

A DOING MORE WITH LESS: IMPROVING RESOURCE EFFICIENCY

Main messages

At the whole economy level, UK energy consumption per unit of output reduced by 40 per cent between 1970 and 1998, although energy use per household changed little.

The volume of household waste increased between 1983/84 and 1997/98. Although the amounts recycled increased, the rise in total household waste outstripped the higher amounts recycled. No information on trends in industrial, commercial or construction and demolition waste is available.

Recycling rates for scrap metals were fairly stable between 1984 and 1998. After increases in the mid-1980s and early-1990s, recycling rates for paper and glass have shown no further increases up to 1998.

Relevance

A key sustainable development objective is to use natural resources more efficiently. The rate of consumption of resources should not reduce their availability for future generations, and producing more with less means reducing environmental pollution, impact on climate change, and degradation caused by the extraction, use and disposal of natural resources.

The extent to which the key objectives identified in the Strategy are being achieved, as reflected by the indicators, is illustrated in the following table.

Key strategies

- *A better quality of life. A strategy for sustainable development for the UK.* (6.5-6.13)
- *A way with waste: Draft waste strategy for England and Wales*¹
- *National Waste Strategy: Scotland. Consultation draft*²
- *Waste Management Strategy 1999-2019. A draft strategy for Northern Ireland*

Some other related indicators:

Emissions of greenhouse gases (H9); Labour productivity (B3); Energy and water consumption by sector/Waste and hazardous emissions by sector (D3); Household water use and peak demand (D7); Thermal efficiency of housing stock (D8); Construction and demolition waste going to landfill (D10); Energy efficiency of new appliances (D11); Energy efficiency of road passenger travel/Average fuel consumption of new cars (D15); Household growth (K4); Climate change and energy supply (N1-N5); Air and atmosphere (P1-P5); Greening government operations (T1); Prices of key resources – fuel (T3); World and UK materials consumption levels per head (U7)

¹ June 1999, Product code 99EP0254/1 & 99EP0254/2

² May 1999

Objective	Ref no.	Indicator		Data used	Change since		Specific targets/goals
					1970	1990	
Greater resource efficiency	A1	UK resource use		To be developed	Promote continual improvements in resource efficiency
Energy efficiency of the economy	A2	Energy efficiency of economy		1950-1998	✓	✓	
	A3	Energy use per household		1970-1998	≈	≈	
Move away from disposal of waste towards waste reduction, reuse, recycling and recovery	H15	Waste arisings and management (headline)		1998	
	A4	Waste by sector		To be developed	Targets in draft waste strategies for England and Wales, Scotland and Northern Ireland
	A5	Household waste and recycling	Waste arisings	1983/84-1997/98	...	✗	Household/municipal waste reduction targets in draft waste strategies for Scotland and Northern Ireland
			Recycling		...	✓	30% recycling and composting by 2010 in England and Wales and Northern Ireland
	A6	Materials recycling	Scrap metal	1984-1998	...	≈	
			Paper & board	1984-1998	...	✓	
			Glass	1984-1998	...	✓	
A7	Hazardous waste		1986/87-1997/98	...	≈		

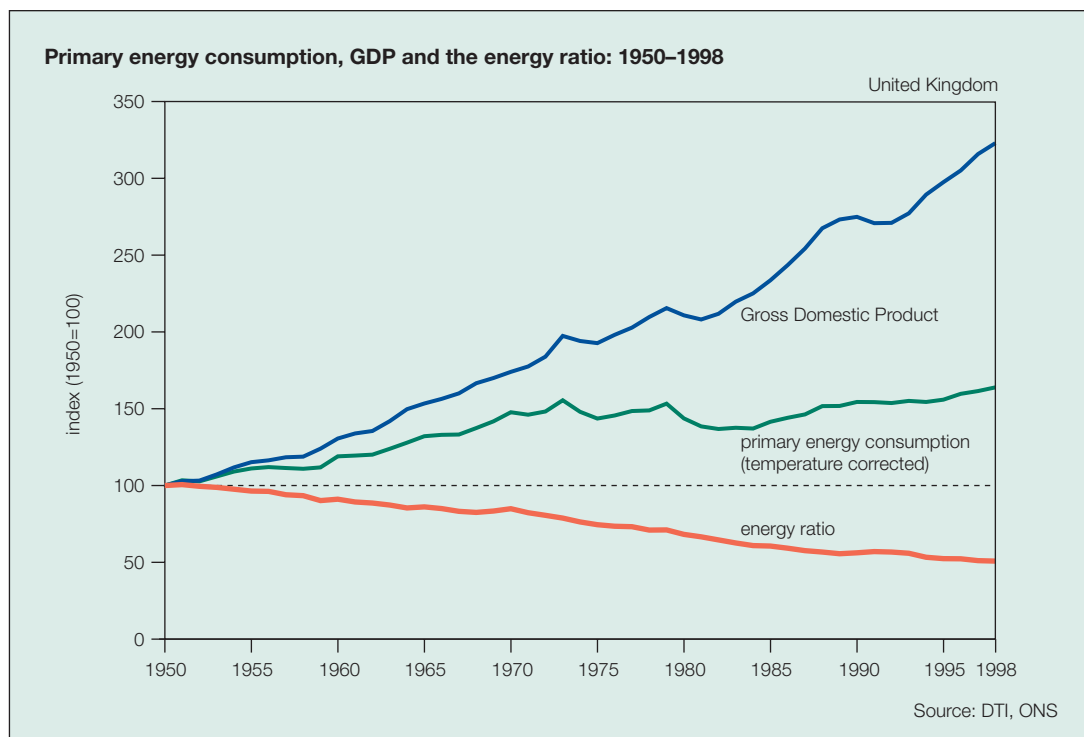
Key	
✓ significant change, in direction of meeting objective	✗ significant change, in direction away from meeting objective
≈ no significant change	••• trend is uncertain or no quantitative data available
na not applicable, in cases where the indicator is for contextual purposes	

Objective	Greater resource efficiency	
Indicator	UK resource use (to be developed)	A1
	An indicator showing, for example, UK consumption of materials by weight or volume per unit of Gross Domestic Product, and identifying broad resource groups separately, such as metals, fossil fuels, minerals and renewables (eg cereals, timber).	
<i>Relevance</i>	A key sustainable development objective is to use natural resources more efficiently. The rate of consumption of resources should not reduce their availability for future generations, and producing more with less means reducing environmental pollution and degradation caused by the extraction, use and disposal of natural resources.	
<i>Targets and goals</i>	There are no specific resource efficiency targets for the UK but there is commitment to promote continual improvements in resource efficiency.	
<i>Background</i>	<p>Specific aspects of efficiency are dealt with by other indicators such as energy efficiency of the economy, and competitiveness/productivity.</p> <p>Research will be carried out to identify suitable measures, consistent as far as possible with work which is being carried out by other countries and international bodies such as OECD and UN and produce first estimates for the UK.</p> <p>One approach is to estimate Total Material Requirements (TMR). This looks at the use of resources, in weight or volume terms, for broad resource groups; identifies separately, direct material inputs (both renewable and non-renewable natural resources), and hidden or ancillary flows such as excavated or disturbed material from mining; and identifies consumption using imported materials.</p>	

Objective Energy efficiency of the economy

Indicator Energy efficiency of economy

A2



Between 1950 and 1998 the output of the economy increased by over 200 per cent whilst energy consumption only increased by about 60 per cent. As a result, energy consumption per unit of GDP (the energy ratio) has fallen steadily by about 1 per cent per year.

Relevance Delivering a more sustainable economy requires doing more with less and making better use of resources. Greater resource efficiency is a key to change. The need to cut carbon dioxide emissions means that the ratio between energy consumption from fossil fuels and economic output may ultimately have to change many fold.

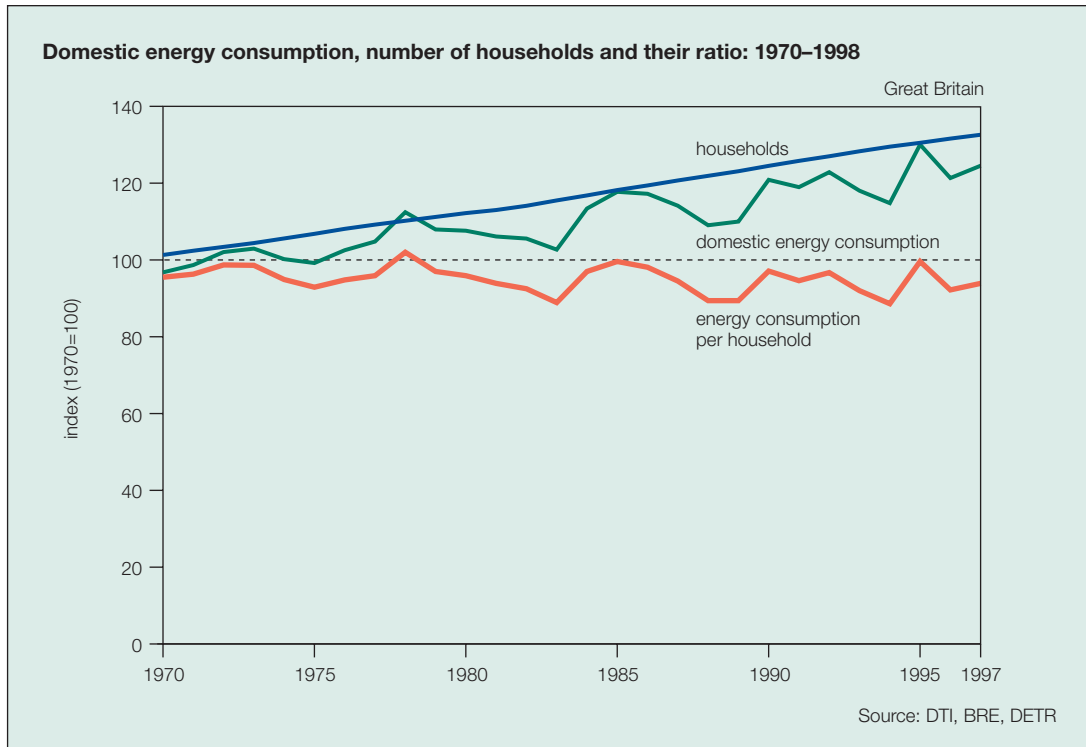
Trends The energy ratio is affected by the economic cycle, for example it levelled off during the early 1990s but started falling again in 1994. It has shown a steady downward trend since 1950 and in 1998 was about half its 1950 level.

Background The downward trend in the ratio is caused by improvements in energy efficiency; fuel switching; a decline in the relative importance of energy-intensive industries; and the fact that some industrial uses, such as space heating, do not increase in line with GDP.

Objective Energy efficiency of the economy

Indicator Energy use per household

A3



In broad terms household energy use increased in line with household numbers between 1970 and 1998. Energy use per household changed little.

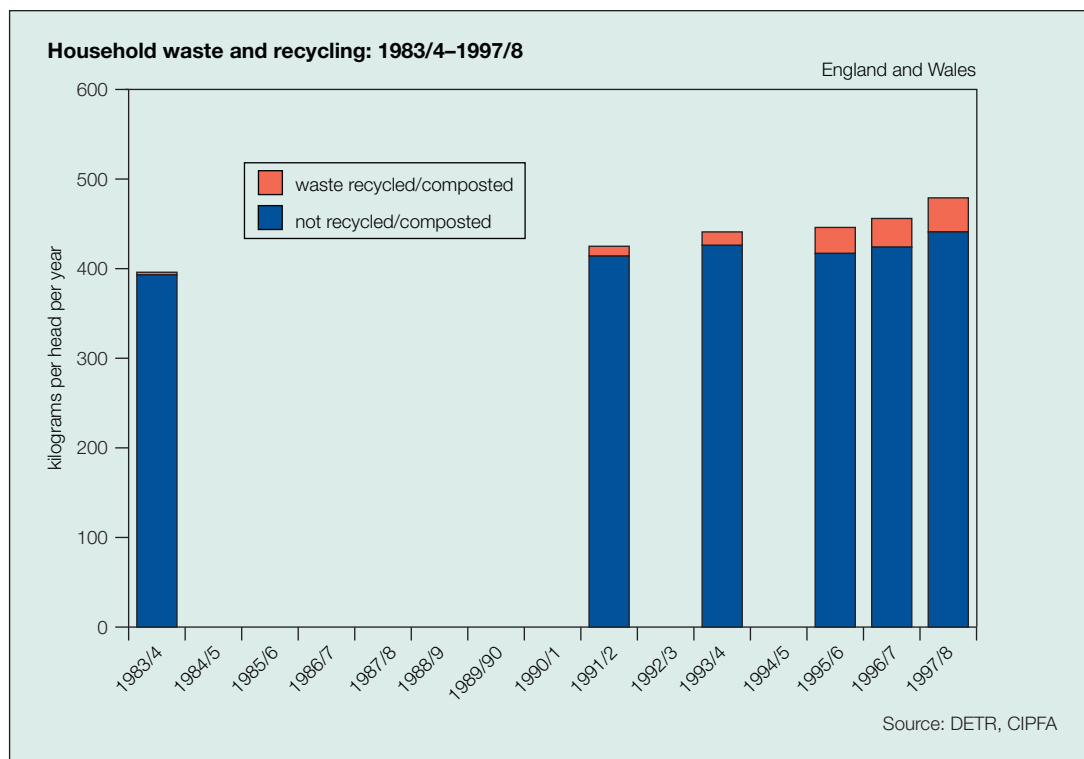
- Relevance** Delivering a more sustainable economy requires doing more with less and making better use of resources. Households are responsible for nearly 30 per cent of final energy use.
- Trends** Changes in temperature from year to year cause fluctuations in household energy use. For example, energy use per household was 7 per cent lower in 1997 than in 1996, which had a colder winter.
- Background** About 85 per cent of energy used in households is for space or water heating. Houses are better insulated, but people prefer them to be warmer. Energy use on household appliances has nearly doubled since 1970, whereas energy use for cooking has fallen by about 20 per cent.

Objective	Move away from disposal of waste towards waste reduction, reuse, recycling and recovery
Indicator	Waste by sector (to be developed) A4 <i>An indicator showing waste produced by different sectors, possibly in relation to GDP or output. The indicator will be developed when final figures are available from the Environment Agency's national survey of industrial and commercial waste. The charts below illustrate the amount of waste generated by different sectors.</i>
<i>Relevance</i>	Sustainable development requires an improvement in resource efficiency. Waste reduction will contribute to this.
<i>Targets and goals</i>	The draft waste management strategy for England and Wales <i>A way with waste</i> , and the draft waste strategy for Northern Ireland, both propose a target of reducing industrial and commercial waste to landfill to 85% of 1998 levels by 2005. The draft waste strategy for Scotland proposes a target of reducing industrial waste arisings by 3-5% by 2005.
<i>Background</i>	In the UK around 400 million tonnes of waste a year are produced from different sources. About 20% of this is from industry and commerce.

Objective Move away from disposal of waste towards waste reduction, reuse, recycling and recovery

Indicator Household waste and recycling

A5



In England and Wales, amounts of household waste generated have increased steadily to nearly 500kg per person per year in 1997/98. This represents an increase of 26% in total household waste and 20% in household waste per head since 1983/84. About 8% of this waste is recycled or composted.

Relevance Household waste reduction and increased recycling would lead to a reduction in the environmental impact of waste disposal.

Targets and goals The draft waste strategy for England and Wales *A way with waste* sets a goal of 30% recycling and composting by 2010. Options for introducing a household waste reduction target will be considered. The draft waste management strategy for Northern Ireland sets a target of 25% recycling or composting by 2010, and also includes a target of reducing household waste to 1998 levels by 2005 and thereafter by at least 1% annually. The Scottish draft waste strategy proposes a target for a 2-4% reduction in municipal waste between 1994 and 2016.

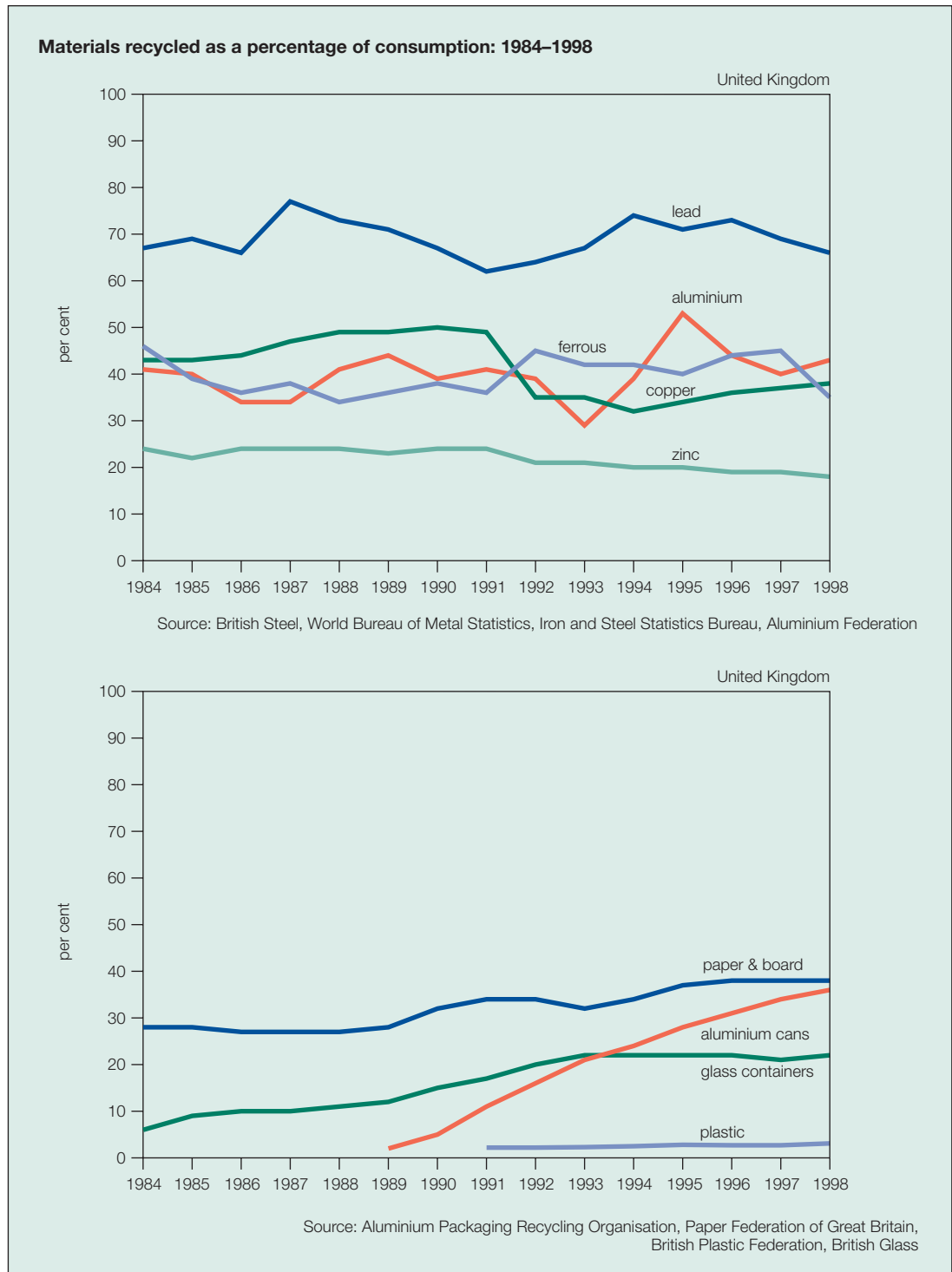
Trends It is difficult to compare long-term changes because of differences in data sources and definitions. The increase in levels of household waste is likely to be linked to a number of factors, including the increase in number of households and changes in the pattern of consumer spending. There may also be an increase in the amount of commercial waste mixed in with household waste. Improved recycling rates reflect improved provision of recycling facilities.

Background Household waste includes household bin waste and also waste from civic amenity sites, other household collections, recycling sites, litter collections and street sweeping. Household waste represents about 90% of municipal waste, which is collected and managed by local authorities. Most recycling of household waste comes from “bring” sites such as bottle and paper banks, and increasingly from kerbside collections.

Objective Move away from disposal of waste towards waste reduction, reuse, recycling and recovery

Indicator Materials recycling

A6



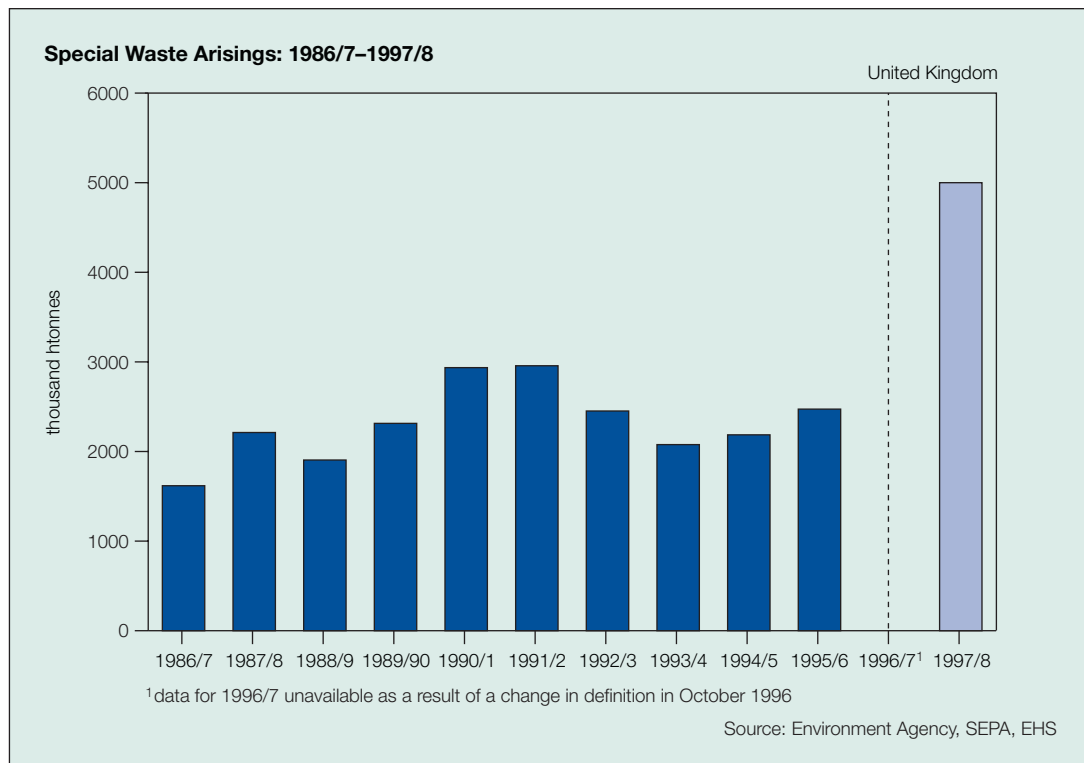
The average recycling rate for metals has been fairly stable between 1984 and 1998 at around 40%. In 1998, about 40% of paper was also recycled, but the level of glass recycling is lower, at around 22%, and only 3% of plastics are recycled.

<i>Relevance</i>	Increased levels of recycling ensure that waste is used as a resource, and value is obtained from it.
<i>Trends</i>	Recycling rates for industrial process waste are generally high. Recycling of paper increased steadily between the mid-1980s and mid-1990s, encouraged by the producer responsibility initiative and improved recycling facilities, but showed no further increase up to 1998. After earlier improvements, the rate of glass recycling has also stabilised.
<i>Background</i>	For many materials, the scope for recycling is limited by the size of the markets for secondary materials. The level of recycling can also be constrained by lack of clear standards, poor consumer awareness and the volatility of prices for recyclates.

Objective Move away from disposal of waste towards waste reduction, reuse, recycling and recovery

Indicator Hazardous waste

A7



Up to 1995/96, around 2 to 3 million tonnes of special waste were reported each year. Following an extension of the definition in 1996 to include some further waste types, such as waste oils, total special waste was around 5 million tonnes in 1997/98.

Relevance Managing and disposing of hazardous waste has a particularly high impact on the environment

Trends Amounts fluctuate from year to year, partly due to variations in amounts of contaminated soil removed for remediation purposes. There is no clear trend.

Background Before 1996, special waste was defined by the Control of Pollution (Special Waste) Regulations 1980. The Special Waste Regulations 1996 defined a wider range of hazardous wastes as special. Following the introduction of these regulations, all movements of special waste are tracked until they reach a waste management facility.

It is anticipated that further changes will be made to the list of special wastes over the next few years. These additions may substantially increase the tonnage of wastes defined as special, regardless of trends in the overall volume of waste generated. The amount of special waste produced will also be affected by any new measures taken to remove hazardous chemicals from the utility chain. Further work will be needed to develop this indicator so that it reflects trends in the amount of hazardous waste generated, independent of the definition of special waste.