

# Plastic Waste

Written evidence submitted by Royal Society Chemistry  
(PW0056)

Written evidence submission to the House of Commons Environment, Food and Rural Affairs (Efra) Committee's inquiry on Plastic Waste.

September 2021

The Royal Society of Chemistry (RSC) welcomes the opportunity to respond to this consultation on plastic waste, a topic which is a key policy focus of ours. The UK has made progress in the past decade both through public understanding of plastic waste as an issue, and improved policy. The initiatives outlined in the Environment Bill will improve the rate of progress, however more is needed including a national recycling strategy to deal with the amount of plastic currently consumed and wasted.

The title of this inquiry references plastic waste as a whole, but the majority of the questions refer to plastic packaging specifically (in line with the government's current commitments). It is clear that single-use and other plastic packaging make up a large proportion of the market, but other, longer-use plastic products are also important to consider in terms of reusability and recyclability.

A number of recent RSC publications outline in more detail different aspects of the plastic waste problem, including:

- [The plastics system as a whole](#)
- [Compostable and biodegradable plastics](#)
- [Plastics with additives for degradation](#)
- [The future of recycling](#)
- [Mechanical recycling](#)
- [Chemical recycling](#)

## **1. What measures should the UK Government take to reduce the production and disposal of single-use plastics in England? Are the measures announced so far, including a ban on certain single-use plastics and a plastic packaging tax, sufficient?**

In order to move away from single-use as the default, there should be a focus on the redesign, reduction, and reuse of plastics and other materials in line with the resource hierarchy.

Policymakers and manufacturers should use sound scientific evidence and lifecycle analysis (LCA) to assess the total environmental impact of materials and product design choices across all stages, from manufacturing, transport and use, through to recycling and disposal. There is an urgent need for the broader environmental picture, including LCA, to be consistently considered in policy decisions on material choices and plastics. Increased investment also is needed into LCA research, including database technologies, to develop more robust methods of measuring environmental impact.

Any disincentive for using products containing plastic specifically may lead to regrettable substitutions in the form of single-use items that are made of other materials (than plastics) but potentially have a higher overall impact on the environment across their life cycle.

There are many areas where further collaboration is needed, for example in behavioural studies on recycling – a better understanding of citizen choices around plastics could allow reuse and reduction of plastics to be implemented, and collection for recycling to be optimised.

The plastic packaging tax mentioned relates to the amount of recycled content used in plastic packaging manufacturing, rather than the production of plastic packaging as a whole. Therefore, it is not clear that introduction of this tax on its own will limit the number of single-use plastics on the market.

‘Policy objective: The tax will provide a clear economic incentive for businesses to use recycled material in the production of plastic packaging, which will create greater demand for this material and in turn stimulate increased levels of recycling and collection of plastic waste, diverting it away from landfill or incineration.’<sup>1</sup>

Sustainable alternatives to single-use plastics can be promoted by investment in appropriate scientific research, both at the fundamental and applied stage. We would also recommend the introduction of product requirements that embrace an ecodesign approach to ensure that products and components are made durable, repairable and reusable.

## **2. How should alternatives to plastic consumption be identified and supported, without resorting to more environmentally damaging options?**

Developments in chemistry, and collaborations across disciplines and sectors, are and will be key to understanding and mitigating the impact of plastics in the environment and developing sustainable alternatives to reduce plastic consumption.

Investment is needed to support early-stage research into the chemistry of plastic materials and their alternatives, including designing plastics derived from sustainable starting materials, changing plastic design for different consumer behaviours eg reusable plastic cups/bottles, and innovative environmentally biodegradable materials that are proven to be safe and sustainable.

Decisions should rely on sound science and research that is in constant dialogue with experts on collection and treatment infrastructure, citizen behaviour, policy and legislation, and manufacturing requirements. Industry will also be an important change maker here. Any measures should be designed to tackle the problem at the scale required, while avoiding unintended consequences.

As detailed in our response to question 1, in order to avoid unintended negative consequences of introducing plastic alternatives, policymakers, researchers and manufacturers should use evidence and lifecycle analysis (LCA) in decision making.

As more sustainable plastics or plastic alternatives are introduced to the market, citizens are faced with the decision of which products to buy and how to dispose of them. For example, the current confusion around the disposal of biodegradable plastic products, as well as the lack of infrastructure for dealing with them at end of life, may mean some biodegradable plastics end up doing more harm than good.

Any future plastic alternatives will require appropriate infrastructure to be in place as well as labelling of products that includes clear instructions on their intended use and disposal.

## **3. Is the UK Government’s target of eliminating avoidable plastic waste by 2042 ambitious enough?**

In the government’s target, the term ‘avoidable’ is defined as ‘when the plastic could have been reused or recycled; when a reusable or recyclable alternative could have been used instead; or when it could have been composted or biodegraded in the open environment’.

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<sup>1</sup> <https://www.gov.uk/government/publications/introduction-of-plastic-packaging-tax/plastic-packaging-tax>

We note that this target covers all plastic waste, not just single-use or packaging. The target doesn't make reference to reducing the overall consumption of plastic (except through reuse). The resource hierarchy (below) shows there should be a consideration for rethinking and redesigning plastic products, as well as reducing consumption, ahead of reuse and recycling.



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We would also note some hesitation with the phrase 'biodegraded in the open environment', as even for plastics that are proven to be fully biodegradable, release to the open environment should not be the intended disposal route.

Our recent publication '[The future of recycling](#)' outlines a number of priority measures that could improve the overall recycling rate for the UK.

#### **4. Will the UK Government be able to achieve its shorter-term ambition of working towards all plastic packaging placed on the market being recyclable, reusable or compostable by 2025?**

To align with the resource hierarchy framework, effort should be directed towards reducing plastic consumption and reusing products before eventual recycling or composting.

Currently, most commonly-used plastics **can be** recycled. However, due to a variety of reasons – including inconsistent collection, inadequate infrastructure and low-quality sorting – a relatively small proportion of UK plastic **is** recycled.

As well as working towards packaging being technically recyclable, the government must therefore put in place measures to improve the likelihood of the product actually being recycled, including long term quality recycling infrastructure.

We would advise caution in incentivising the use of compostable plastics for general packaging uses without the appropriate infrastructure to capture them as a separate waste stream. The current most likely destinations for compostable plastics are landfill and incineration, which means any environmental benefits are not captured. Compostable plastics are best used for specific applications, where collection and proper processing is easily facilitated to avoid loss into other waste streams, or contamination of recycling. For example, with caddy liners for food waste bins, the best end of life pathway is facilitated as part of the use of the product.

To ensure that the benefits of biodegradable and compostable plastics can be captured, more efforts are needed to ensure that they end up at their intended end of life destinations. This will require appropriate infrastructure to be in place as well as labelling of products that includes clear instructions on their intended disposal.

The RSC has compiled a number of resources that explore what a sustainable future for plastics could look like, including in terms of the challenges and opportunities around [compostable and biodegradable plastics](#), and [plastics with additives for degradation](#).

## **5. Does the UK Government need to do more to ensure that plastic waste is not exported and then managed unsustainably? If so, what steps should it take?**

Currently, sorted plastic may be exported for recycling overseas. Such exports must legally comply with the requirements of the Waste Shipment Regulations. Exports should only ever be done if there is certainty that the material is actually recycled (rather than incinerated as is sometimes the case), and the energy costs of exporting the waste are outweighed by the benefits.

We recommend a rethink of incentives to make the export of plastic waste abroad a less attractive option, and long-term investment in quality domestic recycling infrastructure, for a more consistent and better product.

### **Contact**

The Royal Society of Chemistry would be happy to discuss any of the issues raised in our position in more detail. Any questions should be

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