

# Waste information pack

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# Waste information pack

## Introduction

Primary and secondary schools in England throw away the equivalent weight of 185 double decker buses of waste every school day. That's 258,300 tonnes of waste in a year arising from schools in England<sup>1</sup>

This vast amount of day-to-day waste can be significantly decreased by schools if they reduce, reuse and recycle. By reducing the waste they create, schools can save money and lessen their harmful impact on the environment.

Rubbish can be a valuable resource. Instead of being thrown into landfill sites, rubbish can be used to make useful everyday objects. In fact, processes to recycle objects can even be less harmful to the environment than making objects from new. A recycled aluminium can requires 5% of the energy to produce compared with one made from new, since it avoids the energy intensive stages of mining and extraction<sup>2</sup>. This is a good example of how recycling can help tackle climate change.

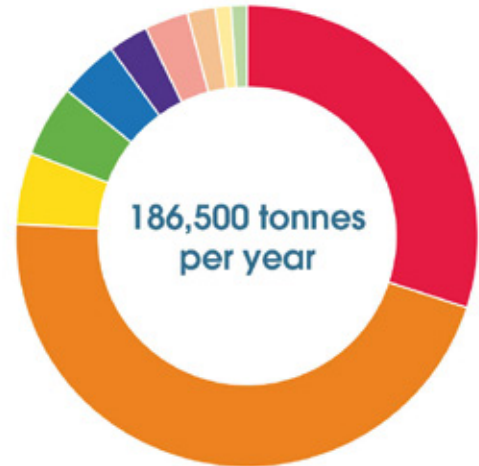
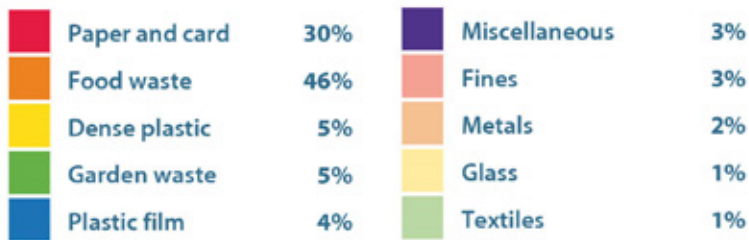
<sup>1</sup> Top tips for sustainability in schools, Department for Education (2012)

<sup>2</sup> Recycle More

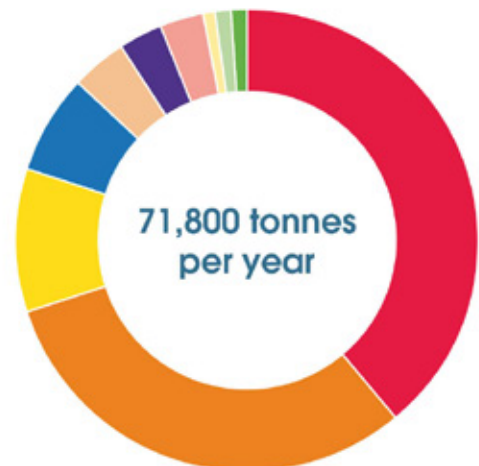
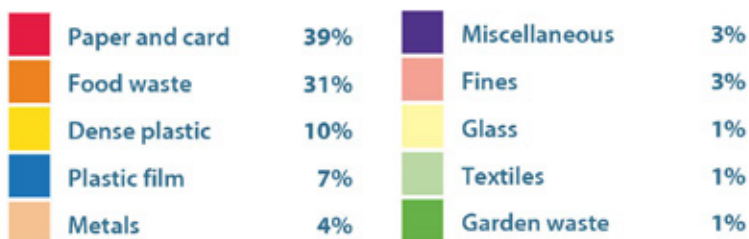
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## Waste produced by primary and secondary schools

### Primary



### Secondary



Source: Report into the nature and scale of waste produced by schools in England, WRAP (2008)

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## What is waste?

**Waste is something that someone doesn't need or want anymore.**

The type of waste created has changed over time. In early pre-industrial times waste was mainly composed of ash from fires, wood, bones, bodies and vegetable waste. It was disposed of in the ground where it would act as compost and help to improve the soil. Ancient rubbish dumps excavated in archaeological digs reveal only tiny amounts of ash, broken tools and pottery. Everything that could be was repaired and reused, populations were smaller, and people lived in less concentrated groups. However, the transition from nomadic hunter-gatherer to farmer meant that waste could no longer be left behind, and it soon became a growing problem.

Until the Industrial Revolution when materials became more available than labour, reuse and recycling was commonplace. Nearly 4,000 years ago there was a recovery and reuse system of bronze scrap in operation in Europe and there is evidence that composting was carried out in China. Reuse and recycling has always existed in the form of salvage, an age-old tradition stretching forward from 'Toshers' who scavenged for coins, bits of metal and jewellery in 19th-century sewers, and the 'rag-and-bone' men. Traditionally, recovered materials have included leather, feathers and down, and textiles. Recycling included feeding vegetable waste to livestock and using green waste as fertiliser. Pigs were often used as an efficient method of disposing of municipal waste. Timber was often salvaged and reused in construction and ship-building. Materials such as gold have always been melted down and re-cast numerous times. Later recovery activities included scrap metal, paper and non-ferrous metals.



To see the Historical Timeline of Waste go to [Appendix 1](#).



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## Types of waste

Waste isn't only what we put in our bins or see littering the streets. Many of the things we do every day create waste. These categories cover some of the different types of waste humans produce:

- ▶ **Agricultural waste** – Both crop farming and animal farming produce waste, and this means that the largest single source of waste is agriculture. In the past, farms used to be smaller, often both growing crops and raising animals. Farmers were able to use manure from the animals as fertiliser for the crops and to feed unwanted parts of the plant crops to the animals. These days, farms tend to be larger and concentrate on just one type of crop or animal. This creates more waste; crop farming also uses far more chemicals than they used to. These chemicals are in the form of nutrients, pesticides and fungicides that have to be well managed so that they do not run off into water courses, as this results in more waste in the form of pollution and hazardous waste.
- ▶ **Mining and quarrying waste** – Large amounts of waste are produced by mining and quarrying. This waste is often piled up near the mine or quarry in 'slag heaps'. Slag heaps of coal waste used to be a common sight around the coal-producing areas of the country. In Cornwall, where China Clay is still quarried, there are many tips and pits. They are nicknamed the 'Cornish Alps' and have even been used as film sets!
- ▶ **Industrial waste** – This is the waste that comes from various industrial processes, and may be solid or liquid. Most industrial waste can be in the form of excess materials or substances, such as waste fibre from agriculture or logging. Some manufacturing, commercial, power or production plants may create waste that is hazardous and requires safe and responsible disposal.
- ▶ **Commercial waste** – This is the waste that comes from any places that are classed as commercial, even if the rest of the premises have a different classification. So if you have a commercial office in your home, any waste that it produces is classed as commercial.
- ▶ **Sewage sludge** – In the past sewage was just discharged straight into rivers or the sea. The River Thames used to be really smelly! When they first built the Houses of Parliament, the smell from the Thames made the building unusable. These days, sewage has to be treated and meet standards set by the Environment Agency before it can be discharged.

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- ▶ **Hazardous waste** – This is waste that may be dangerous to the environment or public health. It has to be handled and treated in controlled conditions. Seemingly ordinary waste such as cleaning materials, paints, weed killers and medicines can be classed as hazardous waste. All hazardous waste requires safe and responsible disposal.
- ▶ **Municipal solid waste** – This is the waste collected by local authorities, including: waste collected from households; left at civic amenity sites and recycling centres; waste or litter collected during street cleans; and some waste from shops and offices.
- ▶ **Household waste** – Household waste is extremely varied, made up of packaging, food, paper, old toys, old clothes, garden cuttings and old furniture. Batteries and electronic waste (e.g. refrigerators, computers and televisions) require safe and responsible disposal separate from the standard council waste collection.

See [Appendix 2](#) for a detailed version of the What's in your Bin? graphic.

## What do we do with our waste?

We create a lot of waste, so what can we do with it? What are the options?

### Landfill sites

If we do not reuse our waste, it is often sent to landfill sites – basically big holes in the ground. The landfill sites we're currently using are filling up fast. Modern landfills are now so tightly controlled and built with many barrier layers that prevent moisture, light and air going in that little to no rotting can take place. Where there is a high concentration of organic waste that is suitably moist, then a little amount of rotting can occur in anaerobic conditions (without oxygen). This gives off gases called methane and carbon dioxide, which are bad for the environment. These gases are usually now caught and the methane is often used to make electricity or heat homes nearby. Other waste will not rot and will remain in the ground for a very long time.



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## Energy from Waste

There are many ways that energy can be made from waste. When waste is burnt at high temperatures to produce heat and/or electricity it is called 'incineration'. But there are other methods that do the same thing, in different ways. All energy from waste processes heat up the waste under differing conditions and produce many different products. They all have different names (gasification, pyrolysis, anaerobic digestion etc.) but common amongst them all is that one or more of the products are used for heating and/or to produce electricity. Once waste has gone through this process it is often not possible, or it is extremely expensive, to recover recyclable materials. This means that the opportunity to make energy and material savings from the waste is lost. To protect health, there are strict guidelines about emissions from plants that burn waste.

## Recycling

The best waste to recycle are dry and clean items like cardboard, paper, glass, metal cans, and some plastics. Recycling means they are reprocessed into new items. Some things can be re-made into what they were before, while others are made into completely new products. It is important that these wastes are kept separate from the general waste and aren't contaminated. It is also important not to drive the recyclable material hundreds of miles to a reprocessor, or more resources could be used in transport than saved by recycling. This is why we can recycle some plastics in certain parts of the country but not others. Keeping the waste we recycle clean and dry increases the quality and ease for the recycler. We can separate it at source (e.g. kerbside) to ensure it is clean, dry and loose but no matter how efficient we get at recycling, we still need to reduce the amount of waste we produce in the first place.

## Composting

Composting is a form of recycling. Waste from the kitchen and garden can be turned into compost or soil conditioner. Many local councils will now take our kitchen and garden waste and turn it into compost, which we can then buy back. If we compost at home, it saves transport, energy and money.



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## Compostable plastics

### The myth

*Compostable plastics are better for the environment than recyclable plastics.*

### The truth

There are many new 'compostable' products emerging on to the market. These meet the EN13432 European Standard for commercial composting. There is a difference, however, between what is commercially compostable and what is likely to compost in the average person's back garden bin. Most commercially compostable products are made from PLA. PLA is a plant-based plastic, which is generally derived from cornstarch. Growing this crop also has other issues attached to it, such as the use of herbicides and pesticides, and the fact that it uses a lot of land – which can result in the destruction of natural habitats and environmental problems, such as landslides. PLA can eventually degrade in a garden compost bin, but it can take a very long time.

These new 'compostable' products can easily be confused with ordinary recyclables, but if they're put in that waste stream they can contaminate it.

There have been many discussions in the industry recently about how these new compostable products increase the risk of contaminating traditional recycling streams, and how to educate the public about these issues.

Further information can be found on the WRAP website [www.wrap.org.uk](http://www.wrap.org.uk)

More myth-busting waste and recycling facts can be found at: [www.wastebuster.co.uk/mythbuster](http://www.wastebuster.co.uk/mythbuster)



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## Waste journey



See the full scale Waste Journey in [Appendix 3](#).

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## The decomposition timeline

The time taken for different materials to breakdown is greatly affected by the environmental conditions the material is in. Mostly breakdown occurs when the material undergoes biological processes (e.g. from bacteria, fungi etc.) called 'biodegradation'. But the most efficient biodegradation occurs under specific conditions.

### Composting provides a good example of this:

- ▶ Carbon to nitrogen ratio: Ideal composting conditions include roughly the same weight of dry leaves, bark and paper that are high in carbon ('browns') and wet items such as vegetable scraps and grass clippings ('greens') that are high in nitrogen.
- ▶ Temperature: Although the act of composting itself produces heat, around 25°C is needed to get bacteria and fungi to an ideal 'start' temperature.
- ▶ Oxygen: At least 10% of the material must be oxygenated.
- ▶ Moisture: A moisture level of around 50% is considered ideal<sup>3</sup>.

In contrast, plastics fall into two categories in terms of decomposition: **biodegradable** and **non-biodegradable**. Biodegradable plastics have been developed to break down after a certain period of time given certain conditions in industrial composting processes. Whereas, non-biodegradable plastics made from oil 'photo-degrade', which means that they break down under the influence of the sun. This is why plastics buried in landfills may never break down.

A study by the Mote Marine Laboratory from 1993 offers comparative rates of decomposition for a wide variety of different materials.

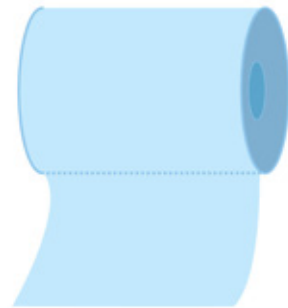
To compare decomposition times of different materials, see The Decomposition Timeline in [Appendix 4](#).

<sup>3</sup> Cornell University (<http://compost.css.cornell.edu/physics.html> and <http://compost.css.cornell.edu/chemistry.html>)

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## Waste facts

- ▶ In 2011, every household in England threw away over 514kg of waste with the local authorities collecting over 25 million tonnes of waste. Approximately over 10 million tonnes (42%) of household waste was recycled in the UK (Defra).
- ▶ In less than two hours, the UK produces enough waste to fill 37 Olympic-sized swimming pools (Green Box Day).
- ▶ You can make 20 aluminium cans out of recycled material using the same amount of energy as it takes to make just one new one (Recycle More).
- ▶ The energy saved from recycling one glass bottle is enough to power a 100 watt light bulb for one hour (Recycling Glass).
- ▶ Recycling one plastic bottle can save enough energy to power a 60 watt light bulb for six hours (Recycling Guide).
- ▶ For every tonne of paper that is recycled, 17 trees are saved (Earth Trust).
- ▶ Incinerating 10,000 tonnes of waste creates one job. Landfilling the same amount of waste creates six jobs. Recycling the same 10,000 tonnes creates 36 jobs (EPA).



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## Recycling material facts

### Aluminium

- ▶ Recycling just one aluminium can provides enough energy to power a TV for three hours (Think Green).
- ▶ If all the aluminium cans thrown away in the UK, on average, per year, were put end to end, they'd stretch to the moon... and back! (Let's Talk Less Rubbish).

### Plastic

- ▶ In 2010, people in the UK used 8.6 single-use bags on average, per month, compared to 14.7 back in 2006. Between June 2009 and May 2010, supermarket customers averaged 8.2 bags per month (WRAP).
- ▶ There are differences across the UK though, with Northern Ireland recording the lowest bag use per person (WRAP).
- ▶ Carrier bags contain more recycled content than ever before, with a 61% reduction in the amount of virgin polymer used in all carrier bags since 2006 (WRAP).

### Waste Electrical and Electronic Equipment (WEEE)

- ▶ 2 million working PCs end up in landfill sites in the UK every year (Waste Online).

### Paper

- ▶ The average British family throws away six trees worth of paper in their household bin, per year (Green Box Day).

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## Glass

- ▶ The energy saved from recycling just one glass bottle can power a light bulb for four hours (Recap).

## Steel

- ▶ Did you know that the thinnest part of a steel can is only 0.07 mm thick? That's thinner than a human hair! (Recycle More).

## Organics

- ▶ In the UK we throw away the equivalent of more than 3 million slices of cheese a day! (Love Food Hate Waste).

## Cardboard

- ▶ Some recycled cardboard is so strong you can use it instead of wood or metal to make furniture (Bryson Recycling).

## Textiles

- ▶ 70% of the world's population wears second-hand clothing! (Let's Talk Less Rubbish).

These facts and their sources, plus more waste and recycling facts can be found at:

[www.wastebuster.co.uk/waste-facts](http://www.wastebuster.co.uk/waste-facts)

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## Recycling symbols



The Recycle mark to encourage people to recycle when possible.



The Mobius Loop is a universal symbol indicating something can be recycled. If there is a percentage visible, it shows how much recycled material it contains.



The Green Dot is a European license showing the manufacturer contributes to the cost of recovery and recycling.

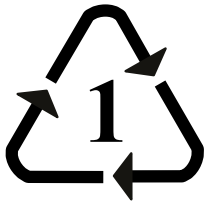


The item is made from aluminium and is recyclable.



The item is made from steel and is recyclable. Nearly all food tins are made from steel and can be recycled even if the symbol is not shown.

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**PETE**

The item is made from plastic and is recyclable. Numbers will range from 1 to 7 for different types of plastic. PET and HDPE (type 2) are the most commonly recycled.



The item is made from glass and can be taken to a bottle bank. All glass can be recycled even if the symbol is not shown.



Batteries should not be put into household waste. All shops selling batteries should accept old batteries for recycling.



Electrical items should not be put into household waste. The WEEE symbol indicates the item is separated for recovery and recycling.



To be given the National Association of Paper Merchants mark, paper or board must be made from a minimum of 75% genuine waste paper.



The Forest Stewardship Council logo identifies products which contain wood from well-managed forests.



'Widely Recycled' means 75% of people have access to recycling facilities for these items.

'Check locally' means 20%-75% of people have access to recycling facilities for these items,

'Not recycled' means less than 20% of people have access to recycling facilities for these items.

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## Conserving resources

We continually use the world's natural resources to produce things. Oil is used in making plastics, trees to make paper, sand to make glass, and metal 'ores' in making metals.

Whilst many of these resources take millions of years to form, we are using them faster than the world is producing them and thus risk running out!

We need to manage these resources carefully. In the first instance, we can reduce the amount of natural resources we use, by looking to renewable resources and recycling as an alternative.

In throwing items away we lose the natural resources they are made from, and also the energy and time used to produce the product. In addition, many items are only designed to be used for a short time before they are replaced – disposable razors, for example. Again, we need to look for alternatives that are recyclable or offer a longer-term shelf life.

Some items, such as small electrical items, are more expensive to repair than replace, often due to the way they are manufactured. However new laws are encouraging manufacturers to be more responsible for their products when they become waste and there is more pressure on them to make products recyclable – or, in the case of small electrical items, making them easier to dismantle at the end of their life.



## Mythbuster

*Why recycle paper when we can replant trees?*

### The myth

There's no need to recycle paper, as most companies plant new trees to replace the ones they cut down.

### The truth

**Trees take years to mature to a stage where they can be harvested.** This can be as short as 12 to 15 years for species such as poplars, or as long as 40 years for conifers like pine, larch and Douglas fir. This means that in order to continuously have a supply of wood for paper we have to keep planting new trees that take up space, management, time and money. Recycling paper rather than making it from new saves energy, water, carbon and landfill space!

More myth-busting waste and recycling facts can be found at: [www.wastebuster.co.uk/mythbuster](http://www.wastebuster.co.uk/mythbuster)



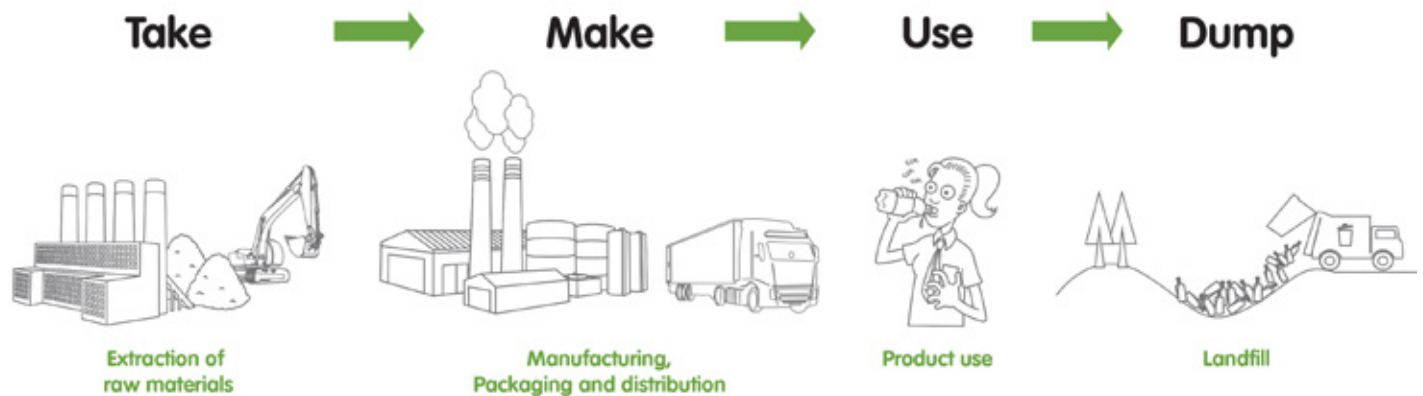
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## Linear vs. circular economy

When we don't recycle, we continually consume natural resources that ultimately result in a physical mass of waste, without reinvesting back into the natural environment.

A **linear economy** is one in which there is no cyclical reinvestment – society simply takes (from natural resources), makes (product), uses (the product), dumps (the resource when it is no longer needed in a way in which it cannot be used again).

### Linear economy

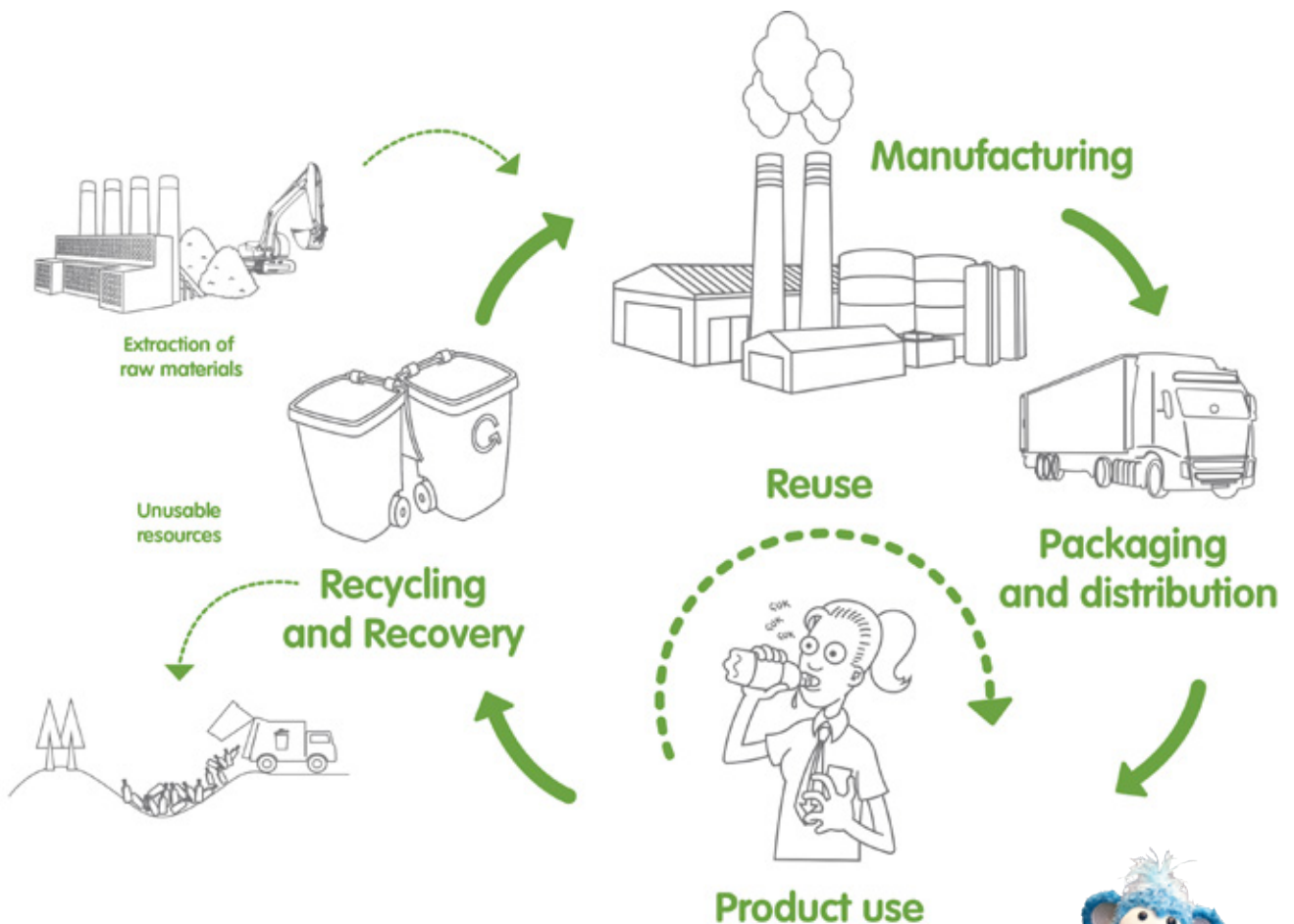


See the Linear Economy diagram in [Appendix 5](#).

A **circular economy** that promotes material/ resource re-use not only reduces our dependency on natural resources, but also increases the efficiency of resource distribution in society. The model reduces both landfill space and carbon generation to create a more economical, environmental and, ultimately, sustainable flow of goods and services in society.

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## Circular economy



See the Circular Economy diagram in [Appendix 6](#).



## Mythbuster

### Are recycled products low quality?

#### The myth

*What's the point in recycling when all recycled products are low-grade and poor quality?*

#### The truth

**Recycled products can be exactly the same grade and quality as new products.** For example, metals and glass can be recycled indefinitely, with no loss of quality whatsoever.

More myth-busting waste and recycling facts can be found at: [www.wastebuster.co.uk/mythbuster](http://www.wastebuster.co.uk/mythbuster)

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## Waste hierarchy

Waste is defined as something that is unwanted or unusable. According to the Office of National Statistics, a staggering 342 million tonnes of waste is produced in the UK each year.

A vast proportion of this waste could be diverted from landfill, where it is buried or burnt, if we followed the steps set out in a waste hierarchy like the one below:



## Reduce

The easiest way to minimise waste is to avoid creating it in the first place.

**Example:** Manufacturers can use less materials and consumers can change their shopping habits so that less wasted items are bought. Avoid excessive packaging in buying products loose or use a bag for life for your shopping.

**Action:** At school, take a look at the types of resources your school buys and think about how to cut down. Much of the waste a school produces can be reduced and recycled. Instead of paying companies to remove waste, the school will save money in the long term by recycling it, and may also be able to sell some of the metal and glass to companies who can turn it into something new.

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## Reuse

Reusing items is a great way of reducing waste.

**Example:** Bags can be reused many times; a water bottle can be reused by filling it from the tap!

**Action:** There are lots of ways to reuse all sorts of items creatively: Why not try tyres as plant pots in school grounds, or use jam jars as containers? Have a school uniform swap day or take unwanted items to charity shops, or use schemes like Freecycle. You could even hold a collection in school for unwanted textiles to gain great new resources for your school and fundraise for charities through schemes such as [www.scienceintoschools.org](http://www.scienceintoschools.org)

## Repair

Can an item be repaired? Often items are disposed of when they could easily be repaired.

**Example:** Modern manufacturing processes and technology have made many products disposable or not designed for easy repair. But there are many items, such as clothing, that could be repaired easily.

**Action:** Learn to sew and mend holes in your socks or jumpers; or even give old favourites a new lease of life.

## Recycle

Recycling materials reduces the amount of new resources we use.

**Example:** Whilst energy is used in the recycling process, it's often less than the energy needed to make a new product. For example, 20 recycled aluminium cans can be manufactured with the same energy it takes to make one brand new can.

Things like paper and food waste will rot, but plastic will not. It is inert, which means it does not react with elements such as air or water, and never biodegrades or rots away. Plastic can stay in the ground for many years, so it's really important to recycle it.

**Action:** Recycle whenever it is not possible to reuse or repair.

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## Reinvest

Close the loop and buy things made from recycled materials. Ideally things made from the waste we produced ourselves!

**Example:** Many products are made from recycled materials other than paper and cans: pencil cases and benches can be made from recycled tyres, pens from recycled yogurt pots and even paper made from sheep's poo! By demanding products made from recycled materials, the recycled goods market is stimulated and in turn, collection and recycling facilities are better developed and maintained.

**Action:** Visit charity shops and car boot sales. What someone else no longer wants, you might! You can buy and sell clothes, games, books and CDs – there are so many things that stay useful. As well as reducing waste, buying second-hand goods can save you money or make you money too if you're the person selling them!

## Recover

This means recovering energy from waste.

**Example:** Energy from Waste (EfW) plants produce electricity and steam or hot water. These plants can use the waste produced in a town to help provide it with electricity.

**Action:** By reducing, reusing, repairing and recycling, your waste won't need to go to an EfW plant.



## Mythbuster

### Is recycling a waste of energy?

#### The myth

*Councils' recycling collections end up using more energy than the rubbish collections, so we may as well just throw our rubbish in the bin rather than recycle it.*

#### The truth

Vehicles would still go and collect your rubbish, even if there was no recycling. Even when taking transportation into account, the resources, energy and carbon saved by not having to make new materials from scratch makes recycling better for the environment than dumping it in landfill sites.

More myth-busting waste and recycling facts can be found on:

[www.wastebuster.co.uk/mythbuster](http://www.wastebuster.co.uk/mythbuster)

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## Compost

Composting is a form of recycling: the nutrients in organic waste are processed and returned to the soil to help more plants to grow.

**Example:** A compost bin biodegrades your fruit, vegetable and garden waste into fertiliser. Some bins also use worms to produce compost from cooked and uncooked kitchen waste.

**Action:** You can either compost in your kitchen and garden or, if your council has the facility, send your waste to a commercial composter. Compost from these sites is often available for sale.

## Exporting waste

### General exportation of waste

There are a number of regulations that need to be identified and followed for the importation and exportation of waste, and they will depend on the type of waste as well if it is being transported for reuse or recycling. You can find out more information on the Environment Agency website:

[www.environment-agency.gov.uk/business/sectors/32447.aspx](http://www.environment-agency.gov.uk/business/sectors/32447.aspx)

### Waste Electrical and Electronic Equipment (WEEE)

The WEEE Directive, implemented in the UK in 2007, along with other legislation, guidelines and agreements such as the Basel Convention, sets out how electrical goods are recycled, reused and disposed of in the European Union. The Directive was set up to complement the 1994 European Community ban on exporting hazardous waste through the Hazardous Waste Directive.

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There are two sides to exporting WEEE: for Reuse and for Recycling. In both cases, it is suggested that exporters become an Approved Exporter via the Environment Agency (for exporting WEEE for Recycling, this is mandatory). In order to export WEEE for Reuse, the exporter must first make sure the items are suitable, and there are guidelines and procedures to make sure this is the case. To export WEEE for Recycling, the items must be expected at a destination suitable for their recycling. The recycling facility must be run to the same levels of environmental legislation, health and safety, etc. as in the UK (if not better), and also due to the restriction of exporting hazardous waste, there are a number of items that cannot be exported, such as most batteries. Details for how batteries can be recycled are below.

Despite the ban and the Directives, there are concerns that electrical goods like old televisions and computers containing hazardous substances are still being exported from Europe to Africa and Asia.



This illegally exported e-waste from the EU is dismantled by hand by workers, some of them children, at informal recycling plants in Africa and Asia. Workers search the e-waste containing toxic heavy metals and hazardous chemicals for valuable and recyclable substances like copper, iron, gold and aluminium. Once the e-waste has been searched, it's burnt and exposes workers to toxic fumes.

Electronic waste is the fastest growing waste in Europe. For further information visit the Environment Agency website: <http://www.environment-agency.gov.uk/business/sectors/129700.aspx>

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## Battery recycling

Batteries that end up in landfill can leak toxic metals like lead, cadmium and mercury. These can leach out into the ground, pollute water and harm wildlife. We can stop this from happening by recycling or using rechargeable batteries.

The Waste Batteries and Accumulators Regulations 2009 introduced collection targets of 25% by 2012 and 45% by 2016. To help this, any shop selling more than 32kg of batteries per year is now obliged to provide battery recycling bins.

Although we recycle 90% of vehicle batteries, we only recycle 3% of consumer batteries<sup>4</sup>!

## So, what happens to them?

There are three types of batteries: disposable dry-cell, rechargeable dry-cell and wet-cell batteries.

**Disposable dry-cell batteries** – These are the normal single-use batteries that we find in electronic equipment like remote controls, torches, calculators and watches. They contain metals such as zinc, mercury, silver and lithium.

**Rechargeable dry-cell batteries** – These are the batteries that you will find in power tools, laptops, digital cameras and mobile phones. These contain metals such as nickel, cadmium and lithium.

**Wet-cell batteries** – These are the types of batteries found in vehicles, and often contain lead.

All these batteries first have to be sorted into their relevant types, and are then processed using either heat (pyrometallurgical), chemicals and water (hydrometallurgical) or mechanically. The metals recovered from these processes can then be used to make new batteries amongst other things.

<sup>4</sup> Environment Agency (2009)



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## Mythbuster

### Is UK recyclable waste just shipped abroad and dumped?

#### The myth

*There's no point sorting rubbish for recycling as it all just gets shipped abroad to be dumped.*

#### The truth

While a proportion of sorted rubbish is shipped abroad, it's not necessarily transferred to foreign landfill sites. There have been press reports about our waste being exported to China and dumped in landfill. This is not the case. A lot of waste is going to China, but the Chinese are buying it because they want to recycle it.

In 1997, China imported around 12,000 tonnes of plastic, paper and metal rubbish from the UK; by 2005 this was almost 1.9 million tonnes. As our recycling rate increases, so does the amount of rubbish shipped overseas for recycling. According to the Environment Agency, much of the rubbish exported is readily recycled in countries where there's a demand for raw materials to manufacture consumer goods.

China is a major manufacturer of plastic products and it is better for them to recycle our unwanted plastic than use raw materials. They can turn PET plastic (fizzy drink bottles) into fleeces and turn milk bottles into household products, such as crates, pipes, bottles and film.

Selling the UK's used plastic bottles and paper for recycling in China actually saves carbon emissions. Shipping these materials more than 10,000 miles produces less CO<sub>2</sub> than sending them to landfill at home and using brand new materials.

The UK's trade imbalance with countries like China also means container ships would return from the UK empty if they weren't used to transport rubbish for recycling – which means more energy isn't wasted by shipping it overseas.

Even though transporting items to China releases CO<sub>2</sub>, the amount saved by recycling rather than manufacturing new items is considerable. A report undertaken by WRAP, called 'CO<sub>2</sub> impacts of transporting the UK's recovered paper and plastic bottles to China', found the emissions for transportation were less than a third of the savings from recycling.

Further information can be found on the WRAP website [www.wrap.org.uk](http://www.wrap.org.uk).

More myth-busting waste and recycling facts can be found at: [www.wastebuster.co.uk/mythbuster](http://www.wastebuster.co.uk/mythbuster)

# Waste information pack

## Packaging waste

Packaging is as old as time itself. People have always used a range of materials including hollow gourds, plant fibres woven into baskets and bags, animal skins, wooden containers and clay pots to store, transport and trade the food and drink necessary to sustain early communities.

In the late 18th century, the process for producing paper from wood pulp had been invented, and by the mid-19th century, cardboard and paper bags were being produced on an industrial scale in England. Similarly, advances were being made in can manufacturing and glass jar and bottle production. By the 20th century, packaging was almost as important to the growing consumer society as the goods themselves.

Today, packaging has six basic functions: to protect, inform, contain, transport, preserve and display products as they move from producers to consumers. Package labelling is also an important source of information about the package's contents, with the type of information on the label being different, depending on the category of packaging.



## Mythbuster

### Tetra Pak carton recycling

#### The myth

*Tetra Pak cartons can't be recycled as they're made from lots of different materials.*

#### The truth

False! The different materials Tetra Pak cartons are made of – cardboard, plastic and sometimes aluminium are difficult to separate but not impossible. 86% of local authority areas in the UK now have recycling facilities for Tetra Pak, with 30% of councils now collecting from your doorstep (according to 2010 Tetra Pak figures). You can also send them to the manufacturer directly for recycling.

To find out whether your local authority collects cartons for recycling, visit [www.tetrapakrecycling.co.uk/locator.asp](http://www.tetrapakrecycling.co.uk/locator.asp) or find out more about its postal recycling scheme at [www.tetrapakrecycling.co.uk](http://www.tetrapakrecycling.co.uk)

# Waste information pack

## The three categories of packaging

### Primary packaging

This is the packaging that we as consumers are most familiar with – it surrounds the products that we purchase. Primary packaging ensures the product is neither contaminated nor damaged, by providing a physical barrier between the product and the external environment. This helps to ensure less waste through product transition. In developing countries, with less sophisticated distribution and packaging systems, as much as 50% of food never reaches consumers. These physical barriers may also prevent pests and moisture from damaging products.

Sometimes primary packaging also offers a more advanced role in ensuring the optimum environment for the product, such as keeping items either cool or warm. The barrier may even be a gas barrier designed to modify the atmosphere within the packaging, to keep highly perishable foods like lettuces from wilting.

With modern shopping habits, where consumers pick directly off the shelves from a huge range of products, primary package labelling is key. It both informs consumers and attracts them to make a purchase. Detailed information about the contents is displayed – this is particularly important for food and drink, where nutritional information and directions for storage and preparation directly contribute to food safety. Primary package labelling also identifies the country of origin and any certifications, such as Fairtrade or organic.



### Secondary packaging

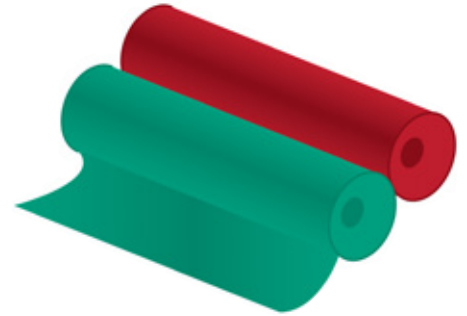
This refers to the cases or boxes used to group quantities of primary packaged goods for distribution or display in shops. Secondary packaging also features package labelling that describes the contents and any special storage or handling requirements required to maintain the quality of the products.

The size and dimensions of secondary packaging are determined by ergonomic considerations – whether they are easy for a person to lift, carry and stack. Of course the dimensions of the secondary packaging also influence the number of packages required to fill a standard shipping pallet.

# Waste information pack

## Transit packaging

This refers to the pallets and wrapping materials used to bundle groups of secondary packages for storage and distribution. Whilst ergonomic considerations don't play a part here – because transit packaging is moved by machine – the mass of the pallet itself does influence the energy required to transport the pallet from manufacturer, to distributor, to retailer.



Today, the UK uses about 10.5 million tonnes of packaging (all forms). About 4.7 million tonnes of packaging is used for consumer goods<sup>5</sup>.

## Packaging facts

- ▶ Just 1.5 grams of plastic keeps a cucumber fresh for 14 days, whereas unwrapped it would be unsaleable in just three days (INCPEN).
- ▶ Glass containers are, on average, 30% lighter (from 2008) than in 1980 (INCPEN).
- ▶ Aluminium cans are, on average, 45% lighter (from 2008) than in 1990 (INCPEN).
- ▶ A 275g glass beer bottle uses 61% less material than in the 1970s; a 165g yoghurt pot 43% less; a two-litre plastic fizzy drink bottle 31% less; and a 400g soup can 29% less (INCPEN).
- ▶ In 2012, Easter egg manufacturers reported that they had reduced the weight of their packaging by around 30% on the previous year (INCPEN).

These facts and their sources, plus more waste and recycling facts can be found at:

[www.wastebuster.co.uk/waste-facts](http://www.wastebuster.co.uk/waste-facts)

<sup>5</sup> INCPEN (2008)

# Waste information pack

## Industry case studies

Robinsons Double Concentrate, introduced in March 2011, has reduced the amount of PET used by 61.3% and the amount of packaging used per litre by 35.1%. [www.britvic.co.uk](http://www.britvic.co.uk)

Kenco introduced a lighter weight coffee jar that has 7% less glass weight than previous models, in February 2011. In 2009, they introduced Eco Refill packs, which reduced packaging by 97%. They partner with Terracycle, who recycle the empty packs into tote bags, pencil cases and garden pavers. [www.wrap.org.uk](http://www.wrap.org.uk)

J20 275ml glass bottles have been lighter since 2009. Each bottle is 20 grams lighter, with each bottle reduced from 200 grams to 180 grams. This saves about 4,000 tonnes of glass a year and is equivalent to 20 million bottles of J20 a year. This is on top of a previous reduction in 2004 of 26 grams. [www.wrap.org.uk](http://www.wrap.org.uk)

Coca Cola Enterprises and project partners (WRAP and BCME) designed a 5% lighter aluminium drinks can in 2008. WRAP found the new design saves 15,000 tonnes of aluminium across the EU each year. It's the first time the body of a can has been made lighter in the EU, as previous weight reductions were made on the base of the can. The thinner can is 0.097mm wide. [www.wrap.org.uk](http://www.wrap.org.uk)

## The Courtauld Commitment

Over 40 major grocery retailers, brands and suppliers in the UK have signed up to this government-sponsored agreement. The agreement was set up with WRAP and works in partnership with leading grocery retailers to develop innovative solutions that reduce the environmental impact of consumerism. It consists of three phases, all of which focus on packaging and the third phase (launched May 2013) also aims to reduce the weight and carbon impact of food waste as well.

## Food waste

### It's time to get rid of sell-by dates on food

The government is advising manufacturers to stop using 'sell by' and 'display until' dates on food. These labels are used by food businesses for stock control and are confusing shoppers.

In 2010, WRAP estimated that 7.2 million tonnes of food and drink were wasted. As a nation we are spending around £2.5 billion on food and drink that ends up as waste<sup>6</sup>.

<sup>6</sup> New estimates for household food and drink waste in the UK, WRAP (2011)

# Waste information pack

The main piece of EU legislation for date marking of food is Directive 2000/13/EC, which is implemented in Great Britain by the Food Labelling Regulations 1996 (SI 1996/1499) and in Northern Ireland by the Food Labelling Regulations (Northern Ireland) 1996 (SR 1996/383).

This legislation requires pre-packed food to carry a date mark which must be one of two types:

**Best before:** Foods are at their optimum condition if stored correctly until the best before date. Food products can still be consumed after this date.

**Useby:** Foods that are highly perishable from a microbiological point of view and are likely to pose an immediate danger to human health must carry a use-by date. Food products should not be consumed after this date.



## Mythbuster

### Best before dates

#### The myth

*It's not safe to eat food that is past its 'best before' date.*

#### The truth

**It IS safe to eat food past its 'best before' date if the food still seems edible** (check the look, smell and taste to check). The best before date is a mark of food quality and shows how long that food typically holds its best quality for.

More myth-busting waste and recycling facts can be found at:

[www.wastebuster.co.uk/mythbuster](http://www.wastebuster.co.uk/mythbuster)

## Mythbuster

### Use by dates

#### The myth

*It's safe to eat food that is past its use-by date.*

#### The truth

It is **NOT** safe to eat food that is past its use-by date. The use-by date relates to the safety of the food and is for perishable foods that could pose a risk to health after a relatively short amount of time after the use-by date has passed.

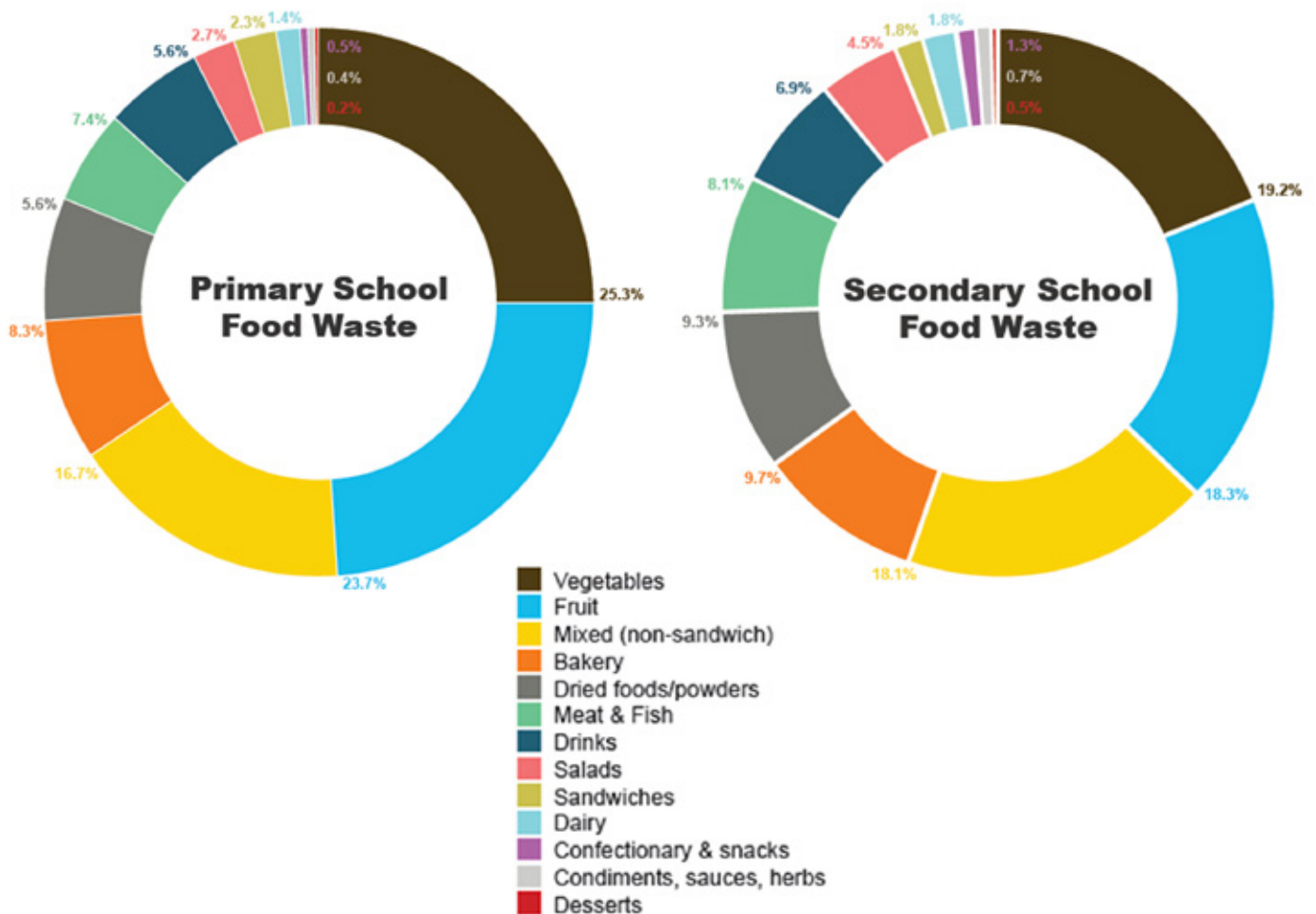
More myth-busting waste and recycling facts can be found at: [www.wastebuster.co.uk/mythbuster](http://www.wastebuster.co.uk/mythbuster)

# Waste information pack

## School food waste

A study by WRAP shows that over a school year, primary schools in England generate 55,408 tonnes of food waste and secondary schools generate 24,974 tonnes. Primary school pupils produce 72 grams per day and secondary pupils produce 42 grams per day<sup>7</sup>. In primary schools, most of the food waste comes from the kitchen and canteen; but in secondary schools the waste is divided more evenly, with most coming from kitchens.

The amount and types of food waste differs between primary and secondary schools:



7 Food Waste in Schools, WRAP (2011)

# Waste information pack

## Litter

Litter is a massive problem that costs £885 million a year to clean up in England<sup>8</sup>. Over 2.25 million pieces of litter are generated in the UK every year<sup>9</sup>. By starting to ‘think global, but act local’, communities are beginning to realise the impact of waste on the environment and taking action in their own communities and cities.

There are two ways litter is currently being tackled in England:

### 1. Fines

Local authorities have the power to fine people who litter even a small amount. A typical fine is £80 and can be given to children as well as adults. Between April 2008 and March 2009, over 30,000 fixed penalty notices were issued to people caught littering<sup>10</sup>.

### 2. Campaigning and educating

Keep Britain Tidy ([www.keepbritaintidy.org](http://www.keepbritaintidy.org)), the environmental charity behind the anti-litter campaign for England, is now working with local and central government, businesses, and voluntary organisations on Love Where You Live ([www.lovwereyoulive.org/](http://www.lovwereyoulive.org/)). This is a unique campaign where everyone – from individuals and schools to community groups – can work together to transform our country.

Getting involved in Keep Britain Tidy’s ‘Big Tidy Up’ is also a great way to teach children about the problem of litter and the effect it has on their environment. The Big Tidy Up offers a range of useful free resources and information on how you can organise your own ‘Big Tidy Up’ to tackle litter in your school or local area: [www.thebigtidyup.org](http://www.thebigtidyup.org)

8 Keep Britain Tidy (2010)

9 Keep Britain Tidy (2010)

10 Keep Britain Tidy (2010)



# Waste information pack

## 10 top tips to reduce waste in schools

The majority of waste in schools is recyclable and lots of rubbish that ends up in landfill could be valuable resources used to make useful everyday objects. What's more, it's often more expensive to dispose of waste in landfill sites than it is to recycle them.

Primary schools currently only recycle 13% of their waste, and secondary schools 20%<sup>11</sup>. A large proportion of waste from schools is food, paper and card.

Here are ten top tips to help your school reduce, reuse and recycle:

*The following extracts have been taken from 'Top Tips for Sustainability in Schools', published by the Department for Education in 2012:*

### 1. Try to stop producing waste in the first place

The best way to manage our waste is not to produce it in the first place! Cutting down on throw-away products and buying only what we need prevents unnecessary waste. Reducing your waste is a much better option environmentally and financially than recycling or any other waste disposal. If your rubbish is collected by your local council, your school may be charged according to the amount collected (though you should not be charged for disposal). If you reduce the amount of waste your school produces, you will reduce its costs too.

- ▶ Work with students to carry out a school waste audit to find out how much waste is produced, then classify the types of different waste and identify waste 'hot spots' within the school (you can find help with this at [www.recyclenow.com/schools](http://www.recyclenow.com/schools) or, if your school is a member of Wastebuster, you can use their very helpful online waste auditing tools at [www.wastebuster.co.uk](http://www.wastebuster.co.uk)).
- ▶ Develop an action plan on how to tackle waste in your school. Track your progress by undertaking regular measuring and monitoring (you can find help with this at [www.recyclenow.com/schools](http://www.recyclenow.com/schools) or, if your school is a member of Wastebuster, you can use their downloadable action planning tools [www.wastebuster.co.uk](http://www.wastebuster.co.uk)).

<sup>11</sup> Top Tips for Sustainability in Schools, Department for Education (2012)

# Waste information pack

## 2. Reuse – think before you throw things away

Reusing, refilling, repairing or refurbishing things will extend their life and reduce the need to buy new ones.

- ▶ Encourage students to use reusable bottles and flasks for drinks. This can easily be done by installing water fountains around the school and encouraging students to drink tap water. Why not try the Pod's Lose Your Bottle activity to start the debate in school?
- ▶ Printer cartridges: you can get your old cartridges refilled and use them again (it may take 1,000 years for cartridges to decompose in landfill, and it is often cheaper to refill them than buy new).
- ▶ Stationery: reuse old envelopes for internal mail or stick a new label over the previous address. The same can be done for old paper or plastic folders.
- ▶ Furniture: repair or repaint items of furniture to prolong their life.

## 3. Recycle – recycling old products into new ones saves raw materials and energy

Recycling helps save energy and tackles climate change, and could save your school money on rubbish collections. The types of materials that can be recycled and the cost savings to the school will depend on your local authority or other waste services provider.

- ▶ Find out from your waste services provider what recycling services they offer – some of these might be free. The services offered may be either 'co-mingled' (all items in one container) or collected in separate 'streams'.
- ▶ You might want to start with the biggest or most popular streams like paper, cardboard, cans, glass containers, plastics bottles and cartons. You can also set up schemes for smaller, more specialised streams like ink cartridges, light bulbs, batteries and CDs. You can also exchange unwanted textiles for new science equipment and teach children the science behind waste as a resource with the Pod's Science into Schools initiative: [www.scienceintoschools.org](http://www.scienceintoschools.org)
- ▶ Make it easy to recycle by placing recycling bins in sensible areas, such as next to printers and photocopiers, classrooms, and in the staff room! These areas can be identified by carrying out a waste survey.
- ▶ Use clear posters and signs to encourage everyone to use recycling bins, and use them correctly, so this becomes second nature (you can find help with this at [www.recyclenow.com/schools](http://www.recyclenow.com/schools) or, if your school is a member of Wastebuster, you can use their downloadable posters and signage [www.wastebuster.co.uk](http://www.wastebuster.co.uk).)
- ▶ There is no limit to how much you can recycle. With careful purchasing, determination and good recycling services, you can aspire to be a zero-waste school!

# Waste information pack

## 4. Swap or give it away!

Could someone else use your unwanted items? Why not donate them to a local charity shop, advertise on Freecycle, or exchange them in 'swap shops' or 'give and take' days?

- ▶ Set up a scheme to collect old ink cartridges and mobile phones from the local community – some charities are keen to accept these to help raise funds.
- ▶ Make it easy for students and their families to swap, donate and exchange secondhand uniforms. Run a 'reuse fashion show', a 'swap shop', or a 'give and take' day to make it easy for parents and students to do this.
- ▶ Contact your local charity shops or Freecycle to find a new home for other unwanted items such as furniture, books etc.
- ▶ Old books and computers can be sent abroad through donation schemes, but check there are procedures in place for maintaining the equipment and disposing of it correctly at end of life.

## 5. Get to grips with your paper and card waste

Paper and card contributes around a third of all waste in schools<sup>12</sup>. But it is easy to make more efficient use of paper and card, and to recycle it when you're done. It saves money too.

- ▶ Put scrap paper trays in each classroom, and in the reception office, the copier room and other places where lots of paper is generated.
- ▶ Make double-sided printing and photocopying the default, or add clear instructions next to printers on how this can be done manually. If need be, run short training sessions for staff so this approach becomes routine.
- ▶ Keep boxes from deliveries if they are suitable for use in storage.
- ▶ When recycling cardboard boxes, make sure you flatten them first, so they do not occupy a lot of space in the recycling bins. Of course, you can also feed cardboard into your compost bins.

<sup>12</sup> Top tips for Sustainability in Schools, Department for Education (2012)

# Waste information pack

## 6. Reduce your school's food and packaging waste

Food waste makes up over a third or more of the school waste burden by weight<sup>13</sup>. It rots in landfill producing methane, a gas more potent than carbon dioxide in creating climate change. Recent research suggests that production and disposal of food wasted by UK households every year accounts for 20 million tonnes of CO<sub>2</sub> equivalent emissions and 6.2 billion cubic litres of water; this is 3% of the UK's domestic greenhouse gas emissions and 6% of its global water footprint<sup>14</sup>.

- ▶ Compost bins can be located on grass or soil, and are an environmentally friendly and educative way to dispose of fruit and vegetable waste.
- ▶ Incorporate composting into science lessons or eco/gardening clubs. Understanding that there is no waste in nature – only food for other species – can be inspiring for all.
- ▶ If you have too much green and vegetable waste, you may be able to arrange a collection through your waste services provider. Check what types of food waste are allowed – not all take meal leftovers or meat and fish products.
- ▶ Encourage waste-free lunches by cutting down on food packaging, single-use and disposable items, and so on. This can focus on packed lunches as well as school dinners.
- ▶ Encourage healthy eating in the school by recommending no crisps, sweets or fizzy drinks days or banning soft drinks. All of these items produce waste.
- ▶ Avoid using plastic cups, cutlery and plates at school, as recycling these is difficult.
- ▶ Use china cups and reusable cutlery in staff rooms, and in refreshment and eating areas.
- ▶ Organise tasting sessions and use student feedback to develop new menus, portion sizes, and favourite fruit and vegetables, as this will cut down on food waste.

<sup>13</sup> Top tips for Sustainability in Schools, Department for Education (2012)

<sup>14</sup> Government Review of Waste Policy in England, DEFRA (2011)

# Waste information pack

## 7. Purchasing

'Procurement' (the buying of things) is responsible for a large share of carbon emissions from schools – that is, emissions bound up in the manufacture of the goods and services schools purchase. Sustainable procurement is now recognised as good for efficiency, value for money, fair trade and the environment – in short, it is the best option for schools.

- ▶ Purchase paper, pencils and other stationary products made from 100% recycled materials if possible.
- ▶ Ask your suppliers to deliver items in returnable containers, or ones which can be recycled. They should be helping you to reduce waste, not adding to your waste problem.
- ▶ Look out for 'scrapstores' that collect items from local businesses and make them available to schools at very low cost.

## 8. Use the power of the web

The paperless office still appears to be a distant dream! However, the use of email, document scanning, intranets, and online information can help to decrease paper use (and paper purchasing costs), if responsibly managed.

- ▶ Encourage staff to save and read documents electronically, rather than always printing out hard copies.
- ▶ Offer parents the choice of receiving newsletters by email, and keep your website useful and up to date.
- ▶ 'Ezines' – like the Pod's own ezine! – are 'electronic magazines' and a great way to get parents and the community involved and aware of what the school is doing.

# Waste information pack

## 9. Think whole school – and think big

Successful school waste initiatives are supported by the whole school, and indeed depend on everyone being aware and getting involved. Some of the leading examples are driven by the efforts of students, with effective support from staff.

- ▶ The Pod ([www.jointhepod.org](http://www.jointhepod.org)) and Wastebuster ([www.wastebuster.co.uk](http://www.wastebuster.co.uk)) have a wide range of exciting teaching resources to explore waste creatively in the curriculum, and tackle practical litter and waste reduction in school.
- ▶ Student-led initiatives work well, with students taking charge of waste surveys, monitoring and publicity campaigns. Some go further and rate the waste performance of teachers!
- ▶ Regularly announce and celebrate waste successes in school assemblies, staff meetings, newsletters and on the school website.
- ▶ Use notice boards and displays around the school to make waste minimisation central to the school's ethos. Could the school set itself the target of working towards zero waste?
- ▶ Run class competitions or recycling days to refresh students' awareness of waste issues.
- ▶ Get the cleaners on your side: ensure they are familiar with what materials can be recycled, and that they are emptying them into the correct external bins.

## 10. Create ripples beyond the school gate

Working with the school's wider community can provide students with an opportunity to bring positive change to a much wider group of people. Important life skills can be gained and the school can develop its local, and perhaps even national, reputation.

- ▶ Measure your achievements and publicise them widely. Students can write letters to local newspapers on their school's environmental efforts and successes.
- ▶ Be vocal about the message: pass information to parents and carers, and show them what the school is doing and what impact it is having. Build waste and sustainability into the core work of the school – its events, shows and public profile.
- ▶ Contact local community, business and environmental groups and draw on their knowledge and support in school initiatives. They may be able to help with composting, recycling collections, school gardens, or have interesting ideas for how to use waste materials.

# Waste information pack

## Appendix 1: Historical timeline of waste



# Waste information pack

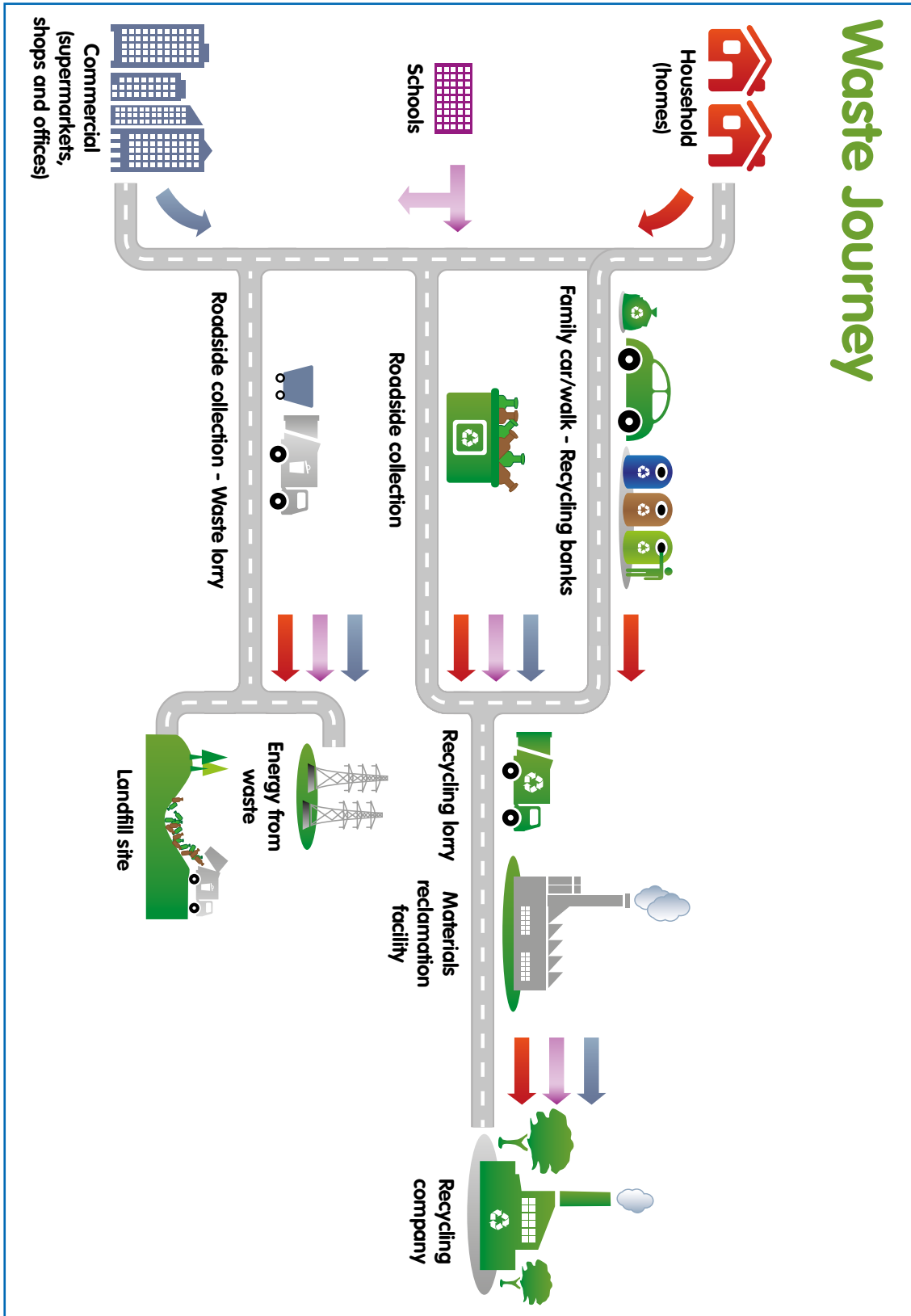
## Appendix 2: What's in your bin?





# Waste information pack

## Appendix 3: Waste journey



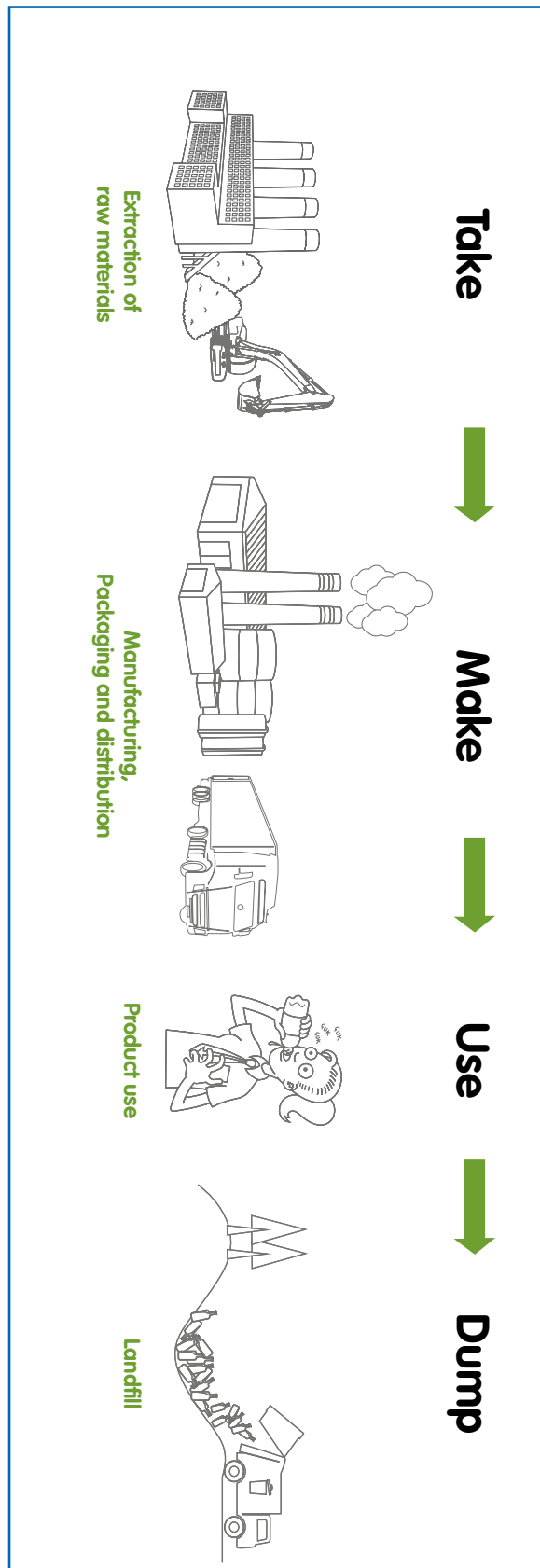
# Waste information pack

## Appendix 4: Decomposition timeline



# Waste information pack

## Appendix 5: Linear economy



# Waste information pack

## Appendix 6: Circular economy

