

# Resources and Waste

## Addressing Consumption and Waste

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**Waste and recycling is an energy issue: It takes energy to create the resources we routinely buy and dispose of every day. If we handle waste badly it's not just a source of pollution and nuisance, it's an inefficient waste of energy. We have to manage waste according to its value as a resource, and a sink of energy that must be avoided, not merely as a problem that we have to get rid of.**

### Understanding waste in the UK

As with energy, the media's view of waste is that household waste production is responsible for the nation's waste mountain. Household waste is a problem, but in the context of UK waste production it's only a small part of the problem (see fig. 1). Industry and commerce together produce over 2½ times more waste than households. Construction and demolition waste, although less problematic than household, industry and commercial waste (because its mostly inert) amounts to more than these three put together.

Household waste may not be the greatest part of the problem, but it is one of the most difficult to deal with as it's so heterogeneous – it's a mix of many different waste types that are difficult to separate for safe disposal (e.g., batteries/chemicals) or recycling (e.g., aluminium foil). The failure of many local councils to collect segregated recycleable materials, and instead concentrate on collecting mixed recycleables so that people need not “change their habits” hampers the development of efficient recycling in Britain.

Even if we cut household waste production by half the effect overall would be negligible. As other waste sectors, especially commercial and industrial, are larger it diminishes the benefits of reducing or recycling household waste. What's the point minimising household waste if our shops, offices and industry are churning out ever-greater quantities of waste on our behalf. Unfortunately, as with energy consumption, the blame in the public debate on waste is put upon

households, primarily because government is unwilling to intervene in the production of waste by society.

### “What has recycling done for us...”

Recycling is good, recycling more waste is good, but in the context of the current system of waste management and disposal in the UK, recycling isn't working. We treat recycling as an end in itself when in fact the greater problem is the growth in waste, and the wastage of energy and resources that this creates.

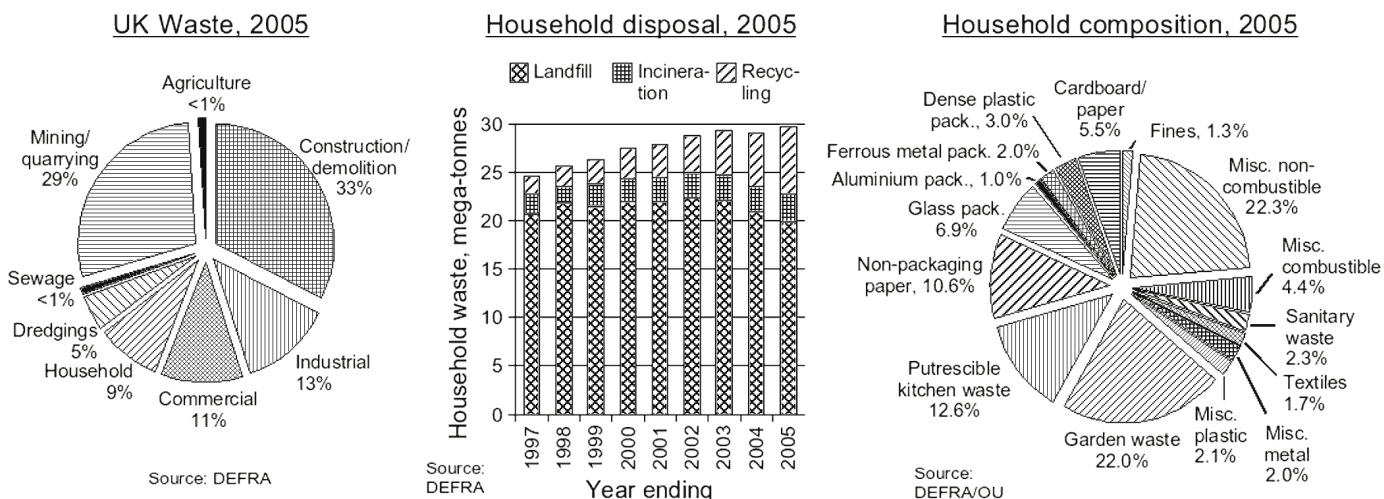
The recycling of household waste has grown at a high rate over the past decade, but at the same time household waste production has also grown at 1.5% per year. This means that although the mass of waste recycled has grown over five times, the percentage of waste recycled has only increased just over three times. In fact, in 2004/5 slightly more waste was land-filled and burnt than in 1995/6. We address this problem urgently – the growth in waste production makes the job of recovery and recycling harder.

The primary motivation for waste management in the UK is meeting targets for recycling, not for the preservation and recovery of non-renewable resources. This means that in many instances the recycling system for waste in the UK, like disposal, does not represent the best option for reducing energy consumption, or the production of greenhouse gases.

### Resource destruction

When we think about waste one of the principle limitations on the “waste system” is the *Second Law of*

**Fig. 1. UK Waste Management in England, 2005**



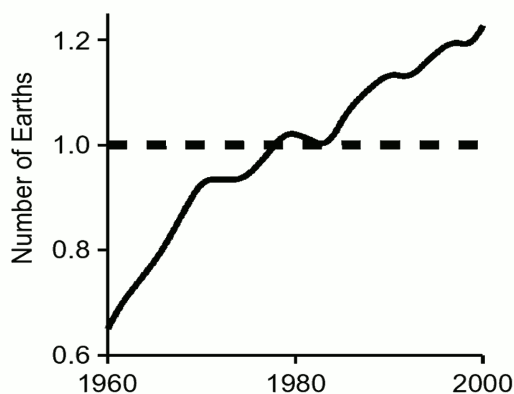
**Thermodynamics:** Energy and materials lose their “quality” when we utilise them. If you make a kilo of plastic and turn it into plastic bags, use the bags, and then recycle them, you'll never get the full kilo of plastic back again. Recycling uses less energy, and creates less greenhouse gases than producing new plastic, but because of the *Second Law* you must always find new sources of plastic to replace the plastic lost. Recycling, on its own, is therefore no solution to resource and energy depletion – we have to manage demand for resources instead.

Of course we could improve the recycling system, but the more effort you expend to recover ever smaller amounts of plastic waste the more energy you use. Eventually you hit the point of no return – you'll expend more energy to recover an additional 1% of plastic than it would take to manufacture another 1%.

Ultimately, the problem we face is resources. As oil and gas production decline so the production of plastic, metal, and even renewable (biomass based) resources will become more difficult. For example, as we use-up the best sources of iron or aluminium the energy required to process the raw materials increases exponentially with the decrease in the quality of the resource (another effect of the *Second Law*).

The need to source resources from more marginal locations or lower quality reserves will make this situation worse – for example, producing oil from Canadian tar sands, or coal, takes more energy than conventional oil production and it produces more greenhouse gases. For this reason, as with energy, the main objective for changing the current waste management system must be to enforce the use of physically less natural resources in our lives (i.e real cuts, not just greater efficiency or recycling).

**Fig. 2. Global Ecological Footprint**



Source: *Limits to Growth – 30 Year Update*

The underlying problem is that the human race exceeded the carrying capacity of the Earth (the ability of the Earth to produce food and resources we demand, and absorb the pollution we produce) two decades ago (see fig. 2). The present acceleration of the effects of pollution, ecological damage and climate change is a direct result of this – we are now testing the stress points in the Earth's systems through our

continued demand. If you look at the “ecological footprint” it mirrors the change in global growth (it reduces during global recessions). Clearly then, like energy, the simplest way to address the ecological footprint of the human species is to reduce growth and then institute a long-term contraction or descent.

### The future of waste management in the UK

The UK's waste system is primarily focussed on the disposal of materials, not managing their value. An excellent example is the recent fashion for biodegradable plastic bags. What's the point of investing energy in producing a plastic bag that we deliberately engineer to decay into nothing? It's far more “ecological” to make a plastic bag that can be recycled because we can recover the value we invested in it during its manufacture. Engineered biodegradability just makes the energy and resources invested in it easier to waste!

The greatest problem we face at the moment is the government's policy of encouraging waste incineration (of all waste, not just household). The driver here is the need to meet targets for the reduction of waste going to landfill. Although the government consider incineration to be both a renewable source of energy (see Sheet 4) and recycling, based upon the energy and resource implications it is neither. Recycling waste using current technology saves four or more times more energy than incinerating that waste would produce.

Whilst incinerators do not produce the gross pollution they used to 10 or 20 years ago, the ultra-fine particulates they produce are potentially a greater hazard. For example, are you worried about nanotechnology – as a recent report from the British Society for Ecological Medicine makes clear, the billions of “nano-particles” which incinerators release each day are highly reactive, and we currently have no understanding of the environmental and health consequences of their release (other than it's “bad”).

Whilst waste remains a problem that needs to be “disposed of”, and whilst disposal remains a far more lucrative enterprise than reuse or recycling, there will be no realistic solution to resource use in the UK.

### Solutions

The simplest solution to waste would be *strict producer responsibility* – if a company makes or sells an article they are responsible for its reclamation. If we enforced this you can bet that very quickly we'd find most shops using refillable containers and other forms of reusable packaging. It's also likely that the service life of goods would dramatically increase as this is the simplest way to reduce the need to manage waste.

In terms of the wider waste system, we need to implement *zero waste* systems – mechanisms to reduce waste production and arrange for the full reuse/recycling of waste materials to eliminate the need for disposal. The type of localisation that we must implement to address energy depletion will make this easier because the point of material production moves closer to the point of use and waste production.

This briefing was produced for the “UK Peak Energy Tour”, 2007 – see <http://www.fraw.org.uk/ebo/> for information.

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