



Resourcing the world

# PLAN FOR PLASTICS

THE CIRCULAR SOLUTION | PLASTIC RECYCLING REPORT 2018



Plastic was introduced as a **material marvel**, designed to preserve and protect products over long journeys - ensuring food in particular remains **fresh, safe and long-lasting** while saving water and energy in the process.

These benefits are significant. Unfortunately pathways have opened up resulting in plastic waste ending up in the natural world.

Our objective is to recover materials before they're lost and damage the environment; recycling resources, creating new from used.

The UK has successfully moved from a 5% to 45% recycling rate over a 20 year period, now we need to consider what our next steps should be, how we as a country can improve recycling. This isn't about banning an eco-material but evolving how we design, collect and process it to optimise its environmental and economic potential.



Plastic has featured prominently in the press and its proper management has become a priority for the public. Veolia is dedicated to the circular economy - designing and refining solutions which keep waste material from being wasted and transforming it instead into a valuable resource. Plastic is no different. As the UK leader in resource management, Veolia is in prime position to propose ways our nation can prevent and preserve plastic resources within a circular economy.

This report is a compilation of consumer and industry insight into recycling and in particular, plastic bottles. We have found a clear disparity between the recycled content people want or expect in their products and what industry is delivering. We have made recommendations on the back of this research in order to bridge this gap and ensure the UK is at the heart of the plastic circular economy.

Veolia already recycles over 40,000 tonnes of plastic bottles in the UK every year and we will commit to do more, as long as there is demand from manufacturers.

The UK plastics packaging recycling targets require around 1.1 million tonnes of plastic packaging to be recycled by 2020, with an expectation that these targets will increase further through new legislation and commitments.

If more bottles are collected, more recycled content is used in manufacturing, design is standardised and collection is simplified, we will witness a huge uplift in recycling, reduce our environmental footprint and most importantly, begin to shape real behavioural change in society.

Plastic bottles are one of the most recyclable and common materials on supermarket shelves and yet around 40% of them aren't reaching recycling centres.

This needs to improve if we are going to solve our plastic problems. We can make the plastic bottle a recycling, circular success story - turning old bottles into new ones, paving the way for other forms of plastic to follow.

The future of plastic recycling is at a tipping point. Reinforced by initiatives like the UK Plastics Pact and firm commitments from well-known brands, this is our chance as an industry to capitalise on the momentum and take the UK from being a bystander to a global front-runner in recycling.

KEY FINDINGS FROM RESEARCH

93% of people think plastic bottles should be made of recycled content.

On average, consumers are willing to pay around

2.5p

more for a bottle with recycled content



Plastic bottles are **highly recyclable** and common materials - yet around **40% of them** aren't reaching recycling centres

UK recycling tonnages



PLASTIC BOTTLES  
594,000 tonnes



POTS, TUBS & TRAYS  
525,000 tonnes



FILM  
414,000 tonnes



59% currently collected for recycling  
Very recyclable

33% currently collected for recycling  
Mixed recyclable

<5% currently collected for recycling  
Very hard to recycle

If we collected and recycled every bottle which ends up in landfill, it would reduce the need to extract more raw material for the production of virgin plastics. We are currently missing 13 billion plastic bottles.

Employing the steps we put forward in this report will allow us to realistically capture every single plastic bottle in the UK, helping to bolster recycling rates which have plateaued in recent years.

Using current figures this would save 300,000 tonnes in carbon emissions - equivalent to taking 127,000 cars off the road.

Drawing on our experience in the sector, the three measures we wish to explore here speak to all parts of the plastics supply chain; from designer to consumer, manufacturer to government, to encourage us all to pull our weight in tandem.



OUR THREE STEPS TO BOOST PLASTIC RECYCLING

STEP 1 SIMPLIFY RECYCLING

Clearer labelling on products as well as schemes to encourage recycling on the move will remove confusion and inconvenience.

STEP 2 STANDARDISE PLASTIC PACKAGING

Sustainable and consistent design will ensure products can be recycled more easily.

STEP 3 INCREASE RECYCLED CONTENT IN PACKAGING

Using recycled content in new products will increase the demand for recycling as well as expand the market for the final material helping to drive costs down in the process.

KEY INSIGHTS

EVERY MINUTE  
We get through 25,000 plastic bottles

EVERY DAY  
Our environment is littered with 700,000 plastic bottles

EVERY YEAR  
5.5 billion plastic bottles end their life as landfill, remaining for up to 1,000 years<sup>1</sup>

<sup>1</sup>House of Commons Environmental Audit Committee Plastic bottles: Turning Back the Plastic Tide (First Report of Session 2017–19)



# 1 SIMPLIFY RECYCLING

**Clearer labelling** on products as well as **schemes to encourage recycling on the move** will remove confusion and inconvenience.

The first step to preventing plastic pollution is collecting more bottles before they're discarded incorrectly. It's a simple formula – if we collect more for recycling, we not only stop build up of plastic on our streets or in our seas, but we harness a resource out of the waste.



In countries like Germany, Sweden and Norway, over **90% of bottles** are returned through Deposit Return Schemes (DRS).



## DEPOSIT RETURN SCHEME



With the right placement, incentive structure and collective support, underpinned by partnership with the recycling industry, DRS can deliver a massive increase in the bottles we salvage.

We welcome the government's initial announcement of a consultation on DRS and look forward to supporting its rollout in the UK.

## CONSISTENT COLLECTIONS



Collections from the home, businesses, streets, markets and public events all have to be as consistent as possible with simple recycling instructions for the busy consumer.

## 'ON THE GO' COLLECTION INFRASTRUCTURE



Developing a much more comprehensive and effective on the go collection infrastructure across the UK is recognised as a key opportunity to collect more plastic bottles and prevent litter.

We welcome the way the public has challenged the consequences of improper plastic bottles' disposal and encourage people, if walking about with a plastic bottle, to be on the lookout for a recycling point, or take the bottle to recycle at home if possible.

## A RECOGNISABLE LABEL ON EVERY RECYCLABLE ITEM



A recognisable label on every recyclable item, as confirmed by the recycling industry, will go a long way to removing the headache of working out if something is recyclable or not.

We are in favour of a more precise labelling system for product recyclability, which the consumer can be confident in when making purchases.



# 2 STANDARDISE PLASTIC PACKAGING

**Sustainable and consistent design** will ensure products can be **recycled more easily**.

Ensuring plastic bottles are recyclable while also keeping quality high and cost low is paramount.



Steps to take to ensure a product is recyclable by design:

### STANDARDISE MATERIALS



We need to standardise the polymers in films and pots, tubs and trays so the recycling industry can collect and recycle the material time and time again, without worries about obscure elements contaminating the process.

Most plastic bottles are made from polyethylene terephthalate (PET), or high density polyethylene (HDPE) which are very easy to recycle.



### SCRAP HARD TO RECYCLE MATERIAL

Similarly, hard to recycle material like black plastic should be solved or scrapped. There are too many material types designed without consideration for what happens after their purpose is served. Functional yet sustainable packaging will reduce contamination later in the recycling chain.



### REWARDING RECYCLING

Policies should be considered which will reward packaging recyclability or penalise businesses which place unrecyclable products on the market.

# 3 INCREASE RECYCLED CONTENT IN PACKAGING

Using recyclable content in new products will increase the demand for recycling as well as expand the market for the final material, helping to **drive costs down** in the process.

Our research demonstrates 93% of people expect recycled content to be in plastic bottles.

There are examples of well known brands aiming for 20% or 25% recycled content. Milk bottles on average contain 20% - 30% and this is gradually increasing. There is an industry ambition to get to 50% for HDPE bottles but the timeline for this is not yet clear.

Our research indicates that 83% of people already think at least half of the material in a bottle is currently recycled content while 55% of people think all or most of the bottle should have recycled content. In reality most manufacturers use virgin plastics.

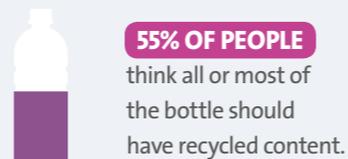
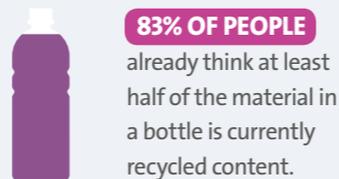
**We have some way to go before industry meets the public's expectations.**

Manufacturers are price sensitive. However, over half of all consumers said they were willing to pay on average an extra 2.5p for bottles containing recycled content.

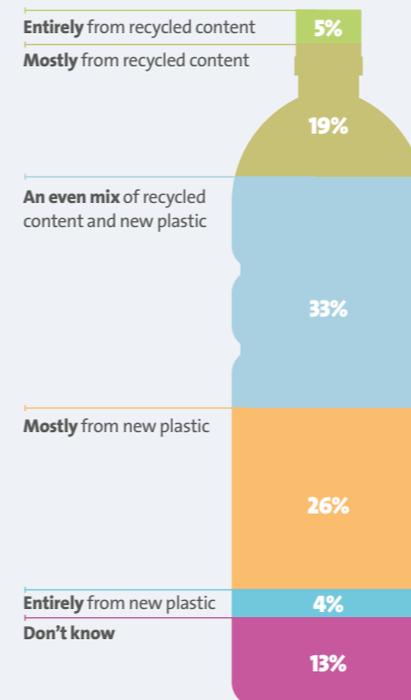
This would raise £325 million annually at current rates of plastic bottle usage in the UK.



## KEY FINDINGS FROM RESEARCH

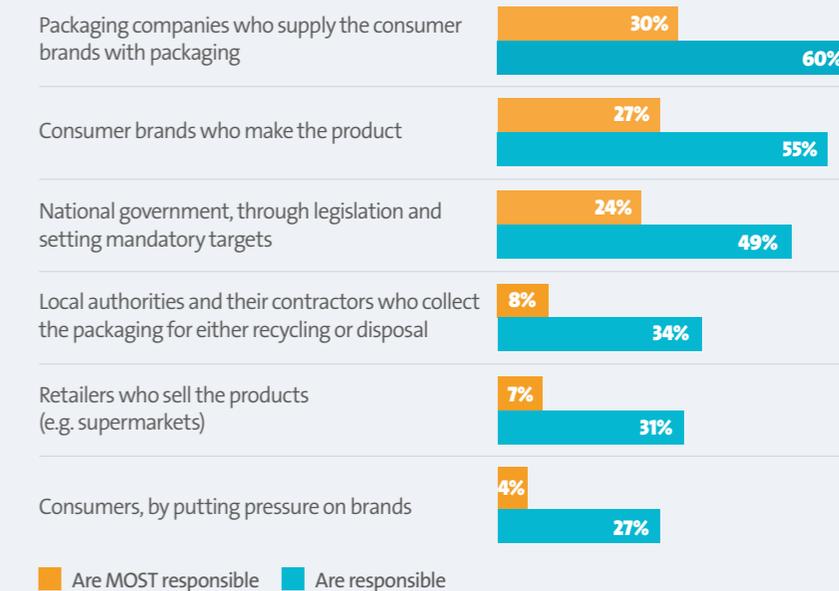


What percentage of recycled content do people think is in a bottle?



Who is responsible for making plastic packaging sustainable?

Consumers recognise that multiple stakeholders (including themselves) have a role to play. However, they think that packaging companies, consumer brands and national government have the most responsibility.



### TAX ON PLASTIC PACKAGING

As recycled content grows it will by scale become comparable in price. Today it needs an edge to compete against virgin materials and therefore a tax for poorly designed packaging would work well, allowing responsible businesses time to move away from non-recyclable or compostable materials.

### REFORM THE PACKAGING RECOVERY NOTE SYSTEM

There is a growing urgency to develop transparent and reliable markets for recycled content. Now a fantastic opportunity exists for the right policies, such as reform of the PRN system to facilitate investment in domestic infrastructure, which will transform the UK into a world leader of plastics recycling.

According to Veolia's joint research with Imperial College London, a circular economy could add **£29 billion (1.8%)** to GDP in the UK.

Every day at Veolia, we're proving it's not only possible but also profitable to give used materials a second, third or even fourth life.

The direction is clear: better plastic resource efficiency through the development of a circular economy. Plastic and bottles in particular are an ideal material to demonstrate that it is possible to move towards a circular economy model with recycling as a key element. It is now up to bottle producers, plastic recyclers, the government and consumers to deliver this opportunity.

Whether it's the environmental urgency to protect our oceans, the ethical imperative to consider future generations, or the economic attraction of a circular, UK-based plastics system, change needs to happen.



Visit: <https://bit.ly/2Km34Cq> for more information

IN ITS SIMPLEST TERMS, THERE IS A NEED TO:

 Collect more plastic bottles for recycling

 Sort to a quality standard

 Reprocess to meet a guaranteed long-term market demand



The UK leader in environmental solutions, Veolia provides a comprehensive range of waste, water and energy management services designed to build the circular economy and preserve scarce raw materials.

[www.veolia.co.uk](http://www.veolia.co.uk)



RECYCLING OF USED PLASTICS LIMITED

RECYCLING OF USED PLASTICS LIMITED (RECOUP) is a registered charity and not-for-profit member based organisation. It works in collaboration with all stakeholders to promote, develop, stimulate and increase the levels of plastics recycling within the UK.

[www.recoup.org](http://www.recoup.org)



Richard Kirkman  
Chief Technology  
and Innovation Officer  
Veolia UK & Ireland



**“Plastic packaging can be complex but mitigating its impact is straightforward. Veolia is in a unique position, holding a bird’s eye view over the end-to-end plastic recycling process, and in this report with industry experts Recoup, we recommend three clear ways the UK can champion plastics - both environmentally and economically - setting the standard for the next decade.**

“The British public have told us they expect plastic bottles to be made of recycled content. We see 50% recycled content for plastic bottles and 30% for plastic packaging as realistic ambitions for every manufacturer to aim for within the next 10 years. When more packaging is both recyclable and made from recycled material, it will be the shift needed for recycled plastic to become mainstream.

“Veolia is planning to invest £1 billion in recycling and recovery infrastructure in the UK over the next five years. It is up to designers, manufacturers and government to ensure supply matches our stake; so more plastic is collected and sorted to a higher quality standard.

“The launch of a Deposit Return Scheme, reformation of the PRN system, implementation of a tax for single use plastics and broader use of recycled content in manufacturing will ensure better plastic resource efficiency, more economic opportunity and improved environmental impact in the long term.

“We owe it to future generations to make circular and sustainable living this country’s priority.”

Stuart Foster,  
Chief Executive Officer,  
RECOUP



**“There is more focus on plastic and sustainability than ever before, and that needs to be matched with action and progress.**

“With circular economy and extended producer responsibility currently under debate, this is the ideal time to acknowledge the key issues and challenge current thinking.”

Veolia is planning to invest **£1 billion** in recycling and recovery infrastructure in the UK over the next three years.



## What consumers told us

The majority of the public expects that the majority of a plastic bottle should contain recycled content. In reality we're far from achieving these ambitions.

We spoke to over 2,000 people from a wide demographic on the subject of recycling so we can learn what would galvanise the public to act. Research has been undertaken to provide insight into what consumers really understand about and their drivers for plastic packaging<sup>2</sup>.

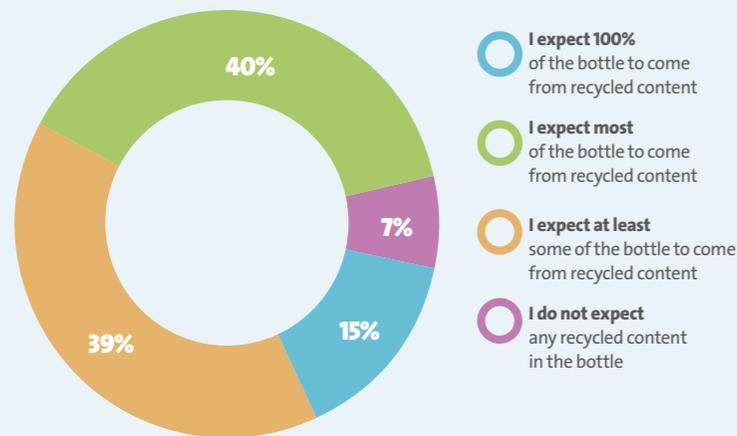
The vast majority (93%) expected plastic bottles to contain recycled materials, This includes over half (55%) who expect that all or most of the bottle to be made from recycled

content. 94% were also aware that bottles were recyclable after use. Only 4% thought bottles are made entirely from new plastic.

Compared to younger age groups, 55-64s and those aged 65+ are both significantly more likely to think the material produced will be of lower quality.

This highlights consumer education is needed about the possibilities that plastic milk/drinks bottles can be recycled into new milk/drinks bottles rather than other plastic products, particularly for the 55+ age group. This will help consumers appreciate the value of using recycled content.

### What do consumers expect to see?



2. Online survey undertaken in September/October 2017. Quotas were set on age, gender, socio-economic background and region, with weighting applied to ensure a balanced and representative sample. Data also comes from the 2016 and 2017 RECOUP Household Plastic Collection Survey.

### Willingness to pay more for recycled content

People are willing to pay more for bottles with recycled content. This could provide a huge incentive for manufacturers who are currently reluctant to pay extra.

Over half of consumers (51%) said they were willing to pay extra for recycled bottles - 2.5 pence extra on average. This would raise £325 million annually at current rates of plastic bottles usage in the UK.

The cost consumers are willing to pay for a product with more recycled content can be a good indicator of market potential. A perceived low amount of 1p per bottle can make the financial difference between using recycled content or not.

The willingness to pay more is most pronounced among 18-24s who are willing to pay an average of 3.7p more (1 to 1.5p more than all other age groups).



### Domestic infrastructure

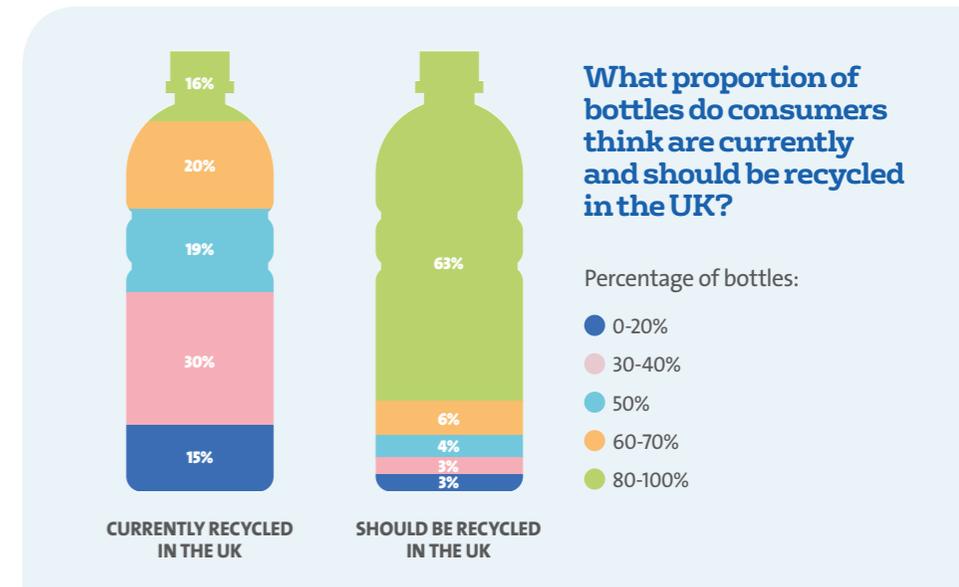
The vast majority of people think plastic bottles used in the UK should be recycled in the UK. More investment in domestic infrastructure is important alongside continuing to trade in a global market

Consumers think that, on average, 50% of bottles collected are recycled in the UK and 87% of us think we should be recycling far more of our bottles here instead of exporting them.

Consumers who think plastic bottles are recyclable are somewhat sceptical about the amount of plastic bottles recycled in the UK.

Almost half (45%) think that 0-40% of the plastic bottles collected for recycling in the UK are recycled in the UK, compared to around one in three (36%) who think 60-100% are recycled domestically.

In terms of what they think ought to happen, the expectation from the consumer is these bottles should be recycled domestically – almost two in three (63%) think that 80-100% should be recycled in the UK.



### What industry told us

For industry - cost and functionality are the most important factors when producing bottles. Recyclability needs to be a higher priority at design stage.

We interviewed companies across the packaging supply chain including manufacturers, brand owners and retailers.

### Change must be cost neutral

For manufacturers, functionality, cost, technical capabilities and aesthetics were the major considerations in how and why they use certain polymers. While sustainability of packaging (recycled content and recyclability) was mentioned, it was a lower priority. Retailers told us that consumers won't pay more for recycled or recyclable bottles, whereas our research contrasts this.

**MANUFACTURER PRIORITIES**

- PACK FUNCTIONALITY
- COST / VALUE FOR MONEY
- VISUAL APPEAL
- RECYCLABILITY
- RECYCLED CONTENT
- OTHER FACTORS

The food service industry is working to ensure at least **30% of milk bottles are made of recycled plastics** (currently this stands at 15%)

## Attitudes to on-pack recycling label (OPRL)

Labelling is useful and instructive but underused. A simplified label will be more helpful to shoppers.



The OPRL scheme delivers a simple and consistent recycling message on both retailer and brand packaging to help consumers recycle more. It provides eye catching 'at a glance' instructions whether you're likely to be able to recycle that item where you live.

In 2016 the national plastics recycling initiative, Pledge 4 Plastics, carried out consumer research about the use and understanding of OPRL and found consumers see it as being intrinsically valuable.

On average, it was found over 70% use OPRL to some extent – either very often, fairly often or occasionally – with over 60% of those who use the label found it very useful.

Its value by consumers is also increasing – 19% say they used it very often in a previous study in 2014, whereas in 2016 24% stated they use OPRL 'very often'.

One third of consumers use it for most items, but two thirds use it in particular situations – for example, when they have multi-material packaging or if the item is not one that they have had before.



## The flow of UK plastic bottle resources

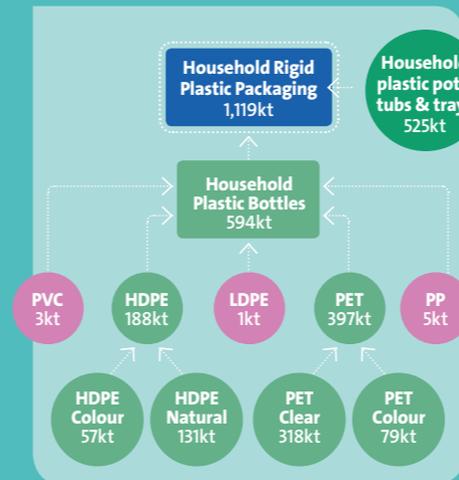
Quick facts on which bottles are and are not currently recycled.

- There are **2.26 million tonnes of plastics packaging** placed on the UK market each year. This includes 594kt of bottles and 525kt of pots, tubs and trays entering UK households.
- The two primary polymers used to manufacture bottles are PET and HDPE. It is estimated that **188kt of HDPE bottles and 397kt of PET bottles** are placed onto the market annually<sup>3</sup>.
- These fractions can be split further by clear/natural and coloured (jazz) bottles. Natural HDPE comprises **70% of the total HDPE bottles** (131kt) and clear PET 80% of the total PET bottles (318kt). It is these fractions which are viable for closed loop recycling into new bottles or other packaging.
- The average HDPE milk bottle MRF throughput is 30% of all bottles indicating **103kt of the 131kt HDPE milk bottles** are collected for recycling. In addition, **225kt of the 318kt PET clear bottles** are collected for recycling, the majority of which are drinks bottles<sup>4</sup>.
- An estimated **325kt HDPE milk bottles and PET clear drinks bottles** are collected for recycling, with around **162kt exported and 162kt reprocessed in the UK**.
- It is estimated that **75% of UK household plastics packaging** which is not collected for recycling goes to an energy recovery destination and **25% to landfill**.

## What types of bottles and pots/tubs/trays are currently on the UK market?

Broken down by polymer, PET and HDPE are both highly recyclable and yet under-recycled.

This diagram shows the household rigid plastic packaging placed on the market by plastic packaging format and polymer:



The end destinations for clear PET and natural HDPE are estimated at:

PET Clear	
225kt	: Recycling
70kt	: Energy Recovery
23kt	: Landfill

HDPE Natural	
103kt	: Recycling
21kt	: Energy Recovery
7kt	: Landfill

## Where are the end markets for UK plastic bottles?

End markets are referring to where plastics are reprocessed into granules, pellets or flakes in preparation for use as a raw material in second life applications.

A third of plastic packaging is recycled in the UK - more domestic infrastructure will encourage more packaging to be recycled here.

According to the National Packaging Waste Database (NPWD), 66% of the 1,044,363 tonnes of plastic packaging recycled from all sectors in 2017 was exported and 34% was recycled domestically. The quantity exported was also 66% for Quarters 1 and 2 in 2018. This is mainly packaging from the household and commercial and industrial streams.

To understand the flow of plastic bottles that are collected and their end markets from the household stream, the RECOUP UK Household Plastics Collection Survey asked Local Authorities to indicate where their plastic material was sold.

Looking specifically at plastic bottles, a UK based reprocessing infrastructure has developed over the last decade leading to an estimated 50%+ being reprocessed in the UK. This aligns with the data from RECOUP Household Plastics Collection Survey where 57% of UK local authorities declared that their bottles are recycled in the UK<sup>5</sup>.

The export markets for plastics recycling are under increasing scrutiny. Over 40% of local authorities reported an export or unknown destination for their plastic bottles, but it is difficult to accurately audit the flow of material, especially where intermediate traders are used<sup>6</sup>. The use of transparent auditable markets for all plastic packaging will be important for UK manufacturers to meet their obligations to increase the use of recycled content.

5. [www.recoup.org/p/324/uk-household-plastics-collection-survey-2018](http://www.recoup.org/p/324/uk-household-plastics-collection-survey-2018)  
 6. [www.recoup.org/p/229/uk-household-plastics-collection-survey-2017](http://www.recoup.org/p/229/uk-household-plastics-collection-survey-2017)

# 34%

of plastic packaging collected in 2017 was recycled domestically

3. Applying 2014 Plastic flow data to proportions reference tables in Plastics Packaging Composition 2011, Valpak and WRAP.

4. Using a variety of bottle composition data from material sorting facilities, and Valpak data.





**PLASTIC SORTING AND REPROCESSING FACILITIES IN THE UK**

The UK plastic recycling infrastructure is established but needs further investment.

The sorting and reprocessing market size are key when looking to plan future feedstock levels and market competition.

It is estimated there are over 100 Material Recovery Facilities (MRFs) that have the capability to sort household plastics packaging from other material streams in the UK.



Plastic is then sorted at Plastic Recovery Facilities (PRFs) which can handle an estimated, collective UK capacity of over **250,000 tonnes of plastic**.

**Veolia invested £6.5m** in a Plastic Recovery Facility in Rainham with a capacity to sort over **65,000 tonnes** of plastic every year.

The UK plastic reprocessing capacity for plastic bottles packaging is estimated to be over **400,000 tonnes**.

Veolia's reprocessing facility in Dagenham can handle **14,000 tonnes** of HDPE bottles turning them into high quality food grade pellets for manufacturing.

The UK plastic packaging recycling infrastructure is predominantly focused on PET and HDPE bottles, together with some polypropylene (PP) reprocessors which accept both bottle and other rigid PP packaging.



The capacity to sort plastics packaging is not exact, but it is estimated to be up to **900,000 tonnes of plastic** can be sorted at this stage.

The Waste Framework Directive has a target for all member states to **reuse or recycle 50% of their household waste by 2020, not just plastics.**

**Individual nations have strategies and targets which are reflected in different policy objectives and support for increasing recycling.**



The Scottish Government and the Convention of Scottish Local Authorities (CoSLA) have a Household Recycling Charter.

Northern Ireland has a Waste Management Strategy: Delivering Resource Efficiency.

The UK government and devolved administrations may choose to continue with their own regulations and policies to achieve their own ambitions.

Wales has an overarching waste strategy document, Towards Zero Waste, and also has its established Collections Blueprint.

# Resourcing the world

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