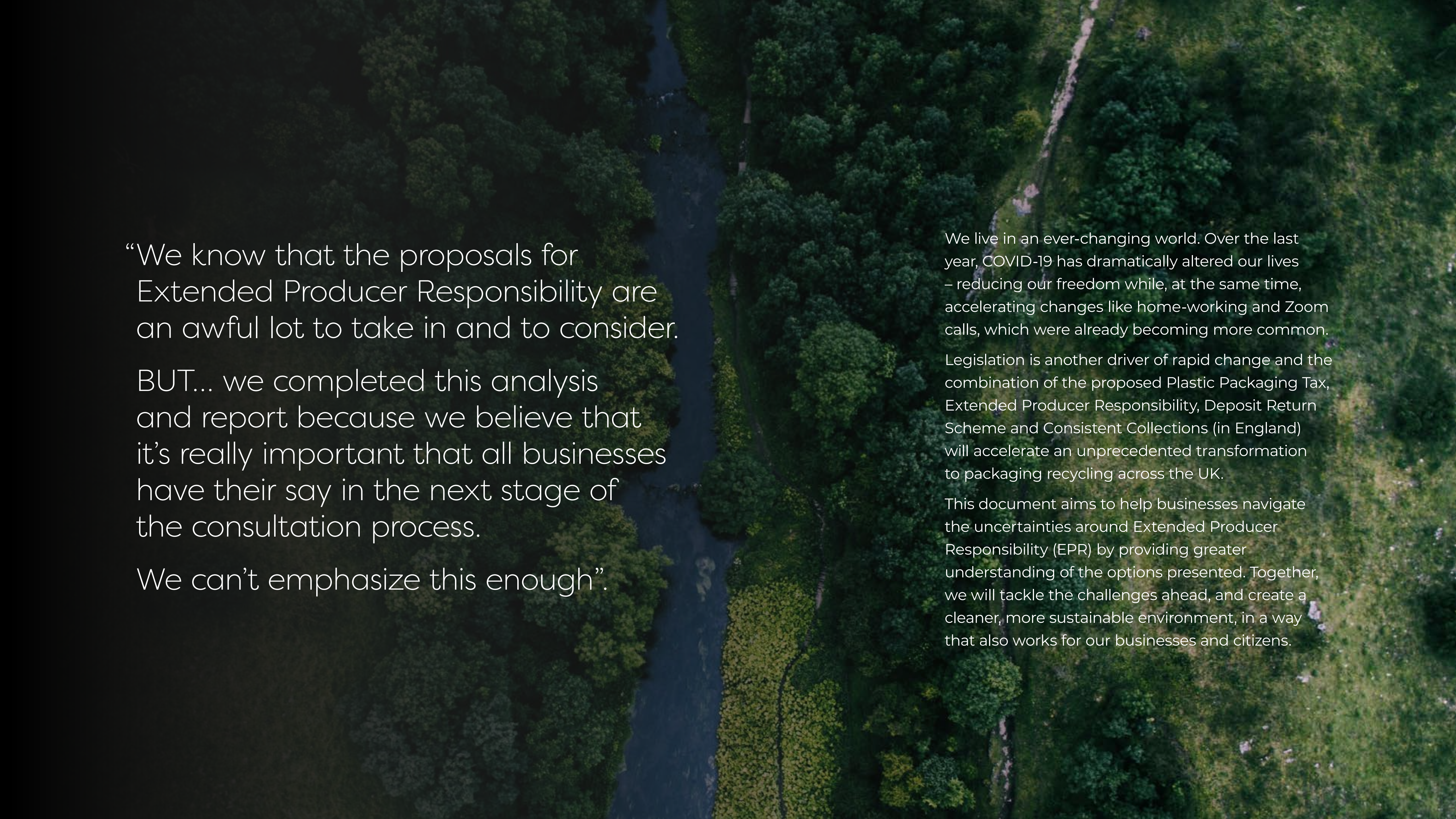


Extended Producer Responsibility - what you need to know.

May 2021

An aerial photograph of a lush green forest with a river winding through it. The trees are dense and vibrant green, and the river is a dark, narrow strip of water. The overall scene is serene and natural.

“We know that the proposals for Extended Producer Responsibility are an awful lot to take in and to consider.

BUT... we completed this analysis and report because we believe that it's really important that all businesses have their say in the next stage of the consultation process.

We can't emphasize this enough”.

We live in an ever-changing world. Over the last year, COVID-19 has dramatically altered our lives – reducing our freedom while, at the same time, accelerating changes like home-working and Zoom calls, which were already becoming more common.

Legislation is another driver of rapid change and the combination of the proposed Plastic Packaging Tax, Extended Producer Responsibility, Deposit Return Scheme and Consistent Collections (in England) will accelerate an unprecedented transformation to packaging recycling across the UK.

This document aims to help businesses navigate the uncertainties around Extended Producer Responsibility (EPR) by providing greater understanding of the options presented. Together, we will tackle the challenges ahead, and create a cleaner, more sustainable environment, in a way that also works for our businesses and citizens.

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These changes are going to be in place for a long time to come, so even though it's a lot to take in, we can't emphasize enough how important it is to have your voice heard.



1 EPR is coming

2.7 billion reasons to take note.

We stand on the brink of the **greatest changes** to the Packaging Waste Regulations in a quarter of a century. The reforms include implementing Extended Producer Responsibility (EPR) for Packaging Waste, which will place a much greater responsibility than we have ever experienced before on obligated businesses for funding the management of packaging waste. **The estimated cost of compliance will rise to £2.7bn in 2024, approaching £100 per household in the UK.**

The Department for the Environment, Food and Rural Affairs (Defra), Welsh Government, Scottish Government and The Department of Agriculture, Environment and Rural Affairs (the four governments) have published updated proposals for regulatory reform, which build upon those first published in Spring 2019. The public consultation on the suggested reforms ends on 4 June 2021. You can respond to the consultation [here](#).

The new legislation is expected to come into effect in a phased approach from 2023, with the first payments made on, or more likely before, April/May 2024. It will introduce large-scale cost increases for brands, manufacturers and importers who place filled packaging on to the UK market, drive major design changes across all areas of the supply chain. It is expected that the new legislation will lead to a common UK wide system, but it important to remember that each of the four Governments has the power to implement changes in their own way should they wish to do so.

The challenges ahead are demanding and the costs are huge – sixteen billion, eight hundred million pounds from 2023 to 2032 – so it is important that all voices are heard in response to the consultation because Governments use these responses to help decide the next steps. This document will help you to understand the implications of EPR, and to prepare for the future.

Understanding today helps to predict tomorrow.

This report has been rapidly compiled within the short consultation period in order to illustrate the potential impacts and help you respond. It includes detailed modelling of the options proposed in the consultation, as well as outlining where responsibilities lie. The models are built on many years' of PackFlow analysis in close consultation with industry partners.

Under the current PRN system, the UK has recycled 8.2 million tonnes of packaging in 2020, meeting business recycling targets (applied to obligated packaging) of 82%¹ at an average cost of £16.91 per tonne of obligated material placed on the market¹. However, that still leaves a substantial volume of packaging which is not recycled. The proposal for EPR includes a modulated fee system which will incentivise packaging which adheres to the four governments' definition of recyclable² and penalise packaging that does not.

¹National Packaging Waste Database - npwd.environment-agency.gov.uk/

²Recyclable' in the consultation is defined as 1). Packaging can be collected and sorted for recycling; 2) reprocessing facilities are available; and 3). A market exists for the reprocessed material.

Data from the largest and most detailed database on packaging metrics in the UK, Valpak's Environment Product Information Centre (EPIC) database, has been used in previous PackFlow reports to support the four governments in target setting as well as in the preparation of the consultation document. It is referenced throughout. This database has been used again for this report to provide the example modulated fee scenarios.

This report will:

- summarise the proposed EPR obligations currently being consulted on by the four governments (with decisions yet to be made);
- quantify possible impacts and factors for obligated businesses to consider;
- examine possible implications for industry;
- outline the potential scale of modulation;
- offer scenarios detailing possible impacts on the environment;

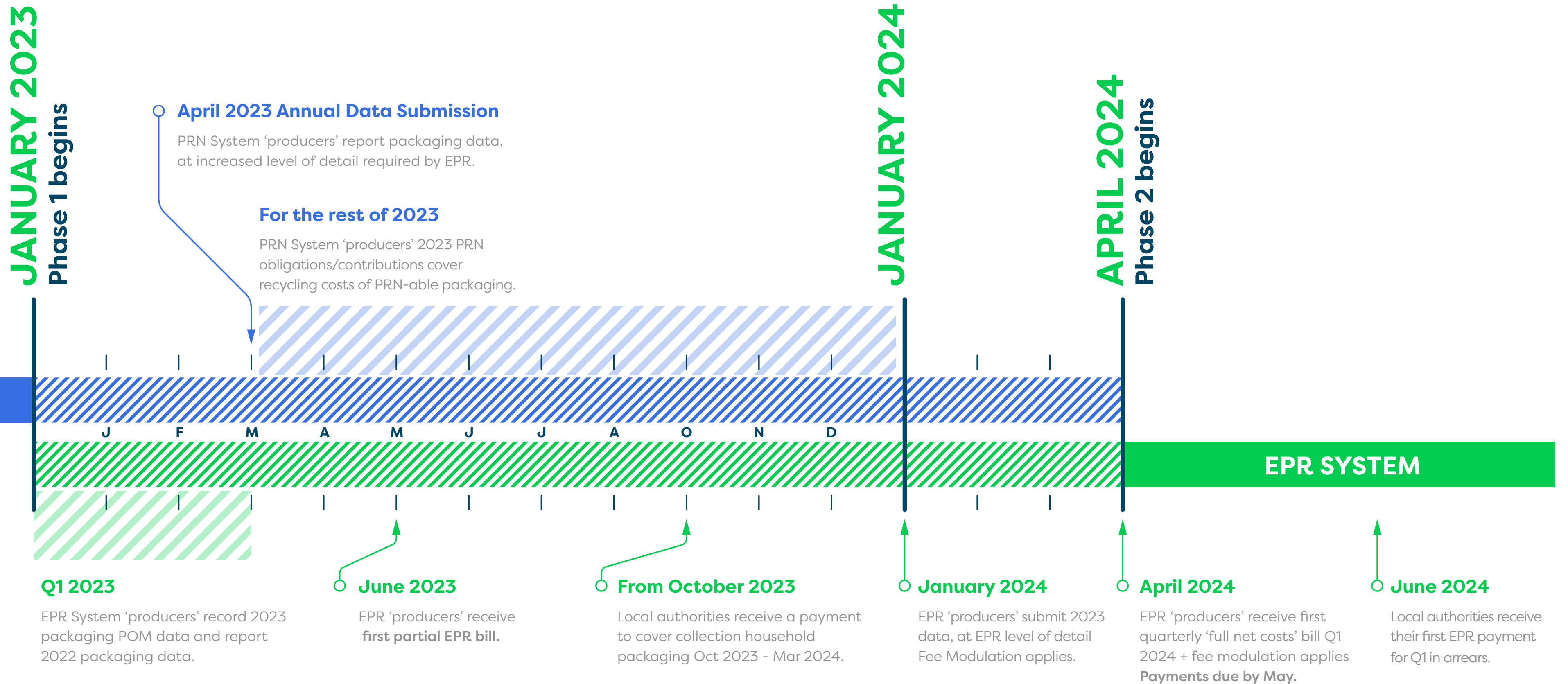
Get to grips with cost implications for your business and make timely preparations

- include illustrations of how the fee modulation concept may work, including a rationale and examples considering factors such as recyclability (as defined), material values and litter impact (including associated cost possibilities and potential implications on obligated businesses); and,
- conclude with next steps, and important considerations to help inform businesses' responses to the consultation. Responses need to be submitted by 4 June 2021.

The focus is around household packaging (all consumer-facing packaging arising from households, including home delivery packaging) and non-household municipal packaging, often referred to as 'household-like packaging' (all consumer-facing packaging that would usually be considered as household packaging, but which arises from businesses).

Here's a timeline showing how we believe things are likely to unfold, subject to the decisions of the four governments.

Whilst we have done our best to factor in future trends, recent years have shown that, in the face of global events such as the pandemic, no predictions are assured.



2

What are the four governments trying to achieve?

A new way for a better world.

Put simply, EPR aims to put responsibility in the hands of those best placed to drive change, thereby accelerating progress towards the Governments' environmental and sustainability policy objectives. In the midst of a climate crisis, recycling can have a big impact.

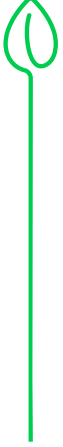
The four governments believe that the increase in packaging recycling resulting from the new system will generate a carbon reduction of 4.38 million tonnes between 2023 and 2032 whilst simultaneously increasing the UK recycling rates for the packaging covered from 61% in 2019 to 78% in 2032. This means that every business involved in the manufacture of packaged products will contribute to a carbon transformation. The intention of the four governments is that ALL stakeholders become part of a movement to tackle climate change!



The four governments have chosen to adopt the EU Circular Economy Package which requires obligated businesses to pay the full net costs of recycling, whereas the PRN system provided only sufficient ‘top up’ funding to ensure that the targets as set by government were met each year. As such, EPR is part of a suite of new legislation which includes Consistent Collections and a Deposit Return Scheme for drinks containers that will work in unison to help standardise the way we do things.

For example, implementing a system of consistent collections across England will facilitate straight forward information being given to consumers through a clear binary on pack recycling labelling – recyclable or not recyclable. Ultimately, these changes should lead to an increase in the use of recyclable materials and a rise in recycling. The four governments’ objective is to generate huge positives – by providing increased financial incentives to drive even more innovation in packaging, even greater efficiency and an even stronger infrastructure, and all underpinned by increased consumer awareness and participation.

After a strongly supported initial consultation, Extended Producer Responsibility has now entered its second consultation phase. It is here that much of the detail will be hammered out, including the scope of full net costs and obligations; scheme governance; regulation of the system, and packaging waste recycling targets. Through this second EPR consultation the four governments aim to create a UK-wide scheme that incentivises businesses to build on achievements up to this point and to go even further on recyclability across as many packaging formats as possible.



The result will be huge positives, incentivising even higher levels of innovation in packaging.

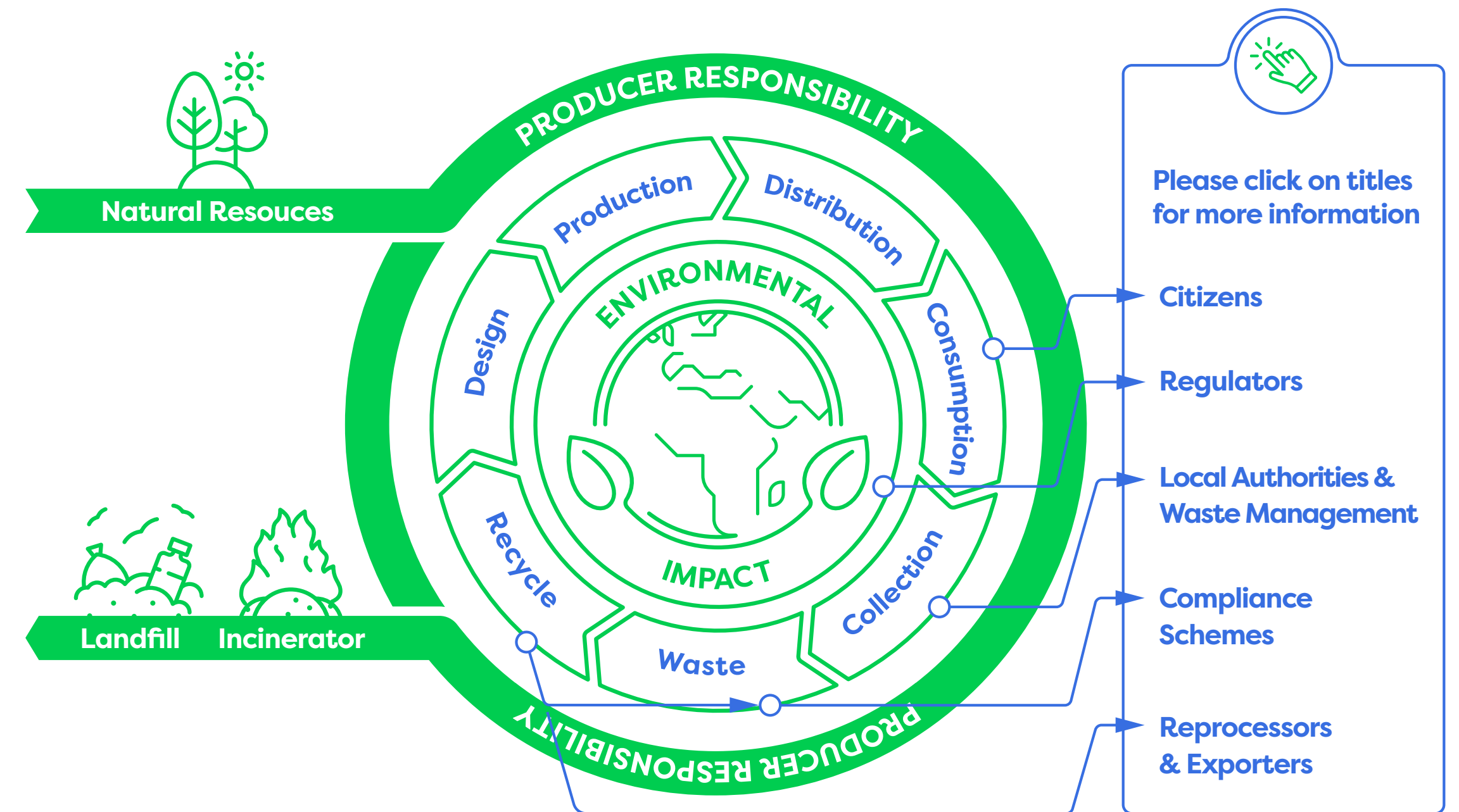
3 Which category do you fall into?

If you're in the packaging supply chain, you need to be in the know.

While the latest consultation proposed a single point in the supply chain onto which the entire direct cost falls – initially suggested to be brand owners and importers – all those involved in the packaging value-chain should take the time to understand the changes that are on the horizon because it is inevitable, given the scale, that at least some of these costs will spread up and down supply chains. For some obligated businesses, costs may increase 30-fold under the new system.

From packaging design and use, to end-user collection, sorting and reprocessing, there will be targets, financial mechanisms and standards applied. These will aim to incentivise industry actions that support the four governments' objectives and discourage practices that undermine the desired goals. Practices need to align with the outcomes to deliver an efficient, high performing and cost-effective system. This diagram explains how responsibilities proposed in the consultation are to be divided and shared.

There'll be targets, financial mechanisms and standards applied.



This diagram explains how responsibilities will be divided and shared.

4 What the changes mean for you

“The obligated party will be responsible for the whole cost of managing a single piece of packaging”.

Even if you don't face big charges, your supply chain will.

From this...

In the current PRN system, the obligation for a single item of packaging is shared across multiple businesses in the supply chain. These jointly finance the recycling of a portion of the total volume of packaging they helped place onto the market.

This is done through the purchase of packaging waste recovery notes (PRNs). The PRN system is market-led, which means prices fluctuate and obligated businesses provide only sufficient funding to ensure that the targets, as set by government, are met each year. The four governments have estimated that the contributions made by obligated businesses through this system cover as little as 7% of the total packaging waste costs defined in the consultation when PRN prices are low.

To this...

With the new EPR approach, the financial obligation will move to a single point in the supply chain. Obligated businesses, proposed by Government in the consultation to be brand owners and importers, will be responsible for financing the whole lifecycle of that packaging – whether it's recycled or not and regardless of whether collection and recycling targets are met or exceeded.

The rationale under consultation is that brand owners and importers are most likely to make packaging decisions and therefore offer the greatest influence in terms of improving packaging sustainability. Therefore placing responsibility on them brings the greatest opportunity for positive change. Instead of funding as little as 7% of end of life costs through the PRN system, obligated businesses will become responsible for the full net cost of managing packaging. The four governments propose that this responsibility will further accelerate the ongoing transformation within packaging design.

Although it is initially proposed that responsibility moves to brand owners and importers, the single party obligation will likely impact all businesses involved in bringing packaging and packaged goods to market, due to increased costs in the supply chain. All stakeholders should take time to fully understand the potential implications of this revolution to the packaging waste regulations.

What's not included?

The only packaging items not in scope of EPR are beverage containers made wholly or mainly of plastic (PET), glass, steel or aluminium – in other words, most drinks bottles and cans.

Responsibility for the management of these will be covered by the introduction of the Deposit Return Scheme (DRS).

Three clear definitions

The four governments have asked industry to consider the value of adopting three new definitions of packaging:

1

Household (HH)

all consumer facing packaging arising from households.

2

Non-Household Municipal (NHM)

all consumer-facing packaging that would normally be considered as household, but that arises from businesses.

3

Commercial & Industrial (C&I)

delivery and transit packaging arising from businesses.

Most primary and home delivery packaging is likely to fall into the HH or NHM categories, whereas secondary and tertiary packaging is more likely to fall into the C&I category.



What happens to PRNs?

It is proposed that there will no longer be PRNs or their export equivalent (PERNs) within the reformed EPR system. Whilst these could still continue to operate for a further year, until the end of 2023, they will then be removed from the system.

“Packaging that does not contribute positively to scheme targets and outcomes should face increased fees”.
Defra.

How much will it cost?

The four governments’ revised impact assessment increases the previously estimated first year cost of packaging EPR from the previous estimate of £1.8 billion to as much as £2.7 billion. Over £1 billion of this relates to household packaging waste management and its associated consumer campaigns, enforcement and administration, and the management of packaging litter. A further £1.5 billion relates to NHM and C&I packaging waste.

When does it start?

The new system is expected to be phased in from 2023. It is proposed in the consultation that obligated businesses will face some additional costs during 2023 and start making full net cost payments on a quarterly basis to cover the costs incurred from April/May 2024.

How will it work?

Under modulated ‘placed on the market’ (POM) fees, obligated businesses will pay different fees within the same overarching material type for placing specific types, compositions or formats of packaging onto the UK market. The level of each fee will primarily be decided by the recyclability of the packaging in question.

The system is likely to operate across the main packaging material categories and will balance the full net costs associated with collecting, sorting and recycling or disposal. Unlike the current system, which categorises packaging by the six most prominent materials – paper and cardboard, aluminium, steel, plastic, wood and glass – it will take into account further aspects relating to environmental performance. So, for example, packaging format and individual plastic polymer types (and combinations of polymers and materials) will be assessed separately or recyclability and relative cost contribution.

By ‘recyclability’, we don’t mean that the packaging can technically be recycled – we mean that collection facilities are widely available to the consumer for that specific type of packaging, and that recycling facilities are available to actually recycle the material into viable end markets at scale once it has been collected.

In Section 5 of this document, we outline one example approach to modulated fees to describe how such a system may work. We have then used this to illustrate the potential implications to obligated businesses, and this element of our work will continue throughout 2021.

“Modulation should increase the fee rates for packaging that does not contribute positively to scheme targets and outcomes”.

Extended Producer Responsibility for Packaging Waste - Consultation Document (Paragraph 7.6)

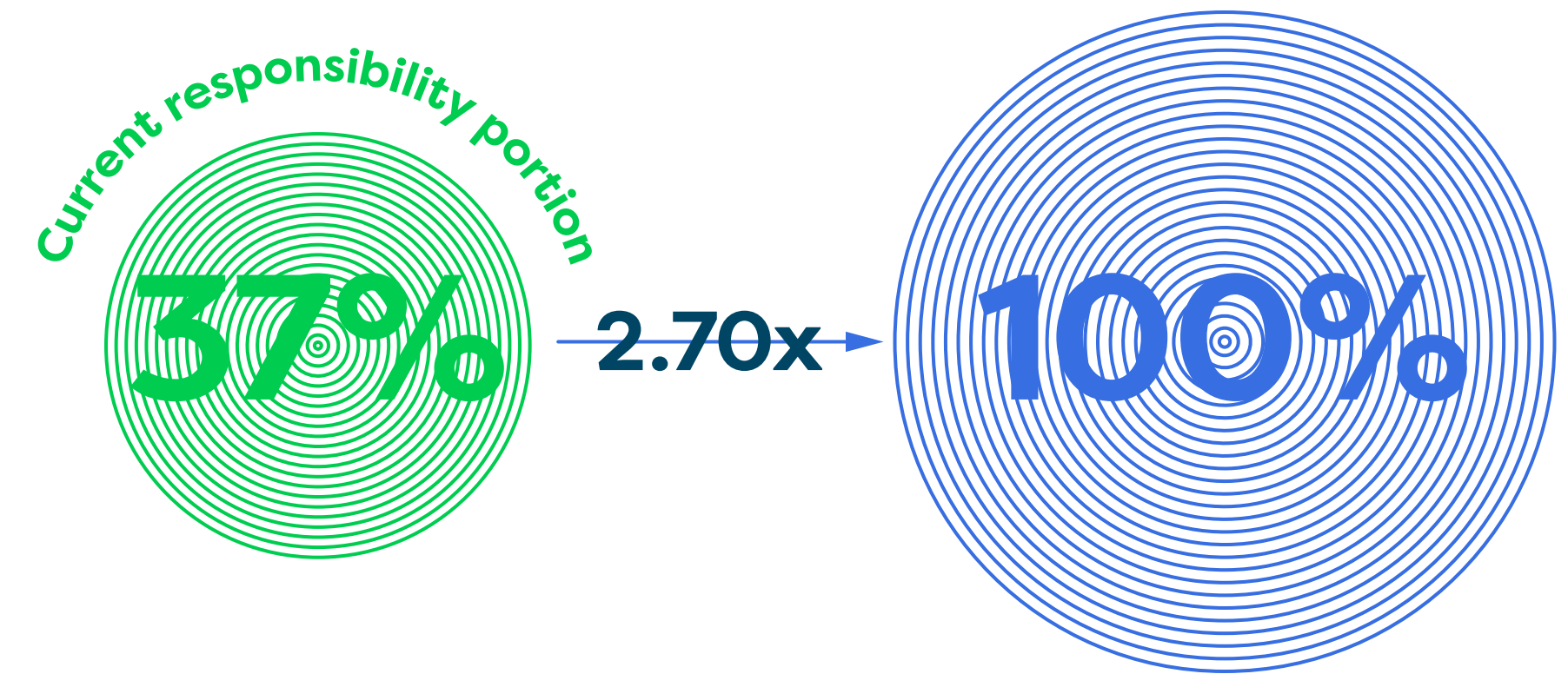
How this affects each part of the supply chain

Obligated businesses... will be responsible for funding the full net cost associated with the management of every piece of packaging placed on the market in the UK.

This means that, instead of paying a contribution to support the cost of recycling as they do now, they will be required to fund the full net cost of local waste collections and sorting, litter costs, and every aspect of sorting and recycling. For household packaging, they will take on responsibility for the cost of disposal of those elements that end up in the residual waste stream. The impact will be huge. Placing this increased cost burden at one point in the supply chain will increase direct costs by up to 30 times for some businesses, although it will also lead to reduced direct costs for others.

New categories of 'producer' will be developed and defined to ensure all packaging is obligated to the correct single party moving forward. Each will have different levels of obligation. Here are some illustrative examples of what this could look like for different obligated business types.

EPR Point of Compliance
Pack/ Filler = Brand Owner



For example:

Brand owners (businesses who put goods into packaging, or have goods put into packaging, and place on the UK market).

Importers (those who import filled packaging into the UK for sale - where the importer is not based in the UK, it will fall to the first UK based owner of the packaging).

Online marketplaces (businesses based in the UK that operate online, through which people based outside the UK are able to offer filled packaging for sale in the UK).

Impact on Business

To quantify the impact of the new system on the bottom line. We have investigated the impact of unmodulated fees on the compliance costs of eight example businesses.

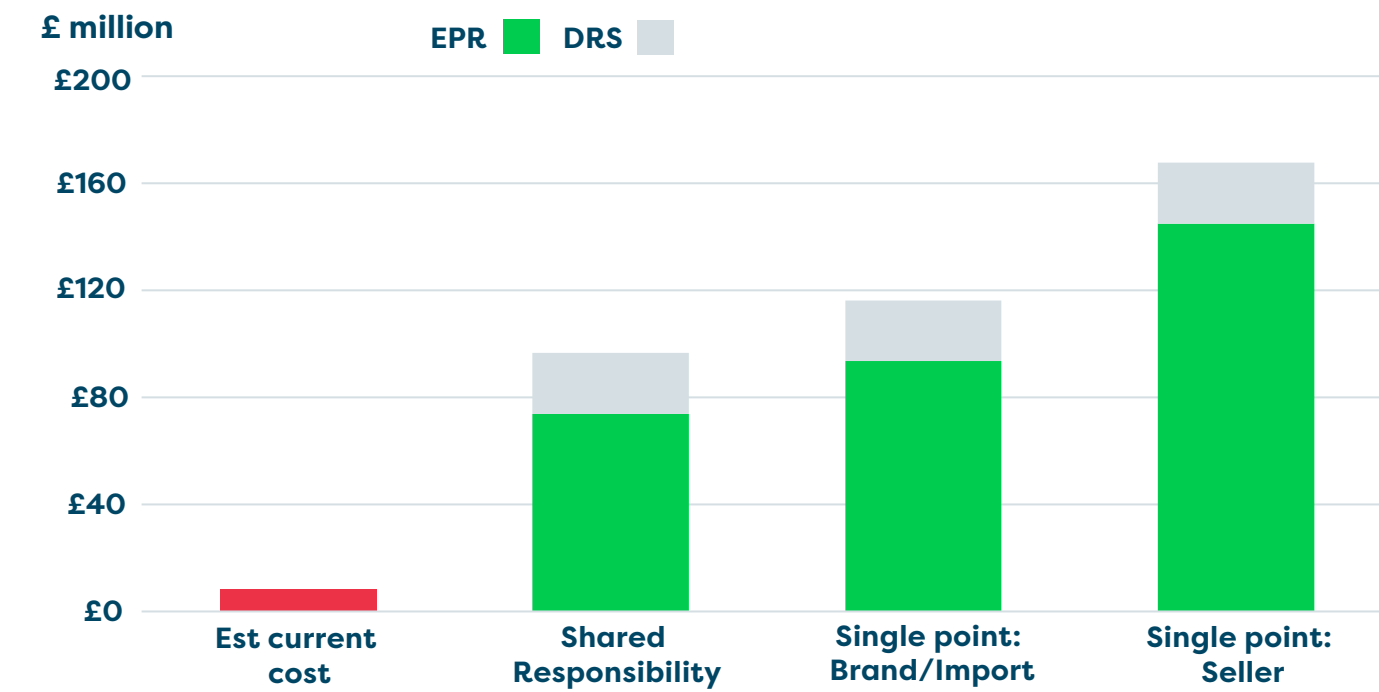
The increase in costs is far from linear across each obligated business due to the proportion of own brand products, and how transit packaging is handled in the PRN system and the EPR system. For illustrative purposes, these cost increases are shown below – and describe the outcomes based on three assumptions:

- 1** Shared responsibility as is the case under the current PRN system
- 2** Obligation falls onto the brand owner or importer
- 3** Obligation falls onto the seller or retailer

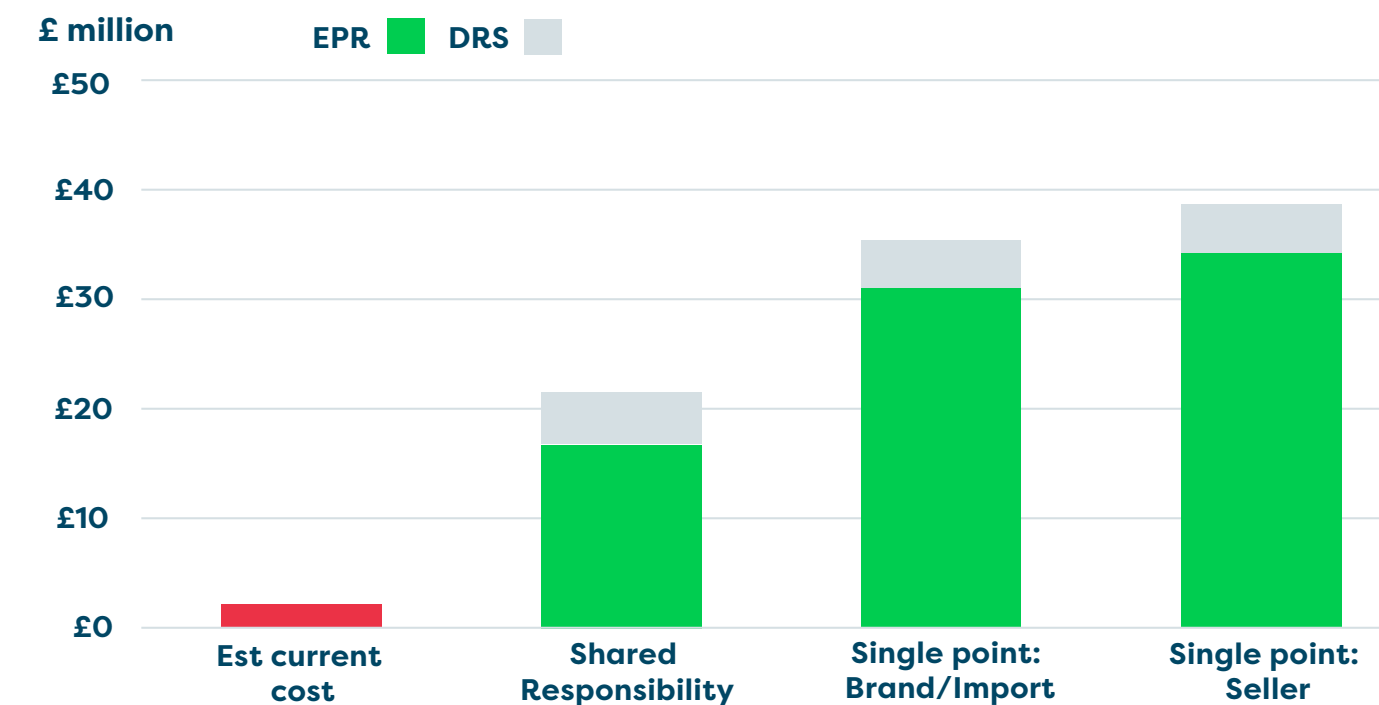
You can clearly see from these graphs that the impact on different businesses varies dramatically depending on their individual circumstances, and these are only illustrative.

If you want to know how your own business may be affected we strongly recommend getting in touch with Valpak or your current compliance scheme for further advice.

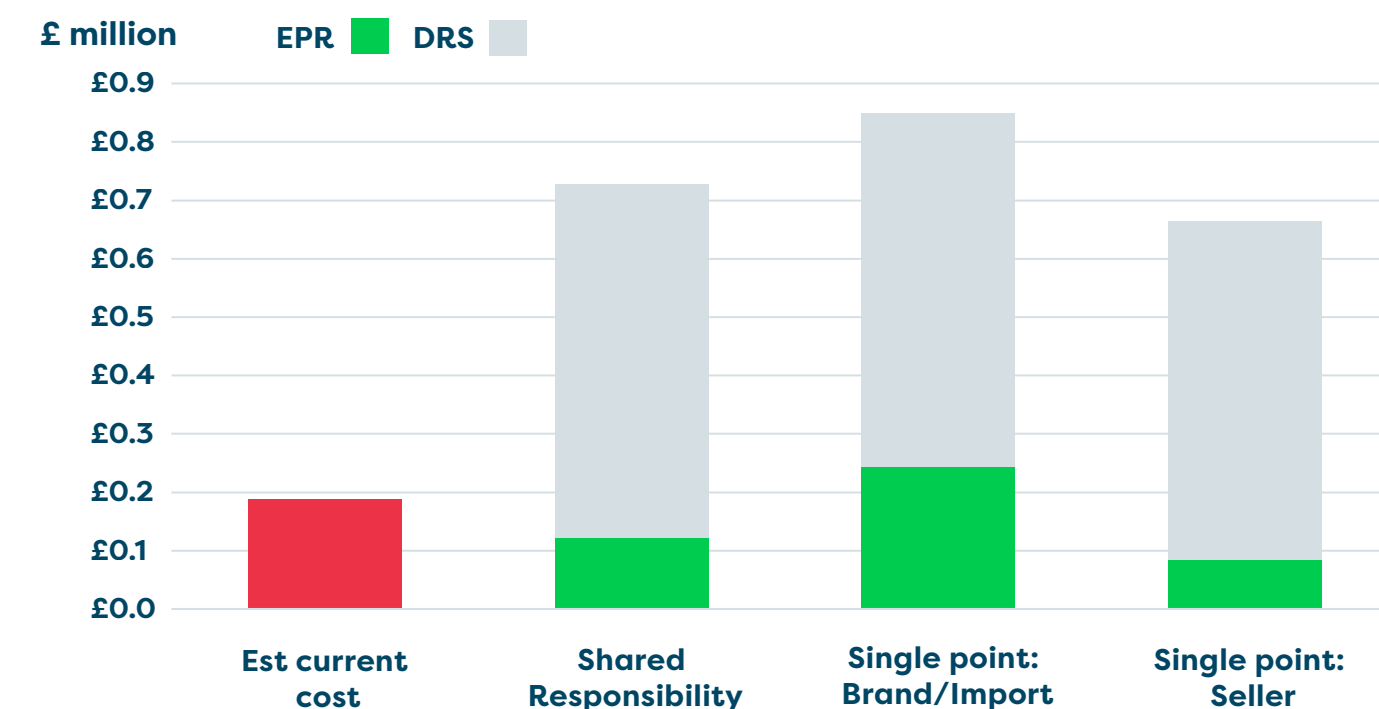
A large national grocery retail chain



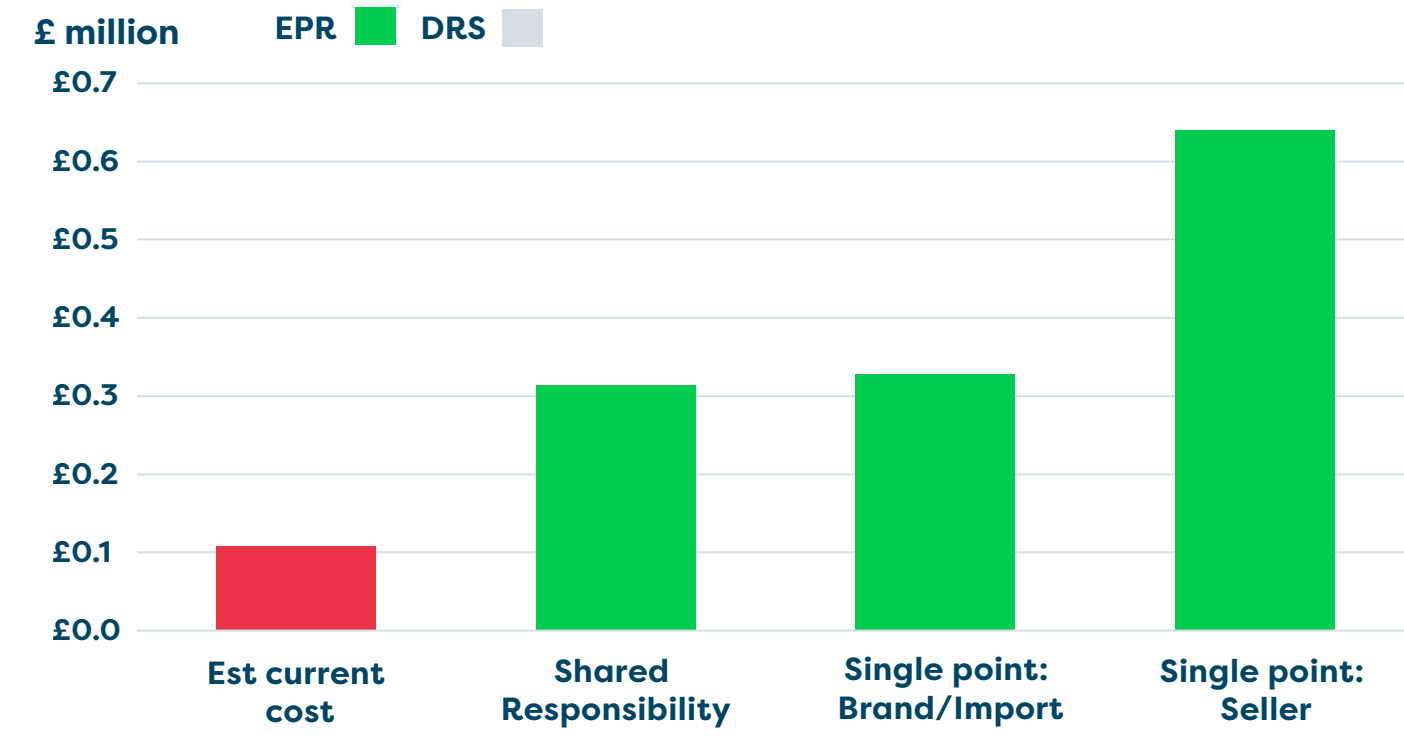
A medium sized national grocery discount chain



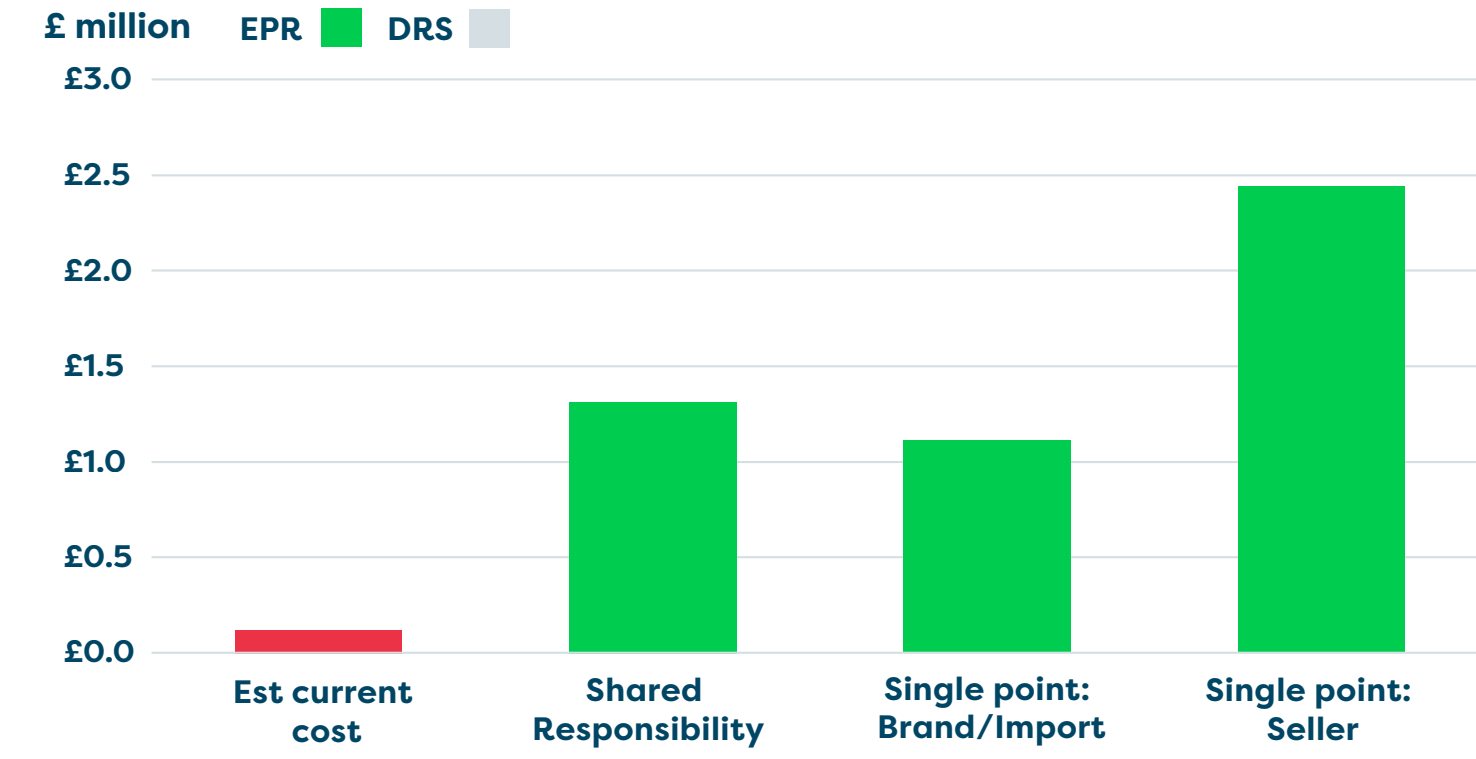
A drinks manufacturer



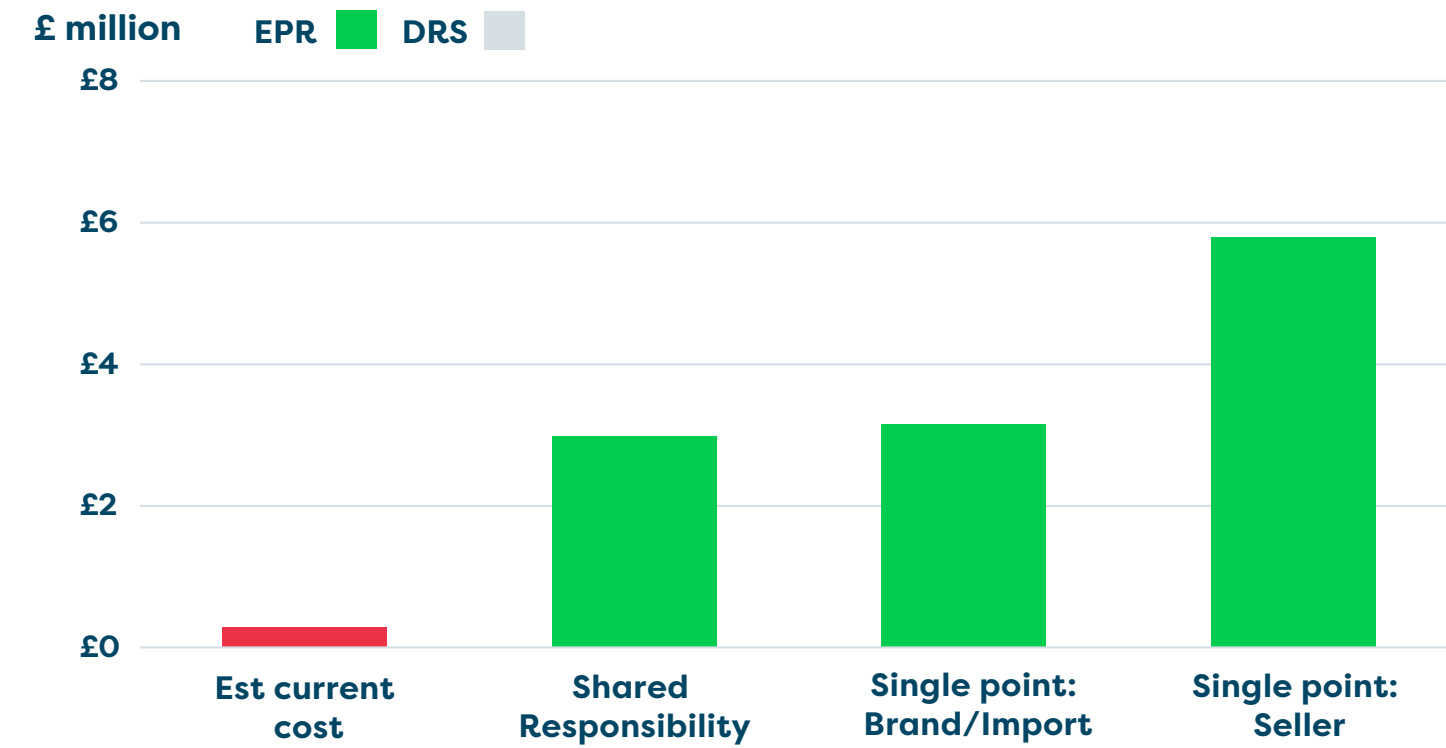
A national pub/restaurant chain



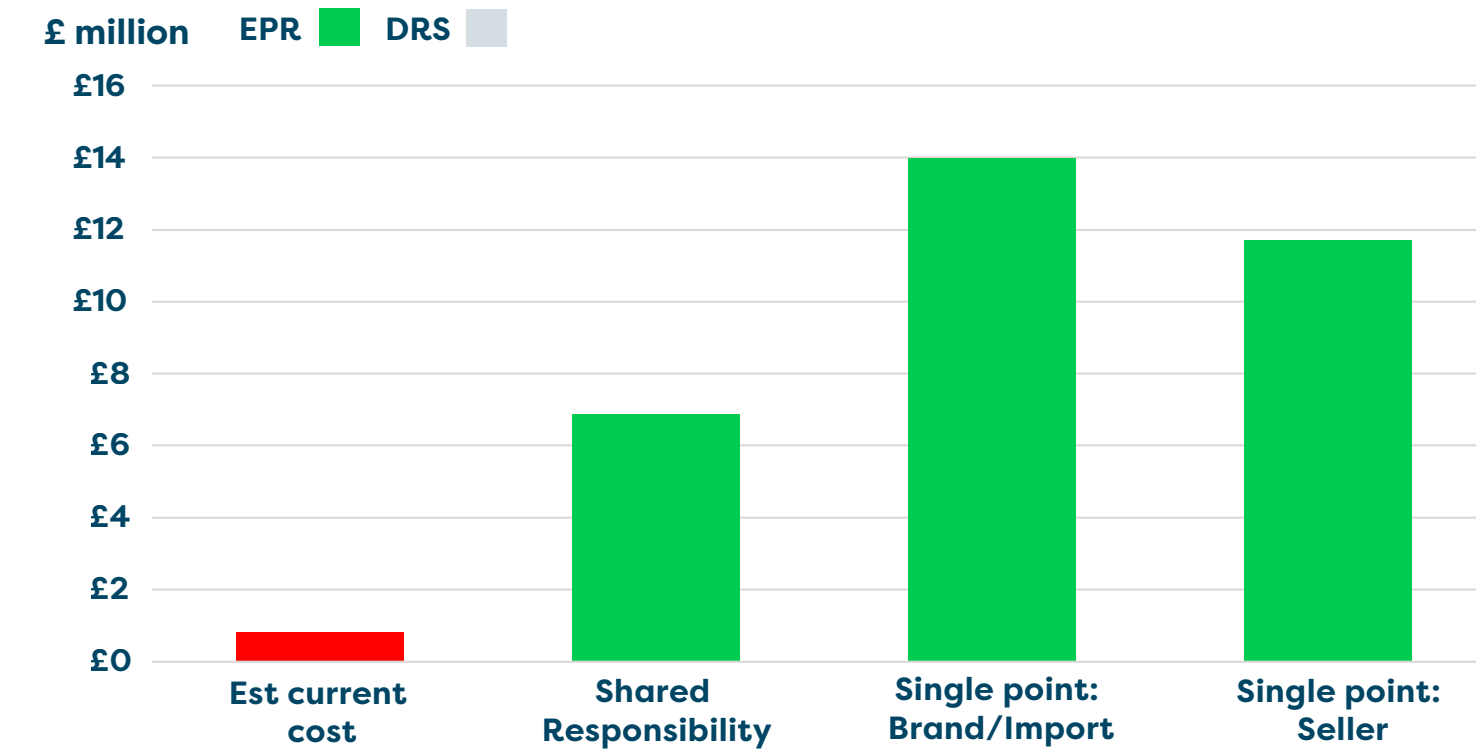
A mixed clothing & other products retail chain



A national DIY retail chain



A branded clothing retail chain



Local authorities and councils and waste management companies that collect packaging waste for recycling... Under the proposals outlined in the consultation, local authorities and councils will receive funding from obligated businesses, via a newly established the scheme administrator, to pay for the collection, sorting and recycling of packaging. They will receive funding for the collection and disposal of packaging within the household residual waste stream.

The same goes for the costs associated with the recycling of packaging waste arising in from C&I settings, although the detailed mechanism is still to be decided. Local authorities and councils will also be funded by obligated businesses (via the scheme administrator) to adequately deal with both ground and bin litter, and litter prevention campaigns.



“Local authorities, councils and waste management companies will be expected to collect a consistent set of materials nationwide”.

Making obligated businesses responsible for packaging litter costs builds a clear incentive to take steps where possible play an active role in reducing ground litter, which is obviously very costly to deal with. The four governments say that this could be achieved through measures such as:

- reducing single-use packaging and promoting reuse models;
- using messaging on packaging, or funding intelligent packaging design and national communication campaigns to discourage littering;
- funding outreach activities in schools and communities; and,
- increasing bin provision to make it easier for people do the right thing.

You can see the potential outline of what these costs could look like for obligated businesses in Section 5.

In exchange for this new source of funding, local authorities and councils and waste management companies will be expected to collect a consistent range of materials nationwide, thereby playing a pivotal role in delivering enough good quality material to meet recycling targets.

*We were also careful to exclude the cost of drinks from the standard basket of goods, as costs for this material will fall under the Deposit Return Scheme.

Consumers... may expect to have at least some of the cost increase passed to them. While the aim of the EPR reform is to hold obligated businesses responsible for the cost of the packaging they place onto the market, it is likely that at least some of the impact will filter along supply chains and down to consumers. Our calculations show that, with the arrival of EPR, the cost associated with an average shopping basket of goods may rise by up to 0.6%.

We outlined the difference in costs based on the items consumers typically put into their shopping basket and, indirect costs for packaging around goods which ultimately end up impacting consumers (such as retail transit packaging).

When we took our model of how modulated fees might be defined, and applied it to a standard basket* of goods costing £53.56, we established that the total additional EPR cost would be 29.8p (with a direct cost of 20.3p). This means that there is a potential 0.6% increase to the cost of the basket. With inflation currently at 1.8%³, this represents a significant increase and, while it may seem like a small amount per week, is a 30% increase in the inflation figure. The total cost of EPR over a year could add up to as much as £100 per household when you take the total costs outlined by the four governments and divide that by the number of households in the UK.

³www.ons.gov.uk/economy/inflationandpriceindices/bulletins/consumerpriceinflation/january2021

Recyclers and Reprocessors... will likely benefit, both from greater levels of material supply and from demand for output (particularly in the case of plastics, where a separate piece of legislation proposes to implement a tax on packaging which contains less than 30% recycled content), which may help to incentivise future investment.

Under the current system, the PRN value of collected packaging depends on many factors – from levels of collection elsewhere in the system and demand driven by the amount of packaging placed on the market by obligated businesses in the previous year, through to the strength of the economy and the price of raw materials and energy. This means that prices have, on occasion, been highly volatile. Fluctuations in price can result in uncertainty and can have a negative effect on investment in the sector.

While volatility cannot be entirely eliminated, under a reformed system any price fluctuations should be smoother than we have seen over the course of the PRN system. This will help obligated businesses with their budgeting and well as reprocessors with their investment plans. At the same time, the value of recovered packaging materials will be netted off obligated businesses' costs. This means that high demand will be reflected in high prices for recovered materials, and obligated businesses will benefit from lower net compliance costs.

“Fee modulation would incentivise the use of packaging that can be easily recycled using existing infrastructure”.

Fee modulation may also provide additional money to fund improvements to collection, sorting or reprocessing infrastructure. It should also incentivise the use of material that can be easily recycled using existing infrastructure.

But what if material is being sent overseas? How can we be sure that it will be recycled properly? The four governments recognise that UK regulators are not currently funded sufficiently to carry out detailed checks on overseas sites, so they are exploring the possibility of increasing fees for accredited waste exporters. This would enable UK regulators to appoint and fund third-party inspectors. All reprocessors and exporters handling packaging waste would need to register with a regulator, report on the volume of packaging waste recycled, and provide proof of recycling, rather than gaining accreditation.

How will obligation be measured and who will administer the scheme?

Under the current PRN system, obligated businesses must either obtain PRNs themselves or join a producer compliance scheme that manages this for them. Within its updated proposals for reform, the four governments have presented two alternatives to investigate further.

This is an incredibly important element in the consultation and one that any obligated business should consider carefully and respond to. By the time reform comes, the PRN system will have been in place for a quarter of a century, so getting it right for the next system is critical.



“Two very different approaches, potentially with equally different outcomes.”

The two very different approaches proposed for household packaging would potentially result in contrasting outcomes. These are described further in the consultation document: :

- 1 **A single scheme administrator**, responsible for managing the whole system would have oversight and control of the entire reformed producer responsibility regime. This single body, appointed by the four governments, would set packaging fees and decide the fee modulation mechanism; it would recover fees from obligated businesses, and distribute funding to local authorities, councils and others eligible for payments. While obligated businesses would have no choice over joining the single scheme, they would be free to engage other companies to help with auxiliary tasks such as data management and reporting. This approach should bring absolute parity to the entire system, ensuring equal costs for all obligated parties.
- 2 **An alternative system** would likely combine a smaller scheme administrator with a number of highly-regulated compliance schemes – referred to as packaging recovery organisations (PROs). The administrator would still carry out those tasks which are required to be done centrally such as setting the system for the modulated fees payable on household packaging, managing local authority and council payments and coordinating national consumer communication and recycling awareness campaigns. It would also provide operational oversight and national reporting.

This would then be supported by PROs who would be tasked with handling the operational aspects of compliance, overseeing their members' journey towards statutory packaging recycling targets and collecting their data and fees. Once details have been decided, PROs may also be tasked by their clients with enhancing the reformed producer responsibility regime, to drive efficiency and support innovation in recycling, and to reduce costs.

Obligated businesses could then choose which of the newly-approved PROs offers the best set of services to suit their individual needs and evolving strategies. Not only is this likely to provide obligated businesses with an additional level of control and choice over the system that they fund, it would also encourage effective competition. In turn, this helps to drive efficiency and innovation, and improve quality, ensuring that costs stay as low as possible and that payments are fair and transparent.

“Two very different approaches, potentially with contrasting outcomes”.



5 Our modulation models

The business end (let's talk numbers).

As we've already seen, the intention of EPR is to shift the full cost of managing packaging at end of life to those most able to influence the design – the obligated businesses. With this new responsibility comes a significant additional cost.

In order to encourage obligated businesses to make these improvements, EPR looks to introduce fee modulation, which will offer lower costs for packaging which uses easy-to-recycle materials and formats, and higher costs for harder-to-recycle packaging. Through extensive research and modelling, we have crunched the numbers and modelled actual figures that we hope will help illustrate what this could mean to obligated businesses.

Projections for some materials, such as wood, metals and glass, are pretty straightforward. We already know that they are relatively simple to sort and recycle. However, the situation becomes far more complex for other materials and packaging products. This is because some materials are used in an extremely wide range of applications, and one piece of packaging can be made up of a number of different components and, in the case of plastic, different polymers. Some packaging items may have an established collection infrastructure and be easy to recycle, while others might not. Similarly work may be going on to develop new sorting or recycling technology which could mean that currently unrecyclable streams become much more easily recyclable in future.

Why it's so important to you

Modulation plays a key part in understanding the potential scale of the changes to obligated businesses as legislation transitions from the current PRN system into the new EPR structure. A clear view will help to inform responses to the consultation and, in turn, help obligated businesses and the supply chain to become EPR ready.



We've outlined the methodology for two different types of waste

Household (HH)

- Cost of recycling separately-collected packaging
- Cost of disposal of the packaging element in residual household waste.

Non-Household Municipal (NHM)

- Cost of recycling separately-collected packaging only.

For the purposes of this document we're only considering the above. Costs associated to Commercial and Industrial (C&I) waste seem likely to vary greatly, depending on circumstances. So it's less likely that there will be generic 'placed on market' (POM) fee that will be applied to groups of materials as there is for HH and NHM. Consequently, this should be considered independently.

How we got started...

Firstly, we started carrying out a comparison to the current PRN system.

It's important to remember here that, unlike the existing PRN system, the EPR costs will apply to ALL material placed on the market (POM) and are paid for by a single obligated business. So you don't just pay for your required proportion (depending on your role in getting the packaging to market) of recycled material up to target. We made sure this was taken into account when doing the calculations.

The PRN system is market-led, which means prices can fluctuate significantly. So, in order to complete our calculations, we used the average PRN expenditure (according to the National Packaging Waste Database - NPWD) from 2016 to 2020.

“You can see why it's important to pay attention to the proposals, fully understand the impact on your business and have your say in the approach used”.

These calculations established that, under the current PRN system and, once the recycling target was removed, the average cost per obligated tonne of material placed on market (POM) is approximately £16.91. Obviously, this varies depending on the material type and the market conditions, but it represents an 'all in' average.

Using the same approach – but applying this to the EPR full net cost proposal from the consultation and impact assessment – the cost would increase significantly to £237.85 per tonne of material POM.

That's a whopping x14 increase and illustrates why it's important to pay attention to the proposals, fully understand the impact on your business and have your say in the approach used for fee modulation. The implications are likely to be far-reaching.

Recognising that this wasn't going to be indicative of the actual situation under EPR...

We then looked to develop a further analysis using baseline data (this would click through to the baseline data examples but not be visible all the time) from the consultation to create an impact assessment, and built on that to establish the cost model.

Here's the baseline data we referred to (taken from the consultation and impact assessment documents)

Costs*					
Activity	2023	Source	Cost Model	HH Cost Assigned by POM	NHM Cost Assigned by POM
Recycling HH	£689,000,000	IA T11	HH	£689,000,000	
Recycling NHM	£249,000,000	IA T11	NHM		£249,000,000
Residual HH (not NHM)	£292,000,000	IA T12	HH	£292,000,000	
C&I	£1,500,000,000	Central estimate	C&I		
Litter	£212,000,000	Consultation	Litter		
Comms	£704,218	T23	HH & HHM	£389,867	£314,351
Admin	£23,000,000	scheme admin + IT	HH & HHM	£12,733,190	£10,266,810
Monitor/enforce	£25,000,000	not covered in IA	HH & HHM	£13,840,424	£11,159,576
TOTAL	£2,990,704,218			£1,007,963,481	£270,740,737

*Costs shared between HH and HHL/NHM (referred to as 'system costs') have been assigned in line with total POM in tonnes:

The total POM and associated waste management costs modelled are found below from Impact Assessment Table 1 Baseline packaging POM data (excl. packaging captured by DRS 'all-in') in a 'do-nothing' scenario – best estimate:

Packaging material	2023 POM (Kt)		
	POM (Kt)	NHM	Other C&I
Plastic	1,300	423	484
Wood	70	228	1,017
Aluminium	68	11	38
Steel	274	129	122
Paper/Card	1,721	2,403	1,487
Glass	692	133	0
Total POM	4,125	3,326	3,148
Recycling costs in EPR	£689,000,000	£249,000,000	Up to £1.5bn minus 0.249bn
Residual costs in EPR	£292,000,000	£0	

Total recycling expectation for 2023 are also found below:

Packaging material	2023 Recycling (Kt)		
	HH	NHM	Other C&I
Plastic	313	88	460
Wood	26	126	348
Aluminium	26	3	15
Steel	237	78	120
Paper/Card	1,061	1,477	1,418
Glass	470	80	0
Total POM	2,134	1,852	2,360

And finally, litter costs are assumed as follows:

Actual proposed cost of Bin litter	£74,000,000
Actual proposed cost of ground litter	£138,000,000

Take 1

Our first analysis, undertook a very straightforward assessment to understand what would happen if we applied a flat, per-tonne rate cost of recycling and disposal (using the information derived from our baseline data) to all materials, regardless of their recyclability, or of the cost implications of collection and sorting.

The same rate was applied both to material that is recycled (according to forecasts within the impact

assessment) and to residual material that is sent for disposal. We also excluded any 'system costs' (shared costs for things like communications, administration and monitoring).

We then broke this down into Household (HH) and Non-Household Municipal (NHM) packaging.

Here's what assigning that flat rate for both recycling and disposal looked like for:

Household (HH), broken down by packaging material:

Packaging material	Total HH POM	Expected Recycling HH and HH like	Cost of recycling (flat rate)	Expected Residual (HH ONLY)	Cost of disposal (flat rate)	System Costs (split by POM)	Total Cost / Material	Total UNMODULATED Cost / t POM
Plastic	1,300	313	£101,057,638	987	£141,345,758	£8,497,582	£250,900,978	£193.00
Wood	70	26	£8,394,564	44	£6,301,128	£457,562	£15,153,254	£216.48
Aluminium	68	26	£8,394,564	54	£7,733,203	£444,489	£16,572,256	£243.71
Steel	274	237	£76,519,681	73	£10,454,144	£1,791,029	£88,764,854	£323.96
Paper/Card	1,721	1,061	£342,562,793	660	£94,516,920	£11,249,491	£448,329,204	£260.51
Glass	692	470	£151,747,891	222	£31,792,055	£4,523,328	£188,063,274	£271.77
Total POM	4,125	2,134	£689,000,000	2,039	£292,000,000	£26,963,481	£1,007,963,481	£244.35
Total Cost	£1,007,963,481	£689,000,000	£688,677,132	£292,000,000	£292,143,207	£26,963,481	£1,007,783,821	£244.35
Average cost / t	£244.35	£322.87	Diff is rounding on t	£143.21	Diff is rounding on t		£1,007,963,481	

Take 1 Continued

And Non-Household Municipal (NHM):

In this example, there's no requirement to pay for packaging in the residual waste stream, so the average cost per-tonne POM is £81.40, and the cost per-tonne of collected material is £134.45.

Packaging material	Total NHM POM	Expected Recycling NHM	Cost of recycling (flat rate)	Cost of other aspects comms admin enforce (split by POM)	Total Cost / Material	Total UNMODULATED Cost / t POM
Plastic	423	88	£11,831,533	£2,764,982	£14,596,516	£34.51
Wood	228	126	£16,940,605	£1,490,345	£18,430,950	£80.84
Aluminium	11	3	£403,348	£71,903	£475,250	£43.20
Steel	129	78	£10,487,041	£843,222	£11,330,263	£87.83
Paper/Card	2,403	1,477	£198,581,533	£15,707,453	£214,288,987	£89.18
Glass	133	80	£10,755,940	£869,368	£11,625,308	£87.41
Total POM	3,326	1,852	£249,000,000	£21,740,737	£270,740,737	£81.40
Total Cost	£270,740,737	£249,000,000	£249,000,000	£21,747,273	£270,747,273	£81.40

The issue with the examples above quickly becomes apparent. When we fail to take into account of the recycling rate, the material that has the lowest recycling rate generates the lowest EPR cost which is definitely not the policy intention. This is by virtue of the consultation data that suggests that disposing of residual waste comes at a lower cost per tonne than recycling collected material.

The aim of modulating fees within EPR is to reward packaging design that facilitates an increase in recycling rates. And recyclability depends largely on the infrastructure available. In this case, where fees are aligned to the actual costs of recycling and disposal proposed in the impact assessment, we would quickly end up in a situation whereby these compliance costs would encourage the use of any type of plastic – recyclable or not – in order to achieve the lowest compliance costs, which would not help to increase recycling rates at all. Time for a rethink.

Take 2

Taking into account what we learnt from our first analysis, for our second we assigned a specific value to materials, based on the output of recycling.

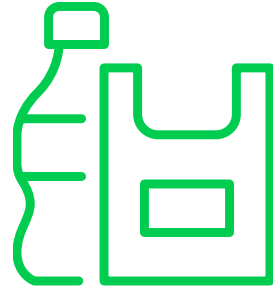
We did away with that problematic 'flat rate' per tonne, and replaced it with a three-tier, modulated value for each material, based on indicative availability of recycling collection systems for the end user.

We also added in a flat-rate cost (per tonne) for collection and sorting, and introduced an additional variation for paper/cardboard and plastic, to indicatively show the impact of the extra cost of material going through a picking line at a sorting facility.

The example on the next page gives an idea of how the values assigned to each of the three tiers in this modulated approach might play out for plastic*.

*These figures are used to give an indication only. The cost examples were derived from the baseline data and split across a traffic light system, from green – 'easy to recycle' – material, to red – 'difficult to access recycling collection and/or difficult to recycle' – material.

Take 2 Continued



Plastic

Material status – plastic	Criteria	% of material POM	Modulated fee
Green	collected at the kerbside and likely to be recycled	60%	£129.56
Amber	collected in national specialist collections and likely to be recycled	7.5%	193.00
Red	not collected at the kerbside and/or likely to be recycled	32.5%	£310.12

While this system produced an outcome that is aligned to the goals of EPR for plastic, it hit a stumbling block when we applied the same theory to paper/cardboard.

Only an extremely small proportion of cardboard packaging placed onto the market is non-recyclable. However, this material exercised a disproportionate impact on the figures. As a result, costs for the ‘difficult to recycle’ tier within paper/cardboard were disproportionately high, making this approach for paper/cardboard inappropriate.

Importantly, it also showed us that this level of modulation is unnecessary for all material types. The likes of metals and glass seem comparatively simple to sort and recycle – and automatically slide into the green section. Wood sits one tier higher in amber. This is because, although wood is not collected at the kerbside, it is widely separately collected at household waste recycling centres.

The table below outlines the output from our second analysis – again broken down into Household and Non-Household Municipal packaging:

HH packaging

Packaging material	Unmodulated Fee	Green	Amber	Red
Plastic	£263.83	£160.75	£263.83	£454.13
Wood	£260.17		£260.17	
Aluminium	£189.30	£189.30		
Steel	£249.46	£249.46		
Paper/Card	£192.89	Separate system required		
Glass	£337.30	£337.30		

NHM Packaging

Packaging material	Unmodulated Fee	Green	Amber	Red
Plastic	£77.79	£53.63	£77.79	£512.70
Wood	£152.49		£152.49	
Aluminium	£7.42	£7.42		
Steel	£46.03	£46.03		
Paper/Card	£73.41	Separate system required		
Glass	£155.30	£155.30		

From this analysis we learnt that, while this method of modulation works well within plastic – which incorporates a wide range of polymers, formats and levels of recyclability – this type of modulation does not seem necessary (at this level of analysis) for metals and glass and, particularly, does not lend itself to paper and cardboard due to the small proportion of material that is not recyclable.

In the EPR consultation, the four governments have suggested that there may be a requirement to treat difficult-to-recycle paper/cardboard (specifically plastic fibre composite) in isolation, in order to generate a fair mechanism for the assignment of costs. Our analysis supports this approach.

Take 3

So, building on our learnings from our second analysis, we developed our third approach.

This final method is proposed to offer an effective balance between a realistic allocation of costs under the modulated system, and the achievement of desired outcomes set out by the four governments. In other words, it has the potential to drive positive change in packaging design, while also reflecting the likely distribution of costs, based on the recyclability of individual packaging.

To arrive at this conclusion, we incorporated the baseline data, narrative from the four governments around the basis for modulation (see Footnote 2) and detailed insight from analysis undertaken by Valpak and industry relating to material POM and recycling in 2019. We chose this time period to avoid any data anomalies resulting from the COVID-19 pandemic.

The third analysis also incorporates relative sorting costs into the methodology.

The first two analyses hypothesised that the more automated sorting costs for steel, aluminium and glass are on a par with the more manual sorting costs required for paper and plastic, so this has been addressed. Similarly, wood is generally ‘separated at source’ at household waste recycling centres (HWRCs) so, again, the cost associated with sorting can reasonably be expected to be much lower than for other materials as the material does not pass through a material recovery facility (MRF).

In order to further develop this model to create a rigorous and holistic approach to fee modulation, accurate insight and input would be needed from each area of the supply chain affected. We fully recognise that there is still work to be done here, but believe analysis can give an indication of what the impact might look like and to help obligated business understand the implications. It also highlights the importance of considering sorting costs when it comes to applying modulation to EPR fees.

Three scenarios have been outlined as follows, again broken down by material, but using steel as the normalised baseline cost and multiplying other material sorting costs accordingly. All three scenarios are designed to provide an indication of potential modulated fees only.

- Scenario 1 - is loosely based on the number of packaging items per tonne (excepting wood, which is separated at source in a HWRC).
- Scenario 2 - represents the fact that sorting plastic is more complex and, therefore, usually more costly than other materials.
- Scenario 3 - is the result of high-level research into sorting costs and is included to show the impact on final modulated fees should these factors be taken into consideration.

		Relative sorting costs per tonne of material (normalised to steel)		
Final Scaling - cost of sorting	Method	Scenario 1	Scenario 2	Scenario 3
Plastic	Manual	4	15	6.05
Wood	N/A (CA sites)	0.1	0.1	0.001
Aluminium	Mechanical	1	1	1.00
Steel	Mechanical	1	1	1.00
Paper/Card	Manual	4	10	1.82
Glass	Mechanical	1	2	0.87
Proportion of handling cost that is sorting		0.25	0.4	0.37

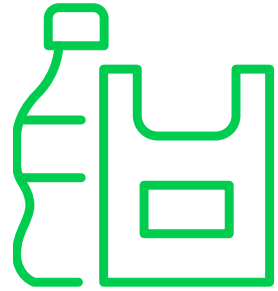
Household (HH) packaging

Packaging material	Scenario 1				Scenario 2				Scenario 3			
	Un-modulated Fee	Green	Amber	Red	Un-modulated Fee	Green	Amber	Red	Un-modulated Fee	Green	Amber	Red
Plastic	£276.20	£176.06	£276.20	£461.06	£309.66	£222.96	£309.66	£469.71	£343.09	£276.07	£343.09	£466.81
Wood	£222.99		£222.99		£197.81		£197.81		£198.06		£198.06	
Aluminium	£163.60	£163.60			£132.58	£132.58			£152.95	£152.95		
Steel	£190.54	£190.54			£121.58	£121.58			£171.67	£171.67		
Paper/Card	£214.09				£217.93				£176.84			
Glass	£291.10	£291.10			£251.67	£251.67			£269.18	£269.18		

Non-Household Municipal (NHM) packaging

Packaging material	Scenario 1				Scenario 2				Scenario 3			
	Un-modulated Fee	Green	Amber	Red	Un-modulated Fee	Green	Amber	Red	Un-modulated Fee	Green	Amber	Red
Plastic	£80.59	£55.77	£80.59	£527.37	£97.73	£69.45	£97.73	£606.79	£139.36	£102.48	£139.36	£803.24
Wood	£118.75		£118.75		£97.31		£97.31		£100.66		£100.66	
Aluminium	-£4.76	-£4.76			-£17.00	-£17.00			-£4.09	-£4.09		
Steel	£19.02	£19.02			-£8.11	-£8.11			£20.52	£20.52		
Paper/Card	£79.11				£81.16				£73.39			
Glass	£128.43	£128.43			£108.33	£108.33			£125.74	£125.74		

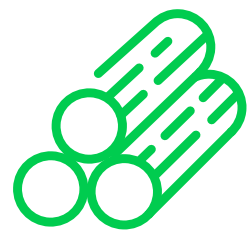
Conclusions by material



Plastic

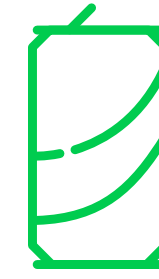
Plastic is an effective, versatile and robust material to use in packaging. It is cost-effective to manufacture but, due to its low weight per unit and relative complexity in some applications, it can be viewed by some as low cost to dispose of or difficult to recycle. However, as we've already touched on, this isn't the point. EPR aims to incentivise businesses to make more of their packaging more easily recyclable.

So, in order to drive the behaviour change desired by the four governments, one thing that cannot be overlooked is that a particular piece of plastic packaging might be more costly to collect, sort and recycle than packaging made from other materials.



Wood

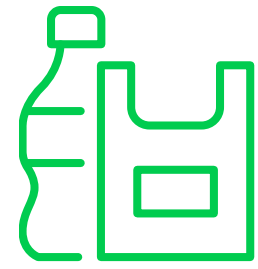
As wood is predominantly collected via household waste recycling centres (HWRCs) and other specialist collections – we don't just put it into our household recycling bins – the cost for sorting should be lower than for other materials, as it does not typically pass through a MRF.



Aluminium

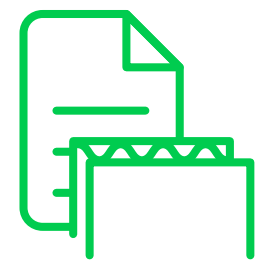
The four governments have stated in the impact assessment that, despite the fact that it is widely recycled and easily sorted, the recycling rate for aluminium is relatively low in comparison to other materials once drinks cans are removed leaving us, typically, with foil products and aerosols. However, as a recyclable material with high value and large carbon savings every time it goes through the recycling process, the benefits of increasing the capture rate of aluminium are significant.

It's also important to remember that any aluminium that slips through the recycling route to end up in the residual waste stream can be extracted and put back into the recycling process at almost any stage. Aluminium can be recovered for recycling during the pre-sort of residual waste; at the final check before material is sent to landfill or destined to become refuse-derived fuel (RDF); or even from incinerator bottom ash.



Steel

Under the defined principles of a modulated EPR system, steel should attract a relatively low fee – it boasts a high residual value, high collection rate and low sorting costs. Similarly to aluminium, any steel that falls into the residual waste stream can still be captured for recycling during the pre-sort process before it goes to landfill, or recovered from incinerator bottom ash. But, for the purposes of this analysis, we, like the four governments, have only considered steel that has been separated ‘at source’ and presented for recycling.

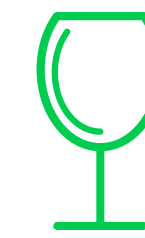


Paper/Card

In this analysis, the modulated fees applied to paper and card would place it above metal, but below plastic and glass. This is down to the fact that they offer pretty high recycling rates and have a healthy commodity value. It also sits between metals and plastics in terms of sorting costs.

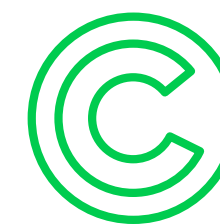
As earlier outlined, this category of material has proved tricky to modulate (in any way other than on an arbitrary basis) – simply because the vast majority of cardboard is easy to recycle, however there is small proportion of it which is much more troublesome. Meaning the figures from the minority, impacts negatively on the generally ‘good’ use of the material.

Government have explained in the consultation that they are considering the approach to separate ‘fibre composite’ material from paper/card which would get around this issue. This would cover off items such as coffee cups, crisps tubes, sandwich skillets and some composite takeaway packaging. Fees could then be set accordingly.



Glass

Applying a consistent methodology across all materials resulted in a calculation of a relatively high unmodulated fee for glass (second only to plastic). This is due to a combination of high recycling rates and relatively low residual material value at present. However, it is tempered in later iterations of the analysis by the fact that the sorting cost for glass is also relatively low in comparison to other materials.



Carbon Considerations....

Another factor that plays a key role in helping to drive sustainability is carbon emissions. While EPR measurements focus predominantly on recyclability, many businesses are introducing internal targets which include carbon impact.

In order to assess relevant carbon emissions, we modelled two potential scenarios. Carbon factors were taken from the Defra publication of emissions factors: www.gov.uk/government/collections/government-conversion-factors-for-company-reporting

Approach 1:

Unmodulated fees are considered against associated emissions.

What did we learn?

As a general rule when using virgin material, emissions and the fees calculated previously reflect a clear link. With the exception of aluminium, which generates especially high emissions at the raw material manufacturing stage, we find that where carbon emissions from production are low, the proposed fees are also low.

If we adapt this model to show materials recycled from a closed loop source, the picture changes. Plastic and, to a lesser extent steel, then produce the highest emissions, with plastic in particular scoring highly on the level of unmodulated fees.

If we consider disposal to landfill then the organic materials - paper, cardboard and wood - produce far higher emissions than inert materials such as plastic, metals and glass. There are, therefore, clear carbon benefits to increasing recycling of those materials that offer the greatest savings. This could be achieved through targets, awareness and capture from the waste stream.

Approach 2:

Modulated fees for plastic packaging types are considered against associated emissions.

Modulated fees for plastic

Typically, those plastics (such as PVC and polystyrene) that generate higher emissions in the manufacturing stage, also tend to be harder to recycle and are therefore likely to incur higher modulated fees. At the same time, Defra's research shows that the easier-to-recycle materials (the likes of HDPE bottles, PP pots and LDPE film) are aligned to lower fees and lower emissions costs.

The exception to the rule here are PET bottles, which carry a high level of associated emissions (relative to other polymer types), which were not mitigated significantly by the use of closed loop recycling when compared to other recycled polymers.



**And last... but not a throwaway thought...
How can we tackle the littler problem?**

Something that our fee modulation analysis to date doesn't take into account is the cost of dealing with litter.

We identified 148 packaging categories within our 'EPIC' database, and a further seven packaging types for 'on-the-go' food that may be considered to have a higher propensity to be littered. Based on the costs proposed by the four governments for dealing with litter, obligated businesses may expect to face an additional fee of as much as £262 per tonne POM (within these categories) to deal with packaging in litter bins, plus 0.322p per unit to deal with ground litter. Not something to be sniffed at.

① “Obligated businesses may expect to face a fee of £262 per tonne POM to deal with packaging in litter bins”.

6

What to do next?

Time to make your voice heard.

We know, it's an awful lot to take in and to consider. BUT... we are providing this analysis and report because we believe that it's really important that all businesses have their say in the next stage of the consultation process. We can't emphasize this enough.

While the final modulation model used to determine costs won't be identical to the ones we've explored here, we hope that this will help business to develop their understanding of what lies ahead. This means that, hopefully, by using this document, you can start to gain insight into the potential impacts on your business and the benefits of instigating change in advance of the implementation of the regulations. Adding your voice is vital. Based on experience of the longevity of the PRN system, whatever is decided on may be in place for a quarter of a century so it's essential that the governments make the right choices and that you have your say. We will help you to be heard.

www.consult.defra.gov.uk/extended-producer-responsibility/extended-producer-responsibility-for-packaging/



**Consultation closes on the 4th June 2021 –
this is your chance to make your voice heard**

Find out more.

