

# Transforming the supermarket aisle



## How to replace problem plastic today

A report by DS Smith and White Space



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## Foreword



The world is changing and the role of packaging in our everyday lives has never been more relevant.

We see it across the value chain, from e-commerce, to industry and the way we shop for food and other everyday essentials. Major systemic change is coupled with concerns about waste as we see a shift to more considerate consumption, with consumers acting upon growing concerns about our environment.

### Packaging must adapt to these global trends.

Over the past two years, we have seen a wave of global brands, retailers and manufacturers set targets for 100 per cent reusable, recyclable or compostable packaging by 2025. And now the stage is set for industry to deliver on these promises.

Meanwhile, consumers have never been more supportive of the sustainability agenda, embracing the need to make positive changes where possible. With 20 million tonnes of plastic packaging produced in Europe alone, we think there is an opportunity for change.

One of the ways in which we can make an immediate difference is in the supermarket aisle where there are easily replaceable alternatives for much of the plastic packaging currently on shelves. In fact, billions of units of plastic could be replaced in the next five years.

At DS Smith, we create and deliver innovative, sustainable, packaging solutions that consider the entire supply cycle. These solutions ensure sustainable growth – for our customers, our people and our shareholders, but ultimately, for our environment.

By applying innovation and creativity, and taking a whole systems approach, we have a huge opportunity to redesign our economy so that it can work in the long term.

This is why we are redefining packaging for a changing world.

Miles Roberts  
Group CEO of DS Smith

# 20 million tonnes of context

Over 20 million tonnes of plastic packaging is produced in Europe each year<sup>1</sup> and despite the public's increasing willingness to reduce their plastic consumption, a huge amount is still polluting our oceans or sent to landfill.

Rolph Payet, Executive Secretary (United Nations Environment Program), Basel, Rotterdam & Stockholm Conventions recently compared plastic pollution to an "epidemic", with an estimated 100 million tonnes of plastic now found in the oceans, 80 to 90 per cent of which comes from land-based sources<sup>2</sup>. A further 8 million tonnes of plastic waste enters our oceans each year<sup>3</sup>.

Due to the lightweight properties of plastic, and the low price of manufacture, this material has proliferated in the single-use and disposable segments where price points are crunched. Increasing the currently low levels of recycling will not solve the plastics issue as it stands today. We must also consider three key areas within this system: production, usage and end of life.

If we take production first. Researchers at UC Santa Barbara have determined the extent to which plastic contributes to climate change<sup>4</sup>. And we must consider within the life cycle of plastics, that most plastic resins come from petroleum and

fossil fuels, which requires extraction and distillation. True of all materials, the processes required to produce a final product and transport it to market create greenhouse gases<sup>5</sup>.

However, the way we use plastics is changing. From campaigns and legislation against microplastics to evidence of the great Pacific garbage patch, consumer awareness is growing about the impact plastic is having on the world's oceans. Consumers are trying to reduce their plastic waste; and suggest they are willing to pay a premium for this, in fact 80 per cent of consumers in the UK are trying to reduce their plastic waste<sup>6</sup>.

**"There's a lot of confusion about where packaging goes, and the real challenge is making sure packaging is disposed of through the right system"**

New Product Development Director, leading NGO.

1 PlasticsEurope - The facts 2018

2 UN Environment, May 2019

3 Jambeck et al. Science

4 UC Santa Barbara

5 Nature Climate Change

6 YouGov Poll, April 2019

End of life can be viewed as about both waste and recycling. Plastic waste is now entering the natural environment at an alarming rate. As the Ellen MacArthur Foundation has noted, there will be more plastic in the sea than fish by 2050. However, it is not just its prevalence that is the issue, it is the end of life treatment. The waste hierarchy is a good guide here. While growing, there is limited reuse of plastics. In terms of recycling, just 42 per cent of all plastic waste is collected for recycling<sup>7</sup> and recycling rates by country vary significantly due to a lack of capacity, technology of financial resources to treat the waste, which can lead to it being exported instead.

Due to the fact that plastic doesn't biodegrade, it will remain in the environment for hundreds of years. As a result, there is now evidence that it has entered food chains and it is causing huge damage to marine ecosystems, and even human health<sup>8</sup>. At the top of the waste hierarchy sits 'reduction'.

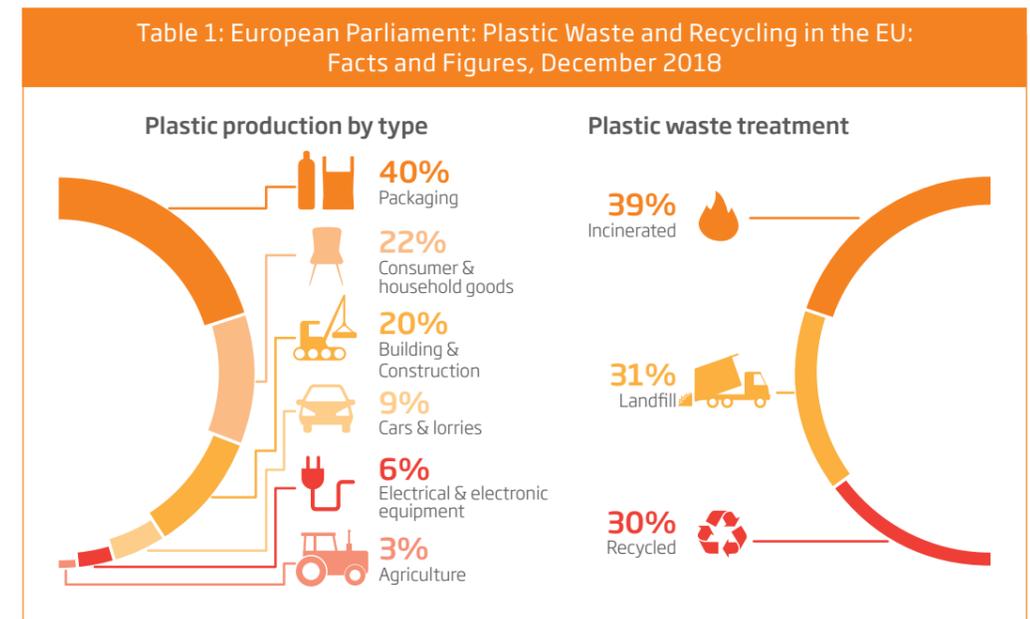
**"An uncomfortable truth is that we send millions of tonnes of waste to be recycled in countries who singularly do not have the infrastructure to cope. That is now over."**

Chief Executive, leading NGO

The low share of plastic recycling in the EU means big losses for the economy as well as for the environment. It is estimated that 95 per cent of the value of plastic packaging material is lost to the economy after a short first-use cycle<sup>9</sup>.

Meanwhile each year, the production and incineration of plastic emits about 400 million tonnes of CO<sub>2</sub> globally, a part of which could be avoided through better recycling<sup>10</sup>.

And researchers at UC Santa Barbara expect this number to grow. They project the global demand for plastics will increase by some 22 per cent over the next five years. On the current course, emissions from plastics will reach 17 per cent of the global carbon budget by 2050<sup>11</sup>.



7 Eurostat 'Packaging waste by waste management operations and waste flow' 2016 data

8 2019 Tearfund Consortium, No Time to Waste: Tackling the Plastic Pollution Crisis Before It's Too Late

9 European Parliament, Plastic Waste and Recycling in the EU: Facts and Figures, December 2018

10 European Parliament, Plastic Waste and Recycling in the EU: Facts and Figures, December 2018

11 Science Daily, April 2019

## How do we tackle plastic...

There are key ways to reduce the plastic waste problem: reuse, reduce, recycle & replace. To meet the over-arching targets detailed in commitments like the WRAP Plastics Pact or the EU Plastics Strategy, the problem needs to be broken down into actionable parts.

To tackle the plastic waste crisis, we should consider reducing single-use packaging, removing unnecessary packaging, enabling the re-use of packaging and adapting business models to create a circular economy rather than a linear economy.

**"We have to reduce packaging levels, starting with over-packaging and ridiculous packaging which has to go immediately, but we have to be careful we don't create other issues as a result"**

CEO & Founder, leading NGO

**"A good first step is moving to more recyclable materials, but recycling is not the answer - we need to reduce our use of fossil fuels and there are major concerns about the plastic recycling infrastructure"**

Research Manager, leading NGO

### Improving plastic recycling

Innovation and continued product investment is critical to the design of packaging which is more recyclable, and fundamental to this is the use of more recycled content in packaging. There is significant consumer confusion about how to recycle materials and so it is imperative that European governments take further action over how to correctly dispose of plastics and invest in improvements to the plastic recycling infrastructure.

### Replacing with alternatives

Plastic has long been a solution for packaging and it will continue to have an important role to play. However, industry must continue to look at more easily recycled alternatives with better recycling infrastructure, such as corrugated packaging, which on average contains 88 per cent recycled content<sup>12</sup>. More than this, work needs to be done to develop alternative new materials, ones that are made from renewable materials or that are truly compostable or bio-degradable.

**"We have not been successful at recycling. After 40 years of trying, we have not been able to make it work. It needs a systemic change."**

Ellen MacArthur, Founder of the Ellen MacArthur Foundation

**"Alternative materials need to be developed alongside removing packaging, and cardboard is a much better alternative to plastic"**

CEO & Founder, leading NGO



<sup>12</sup> Confederation of Paper Industries

# The plastic reduction agenda

Over 80 per cent of industry leaders interviewed for this study say reducing plastics is a top packaging sustainability priority. However, most also have several aims for their packaging sustainability agenda and it is a delicate balance to achieve all of these.

**“Overall the sentiment is that plastics is bad, however, the CO<sub>2</sub> released by other materials and the carbon footprint associated is a serious consideration”**

Nordic packaging and facilities manager

**“Plastic sticks around a lot more than cardboard, which breaks down quickly, and that is what causes a lot of end of life issues with plastic”**

Research Manager, leading NGO

**“Certainly, plastic reduction is a top priority for us at the moment, as it is for all retailers”**

Group Packaging Manager at leading UK supermarket

## Key priority areas for industry and NGOs include:

**80 per cent** of interviewees identified addressing single use plastics as a top priority for improving packaging sustainability

**Over 80 per cent** of interviewees identified reducing plastics as a top priority for improving packaging sustainability

**Over 90 per cent** of interviewees believe that non-plastic materials are part of the solution to reducing single use plastic<sup>13</sup>

There can be conflicting priorities for those seeking more sustainable packaging, often leading to paralysis when it is unclear which is the better solution.

The CO<sub>2</sub> impact of food waste, for example, can be greater than that of plastic. Zero Waste Scotland wants to increase awareness of the fact that binning cold leftovers and other wasted food does more to drive climate change than the better-known environmental problem of plastic<sup>14</sup>.

<sup>13</sup> White Space Primary Research

<sup>14</sup> Zero Waste Scotland, Food Waste Worse Than Plastic for Climate Change, May 2019

The general case for replacing plastics with corrugated packaging in supermarkets is driven by two key factors: Sustainability and its rigidity and strength.

The recycling rate of ‘paper and cardboard’ packaging in the EU is double that for plastic packaging (85 per cent vs. 42 per cent)<sup>15</sup>: Consumers across Europe know what to do with corrugate, meaning recyclable material is more likely to be put into recycling streams. Corrugate can match and improve on the structural benefits of plastics.

Innovative manufacturers like DS Smith within the corrugated packaging industry can leverage clever engineering to create additional transport, logistical and other practical benefits and savings. There is much that can be done with the design of corrugate to create added value and meet bespoke needs. Meanwhile, high quality print is possible on corrugate, improving the ability to deliver brand and other important messages to consumers.

**“People understand corrugate and they know how to recycle it - that can be a real benefit in comparison to plastic”**

Packaging Technologist, leading supermarket

**“Plastic packaging is often used where there is a need around structure and strength. Corrugate is really well placed to replicate this and a lot of work goes into achieving this while minimising material usage”**

Design & Innovations Director, DS Smith

**“Consumers really like the design possibilities of corrugate and it also means you can convey more brand or product information”**

Packaging Technologist, leading supermarket



<sup>15</sup> Eurostat 'Packaging waste by waste management operations and waste flow' 2016 data

## Today's easy wins: Transforming the supermarket aisle

There are five distinct areas of the supermarket aisle where immediate action could be taken to replace plastic with fibre based alternatives. These changes would result in an estimated reduction of more than **1.5 million tonnes** of plastic per year or over **70 billion plastic units**, according to new research conducted in conjunction with White Space.

And it has significant benefits for the retail market, with Cartin Ondulé De France finding that customers spend more time looking at products and exploring a greater number of products when produce sits in corrugate trays<sup>16</sup>. Meanwhile, printability confers branding opportunities and the natural-looking aesthetics of corrugates are attractive to consumers.

It isn't just in store that retailers could benefit. Up to 10 per cent efficiency improvements on production lines are possible by using corrugate<sup>17</sup>. The manual nature of packing lines for some categories reduces the need for major new capex investment when replacing plastic with corrugate.



<sup>16</sup> Cartin Ondulé De France

<sup>17</sup> White Space Analysis



### Plastic Trays: Minimal barriers to replacement

Plastic shelf ready packaging which is used to display goods on shelves does not have the same consumer stigma as it is not taken home and consumers don't notice the sustainability impact. That's not to say it shouldn't be addressed.

Plastic trays on shelves have multiple, long-proven corrugate alternatives and represent a plastic category that could be entirely eliminated in the near term. In fact, corrugate shelf ready packaging is already widely used ahead of plastic in some product categories.

There are areas where single use plastic trays are still prevalent, and we estimate in the UK alone, yoghurt products use ~3,000 tonnes of plastic packaging equating to ~120 million trays<sup>18</sup>.

### Fresh Produce

Currently, plastic punnets are commonly used to package fresh produce across Europe. While non-plastic alternatives are beginning to be adopted, there is still a significant opportunity.

<sup>18</sup> White Space Analysis

**"Since we have replaced plastic with corrugate on some of our vegetable trays we have seen a sales boost. It's a more sustainable solution and it looks better on the shelf"**

Environment Manager, leading retailer

Alternatives such as corrugate punnets with plastic flow wraps to keep the items inside the box have been developed and barrier solutions will soon extend the material's capability beyond dry produce to include wet fruit and vegetables. And while all primary packaging could be removed, leaving the produce 'loose' can seriously increase food waste due to damage, excess handling and consumer behaviour. An increase in food waste would have a significant impact on carbon footprint and level of wasted resource.

**"Plastic Shelf Ready Packaging could be replaced. We're already doing a project looking at replacing more of our plastic SRP with corrugate. The additional branding opportunity this presents is really attractive"**

Group Packaging Manager, leading retailer

**“We looked into trialling loose produce however it was predicted to double our food waste which conflicts with our sustainability aims”**

Packaging Technologist, leading retailer

**“We switched from PPE to PET and now fibre-based punnets are the next frontier. Although it's in the very early stages, I expect there will be fibre-based punnets in Denmark within a year”**

Former Packaging & Facility Manager, leading food group

**“The consumer view in the Czech Republic is that if it's recyclable that's all that matters. This may not be correct, but education would be needed for consumers to pay more for non-plastic vs. recyclable plastic”**

Lead Packaging Manager, leading retailer HSE & Sustainability Director, leading food group

**“Significant investment in plastic alternatives only began a couple of years ago and I expect there to be a lot more investment in adoption in coming years. I'm already seeing fibre-based products being brought through but there needs to be a stronger focus on these alternatives”**

Environmental Manager, leading food manufacturer

**“Practically all of our bottles are shrink wrapped at some stage which I expect is typical of the soft drinks industry. On average this would be 1-2 grams of additional plastic per drinks unit”**

Packaging Technologist, leading drinks brand

Waitrose & Partners launched a corrugate punnet for Duchy Organic grapes in January 2019 “The switch to recyclable cardboard will save an initial 12 tonnes of plastic a year, with this figure set to rise with more grapes expected to make the change later in the year”<sup>19</sup>.

There is a growing body of evidence which shows that consumers will choose more sustainable options and pay more if needed:

- 50 per cent of UK consumers are willing to pay more for biodegradable packaging (YouGov Poll - April 2019)
- 81 per cent of UK consumers are focused on reducing plastic packaging purchases in fresh fruit and vegetables (YouGov Poll - April 2019)

#### Shrink wrap

Drinks manufacturers are actively looking to reduce plastic shrink wrap and future corrugate alternatives could be well placed to provide a solution.

Nearly all soft drinks units are shrink wrapped at one stage of their life, either as a tray or as a multipack. Most manufacturers are engaging in reducing plastic shrink wrap by using thinner plastic or looking at the recyclability of the materials used.

Meanwhile, non-plastic secondary beverage packaging solutions are in development, including those involving glue dots firmly holding beverages in a corrugate tray. Manufacturers are also actively considering non-plastic alternative solutions and corrugate and glue solutions are often seen as the ‘next generation’<sup>20</sup>.

19 Waitrose Press Release, January 2019

20 White Space Primary Research

#### Ready meals

Packaging needs are more complex in the ready-meal category, but change is already happening. Corrugate is well placed to capitalise on this trend.

The colouring in black plastic makes it very difficult to be sorted using existing technology and therefore is likely to landfilled or incinerated. Discussions around moving to clear plastics are positive, but there is an opportunity to use the appetite for change to go further. Alternative non-plastic solutions could retain visual benefits from black plastic.

UK, France and Germany account for over 70 per cent of ready-meal trays and the UK is responsible for over 900 million ready-meal trays in 2018 (over 40 per cent of total)<sup>21</sup>. Geographic concentration means that significant reduction can be made with fewer decision makers and more efficiently.

Ready meals are often supermarket branded and retailers have significant influence over which packaging materials are used. But this is a convenience-driven market rather than commodity market, which suggests consumers who are willing to pay for convenience may be willing to pay more for sustainability.

#### Meat, Cheese and Fish

Plastic replacement in the meat, cheese and fish categories isn't a current priority; but the scale of the problem requires a bold solution. Replacement is not yet high on the agenda of decision makers due to the investment costs and the current suitability of the plastic materials used.

Across Europe, we have a market set up to handle plastic, and switching materials could mean high levels of initial investment. However, this segment is too large to ignore and created over 900,000 tonnes of plastic packaging in 2018. Chilled processed meats, such as ham, alone generated 150,000 tonnes of plastic packaging<sup>22</sup>.

**“We want to reduce plastic as far as possible. With retailer buy-in it's feasible to remove 100 per cent of unnecessary single use plastic by 2025, of which shrink wrap is a significant contributor”**

Packaging Technologist, drinks manufacturer

**“We have already reduced shrink wrap weight as much as possible, we're now looking into a corrugate and glue solution mainly due to its branding opportunity”**

Packaging Technologist, leading drinks brand

**“With ready meals there's a higher retail price and margin and already a customer willingness to pay a premium for convenience”**

Former Purchasing Manager, leading retailer

**“Meat isn't a focus area for us because the plastic is already simple and recyclable”**

Environment Manager, leading retailer

21 White Space Analysis

22 White Space Strategy Analysis

# Realising the opportunity

There are a number of actions that will help drive these opportunities going forward and reduce the barriers to change. If we act now, we can reduce the amount of plastic on the supermarket shelves.

## Key barriers to replacement

Consumers are often unaware of the limitations around recyclable plastics e.g. limited infrastructure, limited ability to recycle multiple times. Yet legislation and incentives are often still geared towards improving plastic recyclability.

In some instances, the replacement agenda has become a distracting priority for retailers. Complex and fragmented supermarket, manufacturer and packaging markets across Europe can create difficulties in spreading innovations and our panel of industry experts pointed to confusion over what is the best alternative solution<sup>23</sup>.

Plastic alternatives must meet the same needs (e.g. shelf life, stability across temperatures, food safety) and create added benefits. Product categories like meat and ready meals are new areas for replacement innovation and with other areas seeing only early stages of adoption, the sales impact is less clear. Some product categories (e.g. meat) would require high levels of investment in production infrastructure too.

**“There can be a temptation from retailers to greenwash and focus on claims like ‘100 per cent’ recyclable, however if it’s not getting recycled there’s no sustainability benefit”**

HSE & Sustainability Director, international food group

## Key enablers to replacement

Consumers are proving willing to choose and suggest they will pay for more sustainable packaging and are likely to continue to do so. We believe the evidence base and commercial case will grow and become clearer. Further consumer and industry education is needed to highlight the practical limitations of sustainability claims and credentials such as ‘100 per cent recyclable plastic’ and ‘100 per cent compostable’.

‘Greenwashing’ must be avoided, which means that collaboration and dialogue between retailers and manufacturers and packaging companies will ensure best R&D solutions are pursued and could help create more value (e.g. around logistic improvements).

Legislation has a major impact on the economics of material choice and sustainability priorities. Further legislation is expected. For true sustainable packaging and plastics reduction to be achieved, decision-makers must have the bravery to lead the way (or commit resources into pushing cross-industry action and a focus on eco-design).

The plastic replacement agenda remains relatively new, so greater scale in plastic alternatives could drive efficiencies. Additional work critically assessing and reviewing the evidence base around plastic carbon footprint versus corrugate carbon footprint may further the case for plastic alternatives on sustainability grounds.

<sup>23</sup> White Space Strategy Primary Research

# Conclusion

There is no silver bullet to solve the problem of plastic in our society, but collaboration between packaging companies, retailers and manufacturers to drive forward sustainable packaging choices and achieve added benefits is a first step that the whole industry must move towards.

With so many organisations looking to replace plastics, our analysis of the supermarket aisle points to some very immediate solutions that could remove over 1.5 million tonnes of plastic or 70 billion units from the supermarket shelves of Europe each year. More than this, it provides the fibre-based industry with a potential market opportunity in excess of £5.7 billion<sup>24</sup>.

Further education to help consumers continue to make sustainable decisions and critically assess claims around plastic and sustainability is a job we must all step up to do and we look forward to working with industry and government to support this agenda.

## Why DS Smith?

DS Smith is actively working to reduce plastic packaging by innovating in sectors where fibre-based packaging can create real value. Due to its natural fibres, corrugated cardboard is highly circular and more importantly, due to consumer understanding, strong infrastructure and the suitability of this natural material (fibre can be recycled over 7x) it is the most recycled material in Europe. This means it does not have the same end-of-life issues as plastics.

This global packaging company is committed to sustainability and the following principles:

## It is a fibre-based packaging manufacture and recycler

- This gives DS Smith a truly circular business model, primarily creating recyclable packaging out of recycled material
- It is one of the largest recyclers in Europe, managing over 5 million tonnes of recyclable material per year

## Innovation & Sustainability

- Proven history of sustainability through innovation, including a response to coffee cup recycling
- Ambitious long-term sustainability targets

## The Power of Less

- Leaders in helping customers achieve ‘more from less’ - improving impact with reduced material usage

<sup>24</sup> White Space and DS Smith Analysis



It's time to replace plastic.  
Join the conversation.

**#RedefiningPackaging**

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