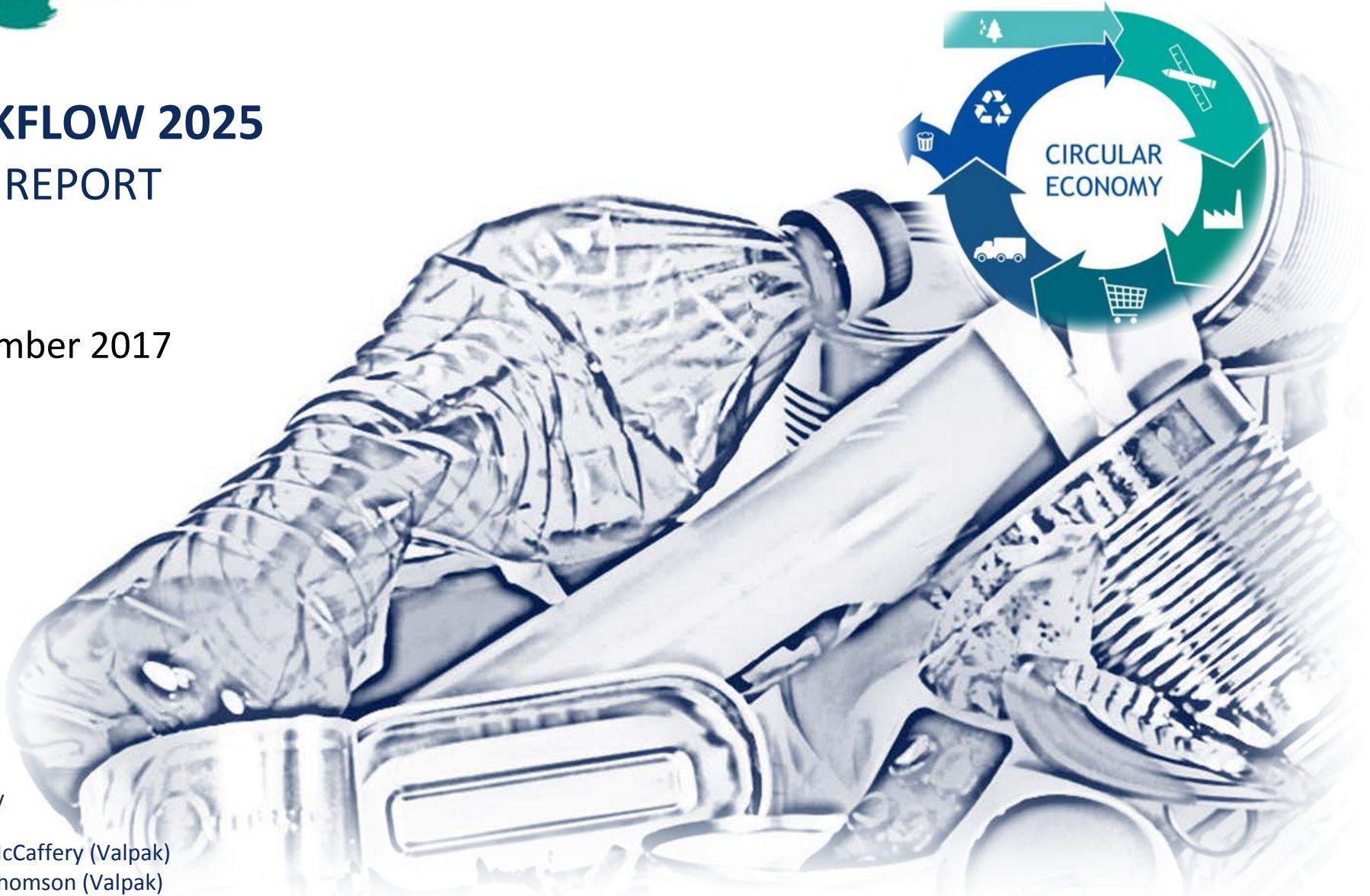




# PACKFLOW 2025 FULL REPORT

September 2017



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## Foreword by Lord Deben



Back in the 1990s, when I was Environment Secretary, the UK was widely derided as the “dirty man of Europe”. Nowhere was this more true than in our recycling performance. It was therefore to deal with this that I introduced UK legislation for the landfill tax and then convinced the EU to introduce producer responsibility regulations for packaging. This was very much our UK initiative and it enabled us to produce a market based system. The packaging regulations placed financial responsibility on producers to meet mandatory recycling targets, but used the market to keep costs to industry to a minimum. The implementation of the regulations was designed by industry for industry and has now been operating for 20 years. I was therefore very pleased to see that the recent implementation review by Defra indeed shows that the system is viewed as successful and fit for purpose to continue to meet the targets already announced to 2020.

However, whilst the system has worked well so far, there are many important new challenges over the next decade which we now need to address. The effect of landfill tax is declining as the escalator is now much less steep and new measures may be required post 2020. Of course, Brexit remains a critical issue and I very much hope that Government and industry alike will support the key elements of the Circular Economy Package, irrespective of the outcome of our EU exit negotiations. Finally, the increasing pressure on both public and business finances means that developing an efficient system that provides the best value for money for the UK as a whole is top priority.

So, not surprisingly the system may well need to change and evolve to suit this new landscape. I am therefore delighted that Valpak has undertaken this detailed research and produced a range of future options for consideration by both Government and industry. As well as setting out how future targets could be achieved, they also take the opportunity to consider other changes that encourage, and indeed reward, those businesses that are “doing the right thing” in these challenging markets.

The report is also very timely; although 2020 may seem some time away, we need to start thinking seriously about alternatives over the coming six to twelve months, so that there is sufficient time to implement any changes. I am very much looking forward to further discussions on how these can work in more detail.

## Executive Summary

Considerably higher and harder to achieve packaging recycling targets are proposed within the European Circular Economy (CE) Package, along with a potential move to ensure producers pay the full cost of packaging collection, sortation and recycling, after material revenues are subtracted (full net costs: FNC).

Whether and how the UK will be able to achieve these requirements under our current producer responsibility regime forms the basis of this study. It assesses the UK’s current regime and investigates how best it can be improved so we can increase UK packaging recycling rates to meet the proposed targets in 2025 and 2030, and the possible impact on cost to producers.

In order to identify drivers to increase recycling, we have researched the producer responsibility systems of six other leading European countries, and compared them with our own.

### Assessing the UK

Maintain	Improve
<i>Competitive system</i>	<i>Quality of material</i>
<i>Shared responsibility</i>	<i>Quantity of material</i>
<i>Market-based system</i>	<i>Consumer awareness</i>
<i>Independent regulator</i>	<i>Strength of UK recycling</i>
<i>Resource efficiency focus</i>	<i>Material levy price spikes</i>
<i>Mandatory, UK-wide system</i>	<i>Producer access to recycle</i>
<i>Household and C&amp;I inclusive</i>	<i>Distribution of producer funds</i>

By 2025, we believe paper & cardboard, metals and glass will all reach the proposed targets with minimum additional intervention (such as consumer

awareness campaigns to increase participation). The challenge rests with plastics, which is likely to need more support. Currently, un-tapped material in the household waste stream, namely plastic pots, tubs and trays and plastic film, requires additional investment in collection, sortation and recycling infrastructure for recycling rates to grow sufficiently. To achieve the 2030 CE targets, it is likely that aluminium, steel and glass packaging will all need additional intervention.

There is no correlation between any of the materials’ recycling rates and PRN prices (UK) or material levies charged (other countries). The two main consistent drivers for UK recycling growth have been central/local government spending on recycling collection infrastructure and the rising cost of landfill tax (a very strong correlation exists in both cases).

### European Schemes Research

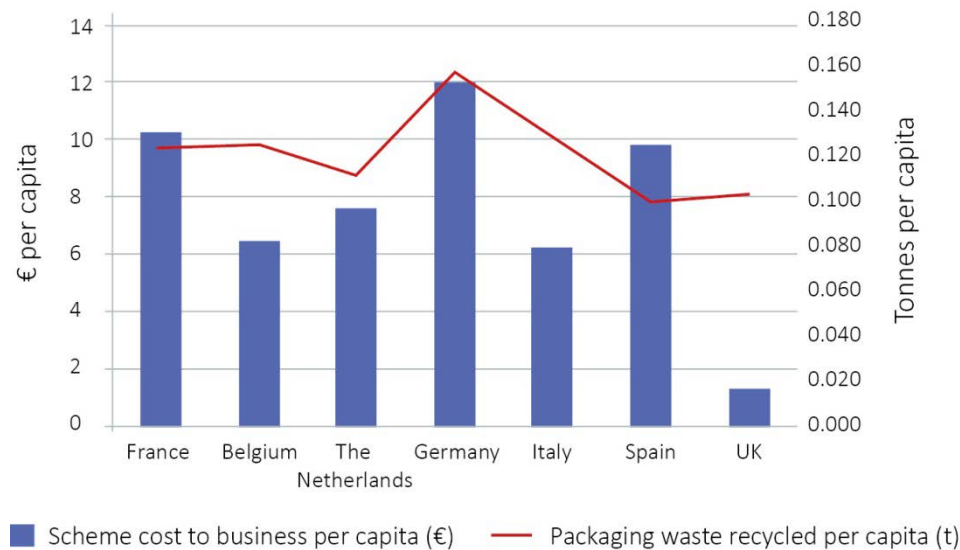
We researched compliance regimes in Belgium, France, Germany, Italy, Netherlands and Spain. Due to aspects of national legislation, waste management structure and culture, these regimes all have their own variances and complications, making it difficult to compare them directly. However, key differences and good practices were identified and lessons learned. Our research identified six key themes:

- Compliance costs
- Control & strategic development
- Communication funds
- Changing behaviour
- Calculation of recycling rates
- Complementary measures

### Compliance Costs

Our compliance costs are spread more widely along the UK supply chain, including raw material manufacturers and convertors, but less widely in terms of company size, due to our high de minimis level.

If we compare compliance schemes' total costs to business per capita (blue bars) with the recycling levels per capita (red line) for 2014, the graph confirms that Germany has both the highest scheme costs and recycling levels for its size of population, and that the UK has the lowest scheme costs for its size of population. What the graph **does not** show is correspondingly low packaging recycling levels in the UK, as a result of low producer costs.



Total costs of handling recycled household packaging were also researched. We estimate the range of household/household+ costs to fall between 5.5€/capita (Belgium) and 12.2€/capita (France). This suggests the UK's total HH costs (€4.1-€6.9/capita) compare reasonably well, particularly as the UK offers kerbside collections of plastic PTTs and glass in many areas, whereas Belgium and France are yet to introduce wide scale PTT collections and collect glass through bring banks (cheaper).

### Control & strategic development

Other regimes researched typically have greater control over waste packaging collections, sortation and recycling than the UK; however, there are marked differences between countries. Monopoly and complementary schemes benefit from 5-6 year governmental contracts, which facilitate longer-term strategic planning. Scheme revenues mainly fund operational costs; however, non-operational and strategic activities such as communications, strategic projects and litter campaigns are also commonly funded.

SPEND					
	Collections	Sortation	Recycling	Communications	Strategic/R&D Projects
<b>Belgium</b>	Yes (up to 100% FNC)	Indirectly	Indirectly	Yes	Yes
<b>France</b>	Yes (80% FNC)	Indirectly	Indirectly	Yes	Yes
<b>Germany</b>	Yes (100% FNC)	Directly	Indirectly	Minimal <sup>1</sup>	Yes
<b>Italy</b>	Yes (100% FNC)	Indirectly	Indirectly	Yes	Yes
<b>Netherlands</b>	Yes (100% FNC)	Indirectly	Indirectly	Yes	Yes
<b>Spain</b>	Yes (100% FNC)	Directly (some residual sort)	Indirectly	Yes	Yes
<b>UK</b>	Indirectly (through PRNs)	None (through PRNs)	Directly	Minimal <sup>1</sup>	No

### Communication Funds

Communication funds are common to all countries without competitive schemes. A portion of compliance scheme revenues are used to fund recycling communication campaigns nationally and locally. Belgium, France, Italy and Spain all credit increased recycling (in part) to effective communications campaigns.

## Changing Behaviour

There is a drive to increase recycling levels through positive behaviour change in all countries researched. To encourage better separation of recyclables by householders, both carrot and stick approaches are being adopted. Communications campaigns reinforce what can be recycled, why it is recycled and how it can be recycled. Positive messages are backed up by financial penalties for poor behaviour.

Behaviour change in producers is encouraged through material levy fees, but also through imposing a recyclability charge for types of packaging that are less technically, economically and sustainably recyclable, or a bonus for pack types that fit well with current national recycling systems.

In Belgium, Italy, France and Spain, local authorities are influenced through the rates paid for the material they collect: higher quality and quantities generate higher income. For countries like Germany and Italy, sortation is the critical stage in ensuring the high quality of recyclables.

## Calculation of recycling rates

Varying methods are used to establish the published Eurostat packaging recycling rates for each country, therefore direct comparisons are difficult. The two key elements in calculating packaging recycling rates are the quantities of waste generated and waste recycled. Waste generated is usually represented by an estimate of material POM. Estimating POM is complex due to the variety of data sources used and issues with data completeness, reliability and accuracy. Combined estimates (per material stream) are likely to result in significant margins of error: e.g. if the UK underestimated plastic POM by 10%, our recycling rate would be 6-7% higher, above most other European countries and on a par with Germany.

A regression analysis was undertaken to establish whether national packaging POM quantities were appropriate; the results suggest that for GDP and population, POM figures are fitting.

Where and how you measure levels of recycling impact the level of recycling you achieve. Currently, UK PRNs are most commonly issued on entry to the final recycling process, but include a deduction for contamination and by-products that may be sent for recycling elsewhere; therefore, our recycling levels are likely to be understated compared to alternative methodologies. For plastic, this is estimated to be around 2% difference.

The point of recycling measurement is currently being reconsidered as part of the CE package.

## Complementary Measures

Disposal taxes and bans, pay-as-you-throw schemes (PAYT), behavioural change mechanisms and deposit return systems are all complementary to packaging compliance and have had notable impacts in the countries studied.

Deposit return systems (DRS) are used in Germany and The Netherlands; in Belgium deposits are mainly limited to reusable glass beer bottles; and in Spain, Italy and the UK there are currently no significant DRS. The potential for increasing UK recycling rates, and achieving CE targets, through a DRS on beverage containers was modelled and the results show that even at a 90% deposit return rate (across all drinks containers, including milk and fruit juice), DRS alone is unlikely to bring UK packaging recycling to the 2030 target level and would leave the UK short on aluminium and plastic in 2025.

Summary of Lessons Learned

Improve quantity and quality of recyclate	Influence behaviour	Maximise measurement	Increase revenue in the system
<p><b>Consistent collections</b> light packaging/paper/glass</p> <p><b>Collection/sort contracts</b> LAs have to deliver quality to receive full payment</p> <p><b>Influence reprocessing</b> define/develop end markets creating a circular economy</p>	<p><b>Communications</b> at a local &amp; national level</p> <p><b>Encourage switching</b> to recyclable formats/ polymers</p> <p><b>Recyclability</b> indices</p> <p><b>Fines</b> for contamination of recyclate streams</p> <p><b>Pay as You Throw (PAYT)</b></p>	<p><b>Minimise fraud</b>- accurate auditable POM calculations</p> <p>Align <b>recycling measurement point</b></p> <p>Review Incinerator Bottom Ash <b>(IBA) protocols</b> for metals to ensure alignment</p>	<p><b>Reduce de minimis</b>: capture more companies and raise awareness of regulations</p> <p>Longer term <b>strategic planning</b> &amp; investment by compliance schemes</p>

## UK Model Development

Taking all the learnings from our research we considered which elements could be incorporated into our existing UK system, to drive further packaging recycling, improve the quality of material collected and achieve the proposed CE targets. This processes resulted in the development of four models:

### Model 1 (Existing UK system).

**Model 2 (Enhanced UK System)** drives better use of our existing infrastructure, retains all the elements of the Existing UK System and adopts three key enhancements:

- A communications fund to increase recycling participation
- A compliance fee to improve PRN price stability
- A reduced producer de minimis to widen producer responsibility and increase funding

It continues to rely principally on rising PRN prices to fund growth of collections, sortation and recycling.

**Model 3 (Strategic UK System)** invests in infrastructure growth. It adopts all the elements of our existing system and the enhancements proposed in Model 2. In addition it provides investment in infrastructure growth through a strategic fund which would provide targeted investment to increase packaging collections, sortation, recycling and end markets, and the opportunity to incentivise recyclability and recycled content. Model 3 does not rely solely on rising PRN prices for funding additional growth.

**Model 4 (Direct Control System)** is a fundamental redesign of the funding of UK household packaging collections based on other European schemes. Levy fees would be charged on household material POM (instead of PRNs

being purchased against recycling) and compliance schemes would more directly fund LA collections and retain the material collected. Model 4 can operate without a compliance fee (4a) or with a compliance fee (4b). Model 4b is anticipated to cover household Full Net Costs. C&I collections and recycling would operate as per the Existing UK system, with PRNs purchased against recycled tonnage to achieve a separate C&I target.

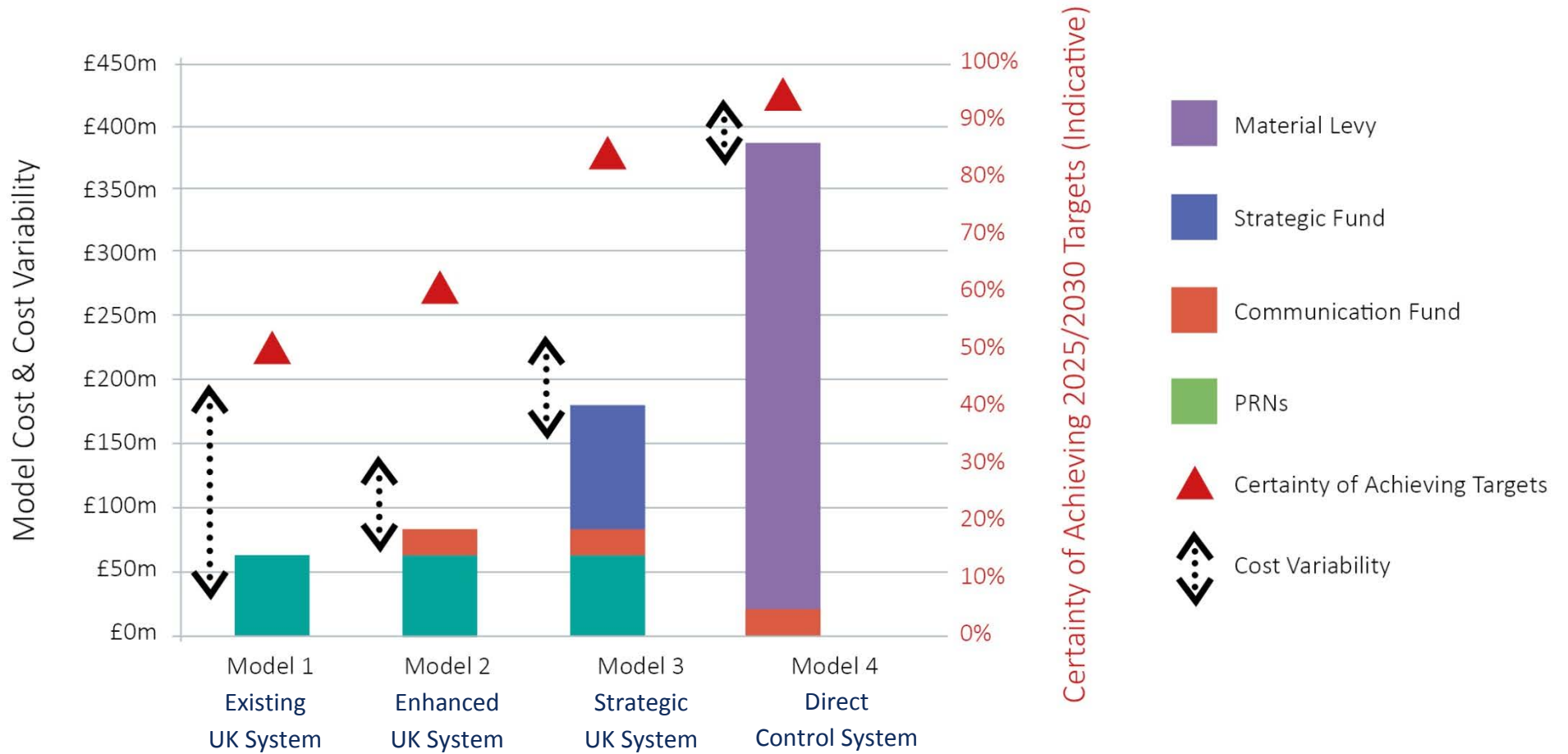
### Summary of Impacts

Potential costs to producers, cost variability and certainty of achieving the targets have been modelled. Our existing system may represent lowest cost, but has highest cost variability and highest potential for non-achievement of targets.

Model 2 provides reduced cost variability and risk, a greater likelihood of achieving CE targets, better consumer awareness and wider system coverage, whilst retaining relatively low costs to producers.

Model 3 provides further reduced cost variability and risk, and much higher certainty of achieving CE targets. Producer costs would be higher than for Model 1 and 2, but significantly less than for Model 4. It introduces strategic planning and growth.

Model 4 would result in significantly higher costs than all other models, but provides marginally more certainty of achieving CE targets. It represents maximum change for all stakeholders





## Table of Contents

<b>Glossary</b>	<b>1</b>	<b>Re-modelling the Existing UK Compliance System</b>	<b>37</b>
		12. Introduction	37
<b>Introduction</b>	<b>2</b>	13. Model 1 – The Existing UK System	38
		14. Model 2 – Enhanced UK System	39
<b>Assessing the UK</b>	<b>3</b>	15. Model 3 – Strategic UK System	43
1. Potential to achieve CE Targets	3	16. Model 4 – Direct Control System	47
2. Elements to Maintain	9	17. Models Summary, Costs and Conclusions	49
3. Elements to Improve	11	18. Regulatory Impact Assessment (RIA)	50
<b>Key Themes from European Research</b>	<b>12</b>	<b>Appendix – Country Comparison Profiles</b>	<b>51</b>
4. Introduction to the Compliance Regimes	12		
5. Key Theme 1: Compliance Costs	19	<b>Endnotes</b>	<b>58</b>
6. Key Theme 2: Control & Strategic Development	24		
7. Key Theme 3: Communication Funds	27		
8. Key Theme 4: Changing Behaviours	28		
9. Key Theme 5: Calculation of Recycling Rates	30		
10. Key Theme 6: Complementary Measures	34		
11. Summary of Lessons learnt	35		

## Table of Figures

Figure 1 Proposed CE targets .....	2
Figure 2 Local authority spending versus recycling rate .....	4
Figure 3 Relationship between recycled plastic average price and plastic PRN prices .....	5
Figure 4 Percentage difference in the average PRN price from the previous year .....	6
Figure 5 Current UK recycling rates against future CE Targets .....	6
Figure 6 Potential impacts on recycling rates of implementing a DRS .....	8
Figure 7 EPR schemes researched and waste streams covered.....	13
Figure 8 EPR schemes researched and waste streams covered.....	14
Figure 9 Current recycling rates & growth required to achieve CE targets .....	16
Figure 10 Compliance scheme costs to businesses and recycling levels per capita, 2014 .....	19
Figure 11 Compliance schemes' income (2014).....	20
Figure 12 Share of producer obligation by activity .....	21
Figure 13 Implementation of full net cost principle.....	22
Figure 14 Estimates of UK total net costs for packaging recycling.....	23
Figure 15 Key areas of compliance schemes' spend .....	26
Figure 16 Compliance scheme (approximate) spend on communications .....	27
Figure 17 Data sources used to estimate levels of POM or packaging waste generated .....	30
Figure 18 Effect of varying UK POM estimates on UK packaging recycling rates (2013) .....	31
Figure 19 Correlation of POM with GDP and population (2013).....	32
Figure 20 Effect of varying UK recycling estimates on UK recycling rates (2013).....	33
Figure 21 Summary of elements that are likely to directly help achieve the CE targets .....	35
Figure 22 Summary of proposed models UK System to Re tain.....	37
Figure 23 Key elements of the existing UK system to retain.....	38
Figure 24 The Existing UK Packaging Producer Responsibility System .....	38
Figure 25 Model 2 – Enhanced UK System.....	42
Figure 26 Model 3 – Strategic UK System.....	46
Figure 27 Model 4 – Direct Control System.....	48
Figure 28 Model costs to producers Vs certainty of achieving 2025 targets .....	49
Figure 29 Summary of conclusions.....	50

## Glossary

**C&I** – Commercial & Industrial

**CE** – Circular Economy

**DRS** - Deposit Return System

**EA** – Environment Agency

**EfW** – Energy from Waste

**EPR** – Extended Producer Responsibility

**FNC** – Full Net Cost

**HH** - Household

**IBA** – Incinerator Bottom Ash

**k** - Thousand

**LA** – Local Authority

**m** - Million

**MO** – Material Organisation

**MSW** – Municipal Solid Waste

**NPWD** – National Packaging Waste Database

**PAYT** – Pay-as-you-Throw

**POM** – Placed on the Market

**PERN** - Packaging Export Recovery Note

**PRN** – Packaging Recovery Note

**R&D** – Research and development

**t** - Tonnes

**T/O** - Turnover

**WMC** – Waste Management Company

## Introduction

In general, the UK is achieving European packaging recycling targets at a much lower cost to producers than other European countries. However, considerably higher, harder to achieve recycling targets are proposed within the European Circular Economy (CE) Package, along with a potential move to ensure producers pay the full cost of packaging collection, sortation and recycling, after material revenues are subtracted (full net costs: FNC).

Whether and how the UK will be able to achieve these higher targets under the current extended producer responsibility (EPR) regime forms the basis of this study. It assesses the UK’s existing system (Sections 1-0), before investigating the producer responsibility systems of six leading European countries (Sections 4-11).

The key learnings and opportunities identified from the research stage were used to develop two enhanced models for UK packaging producer responsibility and, in the case where a FNC system is imposed, a replacement ‘European-style’ model. The models provide varying degrees of additional support and intervention to assist the UK in achieving the 2025 and 2030 CE targets.

Figure 1 illustrates the Proposed CE targets. We have made the assumption throughout this study that the targets will be ratified and transposed into national legislation before the UK’s exit from the European Union.

Figure 1 Proposed CE targets

	CE Target	
	2025	2030
Paper	75%	85%
Glass	75%	85%
Plastic	55%	
Aluminium	75%	85%
Steel	75%	85%

**Recycling more in the UK has additional economic and social benefits. It creates more jobs, improves the environment and reduces business costs. All factors that make the UK a better place to live and work.**

According to the Green Alliance, achieving even 70% UK recycling (MSW and C&I waste) would create over 40k additional direct jobs in recycling, over 20k additional indirect jobs and 10k additional induced jobs in the wider economy<sup>1</sup>. The more we recycle, the less we landfill and incinerate: this saves energy and lowers our greenhouse gas emissions; vital in slowing global warming. Furthermore, recycling is often a cheaper option for businesses than landfill and incineration, as is using recycled content, especially when recycling and manufacture happen locally, promoting resource efficiency at a local level.

## Assessing the UK

We assessed the UK's current recycling rates and EPR system to gain a better understanding of the country's potential to achieve the CE targets. By doing this, we identified elements of the system that we believe should be maintained, in addition to identifying elements that need to be improved.

### 1. Potential to achieve CE Targets

#### 1.1 Introduction

In this section we assess the UK's ability to achieve the CE targets under its current Producer Responsibility regime. The UK compliance system is a market based system where material levy rates are paid on the quantity of material recycled through purchasing Packaging Recovery Notes (PRNs). In all other countries studied for this report, material levy rates are based on the total quantity of material placed on the market.

The price of PRNs is dictated by actual market supply and demand and the perception of the market. Supply and demand is influenced by national recycling targets per material, the quantity of material being collected for recycling and the quantity of material being recycled or exported by accredited reprocessors and exporters. Market conditions are reset at the end of each year, as only a limited number of PRNs are allowed to be carried over into the following year. This can cause either a collapse or sharp rise in PRN prices as the supply and demand balance in the market becomes clearer towards the end of the year.

Market conditions in the short term (and hence PRN prices) are also influenced by global conditions and/or industry rumors. For example, if industry believes that a market player is in financial difficulty and may be exiting the market, this may increase the PRN price. Conversely, the release of stockpiled material from the previous year may collapse the PRN price.

#### 1.2 Drivers for Growth

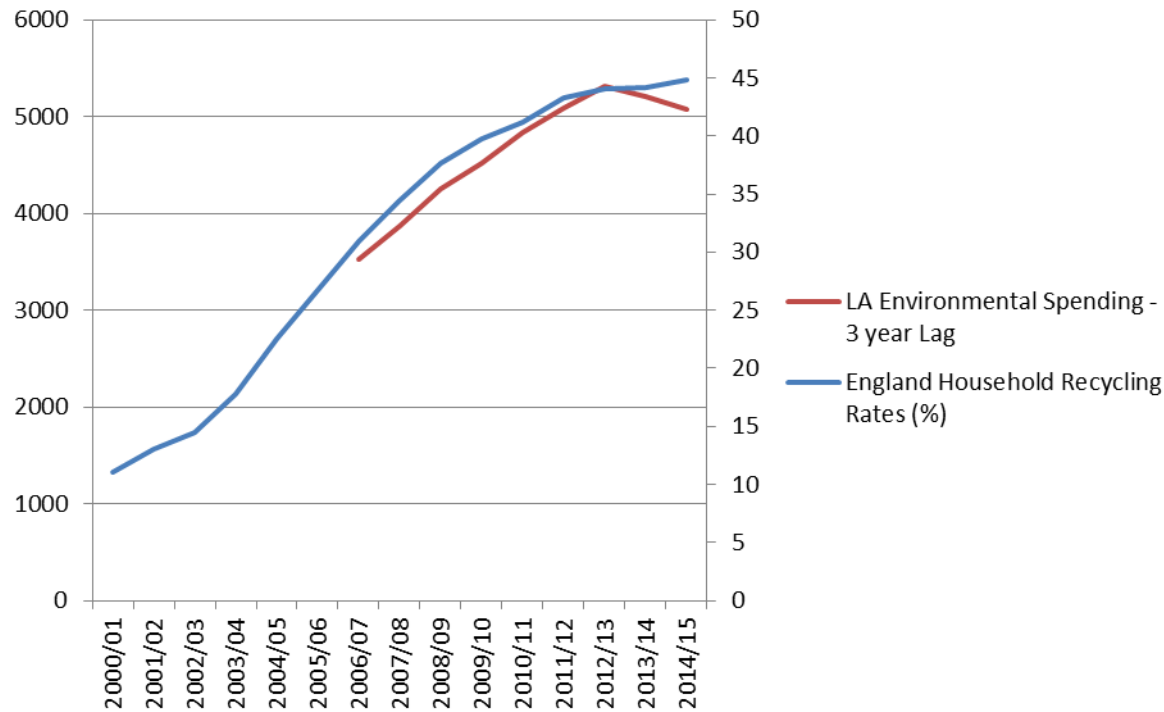
##### 1.2.1 What is driving growth?

Since the introduction of the packaging regulations in 1997, there has been a steady growth in national recycling rates for packaging materials. The two main drivers for this growth have been central/local government spending on developing a recycling collection infrastructure and the rising cost of landfill tax.

The metrics associated with these two drivers were tested against recycling rates to ascertain if a correlation exists: there was a very strong correlation in both cases. This is similar to experiences in other European countries where landfill taxes act as an incentive to divert material away from landfill and towards recycling and/or incineration.

It is anticipated that with the reduction in local and central government spending, and with landfill tax only increasing in-line with inflation, national recycling levels will continue to plateau or fall slightly.

Figure 2 Local authority spending versus recycling rate



1.2.2 What is not driving growth

As part of this project, we undertook a thorough review of the PRN system and the potential drivers for growth. We examined the relationship between PRN prices and recycling rates for all packaging materials over an eleven year period. There was no correlation established between any of the materials’ recycling rates and PRN prices. This was similar to our findings on other European countries, where no correlation was established between material levies charged and recycling rates.

No significant correlation was found in the relationship between PRN prices and recyclate prices either. Figure 3 demonstrates this for the average price of plastic recycled and the plastic PRN price. However, it does show correlation in microcycles when there is a dramatic fall in the recyclate prices. In these small cycles, the PRN price is negatively correlated with the recyclate price and will rise to cover the shortfall in price that is received for the recyclate. It appears that in these specific situations, the PRN is acting to correct the market.

**Figure 3 Relationship between recycled plastic average price and plastic PRN prices**



It is perhaps not surprising that, in general, there is a lack of correlation between PRN and recyclate prices as the market is inelastic. An increase in supply is not necessarily achieved if PRN prices increase too; increasing supply in the long run requires growth in both reprocessing capacity and/or collection rates. Short term increases in PRN prices do not give reprocessors sufficient confidence to invest in long-term capacity increases, or for waste management companies and local authorities, confidence to invest in collection infrastructure.

Figure 4 displays the percentage difference from the previous year in the average PRN price per material and demonstrates the volatility of the PRN price and the issues this volatility creates for long-term investment. In the microcycles where there is a dramatic reduction in recyclate price, the PRN price can encourage, in the short-term, the reprocessor to continue to process material in stock (purchased prior to price falls), or exporters to sell stock without significant financial losses. These acute shocks tend to resolve themselves, for example, once stocks purchased at the historic higher prices are cleared and recyclers or exporters adjust their business models to the new market norms.

**Figure 4 Percentage difference in the average PRN price from the previous year**

	Glass	Paper	Wood	Plastic	Steel
<b>2010</b>	-30%	-68%	-68%	-81%	-82%
<b>2011</b>	-39%	-28%	-30%	37%	-55%
<b>2012</b>	231%	-8%	-23%	236%	62%
<b>2013</b>	68%	2%	1%	208%	55%
<b>2014</b>	-75%	-6%	-12%	-12%	-22%

### 1.3 Current UK Recycling Rates

The most recent statistics on UK packaging recycling are for 2016. They are calculated using POM data prepared by Valpak and adopted by Defra, and recycling data taken from the National Packaging Waste Database (NPWD). These are shown below, next to the CE targets and the compound annual growth rates required by the UK to achieve the targets. The growth rates have been colour-coded to indicate whether we believe they are achievable with or without intervention. The higher the growth rate, the more likely it becomes that intervention will be needed.

The growth rate categories are based on historical levels of growth in recycling. Annual growth rates of around 1% occur in mature recycling systems where there has been no particular intervention: UK glass collection is a good example of this. Annual growth rates of around 2 to 3% are generally only seen in developing systems or where significant intervention

has occurred. An example of this is in the Italian system when there was a change of emphasis from just plastic bottle collections to mixed plastic collections. In this system there was a short-term rise to 7% growth, followed by an annual growth rate of 3%.

**Figure 5 Current UK recycling rates against future CE Targets**

2016 Recycling Rate	Material	CE TARGETS		ANNUAL GROWTH RATE REQUIRED TO ACHIEVE CE TARGETS	
		2025	2030	2016 - 2025	2025 - 2030
46%	Plastic	55%		2.1%	
50%	Aluminium	75%	85%	4.6%	2.5%
75%	Steel	75%	85%	0.1%	2.5%
67%	Glass	75%	85%	1.3%	2.5%
82%	Paper & Card	75%	85%	0.0%	0.7%

<1%	Achievable
1 -2 %	At risk, may need intervention
>2%	Intervention required
Alu	Assumed achievable due to new IBA protocols and EfW growth

#### 1.3.1 To achieve or not to achieve?

The reduction in landfill tax growth and central Government spending discussed in Section 1.2.1, could put materials such as metals, plastic and potentially glass at further risk of not reaching the proposed CE targets, particularly in 2030. Below, we take each material stream in turn and discuss the potential for achieving future CE targets and the type of measures that may be necessary where intervention is required.



### Metals – only 2025 target achievable under current regime

For metals, some form of intervention appears to be required; however, this could be at a policy-level rather than a significant modification to the PRN system. The recent UK policy change amending protocols for packaging metals in Incineration Bottom Ash (IBA) may suffice to reach the 2025 targets. Aluminium and steel packaging recycling figures have shown a significant increase in the quantities recycled in 2016, but are unlikely to be sufficient to reach the targets proposed for 2030. For Aluminium, recycling increased from 76kt in 2015 to 90kt in 2016 (18.5% growth) and for steel, from 364kt in 2015 to 416kt in 2016 (14%). Furthermore, the growth in Energy from Waste plants in the UK is currently at an annual rate of 8% per year. If this level of growth continues, then the quantities of metal packaging counted in the recycling figures from IBA should also continue to grow.

### Paper & Card – 2025 & 2030 targets achievable under current regime

The zero and low annual growth rates required for paper and cardboard suggest that the 2025 and 2030 CE targets are achievable under the current system. There has also been a policy change in the protocols used for paper and cardboard to reflect an increase in the domestic waste stream of cardboard packaging from on-line deliveries and the reduction of non-packaging newspaper and magazines due to the rise in digital media. This protocol change, which states that packaging now represents 34.5% of the paper and cardboard waste stream, should have a positive impact on the UK achieving the CE target for this material.

### Glass – only 2025 target achievable under current regime

The 1.3% growth rate required for glass is sufficiently small, which means that an intervention such as a communications campaign should drive achievement, as long as glass into aggregates continues to be counted as recycling. From 2025, assuming the target is reached and no more, a higher

growth rate of 2.5% would need to be achieved to reach the 2030 target and for this to occur, intervention and regime change would be required.

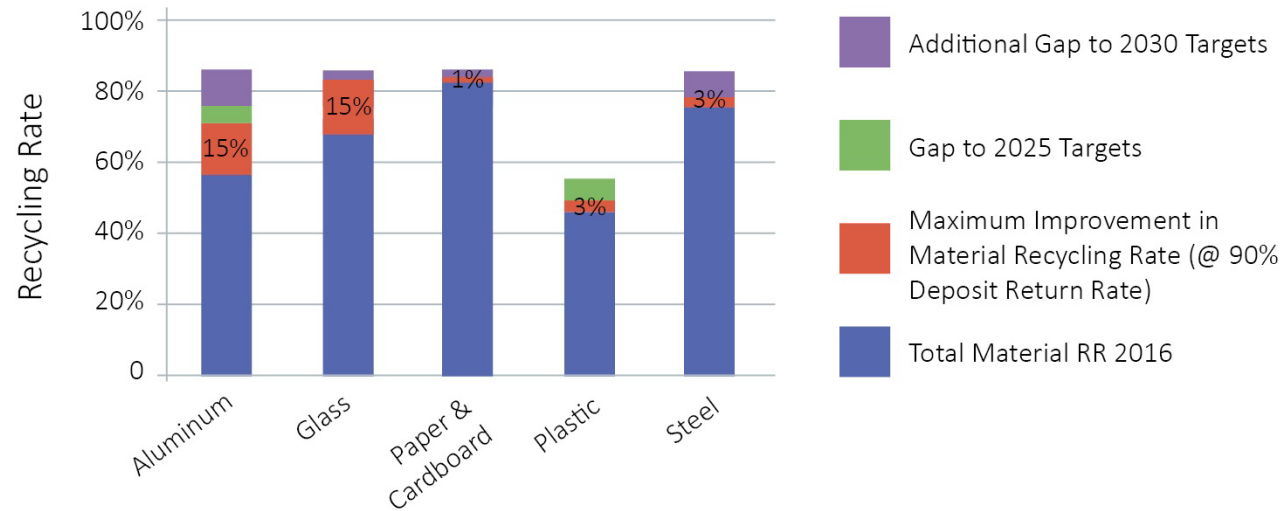
### Plastics – intervention and regime change required

The material most likely to fail to achieve the CE targets is plastics, which only has a proposed 2025 CE target to date. Intervention is required to ensure the current system is amended and the current players in the market are encouraged to behave in a more proactive way to engage with the collection system. As can be seen from our analysis in Section 1.2, with no intervention, the PRN price on its own cannot be relied on in the long-run to increase recycling rates or support market investment.

#### 1.3.2 Would deposits achieve the recycling rates required?

There has been much debate recently about whether UK recycling rates could be significantly improved through the introduction of deposit return systems (DRS) for certain packaging types. In order to assess this further the potential for increasing UK recycling rates through the introduction of a DRS on beverage containers has been modelled to help understand the extent to which a DRS could help the UK achieve the 2025 and 2030 CE targets. The results are illustrated in Figure 6 and cover all types of drinks – milk, fruit juices, alcoholic drinks, etc.. They show that even with a highly optimistic deposit return rate of 90%, with the exception of glass and steel packaging in 2025, implementation of a DRS alone would not bring packaging recycling to the levels required to reach the targets. The UK would be left at least 2% (paper & card 2030) and 10% (aluminium 2030) short of the targets.

Figure 6 Maximum impacts on recycling rates of implementing a DRS



The maximum improvement has been calculated on a DRS achieving 90% drinks container recycling across all materials and all beverage types. For plastics particularly, the introduction of a DRS system would only close one third of the gap that exists between our current plastics recycling rate and the required 2025 recycling rate. This is because in order to achieve the significantly higher plastic recycling targets, the UK needs to focus its resources on the collection and recycling of consumer PTTs and consumer film.

To reflect a more likely drinks container recycling rate, a level of 75% was also modelled. This is more similar to the current bottle recycling rate in Sweden (77%), after ~23 years of a DRS. Under this scenario, the maximum improvement to packaging material recycling rates is limited to 4% for aluminium and glass and 1% for steel. There would be no benefit to plastic or paper & card packaging recycling rates.

Removing milk containers from a potential DRS system would reduce the impact on the plastic recycling rate further still.

	2016							
	Drinks Container Recycling Rate (RR)	Total Material RR 2016	Material RR if 90% drinks containers recycled	Maximum Improvement in Material Recycling Rate (@ 90% Deposit Return Rate)	2025 Required RR	Gap to 2025 Targets	2030 Required RR	Gap to 2030 Targets from 2016
Aluminium Cans	70%	56%	70%	14%	75%	5%	85%	15%
Glass Bottles	70%	67%	82%	15%	75%	-7%	85%	3%
Cartons	37%	82%	83%	1%	75%	-8%	85%	2%
Plastic (DRS on PET/HDPE Bottles)	74%	46%	48%	3%	55%	7%	-	-
Steel Cans	70%	75%	76%	2%	75%	-1%	85%	9%

\* incl 10kt unaccredited

## 2. Elements to Maintain

The cornerstone to the existing UK system is that it is a market-based, competitive and flexible system. These elements are discussed in turn below. Furthermore, there are a number of additional elements identified in our research that the existing and future UK system would benefit from maintaining, such as keeping a mandatory and UK-wide system, an independent Regulator and shared producer responsibility.

### 2.1 Market-based System

The UK's market-based, competitive packaging compliance system delivers the lowest cost system to producers of the six European countries studied. (Please see Section 5.5 and the Appendices for some indication of the total costs of the systems studied, not just the costs to producers). One of the key reasons for this is because the UK system is designed to move towards £0 subsidy once the recycling target is met. In other countries, a fixed fee is generally paid on all packaging collected, whether the target has been met or not. Low costs to producers are further achieved due to the fluctuating supply-demand driven PRN prices.

The market based system has also delivered full net costs<sup>1</sup> for some packaging materials, whether by design or not. For example, an estimate of the cost of collection of aluminum cans by a local authority (LA) is £300 per tonne<sup>2</sup>, including baling and sorting. The current value received for a tonne of

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<sup>1</sup> Cost of collection minus the material value

<sup>2</sup> Base is the compensation payment by Conai to Local Authorities in Italy of aluminium collections

baled aluminum cans is £850<sup>3</sup>, which leaves a positive value of £550 per tonne, meaning that more than full net costs are covered. In the current UK system this positive income stream will go to the local authority and the compliance scheme will pick up the administrative cost, which is reflected in the PRN price.

However, it is clear that the current system does not cover full net costs for plastic collection and sortation. It also does not provide a mechanism to grow the quantity of plastic packaging that is collected and recycled.

### 2.2 Flexibility of the System

Players (compliance schemes or obligated producers) in the current UK market generally buy PRNs at market value from accredited reprocessors and exporters, or from a trading platform. However, if recyclate material prices collapse and fewer PRNs are available, the PRN system is flexible enough to allow players to take a more active role in generating new PRNs.

This is rare, but an example is Valpak's intervention in the market in early 2001 when we set-up a commercial glass collection system 'Recycle more Glass'. The collected glass was delivered to a reprocessor in exchange for a 'free' issue PRN. The reprocessors covered their costs/benefitted from not having to purchase the collected glass feedstock and from any revenues received for the recycled material. The cost of the PRN represented 'full net cost' as it reflected the cost of collection and recycling, minus material value.

The current system is flexible enough to allow this type of direct intervention to happen again, if required. However, it is inherently risky as an individual

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<sup>3</sup> Letsrecycle.com 16/2/17

player taking this interventionist approach may pay more for their PRNs (or for the material collection that generated the PRNs in Valpak's case), and at the same time may reduce the market value of PRNs to the advantage of other passive players purchasing PRNs from reprocessors and exporters in the normal way. This reduced value may occur due to an assumption that recycling targets will be easier to meet with the collection of additional material.

### 2.3 HH and C&I

The UK and Belgian systems are the only systems that included compliance on products that were destined for both the household and commercial and industrial sector. The packaging format and polymers used in these different sectors are sometimes the same; the end destination of the recyclate is also often the same. In order to improve the overall efficiency of a system, it makes economic sense to capture as much material in it as possible. For much C&I packaging, notably plastic film and cardboard, financial support is not required. However, by including it in the system, funding is provided to collect packaging that does require support (such as co-mingled collections of mixed recyclables from small businesses), and it may be cheaper to access than household packaging in order to meet the higher targets. Including C&I in the PRN system helps generate accurate data on packaging waste in the C&I stream.

The UK system has some advantages in that it allows for the capture of accurate data on C&I recycling and it allows for financial subsidies where costs of recovery are high (for example, comingled dry recyclables from trade waste collections).

### 2.4 Resource efficiency

Resource efficiency is a key element of the Circular Economy Package. The UK system recognises that a resource efficiency approach has to be taken where a choice in end market destination is available. Several years ago the glass target was split between the remelt and aggregate market. The purpose of this was to incentivise the use of glass in the most environmentally beneficial application.

### 3. Elements to Improve

#### 3.1 Quantity and Quality of Material

##### 3.1.1 Causal relationship between PRN price and collections

In the UK there is a disconnect in the waste packaging compliance system between organisations that have responsibility for achieving packaging targets (producers and compliance schemes) and organisations that are responsible for the collection of the material needed to achieve the targets: LAs. Furthermore, LAs have their own, differing waste targets to achieve, based on the weight of organic material diverted from landfill. They also have an overall weight based recycling target, which means their focus is on heavy materials such as glass, paper, food and green waste.

For the system to operate effectively there has to be a better connection between compliance schemes and material collections. If we are to retain a largely market based system this can still be achieved, but in less direct ways, such as part of a separate funding mechanism that has a degree of national strategic control.

##### 3.1.2 Quality of collection

In the UK, the LAs and waste management companies (WMCs) that collect and own material are motivated to maximise their profits. Their profits will be determined, in general, by the cost of collection and treatment and the value they receive for the material. This can cause an issue for the quality of material collected. It is generally considered cheaper to collect material co-mingled at the kerbside; however, there are complaints from reprocessors that co-mingled collections provide a poor quality of material with higher wastage. Although there are regulations designed to encourage the separate collection of materials where 'practicable' and 'necessary' (TEEP), the guidance is hard to interpret and difficult to enforce.

#### 3.2 Engaging the Consumer

In the competitive UK compliance market place, it would disadvantage a single compliance scheme to run a campaign for encouraging consumers to recycle more. This is because they would have to pay for the campaign, whilst sharing any benefits with all compliance schemes.

As a result, compliance schemes have historically spent minimal amounts on national communications campaigns. However, in order to achieve the CE targets, effective national and local communication campaigns will be required. Any future campaigns should not disadvantage an individual compliance scheme and a mechanism to share costs should be introduced

#### 3.3 Other

Costly price spikes, distribution of producer funds, strength of UK recycling, development of end markets and long-term strategic investment are additional elements that could benefit from improvement in the UK system.

## Key Themes from European Research

In order to learn lessons from elsewhere, we have undertaken research into extended producer responsibility (EPR) in six European nations, in addition to the UK. These six nations (Germany, France, Belgium, Netherlands, Spain and Italy), along with the UK, represent almost 70% of the population of the EU 28; they all operate different producer responsibility systems and are all in the mature phase of compliance. Secondary research was undertaken into the systems in all of these countries and face-to-face meetings were held with the leading compliance schemes (with the exception of Spain) to clarify and collect additional information.

Due to aspects such as national legislation, waste management structure and culture, all the European schemes researched have their own differences and complications, making it difficult to compare them directly. However, key differences and good practices were identified and lessons were learned from both. A summary of lessons learned that could directly help the UK achieve future CE targets is presented in Section 11.

In this section, we look first at the key differences in the way all seven nations have set-up waste packaging compliance, which companies are obligated and the different elements included in calculating obligations. We then present six key themes we have identified throughout our research:

- **Key theme 1: Compliance costs**
- **Key theme 2: Control & Strategic Development**
- **Key theme 3: Communication funds**
- **Key theme 4: Changing behavior**
- **Key theme 5: Calculating recycling rates**
- **Key theme 6: Complementary measures**

These six themes incorporate the most significant differences between the schemes that potentially represent opportunities for improving recycling rates in the UK and achieving the CE targets. They are discussed in further detail in Sections 5-10 of this report. Firstly though, we introduce the six different compliance regimes and schemes we have researched, including the level of scheme competition, coverage of waste streams, compliance charges, current recycling rates and potential for achieving the proposed CE targets.

## 4. Introduction to the Compliance Regimes

### 4.1 Competition and Coverage

As can be seen in Figure 7, the countries have a mix of single, complementary<sup>4</sup> and competitive EPR schemes. They focus their recycling collections mainly on the household (HH) waste stream and predominantly charge material levy fees against household packaging (obligated packaging). In the UK we have taken a more comprehensive approach and incorporate both household (HH) and commercial/industrial/agricultural (C&I) packaging in packaging obligations and waste packaging collections.

In France, Germany and Spain, producers only report packaging placed on the household market, only pay material levy fees against household packaging and their funds/systems are focussed only on the collection of household or household-type packaging. In Belgium, the household EPR scheme also collects household-types of packaging and a separate scheme is responsible for the C&I obligation, against which different material levies are paid.

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<sup>4</sup> Where complementary schemes exist they are for C&I packaging (Belgium), and a particular material stream (Spain: glass).

Figure 7 EPR schemes researched and waste streams covered

	Main EPR Scheme(s)	Other EPR Schemes?	Waste Streams Collected	Obligated Packaging
Belgium	Fost Plus & Val-I-Pac	Complementary	🏠+ 🏭	🏠+ 🏭
France	Eco-Emballages	Single	🏠	🏠
Germany	DSD	Competitive	🏠+	🏠+
Italy	Conai	Single	🏠	🏠 🏭
Netherlands	Afvalfonds/Nedvang	Single	🏠+	🏠 🏭
Spain	Ecoembes	Complementary	🏠+	🏠
UK	Valpak	Competitive	🏠 🏭	🏠 🏭

🏠 Household

🏠+ Household and Household-type (Hospitality, Schools, Offices, etc.)

🏭 Commercial & Industrial (C&I)

Similar to Belgium, UK obligated producers report packaging placed on both markets; however, they are only required to purchase PRNs (the UK equivalent to levies) that cover recycling. This is an important point to note, as paying levies against material recycled, instead of against material POM, means obligated companies are paying fees on a considerably smaller quantity of material. As an example, in 2015, UK plastic packaging POM is estimated to have been 2,220kt<sup>2</sup>, whereas only 891k<sup>3</sup>t of plastic packaging was recycled.

Some nations also have a de minimis, whereby producers handling smaller quantities of packaging are exempt from the compliance regime. In the UK, companies handling less than 50t of packaging and with a turnover (t/o) of less than £2m need not report packaging handled or participate in

compliance. This is a relatively high de minimis compared to most other countries reviewed. The Netherlands also have a 50t exemption (but no t/o exemption), Belgium a negligible 300g exemption and Spain has different smaller exemptions for different material types. In France, Germany and Italy there are no exemptions: all producers must report their packaging POM.

Another difference between the UK system and the other countries' systems is that the obligation is shared along the supply chain amongst raw material producers, converters, packer fillers and retailers. In the other countries studied, the obligation falls just on the company placing the packaging onto the market.

Each nation charges obligated producers in a different way for the packaging they handle; this is explored in the next section.

## 4.2 Compliance Charges

All obligated producers are charged per tonne for packaging material placed on the market or recycled (UK), regardless of whether this covers just household or household and C&I packaging. However, as shown in Figure 8, some schemes have additional criteria by which producers are charged, such as a component charge in France (where, for example, a plastic bottle would have three components – main bottle, cap and label) or a unit charge, as found in Spain. Sometimes, these charges are in addition to the material levy rate and sometimes they are offered as an alternative (Belgium).

Figure 8 EPR schemes researched and waste streams covered

	Per Tonne of Material	Recyclability Charge	Other Charge
<b>Belgium</b>	HH + C&I POM (different levies)*	No	
<b>France</b>	HH POM	Yes	Component
<b>Germany</b>	HH POM	Voluntary	
<b>Italy</b>	All POM	Pipeline	
<b>Netherlands</b>	All POM	Considering	
<b>Spain</b>	HH POM	No	Unit
<b>UK</b>	All Recycled	No	

\* in Belgium a company can choose to pay per tonne or per unit of household packaging

Whilst a per component charge may encourage producers to simplify their packaging and potentially facilitate recycling, 'recyclability charges' are designed specifically to encourage and discourage certain pack types through bonuses and/or penalties within compliance charges. Eco-Emballages brought in such a mechanism in 2011, Germany has a voluntary assessment process and Italy is in the process of developing its own recyclability assessment and charge, which will be introduced in 2018. The Netherlands is considering such a mechanism. The benefits and drawbacks of such charges are discussed below.

#### 4.2.1 Recyclability charges

Encouraging and discouraging certain packaging types can increase the amount of packaging that can be economically and sustainably recycled within a country's existing infrastructure, thereby improving recycling rates. Penalties are focused on packaging designs where there are clear alternatives that are better from both a recyclability and life cycle perspective. The use of

well-designed bonuses might improve acceptance of such an approach in the UK supply chain.

However, recyclability charges have their drawbacks too. Many types of packaging are technically recyclable, but are less easy to recycle due to lack of collection systems, material volumes, recycling infrastructure and end markets. Discouraging use of technically recyclable, yet difficult to recycle pack types through 'recyclability' charges can have the adverse effect of closing off the opportunity for markets and collections to develop. This is unfortunate because the recycling of these materials may have the potential to become economically and sustainably feasible following trials, development support and economies of scale. A further argument against recyclability charges stems from a debate around resource efficiency versus recyclability: complex packaging such as a drinks pouch may be 'unrecyclable', but it uses less raw material than a bottle or can, is lighter and, although not recyclable, it can still go to energy from waste (EfW). Finally, producers of less-recyclable packaging have made financial contributions (through levies/PRNs) to the development of existing collection and recycling systems, even though these systems do not handle their packaging. This 'cross-subsidy' is then compounded by penalty charges for non-recyclability.

These drawbacks do not mean that well designed recyclability bonuses/penalties are not a good way forward for the UK, in terms of driving higher recycling rates of certain materials and encouraging eco-design that fits with our recycling systems. What they do suggest is that an open and honest debate about the way forward is required and the potential impacts of declaring certain pack types as non-recyclable is thoroughly explored.

Furthermore, due to competing compliance schemes in the UK, the introduction of such a mechanism would currently require new laws to be



made to ensure all compliance schemes apply the bonus/charge mechanism in the same way. One possible solution to implementing the mechanism as it exists in France, would be to levy fees for a central 'strategic fund' (please see Section 15). This would enable a nationwide introduction of a bonus/penalty mechanism outside the market system for PRNs, which would continue in parallel. Amendments to legislation would however be required to introduce a strategic fund itself.

#### 4.2.2 Levying behavior change

The use of levies to encourage behaviour change is not just restricted to recyclability charges or component charges. For example, in France levy rates are reduced if on-pack recycling advice is shown, or if other environmentally beneficial actions are taken, such as light weighting of packaging. In the Netherlands, there are very high levels of PET bottles that should be included in the country's deposit system, but choose not to comply. In Germany, very high levies are placed on beverage containers that are incompatible with their deposit system.

The relationship between levy fees/PRNs and recycling rates is further explored in Section 215.3 of this report. Contrary to common belief, there is no correlation between levy fees and recycling rates; that is to say that simply increasing levy fees does not generate a proportionate increase in recycling rates.

We now turn to look at the current recycling rates in the six European countries and the compound growth rates that will be required for each country to achieve the CE recycling targets in 2025 and 2030.







#### 4.3 Current Recycling Rates and Potential to Achieve Targets

It is not just the UK that has work to do to ensure we achieve the 2025 and 2030 CE recycling targets. Other than Germany and the Netherlands, all the countries we researched have the potential to miss targets unless some form of intervention is undertaken to increase certain recycling rates.

Figure 9 summarises the current (2014) recycling rates in all six countries and the compound annual growth rate required to achieve the targets. The growth rates have been colour coded to illustrate those that are potentially achievable without intervention (green), those that may require intervention (amber) and those that will require intervention (red).

It is important to note that this analysis is based on individual countries' current methodologies for calculating recycling rates; for example, protocols used, the point at which recycling is counted and allowed levels of contamination. If changes were made to these as part of an effort to move to a more standardised European approach, then this could impact the growth rates required to meet the targets.

Figure 9 Current recycling rates & growth required to achieve CE targets

	2014 Recycling Rate*	Material	CE Targets		Annual Growth Rate Required to Achieve CE Targets	
			2025	2030	2025	2030
 Belgium	91%	Paper	75%	85%	0%	0%
	100%	Glass	75%	85%	0%	0%
	<b>42%</b>	<b>Plastic</b>	55%		2.5%	
	99%	Aluminium**	75%	85%	0%	0%
	92%	Steel**	75%	85%	0%	0%
 France	94%	Paper	75%	85%	0%	0%
	75%	Glass	75%	85%	0%	0.8%
	<b>25%</b>	<b>Plastic</b>	55%		7.4%	
	<b>53%</b>	<b>Aluminium</b>	75%	85%	3.3%	3.0%
	74%	Steel	75%	85%	0.1%	0.9%
 Germany	87%	Paper	75%	85%	0%	0%
	89%	Glass	75%	85%	0%	0%
	50%	Plastic	55%		0.8%	
	88%	Aluminium	75%	85%	0%	0%
	93%	Steel	75%	85%	0%	0%
 Italy	79%	Paper	75%	85%	0%	0%
	<b>70%</b>	<b>Glass</b>	75%	85%	0.6%	1.2%
	<b>38%</b>	<b>Plastic</b>	55%		3.4%	
	74%	Aluminium	75%	85%	0.1%	0.8%
	<b>73%</b>	<b>Steel</b>	75%	85%	0.3%	1.0%
 Netherlands	82%	Paper	75%	85%	0%	0.2%
	79%	Glass	75%	85%	0%	0.5%
	50%	Plastic	55%		0.9%	
	90%	Aluminium***	75%	85%	0%	0%
	91%	Steel***	75%	85%	0%	0%
 Spain	78%	Paper	75%	85%	0%	0.5%
	<b>70%</b>	<b>Glass</b>	75%	85%	0.7%	1.2%
	<b>43%</b>	<b>Plastic</b>	55%		2.4%	
	<b>61%</b>	<b>Aluminium**</b>	75%	85%	1.9%	2.1%
	86%	Steel**	75%	85%	0%	0%

\*Household, commercial & industrial recycling  
 \*\* Only a metals recycling rate is available on Eurostat, therefore an estimate for aluminium and steel has been made based on published can recycling rates  
 \*\*\* 2013 Steel Recycling rate from [www.apeal.org/statistics/](http://www.apeal.org/statistics/). Aluminium calculated as residual tonnage after steel recycling tonnage deducted. French alu/steel POM split used as proxy for dutch POM split.

<1%	Achievable
1-2%	At risk, may need intervention
>2%	Intervention definitely required

What is evident from these figures is that certain recycling rates exceed European targets set to-date and those proposed for the future. All the schemes researched confirmed that recycling is funded to whatever level it occurs; i.e. if it is collected the resulting net costs will be covered – payments do not stop once targets have been reached. This is not the case in the UK, which when recycling rates have been achieved, the purchase of PRNs generally ceases and they tend towards zero value. An exception can be where PRNs are generated in December, as in principal they can be carried forward and used in the following year if it is considered there will be sufficient demand due to higher targets.

### 4.3.1 Tough targets for plastics

The plastic target presents the biggest challenge for all countries. France has the greatest work to do: in 2014 they recycled 25% of their plastic packaging and need to grow plastic recycling by a minimum of 7.4% year-on-year to achieve the 2025 CE target. Until 2014 it was predominantly plastic bottles that were being collected, but over recent years PTT collections have started to be rolled out.

The sorting of PTTs into different polymer types presents a particular issue in France, as sortation capacity is highly fragmented with around 200 small facilities across the country. Furthermore, sortation is still sometimes done by hand as it is not economically viable to have automated sortation equipment in very small sorting facilities. In addition, historically, manual sortation has been viewed positively at a local level as it provides employment opportunities.

Municipalities in France have until 2022 to add household films and PTT to collections, as written into law recently (also covering energy recovery). Pressure is growing to consolidate sorting centres and there is an imminent requirement for municipalities to supply sorting centres that are capable of automatically sorting polymers, including PTTs.

Without the recycling of PTTs in all countries, plastic targets are very likely to be unachievable. Currently, Belgium also only collects and recycles plastic bottles and will need to modify their system to include PTTs, and possibly household films, to achieve the targets. To help address this, Belgium is currently running six trials on adding PTT and films to the collection system (two in each of the three regions), with the expectation that over the coming years PTT and films will be collected more widely across the country.

Italy and Spain collect all plastic formats, and although they have considerable growth rates to achieve, they are in a better position to do so. Their focus will be on more/better sortation of collected material to maximise levels of mechanical recycling.

In the Netherlands, there has been an obligation on municipalities to collect plastics separately since 2009, which is believed to be a key factor in enabling them to increase their plastic recycling rate. Plastics are sorted into a variety of polymer/format fractions (e.g. PET, PP, PE, EPS, film, mixed plastics). Sorting centres are required to generate no more than 55% mixed plastics output to receive payment. There is also a deposit system for PET plastic bottles over 0.75l, but in practice, bottles that are mainly 1litre and over, are collected. It is not necessarily advantageous to have deposits on bottles of this size as they tend to be consumed at home and recycled already.

### 4.3.2 Achieving aluminium targets

Not achieving the aluminium targets poses the next greatest threat, particularly for France and Spain. Both countries collect aluminium through recycling collections, but also add to their recycling levels through protocols for the recovery of aluminium from incinerator bottom ash (IBA). The use of protocols for metal packaging in IBA to achieve recycling targets is common to all countries, except Germany. However, calculation methods and allowances vary, meaning some are more generous than others.

Historically, in The Netherlands, householders were encouraged to leave aluminium and steel cans in their residual waste, rather than separate them for recycling. This way, the material has been recovered at the incinerator, either prior to the furnace or from IBA.

In France and Spain, increasing aluminium recycling levels could prove difficult due to the low ratio of aluminium cans to trays/foil (around 40:60 - much lower than in the UK). If greater recovery is to be achieved through IBA, this poses a problem too because the surface of aluminium oxidises in incinerators, thereby reducing the aluminium yield in the IBA. Additionally, recovery levels of non-can aluminium tend to be lower in separate collections. There are also no known plans to increase incineration capacity in these countries; capacity has been flat for the past 10 years.

#### **4.3.3 Maybe/maybe-not materials**

In Italy and Spain there may be some intervention required to achieve glass and steel (Italy only) targets in 2030. However, with average annual growth rates of just over 1% to achieve over 16 years, it is a little premature to discuss the degree of difficulty in achieving the targets.

#### **4.3.4 Toughest challenge (UK)**

In general, the UK has the most to do in order to achieve the CE targets, with potential intervention required in all materials by 2030. In particular the plastic target represents the greatest challenge for 2025. Metals and glass recycling levels all pose potential risks in 2030. Section 1.3.1 of this report discusses in detail the challenge the UK faces in achieving the CE targets. Glass would become a much more serious challenge if there were a change in policy such that the processing of glass into aggregate could no longer be classed as recycling.

## 5. Key Theme 1: Compliance Costs

This theme explores compliance scheme costs to businesses, which businesses are obligated to pay compliance schemes and whether higher scheme costs equate to higher recycling rates.

### 5.1 At What Cost?

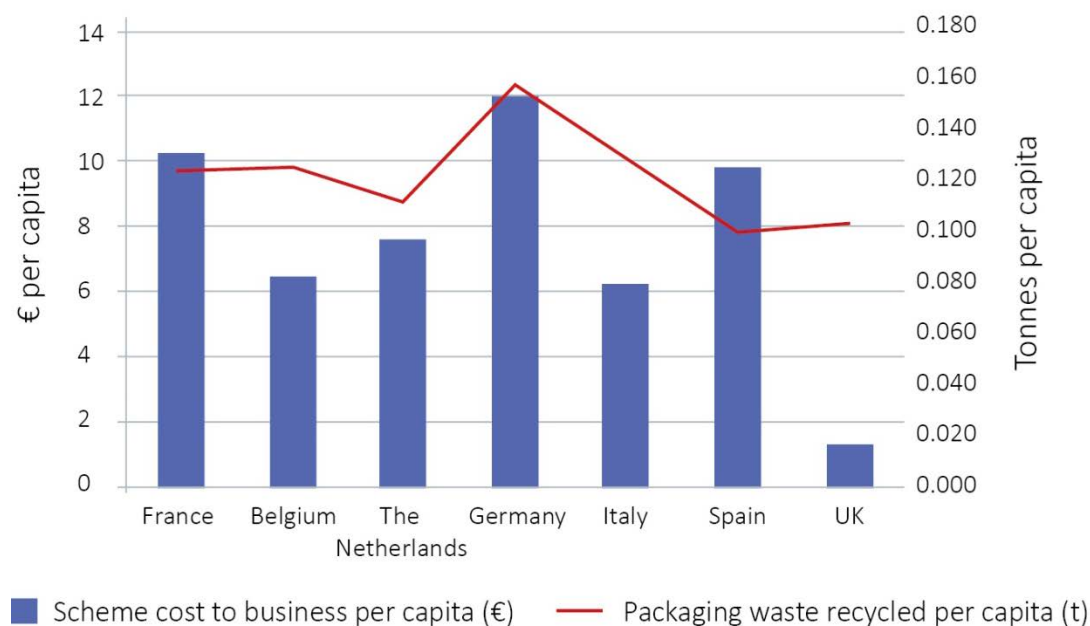
The graph in Figure 10 compares **compliance schemes' total costs to business**<sup>5</sup> per capita (blue bars) with the recycling levels per capita (red line) for 2014. On one hand, it confirms that Germany has the highest scheme costs and recycling levels for its size of population and, on the other hand, that the UK has the lowest scheme costs for its size of population. What it does not show is low packaging recycling levels in the UK, as a result of low scheme costs.

If we seek to recycle more packaging, but still control costs to business, we should look at the systems with better recycling rates and lower producer costs, as shown for Belgium (Fost Plus and Val-I-Pac) and Italy (Conai) in Figure 10.

What do scheme costs to business entail? The main cost to business is what we have termed the 'material levy fee'. All schemes we are looking at use this as a basis for their charge, i.e., a euro per tonne of material fee.

<sup>5</sup> Please note this does not represent the total cost of recycling – simply what producers pay for recycling through compliance schemes and PRN purchases. Please see Section 5.5 for estimates of total costs to the UK of collected packaging waste

Figure 10 Compliance scheme costs to businesses and recycling levels per capita, 2014



That said, the set-up of the material levy fee in each country differs, with some countries including a per item charge, a per component charge, an 'unrecyclable' charge, or a surplus fee for materials excluded from complementary deposit schemes.

Overall income from material levy fees for each of the six countries and the UK is given in Figure 11 below.

**Figure 11 Compliance schemes' income (2014)**

	Income	
	2014 Material Levy Fees/ PRNs (UK)	Scheme Retains Material Revenue
<b>Belgium</b>	€74m	Yes
<b>France</b>	€670m	No <i>(municipalities retain)</i>
<b>Germany</b>	€950m*	Yes
<b>Italy</b>	€354m	No <i>(material organisations retain)</i>
<b>Netherlands</b>	€125m	No <i>(municipalities/WMC retain)</i>
<b>Spain</b>	€453m	Yes
<b>UK</b>	€79m	No <i>(local authorities/WMCs retain)</i>

*\*Estimate, due to there being multiple competitive compliance schemes charging different material levy fees. Levy fees can also vary between clients of a scheme.*

**Please be aware that these costs to producers should not be assumed to be directly comparable for reasons such as:**

- Covering different things: e.g. communications, anti-littering campaigns, collection/sorting/recycling trials, etc.
- Differing collection systems: extensive use of bring banks for glass (Belgium, France, The Netherlands, Germany) that reduce costs
- Not all schemes pay FNC: e.g. France = 80%, UK = variable
- Germany pays for treatment of packaging not recycled, i.e sent to EfW

Also shown is whether, in addition to this income, schemes retain the value derived from selling collected material. Where an EPR scheme retains ownership of sorted packaging, it is taken into consideration in calculating the net costs of material collection. Therefore, in principal, schemes retaining material value do not financially impact municipalities.

There are some potential advantages to retaining the material, in particular in terms of driving material quality and supporting domestic and European recyclers. For example, an EPR scheme can require the sorted recyclables to meet a defined specification, whilst also having good visibility of whether this specification is being met. Schemes can also build non-financial criteria into auctions of the material, such as proximity of recycling to source. Whilst there are advantages for recyclers having a supplier with a shared interest in maintaining a strong domestic recycling infrastructure, there are some potential downsides. These include increased reliance on one major supplier and the risk that auctions can lead to higher prices being paid for feedstock.

In Italy, the majority of material levies are passed down to the material organisations that are responsible for purchasing sorted materials and selling them to reprocessors. The material organisations also retain the revenue from material sales. Based on balancing material purchases and sales, the material organisations advise CONAI (the compliance scheme) on what material levy fees should be. CONAI retains some of the material levies to cover administration and communications (see Section 7).

Having established overall scheme costs to businesses and also what these scheme costs entail, we now move on to consider which businesses are subject to these costs (obligated producers).

## 5.2 Encompassing More Producers

When it comes to obligated producers, the UK is unique as it is the country with the widest formal shared responsibility amongst producers. That is to say, we include convertors and raw material manufacturers as obligated businesses and count retailers as 'sellers' in addition to being own brand owners and importers. In our six comparison countries, producer responsibility is limited to brand owners (including own-brand) and importers.

**Figure 12 Share of producer obligation by activity**

	Belgium, France, Germany, Italy, Netherlands, Spain	UK
<b>Seller</b>		48%
<b>Packer/Filler (Brand Owner, inc. Own Brand)</b>	100%	37%
<b>Convertor</b>		9%
<b>Raw Material Manufacture</b>		6%
<b>Importer</b>	100%	6-100%

The higher scheme costs to business that we have identified in the other European countries are therefore spread across fewer producer types, making the costs to individual obligated producers appear higher still.

We now consider whether higher costs or, more specifically, higher fees, are related to achieving higher recycling rates.

## 5.3 Pay More, Recycle More?

To establish whether any correlation exists between recycling rates achieved and material levy fees charged, some statistical analysis was undertaken both for the UK by itself and for the UK along with other European countries. No correlation was evident when analysing historical UK recycling rates and average annual PRN prices, or when analysing wider European recycling rates and material levy fees. There are a number of reasons why increasing charges alone do not necessarily increase recycling rates:

- Material price:** in most countries the levy rate is a combination of collection and sortation costs net of material value. Material value is significantly influenced by global pricing and economics and, as such, levy rates linked to material values can result in non-correlation with recycling rates (i.e. levy rates may increase to compensate for falling recycle values, just to maintain the status quo).
- Fixed costs:** in all of the schemes there is an element of fixed costs in the levy rates. These fixed costs are usually related to the administration of running the compliance schemes and are not linked to recycling rates. In this way, they also affect the correlation.
- Tax based systems:** in a tax based system, the levy rate is imposed on all obligated packaging sold, irrespective of recycling rate. The onus is on the collector who receives the money from the tax to organise the collection to achieve the target. In all tax based systems there is a disconnect between the target and tax. Over achieving the target does not reduce the levy price, as should occur in a market based system.

- **Fraud:** all compliance regimes studied had some elements of fraud occurring, e.g., incorrect reporting of POM or incorrect returns of the quantity being recycled. Whether fraud occurs in the POM or recycling figures, it impacts recycling rates, reducing any links with levy rates.

#### 5.4 Full Net Costs or Not?

As part of the Circular Economy Package, and if the UK decides to adopt the proposed measures, compliance schemes may have to:

*'ensure that the financial contributions paid by the producer to comply with its extended producer responsibility obligations cover the entire cost of waste management for the products it puts on the Union market, including ..... costs of separate collection, sorting and treatment operations .... taking into account the revenues from re-use or sales of secondary raw material'<sup>4</sup>.*

With the exception of France, full net costs (FNC) were perceived to be met where municipalities were collecting and presenting material as advised by the compliance scheme, or of a sufficient quality. FNCs are not intended to subsidise inefficient, expensive collection or sortation systems, so to assume some level of quality or method of collection seems reasonable. Figure 13 presents FNC information for our six countries.

Figure 13 Implementation of full net cost principle

	Full Net Cost Met?	Criteria
<b>Belgium</b>	100%	If collecting as advised
<b>France</b>	80%	If quality acceptable
<b>Germany</b>	100%+	Includes cost of EfW of residual packaging waste
<b>Italy</b>	100%	If quality acceptable
<b>Netherlands</b>	100%	If quality acceptable
<b>Spain</b>	100%	If quality acceptable

In Germany, FNCs are not only paid for packaging that is recycled, but also for packaging that is not. This is due to all packaging being collected from households. All household packaging material is sorted so that the quantity required to achieve targets can be captured. The remaining material is treated in whichever way is most economic at the time, which could be recycling or being sent for energy recovery. As compliance schemes are responsible for sortation, and in fact compete on the efficiency of their sort processes, they are also responsible for the cost of treating the residual packaging. It should be noted that a DRS is responsible for the capture and recycling of most beverage containers in Germany, although some plastic bottles and cans are still collected in household light packaging collections.

In France, estimated net costs are calculated using a formula at the start of each six year municipality contract period (with material values based on the previous six years). If material values change, this is taken into account in the following six year period.



## 5.5 Total Costs for Handling Packaging Waste

This report is focussed on packaging producer responsibility in the UK and the costs discussed in this section (particularly Section 5.1) relate to the costs paid by producers as a contribution towards UK waste packaging recycling collections and sortation as a whole. In order to put these into context, possible total costs of handling packaging in the UK (for household packaging waste by itself and for household and business packaging waste combined) have been provided in Figure 14 below. UK total costs are also illustrated in euro and euro per capita to enable comparison with other countries (please see Appendix).

**Figure 14 Estimates of UK total net costs for packaging recycling**

<b>ESA/Perchards/360 Environmental<sup>4</sup></b>		
UK Net cost of collection, sorting & processing of waste packaging		
	<b>HH</b>	<b>HH &amp; C&amp;I</b>
<b>Cost</b>	£346m	£526m
<b>Material Revenue</b>	£132m	£257m
<b>Net Cost</b>	£214m	£269m
<b>Net Cost</b>	€265m	€333m
<b>€ per capita</b>	4.1	5.2
<b>Green Alliance (UK scaled-up by population)<sup>5</sup></b>		
UK Net cost of dealing with waste packaging from households		
	<b>HH</b>	
	£362m £m	64.6m UK Population (2014)
	449 €m	1.24€ to £1 (2014 average)
	6.9 € per capita	

These estimates suggest that UK costs per capita for household collection, sortation and recycling (net of material revenue) fall between 4.1 and 6.9 €/capita. For all packaging waste combined (HH and C&I), the estimate is 5.2 €/capita. Producers contribution towards packaging waste costs (combined) is estimated to be 1.3€/capita (25%).

As most other schemes only cover the cost of household or household+ collections, this is where a comparison is most fairly made, although for the reasons stated in Section 5.1, it is not possible to directly compare costs as they all encompass different elements. However, to provide some indication, we have estimated the range of household/household+ costs to fall between 5.5€/capita (Belgium) and 12.2€/capita (France). This suggests the UK's total HH costs compare reasonably well with the other schemes studied, particularly as the UK offers kerbside collections of plastic PTTs and glass in many areas: Belgium and France are yet to introduce wide scale PTT collections and they collect glass through bring banks. Please see Appendix for details.

Having looked at incomes to schemes and the associated costs to businesses, and having established that higher costs do not ensure higher recycling levels, we now look at how scheme income is spent. As funds are spent in different ways, schemes have varying degrees of influence and control over collection, sortation and recycling in their countries.

## 6. Key Theme 2: Control & Strategic Development

Although all of the schemes studied cover the majority or all of FNCs of packaging collection and recycling (with the exception of the UK), there are differences in the level of control that schemes have over collection system design and material sortation. Governance structures also vary between countries and these are discussed below.

### 6.1 Scheme Governance

As with all European laws, the Packaging & Packaging Waste Directive was transposed into national legislation by each country's Government. This has resulted in some differences in the way that EPR schemes are governed in each country.

In countries where there is only a single or complementary schemes, then the licensing process to become an EPR scheme is generally more involved and complex. Operators typically reapply for a licence to operate after a number of years, for example, every six years in France (although an interim one year licence will be issued for 2017 whilst competition is introduced) and every five years in Belgium.

Organisations involved in EPR governance typically fall into three categories:

- 1) Government Departments or Agencies. These were involved in setting targets (as in the Netherlands and the UK) and issuing licences to operate (such as in France, Italy and the UK).
- 2) Specialist EPR bodies set up with a remit to provide governance, for example, the Interregional Packaging Commission in Belgium, which sets the targets and issues operating licences
- 3) EPR scheme bodies. For example, in Germany there is an organization involving the EPR schemes (Gemeinsame Stelle) that sets rules related to costs and material allocation between schemes. There is also a clearing board that calculates the market share of the different EPR schemes based on licensed volumes. There are plans to introduce a body that will monitor POM data provided by companies and EPR schemes to the clearing board.

### 6.2 Scheme Operational Control & Spend

Common to all schemes researched is that they have a level of control (to a greater or lesser extent) over packaging collections, sortation and recycling. In the UK there is a complete absence of control over these by producers and their representative EPR schemes. This means UK schemes are unable to influence which packaging materials are collected, the quality of collected materials and the end destination in terms of UK recycling or export.

Arguably, the highest level of control is in Belgium where the EPR scheme defines how packaging waste is to be collected (in what streams) and has the ability not to pay FNCs if municipalities deviate from this. They also sell the sorted recyclables and reward (or penalise) municipalities based on the quality of the recyclables delivered to the sorting centers.

### 6.2.1 Influence over municipal collections

In the other countries studied, the EPR schemes encourage municipalities to collect packaging waste in a certain way, but have no power to enforce or penalise if a municipality chooses to deviate from their advice. However, the EPR schemes do require that sorted recyclables meet certain quality specifications and typically pay municipalities defined net costs (usually based on average historical costs and material revenues), rather than the actual costs incurred. This means that if a municipality implements an expensive or inefficient collection system then they are responsible for any additional costs incurred. An exception to this is Germany where actual costs, in principal, are paid for the collection of packaging. Municipalities remain responsible for the costs of any non-packaging co-collected with the recyclables, such as newspapers and magazines.

EPR schemes paying municipalities for collection mostly pay on an FNC basis; although, in France, 80% FNCs are paid. The EPR schemes periodically agree contracts with municipalities, typically every three to six years, for the activities they want them to carry out with details of how they will be recompensed.

In Germany, where multiple EPR schemes compete, schemes are allocated collection costs equal to their market share and take it in turn to lead negotiations. The scheme that is leading negotiations picks up a higher percentage of collection costs than the other schemes, thereby encouraging the scheme to negotiate as low a price as possible.

Where a municipality sells sorted recyclables directly to a reprocessor (rather than through an EPR scheme), they are also motivated to maximise quality in order to achieve the maximum value possible. An example of this is in the Netherlands where the average value of sorted material across the country is used in the FNC calculation. Municipalities are incentivised to negotiate hard

with reprocessors as they keep any additional revenue received above the national 'average full net cost' and, as high material revenues keep the national average FNC down, there is also an advantage to the EPR scheme.

### 6.2.2 Individual scheme spend

The majority of scheme revenues are used to fund operational costs related to collection, sorting and, to some extent, reprocessing. The UK is unusual in the quantity of waste packaging it exports for recycling (especially outside of the EU). Most of the countries studied (with the exception of Germany which also has competing compliance schemes), have policies or strategies that encourage either local or national recycling, where possible. However, it should be noted that material handled by the majority of EPR schemes is household derived and these countries do export significant volumes of C&I packaging outside of the EU. Setting targets for a certain amount of UK recycling, or limiting export, would require legislation in the UK. Under EU single market regulations this would be deemed 'anti-competitive' and not permitted. In the countries studied where there were no competing compliance schemes and therefore no requirement to legislate, the schemes developed policies that supported recycling in their own countries.

For this to occur, to some extent, in the UK, a central 'strategic fund' could be introduced in parallel with the market based PRN system, as outlined in Section 15 of this report. The policies of such a fund could then dictate that any additional recycling undertaken due to the fund should be recycled, where feasible, in the UK. This would require amendments to legislation to enable the fund, but the details of fund size, how it is raised and how it is spent could remain flexible.

In addition to operational activities, money is spent on a range of non-operational activities. With the exception of Germany, due to the competitive nature of EPR there, the schemes researched heavily fund

communication activities. Some of this funding is used at a local level, with the municipality managing the way it is used, and some at a national level where the EPR scheme undertakes the communications. Please see Section 7 for further details.

EPR schemes also use money for strategic projects, for example, in France money is being spent on research and trials related to the collection, sorting and recycling of non-bottle plastic packaging and eco-design. Across the countries, funding is also being provided for activities including litter campaigns and maintenance of bring sites.

Figure 15 Key areas of compliance schemes' spend

SPEND					
	Collections	Sortation	Recycling	Communications	Strategic/ R&D Projects
<b>Belgium</b>	Yes (up to 100% FNC)	Indirectly	Indirectly	Yes	Yes
<b>France</b>	Yes (80% FNC)	Indirectly	Indirectly	Yes	Yes
<b>Germany</b>	Yes (100% FNC)	Directly	Indirectly	Minimal <sup>1</sup>	Yes
<b>Italy</b>	Yes (100% FNC)	Indirectly	Indirectly	Yes	Yes
<b>Netherlands</b>	Yes (100% FNC)	Indirectly	Indirectly	Yes	Yes
<b>Spain</b>	Yes (100% FNC)	Directly (some residual sort)	Indirectly	Yes	Yes
<b>UK</b>	Indirectly (through PRNs)	None (through PRNs)	Directly	Minimal <sup>1</sup>	No

## 7. Key Theme 3: Communication Funds

Communication funds, aimed at raising householder participation in recycling, are common to all countries without competitive schemes. A portion of compliance scheme revenues are used to fund communication campaigns on a national and/or local level and in some instances to fund campaigns targeted at specific groups. The approximate levels of communications spend by compliance schemes and the proportion of their turnover this represents has been estimated in Figure 16.



Each country has a different approach to communication activities. In Belgium they use a model of six levels of communication, including national, regional and specific target groups. Communication starts at a young age with programmes in schools and at community events.

France has a considerable communications budget, the majority of which (€20-€25m) is passed through to the municipalities to run campaigns at a local level. Likewise, Spain also has a considerable communications budget (€22m), but the majority of it remains with the compliance scheme (60%). The remainder is passed down to the municipalities to be spent at a local level. Spain credits increased recycling, in part, to consumer awareness and close cooperation with public authorities.

Figure 16 Compliance scheme (approximate<sup>6</sup>) spend on communications

	Total Communications Spend	National Level	Proportion of Turnover
<b>Belgium*</b>	€7m	Unspecified	5%
<b>France</b>	€25-35m	€5m	4-5%
<b>Germany</b>	-	-	-
<b>Italy</b>	€10m	All	2%
<b>Netherlands</b>	€1m (+ €25m anti-litter)	All	1% (+anti-litter fund)
<b>Spain</b>	€22m	€13m	4%
<b>UK</b>	-	-	-

\*Estimate for Fost Plus (household scheme) only

In Italy, the compliance scheme runs national campaigns, in addition to material-specific communications undertaken by the material organisations. In the Netherlands, the communications budget is more conservative at ~€1m; however, it is complemented by a significant anti-litter fund of around €25m.

In Germany, since the introduction of competitive compliance schemes, there have been no communications budgets or campaigns. This is also the case in the UK, where compliance schemes fulfil their consumer information obligations (CIOs), but do not generally participate in national or local communications campaigns, due to reasons of competition. Furthermore, the diversity of recycling collections systems throughout England, Scotland and Northern Ireland make national communications difficult.

<sup>6</sup> Please note these estimates are unconfirmed

## 8. Key Theme 4: Changing Behaviours

A drive to increase recycling levels through positive behaviour change is occurring in all countries researched, to some extent. Behaviour change is not just being asked of producers and consumers, but also municipalities and waste management companies. This section of the report takes each party in turn and looks at the variety of ways in which they are being encouraged to change the way they do things to improve recycling.

### 8.1 Householders

In order to encourage better separation of recyclables by householders, both a carrot and stick approach is adopted in most of the countries researched. As discussed in Section 7, communications campaigns are run at both national and local levels to reinforce what can be recycled, why it should be recycled and how it can be recycled.



These positive messages are backed up in most nations by some kind of financial penalty for poor behavior. In Belgium, households can be fined for not separating recyclables correctly. In Germany, parts of the Netherlands and Belgium, waste is collected using a pay as you throw (PAYT) system, for example, with bin bags or bin charges for recycling costing less than charges for residual waste. When refusal to uplift poorly sorted recycling occurs (as per the 'red sticker' systems in Belgium and Germany), it results in householders having to dispose of the material through their residual waste at a higher cost, or re-sorting and re-presenting material for recycling.

Italy does have a mechanism for fining incorrect recycling, but the charge applies to a building rather than an individual, so in the case of multi-occupancy buildings, it is difficult to identify and penalise individuals.

Spain and France, like the UK, do not have a 'stick' to drive better householder recycling habits. From interviews, it was felt that this was a disadvantage, with one country believing that making participation compulsory would be needed if higher recycling targets were to be met.

### 8.2 Producers

Behaviour change in producers is most typically encouraged through the use of material levy fees. High levy fees can reflect the handling costs of waste material, but also serve to discourage use of certain packaging materials/formats. In the Netherlands, higher levy fees are charged against bottles (that are not collected through their deposit return system) and other plastic packaging; considerably lower levy fees are charged against bio and re-useable plastic packaging.

Behaviour change can also be encouraged through imposing a specific recyclability charge for types of packaging that are less technically,

economically and sustainably recyclable, or a bonus for pack types that fit well with current recycling systems, as has been occurring in France since 2011.

### 8.3 Municipalities/LAs and WMCs

Within our research, all municipalities have responsibility for household collections, or contracts with a WMC to undertake collections<sup>7</sup>. They are therefore critical players in delivering the quality and quantity of recycle required to achieve targets. In Belgium, Italy, France and Spain, municipalities are influenced through the agreed rates they will receive for their material: higher quality and quantities generate higher income for municipalities.

In the Netherlands, municipalities are encouraged to optimise quality in order to benefit from higher revenues for recovered materials than is assumed in the FNC calculation which is used to pay them for collection and sorting (See 6.2.1). In Belgium, the compliance scheme (Fost Plus) believes they have good control over household collections, as in order to be recompensed for FNCs, municipalities must agree to Fost Plus' preferred collection system.

For countries like Germany and Italy, sortation is the critical stage in ensuring the quality of recyclables sent to reprocessing. In Germany, in particular, as all packaging is collected, the optimisation of sortation (recovery rates and

quality) is key to gaining competitive advantage amongst compliance schemes, so it is tightly controlled.

In Italy, sortation facilities can face a double financial penalty if the quality of sorted material is not up to scratch – they can receive a fine and, potentially, if material is rejected, have to cover the cost of sending the material to be treated as EfW. Equally, they can receive double benefits through good-sort bonuses and minimising EfW costs for rejected material.

Country recycling rates for different packaging materials are officially reported through Eurostat, but there are no clear methodologies published alongside these rates to explain how each country has arrived at their figure. In the next section we consider what factors are critical in establishing recycling rates.

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<sup>7</sup> Approximately half of the Belgian municipalities contract directly with Fost Plus, but their contracts are negotiated in the same way as those with municipalities and the same incentives apply. In Germany EPR schemes contract with both municipalities and WMCs.

## 9. Key Theme 5: Calculation of Recycling Rates

### 9.1 It's all in the Recipe – What Recycling Rates are made of

It is neither simple nor straight forward to compare and explain the levels of recycling reported across Europe. A combination of factors is used to establish the published Eurostat rates, and, on closer inspection, it is clear that direct comparisons are difficult.

The two key elements in calculating recycling rates are the quantity of waste generated and the quantity of that waste which is recycled. Firstly, we are going to consider the waste generated figure.

### 9.2 Is Waste Generated Data Well Generated?

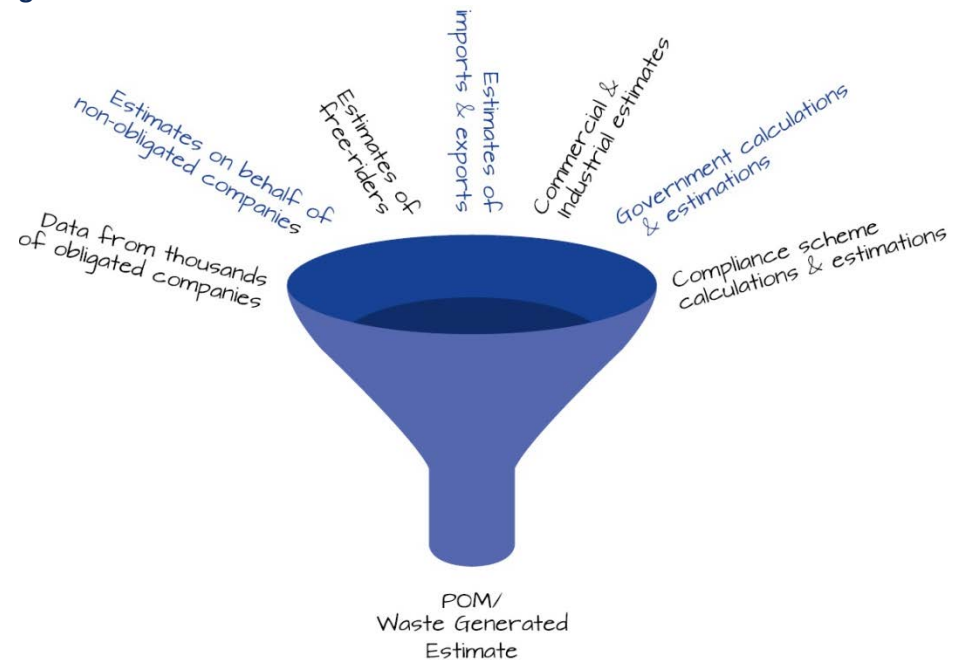
Waste generated data is usually represented by an estimate of the quantity of material placed on the market (POM). Estimating POM is complex due to the variety of sources of data used and issues with data completeness, reliability and accuracy. Figure 17 illustrates the range of data sources used.

In the UK, obligated companies submit their household and C&I POM data to the environment agencies and this is collated and added to an estimate of non-obligated POM. Defra use the findings of [Valpak/WRAPs material flow reports](#) to estimate UK non-obligated POM and any obligated POM not declared.

In the schemes we have looked at, POM is estimated and reported based on a combination of data from packaging manufacturing industry, import and export statistics, market research and obligated companies.

Furthermore, compliance schemes, industry trade associations and government/authorities undertake data analysis and estimations of their own on the collected data. Countries such as the UK and the Netherlands

Figure 17 Data sources used to estimate levels of POM or packaging waste generated



have an obligation de minimis of 50k tonnes, which means companies putting less than 50k tonnes of packaging on to the market do not have to report their POM (non-obligated) and this then needs to be estimated. Estimates for free riders who should report their obligations, but who do not, also need to be made, as do estimates on packaging imported and exported.

All these estimates (done per material stream) added together to generate a total estimate means that margins of error have the potential to be significant.



Figure 18 Effect of varying UK POM estimates on UK packaging recycling rates (2013)

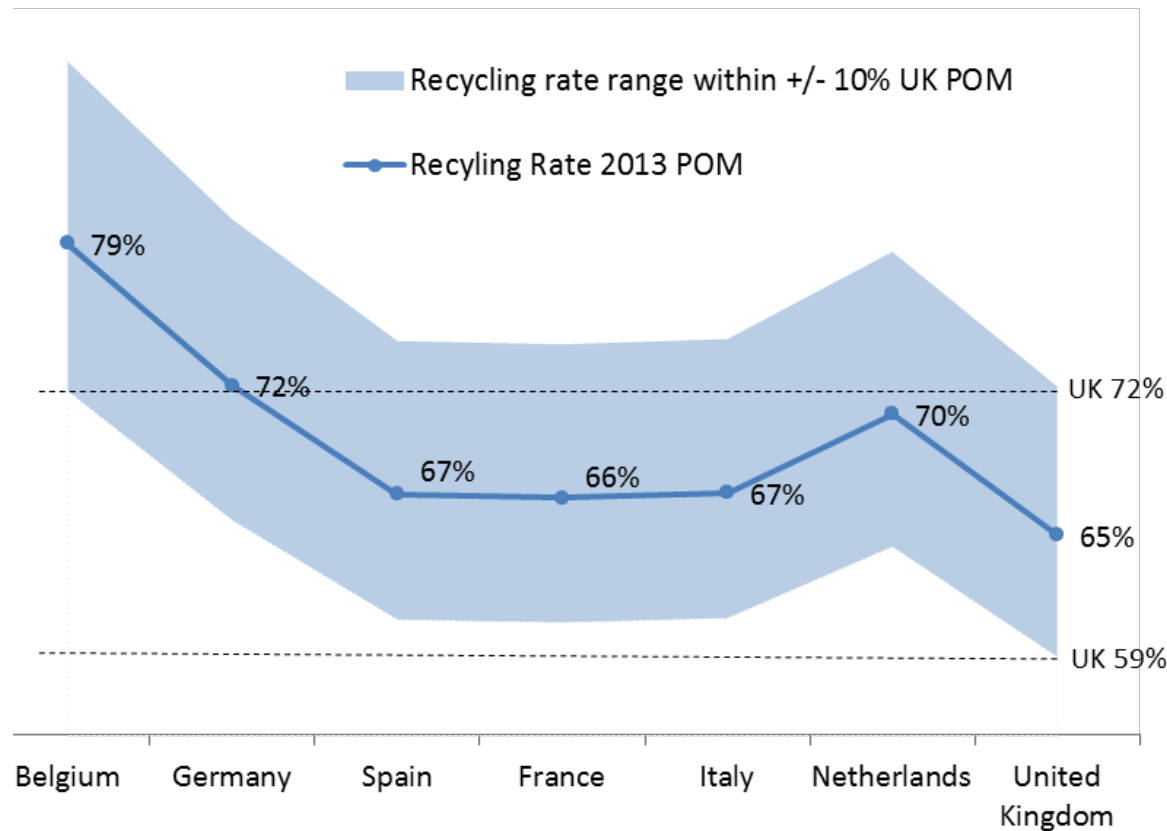


Figure 17 shows that POM estimates used by countries are very important in establishing recycling rates. We have therefore considered each country's packaging POM in relation to their GDP and population to see whether they are in proportion.

Figure 18 shows the impact on UK recycling rates of increasing or decreasing plastic packaging POM estimates by 10% (an appropriate error margin for estimates of this sort) and how we would then compare to our European counterparts.

If we have overestimated our POM, then reducing it by 10% would mean our packaging recycling rate would be 72% - higher than most other European countries and on a par with Germany. If, on the other hand, we have underestimated our POM and we were to increase it by 10%, this would give us a recycling rate of just 59%, which is lower than all other countries considered in this exercise.

**9.2.1 Packaging POM appears appropriate in our peers**

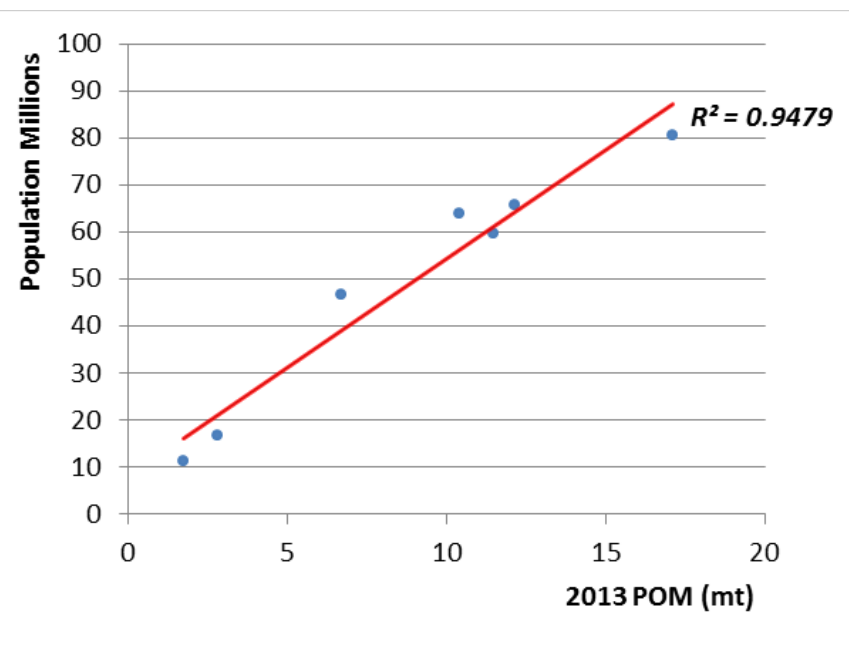
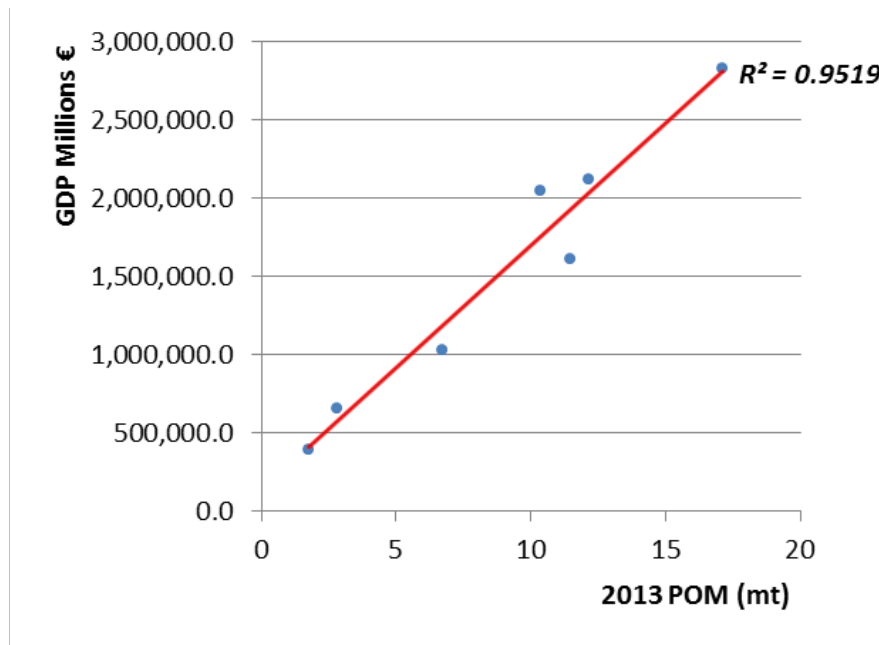
When plotted in a scatter graph and a regression analysis is undertaken (Figure 19 below), it can be clearly seen that the packaging POM figures of our six countries and the UK correlate strongly with both their GDP (0.951) and their populations (0.948).

In regression analysis, the closer R<sup>2</sup> is to '1', the higher the correlation is.

These graphs suggest that the packaging POM figures from the seven countries analysed are appropriate both for the size of their GDP and their population.

Having looked at the waste generated/POM estimates used in calculating recycling rates, we now consider how recycling level estimates are generated.

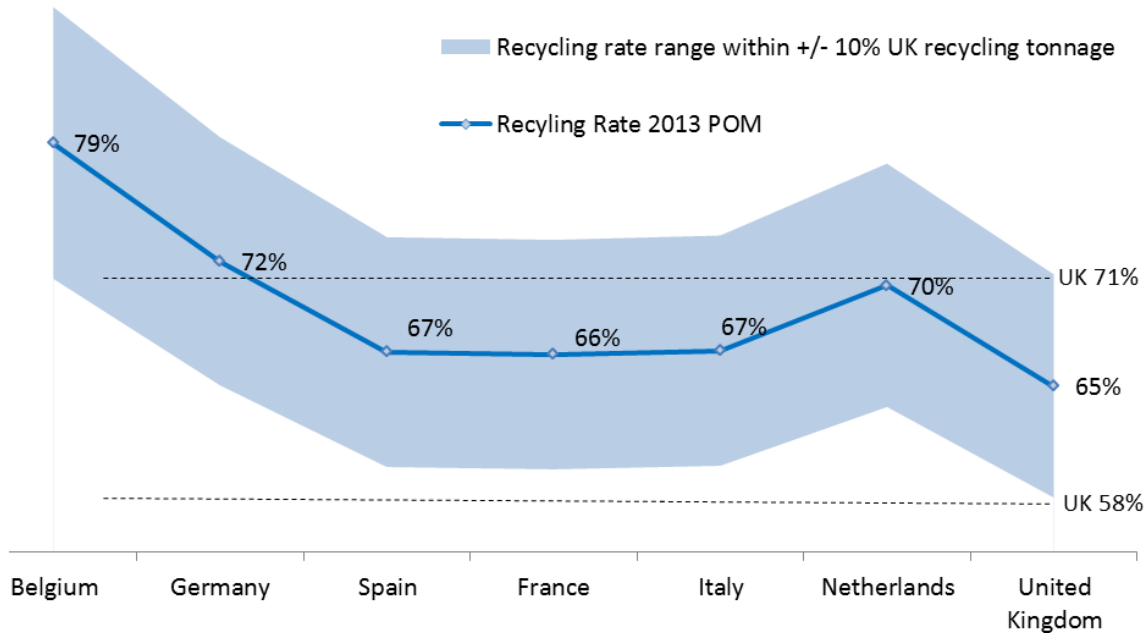
**Figure 19 Correlation of POM with GDP and population (2013)**



### 9.3 Where to Draw the Line?

Where and how you measure levels of recycling very much impact what level of recycling you achieve. EC 2005/270 article 3.4 allows for the quantity of recycled packaging to be taken from the point where material is leaving a sortation facility, or where it is entering a recycling facility. With up to 10% variation allowed between these figures, there can be a considerable difference in the recycling level depending on where it is taken from. Currently in the UK, PRNs are issued as material is going into the recycling process and therefore include a deduction for contamination and by-products that might be sent for recycling or disposal elsewhere. Therefore, our recycling levels are likely to be understated compared to those who measure at the end of sortation, or on entry to recycling with a tolerance for contamination included.

**Figure 20 Effect of varying UK recycling estimates on UK recycling rates (2013)**



Reporting recycling levels is relatively straightforward in the UK. This is because reprocessors and exporters provide the Environment Agency with figures on PRNs/PERNs issued on both household and C&I packaging, which are reported as recycling levels to Eurostat. Other countries studied, with the exception of Belgium, only have actual data for household packaging recycling and use a combination of data and report estimates from local authority/municipal collections, waste management companies, scheme declarations, industry estimates, studies and official waste statistics to calculate C&I packaging recycling levels. Therefore, where a country focuses on household packaging, access and reliability of data on this stream tends to be reasonably precise, with less certain estimates used for C&I packaging.

This variety of data sources, combined with a range of calculation methodologies, is likely to mean that error margins are significant in recycling estimates too. If the same exercise is undertaken with recycling estimates as was undertaken for POM estimates, i.e., UK levels are plotted at 10% higher and 10% lower than reported, then the impact of these margins of error are clear, as shown in Figure 20.

We can see in this graph that, as an example, if recycling levels have been underestimated and we increase them by 10%, then our packaging recycling rate would rise to 71%: almost as high as Germany and higher than most of the other European countries considered. Equally, if recycling levels have been overestimated and were reduced by 10%, then our packaging recycling rate would fall to 58%: far lower than any of the other countries.

## 10. Key Theme 6: Complementary Measures

A range of factors external to EPR systems were identified that impacted on the collection of waste packaging in the different countries. These are discussed below.

### 10.1 Disposal Taxes and Bans

The sharp increase in landfill tax in the UK appears to have had a notable impact on the increase of packaging waste collected for recycling (see Section 1.2.1). This has had less of an impact in countries such as Belgium, the Netherlands and Germany where levels of landfilling of municipal waste are extremely low or non-existent. Incineration taxes are used in various European countries, but are set at lower levels than landfill taxes to avoid incentivising landfill over incineration (with energy recovery) as the cost of waste incineration is higher than landfill (taxes included). It was noted by EPR schemes in several countries that RDF exports from the UK had caused an increase in costs paid for incinerating their residual fraction.

### 10.2 Pay as you Throw (PAYT)

The only national PAYT system identified was in Germany. Here households pay an annual charge for disposal of their residual fraction based on the size of their bin. In some areas, bins are chipped and residents charged on a weight basis. PAYT is also used widely in Belgium and The Netherlands (35-40% of municipalities). In parts of Belgium, residents pay more for the waste sacks that are used for residual waste than those used for recycling. Charging by weight for residual waste has been introduced in some areas. There was more limited experience of PAYT systems in Spain and Italy and no PAYT in the UK. The Spanish EPR scheme commented that they would like to see PAYT used more in their country.

The general consensus was that PAYT systems do help increase the level of packaging waste recycled; however, there can be an increase in the level of contamination in the recyclable fraction. On balance, the view was that use of a well-designed PAYT system is helpful in increasing levels of recycling.

In the UK, a change in the law would be required to allow local authorities to introduce PAYT systems.

PAYT is also discussed in Section 8.1.

### 10.3 Deposit Return Systems (DRS)

Deposit return systems on single use packaging were being operated in several countries: most extensively in Germany and the Netherlands. In Germany, deposits are placed on drinks containers between 0.1 and 3 litres (other than for milk and fruit juice or drinks in cartons). In the Netherlands, there are deposits on PET bottles of 0.75l or above; however, it may not be particularly advantageous to have deposits on bottles of this size as they tend to be consumed at home and more likely to be recycled than small containers used 'on the go'.

In Belgium, deposits are limited to reusable glass bottles. This is most notably the case for beer; however, a small number of wine bottles also carry deposits. In Spain, Italy and the UK there are currently no significant deposit systems in place, although their introduction is being discussed in Scotland and Wales.

Please see Section 1.3.2 of this report for our analysis on the limited gains to UK packaging recycling rates from DRS.

## 11. Summary of Lessons learnt

From the vast amount of research that was undertaken into the six other packaging compliance regimes studied, there were a number of key elements identified that we believe will help them achieve the CE targets in 2025 and 2030. These are summarised in Figure 21 below and also form the basis for the compliance models discussed in Sections 12 to 17.

In addition to this, factors driving more recycling mentioned by country are given in Sections 11.1-11.5.

**Figure 21 Summary of elements likely to directly help achieve the CE targets**

Improve quantity and quality of recyclate	Influence behaviour	Maximise measurement	Increase revenue in the system
<p><b>Consistent collections</b> light packaging/paper/glass</p> <p><b>Collection/sort contracts</b> LAs have to deliver quality to receive full payment</p> <p><b>Influence reprocessing</b> define/develop end markets creating a circular economy</p>	<p><b>Communications</b> at a local &amp; national level</p> <p><b>Encourage switching</b> to recyclable formats/ polymers</p> <p><b>Recyclability</b> indices</p> <p><b>Fines</b> for contamination of recyclate streams</p> <p><b>Pay as You Throw (PAYT)</b></p>	<p><b>Minimise fraud</b>- accurate auditable POM calculations</p> <p>Align <b>recycling measurement point</b></p> <p>Review Incinerator Bottom Ash <b>(IBA) protocols</b> for metals to ensure alignment</p>	<p><b>Reduce de minimis</b>: capture more companies and raise awareness of regulations</p> <p>Longer term <b>strategic planning</b> &amp; investment by compliance schemes</p>

### 11.1 Belgium

- Their public private partnerships, i.e. cooperation between municipalities and industry
- Standardised collections
- Competition 'at the right level' – the tendering of collections/sorting/sale of recyclables
- Communication (sufficiently targeted)
- Control – municipalities FNCs not covered unless they adhere to preferred collection model
- Quality - management of quality during collection
- Close working relationship with WMCs
- Access to detailed market information allowing targeted action
- Support of material federations

### 11.2 France

1. Local communication campaigns
2. Strong domestic recycling market (<20% export)

### 11.3 The Netherlands

- Obligation on municipalities to collect plastics separately (2009)
- Minimum legal standards for waste treatment  
*E.g. For paper this is recycling. For wood this is energy from waste*
- Clear plans in place

### 11.4 Italy

- Switching to collect ALL plastics has hugely helped plastics recycling as it has been easier to trial sort/recycling of different fractions  
*E.g. decided to separate PP bottles and trial with a reprocessor – worked really well and they now sort for all PP bottles*
- Drive quality through pricing for LAs
- Quality control/penalties at the sort stage
- Strong domestic recycling market (<20% export)

### 11.5 Spain

- Collecting all types of plastics since 1998
- Consumer awareness campaigns
- Close cooperation with public authorities
- Out of home collections
- Sorting from residual waste

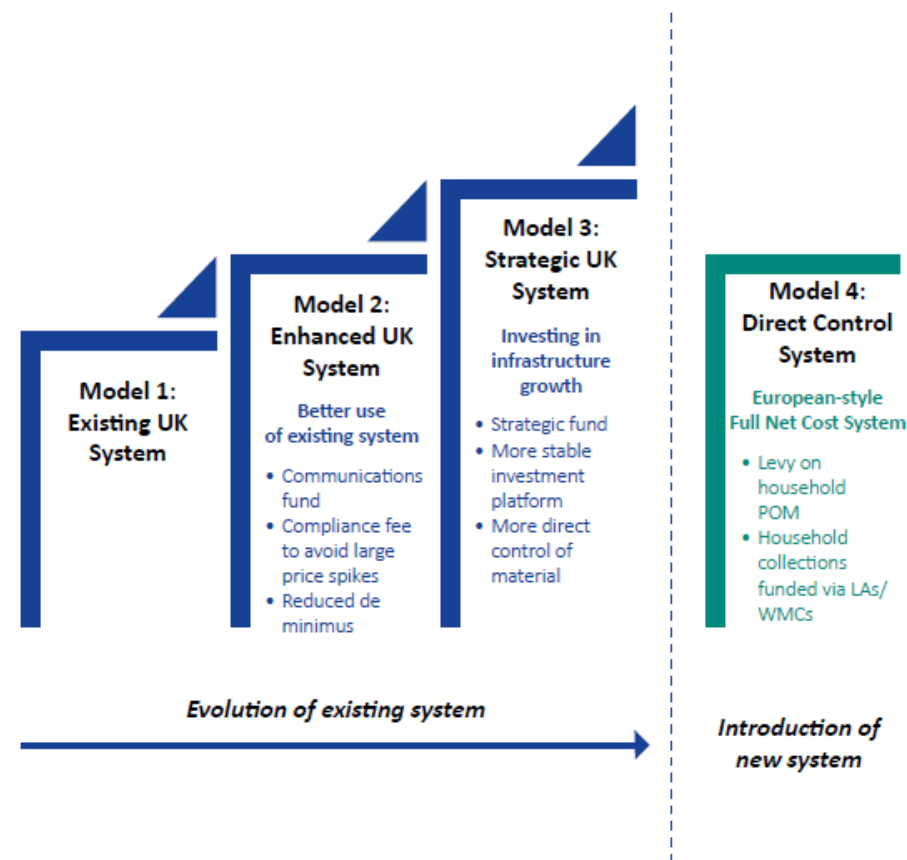
## Re-modelling the Existing UK Compliance System

### 12. Introduction

After examining the UK’s current compliance system, assessing six other European compliance regimes and forecasting all of the countries’ abilities to achieve the CE targets, we turned to look at how the UK compliance system could be developed to provide more certainty for achieving higher targets. This processes resulted in the development of four models, which are presented below: Model 1 is the current UK system, with no changes and Model 4 is a ‘start-from-scratch’ system that mirrors the most commonly found schemes in the rest of Europe. Model 4 is also the one entailing maximum change.

We started by asking ourselves: what minimal changes could we make to the current UK system that would positively impact recycling rates?

Figure 22 Summary of proposed models UK System to Retain



This, we decided, as an initial step meant retaining the strengths of the current system, but looking at how to make better use of the existing infrastructure (Model 2).

What further enhancements could we make to the current system that would provide a bigger boost to recycling rates? This would also require growing infrastructure to meet future longer term challenges, as well as using it better and retaining the strengths of the existing system (Model 3). Finally, to maximise the certainty of achieving targets we looked at a more radical change to a completely new ‘Euro-style’ system, which provides the highest level of certainty of achieving the CE targets and a Full Net Cost system.

### 13. Model 1 – The Existing UK System

Model 1 is simply to continue with the current UK market-based system without further enhancements. This approach is entirely reliant on increasing PRN prices to fund growth in packaging collections, sortation, recycling and end markets. Only the recycling targets change.

This is a very high risk approach for the UK to take as the only change allowed for is that of PRN prices, and as established in Section 1.2.2, no correlation has been found between PRN prices and recycling rates.

There are, however, elements to our existing system which we believe are highly beneficial; these elements are retained in Models 2 and 3:

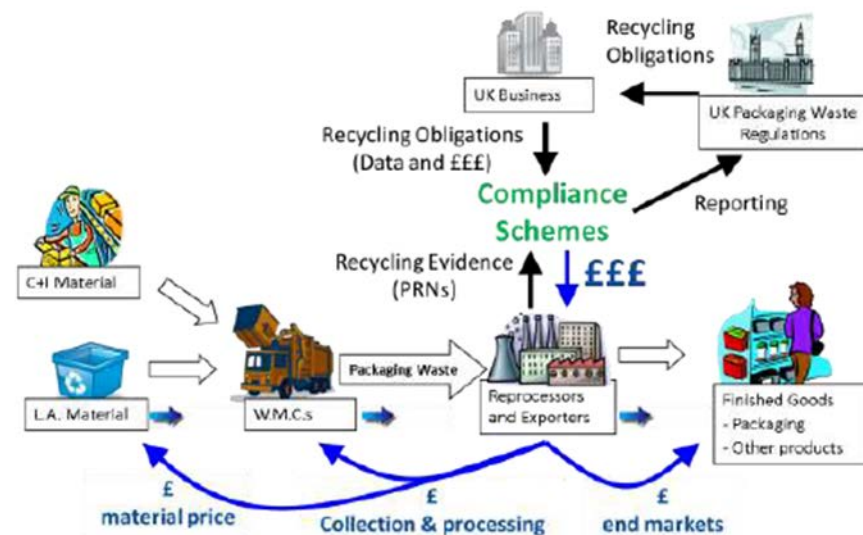
**Figure 23 Key elements of the existing UK system to retain**

Key elements of PRN system that will remain unchanged
Mandatory, UK-wide system retained
System covers HH and C&I
Shared responsibility and percentages remain the same
Gradually increasing business targets set at least 5 years in advance
Competing compliance schemes
Independent regulator funded by fees from producers, schemes and reprocessors/exporters
Regulator fees 'ring-fenced' for packaging monitoring activity

For a comprehensive guide to the existing UK system, please see the Advisory Committee on Packaging's (ACP) recent guide<sup>7</sup>.

As the guide explains, our current system was set up as a mechanism for the UK to achieve European packaging recycling targets, which it has successfully done for nearly 20 years. It was not set up to completely fund the whole system, but to support existing collectors, recyclers and end markets to grow and deliver the recycling tonnages required.

**Figure 24 The Existing UK Packaging Producer Responsibility System**





## 14. Model 2 – Enhanced UK System

**Concept: better use of existing infrastructure. Introduce a communications fund, widen the system and provide more price stability. Continue to rely principally on rising PRN prices to fund growth of collections, sortation and recycling.**

Model 2 retains all the elements of the existing UK system, but with three key enhancements to address particular issues that were identified during the research phase and a few minor ones. These are outlined in the following section.

### 14.1 Increasing Recycling through a Communications Fund

Belgium, France, Italy and Spain all have a significant communications budget with which to fund national, local and other targeted recycling campaigns (please see Section 7 for details). The schemes interviewed from these countries also believe the implementation of communications campaigns has been a key driver in increasing national recycling rates.

As a consequence of a reduction in spending from Central Government there has been no significant national recycling campaign in the UK for the past five years. Some individual material organisations have undertaken smaller scale voluntary campaigns aimed at their own material groups. Examples of this include Metals Matters and Every Can Counts, which have reported an increase in recycling in the associated material streams following regional campaigns although they are relatively limited in scope because of low budgets.

In each of the non-competitive systems that were studied, the average amount spent on communications campaigns equated to €20-30m (if scaled

by population) or ~4-5% of compliance schemes' budgets. In Germany, where they went from a monopoly system to a competitive system, spending on a national campaign reduced dramatically and almost immediately from the average spend to zero and subsequently there was an associated slowdown in the growth of recycling.

We are suggesting that the UK generates a fund to match those of the other European schemes researched, of approximately £20m, that would be managed by a newly created central body. If all compliance schemes (on behalf of their share of producers) pay into a central body, then there would be no additional benefit or disadvantage to any one scheme of investing in communications. The central body would be responsible for the delivery of national communications to raise awareness of recycling and increase participation. The fund would also be available to support LA campaigns and other targeted groups (such as schools, events, etc.) at a local level.

Evidence of the effectiveness of communication campaigns can be found within the UK already: Metals Matters<sup>8</sup> helps LAs promote their kerbside metal recycling and reports, for example, a 28% increase over 6 months in the capture rate of metal packaging from households in Warwick. The campaign cost just 29p per household and the increase in metals collected covered campaign costs within six months. Similar results were reported in Shropshire, Glasgow and Bedford, to name but a few, with all campaigns increasing metal capture by 18-25%.

A producer communications fund could come from additional fees generated by reducing the level of de minimus exemption for smaller businesses (see Section 14.3), or adding a small additional amount to existing producer fees.

## 14.2 Better Price Stability through a Compliance Fee

A compliance fee mechanism is currently used in the UK for the WEEE Regulations. It is a fixed fee for recycling evidence set by Government based on a methodology put forward by industry. Compliance schemes who have failed to cover their obligations through collecting sufficient physical recycling evidence have the option to purchase a compliance fee as an equivalent alternative to meet their legal obligations. The fee is set to encourage physical collections where it is economically and environmentally practicable to do so.

The existing UK packaging producer responsibility system is a market-based system and demand for PRNs is inelastic; hence, an increase in the price of PRNs will not immediately increase their supply. As material targets rise, there is increasing likelihood of price spikes; in theory, if a target is likely to be missed then the PRN price could go to a level that could break the system.

Price spikes cause significant uncertainty to producers and reprocessors: for example in 2011 the price of a glass PRN increased from £20 to £100 per tonne over a period of three months. This five-fold increase in costs was directly passed on to obligated companies, but there was no significant increase in recycling that year.

It is proposed that to enhance the existing system, a compliance fee should be introduced to minimise price spikes. This is an alternative form of compliance that enables schemes to contribute to a central fund when they believe a material price is unreasonably high. It is suggested that the compliance fee would operate in the following way:

- Compliance fees will be set after the end of the compliance year
- The Secretary of State will seek proposals on the methodology for setting the compliance fee

- Methodologies will take into account costs associated with collection/treatment of packaging waste and PRN values
- Compliance fees will be set at a level to encourage schemes to meet their targets through actual collections and recycling, but avoid excessive costs
- Reprocessors will be registered and returns submitted
- Fees raised will go towards projects to encourage increased collections

## 14.3 Reduced Producer De minimis

Under the current UK packaging regime, only companies handling more than 50 tonnes of packaging and turning over more than £2 million are obligated by the regulations. This is the highest threshold in the six European countries studied. In addition the inclusion of a turnover as well as a tonnage condition leads to problems and confusion in confirming when the levels have been met and can lead to some surprising situations. For example large obligations can be excluded when companies restructure under a new holding company.

It is proposed that the producer de minimis is reduced to incorporate more producers into the current system, raise their awareness of the importance of recycling and share the costs amongst more producers. The additional income raised could be used to fund the central Communications Fund proposed above (see Section 14.1).

If the producer de-minimus were to be reduced to a threshold of 1t of packaging handled and a turnover of £0.5m, approximately 100k additional companies would become involved in packaging producer responsibility and would pay a fixed fee of ~£230. This would include a fee (~£30) for the

Environment Agency and provide a per small company contribution of ~£200 to a central recycling communications fund. These smaller companies would register directly online, similar to the current system in place in the UK for small WEEE users.

#### **14.4 Other Enhancements to Existing UK System**

In addition to the significant enhancements discussed above, it is recommended that the following, more minor, enhancements are introduced:

##### **14.4.1 All Large Producers in Compliance Schemes**

In order to encourage a more strategic approach from compliance schemes it is proposed that all producers handling more than 50 tonnes of packaging register with a compliance scheme, rather than self-comply. Doing this would further improve control of the system and encourage greater levels of strategic planning. This is currently the system adopted for the UK WEEE system.

##### **14.4.2 All reprocessors and exporters in the system**

Currently, there are some exporters and reprocessors working outside the existing UK system: they are not accredited and do not issue PRNs. Even though this additional packaging recycling is occurring, it does not count towards UK recycling rates.

For example, 50 unaccredited facilities in the UK may have been recycling plastics in 2011. When combined with unaccredited exports, this is estimated to have represented 50kt of recycled plastic packaging that did not contribute to the national packaging recycling rates<sup>2</sup>. In 2013, 50kt of

unaccredited recycling was believed to have been undertaken, reflecting a possible 2% increase in the plastic packaging recycling rate.

It is therefore recommended that all reprocessors and exporters of packaging waste are required to register to issue PRNs, with a very low de-minimus for trivial operations only.

##### **14.4.3 Align measurement point of recycling with rest of Europe**

Throughout Europe there are slightly differing interpretations of the measurement point for recycling, the inclusion of non-target material and useable output. Standardising the recycling measurement point and non-target inclusions/exclusions with the rest of Europe could increase the UK plastics recycling rate by approximately 2%, for example.

The enhancements suggested in model 2 are summarised in Figure 25.

Figure 25 Model 2 – Enhanced UK System

Changes	For example...	Potential impacts...
<b>Communications fund</b>	<ul style="list-style-type: none"> <li>• European schemes of UK size typically invest €20-30m, or 4-5% of T/O in communications</li> <li>• Managed centrally (WRAP?)</li> </ul>	<ul style="list-style-type: none"> <li>• National and local programmes</li> <li>• ~£20m fund</li> </ul>
<b>Compliance fee</b>	<ul style="list-style-type: none"> <li>• Per material</li> <li>• Stakeholders submit proposals on fees</li> <li>• Income will vary &amp; lag by 1yr</li> <li>• Project fund, as per WEEE</li> </ul>	<ul style="list-style-type: none"> <li>• Prevent overly-high PRN prices</li> <li>• Direct additional producer fund as needed</li> <li>• Removes 'fail cheap' option</li> <li>• System can't fail</li> </ul>
<b>Reduced de minimis</b>	<ul style="list-style-type: none"> <li>• £230pa fixed fee</li> <li>• Producers handling 1t-50t &amp; t/o &amp; over £0.5m</li> <li>• Compliance Scheme fees in addition</li> </ul>	<ul style="list-style-type: none"> <li>• ~100k new obligated companies</li> <li>• ~£20m fund &amp; ~£3m EA fees</li> <li>• Raise awareness of regulations &amp; targets</li> </ul>
<b>Align measurement point of recycling with the rest of Europe</b>	<ul style="list-style-type: none"> <li>• Point of entry to Reprocessors</li> <li>• E.g. Plastics: re-include average 5% non-target</li> <li>• Define acceptable non-target &amp; usable output</li> </ul>	<ul style="list-style-type: none"> <li>• Potential +2% on plastic recycling rate</li> </ul>
<b>All large producers with scheme</b>	<ul style="list-style-type: none"> <li>• As in UK WEEE &amp; Battery compliance</li> <li>• Small producers can register with scheme or EA</li> </ul>	<ul style="list-style-type: none"> <li>• Facilitates compliance fee</li> <li>• Encourage longer-term, strategic planning</li> </ul>
<b>All reprocessors/exporters in system</b>	<ul style="list-style-type: none"> <li>• All reprocessors will have to report recycled quantities of packaging</li> <li>• Sensible de minimis tonnage</li> </ul>	<ul style="list-style-type: none"> <li>• Clarity over recycled tonnages (less un-accredited recycling)</li> <li>• More recycling counted towards targets</li> </ul>

## 15. Model 3 – Strategic UK System

**Concept: investing in infrastructure growth. As per Model 2, with the introduction of a strategic fund to boost growth in the recycling supply chain. Considerably less reliance on rising PRN prices for funding.**

Model 3 adopts all the elements of our existing UK system and the enhancements proposed in Model 2. The additional enhancement in Model 3 is a mechanism to promote investment in infrastructure growth through the development and deployment of a strategic fund. The strategic fund would provide a targeted and timely investment vehicle with which to drive increases in packaging collections, sortation, recycling and end markets. Model 3 does not rely solely on rising PRN prices for funding additional growth, rather it relies on them to maintain current recycling levels with some growth.

Evidence of the benefit of centralised strategic investment was found in France, Belgium, Italy and Spain (please see Section 6.2).

### 15.1 The Strategic Fund

So what could a strategic fund look like and how would it work? How it 'looks' should vary depending on what is required to support industry at any given time. It needs to be flexible: cover all materials, some materials or none, depending on where investment is needed. The fund needs to be able to grow and shrink and to provide the appropriate levels of investment for the size of growth and infrastructure required.

How a strategic fund should work is vastly more complicated and there are many different forms it could take. Whilst we are proposing a high level guide on how a fund could work, we recognise that further research, analysis,

consideration and consultation is required to shape the best strategic fund-structure for the UK.

### 15.2 Fund Formulation

Government would need to legislate for the existence of a fund, its purpose and governance. It would need to create an independent body to set the fund size and associated fees to be charged to raise the funds. We propose strategic fund fees are set 12 months in advance for a three year period. The governmental body would be advised by material organisations, recycling supply chain experts, representatives from industry and local authorities. In order to establish the funds to be raised and charged, the body would be required to develop a strategy that mapped out the potential infrastructural requirements (if any) of material recycling supply chains.

### 15.3 Fund Generation

It is likely that an initial round of fees to provide set-up funds for the governing body would be required. Until the governing body is fully specified, this is an unknown quantity. To provide some context, if large producers were charged 50p for every tonne of material placed on the market that a PRN is not purchased against (after shared producer responsibility is taken into account, please see Figure 12), then this would generate approximately £2 million.

The same charging mechanism would be used to generate funds annually, per material stream, as required and declared by the governing body. The reasoning behind selecting this mechanism is that across the rest of Europe, producers pay fees against every tonne of material they place on the market,

not just the tonnage of material recycled as is done in the UK. This mechanism brings us in line with our European counterparts and also reflects current recycling rates: the higher recycling levels are, the less tonnage there is to charge against and the fewer requirements there are to charge at all. Bonuses could also be given to producers who place their products in recyclable packaging or packaging with recycling content.

Again, to provide some idea of fund and fee sizes, if investment of ~£50m were required in clear PET PTT recycling facilities in order to reprocess all the material expected to be collected in 2020<sup>9</sup>, then this would require a fee of £50/t for plastic placed on the market that a PRN is not purchased against (after shared producer responsibility is taken into account, please see Figure 12).

The fund could also support industry in improving the quality and consistency of material collected and recycled, in addition to the quantity. For example, should the glass industry believe that investing in separate collections of glass and colour separated glass will significantly improve quality, then funds could be raised against this and trials and/or projects initiated. Similarly in the paper and card industry, should recyclers and producers believe it important to reduce the moisture contamination in collections, for example, then funds could be raised against this and investments made in providing better weather protection of collected paper and card.

The governing body would communicate with compliance schemes about additional fees that would need to be levied against their producer members and paid into the strategic fund. It is anticipated that these fees would be raised at the beginning of the packaging compliance year. We propose

strategic fund fees are set 12 months in advance for a three year period . A small 'strategic fund handling fee' would be paid to compliance schemes to cover the additional cost of calculating, billing and collecting the funds.

#### 15.4 Fund Management

There are a number of ways funds could be managed, including the creation of a new charity or not-for-profit organisation. This, however, wouldn't be no small undertaking as it would require administering and an investment of potentially £50-£100m per year, which would require governing, management, operational and support staff.

An alternative concept would be to adopt the funding mechanism used in Italy to channel the majority of material levy fees into the associated material sectors for which they were raised. Here, the levy fees are collected by CONAI, the national compliance scheme, and passed through to the relevant material organisations that are responsible for spending the funds. Funds are spent on a combination of:

- Municipality payments for collected material
- Sortation
- Recycling support (if/where required)
- Research and development e.g. additional sortation or end markets

Such a concept could work well in the UK for the management and delivery of a strategic fund. As 'material organisations' do not exist in the same form for all materials in the UK (for example, plastics has a number of different representative bodies), then trade associations could bid for funds individually, or work in partnership creating one vehicle for funds.

The advantages of this approach are that funds would lie with those who have the best understanding of what is required to support their sectors. Funds would be managed by organisations that, to some extent, already exist; although, additional staffing may be required. This should be less costly than ‘starting from scratch’, and due to their memberships, material organisations should have communication channels up and down their supply chains. This approach also removes any concerns about the cross-subsidising of one material by another and places an element of responsibility on the material sectors to support the achievement of recycling targets.

Fund managers would also have the option of supporting UK reprocessors in their supply chain through insisting that additional material collected as a consequence of the fund, is recycled in the UK. A metric that would benefit UK reprocessing, similar to the Belgian model, could also be incorporated in the tender approval process.

### 15.5 Delivery

Collected funds would be paid into the governing body for redistribution to the relevant material organisations for management. The material organisations receiving funds would have been involved in developing the strategy for investing the funds and would start the process for delivery.

It may be that funds would be further distributed by material organisations through ‘calls for tenders’ to invite proposals from industry to fulfil any infrastructure gaps identified, or material organisations would approach suitable partners they believe would deliver the necessary development and additional recycled material.

Care would need to be taken to ensure developments did not interfere with existing market forces and create any unfair competitive advantage. Investments may or not require a financial return and, as such, may be more like a ‘grant’, depending on the details of the arrangement. It is also expected that plans would need to be prepared to ensure projects and additional recycling would be sustainable post-funding.

Suitable monitoring and feedback would be required between those receiving funding, the material organisations and the governing body. External auditing of the use of funds would be required to ensure appropriate spend. f

### 15.6 Benefits

The benefits of this kind of strategic fund include:

- Additional funds can be generated if/when needed
- Funds can be targeted where they are of most benefit
- Funds would be managed by the organisations that know the industry the best
- No new ‘super delivery body’ required – existing organisations used where possible
- There would be no cross-subsidising between material sectors
- Material organisations could offer recyclability bonuses and recycled content benefit
- Additional material collected could be directed to UK reprocessors

A summary of Model 3 - Strategic UK System is shown below.

Figure 26 Model 3 – Strategic UK System

### Government legislates for strategic fund/governance/scope/fees/approval

- Money ring-fenced for improvements in packaging recycling chain for the material
- Fee set 12 months in advance for a 3 year period
- Stakeholder organisation (inc. Government) set fees based on stakeholder proposals evaluated by independent experts
- The fee may be reduced to reward recyclability and recycled content
- Government could potentially include legislation to split packaging targets into UK recycled and Export
- Government approve and instruct compliance schemes to raise funds
- Funding transferred to Material Organisations for implementation

### FUNDS

- Raised by compliance schemes on tonnes of POM not recycled (by material)
- Transferred to relevant material organisations

### DELIVERY

- Material organisations publish framework and release 'Call for Tenders'
- Sector stakeholders bid for funds
- Material organisations award projects, manage, monitor, evaluate and feedback to Government
- 3rd party commercial due diligence undertaken on funds to ensure against fraud
- Use of external experts

### BENEFITS

- MOs can offer recyclability bonus' based on OPRL status and recycled content benefit, if included in approved fees
- MOs control additional material collected/sorted and support UK recyclers by offering first refusal
- Potential for Government to introduce separate UK reprocessing targets



## 16. Model 4 – Direct Control System

**Concept: Redesign funding of UK household packaging collections based on other European schemes. Levy fees charged on household material POM. Compliance schemes directly fund LA collections and retain material.**

Model 4 is a fundamental redesign of the funding of UK household packaging collections based on other European schemes. In other words, levy fees would be charged on household material POM (instead of PRNs being purchased against recycling) and compliance schemes would more directly fund LA and other collections and retain the material collected.

Model 4 can operate without a compliance fee (4a) or with a compliance fee (4b). It is anticipated Model 4b would cover the Full Net Cost of household collection, sortation and recycling.

In this model C&I collections and recycling would operate in the same way as the existing UK system, with PRNs purchased against recycled tonnage to achieve a separate C&I target (please see Section 16.4 below).

### 16.1 Household Material Levy Fees

Compliance Schemes would charge a levy rate on all material going onto the household market and producers would be required to report their household and C&I packaging separately.

In situations where a company could not identify which market the material was placed on, a protocol would be used. Levy rates between compliance schemes would vary depending on the commercial contracts the compliance schemes had entered into with local authorities.

### 16.2 Household Collection Contracts

In this model compliance schemes contract directly with local authorities for their collected material, and are responsible for organising the sortation and end market contracts for recycle. Compliance schemes would be required to match their producers' obligations with the tonnage they contract from local authorities.

In model (4a) there is no option for the compliance scheme to pay a compliance fee, so either they have to fully contract their obligated tonnage, or trade with another compliance scheme who may have over-achieved. In Model 4a, if nationally set targets have been achieved, there may be some more expensive/remote local authorities whose material is not required to meet targets and would therefore have to continue to (at least partially) self-fund collections.

### 16.3 Compliance Fee (Model 4b only)

Model (4b) addresses the issue of local authorities lacking contracts and having to self-fund collections, and the potential for compliance schemes paying excessive prices for material. The introduction of a compliance fee means such authorities would receive the average FNC from the Compliance Fee Administrator. Compliance schemes who fail to meet their obligation would purchase evidence from the Compliance Fee Administrator. Funds raised from this would pay for the LA collections that the Compliance Fee Administrator was covering; any shortfall in funds would be charged back to compliance schemes on a market-share basis.

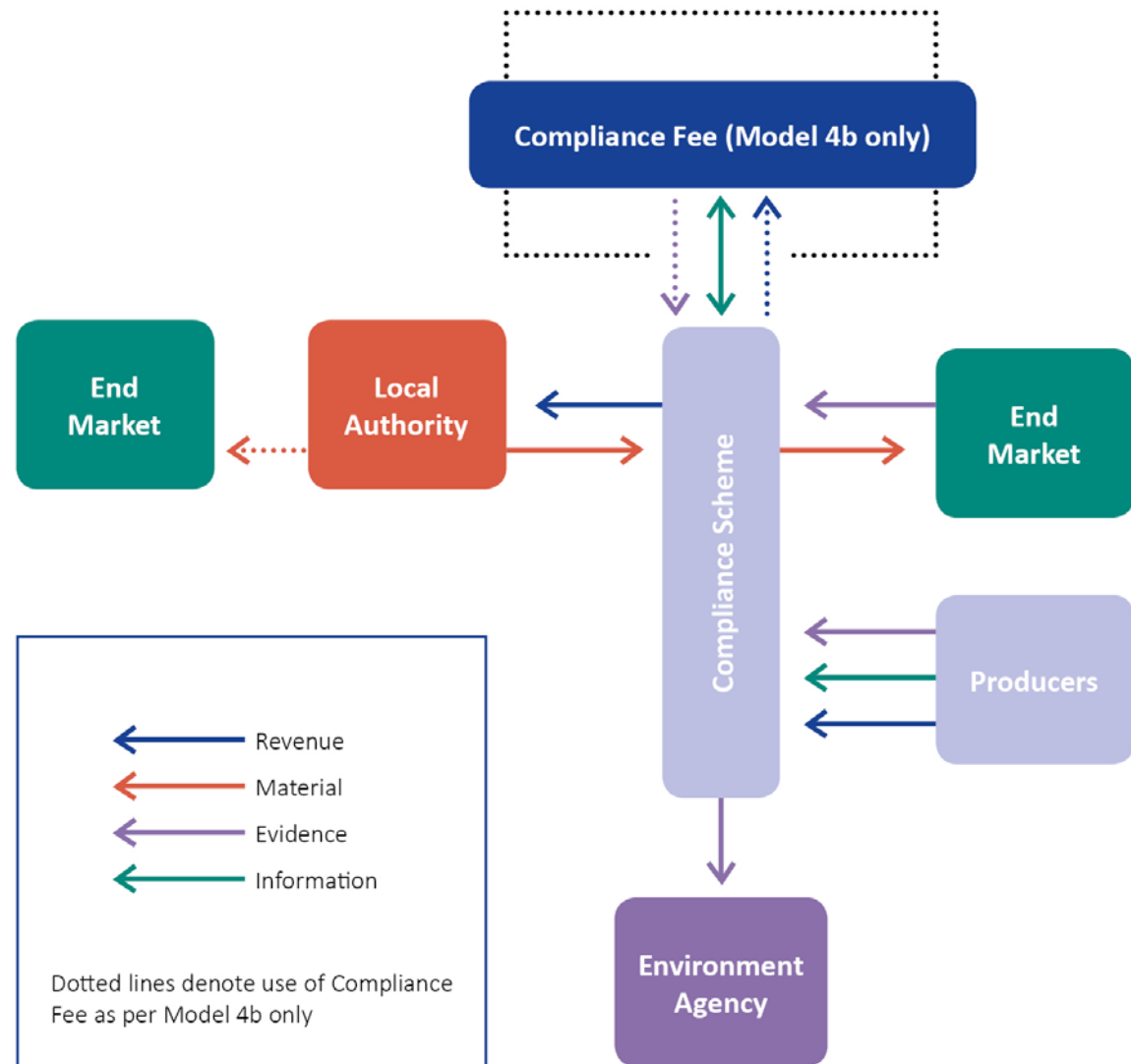
**16.4 C&I**

As the full net costs for C&I material are, in general, significantly different from those of household material, Model 4 has been designed to separate the two, resulting in separate targets for each material stream. C&I would operate in a similar way to the existing system, with PRNs purchased from reprocessors and exporters. In order to put a price cap on the PRN value, there would be a compliance fee per material. This fee would be calculated in a similar way to that described in Model 2.

**16.5 Summary of Model 4**

Figure 27 below summarises Model 4. The compliance fee mechanism relates only to Model 4(b).

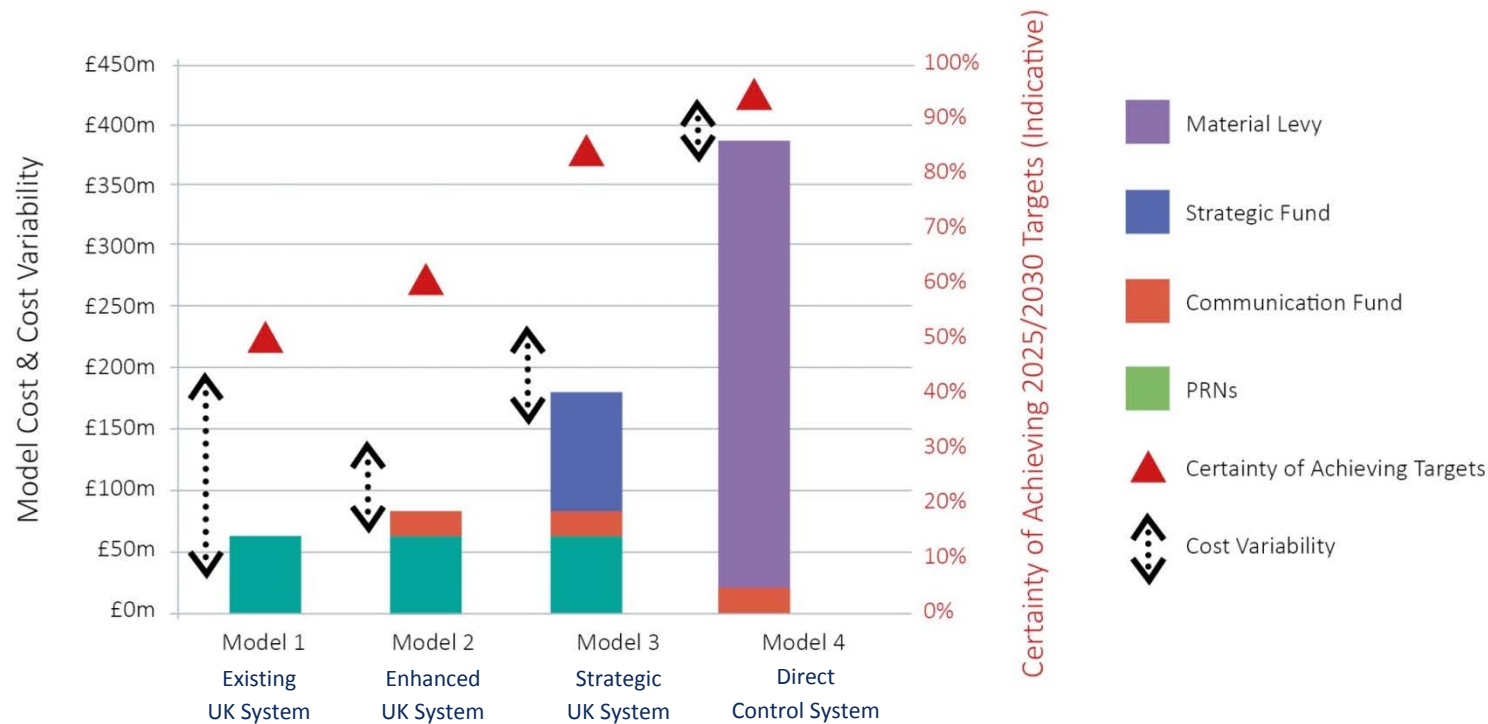
**Figure 27 Model 4 – Direct Control System**



### 17. Models Summary, Costs and Conclusions

Figure 28 below illustrates potential model costs to producers, cost variability and certainty of achieving the targets.

**Figure 28 Model costs to producers Vs certainty of achieving 2025 targets**

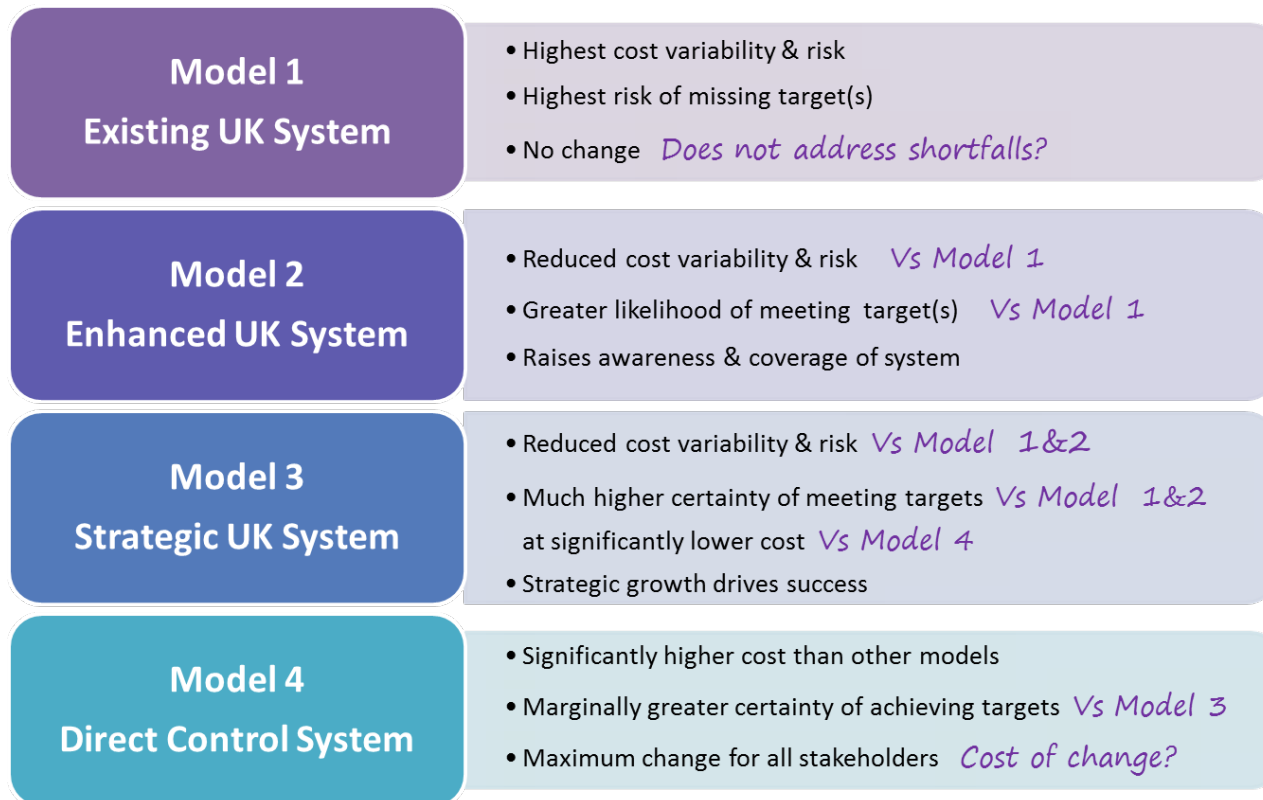


The graph highlights that our existing system, whilst currently lowest cost, has highest cost variability and highest potential for non-achievement of targets. A more complete summary of conclusions on Models 1 to 4 is given below.

The conclusions suggests that change to the UK system is required, both to increase certainty around attainment of the CE 2025 and 2030 targets, but also to provide more certainty around costs to producers.

No further recommendations are made as to the suitability of each model for the UK, as this is for wider industry stakeholders to discuss and for Government to consult on.

Figure 29 Summary of conclusions



## 18. Regulatory Impact Assessment (RIA)

No RIA has been undertaken on any of the proposed models. The RIA should look at the financial, environmental and social impacts of the proposed changes. It is important that prior to selection of a model, a full RIA should be undertaken.

# Appendix – Country Comparison Profiles

2014 <i>(unless otherwise stated)</i>	Belgium	UK
<b>Producer de minimis</b>	Negligible (300kg). Estimated 7% of market below de minimis	50t and £2m T/O
<b>Regime</b>	Complementary schemes	Competitive schemes
<b>Main schemes</b>	Fost Plus (Household) VAL-I-PAC (C&I)	Valpak Ltd
<b>Scheme cost to business</b>	6.6 €/capita <i>includes both Fost Plus &amp; VAL-I-PAC</i>	1.3 €/capita
<b>Total cost to business</b>	6.6 €/capita	5.2 €/capita <i>(see Section 5 for details)</i>
<b>Household cost to business</b>	5.5 €/capita	4.1-6.9 €/capita <i>(see Section 5 for details)</i>
<b>Main scheme costs to business</b>	Material levy fees on HH POM <i>(by weight or number of units)</i> <i>Different fees for household and C&amp;I</i>	PRNs on HH & C&I recycled packaging <i>No difference in cost</i>
<b>Value of recyclate retained by</b>	Scheme (households) Businesses (C&I)	Local Authorities Waste Management Companies
<b>Population</b>	11.2 million	63.3 million
<b>Waste packaging generated</b>	0.155 (t/capita) <i>Reusable packaging excluded from total</i>	0.178
<b>Waste packaging recycled</b>	0.126 (t/capita)	0.105
<b>Packaging recycling rate</b>	81%	59%
<b>Factors driving recycling rate</b>	<i>High control over collections</i>	<i>No control over collections</i>
	<i>High consistency of collections</i>	<i>No control, low standardisation</i>
	<i>Householder penalties for poor sorting</i> <i>Ability to not collect incorrectly sorted recyclables.</i>	<i>No penalties</i>
	<i>Co-operation between municipalities &amp; scheme</i>	<i>Little liaison required</i>
	<i>Communication (sufficiently targeted)</i>	<i>No central communication fund</i>
	<i>Quality of collections (glass collected separately)</i>	<i>Lower quality due to amount co-mingled</i>
	<i>Support of material federations</i>	<i>Some support</i>
	<i>Close working relationship with WMCs</i>	<i>Little liaison required</i>
	<i>PAYT</i>	<i>Regulation required to implement in UK</i>
<b>Communications fund</b>	<i>Yes: funds national, local and targeted groups campaigns</i>	<i>No central communication fund</i>
<b>Recyclability bonus/penalty</b>	<i>Higher levy rates for plastics not collected for recycling (non-bottle) and complex packaging. Higher rates still for packaging considered non-recyclable</i>	<i>No*</i>
<b>Full net costs paid?</b>	<i>Yes: FNC paid only if municipality complies with Fost Plus</i>	<i>In some cases, but varies.</i>
<b>Collection consistency</b>	<i>High: Fost Plus defines what is collected/which streams: PMD - plastic bottles, metal packaging &amp; cartons mixed kerbside Paper &amp; board - separate kerbside stream Glass - bring banks</i>	<i>Low Efforts by WRAP to improve consistency but no power to enforce change</i>
<b>Control of collections</b>	<i>High for household</i>	<i>None</i>
<b>Control of sortation</b>	<i>High for household</i>	<i>None</i>
<b>Control of recycling</b>	<i>High for household - prefer local recycling 99% HH recycled in Europe. Low control over C&amp;I packaging (some facility auditing)</i>	<i>None* - although a high percentage of HH packaging is recycled in the UK or Europe (but typically less than in the other countries studied)</i>
<b>Landfill tax</b>	<i>No landfill</i>	<i>£86.10/tonne (from 1st April 2017)</i>
<b>Incineration tax</b>	<i>Brussels - none</i>	<i>None</i>
	<i>Wallonia and Flanders - varies by hazardous/non-hazardous and with/without energy recovery</i>	
<b>PAYT</b>	<i>Buy refuse sacks and recycling sacks (cheaper)</i>	<i>None, would require change in UK law</i>
<b>Householder Penalties</b>	<i>Penalties for poor sort(financial) and refusal to uplift</i>	<i>None</i>
<b>Deposits</b>	<i>None on single-use packaging. Refillable glass bottles (primarily beer) attract a deposit</i>	<i>None</i>

*\* Due to there being competitive schemes in the UK, new laws would be required (instead of scheme policy) to introduce a preference for UK recycling or recyclability charges; however, EU Single Market regulation does not allow national laws that promote a national competitive advantage or disadvantages one material stream against another. A solution to this situation is to develop a central UK body that could develop policies around UK recycling and recyclability charges, that all compliance schemes adhere to and fund (please see Section 15).*

Scheme Control

Other Control

2014 <i>(unless otherwise stated)</i>	France	UK
<b>Producer de minimis</b>	None	50t and £2m T/O
<b>Regime</b>	Single scheme (competition entering market in 2017)	Competitive schemes
<b>Main schemes</b>	Eco-emballages	Valpak Ltd
<b>Scheme cost to business</b>	10.2 €/capita <i>(for household collections only)</i>	1.3 €/capita
<b>Total cost to business</b>	<i>C&amp;I costs (if any) unknown</i>	5.2 €/capita <i>(see Section 6 for details)</i>
<b>Household cost to business</b>	12.2 €/capita	4.1-6.9 €/capita <i>(see Section 6 for details)</i>
<b>Main scheme costs to business</b>	Material levy fees on all POM	PRNs on HH & C&I recycled packaging <i>No difference in cost</i>
<b>Value of recyclate retained by</b>	Municipalities (household)	Local Authorities Waste Management Companies
<b>Population</b>	65.9 million	63.3 million
<b>Waste packaging generated</b>	0.189 (t/capita)	0.178
<b>Waste packaging recycled</b>	0.124 (t/capita)	0.105
<b>Packaging recycling rate</b>	66%	59%
<b>Factors driving recycling rate</b>	Local communication campaigns (centrally funded)	No centrally funded campaigns
	Strong domestic recycling market (<20% export)	No control over waste packaging exports
<b>Communications fund</b>	Yes: funds national, local and targeted groups campaigns	No central communication fund
<b>Recyclability bonus/penalty</b>	Yes, since 2011	No*
<b>Full net costs paid?</b>	80% of FNC paid	In some cases, but varies
<b>Collection consistency</b>	Low to medium: a 3 stream collection similar to Belgium is encouraged; however, ~80% of municipalities collect a single stream of mixed fibres and light packaging kerbside with glass collected in bottle banks.	Low <i>Efforts by WRAP to improve consistency but no power to enforce change</i>
<b>Control of collections</b>	Low to medium	None
<b>Control of sortation</b>	Low - controlled by municipalities	None
<b>Control of recycling</b>	Medium - prefer national recycling 89% of household packaging recycled in France Require info on where material is sent for recycling	None* - <i>although a high percentage of HH packaging is recycled in the UK or Europe (but typically less than in the other countries studied)</i>
<b>Landfill tax</b>	150€/t ("non-authorized" landfills)	£86.10/tonne (from 1st April 2017)
	40€/t ("authorized" landfills)	
	32€/t ("authorized + ISO14001")	
	20€/t (minimum energy recovery 75%)	
	<i>Costs taken from CEWEP, May 2017</i>	
<b>Incineration tax</b>	20€/t (minimum energy recovery 75%)	None
<b>PAYT</b>	Trialling	None, would require change in UK law
<b>Householder Penalties</b>	None	None
<b>Deposits</b>	None	None
<b>Scheme Control</b>	<i>* Due to there being competitive schemes in the UK, new laws would be required (instead of scheme policy) to introduce a preference for UK recycling or recyclability charges; however, EU Single Market regulation does not allow national laws that promote a national competitive advantage or disadvantages one material stream against another. A solution to this situation is to develop a central UK body that could develop policies around UK recycling and recyclability charges, that all compliance schemes adhere to and fund (please see Section 15).</i>	
<b>Other Control</b>		

2014 <i>(unless otherwise stated)</i>	Germany	UK
<b>Producer de minimis Regime</b>	None <i>(only for 'completeness' statement)</i>	50t and £2m T/O
<b>Main schemes</b>	DSD	Valpak Ltd
<b>Scheme cost to business</b>	11.9 €/capita	1.3 €/capita
	<i>Estimated figure as individual scheme information is not available</i>	
	<i>Includes cost of disposal of residual waste packaging</i>	
<b>Total cost to business</b>	Unknown <i>(costs of deposit system or C&amp;I unavailable)</i>	5.2 €/capita <i>(see Section 6 for details)</i>
<b>Household cost to business</b>	11.9 €/capita	4.1-6.9 €/capita <i>(see Section 6 for details)</i>
	<i>Estimated figure as individual scheme information is not available</i>	<i>Does not include cost of disposal of residual waste packaging</i>
	<i>Does not include any DRS costs</i>	
	<i>Includes cost of disposal of residual waste packaging</i>	
<b>Main scheme costs to business</b>	Material levy fees on HH POM	PRNs on HH & C&I recycled packaging <i>No difference in cost</i>
<b>Value of recyclate retained by</b>	Scheme (households)	Local Authorities Waste Management Companies
<b>Population</b>	80.8 million	63.3 million
<b>Waste packaging generated</b>	0.220 (t/capita)	0.178
<b>Waste packaging recycled</b>	0.157 (t/capita)	0.105
<b>Packaging recycling rate</b>	71%	59%
<b>Factors driving recycling rate</b>	<i>Household collection of ALL packaging Waste</i>	No control over collections
	<i>High consistency of collections</i>	No control, low standardisation
	<i>Control over sortation</i>	No control over sortation
	<i>Refusal to uplift poorly sorted HH waste packaging</i>	No penalties
	<i>Quality of collections (glass &amp; fibre collected separately)</i>	Lower quality due to amount co-mingled
	<i>PAYT - HH pay based on residual bin size required (larger is more expensive)</i>	Regulation required to implement in UK
<b>Communications fund</b>	No central communication fund	No central communication fund
<b>Recyclability bonus/penalty</b>	Voluntary	No*
<b>Full net costs paid?</b>	Yes: FNC+ paid	In some cases, but varies
	<i>Cost of disposal of residual waste packaging also covered</i>	
<b>Collection consistency</b>	High	Low
	<i>Paper &amp; board - kerbside separate stream</i>	<i>Efforts by WRAP to improve consistency but no power to enforce change</i>
	<i>Glass - bottle banks</i>	
	<i>All remaining packaging - mixed kerbside stream</i>	
<b>Control of collections</b>	Low, but high consistency & high quality of recovered fibres and glass	None
<b>Control of sortation</b>	High	None
<b>Control of recycling</b>	High. Control of sorted recyclables has lead some schemes to invest in recycling operations.	None* - <i>although a high percentage of HH packaging is recycled in the UK or Europe (but typically less than in the other countries studied)</i>
<b>Landfill tax</b>	No landfill of packaging	£86.10/tonne (from 1st April 2017)
<b>Incineration tax</b>	None	None
<b>PAYT</b>	Pay for size of refuse bin required <i>(larger = more expensive)</i>	None, would require change in UK law
<b>Householder Penalties</b>	Refusal to uplift poorly sorted recyclables	None
<b>Deposits</b>	Comprehensive beverage container DRS	None

\* Due to there being competitive schemes in the UK, new laws would be required (instead of scheme policy) to introduce a preference for UK recycling or recyclability charges; however, EU Single Market regulation does not allow national laws that promote a national competitive advantage or disadvantages one material stream against another. A solution to this situation is to develop a central UK body that could develop policies around UK recycling and recyclability charges, that all compliance schemes adhere to and fund (please see Section 15).

Scheme Control

Other Control



2014 <i>(unless otherwise stated)</i>	Italy	UK
<b>Producer de minimis</b>	None	50t and £2m T/O
<b>Regime</b>	Single scheme	Competitive schemes
<b>Main schemes</b>	Conai	Valpak Ltd
<b>Scheme cost to business</b>	6.2 €/capita	1.3 €/capita
<b>Total cost to business</b>	6.2 €/capita	5.2 €/capita <i>(see Section 6 for details)</i>
<b>Household cost to business</b>	Majority of 6.2 €/capita <i>(contribution from C&amp;I unknown)</i>	4.1-6.9 €/capita <i>(see Section 6 for details)</i>
<b>Main scheme costs to business</b>	Material levy fees on all POM	PRNs on HH & C&I recycled packaging <i>No difference in cost</i>
<b>Value of recyclate retained by</b>	Material organisations	Local Authorities Waste Management Companies
<b>Population</b>	60.8 million	63.3 million
<b>Waste packaging generated</b>	0.197 (t/capita)	0.178
<b>Waste packaging recycled</b>	0.129 (t/capita)	0.105
<b>Packaging recycling rate</b>	65%	59%
<b>Factors driving recycling rate</b>	Collecting ALL plastic packaging for recycling/disposal	98% LAs collect plastic bottles, 75% PTTs, 20% Film <i>(Does not reflect % HHs)</i>
	Ability to run separation and recycling trials	Would require central strategic fund
	Driving quality municipal collections through pricing <i>(Higher price paid for higher quality material)</i>	No control over collection quality
	Quality bonus/penalties at sort stage	No control over sort quality
	Strong domestic recycling market (<20% export)	No control over exports
<b>Communications fund</b>	Yes: funds national, local and targeted groups campaigns	No central communication fund
<b>Recyclability bonus/penalty</b>	Being introduced in 2018	No*
<b>Full net costs paid?</b>	Yes, if delivering suitable quality	In some cases, but varies
<b>Collection consistency</b>	Medium. Historically, a twin-stream kerbside of fibre stream and light packaging stream (plastics, metal and glass) used. Now moving towards separately collected glass. All plastic packaging collected.	Low <i>Efforts by WRAP to improve consistency but no power to enforce change</i>
<b>Control of collections</b>	Low to medium	None
<b>Control of sortation</b>	Medium (controlled by value paid for materials & penalties)	None
<b>Control of recycling</b>	High, scheme sells sorted materials - prefer national recycling - 80% in Italy	None* - <i>although a high percentage of HH packaging is recycled in the UK or Europe (but typically less than in the other countries studied)</i>
<b>Landfill tax</b>	Combustible waste CV > 13 MJ/kg from 01/01/2012 10-25 €/t MSW 5-10 €/t other (non-inert) waste <i>Taken from CEWEP, May 2017</i>	£86.10/tonne (from 1st April 2017)
<b>Incineration tax</b>	In some regions	None
<b>PAYT</b>	Some use but not extensive	None, would require change in UK law
<b>Householder Penalties</b>	HH penalty for incorrect sorting is per apartment building and so has limited impact	None
<b>Deposits</b>	None	None
<b>Scheme Control</b>	<i>* Due to there being competitive schemes in the UK, new laws would be required (instead of scheme policy) to introduce a preference for UK recycling or recyclability charges; however, EU Single Market regulation does not allow national laws that promote a national competitive advantage or disadvantages one material stream against another. A solution to this situation is to develop a central UK body that could develop policies around UK recycling and recyclability charges, that all compliance schemes adhere to and fund (please see Section 15)</i>	
<b>Other Control</b>		

2014 <i>(unless otherwise stated)</i>	The Netherlands	UK
<b>Producer de minimis</b>	50t	50t and £2m T/O
<b>Regime</b>	Single scheme	Competitive schemes
<b>Main schemes</b>	Afvalfonds Verpakkingen (Packaging Waste Fund:PWF) with some operational activity coordinated by Nedvang	Valpak Ltd
<b>Scheme cost to business</b>	7.4 €/capita (source: EXPRA, year unknown)	1.3 €/capita
<b>Total cost to business</b>	7.4 €/capita + <i>Excludes any costs of DRS</i> <i>Excludes costs to businesses of non-HH-type recyclable uplifts</i>	5.2 €/capita <i>(see Section 6 for details)</i>
<b>Household cost to business</b>	7.4 €/capita <i>(includes fees paid to WMCs for Data on C&amp;I)</i>	4.1-6.9 €/capita <i>(see Section 6 for details)</i>
<b>Main scheme costs to business</b>	Material levy fees on all POM	PRNs on HH & C&I recycled packaging <i>No difference in cost</i>
<b>Value of recyclate retained by</b>	Municipalities (household+) Businesses (C&I)	Local Authorities Waste Management Companies
<b>Population</b>	16.8 million	63.3 million
<b>Waste packaging generated</b>	0.166 (t/capita)	0.178
<b>Waste packaging recycled</b>	0.113 (t/capita)	0.105
<b>Packaging recycling rate</b>	68%	59%
<b>Factors driving recycling rate</b>	Municipalities obligated to collect plastics separately (2009)	No control over collections
	Minimum legal standards for waste treatment <i>For paper this is recycling. For wood this is EfW</i>	No legal standards
	Clear plans in place	No long term strategic plan/plans
<b>Communications fund</b>	Yes, but mainly for anti-litter campaigns (large fund)	No central communication fund
<b>Recyclability bonus/penalty</b>	No	No*
<b>Full net costs paid?</b>	Yes: at least average FNCs paid	In some cases, but varies
<b>Collection consistency</b>	Medium - kerbside fibre stream& light packaging (typically plastic, metals & cartons). Majority glass collected in bottle banks. All plastic packaging collected.	Low <i>Efforts by WRAP to improve consistency but no power to enforce change</i>
<b>Control of collections</b>	Medium	
<b>Control of sortation</b>	Medium e.g. max 55% of plastic packaging exiting sort permitted to be mixed polymer if FNC to be paid	
<b>Control of recycling</b>	Low	None* - <i>although a high percentage of HH packaging is recycled in the UK or Europe (but typically less than in the other countries studied)</i>
<b>Landfill tax</b>	No landfill of household waste	£86.10/tonne (from 1st April 2017)
<b>Incineration tax</b>	13€/tonne	None
<b>PAYT</b>	In some areas	None, would require change in UK law
<b>Householder Penalties</b>	Refusal to uplift incorrectly sorted recyclables in some areas (no legislation)	None
<b>Deposits</b>	DRS on PET plastic bottles >1l	None
<b>Scheme Control</b>	* Due to there being competitive schemes in the UK, new laws would be required (instead of scheme policy) to introduce a preference for UK recycling or recyclability charges; however, EU Single Market regulation does not allow national laws that promote a national competitive advantage or disadvantages one material stream against another. A solution to this situation is to develop a central UK body that could develop policies around UK recycling and recyclability charges, that all compliance schemes adhere to and fund	
<b>Other Control</b>		

2014 (unless otherwise stated)	Spain	UK
<b>Producer de minimis</b>	None	50t and £2m T/O
<b>Regime</b>	Complementary scheme	Competitive schemes
<b>Main schemes</b>	Ecoembes	Valpak Ltd
<b>Scheme cost to business</b>	9.7 €/capita	1.3 €/capita
<b>Total cost to business</b>	9.7 €/capita (excluding any C&I uplift costs to business)	5.2 €/capita (see Section 6 for details)
<b>Household cost to business</b>	Majority of 9.7 €/capita (contribution from C&I unknown)	4.1-6.9 €/capita (see Section 6 for details)
<b>Main scheme costs to business</b>	Material levy fees on household POM	PRNs on HH & C&I recycled packaging <i>No difference in cost</i>
<b>Value of recyclate retained by</b>	Ecoembes (Household+)	Local Authorities Waste Management Companies
<b>Population</b>	46.5 million	63.3 million
<b>Waste packaging generated</b>	0.148 (t/capita)	0.178 (t/capita)
<b>Waste packaging recycled</b>	0.101 (t/capita)	0.105 (t/capita)
<b>Packaging recycling rate</b>	68%	59%
<b>Factors driving recycling rate</b>	Collecting ALL plastic packaging for recycling/disposal	98% LAs collect plastic bottles, 75% PTTs, 20% Film (Does not reflect % HHs)
	Consumer awareness (communications)	No central communication fund
	Close co-operation with public authorities	Little liaison required
	Out of home collections	Some, but limited
	Sorting from residual waste	No sort of residual waste
<b>Communications fund</b>	Yes: funds national & local campaigns	No central communication fund
<b>Recyclability bonus/penalty</b>	None	No*
<b>Full net costs paid?</b>	Yes, if delivering suitable quality	In some cases, but varies
<b>Collection consistency</b>	Low- municipalities choose their system, however efficient collection promoted by Ecoembes through 5 year agreements with municipalities	Low <i>Efforts by WRAP to improve consistency but no power to enforce change</i>
<b>Control of collections</b>	Low	None
<b>Control of sortation</b>	Unknown	None
<b>Control of recycling</b>	Unknown	None* - although a high percentage of HH packaging is recycled in the UK or Europe (but typically less than in the other countries studied)
<b>Landfill tax</b>	Catalonia: 12 €/t (municipalities with separate collection systems) 21 €/t (without separate collection systems) <i>Taken from CEWEP, May 2017</i>	£86.10/tonne (from 1st April 2017)
<b>Incineration tax</b>	Varies by region	None
<b>PAYT</b>	Very limited	None, would require change in UK law
<b>Householder Penalties</b>	None	None
<b>Deposits</b>	None	None
<b>Scheme Control</b>	* Due to there being competitive schemes in the UK, new laws would be required (instead of scheme policy) to introduce a preference for UK recycling or recyclability charges; however, EU Single Market regulation does not allow national laws that promote a national competitive advantage or disadvantages one material stream against another. A solution to this situation is to develop a central UK body that could develop policies around UK recycling and recyclability charges, that all compliance schemes adhere to and fund (please see Section 15).	
<b>Other Control</b>		

## Endnotes

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<sup>1</sup> Friends of the Earth, More jobs, less waste, September 2010. Figures quoted are compared to 2006

[https://www.foe.co.uk/sites/default/files/downloads/jobs\\_recycling.pdf](https://www.foe.co.uk/sites/default/files/downloads/jobs_recycling.pdf)

<sup>2</sup> Valpak/WRAP, Plastic Packaging Market Study (Plastic Flow) 2014, December 2014

[http://valpak.co.uk/docs/default-source/environmental-consulting/plastic\\_packaging\\_market\\_study\\_2014.pdf?sfvrsn=2](http://valpak.co.uk/docs/default-source/environmental-consulting/plastic_packaging_market_study_2014.pdf?sfvrsn=2)

<sup>3</sup> NPWD <https://npwd.environment-agency.gov.uk/>

<sup>4</sup> EUROPEAN COMMISSION, DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directive 2008/98/EC on waste <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015PC0595>

<sup>5</sup> ESA/Perchards/360 Environmental, A Discussion of the UK PRN/PERN System for Packaging Waste and Possible Alternatives, combined with additional cost data from 360 Environmental, 2017

<sup>6</sup> Green Alliance, Recycling reset, 2017

<sup>7</sup> The Advisory Committee for Packaging, PRN System Guide, 2017

<https://npwd.environment-agency.gov.uk/FileDownload.ashx?FileId=946cab53-a22d-4326-91e0-ccba9dcda27>

<sup>8</sup> <http://metalmatters.org.uk/>

<sup>9</sup> WRAP, Developing End Markets For PET Pots, Tubs and Trays, March 2015

[http://www.wrap.org.uk/sites/files/wrap/Developing\\_End\\_Markets\\_For\\_PET\\_Pots\\_Tubs\\_And\\_Trays.pdf](http://www.wrap.org.uk/sites/files/wrap/Developing_End_Markets_For_PET_Pots_Tubs_And_Trays.pdf)

# PACKFLOW 2025

## FULL REPORT

### Published

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### Contact us

Please contact us at [PF2025@valpak.co.uk](mailto:PF2025@valpak.co.uk) to

- leave feedback and comments on PackFlow 2025
- contact the PackFlow 2025 team

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