
North West	25,730	11.0
South East	35,502	11.7
South West	13,549	9.1
West Midlands	17,040	8.4
Yorkshire & Humberside	16,290	8.8
<b>England</b>	<b>190,486</b>	<b>10.6</b>
<b>Northern Ireland</b>	<b>9,344</b>	<b>13.7</b>
<b>Scotland</b>	<b>18,405</b>	<b>10.3</b>
<b>Wales</b>	<b>15,597</b>	<b>13.6</b>

### Average Kerbside Collection Rates

The 2010 data suggests that the average bottle collection rate per household, from those with a plastic bottle kerbside service, has modestly improved when compared to previous years (Fig. 15). The data indicates a collection rate of approximately 11.6 kg, an increase of 0.4 kg (3.5%) from 2009. Recoup believes that the average yearly consumption of plastic bottles by each UK household exceeds 22kg.

Figure 15: Average kerbside collection rates of plastic bottles per household from 2005 to 2010



This is further evidence that the provision of kerbside collection infrastructure alone will not allow the UK to reach significantly higher bottle recycling rates. The barriers to increased collection need to be clearly identified and addressed, to ensure all householders are using the service provided, and that all bottles from each household are placed in the recyclables collection container. This will require significant work on barriers and drivers to behaviour change and consideration of how to raise the profile of plastic bottle recycling to all householders.

## Participation Rates

Generic dry recyclables participation rates are provided as part of this survey. From responses provided, an average 76% kerbside participation rate was indicated. However, individual local authority participation rates varied widely with rates from 15% to 100% being reported. Whilst this provides a general indication of participation, it does not relate specifically to plastics. Recoup are interested to hear from any local authorities who have, or are interested in considering the opportunity to complete plastic specific participation rate studies.

## Measuring Performance Indicators

A number of performance indicators are provided in this section of the report. The data has been analysed to give a 95% confidence interval. This means that there is a 95% probability that a local authority's kg/hh/year collection level for any given parameter will be within a defined range of the average performance reported. These datasets are provided for indicative purposes only, since a number of factors can influence collection rates including types and quantity of other materials collected, scheme promotion and frequency of collection. It is reasonable to expect that some parameters are likely to impact on collection levels, such as capacity of collection containers which can facilitate improved overall recycling rates, or limit the quantity of recyclables that an individual household can store. Even in this circumstance it will be linked to the frequency of collection.

## Container Types and Performance

Since 2007 the most popular kerbside recyclables collection container has been a wheel bin. There are now over 9.5 million households with a wheel bin dry recyclables collection including bottles. A wheel bin is now provided by 46% of the local authorities with a kerbside bottle collection. This fits with the wider adoption of alternate weekly collection and the introduction of more materials (including non bottle plastics) into some services. Boxes accounted for 35% of the local authorities covering more than 6.5 million households, followed by disposable or re-usable bags being used by 13% of local authorities. The remaining local authorities are generally using different systems within their service area requiring a combination of container types. When applying the percentages by number of households rather than by local authorities, the proportions are similar.

Boxes typically have a 55 litre capacity whilst wheel bins have 240 litre capacity. In a few circumstances a 120L wheel bin is used. It is also common practice to use different coloured containers to distinguish between waste, recyclables and organic material, although these are not standardised. A summary review suggested that there are no fewer than 8 different colours used across the UK for the collection container which includes plastic bottles.

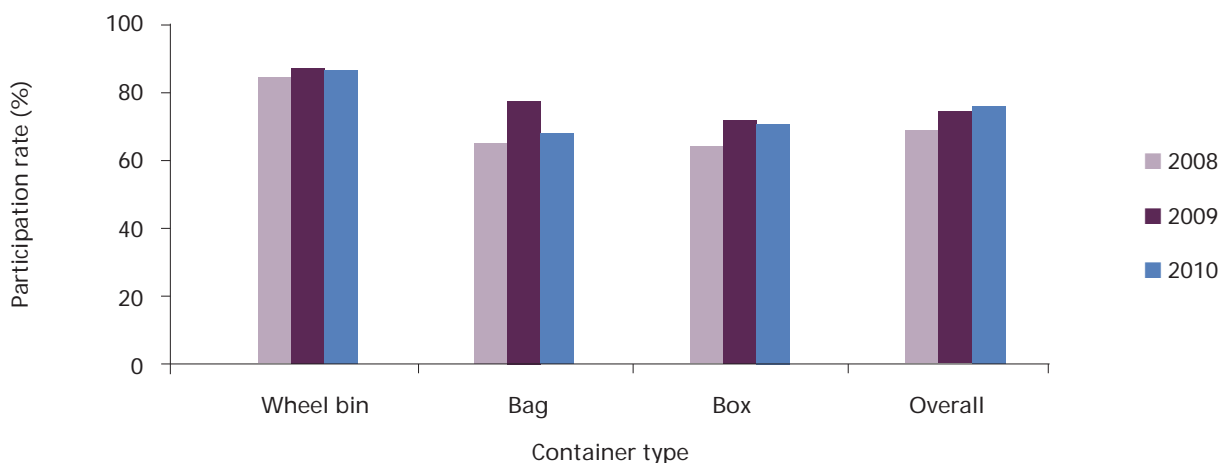
When considering the weight of plastic bottles collected per household per year (kg/hh/yr), the analysis indicated that wheel bins had a higher than average collection performance rate when compared to other container types.

- Wheel Bin : 11.7 (+/- 1.2) kg/hh/yr
- Box : 11.4 (+/- 1.1) kg/hh/yr
- Bag : 10.6 (+/- 2.4) kg/hh/yr

The 2010 survey data also demonstrated that household participation rates by container type were higher for localities operating wheel bins, with an average of 86% participation reported. Average participation rate for bags was 71%, and 68% for boxes. Participation rates reported to Recoup always vary widely but

whilst scheme participation is not compulsory, factors such as frequency of refuse collection can significantly affect participation levels when reviewed by container type. Figure 16 shows average kerbside participation rates by container type.

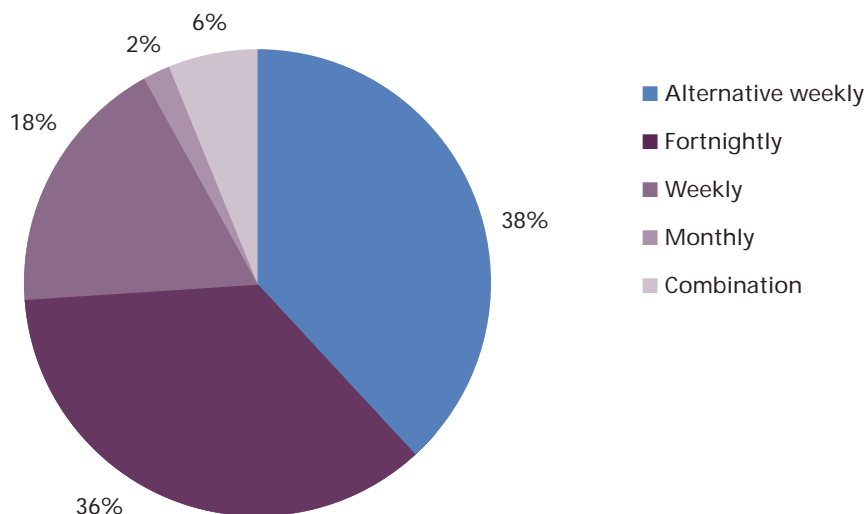
**Figure 16: Average kerbside participation rate by container type**



**Frequency of Recyclables Collection**

An important aspect of the kerbside scheme is the frequency of recyclables collection. When considering the number of local authorities providing each type of service, the reported data (Fig. 17) has been consistent for the past two years. Fortnightly recyclables collections are most popular covering 74% of local authority areas with kerbside bottle collection. When analysed further, 38% represent an alternate weekly service and 36% which have a weekly refuse collection. Weekly recyclables collections account for 18% of local authority services, 2% offer a monthly recyclables collection, and 6% use a combination of collection frequencies in their area.

**Figure 17: Frequency of kerbside plastic bottle collection service**



When the recyclables collection frequency and container type is combined as shown in figure 18, the larger capacity wheel bins are more popular when a fortnightly or monthly collection service is provided.

The box and bag collections are most commonly used with a weekly recyclables collection service. Only 8 local authorities indicated a monthly kerbside collection service with all of these supplying wheel bins for collecting recyclables.

Another capacity consideration relates to the collection vehicle. Compaction of the recycled material in the vehicle occurred in 67% of local authorities whilst 33% collected without compacting. This will be closely connected to the scheme type and collection vehicle with more opportunity for compaction of co-mingled recyclables.

**Figure 18: Container type relationship to recyclables collection frequency**

	Weekly	Fortnightly	Monthly
Wheel bin	8%	58%	100%
Box	60%	33%	
Bag	32%	9%	

Regarding the performance by frequency of recyclables collection, the analysis showed alternate weekly and weekly collections have higher average performance rates for the collection of plastic bottles, when compared to fortnightly collection.

- Alternate Weekly : 13.9 (+/- 1.6) kg/hh/yr
- Fortnightly : 10.4 (+/- 2.0) kg/hh/yr
- Weekly : 11.9 (+/- 1.4) kg/hh/yr

When taking into account the total weight of plastic bottles recovered through the different service types, alternate weekly recyclables collection systems collected over 88,300 tonnes, followed by fortnightly and weekly collection, with over 63,600 and 39,900 tonnes per year respectively (Fig. 20). The remaining 42,000 relates to those collections which utilise combinations of container types or collection frequencies.

### Residual Collection Relationship

Based on survey responses as shown in figure 19, the preferred choice in relation to refuse collection was a same day service using a separate vehicle, accounting for 38% of local authorities and 8.7 million households. Alternate weekly collection was the second most popular option accounting for 34% (6.1m households), followed by different day collections covering 10% of local authorities (2.3m households).

**Figure 19: Relationship between recyclables (plastic bottles) and residual waste collection**

Residual Waste Service Type	Local authorities	Households (millions)
Same day separate vehicle	137 (38%)	8.7 (40%)
Alternate Weekly	125 (34%)	6.1 (28%)
Different Day	37 (10%)	2.3 (11%)
Combinations / Same day same vehicle / no response to question	66 (18%)	4.6 (21%)

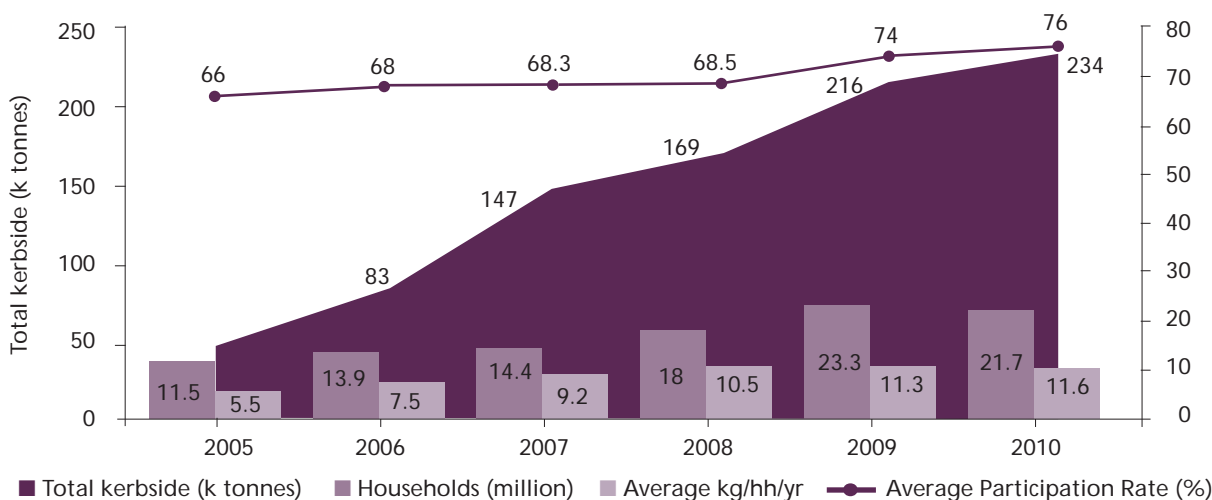
When considering the kerbside performance relationship with refuse collection, alternate weekly collections appeared to have the highest average performance level, with 12.7 kg/hh/yr. The average reported performance of same day collections with a separate vehicle was 12.1 kg/hh/yr; different day collections was 9.4kg/hh/yr. Same day same vehicle collections were not included as the number of responses was lower than that required for meaningful analysis.

- Same day, separate vehicle: 12.1 (+/- 1.6) kg/hh/yr
- Alternate weekly: 12.7 (+/- 1.8) kg/hh/yr
- Different Day: 9.4 (+/- 2.0) kg/hh/yr

### Consolidated Kerbside Scheme Parameter Trends

The graph in figure 20 combines key indicators for kerbside plastic bottle collections such as total tonnage, average weight per household, number of households serviced and average participation rate. As can be seen there are upward trends in each category, discounting the 2009 households serviced data anomaly which has been corrected for 2010. This is a useful reference point for mapping kerbside bottle collection development over time, but it does not provide direct comparisons as each dataset uses a different value scale. Note that the primary axis (left) refers to the total tonnage (in k tonnes) whilst the secondary axis (right) refers to total households serviced (in millions), average kg per household, and average participation rate (%).

Figure 20: Comparison between parameters influencing kerbside plastic bottle recycling

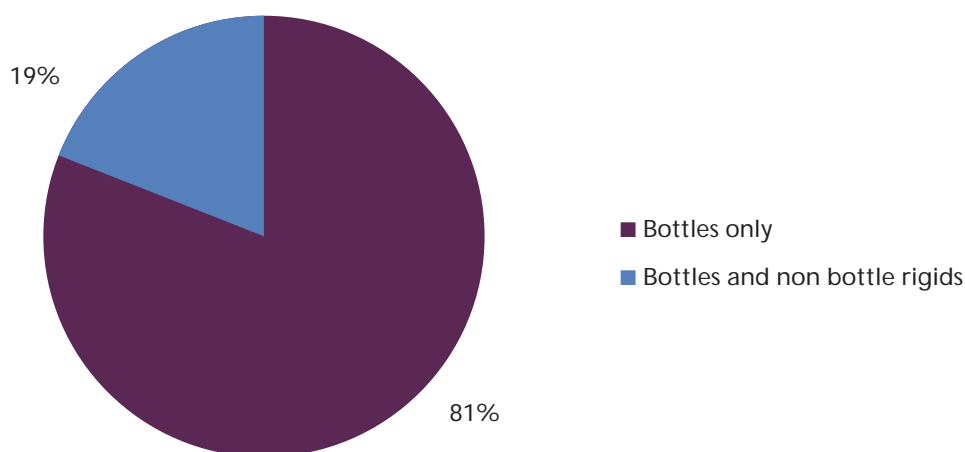


### Factors Preventing The Inclusion of Plastic Bottles in Kerbside Systems

Local authorities not collecting plastic bottles as part of the kerbside service were asked for the main reason why it had not been implemented. Twenty responses were received to this question, and the most common issues highlighted were related to current inflexibility with the collection contract or with the collection vehicle limitations, with specific reference to kerbside sorting. It is believed that these issues will be resolved when the existing contracts are completed, and the majority of the remaining local authorities will be adding plastic bottles to their kerbside collection services within the next three years. There are specific local authorities that identify cost, logistics or political reasons for not collecting plastic bottles for recycling at the kerbside. Recoup have contacted these local authorities in early 2012 to identify any opportunities to overcome these perceived barriers, with the aspirational target of kerbside collection of plastic bottles from every UK local authority. This will help deliver higher UK bottle recycling rates.

This section of the report provides data relating to local authority plastic bring collection schemes. There are a total of 250 waste collection and unitary authorities with a plastic bring scheme which represents 8,801 sites across the UK. There are 186 of these bring schemes which collect only plastic bottles, with 47,265 tonnes of plastic bottles being collected. This is a very minor decrease from 2009 collection rates. In addition 5,141 tonnes of non bottle rigids were also recovered through 64 of the local authorities. In total, 52,406 tonnes of plastics were collected through bring schemes in 2010. This data incorporates estimates for any plastic material collected through household waste and recycling centres run by waste disposal authorities, and also 'on the go' collection facilities which are serviced by local authorities.

**Figure 21: Comparison of local authority bring schemes collecting plastic bottles only and those collecting both plastic bottles and non-bottle rigid plastics.**



Despite bring schemes being the traditional method of plastic bottle collection, 80% of plastic bottle bring schemes were actually introduced after the year 2000; according to the reported data, one fifth of all bring schemes running today were set up in 2003. Nevertheless, there appears to be no correlation between the year of scheme introduction and the tonnages collected. It is also clear that the bring infrastructure is generally being maintained but has not changed significantly in the past three years.

### Bring Collection Containers

There have not been any major changes in the types of collection container used for plastic bring collections. Survey respondents indicated the type of bring containers used in their local authority area to collect plastic bottles. Seven main bring container types were specified Fig. 22; the most common type of unit was the 1,100 litre wheel bin followed by the 10 cubic yard bank; this corresponds with previous survey findings.

In addition, a further 10% of local authorities stated they use 'other' types of bring container. This represents the increasingly common 1,280 litre wheel bin, 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. The choice for a specific unit type and size will be dependent upon specific needs, type of site, the collection vehicle and the frequency of use by consumers.

Figure 22: Container types used by local authorities for bottle collection

Type of Container	Local Authorities (%)	Approximate Capacity (m <sup>3</sup> )
10 cubic yard bank	15	7.65
8 cubic yard bank	10	6.12
1,100 litre wheel bin	54	1.10
360 litre wheel bin	1	0.36
240 litre wheel bin	1	0.24
Single net cage	4	3.54
Skip	9	9 - 36
Other	6	n/a

The data shows that the sites using larger capacity container types tend to collect higher quantities of plastic bottles. For instance, single net cage and 10 cubic yard bank systems have large capacity and also report high recovery rates. While these larger container types should require less frequent servicing, they are not suitable for all bring sites particularly where space or access is limited. However, there are other benefits of using a net cage system such as avoiding the need for a bespoke collection vehicle.

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. These comprehensive systems often use the smaller capacity units.



### What is the Main Objective of Operating a Plastic Bring Scheme

Of 93 responses from local authorities with a bring system, 47 identified tonnage as the key objective of the scheme. A further 21 stated that material quality was the key scheme driver. Another popular comment was that the bring scheme met a public demand for plastic recycling and they also compliment kerbside service. This was noted by 20 local authorities, some of whom also specifically mentioning that the bring scheme is also seen as an overflow for people on fortnightly refuse collections who cannot fit all their plastic items in the kerbside collection container. Five local authorities viewed their plastic bring scheme as a low cost option for recycling bottles, and a further 5 suggested it was a short term solution until waste collection contracts can be reviewed.

More than 30 local authorities identified that they could not report accurate tonnage data as the bring sites were collecting co-mingled materials which did not have material tonnage splits, or they were serviced as part of a kerbside collection route. The most popular approach to estimating material weights by those collecting plastic bottles and cans is to adopt a 50:50 split method.

### How Does The Introduction of Kerbside Affect Bring Collections

Local authorities were asked to consider the impact of plastic kerbside collections on bring systems. The following four examples are representative of the responses received.

- Kerbside recycling introduced in June 2011 in response to residents request for plastic/cardboard recycling and has had an impact on the amount of plastic recycling at Bring Sites – reduced by 90% between 2009 and 2010.
- It is expected that the number of banks at the locations will reduce during the next year and subsequent years. This is because we now have a more comprehensive kerbside recycling service which includes mixed household plastics packaging.
- Collection weights from the plastic bring bank collection system have reduced by two thirds in response to upgrading of citywide kerbside recycling collection service in 2008-09.
- Only one of our districts now provides funding for plastic bottle banks. They have been withdrawn in other districts as kerbside collections for plastic bottles have been rolled out.

Based on this evidence it appears that the long term future of bring collections is questionable. Recoup are aware of further schemes that are likely to cease with the introduction of kerbside in 2011 and 2012. We still expect that bring sites will generally be maintained or run at a reduced number of sites as a support service where demand exists. The transfer of plastic tonnage from bring to kerbside will require monitoring to ensure bring scheme efficiencies are maintained, for example by reducing collection service frequency as needed.



The collection infrastructure for non bottle plastics packaging items is growing, particularly through expansions to kerbside collection schemes. This fraction is generally composed of a variety of pots, tubs and trays, referred to in this report as non-bottle rigids.

The 2011 survey requested information on the non bottle plastics collected by local authorities for recycling. As with bottles, the bring scheme development for non bottle plastics collection has not been significant. There are 64 local authority areas with bring schemes collecting non bottle plastics, representing approximately 1,600 sites. This is not notably different from the 2009 data.

Of the responding local authorities, 114 indicated that they are now actively collecting non-bottle plastics through kerbside schemes in addition to plastic bottles. A further 64 local authorities indicated that they were collecting non-bottle plastics through their bring schemes. This represents an additional 30 kerbside schemes and 28 bring schemes collecting a wider range of plastics packaging compared to the previous year. The total reported tonnage for 'non bottle plastic packaging' in 2010 was 76,364 tonnes which is predominantly rigid packaging items but does also include a small amount of flexible plastics.

The information provided suggests an increase in collected non-bottle plastics of 90% compared with 2009. In previous years it has been expected that there has been issues with accurately reporting the proportion of non bottle plastics within the total reported plastic tonnage.

The Recoup project team spend a significant amount of time reviewing the submitted information, following up information and sensor checking the data to ensure the final report is as accurate as possible. We also aim to clarify different interpretations of 'mixed plastics packaging', and identify the difference between an active collection of non-bottle plastics packaging, compared to a passive collection within a material stream still defined as plastic bottles only.

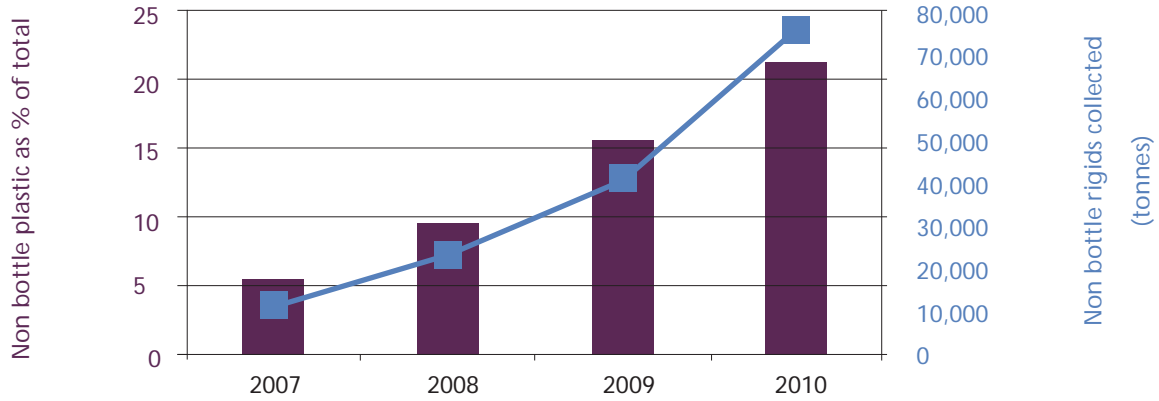
However, it is accepted that there may be minor discrepancies between individual local authority tonnages reported for bottle and non-bottle plastics where collected. It is reasonable to believe that as more local authorities and their contractors collect this fraction, and improve monitoring techniques, the data will become more accurate. Anecdotally, the reported non bottle tonnage could be understated by up to 10%. Figure 23 shows the breakdown of non-bottle plastics packaging collections by scheme type and country. England accounts for 81% of the non bottle plastics collected. Wales, Scotland and Northern Ireland account for 10%, 6% and 3% respectively.

**Figure 23: Breakdown of non-bottle household plastics packaging collection tonnage by country (tonnes)**

	Bring (tonnes)	Kerbside (tonnes)	Total (tonnes)
England	4,631	57,649	62,280
Northern Ireland	200	1,663	1,863
Scotland	17	4,497	4,514
Wales	293	7,414	7,707
Total	5,141	71,223	76,364

In 2010, the non bottle plastics account for some 21% of the total household plastics packaging collected for recycling. As shown in figure 24, this proportion has been steadily increasing since 2007 when the data was first compiled. Before 2007, there were only a limited number of local authorities collecting non bottle plastics.

Figure 24: Tonnage of non bottle plastics packaging collected and proportion of total plastic tonnage

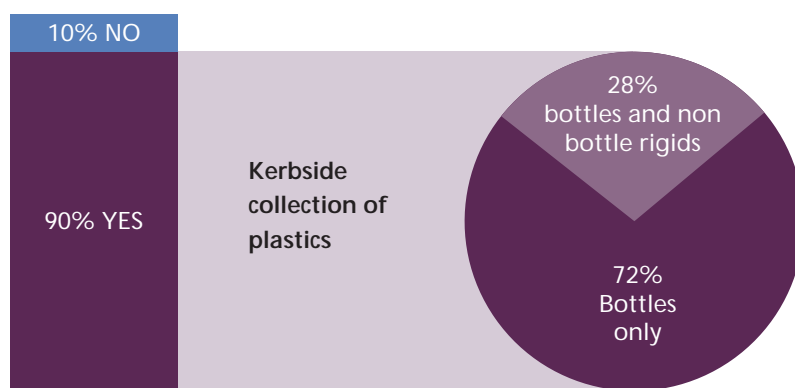


### Kerbside Non Bottle Plastic Collection

From those local authorities providing a plastic bottle kerbside service, 28% also collect non bottle plastics as seen in figure 25. This equates to 114 local authority areas and 7.1 million households. Where this service is provided, the average material collection rate is reported as 8.53kg of non bottle plastic per household per year.

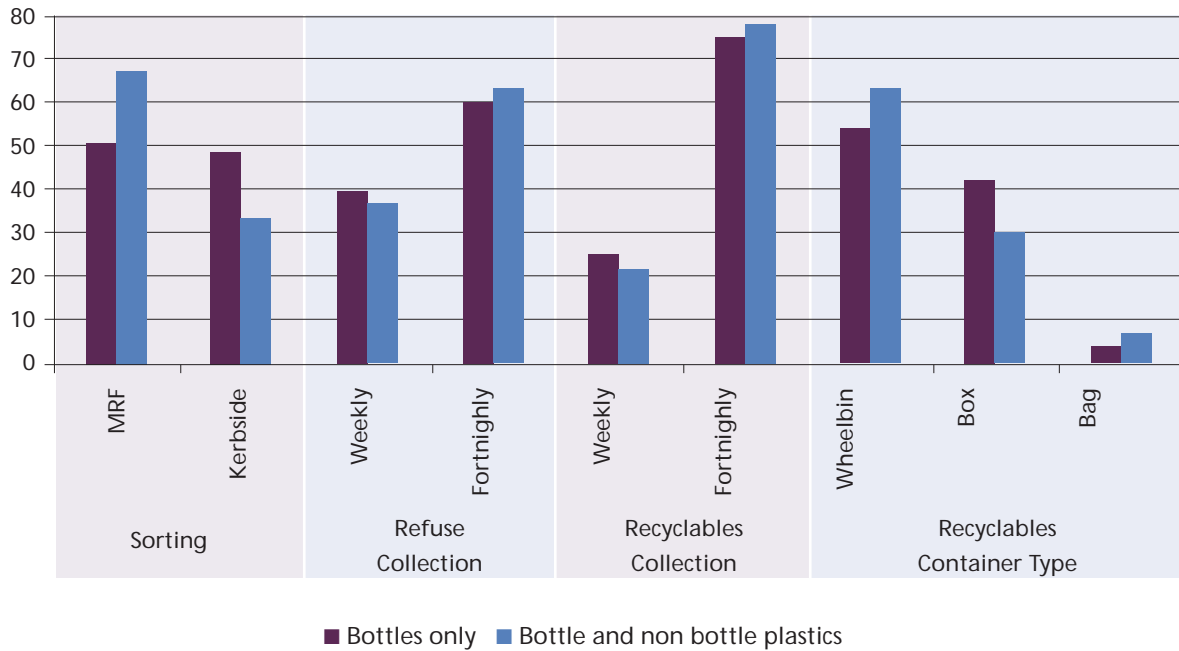
Since the previous report, the overall collection rate percentage for non-bottle plastics packaging has significantly increased. The kerbside non bottle tonnage collected represents a 101% increase on last year's data – an increase of over 35,000 tonnes.

Figure 25: Kerbside plastic collection and proportion also specifically collecting non bottle plastics by number of local authorities



When comparing the kerbside service profile of bottle only collections against those local authorities collecting bottles and a wider range of plastics, there are some notable trends as shown in figure 26. Where non bottle plastics are collected, almost 70% of kerbside services collect the material comingled and sort using a MRF. Whether collecting a wider range of plastics or not, all kerbside schemes show fortnightly collections of both residual waste and recyclables as most popular. Fortnightly recyclables collections are particularly common place. The preference for the use of a wheel bin to collect recyclables is significantly more pronounced where non bottle plastics are also collected.

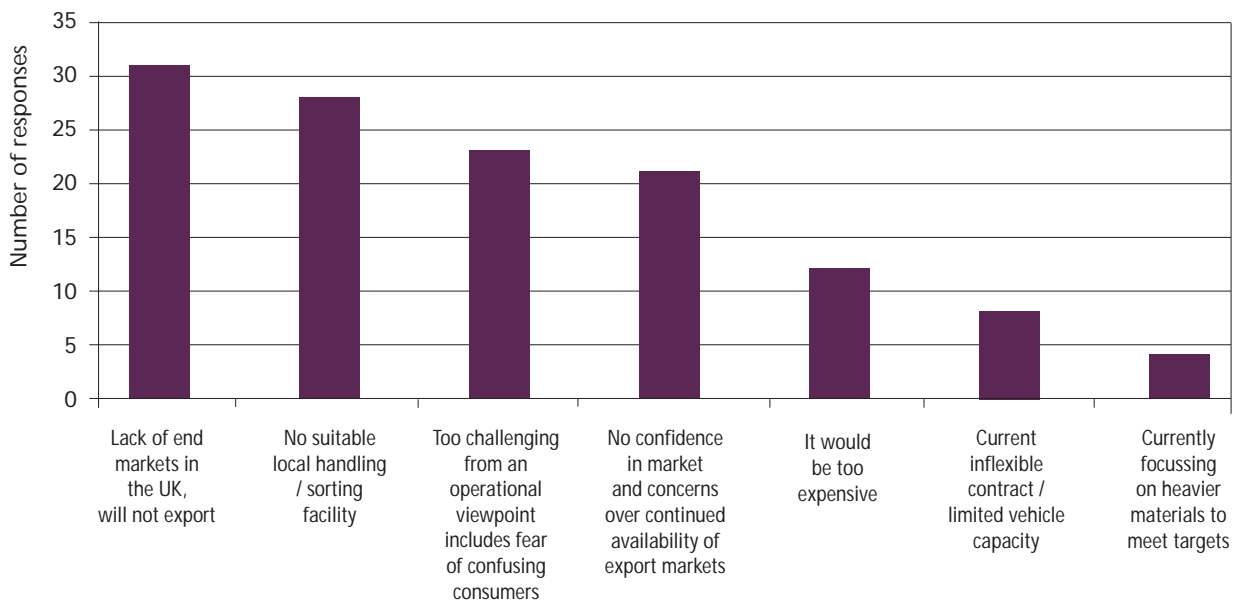
Figure 26: Bottle only vs bottles and non bottle plastics kerbside collection trends



### Barriers To The Implementation Of Non Bottle Rigid Collections

Local authorities not collecting non-bottle plastics packaging were asked for the main reason why they have currently not implemented such a scheme figure 27. From 127 responses a number of key reasons were provided. The most common issues related to lack of end markets and perceived operational challenges. In addition 61 local authorities with bottle collection schemes stated that they will not be introducing non bottle plastic collections without providing a specific reason.

Figure 27: Factors preventing local authorities from collecting non-bottle household plastics



The plastic bottle was the first household plastic type to develop sustainable recycling options. Communications activities will influence what the householder perceives as recyclable plastic, and therefore, what fractions are put out for recycling. Recycling communications to householders need to be more consistent, whether collecting plastic bottles or a wider range of plastics packaging. Recoup continue to monitor both consumer and industry messages and associated claims regarding plastics recycling, and consider their potential impacts.

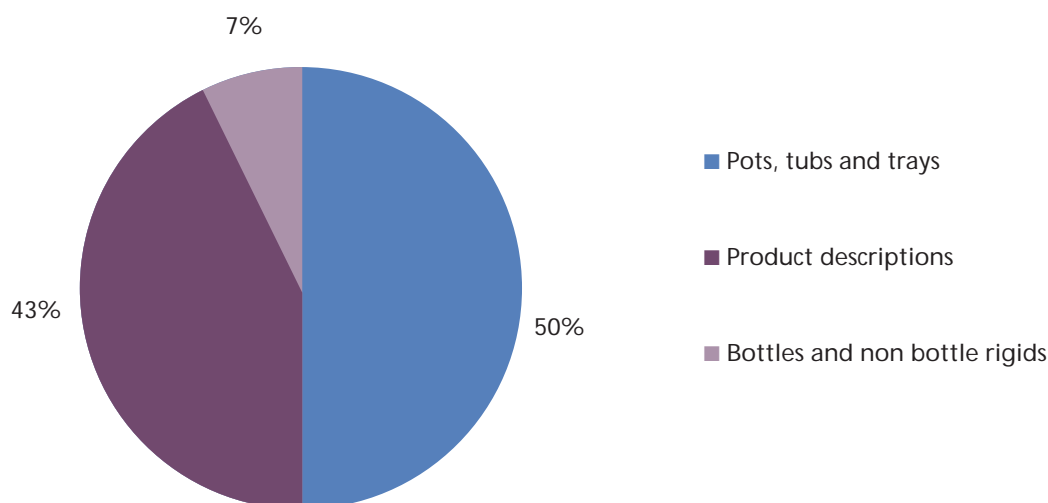
There are so many stakeholders, a range of approaches to collecting and recycling plastics, and pressures to improve green credentials. Taking a step back from the supply chain, there needs to be some general boundaries and approaches that will allow UK plastics recycling to develop sustainably. It is key that we maintain the confidence of consumers in plastics recycling through a transparent approach and consistent communications. What the industry say can be recycled must stand up to scrutiny.

'Recycle your plastic bottles' or 'plastic bottles only' is recommended by Recoup for consumer messaging. It is a simple message to engage householders and most likely to encourage participation in recycling schemes. In terms of non bottle rigids, Recoup recommend using the term 'pots, tubs and trays'. We do not recommend collecting any flexible plastics (plastics films) through bring or kerbside schemes at the present time.

### What Messages are Given to the Consumer Regarding Non Bottle Rigid Collections?

Local authorities collecting non bottle rigid plastics through kerbside were asked how they communicate the recycling message. From 110 responses, 55 use the term 'pots, tubs and trays' as endorsed by Recoup, 47 use various levels of product descriptions (soup tubs, yogurt pots, etc), and 8 use plastic polymer codes. The use of polymer codes in consumer communications is actively discouraged by Recoup.

Figure 28: Consumer Messages For Non Bottle Rigid Plastics



There are other variations of consumer messages used by those local authorities collecting non bottle rigids. Some exclude expanded polystyrene, black plastics, oil and paint containers and expanded foam trays.

Providing a clear and concise message to householders around what plastics can be recycled is paramount. Whilst the various authorities collect varying degrees of plastics, this message must be consistent and without risk of mis-interpretation. If the messages provided to householders are confusing, then there is an issue with the wrong types of plastics being deposited for recycling. Reversing this trend is very difficult to achieve, with further messages largely ending up being ignored by the householder or perceived to be conflicting advice.

The leading bottle reprocessors in the UK have advised that all bottles be collected as part of a plastic bottle collection scheme. The communications used by different local authorities carry the same general messages, but there is not an agreed standard approach. Some initial key points from Recoup experience are;

- Removing the lids from bottles is a nice rather than necessary instruction;
- Washing is not necessary for recycling purposes. However, it may assist in ensuring empty bottles and containers are placed for recycling, and also avoid unnecessary odour issues particularly with less frequent collection services during summer months;
- Different definitions are frequently used to describe the same thing;
- Polarised approach to describing what plastics packaging cannot be recycled, with various levels of description;
- Potential for non-bottle plastic and flexibles instructions to be ambiguous and conflicting;
- Aligning instructions at a County or regional level, where relevant, may improve consumer understanding of what is required and reduce confusion/questions. This does not necessarily require all local authorities in that area to have exactly the same collection system.

Reviews of consumer plastic recycling instructions highlights many different approaches despite this material being sold to the same or similar reprocessors. Recoup advise that the polymer codes can confuse rather than encourage the consumer to recycle and should, therefore, be avoided. We also believe that further work is needed to provide consistency and accuracy for labelling of plastics packaging with recycling messages. It is for the local authority to decide which plastics should be collected, through guidance from the plastic reprocessor they are supplying. Other methods of consumer communication such as on pack labelling must align with this.

SOURCES	DISPOSAL		
CARTON	CARTON	FOIL	FILM
 FSC	 paper	 metals	 plastics
MIXED SOURCES	WIDELY RECYCLED	CHECK LOCAL RECYCLING	NOT CURRENTLY RECYCLABLE



The collection and recycling of plastics from the household waste stream remains primarily focused on plastic bottles, which represents approximately 80% of the plastics collected. Local authorities tend to target the collection of all bottle formats e.g. PET and HDPE bottles both in clear / natural and in various colours. These are sometimes segregated at the handling stage by material type and colour before baling and onward sale to reprocessors. In the last two years the market options for the non bottle rigid fraction have become a key focus area as the collection levels has increased. The opportunity to separate various grades of bottles and also non bottle rigids has developed as new bespoke plastic sorting facilities have been commissioned.

### The Value of Plastic

The collection and recycling of plastics from the household waste streams remains primarily focused on plastic bottles. The 281,097 tonnes of bottles collected represents a potential value of approximately £60 million. This also suggests that over 6,500 million plastic bottles remain un-recycled costing in the region of £24m in disposal costs. Some bottles in the residual fraction will go to energy from waste, but the disposal costs have been assumed to be in line with landfill costs for the purposes of this calculation.

Rigid non bottle plastics have been a more recent addition to recyclables collections. While the markets and values for non bottle rigids are yet to develop, the 76kt collected is likely to attract a nominal value if not contaminated, and the inferred 424kt of non bottle rigids not recycled will incur disposal costs of £34 million per annum.

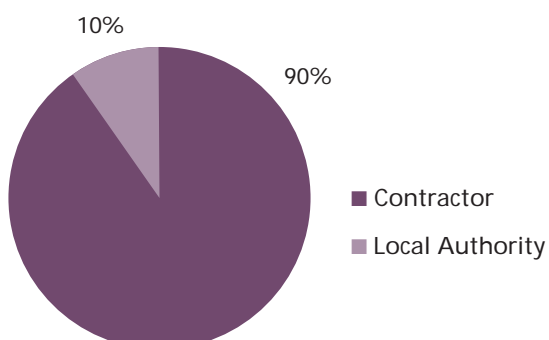
The values for plastics will fluctuate over time and be dependent on a number of conditions, not least the quality level, but are based on baled material delivered to a reprocessor. The disposal costs are based on landfill fees of £80 per tonne which are expected to continue increasing in the coming years.

### Control of Material Sales

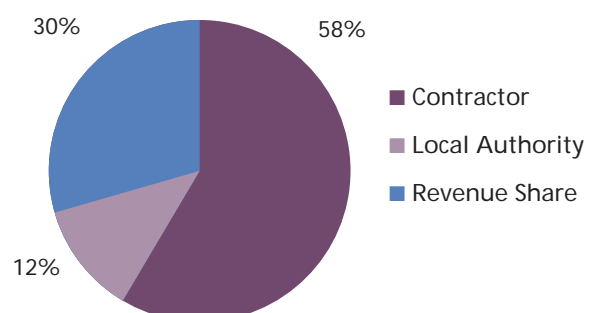
Local authorities were asked to confirm who controlled the plastic sale and revenue generated (fig 29). From 230 local authority responses, we have found that in the majority of cases the contractor controls the plastic material sales. Additionally, 58% of contractors receive the entire revenue from the sale of the material. A further 30% have a revenue sharing arrangement in place with the local authority.

Figure 29: Who decides where plastics are sold and who controls the revenue

Control of Plastic Material Sale



Revenue from Material Sale



## Monitoring of Plastic Quality

Given the importance of material quality, local authorities were also asked about their monitoring processes for plastics. It was found that 74% of responding local authorities monitor the plastic material with 57% auditing the MRF/waste contractor site and 13% auditing the reprocessor.

Whilst towards the end of 2010 the value of recycled plastics packaging dropped, there have also been many advances, helping the UK to work towards some of the government's recycling targets. Examples of these can be seen in advances in technology, allowing MRFs to deal with rigid plastics and greater initiatives around the country to encourage the public to recycle plastics, such as 'on the go' schemes.

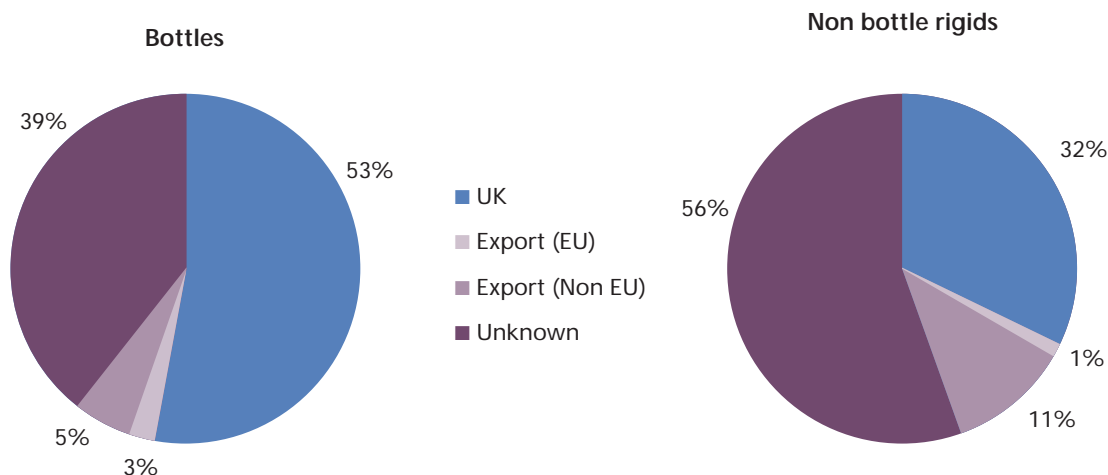
## End Markets For The Collected Plastic

Survey respondents were asked to indicate where their plastic material was sold as shown in figure 30. For plastic bottles, 53% identified a UK market, 8% export market, and 39% were not aware of the end market. This high level of unknown end market for bottles may be a result of not wanting to declare the end market used, or that the responsibility for sale lies with the service provider rather than the local authority. It is difficult to provide accurate data on UK vs export reprocessing but it is estimated that approximately 50% of material collected will stay within the UK for reprocessing. The remaining 50% will be sold to non UK reprocessors. Therefore, if the 39% unknown was converted to export, this would broadly match with the best estimate provided. Irrespective of destination, the inherent value of the bottles will lead to them being recycled.

When requesting end markets used for non bottle rigids, 32% suggested a UK reprocessor was used. A further 56% were not aware or willing to disclose the reprocessor. This data does not match expectation as it is believed that a significant proportion of non segregated bottles, pots, tubs and trays are baled together and exported to non EU export markets for separation and reprocessing. Of those schemes which are collecting non bottle rigids in addition to plastic bottles, the over-riding majority indicated that whilst the material was collected in a mixed format, they were actually intended to be sold to market as a lower grade of bottles. It is known that some reprocessors will not accept baled bottles, even when they contain a relatively small proportion of pots, tubs and trays.

Recoup believe that all local authorities should have a detailed knowledge of the plastic sales chain and the end market application, even when not directly responsible for the material sales.

Figure 30: End Market for Collected Plastics



Recoup have reported the increases achieved in the level of UK household plastics packaging collections over the past 17 years. This section of the report compares plastic bottle collections against wider dry recyclables performance levels. The UK recycling levels are also compared to plastic recycling and recovery levels in other EU countries.

### Local Authority Recycling Performance Data vs Plastic Recycling Levels

There are no obvious links between reported local authority recycling rates (dry recyclables) as reported by Waste Data Flow, and specific plastic bottle collection levels reported to Recoup. That said, if the performances in these two categories are ranked based on available data, there are 6 local authorities that are in the top 50 for both dry recyclable and plastic bottle collection rates. These are;

- Adur & Worthing
- Bournemouth
- Chichester
- Epping Forest
- Guildford
- Mid Sussex







### European Union Plastic Packaging Recycling and Recovery Rates

There is a strong growth trend in household plastic recycling and energy recovery in Europe as can be seen in the latest research comparing the rates across Europe (Fig. 31). Recycling performance across EU countries range between 15% and 30% in most cases, energy recovery levels show a much wider range (0% and 75%).

The UK were behind average EU plastic recycling and recovery 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, and also specifically in 2010 by increasing collections of non bottle rigids.

The UK were ranked 20 from 29 countries, based on plastics packaging tonnage recovered in Europe in 2010, although this combined both recycling and energy recovery. This is an improvement of one place compared with 2009. While the UK are recycling and recovering just over 30% of plastics packaging, there are nine countries achieving above 80% recovery. When considering the recycling rate in isolation the UK achieved a marginally better rank of 15 from 29, up from 17th in 2009. No EU country achieved higher than 36% 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.

Figure 31: Recycling and energy recovery rate per country in the EU (sourced from Plastics : The Facts 2011)

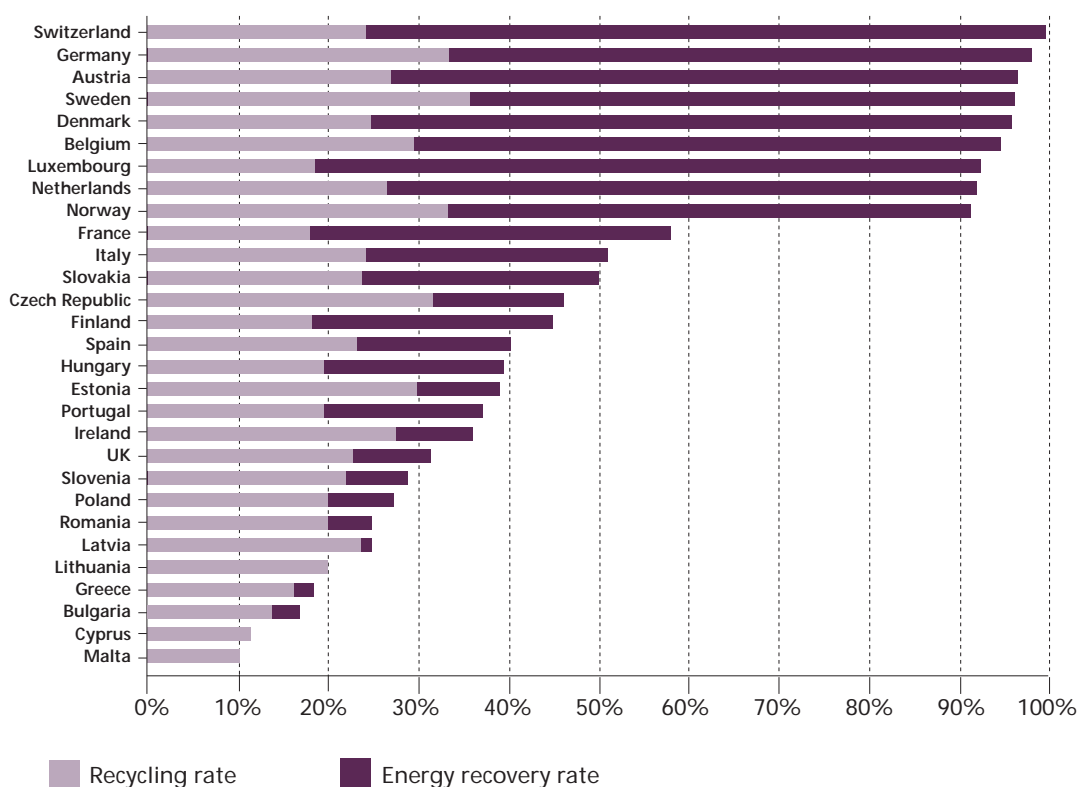


Figure 1: Breakdown of recycled tonnage by scheme and packaging type.....	Page 10
Figure 2: Growth in household plastics packaging collections, by bring and kerbside schemes .....	Page 11
Figure 3: Percentage of plastic bottles collected through bring and kerbside schemes .....	Page 12
Figure 4: Percentage of plastics packaging collected by scheme type (tonnage).....	Page 13
Figure 5: Changes in collection rates between 2009 and 2010 by plastic format and collection scheme type.....	Page 13
Figure 6: Breakdown of plastic bottle only collections by country and infrastructure.....	Page 14
Figure 7: Breakdown of bottle collections that also include non bottle rigid collections by country and Infrastructure .....	Page 14
Figure 8: Breakdown of plastic bottle collections by country (in tonnes) in 2010 and respective changes (by %) in comparison with 2009 data.....	Page 15
Figure 9: Percentage comparisons of bring and kerbside bottle collection by tonnage and per capita.....	Page 16
Figure 10: Estimates of plastics packaging collections in 2011 and 2012 .....	Page 17
Figure 11: Projected household plastics packaging collection growth to 2020 .....	Page 18
Figure 12: Kerbside plastic bottle collection growth estimates based on actual data and inferred infrastructure and performance increases.....	Page 19
Figure 13: Comparison of 2000 to 2010 data.....	Page 21
Figure 14: Kerbside plastic bottle recovery in 2010 (tonnes) and average collected per household (kg) by country and region .....	Page 22
Figure 15: Average kerbside collection rates of plastic bottles per household from 2005 to 2010 .....	Page 23
Figure 16: Average kerbside participation rate by container type.....	Page 25
Figure 17: Frequency of kerbside plastic bottle collection service.....	Page 25
Figure 18: Container type relationship to recyclables collection frequency .....	Page 26
Figure 19: Relationship between recyclables (plastic bottles) and residual waste collection.....	Page 26
Figure 20: Comparison between parameters influencing kerbside plastic bottle recycling.....	Page 27
Figure 21: Comparison of local authority bring schemes collecting plastic bottles only and those collecting both plastic bottles and non-bottle rigid plastics.....	Page 28
Figure 22: Container types used by local authorities for bottle collection .....	Page 29
Figure 23: Breakdown of non-bottle household plastics packaging collection tonnage by country (tonnes) .....	Page 31
Figure 24: Tonnage of non bottle plastic packaging collected and proportion of total plastic tonnage.....	Page 32
Figure 25: Kerbside plastic collection and proportion also specifically collecting non bottle plastics by number of local authorities .....	Page 32
Figure 26: Bottle only vs bottles and non bottle plastics kerbside collection trends.....	Page 33
Figure 27: Factors preventing local authorities from collecting non-bottle household plastics.....	Page 33
Figure 28: Consumer messages for non bottle rigid plastics .....	Page 34
Figure 29: Who decides where plastics are sold and who controls the revenue .....	Page 36
Figure 30: End Market for Collected Plastics .....	Page 37
Figure 31: Recycling and energy recovery rate per country in the EU (sourced from Plastics : The Facts 2011) .....	Page 39



# UK Household Plastics Packaging Collection Survey 2011



**RECOUP**

REcycling Of Used Plastics Limited

Recoup (Recycling of Used Plastics Limited),  
1 Metro Centre, Welbeck Way, Woodston, Peterborough, UK, PE2 7UH  
t: +44 (0)1733 390021 e: enquiry@recoup.org w: www.recoup.org