



# Sustainable plastic packaging



Plastic packaging materials are highly resource efficient by virtue of their exceptionally light weight. In the UK, this characteristic has already ensured that the overall weight of packaging per capita is one of the lowest in Europe. In fact, the table shows how well the UK performs in packaging per person compared, for example, to countries like Germany and others which are perceived to have stronger environmental credentials. The substantial moves in the UK to convert to plastic packaging has helped achieve this.

It is notable that the overall amount of packaging used in the UK has remained virtually unchanged during the past decade despite a rise in consumer consumption. This contrasts sharply with some of the other European nations where it has risen in some cases by over 30%.

This is because, in the UK, retailers, packaging suppliers and the Government's WRAP programme have achieved considerable success in promoting responsible and sustainable packaging

without compromising functionality and fitness-for-purpose. In fact, the UK is one of only three European countries that enforce the 'Packaging Essential Requirements' which require that companies ensure their packaging is not only fit-for-purpose but is the minimum packaging required for safety, hygiene and consumer acceptability.

	Packaging used per person (Kg)		
	2007	1998	Packaging per capita growth 1998-2007 %
Ireland	245	185	32
Italy	212	16	32
Netherlands	212	161	32
France	202	194	4
Germany	196	172	14
Spain	189	159	19
Denmark	180	158	14
<b>UK</b>	<b>176</b>	<b>175</b>	<b>0.6</b>
Portugal	162	101	60
Sweden	158	108	46
Belgium	158	140	13

(source: Incpen)

In spite of the reality, it is therefore surprising that consumers and the popular press continue to believe that goods in the UK are over-packaged. This misunderstanding about the role and value of packaging is clearly demonstrated in a 2009 survey (reference here) which showed that 60% of consumers in the UK were concerned about overpackaging compared to 32% in Germany and 38% in Italy. These

views are clearly incompatible with the packaging consumption figures in the table above and whilst a small number of high-visibility examples of over-packaging do exist, it is plastic which is most likely to present a solution.

## Plastic packs big benefits

There are many other benefits to come from using plastic packaging:

- **DURABLE AND SHATTER RESISTANT - MAKING PACKS SAFE TO TRANSPORT AND USE IN THE HOME.**
- **LIGHTWEIGHT PACKS - HELPING TO DRAMATICALLY REDUCE THE CARBON FOOTPRINT OF THE GOODS AT ALL STAGES IN THE SUPPLY CHAIN.**
- **UNIQUE BARRIER PROPERTIES THAT REDUCE CONTAMINATION, KEEP FOOD IN GOOD CONDITION FOR LONGER AND EVEN ALLOW PRODUCTS TO BREATHE.**
- **COST EFFECTIVENESS - REDUCING THE OVERALL COST TO THE CONSUMER**

These, and many more attributes, make plastics a sound environmental choice from cradle to grave.



Plastics offer a design versatility, functionality and lightweighting opportunity which has led to many innovative ways of reducing packaging on the shelf, for example, in this "Eco Refill" coffee campaign where traditional heavier containers are being replaced. These opportunities are being taken up by many retailers and brands – large and small.

The fact is that a world without plastics would mean a 3.6 times increase in the weight of packaging material needed more than doubling the energy consumption for packs and a 2.7 times increase in greenhouse gas emissions.

# Reducing Food Waste

Plastic packaging works continually to extend food life and preserve the product in transit. In the UK we throw away 1.6 million bananas and 5 million potatoes every day. Yet by using flexible plastic packaging, bananas can be stored for 7 more days than if left loose. And by using plastic packaging for potatoes rather than displaying loose, in-store wastage is reduced by a third.



UK consumers throw away 5 million potatoes every day. Plastic bags reduce in-store waste from 3% to 1%. (Source WRAP)

In the home, 25% of waste generated by UK households is food which has been allowed to deteriorate. More use of plastic could mean much less of this kind of waste. Even with a refrigerated cucumber, the plastic film prevents the loss of moisture which leads to rapid deterioration. In fact, a film wrapper (weighing less than 1.5 grammes) can extend the life of a cucumber from two days to typically 14 days.

It is essential, if we are to preserve precious resources, that we use the best balance of packaging and product to ensure optimum resource efficiency and functionality.



UK consumers throw away 1.6 million bananas a day. Identical storage conditions, with and without plastic protection, shows the difference in banana condition.



Plastic packaging products, whether they are pots, trays, film, bags or pouches, offer real benefits in resource minimisation whilst not compromising the integrity and freshness of the far more costly products they protect.



## Better by Design

The UK plastics packaging industry is also further improving its sustainability record through continued innovation in design and manufacture. For example, in the last fifteen years, it has reduced the carbon impact of many of the products it supplies - including PET water and beverage bottles - by a staggering 40%-50% mainly through lightweighting. But there are many other innovations which reduce food waste and keep goods safer in the home.

New developments in re-closable and re-sealable film packs are a clear example of the way plastic packaging can go on preserving the product whilst in the consumer's fridge, allowing consumption over a long period of time whilst still keeping the product fresh and nutritious.

Similarly, portion packs allow us - in the home, restaurant or when travelling - to open just the right amount of butter, sugar, coffee, milk or even baked beans that we need. This avoids waste or contamination of a partly used product.



Single portion packs and re-sealable packs save waste



Plastic 'blister' packs can also help us keep essential medical and pharmaceutical products safe and dry as well as helping us take the right dosage at the right time.

# Essential credentials

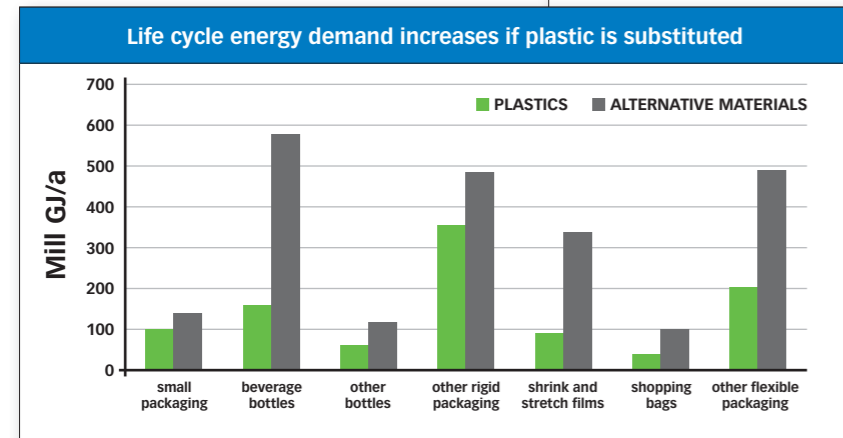
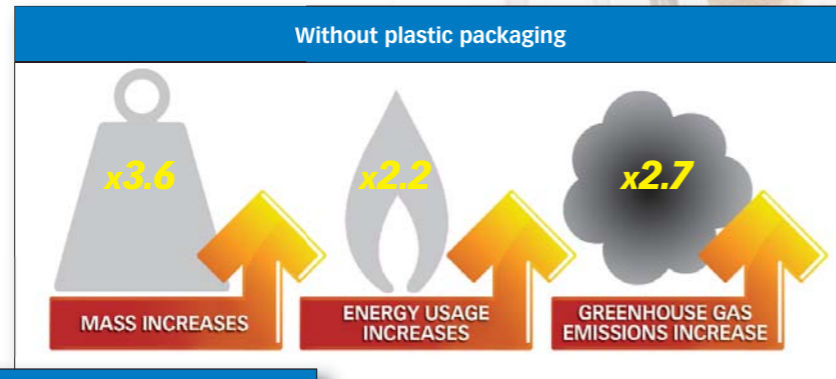
Once we accept the benefits of plastic packaging in reducing food waste, it is important to consider what environmental impacts it has outside its role as a highly efficient protector.

In reality, these impacts are of relatively minor importance compared with the impacts such as food waste that plastic saves. If the carbon impact of all the plastic products (not just packaging) used by the average consumer in Europe were measured, they would account for around 1.4% of that person's overall carbon impact. But, when you take into account that plastic packaging accounts for only around one third of plastics' consumption – the value of plastic packs in saving resources far outweighs the resources expended in producing it.

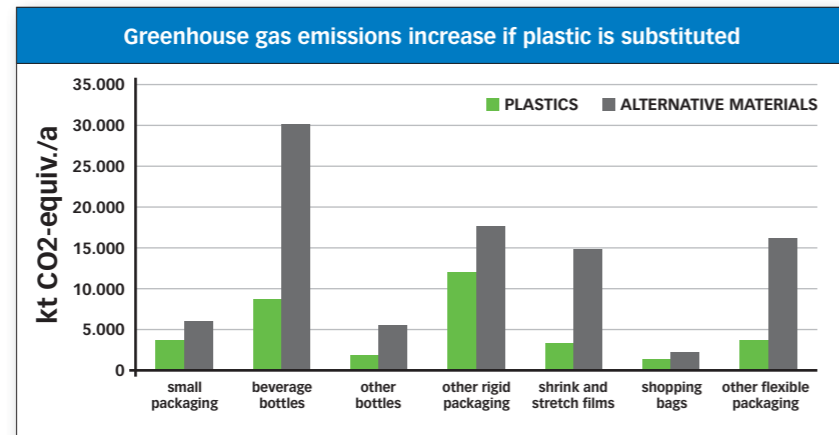
(source Plastics Europe)

## What would happen without plastic packaging

Studies show that if we tried to live without plastic packaging, there would be greater impacts and damage to the environment.



Lightweight tubs with click-on lids for freshness



All 7 investigated plastic packaging sectors show advantages compared to mix of alternative materials

All 7 investigated plastic packaging sectors show advantages compared to mix of alternative materials

Beverage bottles, transport films and other flexible packaging show highest contribution to total benefit

Source: Denkstatt March 2011

# End-of-life is just the beginning

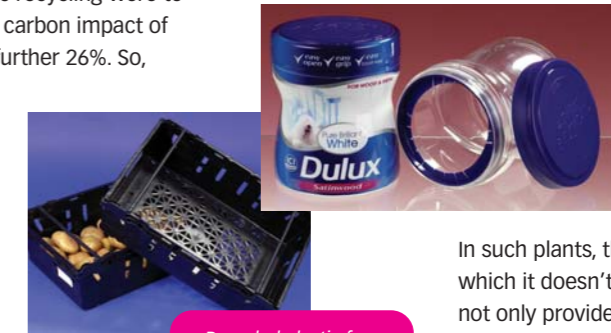
Many might argue that it is disposing of plastics which presents the biggest impact. But what is the reality? Like all other materials, plastics can and should be recovered at the end of the primary function. This recovery route should always take priority over landfill.

The recovery route includes many recycling options where plastics can be turned into second life applications and this option is gaining rapid acceptance. If the level of plastic recycling were to double in the UK over the next 10-15 years, the carbon impact of plastic packaging in the UK would reduce by a further 26%. So, increasing the collection of plastics for recycling is vital. This is why the plastics packaging industry is actively encouraging

local authorities to improve the methods of mixed plastics collections. We believe landfill for plastic is not an option that should be considered for the future.

Another very effective form of resource recovery for those end-of-life plastics, which are unsuitable on environmental or

economic grounds for recycling, is as a highly efficient feedstock for Energy generation. Many European countries noted for their advanced policies in environmental management are far ahead of the UK in generating electricity and district heating via clean burn Energy from Waste plants. For example, in the Swedish city of Gothenberg, 75% of the heating required by the population is provided by energy recovered from it's household waste.



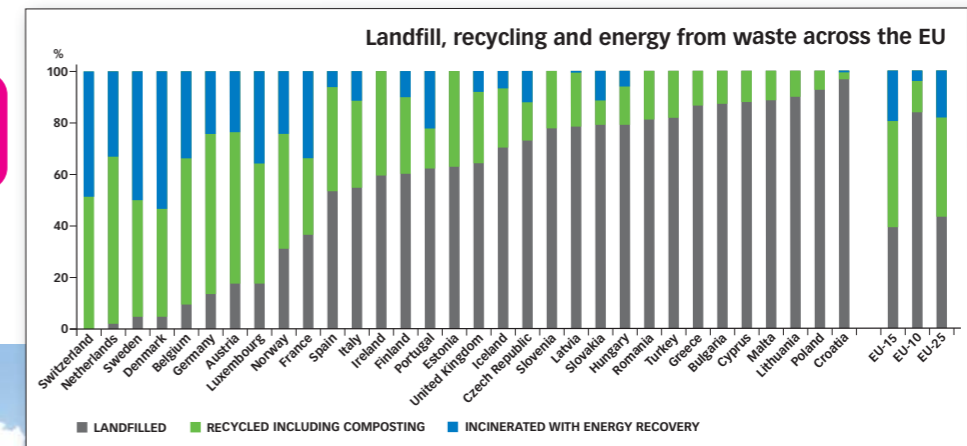
Plastic paint 'cans' with screw lids reduce weight in transportation and allow paint to be re-used for longer

Recycled plastic for multi-trip transit and display trays last for years before being recycled again

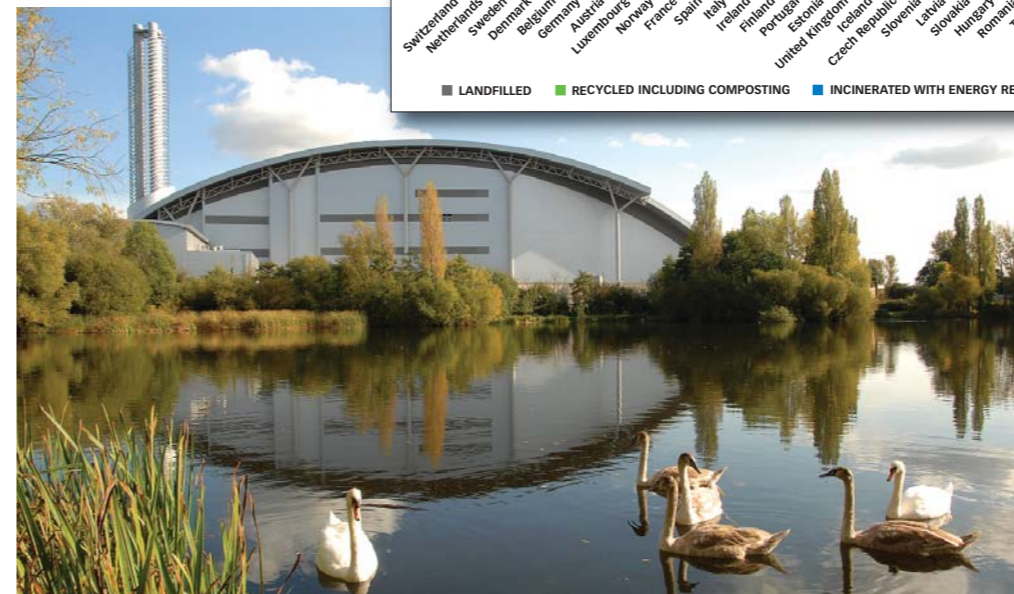
In such plants, those plastic products which it doesn't make sense to recycle, not only provide energy themselves but also assist the of low quality waste efficient combustion. In fact, the energy captured from these high calorific value plastics, is greater than that derived from using coal to generate power.



Leisure wear made from recycled plastic bottles



PETER Sorry the above para got confused



Lakeside Energy from Waste Plant. Image courtesy of Lakeside Energy from Waste Ltd

In another example, one leading waste management company is recovering end-of-life plastics material unsuitable for recycling, 'cracking' it back into diesel fuel and using the fuel produced to run its fleet of vehicles.

Further innovations in recovery of end-of-life plastics are being developed at such a pace that the plastics industry is confident that no plastics waste will need to go to UK landfill in the future.

# Putting our own house in order

The plastics packaging industry, including PAFA members has for many years, been taking active steps to reduce its environmental impacts.

In fact, the industry has long been a champion of resource reduction at every stage of production as well as in the design and structure of its products. Modern plastic formulations have also been developed specifically to allow exceptional functionality as well as the highest levels of resource efficiency, bringing new opportunities for impact and environmental reduction across society. Here are a few examples of how our industry demonstrates its responsible approach to reducing impacts:

## 1 Investments aimed at reducing the energy used in the production of plastic packaging

- Thermal oil systems to reduce energy consumption
- Variable speed drives on machinery and equipment
- Efficient lighting
- Using polymer additives to reduce the energy required to extrude materials
- Capturing heat via heat exchangers in production processes to heat or provide power for those processes.

**This has resulted in savings of up to 40% in energy required per tonne of material processed for some PAFA members.**

## 2 Carbon reduction extends beyond reducing energy consumption in manufacture to include many other initiatives:

- Continued innovation in reducing the amount of material per pack. Compared with the 1990's, 40% less material is being used in many flexible and rigid applications.
- The increased use of post consumer waste and production waste in the manufacturing process is helping members to achieve 20% reductions in carbon footprint.
- Members have been reducing their impacts, for example by installing solvent recovery systems.
- A number of PAFA members are involved in the Carbon Disclosure project.

## 3 Recycling

- The production of goods from recycled materials instead of virgin polymers delivers considerable savings in CO<sub>2</sub>, reduces water usage and helps divert waste from landfill.
- Recycled content is now the 'norm' in a range of products made by our industry. This includes films, bags, pots, tubs, trays and bottles. In some applications virtually 100% post-consumer waste content has been achieved.
- Across the UK are accredited recyclers, including those involved in recycling post-consumer PET and LDPE, and are currently engaged in recycling over half a million tonnes of post-consumer waste per year.
- Many PAFA members operate closed-loop recycling of in-plant process waste.
- Industry has committed to working alongside all stakeholders to increasing the levels of recycling post-consumer waste to achieve 'best in Europe' by 2020.

## 4 Reduction in waste to landfill

- PAFA members have made significant reductions in the amount of waste sent to landfill with some having achieved reductions as high as 48% over the last five years alone.
- Industry has committed to working with all stakeholders towards achieving zero consumer plastic waste going to UK landfill by 2020.



# Litter is a lost resource

One of the most important characteristics of plastic is its light weight. However, this can mean that thin plastic disposed of irresponsibly can quickly become highly visible litter. The plastics industry strongly condemns the careless disposal of its products and supports national and local campaigns which aim to educate and inform in order to change habits.

Whilst much publicity is given to the presence of products like carrier bags in litter, the reality is that plastic bags form far less than 1% of all litter on our streets.

We need to understand that plastic is a precious resource and should never be discarded as litter but should be reused wherever possible and at the end of its useful life recycled or recovered. Sadly, plastic litter is a global issue and in some countries it is common practice for everyday items to be discarded on land and in the sea. In some cases the spreading of such pollution can spread due to poor management of wind-prone landfill sites, poor control of shipping at ports and the discarding of waste from ocean-going vessels. Problems also arise when visitors enjoying countryside, beach and leisure areas irresponsibly leave their waste behind.

The plastics industry endeavours to ensure that its products do not find their way into the countryside or the sea by promoting best practice under the banner of Operation Cleansweep. The industry also works closely with Keep Britain Tidy and the Marine Conservation Society.

In 2011 the plastics industry entered into a pledge to:

- **Contribute to solutions by working in public-private partnerships aimed at preventing marine debris.**
- **Work with the scientific community and researchers to better understand and evaluate the scope, origins and impact of marine litter and to work with stakeholders to look for solutions.**
- **Promote comprehensive science-based policies and enforcement of existing laws to prevent marine litter.**
- **Help spread knowledge regarding eco-efficient waste management systems and practices, particularly in communities and countries that border our oceans and rivers.**
- **Enhance opportunities to recover plastic products for recycling and energy recovery**
- **Steward the transport and distribution of plastic resin pellets and products from supplier to customer to prevent product loss and encourage our customers to do the same.**



# What the media says



# Frequently Asked Questions



**Q How can plastic packaging contribute to sustainability?**

**A** Without plastic packaging more resource would be required to produce alternatives. Up to 4 times the mass would be required, more than twice the energy and around 3 times more harmful emissions if we tried to replace plastic packaging in our lives.

---

**Q Why can't all plastic be recycled?**

**A** Most Plastic can be recycled. But as waste recycling targets are weight-related and plastic is lightweight, local councils put plastics low on their priority list. There are also some highly effective plastic packs which are contaminated when they have served their useful purpose – for example meat and food wrappings. For many of these it is currently not a viable option to collect and clean for recycling. They can, however, be used to produce heat and electricity in Energy from Waste plants.

---

**Q Do any councils collect plastics for recycling?**

**A** In 2010 a total of 401 authorities collected plastic bottles and 98 collected other plastics as well.

---

**Q If I have clean plastic film such as carrier bags and bread bags, where can I take it myself for recycling?**

**A** You can take it to any one of 5,000 carrier bag recycling bins at supermarkets across the UK.

---

**Q Is it true that plastic remains stable in landfill?**

**A** Yes, one big advantage of plastic is that, unlike some other materials, it remains stable and inert in landfill. This means it will not break down to give off harmful greenhouse gas emissions.

---

**Q Is it true that plastic litter in the seas, when ingested by marine life, can pose a threat to health if that marine life enters the human food chain?**

**A** There is no peer-reviewed scientific evidence that waste plastic represents a direct threat to human health if ingested by marine life which then enters the food chain.

**Q Is it better to landfill non-recycled plastics or recapture their latent energy through Energy from Waste plants?**

**A** Landfill should be a last resort for any resource. Because plastics have a higher calorific value than coal, it is far better to convert this to energy. For more information visit <http://www.energy-from-waste-uk.co.uk>

---

**Q Would it make it easier to recycle plastics if there were fewer types of plastics in use?**

**A** The different plastics in use have been developed to give special properties suited to many different applications such as cushioning, anti-fogging, shatter resistance, high clarity, freezable and ovenable, easy opening and re-sealing. Many modern recycling facilities can sort different plastics by their type and colour.

---

**Q If other materials have higher recycling rates than plastic, doesn't this make them more environmentally friendly than plastic?**

**A** Plastic packaging's unique qualities, most notably its lighter weight, means that it is intrinsically a lower generator of greenhouse gases than packaging made from other materials. It also uses less energy in manufacture and product distribution. This means that, even if there were no plastics recycling, plastic brings the benefit of lower overall environmental impacts across a product life cycle.



**Packaging and Films Association**

Gothic House, Barker Gate, Nottingham NG1 1JU

Tel: +44 (0)115 959 8389

Email: [pafa@pafa.org.uk](mailto:pafa@pafa.org.uk)

[www.pafa.org.uk](http://www.pafa.org.uk)