

Q FRESHWATER

Main messages

River water quality generally improved between 1990 and 1998. Freshwater resources are under pressure in some areas because of abstraction for public water supply. Although action by water companies to reduce leakage was successful between 1994/95 and 1998/99, further reductions will continue to be mandatory.

Relevance

Water is a renewable resource, which is vital for public health and the environment. We need to safeguard the supply and ensure we have affordable supplies provided in ways which protect the environment. River quality is under pressure from agricultural, industrial and sewage discharges, and climate change.

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 in the UK.* (8.29-8.31)

Other related issues/indicators:

Energy and water consumption by sector/Waste and hazardous emissions by sector (**D3**); Household water use and peak demand (**D7**); Dangerous substances in water (**M2**); Acidification in the UK (**P4**); Estuarine water quality, marine inputs (**R1**)

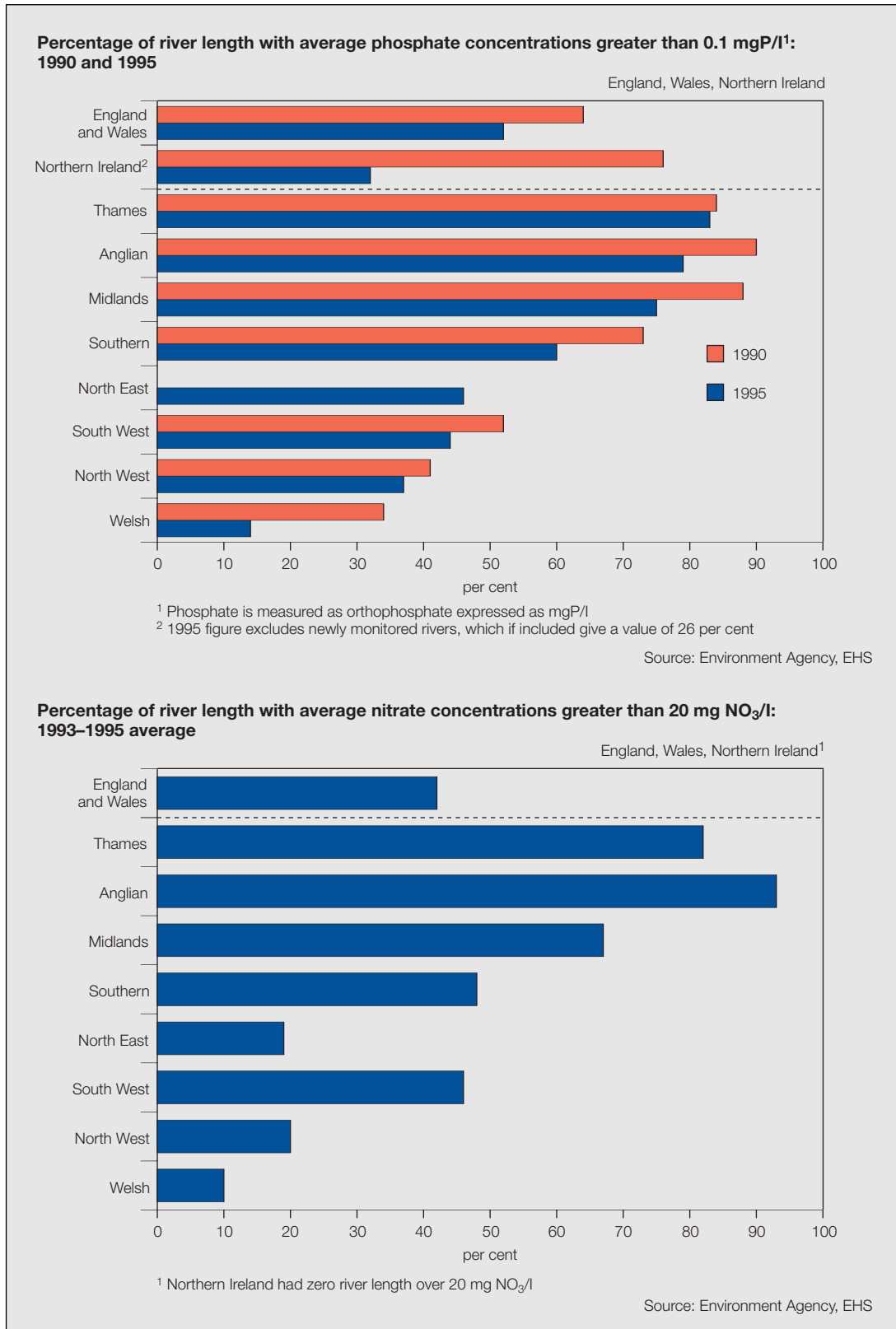
Objective	Ref no.	Indicator		Data used	Change since		Specific targets/goals
					1970	1990	
Improving river quality	H12	Rivers of good or fair quality (headline)		1990-1998	≈	✓	At least half of river quality objectives (RQO) shortfall to be eliminated by 2005 in England and Wales
	Q1	Nutrients in water		1990-1995	...	✓	
Safeguarding resources and ensuring affordable supplies	Q2	Water demand and availability		1997/98	
	Q3	Water affordability		1994/95-1997/98	...	✓	
Avoiding waste of water	Q4	Water leakage		1992/93-1998/99	...	✓	Reduce leakage by 26% by 2000 compared to 1996/97 values in England and Wales
	Q5	Abstractions by purpose	Public water supply	1971-1997	✗	≈	
			Other		✓	✓	
Q6	Sites affected by water abstraction		To be developed		

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 Improving river quality

Indicator Nutrients in water

Q1



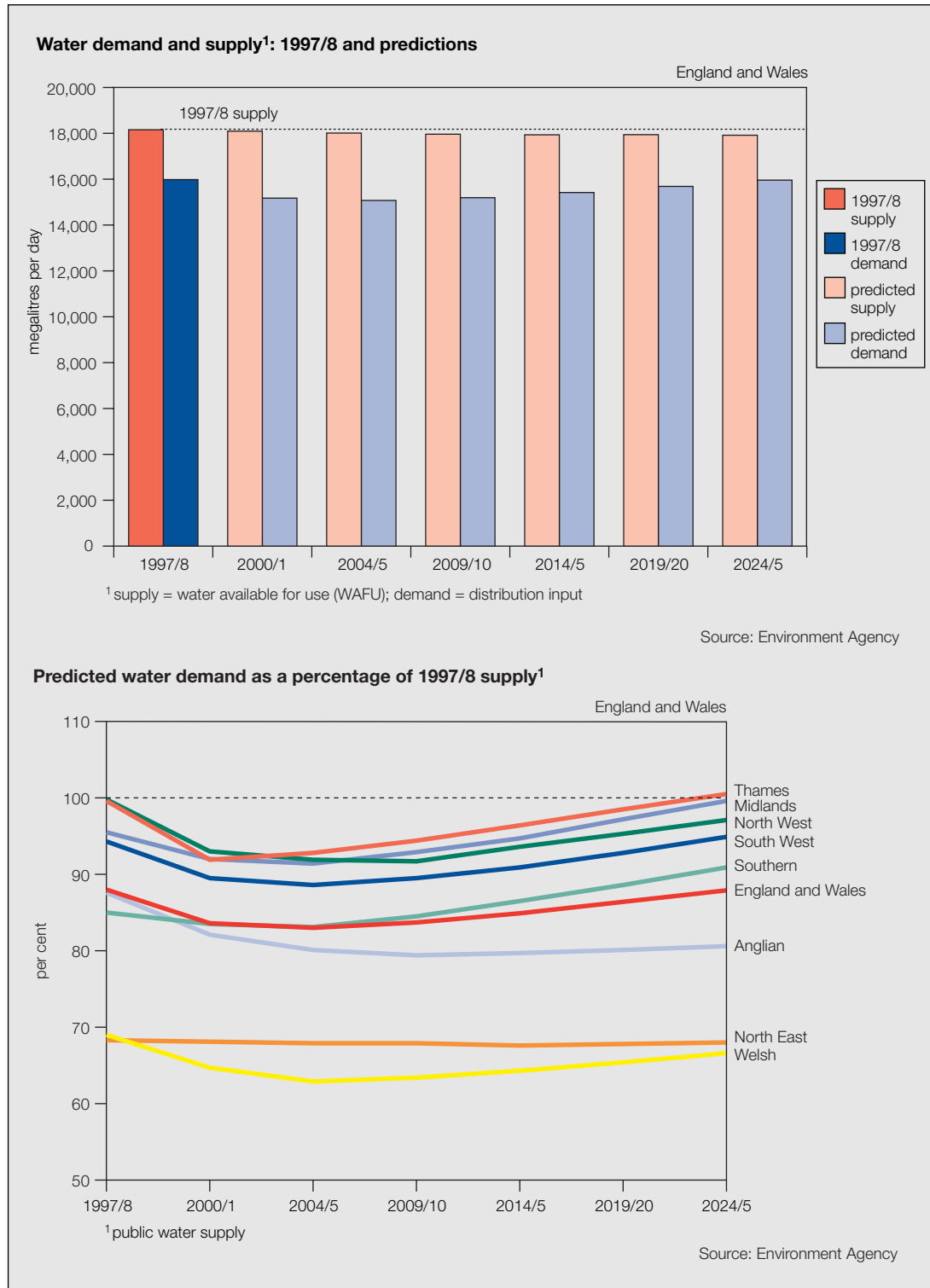
The percentage of river lengths in England and Wales with average phosphate concentrations greater than the guideline value of 0.1mg P/l fell from 64 per cent in 1990 to 52 per cent in 1995. Northern Ireland showed a greater decrease, from 76 to 32 per cent.

- Relevance* Phosphorus and nitrogen are naturally found in water and plants require these nutrients in order to grow. Inputs from sewage treatment works and agriculture, for example, can however lead to high phosphorus levels which can cause eutrophication in freshwater. This can affect the ecological balance of the water environment leading to excessive plant growth which can create health risks. High levels of nitrate are mainly of concern in relation to marine eutrophication (see indicator R1) and drinking water abstractions, where there are also health implications. A level of 50mgNO₃/l is the EU maximum admissible concentration for drinking water to be met by 95 per cent of samples and also the threshold established by the World Health Organisation for health protection.
- Trends* The improvement in phosphate concentrations between 1990 and 1995 was mainly due to improved treatment of sewage effluents to remove organic load and reductions in the amount of phosphorus used in detergents. Rivers with the highest concentrations of phosphates are mainly in the south and east reflecting the geology and higher population, and hence the higher sewage inputs of phosphates to rivers in these areas. The regional pattern of average nitrate concentrations is similar to that for phosphates, reflecting inputs from agriculture and also geology and sewage effluent. In due course data will become available for 1998-2000 and enable trends for nitrate concentrations to be shown.
- Background* The term 'eutrophication' describes a process rather than a state and studies have shown that it is influenced by a number of factors. The assessment of whether a stretch of water is actually or potentially eutrophic is not possible simply by reference to numeric chemical data, such as a threshold value for phosphorus. For the purposes of implementing the Urban Waste Water Treatment Directive and the Nitrates Directive, both of which require action to combat eutrophication, the UK has established a suite of criteria on which to assess the presence or potential for eutrophication in waters. These vary according to the type of water body under observation, but include indicators of chlorophyll and dissolved oxygen concentrations, water clarity and rate of exchange, the presence and duration of algal blooms and the presence and severity of changes to life forms in the water.

Objective Safeguarding resources and ensuring affordable supplies

Indicator Water demand and availability

Q2



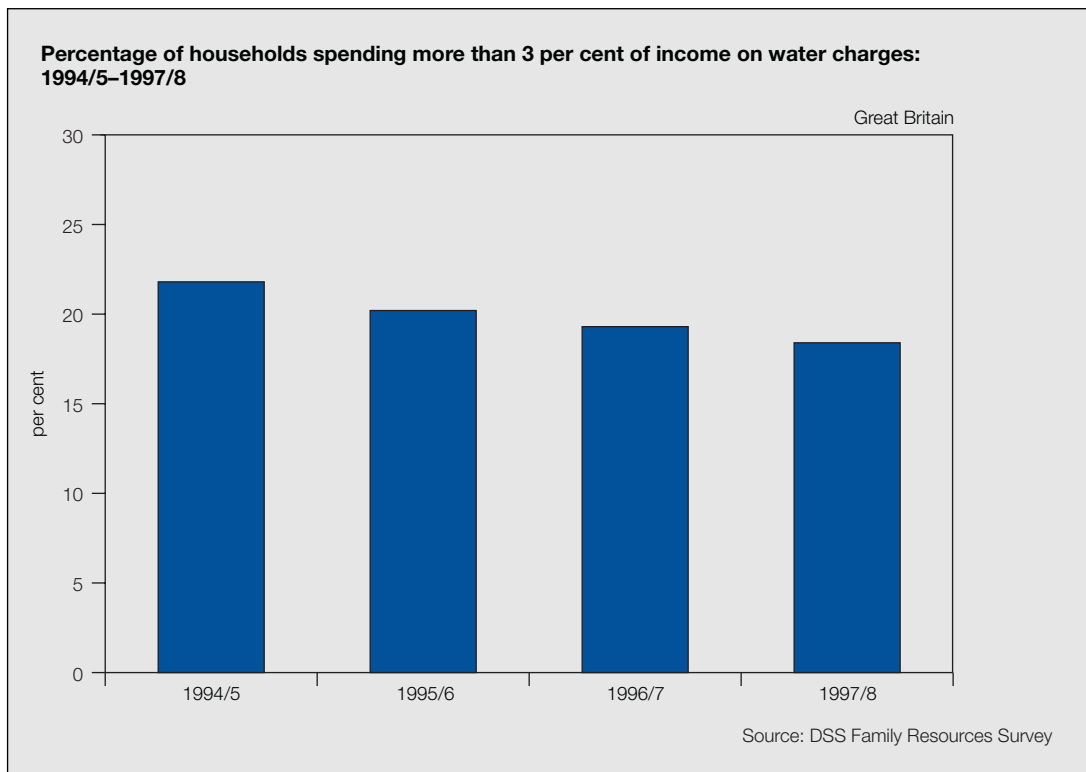
Projections by water companies in England and Wales show a decrease in the margin between supply and projected demand for several regions over the next 25 years, even with planned demand management methods in place and without taking into account effects of climate change on supply.

<i>Relevance</i>	Water is a renewable resource which is vital for public health and the environment. A key sustainable development objective is to safeguard our water resources and ensure we have affordable public water supplies provided in ways which protect the environment. Comparison of actual performance against predictions in future revisions of this indicator would help show whether that objective is being met.
<i>Trends</i>	Current projections show an overall increase in demand over the next 25 years. Climate change impacts may affect both demand and supply.
<i>Background</i>	Water companies supply water to households and industry by abstracting water from rivers, boreholes and reservoirs. Pressures leading to greater demand for public water supplies include increasing numbers of households, growing demand for non-essential uses of water (e.g. power showers, swimming pools), garden watering and new commercial ventures. Projections are based on predictions of population and numbers of households, forecasts of distribution losses, and predicted demand from household and commercial customers with planned demand management measures in place. Public water supply abstractions account for about half of total water abstractions (see indicator Q5).

Objective Safeguarding resources and ensuring affordable supplies

Indicator Water affordability

Q3



Households spending more than three per cent of their income on water charges fell from 22 per cent to 18 per in the four years ending 1997/98.

Relevance Water is essential to life and health. Water should be easily affordable by all and no-one should have to compromise personal hygiene and health in order to be able to pay water bills.

Trends There has been a fall in the proportion of income spent by household on water charges between 1994/95 and 1997/98. This is true for owner occupiers, for people renting from local authorities or housing associations, and for private renters. Similar trends are evident for single and 2-person households and for the two lowest income bands, where there are most pensioners.

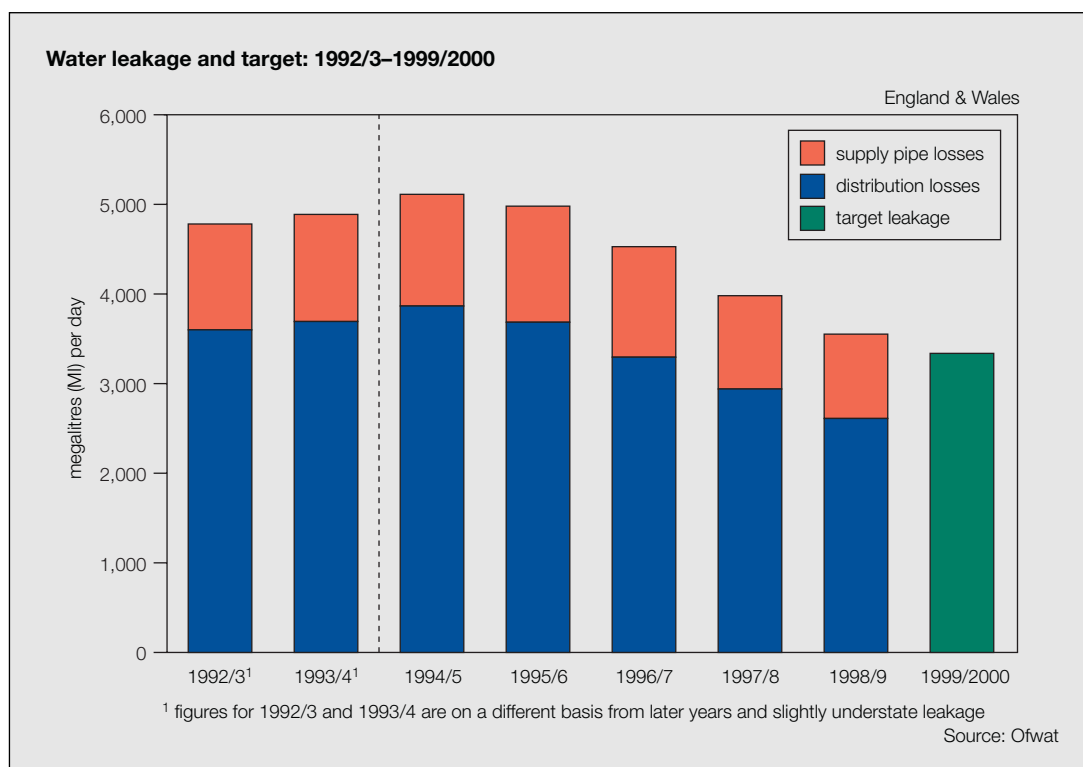
Background Average (median) expenditure has come down from 1.5 per cent in 1994/95 to 1.3 per cent in 1997/98.

The level of water prices is regulated by the Director General of the Office of Water Services, who has recently announced in draft determinations that water bills are to fall by an average of 13.7 per cent in the year 2000-2001. Under the Water Industry Act 1999, customers will have increased choice over how they pay for their water. People who would benefit from a measured charge can opt for a meter free of charge; and those who currently pay on an unmeasured basis can continue to do so in their current homes where they are using water for basic household purposes.

Objective Avoiding waste of water

Indicator Water leakage

Q4



In 1998/99, 3,552 megalitres (Ml) per day of water put into the supply by water companies in England and Wales was lost through leakage. This compares with 5,112 Ml per day in 1994/95, a fall of 31 per cent.

Relevance Water is a renewable resource, vital for public health and the environment. Safeguarding resources by avoiding waste of water is essential for sustainable development.

Targets and goals Mandatory leakage targets for water companies in England and Wales have been set which will reduce leakage by 26 per cent by 2000 compared with 1996/97 levels.

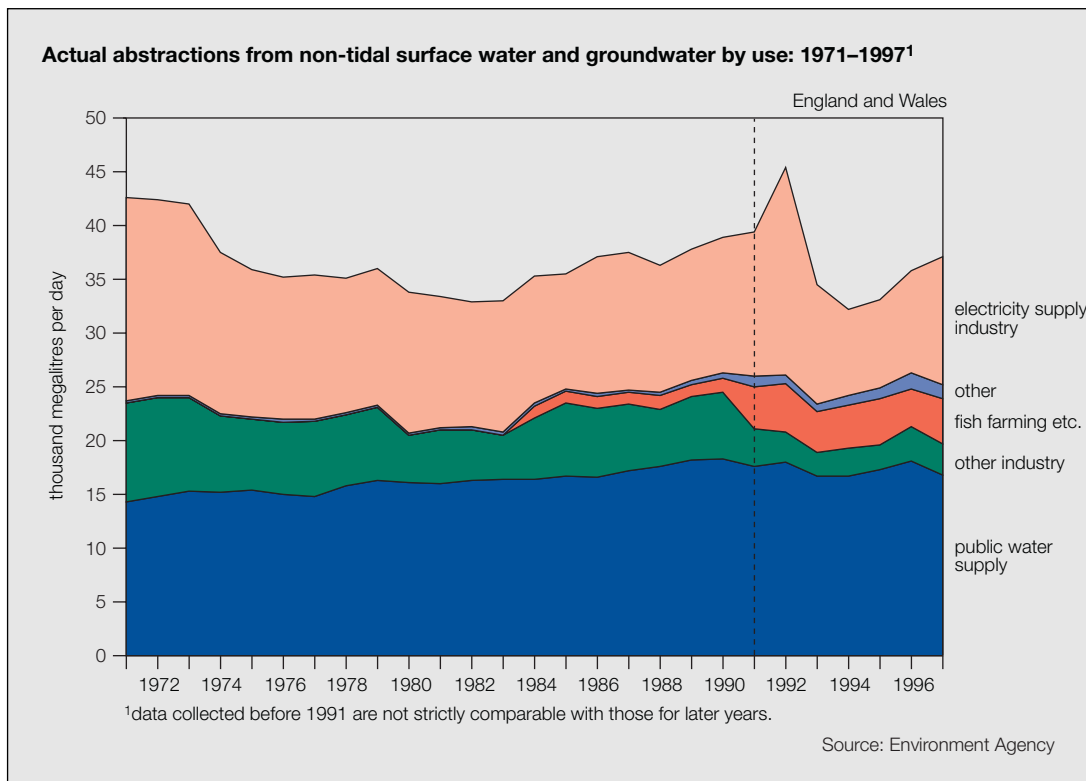
Trends In 1998/99, leakage levels reported by water companies were 22 per cent lower than in 1996/97.

Background Water lost through leakage is not permanently lost from the environment because it will eventually flow back to rivers or groundwaters, but the time delay in this process generally means that it is lost as a water resource and cannot be used. More water than is necessary is therefore abstracted from the freshwater environment. Also, the water will not generally be returned to where it was abstracted from, causing local resource problems.

Objective Avoid wasting of water

Indicator Abstractions by purpose

Q5



In England and Wales, total abstractions fell by 13 per cent between 1971 and 1997 mainly because of the reduction in water use by the electricity supply industry and increased efficiency in industry. However, abstractions for public water supply increased by 17 per cent.

Relevance Water is ultimately a renewable resource, but there are bounds to freshwater availability. We need to use water wisely to ensure that abstraction does not exceed what the environment can sustain. Reductions in public water supply would also lead to savings in energy and other resources used to purify it.

Trends About half of the total water abstracted is used for public water supply, and about 30 per cent is used by the electricity supply industry.

Background Water is abstracted in response to demands from the public, industry and agriculture. The increase in abstractions for public water supply is due largely to increasing use of household appliances and other changes in household water use. Leakage has accounted for over 30 per cent of public water supply abstraction in the recent past, although mandatory targets are now driving those losses down (see indicator Q4).

Objective	Ensure that abstraction controls play a full part in protecting the best wildlife and amenity sites
Indicator	Sites affected by water abstraction (to be developed) Q6
<i>Relevance</i>	Unless carefully managed, demand and abstraction of water for public supply, industry and agriculture can give rise to unacceptably low flows in rivers, damaging wildlife habitats and having adverse effects on water quality, and recreational and amenity value.
<i>Background</i>	<p>There is evidence that excessive abstraction of groundwater or surface water could be contributing to environmental degradation at up to 350 separate sites in England and Wales.</p> <p>The total of river lengths in England and Wales considered by the former National Rivers Authority to require low flow alleviation measures was included in the 1996 indicator report. The current view is that this indicator would be improved if it were broadened by the inclusion of other wetland sites which are thought to be in need of action to prevent abstraction damage.</p> <p>The Environment Agency is therefore developing an indicator which will draw upon a register of all sites known or suspected to be significantly environmentally degraded by abstraction. Criteria for insertion of a site into the register will need to be established and applied consistently, but they will inevitably reflect the need for value judgement. The indicator will reflect progress in investigating and, if necessary, implementing solutions. The Agency hopes to have completed this development by summer 2000.</p> <p>The Department is also giving consideration to a separate indicator based upon river flows, which are measured at around 2000 locations in the UK.</p>