THE GROCER VISION REPORT

Beyond Plastics

Grocery Packaging in a Sustainable Future

The Grocer VISION

PAID FOR BY pwc

Contents

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Foreword

The Grocer Vision

It's hard to recall an environmental issue that has exploded into the collective consciousness in the same way as plastic. Compared with the slow burn of climate change awareness, the public backlash took hold – on social media at least – mere seconds after the BBC's Blue Planet II broadcast images of discarded plastics impacting marine life in catastrophic ways.

Ever since, businesses that sit along the grocery supply chain have been scrambling to respond in a way that shows they recognise the level of public discontent whilst ensuring the qualities that have made plastic the grocery industry's go-to packaging material – durability, safety, convenience, cost and aesthetics – are not sacrificed in the rush to be seen to be doing the right thing.

Yet there persists a sense that responses have tended towards the knee-jerk. Take compostable packaging, whose enormous potential to form a closed loop system is currently being undermined by fragmented supply chains and inadequate waste infrastructure that means only a small proportion ever gets converted back into compost.

Eighteen months on from the Blue Planet 'moment', it's time to take stock.

The purpose of this whitepaper is to look beyond plastics at the bigger question of what a sustainable packaging future looks like.

Using insights from an exclusive survey we explore the actions consumers are already taking to reduce their own footprint and those they are prepared to take in the future.

We consider the business response – from collaborative initiatives like the Plastics Pact to those businesses such as Iceland, boldly going it alone.

We look at how the fast-moving policy environment will create a framework for change.

And we look to the future: to the new alliances, innovations and business models, the sum total of which promises a more sustainable future for grocery packaging – a future in which materials are valued throughout their lifecycle and one where zero waste ends up littering our oceans and terrestrial ecosystems .

For plastic, and packaging in general, there must be no Blue Planet III.

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The public outcry against plastics may seem like a superficial perspective for some. But when 30% of consumers claim they have switched their regular brand for one with more sustainable packaging there is no doubt of the commercial impact for businesses that fail to take action. This creates a dilemma. What shoppers often believe is the right thing to do is not always the most sustainable packaging option. Faced with doing the popular, or the right thing, where will your organisation choose to invest?

If you respond to the latest consumer concerns, how can you future-proof your business? And how do you do this across a range of different markets where consumers may have different attitudes?

If you invest in the most sustainable packaging format but this doesn't fit with consumer concerns, how can you make this work commercially? While 59% of consumers said they would pay more for sustainable packaging, many are unlikely to make sacrifices on attributes such as shelf life or storage.

Consumers are clear where the responsibility for change lies. 63% agree it's with the packaging or food manufacturer. This compares with just 11% who believe the retailer must take responsibility.

So how will your organisation respond to the challenge and stay responsive for the longer term?

This is a fast evolving maelstrom of public opinion, with a reluctance to compromise on packaging performance, all taking place against a raft of emerging legislation. It's clear there are no simple choices in this new packaging reality.

Responsible companies must look beyond the latest on social media and develop a future-proofed course of action, or some expensive, and environmentally irresponsible, mistakes could be made. This report aims to help you along that process.

If you would like to discuss the issues your organisation is facing, please do get in touch.

> “Plastic was designed without system oversight or circularity and its use exploded. We can’t repeat that mistake.”

Libby Peake, senior policy advisor, Green Alliance

Introduction

Unwrapping the Blue Planet effect

David Attenborough’s powerful documentary shone a light on a part of the plastics supply chain that had remained largely hidden and cast doubts over the future of one of the grocery sector’s favourite packaging materials.

What a difference a day makes. As we approached the end of 2017, the suggestion that plastic packaging would surge past other, arguably more pressing, challenges like climate change, air pollution and biodiversity loss, to become the world’s foremost environmental issue might well have seemed folly. Then on 10 December the BBC broadcast the final episode of Blue Planet II, hosted by David Attenborough, and almost overnight plastic went from a cheap, convenient and cherished grocery industry staple to public enemy number one and a political hot potato.

Unlike many environmental issues that achieve brief prominence before slipping down the public agenda plastic has retained an astonishingly high profile. In a YouGov survey conducted in February this year a greater number of people said the government should prioritise action on single-use plastic than climate change.

“It’s been extraordinary to watch it [unfold],” says Liz Goodwin, who was CEO at the Waste and Resources Action Programme (Wrap) and now works for the World Resources Institute. “We’ve been banging this drum for years.”

For some, the only surprise is that the drumbeat wasn’t heard sooner. It was back in January 2016 that the Ellen MacArthur Foundation (EMF) estimated there would be more plastic by weight than fish in the sea come 2050.

Eighteen months later, Procter & Gamble drew attention to the issue with the launch of its Fairy Ocean Plastic bottle made entirely from post-consumer recycled (PCR) plastic and ocean plastic. That was in October 2017, two months before Blue Planet II changed the conversation around packaging for good.

As we quickly discovered, the issue of marine pollution resonates powerfully with consumers. In an exclusive survey conducted by Harris Interactive UK for this whitepaper, plastic pollution of seas and waterways was the biggest concern to do with food and drink packaging for 38% of respondents, with 74% putting it in their top three.

A little over 40 years on from the launch of the first universal recycling symbol, globally just 14% of plastic packaging is recycled, according to EMF. In the UK, the recycling rate is a more respectable 46%, according to Wrap, which has launched a Plastics Pact to deliver a 70% rate by 2025. However, the UK remains one of Europe’s largest consumers of single-use plastics used for food and drink, with considerable growth still expected in the next decade. Demand for convenience food and drink is a key driver, with the food-to-go market expected to be worth £23.5bn by 2020 (up from £17.4bn in 2017, according to IGD). In this context, a recycling rate of under 50% still equates to a huge volume of plastic packaging being sent either to landfill or for incineration every year.

The challenge is plain to see, but has the response been proportionate? There remains a sense among some observers that the debate over plastic has been somewhat unbalanced to date. Lord Deben, chair of the Committee on Climate Change, suggested the “media maelstrom” has quite rightly turned the spotlight on the issue, but that the glare has made it “very easy to forget how important plastic is and what it does”.

Extended shelf life, less food waste, improved durability, greater product variety, clean aesthetics and convenience – the list of benefits for plastic packaging is long and well publicised.

Plastic also happens to be very cheap. But is it indispensable? Some supermarkets think not. Iceland, notably, has implemented a plastic-free pledge for all its own-brand products. Other businesses have also responded with pledges to reduce plastic packaging, with 32% of those surveyed saying they have switched away from products with plastic packaging.

So where do we go from here? “The retail and thus packaging system will need to help consumers to achieve the overarching goals,” says Tony Breton, market specialist at Novamont. “Things will change.”

Over the four chapters of this whitepaper, we will delve deeply into how those changes are likely to play out.

Packaging in a single-use economy

Production

Plant-based compostables are considered the most environmentally sound packaging material

Recyclability is the most important attribute for consumers rating the sustainability of packaging

Packaging and food manufacturers are considered most responsible for ensuring packaging does not damage the environment or society

Purchasing

70%

70% of consumers have **changed their shopping habits** as a result of concerns over packaging

Tesco is the retailer considered to be taking the most action on packaging

60%

60% of shoppers have **sought out products with less packaging**

30%

30% of shoppers **have changed their regular brand** as a direct result of their attitude towards packaging

41%

41% of shoppers would not be **prepared to pay more** for sustainable packaging

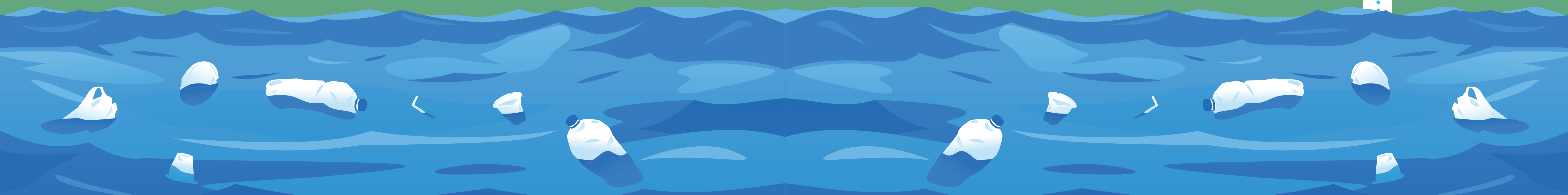
Disposal

38%

38% of shoppers would be put off **switching to more sustainable packaging** if the product had a shorter shelf life

A **deposit return scheme** for plastic bottles is the most favoured government policy

Plastics in the ocean is the number one environmental concern for the packaging used in food and drink products



> We have to be on the edge of the curve of what consumers want but not ahead of them.

Stuart Lendrum, head of packaging, Iceland

Chapter One

Keeping up with the consumer

The breakneck speed at which plastic has shot up the sustainability agenda has left businesses racing to respond to new consumer expectations. Those that fail to keep up risk a backlash from shoppers.

When I mention I'm involved with plastics for a living, I sometimes get a look along the lines of 'you killed a baby whale'," noted Dr Sally Beken, a polymer scientist at the UK's Knowledge Transfer Network, in an April 2018 blog. Twelve months on, has hostility towards this "fantastic" (Beken's word) material resulted in a shift in buying patterns, or even switching between brands? The short answer to both questions is 'yes'.

Our exclusive survey of over 1,000 UK adults showed that 21% have substantially changed their shopping habits as a direct result of concerns about the environmental or social impact of packaging, rising to 34% amongst 18- to 34-year-olds. In fact, 70% of all consumers now shop differently than they did a year ago, with more than half seeking out products with less or no packaging (60%) or that they know can be recycled (52%).

Mission impossible

Supermarkets and their suppliers admit to being surprised by the pace of change. The pressure from the public – as well as politicians – to move quickly has been "immense", admits Peter Andrews, head of sustainability at the British Retail Consortium (BRC). Retailers have had to react, launching packaging policies in which they commit to strip out "unnecessary plastic", offer new recycling collection points, and switch to alternative materials.

But simply stripping out plastic is easier said than done – costs increase and margins decrease. There is also the risk food waste could rise, whilst alternatives can often have higher greenhouse gas impacts. In other words, don't judge a material by its cover. And yet that is exactly what shoppers seem to be doing.

Sustainable switching?

Almost a third (32%) of those surveyed have already switched from products packaged in plastic to ones packaged in other materials, with plant-based compostables now seen as the most environmentally or socially sound choice, followed by paper and glass.

A similar number (30%) have started swapping their regular food brands based on the packaging, rising to 48% amongst 18- to 34-year-olds. Conversely, amongst those 55 and over, 86% remain loyal to their favourite brands regardless of what they are wrapped in.

There appears little chance of the pressure easing, with 28% of those surveyed warning they'd switch if their regular brand wasn't offering more environmentally or socially sound packaging.

But what constitutes eco-friendly packaging in the eyes of the consumer? The answer is complicated and suggests there remains a lot of confusion when it comes to assessing the merits of different materials. Asked to rank a range of materials on their sustainability our research identified plant-based compostable packaging

Thinking about your grocery shopping in the past year, how much have you thought about the environmental or social impact of your food and drink packaging?

50%	I have thought about it a little
35%	I have thought about it a lot
15%	I haven't thought about it at all

We asked shoppers to rank the packaging material they consider to be the most environmentally or socially sound:

1. Plant-based compostables
2. Paper
3. Glass
4. Cardboard
5. Plastic
6. Single-use plastic
7. Tin/Aluminium
8. Laminated cardboard packaging
9. Flowrap

What has been the most important factor in making you think about the environmental or social impact of your food and drink packaging?

39%	TV programmes
19%	Changes to product packaging by retailers and brands
15%	Social media
9%	Newspapers/magazines
7%	Influence of friends/family
5%	Changes to in-store communications by retailers and brands
2%	Radio
4%	Other

Which retailers do you consider to be taking the most action on the environmental or social impact of packaging?

22%	Tesco
17%	Morrisons
16%	Sainsbury's
15%	Iceland
15%	M&S
14%	Co-op
13%	Asda
12%	Aldi
12%	Lidl
11%	Waitrose
1%	Other

> “When we talk about reduction we're not asking supermarkets to achieve reductions by simply thinning their plastic – we want to see plastic being cut out altogether.”
>
> **Elena Polisano, campaigner, Greenpeace**

as a clear number one with 38% of the vote ahead of paper with 21%. Plastics ranked as the top material for 5% of respondents putting them, perhaps surprisingly, ahead of tin or aluminium, laminated cardboard and flowrap. Yet for 25% of people plastic ranked the worst material for sustainability rising to 37% for single-use plastic specifically, suggesting that the negative connotations of plastic packaging far outweigh the positives.

Plastic's PR problem

How has the public's perception of plastic changed so quickly? Blue Planet II is often cited as the tipping point, and indeed survey respondents said TV programmes had the biggest impact on their outlook (39%). But in their haste to launch new policies to demonstrate a more responsible approach to packaging, are retailers perpetuating plastic's poor public profile?

Almost one in five shoppers (19%) say it is changes to packaging made by retailers and brands that has made them think about the impact of packaging. For 9% it's newspaper and magazine articles, which are often presenting “science fiction rather than science based on facts”, according to Lubna Edwards, group sustainability director at Klöckner Pentaplast.

NGOs have been influential in ensuring plastic remains in the spotlight. As an issue, plastic has been a gift for campaigners – it's less complicated to grasp than climate change, is underpinned by a wealth of damning facts and disturbing images, and involves global, million-dollar brands that consumers see, touch and use on a daily basis.

Hardly surprising, then, that there has been a “sharp upward trend” in NGO activity in the past six months relating to single-use plastic and plastic pollution, according to tracking firm Sigwatch.

At the outset, it was large manufacturers such as Nestlé and Coca-Cola that received the majority of attention from campaigners. Supermarkets are now “in the firing line” too, says Sigwatch founder Robert Blood. In the 12 months to 23rd April, 2019, Tesco was the number one corporate target followed by Poundland and Sainsbury's. Praise is relatively hard to come by, and has been reserved for those businesses committing to end the use of plastic.

Iceland, which is removing all plastic packaging from its own-label range by 2023, has become the sustainable packaging pin-up in the eyes of campaigners. However, this is not reflected among consumers, with most naming Tesco as the retailer they perceive to be taking the most action on packaging.

Key takeaways from PwC

- Public attitudes to plastic can evolve rapidly and impact consumption patterns. To stay ahead, add regular monitoring of these attitudes to your ongoing consumer research programmes.
- If you want to continue using plastic, find a way of educating and communicating the benefits of the better types of plastic you have chosen. This helps to avoid making your choice unacceptable for some consumers.

Most criticised and praised corporates on single-use plastics in the UK

April 2018—April 2019

Based on mentions in NGO communications. Praise and criticism scores are calculated based on Sigwatch's reputational impact scoring system which considers NGO influence, sentiment and prominence.

Criticised	Company	Praised
22.5	Aldi	0
0	AMCOR	3
6	BRC	0
0	Coca-Cola Company	3
19.5	Co-operative (UK)	0
0	Danone	3
6	Iceland Foods	33.75
9	John Lewis Partnership	10.5
22.5	Lidl	10.5
9	Marks & Spencer	10.5
0	Marylebone Cricket Club	13.5
12	Morrisons	18.75
0	Novamont	3
15	PepsiCo	3
33.75	Poundland	0
32.25	Sainsbury's	0
37	Tesco	10.5
0	Unilever	3
0	Veolia Environnement	3
19.5	Walmart	4.5

Data ©SIGWATCH. For additional information on SIGWATCH, visit our website at www.sigwatch.com

Chapter Two

Mapping the business response

Food and drink businesses have acted swiftly and decisively to reduce plastic through industry-wide agreements and bold individual commitments. But have their efforts been focused in the right places?

The UK grocery sector has been built on the backbone of plastic packaging that is expertly engineered and extremely economical. But now supermarkets are all grappling with the same question – can we move beyond plastic?

Consumers want them to. As do campaigners. And politicians – even the most senior in the UK. "In years to come, I think people will be shocked at how today we allow so much plastic to be produced needlessly," said Prime Minister Theresa May on launching the government's 25-year environment plan in 2018.

Retail's rapid reaction

Almost all the largest consumer-facing brands and major supermarket chains have launched new sustainable packaging policies in the past 18 months. Some are switching materials or paring down the polymers they use to widely recycled ones; others have become waste collectors of hard-to-recycle materials; many are removing unnecessary packaging; and a few are trialling new business models based on refillable packaging.

However, in the rush to react there is a feeling that many businesses are failing to properly evaluate the impact of these new policies and whether they are correctly targeted. "There have been lots of commitments and different companies are looking at the same problem, but the solutions are not always coherent," explains Libby Peake, senior policy advisor at Green Alliance, a think tank.

Compulsion to commit

Industry-wide voluntary agreements have traditionally helped bring clarity and consistency in responding to complex problems. In April 2018, Wrap launched the UK Plastics Pact, in which companies across the plastics value chain signed up to deliver four key commitments for plastic packaging by 2025. Discussions had begun well before Blue Planet II, due in part to China's decision to close its low-quality recycling market.

Globally, there was also growing recognition of plastic pollution, with talk of a Paris-style agreement to curb the eight million tonnes leaking into the environment every year.

In October 2018, the EMF launched the New Plastics Economy Global Commitment. The aim was to stop plastic waste and pollution at source by applying

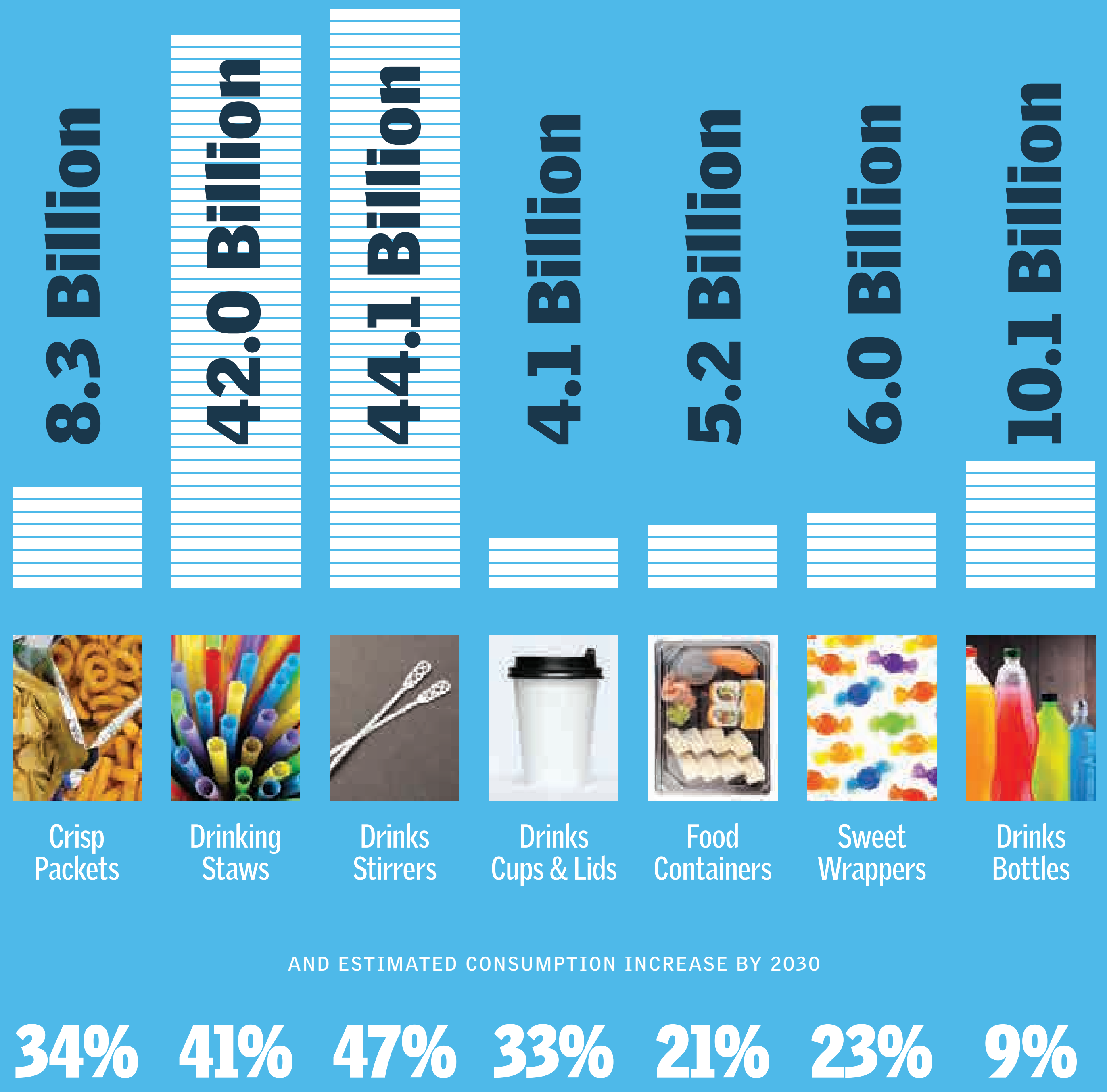
In your opinion, who is most responsible for ensuring food and drink packaging does not damage the environment or society?

34%	Packaging manufacturers
29%	Food manufacturers
16%	Government
11%	Food retailers
9%	Shoppers
3%	None of the above

"Trying to keep the customer happy whilst doing the practical, scientific thing has become almost impossible. Switch to paper, card, metal or glass and all the time you are adding carbon. I guess the question is: what problem are we actually trying to solve?"

Kevin Vyse, packaging expert and member of Defra's advisory committee on packaging

UK consumption of single-use plastic items in 2017



Source: Eunomia/WWF-UK, 2018

"We can't lose sight of the role packaging has to play. We are doing as much as we can, as fast as we can."

Duncan Gordon, corporate affairs senior director, PepsiCo

circular economy principles, with the targets effectively mirroring some of those in the UK's Plastics Pact.

So are these initiatives working? With signatories covering 80% of packaged food in the grocery sector there is a feeling that the Plastics Pact can indeed shift the dial. Indeed, all the industry leaders interviewed for this whitepaper reported that engagement in this issue has never been higher. Examples of collaboration are already filtering through – the Confederation of Paper Industries, for instance, has just issued new guidelines to specify packaging that can be recycled in the UK's paper mills – encouraging minimal use of laminates and "tear offs" for plastic facings.

EMF, meanwhile, has convinced 35 brands – including Nestlé, Coca-Cola and Unilever – to publicly disclose how much plastic packaging they use. Danone has also published a split by material and packaging type, whilst Nestlé has compiled a 'negative list' of problematic or unnecessary plastics, additives and accessories that it will stop using by 2024. This includes polyvinyl chloride (PVC), polystyrene, expanded polystyrene (EPS) and non-recyclable plastic/paper combinations such as laminates.

Morrisons is also removing EPS from its products, a move that the Co-op, which hasn't signed up to the Plastics Pact, has already made for its pizza range. "Our approach is twofold," says Iain Ferguson, environment manager at the Co-op. "We want to ensure any materials used are widely recyclable and to challenge the use of packaging where we believe it can be eliminated or reduced." In some cases that's meant replacing plastic with other materials, as with the switch from EPS to corrugated card for pizza discs, but in the majority of cases it has meant simplifying the plastics used, Ferguson explains, by taking colour out, aligning with the polymers that waste contractors want and by making packaging from a single polymer.

Streamlining polymers in the supply chain will be music to the ears of waste contractors and reprocessors. Currently, they have to deal with "seven or eight" major polymers, according to Adam Read, external affairs director at Suez recycling and recovery UK.

However, the fact some brands are switching between materials – for example from plastics to compostables – risks negating the benefits for collection and processing achieved by simplifying polymers. This is where consistent government policies that incentivise certain materials and simplify recycling infrastructure will be critical. "We can't have five years of carnage," Read says.

No easy alternatives

Identifying when to stick with plastic and when to replace it with an

Which of these factors do you consider to be most important when identifying if an item of packaging is better for the environment or society?

30%	It's recyclable
20%	I can easily recycle it
16%	It's compostable
10%	I can reuse it
8%	It's plastic free
4%	A proportion of recycled material is used
4%	It's refillable
3%	It's ethically sourced
3%	None of these
2%	Low energy is used in its production
1%	Lower road miles

"You need to measure the impact of packaging across its entire lifecycle, and the best material to use may well vary from product to product depending on how it is used, consumed and disposed of. [And] sometimes the most sustainable form of packaging will be plastic of some kind."

Iain Gulland, chief executive, Zero Waste Scotland

alternative material is a major challenge. The temptation to switch to materials that consumers perceive to be more sustainable, or are marketed as such, can be overwhelming. In recent months, packagers specialising in aluminium, card, paper and compostables have been on a charm offensive to entice food businesses away from plastic.

Ramon Aratia, sustainability and public affairs director at Ball Beverage Packaging Europe, says there has been "unprecedented interest" from customers in aluminium.

Alex Manisty, group head of strategy at paper packaging specialist DS Smith, notes that there has been a "deluge of interest" as companies look at how to meet their new commitments, whilst Paul Mines, CEO at 'natural plastics' developer Biome Bioplastics, says enquiry rates in the UK have "gone through the roof".

All these materials have potential benefits, including far better recycling rates than plastic and in the case of aluminium, for instance, near infinite recyclability.

Campaigners, for their part, are desperate for the debate to move away from alternatives to plastic and for grocers to focus on reduction of all single-use materials. "We need to see a scaled-up expansion of refillable and reusable packaging," says Greenpeace campaigner Elena Polisano.

Amidst the myriad commitments being made it's currently nigh on impossible to determine whether the direction of travel is the most sustainable. Wrap and the EMF offer valuable guidance, and safety in numbers, but brands are also looking to Westminster for leadership. "The government needs to step up and say this is the right way and back it up with scientific [evidence]," says BRC's Andrews. "We need an independent, authoritative voice."

Key takeaways from PwC

- If you do choose to use biodegradable or compostable materials, make sure you are completely confident they are delivering benefits to the environment.
- Consider a detailed product-by-product analysis of the best material for every type of product. Announcing a ban on certain materials may provide a quick PR win, but may not be the right thing to do for the environment over time.
- If you are using, or planning to use returnable packaging, make sure as part of your R&D and on-going monitoring that you are tracking the environmental performance of the returnable system. That way you can be confident that any losses do not eliminate the environmental benefits of the material.

Stick or twist?

"Whenever you make a change to packaging you have to make sure what you are moving to is better than what you are moving away from. This is not always easy, or straightforward and may need significant effort to get a clear answer."

Henry Le Fleming, assistant director, sustainability & climate change at PwC UK.

Here are some key considerations for businesses thinking of switching materials:

Will customers accept the alternative? Iceland has committed to plastic-free packaging across its own-brand range, and is on the hunt for alternatives. But it is proceeding with caution. "If it isn't fit for purpose customers may switch off," says head of packaging Stuart Lendrum. "It's very easy to move into more sustainable packaging and not sell anything."

Are there any health risks? Food safety is another important consideration since packaging plays a vital role in reducing the risk of pathogens. "People may tolerate an increase in food waste, but they won't tolerate a child contracting salmonella poisoning," suggests Klöckner Pentaplast's Lubna Edwards.

Will food waste increase? Packaging plays a vital role in preserving products and extending shelf life even where, from a safety perspective, it is not essential. For the UK cucumber season, Morrisons' cucumbers come without packaging, but otherwise the plastic sheath will remain. M&S, meanwhile, is trialling plastic-free fruit and veg aisles. It seems likely that consumers will take some time to adapt their eating habits to fresh produce that doesn't last as long.

Are consumers prepared to make a trade off? 38% won't tolerate a shorter shelf life on more sustainable packaging, according to our survey, and yet 60% claim to be seeking out products with less or no packaging. 41% say they wouldn't be prepared to pay any more for an item with better environmental and social credentials.

What about the carbon footprint? Pound for pound, a plastic bottle beats an aluminium can hands down in a head-to-head on carbon footprint, most experts can agree. But businesses are looking at a wider range of environmental indicators to inform their policies. "We won't be guided by the single-issue approach of carbon," says Iceland's Lendrum. It is extremely difficult to put a price on plastic pollution – researchers at Plymouth Marine Laboratory have come up with figures of between \$3,300 and \$33,000 (£2,500 and £25,300) per tonne of marine plastic, but that is likely to be an underestimate of the real costs to human society. How to measure the costs and environmental impacts of different packaging materials is a debate that has only just begun.

What happens at end of life? New regulations in the UK and EU should ensure packaging is either designed to be recycled or else it will become more costly. For some products, like straws and stirrers, regulators are moving swiftly to implement blanket bans.

> We will cut our reliance on single-use plastics, end confusion over household recycling, tackle the problem of packaging by making polluters pay, and end the economic, environmental and moral scandal that is food waste.

Michael Gove MP, environment secretary

Chapter Three

Navigating a new policy landscape

The government has brought forward a raft of new proposals to improve the UK's waste infrastructure, incentivise recycling, and tax plastic packaging. Businesses face picking up a significant share of the bill.

Ever since Blue Planet II first aired, the pace of policy change has been relentless. Last year, the government launched its Resources and Waste Strategy, as well as a less prominent but undoubtedly significant Bioeconomy Strategy. The policy pace hasn't let up this year – four consultations have been launched in a bid to overhaul the current waste system.

With proposals covering extended producer responsibility (EPR), streamlined collection systems, a deposit return scheme (DRS) and a tax on plastic packaging, this upheaval is not for the faint-hearted. "It's easy to sit and want it to happen faster," says Iceland's Lendrum. "But when you are close to this – the test and the trials (Iceland has run its own reverse vending pilot) – you realise that whether it's the tax in 2022 or the DRS in 2023, it's not far off given the scale of change."

Producer pays

The consultations have only just closed, therefore businesses are reluctant to go into detail about the potential impacts. One thing, however, is clear – this is likely to be a difficult, demanding period for anyone involved in the grocery supply chain. As Green Alliance's Peake says: "It's not easy to incentivise businesses without burdening them."

So how big will the burden be?

EPR, where companies that place packaging on the market meet a share of its disposal cost, will raise £0.5–1bn a year for recycling and disposal, according to government estimates. Added to this is a proposed tax applied to all plastic packaging that doesn't include at least 30% recycled content.

There are also considerable up-front costs involved in a proposed DRS. The Institute of Economic Affairs recently claimed the economic gain figures of £2.1bn over 10 years produced by the government are "highly questionable". Nevertheless, 26% of consumers say it is their favourite of the new policies. Not far behind are changes to collections to make it easier to recycle (23%) and charging businesses the full cost of packaging waste (20%).

The Foodservice Packaging Association suggests the cost to business of all this new policy will be "huge",

If an item moved to packaging with better environmental and social credentials how much more would you be prepared to pay for it?

41%	I would not be prepared to pay more
39%	Up to 5% more
15%	Between 6 and 10% more
3%	Between 11 and 15% more
3%	Over 15% more

Which of these government policies to make packaging better for the environment or society would you be most in favour of, if any?

26%

A deposit return scheme where consumers pay a small fee for a plastic bottle, which is refunded when they return it

23%

Changes to the collection system for household recycling so it is easier for me to recycle more packaging

20%

Charging businesses the full cost for disposing of their packaging waste

14%

Providing clear information on the sustainability of packaging materials, for instance through a traffic light label on pack

11%

A tax on packaging with a low recycled content

6%

I would not be in favour of any of these policies

> "It's a $102 bn global industry that is going nowhere apart from landfill and incinerators."
>
> **Julia Schifter, VP of strategy analysis at Tipa**

with some "inevitably" finding its way through to consumers, according to the Packaging Federation.

Consumer pays

But will consumers be prepared to foot the bill? More than half of those surveyed (59%) say they would pay more for products wrapped in packaging with better environmental or social credentials, but not much more – 39% of those happy to pay a premium limited it to 5% (on a £2.50 product). Those aged 18 to 34 years old appeared to be the most willing – 74% would pay a premium.

If businesses want to avoid future charges they will need to shift to using a higher proportion of recycled materials. But there are currently major barriers to this shift taking place. Although producing a tonne of recycled plastic generates between 1 to 1.5 tonnes less Co2 than a 'virgin' tonne, according to Wrap, the vast majority of plastic packaging is currently made from new, rather than recycled plastic. New plastic looks better and is of consistent quality, while brands have historically been unwilling to pay a premium for recycled feedstock, the material used to make new packaging products and the market for which is traditionally volatile. Furthermore, in the UK a lack of investment in recycling capacity currently restricts the supply and affordability of recycled content.

Experts, however, believe change is on the way. Susan Hansen, a food supply chain strategist at Rabobank, has detected a shift in the mood of businesses and predicts that as sustainability pledges and new regulations kick in there will be a potential "flip" in the availability of recycled plastic, with demand outstripping supply.

A DRS should help deliver high quality PET, as well as capture some on-the-go packaging, which is notoriously difficult to recycle due to a lack of infrastructure. (The Plastics Pact promises "comprehensive infrastructure" for on-the-go packaging by 2022). And there could be further advantages to a DRS. "Like EPR, it needs a very good central data system that logs materials as they leave stores and identifies them again once they enter the waste stream," Vyse explains. "That could be really beneficial to brands as they can keep track of materials and potentially valorise them for reuse, for example, aluminium cans."

Food safety concerns

Nevertheless, hitting the recycled content targets set within the Plastics Pact will be a considerable challenge, especially for grocery packaging. There are

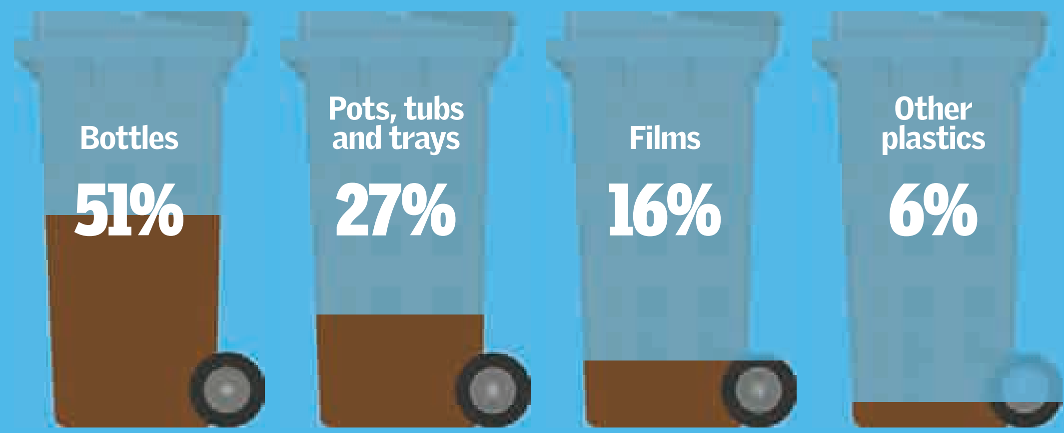
UK kerbside collection

503

THOUSAND TONNES

Plastics collected

PET: 40%
H DPE: 22%
Film: 16%
PP: 10%
Black plastic: 10%
PVC: 0.1%
EPS: 0.4%
PS: 1.5%



Source: WRAP, 2018

28%

of plastic is 'challenging to sort and market for reprocessing'

Source: WRAP, 2018

39

sets of rules for household plastic collections

Source: BBC News, 2018

Manufacturers resistant to change need to consider the reputational impact the binary labelling system proposed by government—'recyclable' or 'not recyclable'—would have if their product fell into the 'not recyclable' bracket.

strict EU rules on food contact materials. And with the market for food-grade recycled plastic set to explode, a lot more attention will be paid to the chemicals in the system – after all, no-one wants a toxic circular economy.

Solutions for flexible packaging – by far the biggest packaging segment in terms of product value sales – will be a particular problem. The multiple layers are almost impossible to separate out for super-cleaning, so it's currently unfeasible to turn a crisp packet back into a crisp packet, for example. The European Food Safety Authority (EFSA) has reportedly evaluated hundreds of applications for recycling processes for flexible recycled plastics used in food contact materials, but none have been approved so far.

Businesses are determined to find a workable solution. Ceflex, a collaborative initiative amongst European companies – ranging from material producers like BASF and packaging converters like Huhtamaki to brands including Marks and Spencer and PepsiCo – has been working away quietly to design a circular economy roadmap for flexible packaging.

Another option is to look at packaging alternatives, like compostables.

Recent research for the Biomass Biorefinery Network, conducted by Ricardo Energy & Environment, estimated the potential market for compostable flexible packaging could be 53,000 to 77,000 tonnes per year; a significant volume given the entire market for compostable packaging is currently only around 8,000 tonnes. "[Flexible packaging] is a $102bn global industry that is going nowhere apart from landfill and incinerators," says Julia Schifter, VP of strategy analysis at Tipa, which specialises in flexible compostable packaging.

Plant-based compostable packaging offers potential where traditional plastics are contaminated with food waste – compostable packaging instead returns these nutrients (the food waste) back to the soil in a so-called 'bio-loop' system.

Waste experts, however, caution that for all its benefits most compostable packaging currently suffers the same fate as plastic due to a lack of infrastructure to support its recovery. There are few in-vessel composting facilities and concerns about how the material breaks down in anerobic digestion remain.

In its EPR consultation, the government notes that compostables "can undermine mechanical recycling of conventional plastics" and even be a "contaminant" in compostable waste streams.

"All packaging with food waste attached is going to be easier to recycle organically than mechanically," explains David Newman from the Bio-based and Biodegradable Industries Association. "However, in the next five years whatever you do is going to be open to criticism because the systems are not yet in place, so think beyond that."

Simpler systems

The current, inconsistent system of waste collection in the UK is identified as another barrier to a more circular packaging supply chain. Almost one in four (23%) shoppers felt an easier kerbside collection system – as is being proposed by the government – is the best way to deal with packaging more responsibly.

There is demand too among the public for a clearer set of instructions for what they can and can't recycle, with 14% expressing preference for a policy that allows for the provision of clear information on the sustainability of packaging materials, for instance through a traffic light label on pack. Manufacturers resistant to change would need to consider the reputational impact the binary labelling system proposed by government – 'recyclable' or 'not recyclable' – would have
if their product fell into the 'not recyclable' bracket.

Key takeaways from PwC

- Monitor and engage with proposals from government. The policy environment remains uncertain, so stay on top of changes to ensure any packaging investments remain future-proof.
- Consider using recycled content. It is likely to be encouraged under all policy scenarios and it is unlikely governments will settle quickly on a consistent methodology for assessing packaging sustainability.
- Be mindful of longer term climate change policy as well as the shorter term changes proposed to packaging and plastic. Switching out of plastic now may have longer-term implications.

Cash for Cans

A well-executed DRS has the potential to legitimise packaging by placing a value on the commodity, however, DRS schemes have remained largely unchanged over the years despite the rapid pace of change in the packaging market. "DRS and other schemes to recycle plastics could be vastly improved by harnessing the latest developments in retail logistics, e-commerce, and gamifying consumer choices such as end of life disposal," says Henry Le Fleming, assistant director, sustainability and climate change at PwC UK.

While the UK government consults on what a DRS for drinks containers should look like in England, Wales and Northern Ireland, Veolia and Leon have seized the initiative by launching an innovative scheme of their own. The waste contractor has joined forces with the fast food chain to reward people for recycling single-use bottles and cans with money off their meals. In March, a reverse vending machine was installed near to Granary Square in London's King's Cross, encouraging members of the public to deposit their used plastic bottles and aluminium cans in return for a voucher worth 10% off their bill at the Leon in St Pancras Square, a few minutes' walk away.

The pilot is due to run for six months and has been designed to target the disposable drinks containers most commonly discarded on the go.

Veolia will collect and process the machine's contents, ultimately transporting the bottles and cans to be recycled into new products.

"A UK-wide deposit return scheme is imperative if we want to round up the millions of stray plastic bottles and cans we as a country are not recycling," says Richard Kirkman, chief technology and innovation officer, Veolia UK & Ireland.

"We hope as the pilot unfolds it proves the importance of recycling on the go as well as the need for appropriate infrastructure to facilitate it," adds Kirkman.

> “We can’t recycle our way out of this.”

Paula Chin, sustainable materials specialist, WWF-UK

Chapter Four

Shaping a sustainable packaging future

From ‘pre-cycling’ and smart fountains to bio-based and single polymers the shift to a sustainable, circular system for grocery packaging is well underway; but which innovations will stand the test of time?

As a business, it’s easy to see how the challenges involved in transitioning to a closed-loop system for packaging materials could feel overwhelming. That’s why it’s important to break the task down into individual actions which, when tacked together, create a more sustainable whole.

A first step, according to Paula Chin, sustainable materials specialist at WWF-UK, is to put less packaging material on the market: “Do that and you have less to manage.” Costs also fall. But reduction, for both politicians and the food industry, is a hard solution to swallow. “I wonder how brave businesses are willing to be?” Chin adds.

Low-hanging fruit

Retailers have understandably focused initially on the quick wins – not least because this is where regulators are focusing their efforts too, as demonstrated by recent moves at both an EU and UK level to ban plastic straws, stirrers and other single-use plastic items. Retailers have been analysing their portfolios to remove any packaging that is deemed unnecessary. Research by Greenpeace shows that the top 10 supermarket chains cut an average of 2,217 tonnes of plastic from their food and drink portfolios between 1 January 2018 and 27 March 2019. Asda has managed 6,500 tonnes. During this same period, the 10 retailers announced 86 packaging reduction measures and removed almost 2,400 million individual packaged items.

Voluntary commitments have also given brands the courage to make changes that even a year ago would have made little commercial sense, such as removing black plastic.

The new recyclers

Supermarkets have been quick to appreciate that closed loop recycling of packaging – the circular economy solution that is the ultimate destination for businesses and policy makers alike – won’t happen overnight, especially for plastic. Many still need difficult-to-recycle materials in order to deliver their products in a format acceptable to customers. Crisps are an obvious example – billions of packets end up going to landfill or to waste plants for energy generation every year, but such practices are fast becoming socially unacceptable.

Companies have had to come up with innovative solutions. PepsiCo, which owns Walkers, has started collecting

Black plastic breakthrough

Black plastic trays are notoriously difficult to recycle owing to the fact that the black pigments are not always detected by sorting equipment. The fact black plastic is traditionally associated with premium ranges, however, means switching to clear plastic could devalue the product in consumers’ eyes. Now, there is a collective move among retailers, including Morrisons, Iceland, Waitrose and the Co-op, to remove black plastic without impacting the aesthetic appeal of the product. “We stopped relying on black plastic to attract customers, and got more creative with the design to set premium visual clues,” says Iain Ferguson, environment manager at the Co-op. “Last year, we moved our sushi bases from black to clear PET, thereby avoiding 19 tonnes a year of black PET, but the product still looks great thanks to the reverse-printed paperboard sleeve.”

“We need to go hard on elimination and reuse models.”

Sander Defruyt, lead, EMF New Plastics Economy initiative

crisp packets – 2.2m of them from 10,700 locations so far. It’s still a fraction of the total placed on the market, but it’s a start, and a bridge to a better approach. “We’re looking at new packaging and the aim is for customers to be able to put it in their recycling at home,” says Duncan Gordon, the company’s corporate affairs senior director.

Other manufacturers are investing in innovation that reduces the overall volume of packaging required. Evian is currently trialling (re)new, an at-home appliance that features a lightweight, bubble-like water dispenser made with 100% recycled plastic that contracts when water is consumed. The dispenser has the capacity to store five litres of water and contains 66% less plastic than a standard 1.5 litre Evian bottle.

Hopes are also being pinned on recycling technology to provide the answer. Chemical recycling, which involves breaking plastic up through, for example, pyrolysis, so new products can be manufactured, has received a lot of attention despite the exact environmental benefits remaining unclear. “This technology could be the final piece of the jigsaw for the UK plastic recycling industry,” says Sarah Bradbury, director of quality at Tesco, which is collecting hard-to-recycle plastics at some stores for recycling back into oil.

Sainsbury’s has just revealed an even more intriguing approach: pre-cycling allows its shoppers to remove unwanted primary and secondary packaging in store and leave it for recycling. It’s convenient for customers and could produce a remarkably clean waste stream.

Resource protection

With pressure to increase recycled content growing, the desire of businesses to control material flows will only intensify. Some manufacturers are already struggling to find enough recycled material to meet their needs. “We can’t get hold of enough recycled PET (rPET) and at the same time retailers and brands have made bold commitments to increase their use of rPET,” says Edwards at Klöckner Pentaplast.

As a consequence, some food companies are looking at innovative new partnership models to ensure they don’t fall short of their new commitments. Rabobank has already identified a number of “marriages” between players in the supply chain. The trend really took off in Europe in 2018, says Hansen, with a series of acquisitions, semi-investments, partnerships, long-term contracts, or loans. Coca-Cola, for example, extended a loan to Dutch firm Ioniqa to help it develop technology to produce high-grade rPET from hard-to-recycle PET waste.

Ingka Group, which owns Ikea, has invested in Umincorp, the Dutch firm that has developed Magnetic Density Separation (MDS) technology that allows mixed plastic streams to be recycled directly into separated polymer groups.

Companies are also trying to simplify the variety of different plastics they use by turning to a few preferred polymers. Wrap data shows that three polymers – PET, HDPE and PP – make up the lion’s share (72%) of plastic packaging collected from households. “Standardising polymers used in packaging potentially would help sorters and reprocessors by providing a more consistent input material and would enable a more consistent recycling message to be used for consumers and householders,” it noted in a report published in October 2018.

There is also huge investment going into alternatives to PET, most notably PEF, or polyethylene furanoate – a 100% bio-based polymer that can be recycled using the same process as PET. It represents the “first example of a polymer that’s better than the petroleum-based ones”, according to Tom van Aken, CEO at Avantium, which has developed the technology. Stronger and thinner than its oil-based cousin, van Aken has said PEF also has improved barrier properties so the shelf-life of products can be extended.

Much is expected of bio-based packaging, with Europe a major hub for research and development (like the UK, the EU has also published a new Bioeconomy Strategy). Globally, bioplastic production reached 2.11 million tonnes in 2018, and 65% of this was for packaging, according to the European Bioplastics trade body. This required just 0.016% of agricultural land. EMF has estimated that “drop ins” – identical, renewably sourced counterparts to fossil-based plastics that can be used seamlessly in the current value chain – could replace 60% of the plastics used for packaging today, providing the impacts on land use and biodiversity are fully assessed across the entire product lifecycle.

But although such materials may displace fossil fuel-based packaging, they will do little to stymie demand for single-use materials. “We need to go hard on elimination and reuse models,” says Sander Defruyt, who leads the EMF’s New Plastics Economy initiative.

Recycled content: will brands rise to the challenge?

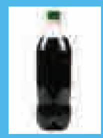
PET BOTTLES

2018	20%
2022	38%
2025	55%

MILK BOTTLES

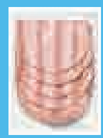
2018	30%
2022	38%
2025	45%

PE BOTTLES



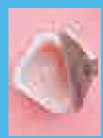
2018	15%
2022	22%
2025	30%

PET TRAYS



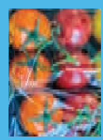
2018	30%
2022	42%
2025	55%

PP POTS, TUBS & TRAYS



2018	0%
2022	10%
2025	20%

PE FILMS



2018	0%
2022	10%
2025	18%

Source: Wrap, 2018

"Simple economics show some products will be priced out of the market whilst others will thrive."

Tony Breton, market specialist, Novamont

A refillable revolution
A smattering of reuse trials are already up and running, most notably Loop – which counts Nestlé, PepsiCo, Unilever, Mars, Coca-Cola, Mondelez, Danone and Tesco among its partners. The system, created by Terracycle, is simple: products are delivered to consumers in specially designed packaging that can be used over and over again; empties are collected, washed, refilled and restocked. "This shifts who owns the packaging," explains Terracycle Europe's head of communications Stephen Clarke.

Coca-Cola European Partners (CCEP), meanwhile, has piloted an innovative project in partnership with the University of Reading as part of efforts to reduce the 650,000 plastic drinks bottles used across the university's campuses every year. The scheme, which was trialled over the course of the 2017 autumn term, encourages users to purchase their own customisable bottle containing a microchip that enables customers to pre-pay for access to over 100 drinks via smart fountain dispensers.

Refill and reuse systems hold significant potential to reduce the industry's reliance on disposable packaging, but businesses looking to implement such systems should expect to encounter challenges, not least when it comes to changing the deep-rooted habits of consumers who have been conditioned to favour convenience and choice. What's more, they still see recycling as more important than reuse (30% versus 10% according to our survey).

The trick, says EMF's Defruyt, is to offer reuse models in which consumers don't sacrifice convenience. Better still is when convenience is enhanced through personalisation, for example, or automatic ordering when supplies are low, thereby reinforcing brand loyalty.

Clarke admits there won't be any profit coming out of the Loop trials, but if they work and are scaled up, "that's where the real value will be".

But is there really money to be made in reduction? In the short term almost certainly not, but in the long term both the economics and ethics stack up to create a compelling business case in the view of Novamont's Breton: "Reducing consumption of plastic in packaging is not in the general interest of retailers within the supply systems they now rely on and consumers expect. However, it is increasingly recognised that, as part of our need to reduce carbon emissions, all the systems that deliver 'normality' today will need to change."

Breton argues we need to get to a point in the future where all products are considered across their entire lifecycle and costed appropriately. "Simple economics show some products will be priced out of the market whilst others will thrive. Bring those costs into play and reuse and refill become both profitable and the societal norms."

Action Points from PwC

- Prepare for a period of divergence as different types of product are best suited to different types of material or format. There is unlikely to be a universal solution to the question of sustainable packaging.
- There will be opportunities for new types of product or modes of consumption as consumer preferences and policies change. Make sure your innovation programme includes development across materials, formats and circular systems.
- Build an understanding of what sustainable plastics look like in the short, medium and long term. This is likely to focus on recycling as a first step before evolving to incorporate greater use of other non-fossil fuel based sources.

Packaging in a circular economy

Conclusion

Time for the sector to take a deep breath

The journey to a sustainable packaging future will be long with no quick fixes. Businesses will need to rethink the role of packaging across its entire lifecycle and put responsible reduction at the heart of their strategies.

Public interest in plastic has never been higher – shoppers have dramatically changed the way they shop. Retailers have had to react: stripping out unnecessary packaging; switching to different materials; and, in some cases, buying into new recycling technologies to secure supplies of more recycled content as industry commitments and Pigouvian policies kick in. A much-needed overhaul of the UK's waste policy is underway, and the packaging value chain needs to prepare for additional costs.

To suggest this has created challenges would be putting it mildly. Consumers are confused about what constitutes the most sustainable option and there are concerns too that some grocery businesses have made knee-jerk changes that could result in unintended consequences – both economic and environmental. It is time to take a breath.

Indeed, this whitepaper has clearly demonstrated the need for better understanding of the impact of all packaging (that is, not just plastic). A straight comparison of carbon or recycling rates is not enough, whilst evidence from existing life cycle analyses is sparse and often contradictory.

So, which way do businesses turn? A universal set of whole-system performance metrics for packaging sustainability would help, encompassing not just carbon, but other key indicators such as land use, durability, recoverability and cost.

> Consumers are expressing a clear sentiment that they want less packaging of all types – not just plastic

It is unlikely that a silver bullet exists. The grocery sector will therefore look to government to set the policy landscape for the next five, 10 and ideally 20 years with consistent polices and investment in infrastructure that unleashes the potential of nascent markets such as compostables.

There is no quick fix, especially if the sector is to effectively decouple plastic production from finite resources and reduce reliance on single-use packaging of all types. A willingness to collaborate and seek advice from experts within the supply chain and beyond will be necessary.

Reducing consumption might appear anathema to food companies – today's industry has been built on the backbone of packaging and the provision of choice and convenience. Yet consumers are expressing a clear sentiment that they want less packaging of all types – not just plastic.

Looking forwards, businesses will need to rethink the function and value of packaging across its entire lifecycle. It is highly likely plastic will retain an important role in the supply chains of the future when used responsibly as part of DRS and refillable systems, but at the same time pressure to remove it wherever possible will continue to grow.

For businesses, footing the bill for managing and recycling their packaging is a necessary price to pay as we set about the transition to a more circular system where materials are valued throughout their lifecycle, product integrity is assured, and zero packaging ends up polluting the environment.

This journey will be long and at times painful. Grocery businesses know it's a journey they have to take.

William Reed
INFORMING BUSINESS GROWTH