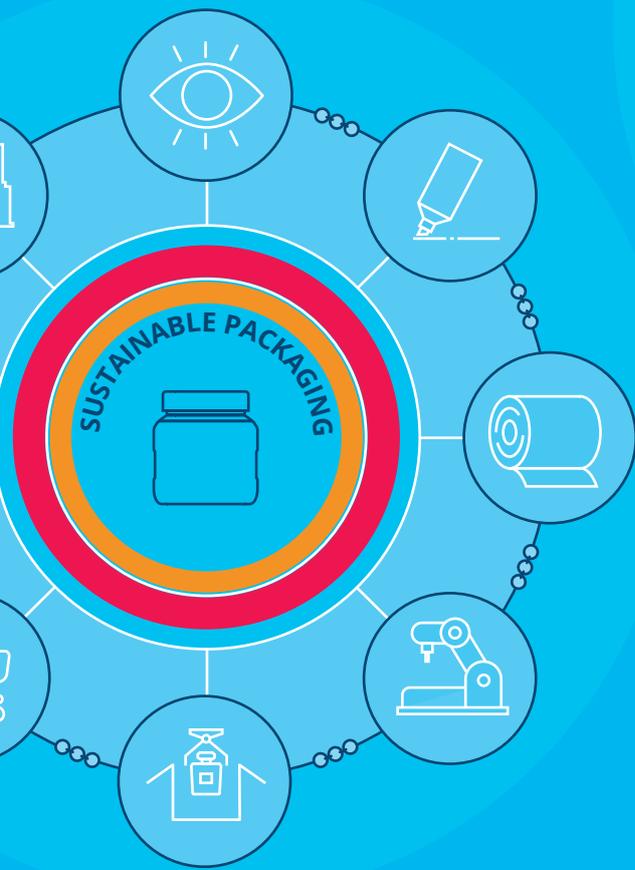
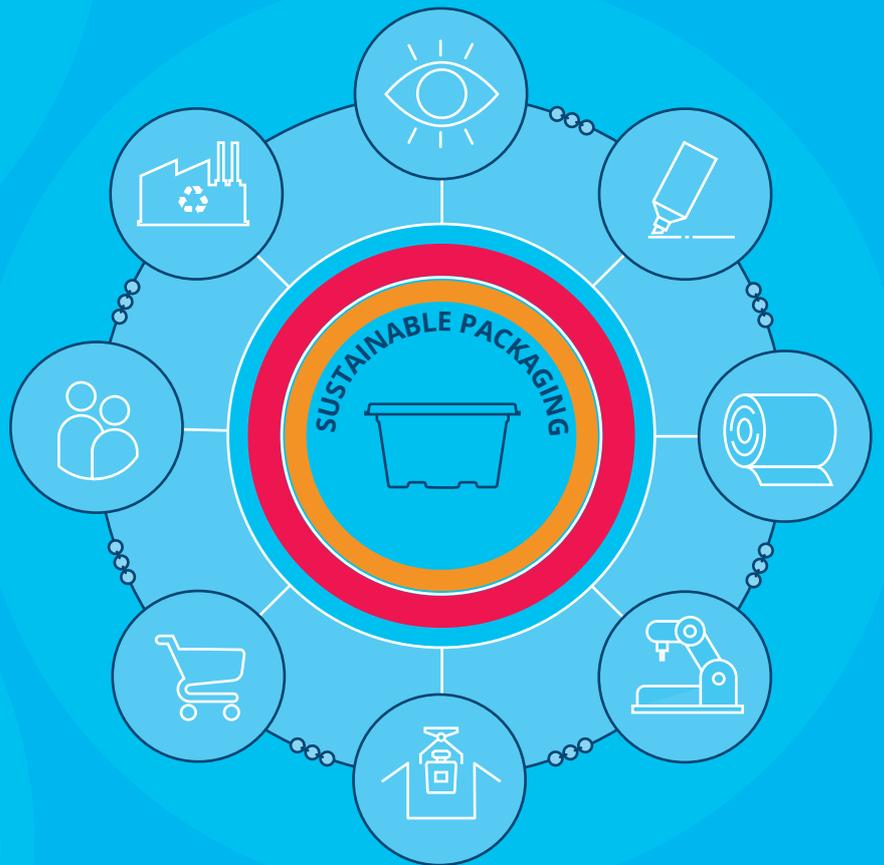


# Sustainable Design for Plastic Packaging

BPF Workshop Output:  
Supply Chain Views



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# Executive summary

## How can the plastics supply chain work together to create more sustainable plastic packaging?

This report seeks to investigate how sustainable packaging design operates within the supply chain to help answer that question. It's intended to generate ideas and elicit debate. The views expressed herein reflect the output of a workshop held in November 2019. It is not a BPF policy document. It represents a range of views from brands, retailers, packaging manufacturers, NGOs, designers, academics and recyclers.

Delegates were asked to identify areas of focus to improve sustainable packaging design. Their responses may be summarised as: following good design practice, improving stakeholder communication, appreciating public perception, improving infrastructure, gaining clear and effective legislation, aligning KPIs, and answering the question "what is sustainability?"

When considering solutions, delegates identified several important areas:

- Promote best practice design principles more widely
- Agree standards on sustainability metrics and tools
- Government investment, including in the UK's recycling and collection infrastructure
- Supply chain to deliver messages effectively to government with a unified approach
- Plan ahead for investments
- Continued board-level commitment to sustainability
- Educate the public to ensure a broader understanding of sustainability
- Form groups, align goals, and take action on important areas

Stakeholders are keen to drive change, and the BPF is considering the following workstreams:

- Exploring tools, guides and ways to standardise best practice in sustainable design
- Working to establish definitions and metrics that can be universally accepted
- Assessing requirements of the UK's plastic recycling infrastructure
- Investigating food contact materials and legislative changes
- Promoting life cycle thinking, including resource efficiency

The BPF believes great work is being accomplished across the value chain, and looks forward to continuing work in this area to help achieve the circular economy for plastic packaging.

### Background

This report is based on a workshop event<sup>1</sup> held at the British Plastics Federation (BPF) offices in London on 25 November 2019, attended by professionals representing the plastics supply chain. It also draws on informal research conducted by BPF staff, and builds off previous work with stakeholders including a series of Marine Litter Platform events held in 2018.

### What is the plastics packaging supply chain?

The supply chain includes all organisations involved in producing plastic packaging including brands, retailers, material suppliers, manufacturers, distributors, and waste processors.

<sup>1</sup> This document does not necessarily reflect the view of the British Plastics Federation, its members, or all the attendees of the workshop; it reflects a range of views, and views do vary across the supply chain.

# BPF current and potential future workstreams

The BPF looks forward to continued collaboration with the supply chain in the development of sustainable plastic design initiatives. Alongside the November workshop of which this report is the output, the BPF is engaged in sustainable plastic design initiatives in other areas, including:

## BPF work completed to date

				
<p><b>Research</b></p> <p>How does sustainable design work within the supply chain?</p>	<p><b>RECOUP &amp; BPF Recyclability By Design</b></p> <p>Printed guide with technical specifications for plastic packaging recyclability</p>	<p><b>PackScore (Version 1)</b></p> <p>Online simple-to-use eco-design tool <a href="http://www.PackScore.co.uk">www.PackScore.co.uk</a></p>	<p><b>Sustainable Design Workshop</b></p> <p>Feedback and ideas from the supply chain</p>	<p><b>Current report</b></p> <p>Exploring sustainable plastic packaging design in the supply chain</p>

For more information visit: [bpf.co.uk/ecodesign](http://bpf.co.uk/ecodesign)

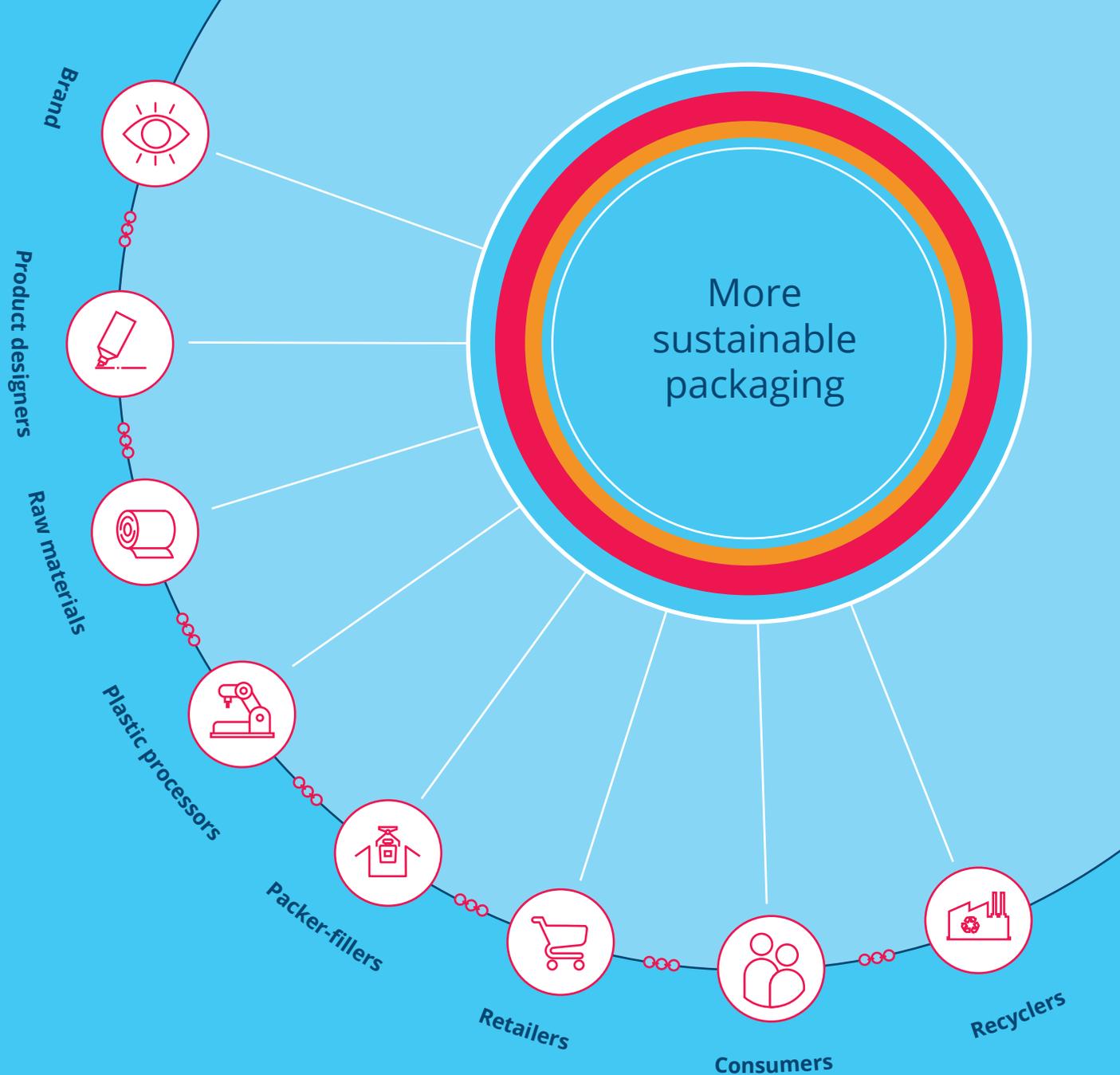
## Potential workstreams

				
<p><b>Eco-tool finder</b></p> <p>Online searchable database of eco-design tools and LCAs</p>	<p><b>PackScore (Version 2)</b></p> <p>Considering the integration of flexibles and a possible 'carbon calculator'</p>	<p><b>eLearning</b></p> <p>Considering sustainable plastic packaging design training</p>	<p><b>Workshops</b></p> <p>Workshop on issues, such as resource efficiency, reuse, definitions, etc.</p>	<p><b>???</b></p> <p>Other areas to be decided as policy developments take shape</p>

### What is sustainable packaging design?

In practice, sustainable packaging design often means designing for one or more of the following:

- Ease of recyclability
- Resource efficiency
- Inclusion of recycled content
- Reuse
- Environmentally beneficial consumer behaviour (e.g. portion control)



### What are we trying to do?

How can the plastic supply chain work together more effectively to ensure we create sustainable plastic packaging products?

The purpose of this report is to pose this question and start to find answers.

This report reflects ideas and opinions rather than representing the position of any one organisation.

### Why is the supply chain important?

Within this report, the term 'supply chain' includes raw material suppliers, plastic processors, product designers, packer-fillers, brands, retailers, consultants, waste processors and recyclers though other organisations may sometimes be involved.

These businesses are involved in the supply and processing of materials, their transport and distribution, and in collecting, sorting and recycling or disposing of used products.

When a new product is launched, it usually requires several companies working together. Therefore, creating sustainable packaging depends on decisions made by companies spanning this supply chain.

# What challenges does the supply chain experience?

To help the UK move towards a circular economy for plastic packaging, workshop attendees identified critical areas to address:

## Answering “what is sustainability?”

The supply chain sees value in widely agreed definitions on concepts like ‘sustainability’, ‘recyclability’ and ‘reuse’, and standard ways to measure whether something is sustainable.

## Gaining certainty on effective legislation

The uncertainty surrounding future legislation is high up on the supply chain’s agenda. Without knowing what future regulations may come into force, it is difficult to plan ahead. There is currently interest regarding what the future holds for the regulation of food contact materials.

## Improving infrastructure

The supply chain believes adequate infrastructure is lacking: current collection systems (including provisions for collecting used materials discarded when people are ‘on-the-go’) are not doing their job as effectively as they could, there is a lack of re-use initiatives and, critically, too few recycling facilities in the UK to process waste plastic. It is felt there is a general lack of investment and a lack of consistency in approach.

## Previous investment

Change incurs costs in both money and staff time. Many facilities have invested large amounts of money in specialised equipment that lasts for decades. Switching materials or significantly altering designs could render equipment obsolete, potentially requiring millions of pounds in investment within a single site. It is hard for companies to know how to invest for the future wisely, especially with ongoing uncertainty in the market and no obvious way of substituting particular materials without some form of environmental trade-off (e.g. increased greenhouse gas emissions, or increased energy or water use).

## Stakeholder communication

Achieving the circular economy will require clear communication between stakeholders. The variety of stakeholders is sometimes an issue. There are

sometimes conflicts of interest, and a need for industry- wide conversations and agreement on goals and ways of working. The difficulty of involving multiple stakeholders in the development of a product is sometimes an obstacle to delivering more sustainable designs.

## Aligning KPIs

Brand differentiation and price are two real-world considerations for a company, for example. Even within companies, KPIs can compete across departments. A particular department in a company may be driving a lowest-cost approach to help them meet particular financial targets, for example. Such conflicts can hinder beneficial innovation. Finding ways to embed sustainability as a core and overarching value at the very top of a company is therefore important. Long-term environmental and PR considerations need to be incorporated into strategic planning activities and balanced against other traditional annual targets.

## Following good design practice

Failing to follow good design practice remains an issue. Designs may not optimise material use, may ignore the potential for designing for reuse, or may not be easy to recycle. There are also legacy items in need of updating.

## Public perception

The public are not always well informed about which products are more sustainable. They have often been fed an ‘all plastic is bad’ message, which puts unhelpful pressure on the supply chain to create non-plastic solutions that may indeed be significantly worse for the planet. Public perception and a lack of understanding remain an overriding issue, as do confusing and poorly understood symbols on labels.

## Sustainable design issues across the supply chain



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### Brands

Brands compete to stand out as attractive, distinct, and memorable. It can therefore be difficult to justify simplifying or standardising their products. The head of brand is likely to care about aesthetics, perhaps even including the weight and 'feel' of the final product. Departments within a brand may have conflicting KPIs, competing when it comes to sustainability, brand features, logistics, product protection and costs.

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### Retailers

Retailers face similar issues to brands. Retailers are also under increased pressure to show that they are reducing single-use plastic. They have pressure to avoid negative PR, and struggle to explain the full picture of sustainability to their customers. Although research says that people may be more willing to pay for more 'sustainable' options, practice shows that this is not always the case.

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### Manufacturers

Manufacturers may have the technical knowledge to understand the most resource-efficient solution but might not be able to explain this effectively to their client (typically a brand or a retailer in this case). New tooling for machines can be very expensive and lead times can be long, so there is rarely an instant fix. Manufacturers must generally work to client requirements, so have limited scope to influence many of the decisions that ultimately determine how sustainable or recyclable a product is.

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### Designers

Designers may sometimes lack all the technical knowledge to challenge their client on sustainability or to implement a sustainable design strategy. Designers are instructed to follow marketing-led instructions, which may often be derived from research, focus groups, brand strategy etc.

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### Legislators

Legislators face complex system-wide issues with many interacting parts, including conflicting views by different stakeholders. They are caught between public opinion and industry concerns and must overcome challenges to develop long-term effective policies. They must also avoid the danger of unintended consequences.

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### Packer-fillers

Changing lines for different pack formats is expensive and time consuming. Product protection is paramount and any compromise on this for environmental reasons needs to ensure integrity and safety are paramount.

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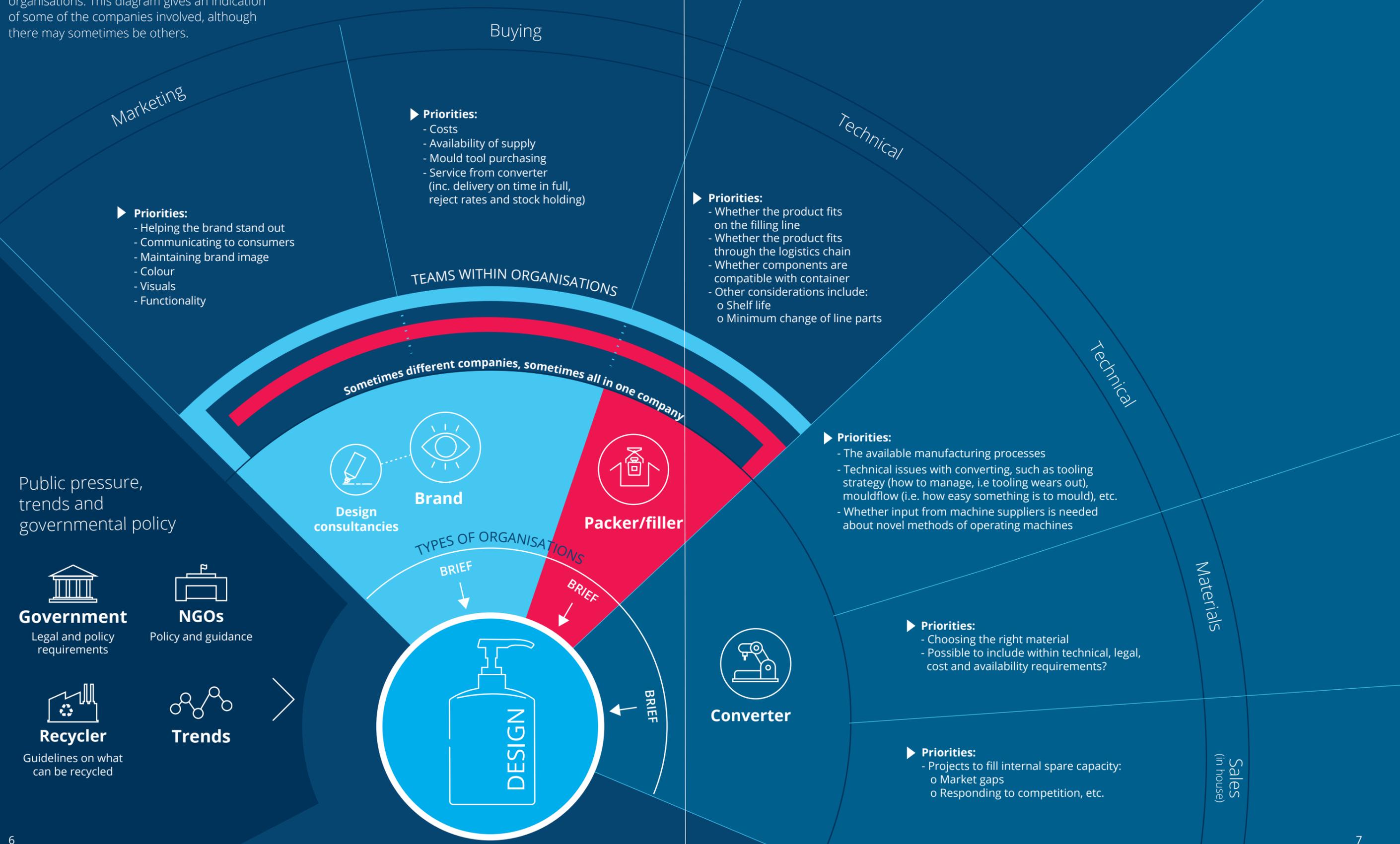


### Waste processors

Waste processors struggle with the quality and consistency of the waste plastic that they receive. Complicated packaging items that are not designed to be easy to recycle cause issues.

# Who is involved in the design of plastic products?

The design of a new product may involve multiple organisations. This diagram gives an indication of some of the companies involved, although there may sometimes be others.



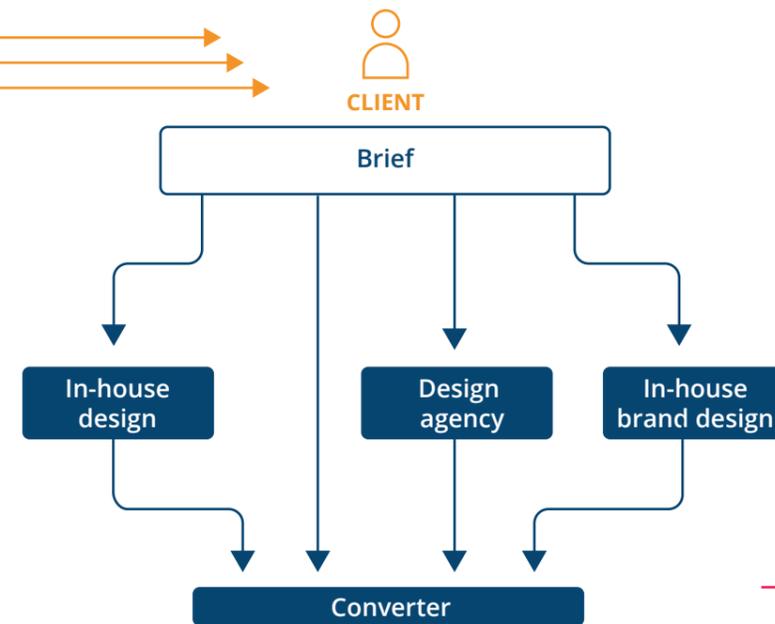
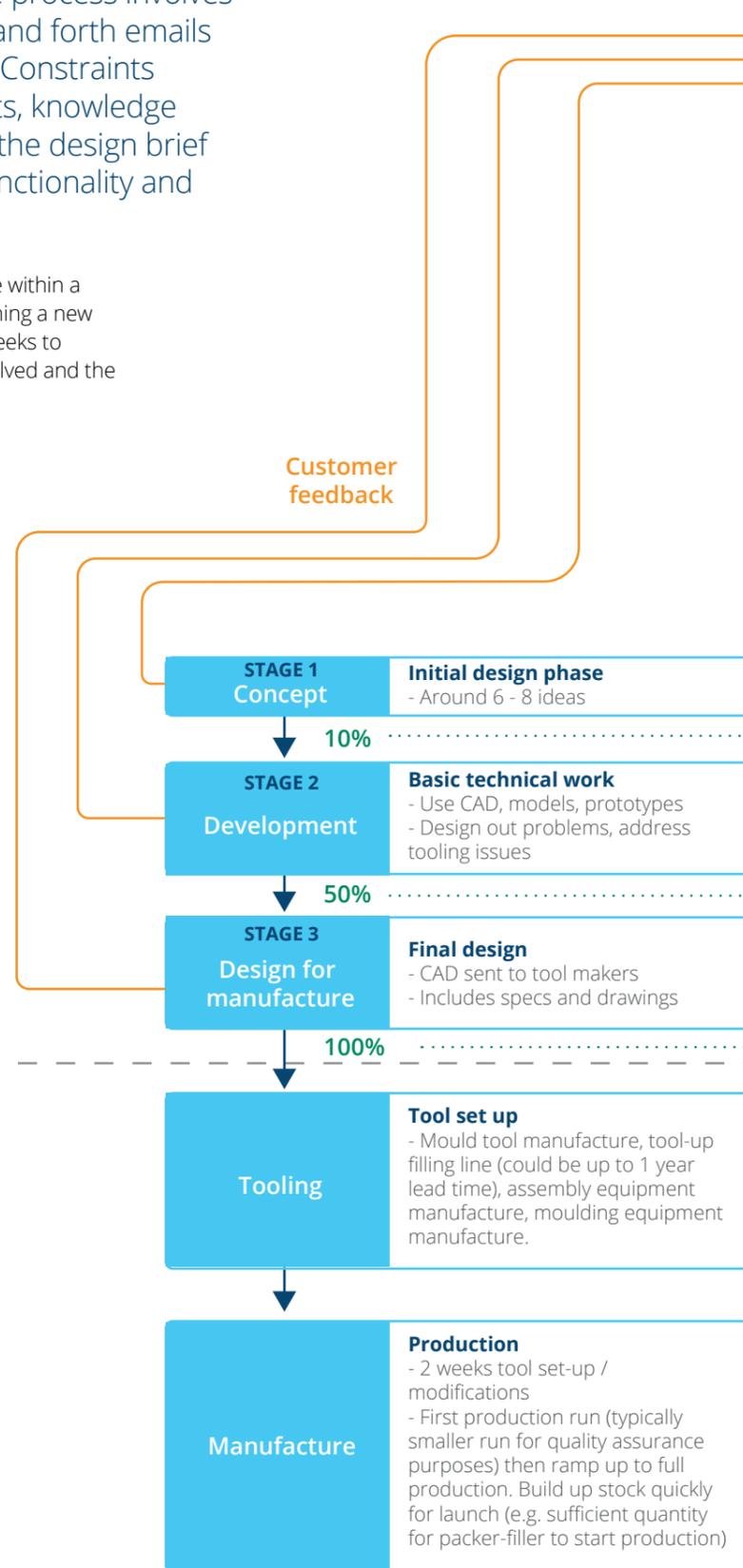
# What is the process involved in design?

As product designs progress, the process involves meetings, discussions and back and forth emails within and across organisations. Constraints such as time, brand requirements, knowledge and costs must be factored into the design brief without limiting the packaging functionality and technical performance.

Though completing the steps might be possible within a couple of weeks, in reality the process of designing a new product can take anywhere from a matter of weeks to several years because of the organisations involved and the process of feedback and decision making.

Here is an example of the design process.

## Packaging design proceeds through distinct stages



**% of design projects that will make it through to next stage**  
 For example, it may sometimes be the case that roughly a third of products briefed may get through to the manufacture stage

**Total time 3 weeks - 3 years.**  
 Varies depending on complexity and depending on communication and decision making time.

**Each individual stage varies in time.**  
 Each stage shown here could be anywhere from a matter of days to several months depending on the complexity involved.

# What solutions does the supply chain see?

Members of the supply chain have different priorities and drivers. But when it comes to sustainability, there are shared challenges of making plastics packaging circular. It is felt that improvements should be sought in education, standards, legislation, definitions, consistency, collaboration and design.

As expected, within each area, views diverge a little on the details of what exactly should be done. Below, we present some ideas proposed by the supply chain.

## Use best practice principles

The widespread adoption of relevant design guidelines and tools can help with key design decisions. Considering standardising pack formats where it is possible to do so in order to improve recyclability as well as to create opportunities for reusable solutions.

## Government investment

Collection systems need to be standardised across the UK to ensure the consistent collection of all plastics for sorting and recycling. Reuse systems may need government investment to get them kickstarted. 'Pay as you throw' is an area that needs investigation. Incentives for companies to invest in the right kind of infrastructure, such as UK-based recycling facilities, need to be explored, as do ways in which the government could potentially encourage modifying or replacing existing equipment to accommodate future packaging designs that are easier to recycle. Any targeted taxes raised in this area need to be re-invested back into the system, so that funds are diverted to much needed innovation and infrastructure to enable more national recycling capability.

## Global standards

Standards need to be agreed at the highest levels in order to work effectively across borders and ensure stakeholders stick to the same, useful set of rules. This may include definitions of sustainability, recyclability and reuse.

## Continued board-level commitment to sustainability

Commitment from board level that sustainability is a priority is required. Each layer of management should integrate lowering environmental impacts as a critical KPI and work to reduce their conflict with other internal KPIs. Environmentally conscientious staff who are driven to make a positive change need support from the highest levels.

## Work together to educate the public

The public needs help to understand the full life cycle impact of a product to ensure they make informed decisions on the most environmentally friendly choice.

## Work together to push for better legislation

The supply chain should clarify its messages to government, and then work closer together to deliver them effectively.

## Plan ahead for investment

Once clarity regarding taxation and future Extended Producer Responsibilities (EPR) is achieved and a stable supply of recycled material is available, organisations will be in a better position to plan for key investments. The onus will then be on individual companies to ensure they make the necessary changes.



# Are there any principles for sustainable design?

During the 2019 BPF workshop on sustainable design, supply chain representatives identified and voted on sustainable design principles. Similar ideas were clustered together and results are shown below.

## Guiding principles as voted on at the BPF Ecodesign Workshop

The common themes that emerged can be summarised as:

### Simplify Design

When designing new packaging products:

- Make packaging designs simple
- Use materials that are widely recycled wherever possible
- Discourage unnecessary laminate structures
- Label appropriately without covering too much of the item
- Use easily separable components
- Minimise the use of strong colours
- Consider uniform packaging designs for product types

An excellent packaging case study is found in the HDPE milk bottle: a simple, standardised design that can be recycled back into itself. For more detailed guidelines, download the summary of *Recyclability By Design*,<sup>1</sup> which was published by the BPF in conjunction with RECOUP.

### Cross-Supply-Chain Support

Create systems that encourage sustainable decisions to be made. Collaborate to make these systems operate well.

### Minimise Environmental Impact

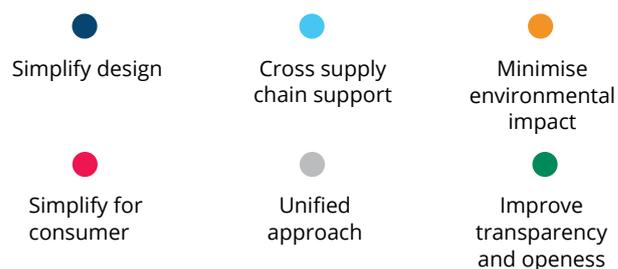
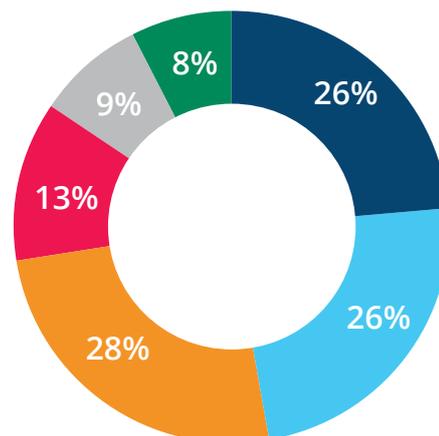
Care must be taken when attempting to minimise environmental impacts. Questions need to be asked like:

- What are the unintended consequences of a change in design? (e.g. damaged product or food waste)
- What is the best material for the application?
- Is packaging necessary for this product?
- How do we keep the materials in use?

### Simplify for Consumer

Consider the end user. How are they going to use and dispose of the product? How can we ensure we make their life easy? If we don't make it easy for consumers to act in a sustainable manner, then we may often fail at the last, important hurdle.

## Guiding Principles as Voted on at the BPF Eco-design Workshop



### Uniform Approach

The supply chain needs to understand what 'sustainability' means, with internationally agreed standards.

### Improve Transparency and Openness

Keep communication open and clear both within and across organisations. Concepts such as 'life cycle impacts' need to be widely understood by the public. Life cycle thinking should be the norm, and relevant information and evaluation tools should be appropriately disseminated.

<sup>1</sup> Guide can be accessed at [bpf.co.uk/eco-design](http://bpf.co.uk/eco-design)

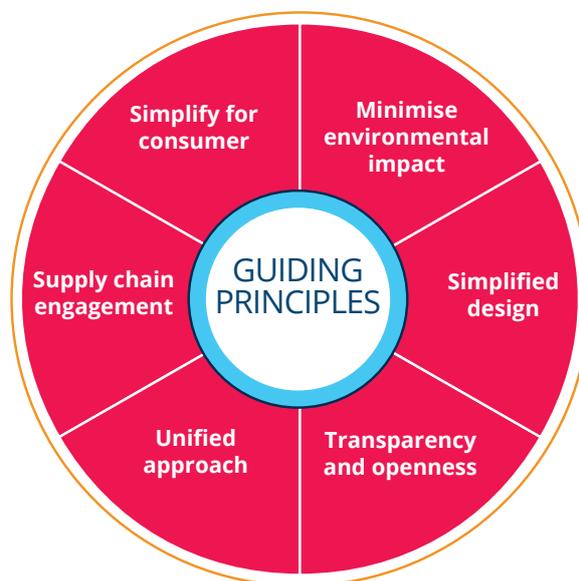
# Taking action: What to do next?

The plastics supply chain is keen to take action in order to work towards the circular economy and ensure plastic packaging products are created sustainably.

The sustainable design principles proposed herein can act as a guide in developing new products or processes. These principles may be phrased as questions to ask ourselves when developing new initiatives.

- Does this simplify life for the consumer?
- Are we minimising environmental impacts?
- Have we engaged the whole supply chain?
- Are we taking a unified approach?
- Are we being transparent and open?
- Have we simplified the design?

Such an approach may help stakeholders when developing new initiatives, in order to test and examine their ideas.



## Next steps

To work towards the circular economy, the supply chain has identified several areas where they feel improvement is required.

This includes agreed definitions, increased investment, a defined approach to sustainability, more effective education on what sustainability means, a wider adoption of best practice design principles, and closer alignment with one another.

Informed by input from stakeholders, the BPF has identified several workstreams that it intends to explore, with the support of others along the supply chain where required.

Progress will need cooperation, with stakeholders themselves determining the best courses of action, and the BPF intends to help facilitate this collaboration.

These suggested workstreams include:

- Promote use of eco-design guidance through guides, tools and/or training
- Promote life-cycle approaches to sustainable design
- Seek adoption of clear, useful definitions and metrics
- Assess the requirements of the UK's plastic recycling infrastructure
- Seek and promote clear guidance on food contact regulations and legislation

The supply chain is eager to continue the great strides already made in developing sustainable plastic packaging. The overriding message is that close collaboration is required on many fronts, and that we all have a conscientious role to play going forward.

Though the UK faces a great deal of uncertainty, not least where environmental legislation is concerned, there is a great willingness to work more sustainably. We hope this report and the action it leads to, including the workstreams above, can help in this regard.



