



Plastic Packaging

Frequently Asked Questions

2018

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1 The purpose of plastic packaging

Why are things packaged?

Packaging lets us consume products in ways that would be very difficult, if not impossible without it.

Packaging:

- **Protects** vulnerable products from damage whilst in transit and from contamination or damage by moisture, humidity, gases, microorganisms, insects and light.
- **Preserves** products for longer, which reduces waste by giving people more time to use or consume them before it is no longer suitable to do so.
- **Prevents** waste by keeping a product together and avoiding spillages.
- **Allows transport** over great distances, so that we have access to a wide variety of non-local produce that, in turn, encourages trade.
- **Saves space** through stacking objects which make transporting more efficient.
- **Displays** important information about the product, such as nutritional content or allergy advice, which makes selling easier.

Source: INCPEN. Why are products packaged the way they are?

Packaging prevents food waste – this saves resources and reduces CO2 emissions.

What happens without packaging?

We could not purchase liquids, gels, powders or out-of-season fruit. We would have significant problems with food safety and hygiene. Food wastage would increase – this would have negative environmental impacts. Products sold loose have been found to suffer from greater in-store waste, in some cases leading to increases of 20%. Damage and losses would occur to goods in the retail and logistics chain.

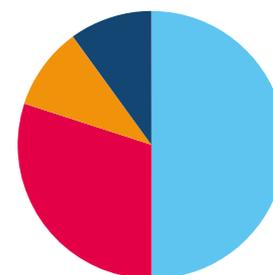
'Food waste has at least ten times the environmental impact of packaging waste and that's before taking account of the impact of methane from decayed food.'



Source: Prepared by the Advisory Committee on Packaging. Packaging in Perspective.

Energy used to feed us:

Only 10% is packaging - the figure is even less in the case of plastic.



- Food production & processing
- Driving to the shops, storing and cooking food
- Transport to the shop & retailing
- Packaging

Source: The Green Kitchen: recipes for a better plan: How to shop and cook in an energy-efficient, environmentally responsible way, INCPEN.

There is too much packaging, isn't there?

The amount of material used has actually declined: between 2004 to 2014 the average plastic packaging weight fell by 28%.

Source: [The excellence of the plastics supply chain in relaunching manufacturing in Italy and Europe: Executive summary](#)

The amount of packaging we consume today reflects the lifestyles we live.

There are regulations in place that require all packaging specifiers to **reduce** the amount of packaging used without compromising its functionality: The Packaging (Essential Requirements) Regulations 2015 (SI 2015/1640) [Government Guidance Notes](#)

Voluntary industry agreements also help. The [Courtauld Commitment](#) to reduce packaging and waste is an example:

Achievements of the Courtauld Commitment:

Phase 1

Prevented £1.8 billion worth of food and packaging waste

This saved as much CO2 emissions as the emissions from 500,000 round-the-world flights



Phase 2

£3.1 billion worth of waste was prevented

Enough food waste has been saved to fill 184,500 refuse lorries



Phase 3

In progress...

If successful, it would save as much CO2 emissions as removing 1 million cars from the road



Why use plastic packaging?

To be fit for purpose, packaging must protect and preserve. Plastic packaging performs this function particularly well and provides many other advantages for consumers, suppliers and society. Plastic is:

Resource efficient: plastic packaging saves packaging mass, energy and greenhouse gas (GHG) emissions. Without it, we would use 2-3 times more resources.

Source: [The impact of plastic packaging on life cycle energy consumption and greenhouse gas emissions in Europe: Executive Summary July 2011, Bernd Brandt and Harald Pilz](#)

Safe: plastic is shatter resistant, containers do not break when they are dropped or knocked over, this makes them particularly useful for certain environments, such as the bathroom, around children, at the pool, by the beach or on the go.

Hygienic: plastic keeps products free from contamination. This is particularly useful for medical packaging as packaging can be filled and sealed hygienically without any human intervention. (e.g. sterile syringes).

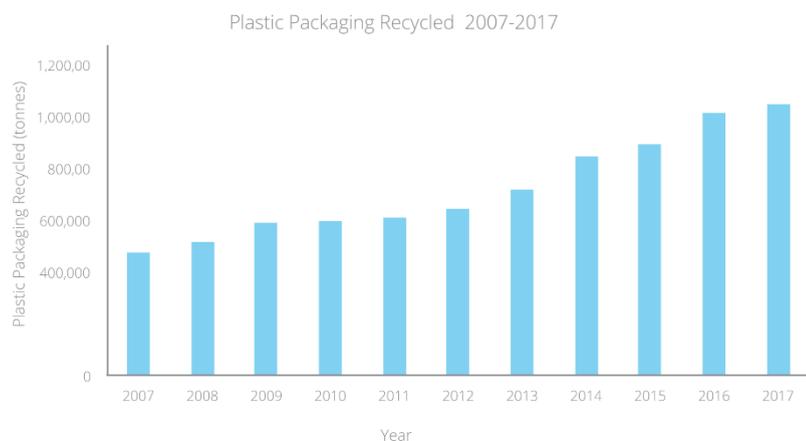
Light weight: plastic packaging is lightweight and can take up less space than alternatives, which means lighter loads for planes and trucks and lower emissions.

Secure: plastic can be sealed shut or moulded into a safety mechanism (e.g. child proof locks on medication)

Durable: because plastic packaging is so durable, plastic packaging can be very thin. This means it uses fewer resources and takes up less space for transport which means fewer trucks, trains or planes are needed to transport it.

Versatile: plastics can be transformed in many different ways. They can be blown, injected or thermomoulded. This means it can be used to package pastes and sauces. A variety of decorative effects and colours are also available.

Recyclable: plastic packaging can be recycled many times to create new products, the rates of recycling and the number of different plastics that are recycled in the UK have been increasing.



Source: Environment Agency, National Packaging Waste Database (NPWD)

[Learn more about recycling.](#)

Food waste is prevented by using plastic packaging:

Bananas in a flexible bag extend their shelf-life by **3 DAYS**

Plastic bags reduce waste of potatoes by **2/3**

Cucumbers extend their life when wrapped in film to **14 DAYS**

Advanced plastic packaging extends the life of steak up to **10 DAYS**

This is important because food production uses far more resources than the packaging that protects it.

Food waste has **10x** environmental impact of packaging waste

For more information on food wastage and how you can prevent it, please see [Fresher for Longer](#) and [Love Food, Hate Waste](#)

Plastics packaging saves resources – it is lighter, uses less energy and produces less greenhouse gas emissions than alternatives.

Source: The impact of plastic packaging on life cycle energy consumption and greenhouse gas emissions in Europe: Executive Summary July 2011, Bernd Brandt and Harald Pilz

2 Sustainability

Do we need single-use packaging?

Firstly, there is no such thing as single use packaging all plastic packaging can be recovered for recycling or the generation of energy. [Find out](#) about the multiple lives of Kevin to learn more about single-use plastics.

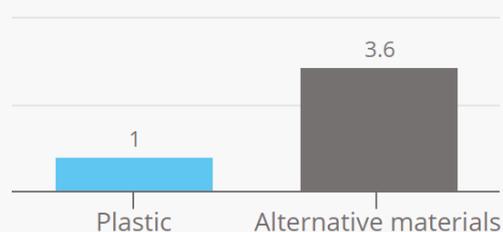
"Single-use" plastic packaging has an important part to play in modern life, especially where safety and hygiene is concerned. For example, a plastic water bottle allows hygienic access to clean drinking water and is less resource intensive to produce than alternative materials. It's easy to forget this as plastic packaging does such a good job protecting us from harmful germs. For example, the Food Standards Agency [recently explained](#) that raw chicken, must be placed in a plastic bag separately to other food to prevent food poisoning.

"Single-use" plastic packaging has also considerably reduced packaging weight in transit and in many cases, has reduced the number of lorries needed to transport goods on our roads.

Without "single use" plastic packaging food waste would increase; more energy would be used, and more carbon emissions would result.

Packaging mass

Alternative materials would be 3.6 times heavier than plastic packaging.



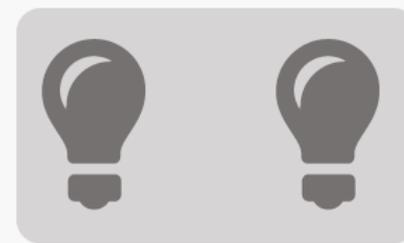
Source: The impact of plastic packaging on life cycle energy consumption and greenhouse gas emissions in Europe: Executive Summary July 2011, Bernd Brandt and Harald Pilz

Energy

It would take around **twice** as much energy to use alternative materials to plastic packaging.



Plastic

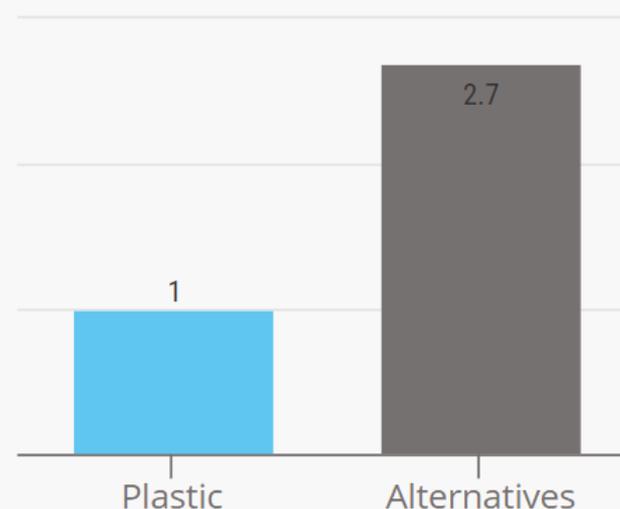


Alternatives

Source: The impact of plastic packaging on life cycle energy consumption and greenhouse gas emissions in Europe: Executive Summary July 2011, Bernd Brandt and Harald Pilz

Greenhouse Gas Emissions

Alternative materials to plastic would result in 2.7 times more greenhouse gases emissions over their life time.



Source: The impact of plastic packaging on life cycle energy consumption and greenhouse gas emissions in Europe: Executive Summary July 2011, Bernd Brandt and Harald Pilz

Is plastic packaging bad for the environment?

No. Many people don't realise that plastic packaging provides many environmental benefits.

Plastic packaging is also lightweight and strong — this means we use fewer vehicles and less fuel to transport it. Plastic packaging makes a positive contribution to saving resources and reducing emissions.



For the same amount of bags, it takes 1 truck to deliver plastic bags and 7 to deliver paper bags.

Source: RAN Encourage Plastic Bag Recycling. Nevada News.

Other "single-use" items, such as plastic packaging of fruit and vegetables, provide hygienic ways to purchase food and reduce waste, which reduces overall resource consumption. Grapes sold in sealed trays rather than loose bunches typically have reduced waste in stores by over 20%.

Plastic packaging has also brought important innovations to keep food fresh and reduce wastage in the home.

Environmental cost associated with the materials we use in consumer products and packaging



Source: Trucost Plastics and Sustainability: A Valuation of Environmental Benefits, Costs and Opportunities for Continuous Improvement. Costs shown in US billion dollars.

Is plastic recyclable?

Plastics packaging can be recovered and recycled into a variety of items including:

- Durable goods for our homes and businesses
- Insulation to keep our homes dry
- Agricultural products to improve farming

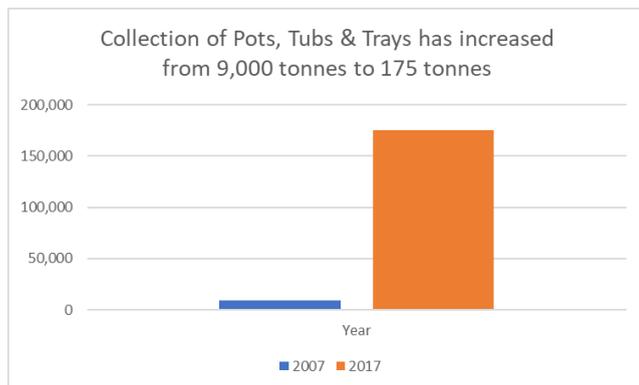
In terms of the products we use every day, plastics collected for recycling have undergone a transformation. Councils are obliged to provide a domestic collection from our kerbside and recycling rates in the UK have been improving steadily.



75% of plastic bottles in Wales are recycled due to harmonised collection systems.

Source: WRAP waste composition analysis.

Household plastic bottle recycling collection in the UK has increased by **over 2,000%** since 2001.



Source: RECOUP Household Plastics Collection Survey 2018

The industry is working hard to improve recycling through the Plastics Industry Recycling Action Plan (PIRAP). [PIRAP](#) involves adopting best practice collection methods, optimising sorting infrastructure and developing end markets for recycled plastics. [See who is involved](#)



What can I recycle?

UK local authorities offer a kerbside collection service of many plastic packaging items. The percentage of councils collecting all items has been increasing. In September 2015, the collection rates were as follows:

| Item | 2010 | 2016 |
|--|------|------|
| Plastic bottles | 90% | 99% |
| Pots, tubs and trays | 28% | 76% |
| Plastic film (e.g. carrier bags and bread bas) | 10% | 21% |

Source: RECOUP, UK Household Plastics Collection Survey 2018

[About recycling symbols](#)

[How to recycle specific items](#)

[Plastic recycling symbols](#)

What is plastic recycled into?

Recycled plastics are used to create all sorts of items, such as [packaging](#), bags, car components, furniture, building materials, paint pots and even kerbstones.

Did you know? Recycling a single plastic bottle can conserve enough energy to light an 10W LED bulb for up to 36 hours

How much plastic is recycled?

Only 26% of all plastic used in the UK ends up in landfill. In terms of plastic packaging, 45% (1,015,000 tonnes) of all plastic packaging used in the UK was recycled in 2016. This is an improvement of 15% from 2015. Rates are continuously rising year on year increasing to 46% in 2017.

Source: Environment Agency. National Packaging Waste Database

In terms of overall plastic recycling, the UK is now ranked **10th** out of 30 EU countries. For plastic packaging recycling, the UK is ranked 7th overall and 2nd for commercial and industrial packaging recycling.

If packaging can't be recycled, does it matter?

It is desirable for packaging to be recycled if it can be. However, if a one-trip packaging product consumes less resources than a product that can be recycled, it is preferable to use the one-trip packaging, as this will save resources. Products that can't be recycled today, may be able to be recycled in the future. In addition, if it is not economically sustainable to recycle something then it is always possible to recover energy from coal.

Why isn't all plastic packaging collected from households?

Recycling targets are set on the basis of tonnes, and plastic is a very light material. Some councils prefer to collect heavier waste than plastic packaging.

However, the number of councils offering the collection of various recyclables has been increasing steadily.

From 2010 to 2018 collection increased:

- Plastic bottle: 90% → 99%
- Pots, tubs and trays: 28% → 79%
- Plastic film: 10% → 17%

Source: RECOUP. UK Household Plastics Collection Survey 2018

Does the production of plastic packaging use a lot of energy?

Plastic packaging production uses about half as much energy as alternative materials. Plastics are also a very lightweight packaging medium, which means less energy is used to transport goods protected by plastic packaging.

Source: The impact of plastic packaging on life cycle energy consumption and greenhouse gas emissions in Europe: Executive Summary July 2011, Bernd Brandt and Harald Pilz

The plastics industry is committed to using even less energy and reducing carbon dioxide emissions. Many producers sign up to a voluntary [Climate Change Agreement](#) with the Environment Agency. The plastics and thin film industry comfortably achieved the target reduction set for the first monitoring period of January 2013 – December 2014. Some individual organisations have achieved an energy usage reduction of up to 50%.



Image courtesy of [PlasticsEurope](#). Plastics - the Facts 2015.

What should we do to improve recycling?

Our kerbside collection system should be as consistent as possible. Wales [is progressing](#) in this area faster than England due to a carrot and stick system.

In Wales, the government has identified one system for collection. They encourage and incentivise councils to adopt that system with targets and funding to help the transition. The Welsh government has a £6.5 million circular economy fund and a £5.75 million collaboration change programme to support 10 local authorities. Wales has now achieved an exceptional recycling rate and would be considered third in Europe if it was an EU member state.

In contrast, England has three different options that local authorities are encouraged to adopt. But there are no targets or funding available if they choose to adopt one of the three proposed collection approaches.

If Wales was an EU member state, it would be **third** for recycling rates.



Source: Eunomia. Recycling – Who Really Leads the World?

Wales currently recycles **75%** of its bottles through a household collection service compared to 57% in the UK.

Overall recycling rates in Wales varied from 50.3%-65.9% in 2014/2015, while England's varied from 14.7% - 66.6%. Wales are moving towards a target of 70%.

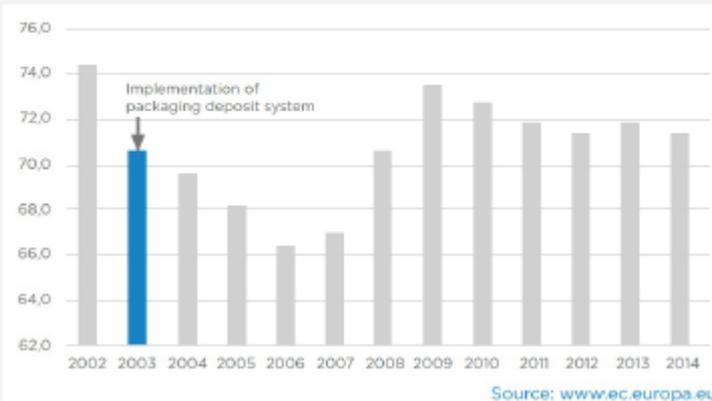
Is a Deposit Return Scheme a good way to improve recycling?

Not necessarily. Some Deposit Return Schemes (DRSs) do help some countries achieve high recycling rates for bottles sold containing beverages.

However, not all countries with a DRS achieve high recycling rates, some achieve rates for PET bottle recycling that are similar to or lower than current levels in the UK. Examples include: South Australia (65%), Hawaii (61%), and Oregon (52%).

A DRS may even harm the overall packaging recycling rate. This appears to be what happened in Germany, when a DRS on single trip packaging was introduced.

Germany: total packaging recycling rates 2002-2014



A DRS may also result in unintended negative consequences.

We should also be engaging in initiatives aimed at capturing the more difficult waste streams and less recycled items, e.g. 'on the go' and bathroom products.

- If refillable containers were excluded, we may see an increase in broken glass as part of litter, as witnessed in Germany.

Source: Prognos. Effects of deposits on beverage packaging in Germany

- There may be an attempt to avoid the deposit by creating unusual forms of packaging, which could be very difficult for the remaining kerbside system to accommodate.
- Small retailers may also be negatively affected if they are required to collect bottles manually and store bags/crates etc. in their store space.

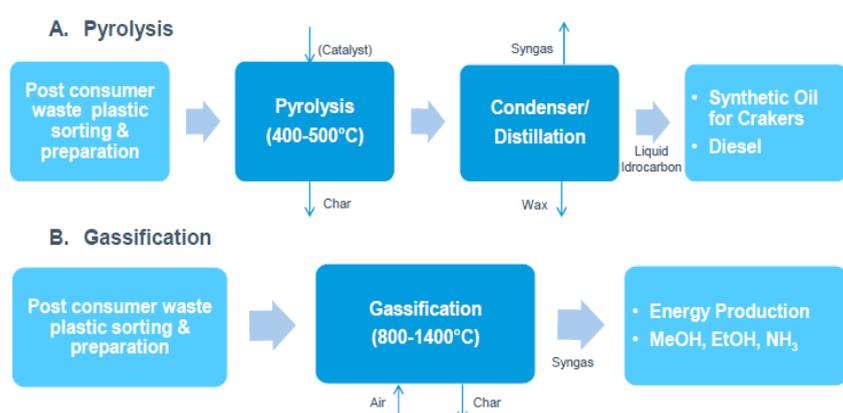
For a DRS to offer the most benefit to the UK, it should **complement** rather than disrupt existing collection methods by focusing on those containers not presently collected for recycling – for example, 'on the go' consumption. Further work should be done to understand where the biggest shortfalls exist.

Finally, a DRS only targets beverage containers, which only account for just over 10% of plastic waste and less than 1% of all waste generated.

What should happen to plastic at the end of its life?

Many plastic items can be recycled at the end of their life. The first option is **mechanical recycling** – this is what people usually think of when they think of recycling.

The second type of recycling is **chemical recycling** – where the plastic is broken down into its constituent parts in a process called Pyrolysis. These technologies are being developed and the first chemical recycling plant is due to open in Scotland in 2019. In the near future, we expect that the more difficult to recycle items will be chemically recycled into fuel and the building blocks for new plastic. If recycling isn't suitable, another very effective option is **energy generation from waste**.



Plastics make a highly efficient source of energy recovery. Many European countries are far ahead of the UK in generating electricity and district heating via efficient energy-from-waste plants. For example, in 2012 Sweden's energy from waste plants produced heat for 810,000 households and electricity for 250,000 houses.

Source: [The Swedish Recycling Revolution](#)

Sweden's plants save the same amount of CO₂ each year as 680,000 petrol-powered cars emit.

Source: [Towards a greener future with Swedish waste to energy - the world's best example.](#)

Is plastic packaging resource efficient?

The UK government's guidance on waste management sets out the waste hierarchy. The hierarchy indicates the preferred method of waste management, beginning with the most desired option: prevention.



The plastics industry is constantly innovating and improving production and waste management to promote the waste hierarchy's objectives.

Prevention: plastic packaging is lighter than it used to be — this means less raw materials are used. The industry also engages in an agreement to work towards reducing packaging and waste called the [Courtauld Commitment](#).

Examples of lightweight packaging innovations:

- [The Fez](#) — Child resistant closure with 40% weight reduction.
- [Super Lightweight Mono Material Trays](#) — strong environmental credentials with excellent levels of performance and functionality.
- [Infini Bottle](#) — a lightweight, fit-for-purpose milk bottle with a reduced carbon footprint.
- [Multilayer Polypropylene Jars](#) — light, easy-to-open, resealable and recyclable food containers.

Preparing for re-use: Many types of plastics packaging are long-life artefacts. For example, returnable crates have lifespans of over 25 years and re-usable bags are playing a greater role in responsible retailing.

Recycling: Plastic recycling is always improving. Plastic packaging can have a new lease of life in building and construction or as furniture, a bag or footwear. [View examples](#).

To read more about recycling visit the [BPF Recycling Group](#).

Other recovery: At the end of its life plastic packaging can be submitted to energy-from-waste schemes. Plastics are an effective energy source because they have a high calorific value.

Disposal: No plastics should be put in landfill. Currently 22% of all plastic in the UK still goes to landfill.

[Conversion Report: Post-consumer Plastic Waste Management in European Countries \(2016\)](#)

The BPF's vision for a plastics circular economy has an objective of zero plastic packaging to landfill by 2030 in [Plastics: A Vision for a Circular Economy](#).

Why don't we use more compostable or biodegradable material?

Good environmental practice requires us to use the least material to do the job required, then to reuse or recycle by recovering material or energy from the products we use at the end of their life. For that reason, most plastic packaging is either recycled or sent to energy-from-waste plants (if recovery for recycling is not the best environmental option).

Where products are not presently collected for recycling it can be because there are high levels of contamination and/or the resources required to recycle simply makes it unsustainable at present. Most presently available compostable and biodegradable materials fail to recover material or energy. Currently, no materials have been proven to adequately biodegrade in the open marine environment.

When packaging can't be easily recovered (because there is a high level of food contamination) and the process of waste management is compatible with compostable material, then compostable materials would be appropriate for returning the nutrients contained in the food. An example of this is the [Bebo B2nature™](#) compostable coffee cup.

However, if compostable or biodegradable materials get into the recycling stream, this can have detrimental effects, rendering the recyclate unusable. For this reason, where compostable material is used, it is important that this risk is recognised and managed.

Did you know? Biodegradable material is different to bio-based material. Plants can also be used to make non-biodegradable plastic.



[Source: UNEP \(2015\) Biodegradable Plastics and Marine Litter. Misconceptions, concerns and impacts on marine environments. United Nations Environment Programme \(UNEP\), Nairobi.](#)

3 Plastic in the Environment

Where does plastic in the ocean come from?

The majority of litter in the seas and oceans comes from outside of Europe, so it's vitally important that other countries also take action. Marine litter — like litter in our cities and towns — is largely due to the **thoughtless disposal** of waste on land. Tackling this issue requires us to focus on changing the way people discard items in our communities.

Litter travels

80% of the plastics found in the ocean is estimated to have come from land-based sources.

Source: European Commission. [Our Oceans, Seas and Coasts](#)

Sources of plastic in the ocean

It is generally accepted that largest source of leakage of plastic items into the oceans is from a small number of Asian and Pacific rim countries that account for over 80% of ocean waste - these include China, Indonesia, Philippines, Vietnam, Sri Lanka, Thailand, Egypt, Malaysia, Nigeria and Bangladesh.

Source: Jambeck et al. 'Plastic waste inputs from land into the ocean'. [Science](#)

98% of the litter in our oceans emanates from countries outside Europe and the United States.

Source: Ellen MacArthur Foundation, [The New Plastics Economy: Rethinking the future of plastics](#)

Reasons for leakage

The UN estimates that 'at least 2 billion people worldwide still lack access to solid waste collection'. As these people are left to rely on dumpsites, which are often located near oceans or waterways, it is understandable how this leakage occurs.

Source: UNEP, [Global Waste Management Outlook, 2015](#)

How can I prevent plastic entering the ocean?

As litter travels to water ways, it's essential we:

- Use the bin - not the gutter, not the river, not the pavement.
- If you see some litter and you're near a bin – pick it up.
- If the bin is full, find another one or take your litter home.

You can also join a local beach or neighbourhood clean-up.

What is the industry doing about plastic in the environment?

The plastics industry is active in helping to understand and reduce litter. We work with a variety of non-governmental organisations (NGOs) and charities to educate and change behaviour. These initiatives need to be complimented by government enforcement of anti-litter legislation.

For Fish's Sake #FFSLDN

To prevent litter entering our marine environment, the BPF has supported another innovative behaviour change campaign from Hubbub. *For Fish's Sake* launched in May 2017 and focuses on the Thames River, London. The campaign aims to help people understand the connection between littering on the land and pollution in our waterways in a playful creative way. It also works to build a sense of community around the Thames and reduce the desire to litter. *For Fish's Sake's* [interventions](#) include ballot rubbish bins, grate art and a cabinet of curiosities. The aim is to create a replicable model for other waterways and expand nationally.

NeatStreets

#NeatStreets is an anti-littering campaign supported by the plastics industry which took place in Villiers Street, London. The project used innovative methods of behaviour change to challenge and change littering behaviour. Run by Hubbub, #NeatStreets drew on developing a sense of community and using targeted, evidence-based infrastructure such as interactive bins and cigarette ballot bins.



#NeatStreets resulted in a **26%** reduction of litter in Villiers St and produced resources for other local communities to carry out similar projects.

Leeds By Example

The BPF alongside industry Giants are supporting #LeedsByExample. The on the go 6-month trial hosted by the charity Hubbub has an ambition of nationwide roll-out. The initiative will provide extra recycling bins in Leeds to ensure as much waste gets collected and recycled as possible. The project involves recycling points located on the streets, in shopping centres, transport hubs and offices. Only 42% of local authorities provide recycling for packaging used on the go and the trial will highlight the need for recycling bins whilst educating the public.

Upstream battle

The BPF are a supporting partner of Upstream battle. [Upstream Battle](#) is Keep Scotland Beautiful's ambitious new campaign to change behaviour and prevent marine litter at source. It's run in partnership with RECOUP. Focused on the entire length of the River Clyde and its tributaries, the campaign will raise awareness, gather evidence and inspire action. Connecting communities, individuals, schools, and the private and public sectors, everyone has a part to play in keeping the Clyde clean and protecting our seas.

Litter Strategy for England

The BPF was an enthusiastic contributor to the first ever [Litter Strategy for England](#). The Department for Environment Food & Rural

Affairs (DEFRA) Strategy recognises the importance of behaviour change, education, infrastructure and enforcement. It proposes setting up working groups to address the issue.

Marine Litter Platform

The BPF's [Marine Litter Platform](#) was established in 2018 as a forum to allow the government, brands, retailers, academics, NGO's, manufacturers and recyclers to collaborate. This platform seeks to find and deliver best solutions to the global problem of marine litter. The platform focusses on eco-design addressing design for the end of life of a product, waste management systems, littering, communication and education.



Primary microplastics are thought to account for less than 10% of plastic in the ocean, this includes tyres, road markings, building paints, and fibres from clothes.

Source: Eunomia. *Plastics in the Marine Environment*. June 2016.

Although pellet loss only represents less than 1% of the primary microplastic in the environment, the BPF runs this industry-led initiative to reduce plastic pellet loss.

Source: Boucher J and Froit D (2017) *Primary microplastics in the Oceans. A Global Evaluation of Sources*. Gland, Switzerland: IUCN 43pp

[Operation Clean Sweep](#) helps companies to audit sites, set up their worksite, train staff, and create procedures to ensure factories are free of rogue pellets and mitigate the risk of them escaping into the wider environment. The UK, an early adopter of this international programme and has signed up PD Ports the first port operator to commit to preventing plastic pellets leakage.

Marine Litter Action Network:

The BPF and the Marine Conservation Society (MCS) created the Marine Litter Action Network (MLAN), which the industry helped fund. MLAN brings together organisations (NGOs, academics, decision makers) to act on marine litter. MLAN includes educational initiatives that teach young people the importance of looking after our environment. The plastics industry is working hard to tackle litter in the UK it is a global issue, so it is vital action is taken by the other countries as well.

What should we do about plastic in the ocean?

Any solutions taken must be carefully considered to make sure they address the root cause of the issue and are well suited to preventing plastic ending up in the environment.

As most of the plastic in the ocean comes from the land, it is essential that we prevent litter on the land. This includes behaviour change initiatives and improving waste management in developing countries.

Moving away from plastic to alternative materials will not solve the problem of rubbish in our natural environment. In fact, one study has found that moving to alternatives to plastic could actually be worse.

Source: [Trucost Plastics and Sustainability: A Valuation of Environmental Benefits, Costs and Opportunities for Continuous Improvement](#)

Would a plastic-free aisle in the UK help reduce plastic in the ocean?

As most (98%) of the plastic that enters the ocean comes from sources outside the UK and the United States (Source: [Ellen MacArthur Foundation, The New Plastics Economy: Rethinking the future of plastics](#)), a plastic-free aisle in the UK will not contribute in any material way to problem of plastics in our oceans.

The most important step is to improve the waste management facilities across the world, as over 2 billion people rely on dumpsites near waterways (Source: [UNEP, Global Waste Management Outlook, 2015](#)), this could have a large impact on protecting our oceans.

It is important to realise that as long as it is disposed of correctly, plastic packaging is the greener option — it uses less energy to produce, reduces transport costs and CO2 emissions because it is lightweight, and significantly reduces the amount of fresh food wasted by protecting it in a hygienic environment and extending its shelf life. A 'plastic-free aisle' would potentially increase the overall environmental impact of food packaging by increasing food waste, increasing the resources necessary to package goods and increasing greenhouse gas emissions.

The UN's recent Ocean Conference, 2017 recognised the importance of addressing marine pollution as a socioeconomic issue, requiring the encouragement of reuse and recycling, the development of converting plastic to energy and behaviour change interventions. It also noted the importance of capacity building in developing states around waste management infrastructure.

Source: [The Ocean Conference, New York, 5-9 June 2017. Concept Paper on Partnership dialogue 1: Addressing marine pollution.](#)



What should we do about litter?

When addressing litter, it is essential to remember that litter is the consequence of thoughtless and careless behaviour and involves a vast array of items. Successful solutions will use a combination of evidence-based strategies to target changing human behaviour and the government enforcement of litter-related offences.

See the section above for a variety of effective industry the plastics industry is supporting.

Would a Deposit Return Scheme help prevent litter?

We can't find any robust evidence that shows a DRS has had a positive impact on litter. In the UK, beverage containers are a small percentage of litter: plastic bottles only account for 2.1% of litter, cans 3.5%.

Source: Litter Composition Survey of England carried out by Keep Britain Tidy (KBT)

One recent German study found that there were 'no significant quantitative effects in litter reduction and no economic effect in street cleaning identifiable as a result' of the DRS.

Source: Effects of deposits on beverage packaging in Germany Effects of deposits on beverage packaging in Germany. Prognos Executive Summary.

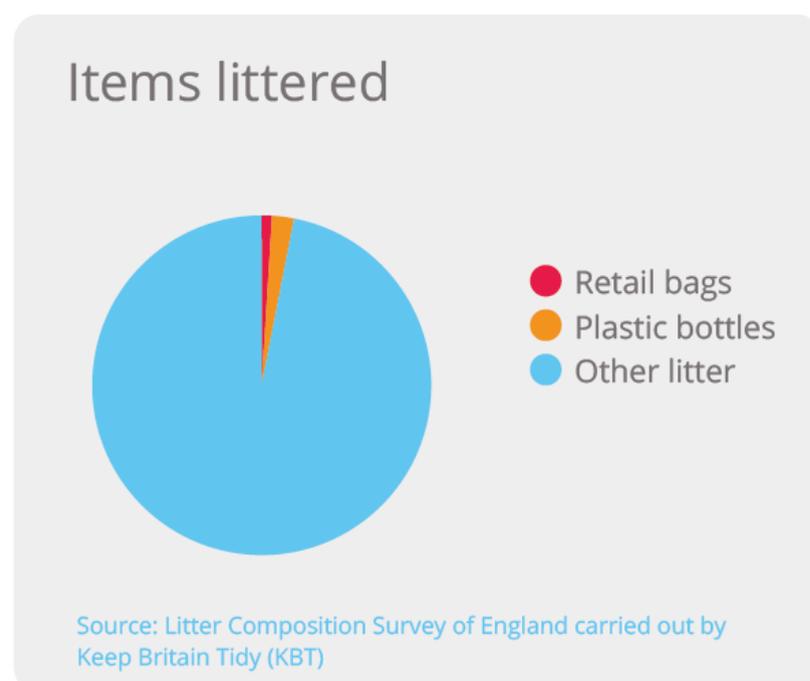
Litter surveys from Australia also indicate that Victoria, a state that employed behaviour change methodologies instead of a DRS, has seen the strongest decline in the number of littered items. Despite having a DRS since 1977, South Australia does not have the lowest amount of litter and since the introduction of a DRS in the Northern Territory in 2012, littered items have actually increased.

Source: Keep Australia Beautiful, National Litter Index 2014/2015.

Do certain items get littered more than others?

Litter is a behavioural issue, but sometimes packaging can encourage or discourage littering. For example [research by Coca Cola](#) has found that bottles are less likely to be littered than cans – this is thought to be due to the fact they can be resealed and carried to another location to dispose of them responsibly if there are no bins nearby.

Litter surveys have found that cigarettes and chewing gum are the most frequently littered items. Plastic bottles and retail bags were only a small percentage of the items littered (2.1% and 0.7% respectively).



Can I get in trouble for littering?

Yes. It is an [offence](#) to drop litter in the UK and in many other countries. Dropping litter in the UK can attract a large financial penalty. From April 2018 People dropping litter, including from vehicles, face increased on-the-spot fines of up to £150 as new penalties come into effect. Councils across England are being given the power to raise fines from the previous ceiling of £80.

Would more bins help?

Probably. We know that if bins aren't easily available, people do tend to drop rubbish. In a recent observation of Londoners, people were over twice as likely to use a bin if it was within five metres (Source: Hubbub observations as part of For Fish's Sake). Previous [observations by Disney](#) found that people would drop litter if they did not find a bin within 30 steps.

However, it's also important that we create a culture of using the bins and making it unacceptable for people to throw rubbish on the ground.

In addition, there is a question of how we make sure the bins we have are doing the right job. Are they visible? Are they overflowing? Some councils are experimenting now with solar powered sensors that send notifications when they are getting full ([DEFRA Litter Strategy](#)).

39% of Londoners admit to dropping litter when they are on their own

Survey was conducted by Censuswide on behalf of Hubbub in April 2017 and interviewed 1,000 Londoners.

Does biodegradable packaging reduce litter?

It's unlikely. Current biodegradable materials require specific circumstances, such as very high temperatures which are not met on our streets or in the oceans.

In relation to marine litter, the UN's chief scientist, Jacqueline McGlade said that these materials are 'well-intentioned but wrong'.

Source: [The Guardian](#), Biodegradable plastic: false solution for ocean waste.

The UN also cautioned that using these materials may actually increase littering, as consumers would assume that because these materials would break down overtime it was acceptable to litter them.

Source: [UNEP \(2015\) Biodegradable Plastics and Marine Litter. Misconceptions, concerns and impacts on marine environments. United Nations Environment Programme \(UNEP\), Nairobi.](#)

There are applications where biodegradable compostable products can offer positive benefits to waste management. Some of these uses could be for some items in households where home composting facilities are available, food waste (for industrial composting or anaerobic digestion) and products that have a high food contamination level making them difficult to recycle.

4 Safety & Regulation

What safety benefits does plastic offer?

Plastic is:



Shatterproof — doesn't break into dangerous shards when dropped. Particularly useful for products handled by children, used in the shower or in public venues.



Hygienic — this makes it ideal for packaging food, medicines and pharmaceuticals.



Secure — perfect for tamper-evident and child resistant items.



Durable — this keeps the contents of the packaging dry and protected on its way to the consumer.



Lightweight — easy to lift and carry.

Is plastic in contact with food safe?

Yes, plastic in contact with food is safe, as long as it is compliant with the requirements of food contact and Good Manufacturing Practices (GMP) legislation. All materials in contact with food, even natural components of plants such as glycoalkaloids in potatoes, have the potential to bring about changes in food and drink in terms of texture, taste or smell — or indeed be harmful to health. For this reason, food contact materials are closely regulated in accordance with EU and UK laws.

To ensure safety, we have well-regulated migration limits and good manufacturing guides and protocols set out. The three pillars of EU law in this area include:

1. EC 1935/2004 applies to all materials in contact with food.
2. EC 10/2011 and subsequent revisions sometimes known as the PIM (Plastics Implementation Measure). Only applies to plastic.
3. EC 2023/2006 GMP applies to all materials in contact with food.

GMP requires quality measures to be in place to ensure that products are consistent, controlled and compliant. These measures relate to raw material specifications, traceability, quality control, manufacturing, storage and transportation.

What is plastic?

'Plastic' is the general common term for a wide range of synthetic, semi-synthetic and bio derived polymer materials used in a huge — and growing — range of applications.

Plastics are safe, hygienic, secure, lightweight, versatile and durable. They also take fewer resources to produce than alternative materials.

Plastic packaging is estimated to account for just 1.5% of oil and gas use ([Plastipedia](#)). The chemical building blocks for plastics raw materials are traditionally derived from by-products of the refining process that originally would have had no other uses. Plastics can also be made from biomass, including the waste products of food production.

Do PET plastic bottles cause cancer?

No, this is a myth — there is no evidence to indicate that using PET plastic bottles causes cancer. These stories are concerned with what are known as 'endocrine-disrupting chemicals' such as bisphenol A (BPA) and dioxins that are sometimes found in some types of plastic containers — but not PET bottles.

Source: Bisphenol A. European Food Safety Authority (EFSA)

If used in the manufacture of bottles, the question to ask is whether they can migrate out of the containers and into food and drink. If they can, it's important to know whether they would do so in any quantities that would cause harm.

Some studies have shown that minute amounts of BPA can transfer from packaging — but the levels of these are so low that they cause no harm to humans.

Source: No consumer health risk from bisphenol A exposure. EFSA

Source: Bisphenol-A (BPA) frequently asked questions, Food Standards Agency

The UK Food Standards Agency (FSA) has examined the effects of BPA and states that the level at which people typically consume BPA poses no risk. The FSA has also concluded that even when consumed at much higher levels than would typically be found, BPA is rapidly absorbed, detoxified and eliminated by the human body.

The European Food Safety Authority (EFSA) has addressed concerns by reducing the permitted tolerable daily intake (TDI) – the stated quantity of a chemical substance consumers may ingest over their lifetime without posing a risk to their health - and has found that current exposure to BPA from food contact materials is considerably below even this reduced figure, and have concluded therefore that this is not a health concern.

Where chemicals are present in plastic products they adhere to strict limits on their transfer to food. As mentioned, legislation is designed to mitigate adverse health effects and provide safety to consumers and workers.

UK companies ensure that they comply with strict standards set by the UK and the EU, and the European Chemicals Agency (ECHA) and European Food Standards Authority regulate the limited use of specific chemicals through legislation such as REACH and Food Contact regulations.

Source: Registration, Evaluation, Authorisation & restriction of CHemicals (REACH), Health and Safety Executive

Did you know?

Styrene occurs naturally, and the exposure from using a polystyrene cup (5-10 parts per billion) is similar to eating strawberries or beef and far less than drinking beer.



| Food/Beverage | Styrene level (parts per billion) |
|---------------|-----------------------------------|
| Cinnamon | 170-39,000 |
| Beer | 10-200 |
| Beef | 5.3-6.4 |
| Coffee Beans | 1.6-6.4 |
| Strawberries | 0.37-3.1 |
| Peanuts | 1-2.2 |
| Wheat | 0.4-2 |

Food/Beverages had no man-made styrene contact).

Source: You Know Styrene. A resource for consumers, employees and communities. youknowstyrene.org

What other legislation regulates the packaging industry?

Legislation in various areas ensures that packaging and films are safe, produced to a high standard and contribute to a more sustainable future.

a) Food contact legislation

Please see *Is plastic in contact with food safe?* on page 18.

b) Packaging waste directive

The [EU Directive on Packaging and Packaging Waste Directive \(94/62/EC\)](#) aims to provide high level environmental protection by managing packaging waste and reducing its impact on the environment and ensuring the functioning of the internal market by avoiding obstacles to trade and distortion and restriction of competition.

This legislation requires that packaging is kept to the minimum volume and weight necessary for safety, hygiene and consumer acceptance.

c) Recycling targets

Packaging recycling targets are created by the UK government with the aim of ensuring companies comply with EU recycling targets. In 2012, the plastics packaging recycling target was 32%. In the 2016 budget, the UK government announced that packaging recycling targets for 2016 will be 49%. This target was successfully achieved in 2016. This will increase by 2% each year until 2020, to 57%.

The current Circular Economy proposal in the European Union is for future targets for recycling of plastic packaging to be set at 55% in 2025. The overall packaging waste target is set at 65% in 2025 and 75% in 2030.

d) Packaging Waste Recovery Notes (PRNs)

The EU Directive on Packaging and Packaging Waste Directive (94/62/EC) aims to provide high level environmental protection by managing packaging waste and reducing its impact on the environment. It also aims to ensure the functioning of the internal market by avoiding obstacles to trade and distortion and restriction of competition. In the UK, this is implemented by the Producer Responsibility Obligations (Packaging Waste) Regulation 2007.

Larger producers of packaging are required to ensure that a proportion of the packaging they produce is recovered and recycled. Targets for recycling are set by the UK government.

Producers fulfil this responsibility by collecting evidence that an equivalent amount of packaging has been recycled. The evidence they collect comes from registered reprocessors (when recycling occurs in the UK) and exporters (for packaging recycled overseas). The evidence they collect is called a Packaging waste Recovery Note (PRN) or a Packaging waste Export Recovery Note (PERN).

The effect of this system in practice is to provide some additional funding from the producers to the recycling industry with the aim of improving recycling. Since the scheme began, packaging recycling has improved significantly. With over 60% of packaging recycled, the UK is one of the best performers in Europe.

Source: [Advisory Committee on Packaging Task Force 2 – PRN Transparency PRN System Guide](#).

For more information on PRNs, please see the Environment Agency's [Guide to the PRN System](#) (available under Activity).

What voluntary commitments has the packaging industry made to reach a circular economy?

The [UK Plastics Pact](#) is a collaborative voluntary initiative run by the Waste and Resources Action Plan (WRAP) that aims to create a circular economy for plastics. It brings together businesses from across the entire plastics value chain with UK governments and NGOs to tackle the scourge of plastic waste. This voluntary initiative. More information on the

This voluntary initiative is working toward the following set targets for the year 2025:

1. 100% of plastic packaging to use reusable, recyclable or compostable
2. 70% of plastic packaging effectively recycled or composted
3. Take actions to eliminate problematic or unnecessary single-use packaging items through re-design, innovation or alternative (re-use) models
4. 30% recycled content across all plastic packaging

Companies that have signed up to this voluntary initiative can be found here:

<http://www.wrap.org.uk/content/plastics-pact-members>

For more information:

- on plastic: visit www.polymerzone.co.uk
- on packaging: visit: www.bpf.co.uk/packaging