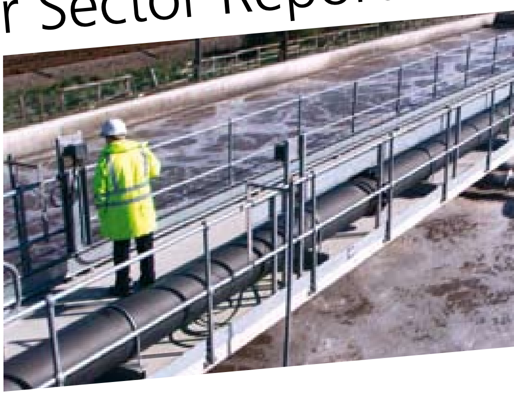
WATER UK

Sustainable Water

State of the Water Sector Report



This is Water UK's first **State of the Sector** report. Its purpose is to answer the question – is our sector becoming more sustainable?

In examining this question, this document identifies what has been driving success over the last five years. The report also identifies barriers or challenges that may direct the sector in setting our priorities for the next five years.

Information within the report has been provided by UK water companies, regulators and policy organisations. It is structured to report sustainability trends within the processes of sourcing, supplying and treating water and wastewater[1]. Positive progress is indicated throughout the report in green, no trend (or incomplete information to determine a trend) in yellow, and negative trends in red.

Further water company case studies, covering each section of the report, are available on the Water UK web site

[1] The number of companies reporting on data within each of the Water UK sustainability indicators varies according to the relevance of the indicator and the availability of data. Where variation occurs in the report, the number of companies is noted against the maximum possible.

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Contents

Foreword

In the UK, we have rightly come to expect some of the highest quality water in the world. Our water industry is truly world class, and we are justly proud of the huge environmental improvements that have been achieved.

But there is no room for complacency. We still have environmental water quality problems, an ageing infrastructure, and an unsustainable supply-demand balance in certain parts of the country. The drought of 2004-06 and the floods of 2007 were a warning of the more extreme weather that climate change could bring. What is more, we have a growing population and more houses to build, and we are living more water-intensive lifestyles.

All these challenges need to be addressed, and in a sustainable way. This is what *Future Water*, the government's new water strategy for England, is all about. It sets out our vision for water in the future and the practical steps that we will need to take to ensure that good clean water is available for all of us and for nature.

That is why a candid assessment of the industry's sustainability record is so valuable. This report shows both how much has been achieved – and how much more needs to be done. The water industry is working hard to continue to deliver high quality water and wastewater services whilst reducing its environmental impact and protecting the interests of consumers.

But the water industry cannot achieve a sustainable water sector on its own. We all need to work together to protect and enhance our water resources and environment, and manage them in more sustainable ways. This report is a significant step towards achieving this.

Hillary Benn – Secretary of State for Environment, Food & Rural Affairs

Introduction

Sustainable Development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. In today's society, I believe there is no more important resource that needs safeguarding than water.

Many organisations aspire to be sustainable, but this is no easy task. This is why it is important that industry, governments and all stakeholders work together to identify, discuss, agree and guide each other on the right approach. Sometimes this means taking stock to examine if we are moving in the right direction, before moving forward again. This is the aim of this report.

The report sets out to address the question of whether the sector is becoming more sustainable. As you might expect, there is no easy answer. We have made some excellent progress in many areas. Our rivers, lakes and bathing waters are cleaner and safer than at any time since the Industrial Revolution began. There has been massive investment over the last 20 years, and big strides in efficiency, without significant impacts on affordability for most. What is also encouraging is the number of outstanding examples of change and innovation that we have been able to highlight within this report. It does demonstrate an enormous effort within the industry in identifying sustainable solutions and putting these into action.

The report highlights a number of particular challenges that we will all need to consider in the future, including:

1. To reduce the amount of water society wastes. This means all of us working together to raise awareness, communicate better and take effective action.

2. To reduce incidents of sewer flooding. This will be particularly challenging against a backdrop of population growth, and predictions of more frequent heavy rainfall events in future.

3. To reduce the amount of greenhouse gases emitted. Current trends show that growth and pressure to deliver a cleaner environment are pushing companies to use more, not less, energy.

4. How to address all of the above, while continuing to improve network quality and performance.

5. Perhaps most crucially, maintaining affordable water services.

What makes me particularly proud is the industry's willingness to have a frank discussion about the challenges we have faced and continue to face. This is not the first time we have reported on the sustainability performance

of the sector. Water UK has, with the support of all its members, been publishing sector reports for the last seven years. In 2007, we led a review of this reporting in consultation with the industry, policy makers, regulators and interest groups. It was clear that the current way of reporting was not doing its job – that of informing, influencing and delivering real, sustainable, change.

Through consultation, a new reporting framework has been developed. Going forward, each water company will report annually through Water UK against agreed and verified sustainability indicators, culminating in a five year State of the Sector review, timed to inform Water UK's strategy development.

Through its reporting, the industry aims to have a better dialogue on sustainability with governments, regulators, and other stakeholders, resulting in improved awareness and more informed decisions. We welcome dialogue on any of the issues highlighted in this report, and look forward to working with you all to move towards a more sustainable water sector.

Pamela Taylor – Chief Executive, Water UK

The last five years in summary

(Note: Data for 2007/08 has not been included, as the water industry is now using an improved set of indicators. This data is available in a separate report)

	Key Indicators[1]	2002/03	2003/04	2004/05	2005/06	2006/07	Description of five year trend
Governance	Measure being developed						Sustainability is becoming more integrated into policy and industry decision making. This has been driven by policy and regulatory change as well as a growing recognition of the business value of operating in an environmentally, socially and economically responsible manner.
Sourcing Water	Security of supply index range (from 100 = no difficulty, to low or negative values = extreme difficulty)	100 to -256	100 to -24	100 to -63	100 to -91	100 to -53	Industry has kept pace with changes in regional population/housing and a changing climate. For example, despite a severe drought affecting parts of the UK in 2004-06, supplies were maintained with only limited impacts on levels of service.
	River water quality - % of rivers with good biological water quality	74.6%	75.7%	75.5%	76.3%	76.5%	The quantity and quality of water in rivers has an important part to play in maintaining their good biological status. After major improvements in the early 1990s, the last five years have seen a plateau in river water conditions.
Water and wastewater networks	Loss from the Supply Network (Mld)	4,981	5,023	4,950	4,858	4,520	Major reductions in leakage levels were achieved between 1995 and 2002, but since then most companies are now reaching a plateau at or below the Economic Level of Leakage (ELL) (the level at which the cost to companies and customers of further reducing leakage exceeds the cost of producing water from an alternative source).
	Total number of pollution incidents[2]	2426	2820	2235	2352	2384	Pollution incidents have decreased since 2002, but the overall number remains high. The sector also has the highest number of reported serious pollution incidents of all industrial sectors in 2006.
	Properties at risk of sewer flooding (%)	0.05%	0.05%	0.04%	0.03%	0.03%	Progress has been made over the last five years in reducing properties considered to be at risk of sewer flooding, although the proportion of properties actually flooded has remained constant..
	Properties flooded (%)	0.02%	0.02%	0.02%	0.02%	0.02%	
Water consumed	Compliance with drinking water standards	99.82	99.83	99.86	99.88	99.90	Drinking water quality continues to be high, with improvements gained through a variety of approaches (e.g. catchment management plans, improved network management, the rehabilitation and cleaning of mains, and mains replacement).
	Domestic demand (l/p/d)	149.1	150.3	150.7	151.5	147.8	The last five years has seen nearly all water companies undertaking water efficiency trials, offering water saving devices, and communicating water efficiency messages to the public. Domestic water demand is stable and non-domestic demand has decreased.
	Non domestic demand (l/£GDP)	1.56	1.59	1.47	1.31	1.26	
	Total water consumed (Ml/day)	13,068	12,886	13,355	13,234	13,011[3]	
Cost of water	Investment in assets	£1.67bn	£1.91bn	£1.94bn	£1.98bn	£2.22bn	Operating costs are declining as a percentage of the total bill as a result of efficiencies, but capital investment programmes remain significant.
	Households with water bills >3% income as an indicator of affordability	9%	9%	9%	9%	9%	Average bills have increased, but for the majority of the UK population water bills are less than 3% of income, and have remained so over a number of years. Affordability for a proportion of the population is a real issue and remains so despite actions from companies.

	Key Indicators[1]	2002/03	2003/04	2004/05	2005/06	2006/07	Description of five year trend
Waste water	Population connected to compliant WwTW	86.6	93.7	97.0	88.0	86.1	The water Industry has invested significantly since 1990 in sewerage and sewage treatment, and quality standards have improved. During the last five years the trend initially showed a continuation of this improvement, but standards have now fallen back to the same level as 2002/03[4].
	Percentage of sludge reused	72%	77%	81%	88%	79%[5]	Recycling of sludge to agricultural land, together with its use in land restoration / reclamation and energy recovery has increased, in part due to improvements in the quality of sludge. Disposal to landfill has been virtually eliminated.
Climate change	Average Energy used to supply 1Ml water	602 kWh	663 kWh	663 kWh	586 kWh	559 kWh	Industry is responsible for about five million tonnes of greenhouse gas emissions (CO_2 equivalent) every year. Whilst this represents less than 1% of total UK emissions, it is rising. Despite improved efficiency in abstracting, treating and supplying water, population demographics and consumption growth, along with more stringent treatment standards, are driving energy use up.
	Average Energy used to treat 1Ml sewage	814 kWh	645 kWh	663 kWh	634 kWh	756 kWh	
	Greenhouse gases emitted (total CO_2 emissions)	Not calculated		4.14m tonnes	4.15m tonnes	5.03m tonnes	
	Adaptation to climate change – measure being developed						The floods of 2007 highlighted pressures on the sewerage and drainage network. The industry has included climate scenarios into business planning for many years, and is developing a strategic framework for adaptation.
Added value	Employee turnover rate	7.6	9.7	10.3	10.3	10.3	Employee turnover remains fairly low and stable relative to other sectors. However, investment in employees via training is falling, and the proportion of employees approaching retirement age is rising; this presents a long term issue to the industry in terms of knowledge, skills, retention and continuity.
	Investment in employee training and development £ and hours per person per year	£400 18 hrs	£400 27 hrs	£390 17 hrs	£342 17 hrs	£321 17 hrs	
	Value of community investment	>£5m	>£11m	>£10m	>£6m	>£7.6m	Water companies play an active role in communities through investment and charitable donations, providing skills, equipment and access to land and by encouraging staff to get involved.
	Percentage of SSSIs[6] on water industry landholdings in target consition	66%	74%	68%	72%	74%	Water companies have a duty to promote conservation and to protect sites of environmental importance. Public service agreement targets for SSSIs have helped focus on the goals to be achieved.

1) Positive progress is indicated in green, no trend (or incomplete information to determine a trend) in yellow, and negative trends in red. White indicates no quantitative data to make an evaluation.

2) England and Wales only. Includes category 1, 2 and 3 incidents including those caused by 3rd parties. See Section 4 for a further breakdown.

3) From 2007 this figure will include leakage ('Loss form the Supply Network' - 4,520 Ml/day) in Ofwat and Water UK sustainability indicator reporting. Total water consumed for 2006/07 including leakage is therefore 17,531 Ml/day.

4) There is uncertainty in the figures for the last two years, and this is currently under review. Anecdotal information suggests that companies are achieving approximately 95% compliance.

5) This includes reuse, recycling and energy recovery. There may be some minor discrepancies in figures due to some companies collecting 'post-digestion' and others 'pre-digestion'. In addition, there is some variation due to reporting with or without 'grit and screenings'.

6) Sites of Special Scientific Interest (SSSIs) are statutory nature conservation designations - In England SSSI condition is measured by area in target condition, in other areas it is measured by number of units in target condition. Therefore figures across the UK are not directly comparable and figures for England only are reported here.

Way forward for industry, regulators and policy makers

The water sector has an opportunity to be recognised as a leading sector in the delivery of sustainable outcomes. This report highlights some of the achievements to date, areas of ongoing progress, and future priorities. This report answers the question 'are we more sustainable?' with a qualified yes, but highlights how much more there is to do.

Sector wide sustainability will require long term commitment to change. This means working beyond annual and five year regulatory and monetary cycles, building on the first strategic direction statements now published. It also requires improving awareness of sustainability amongst employees, customers and key decision makers, rewarding innovation, and having robust information to make informed decisions.

A group of key industry stakeholders, including regulator, policy and non-government agency representatives have been involved in a consultative process through the summer of 2008 to formalise the way forward proposed below. If implemented, this would improve sustainability performance across the sector. Further detail is provided at the end of each of section of the report.

Industry

Extreme weather events, an ageing infrastructure, affordability concerns, population growth, and increasing pressure to improve water quality while using less energy and resources, will continue to be features of the industry going forward. To meet these challenges the industry will:

- Embed sustainability principles (financial, social and environmental) and assessments into long-term strategies and business plans.
- Engage employees and support a cultural shift towards the delivery of more sustainable practice and solutions.
- Explore opportunities for sustainable growth with benefits for customers, such as provision of water efficiency services and adoption of Sustainable Urban Drainage Systems
- Ensure that economic appraisals of policies and plans take full account of customers' views and of environmental and social costs and benefits.
- Work with others to maintain investor confidence in the water sector to allow future investment programmes to be financed efficiently.
- Continue to develop the evidence base for water efficiency and wider demand management measures.
- Develop a cost-beneficial strategy to manage and reduce greenhouse gas emissions in the industry.

Regulators

Economic, environmental and social regulators have a duty to consider sustainability in their actions and decisions. To help move towards sustainability, we would like regulators to:

- Incentivise and reward good governance and practice on sustainability.
- Clearly set out how all aspects of sustainability will be factored into regulatory, pricing and policy reviews.
- Support investment in innovation and promote sharing of best practice and partnering where appropriate.
- Support sustainable ways of achieving further improvements in water quality, such as tackling pollution at source, and using more flexible and catchment-based approaches.
- Agree and undertake joint research and communication activity with the industry around leakage, water efficiency, and other aspects of demand management.

Policy makers

Policy makers within different levels of government and regional development agencies will influence the water industry's ability to deliver sustainable solutions. We would like policy makers to:

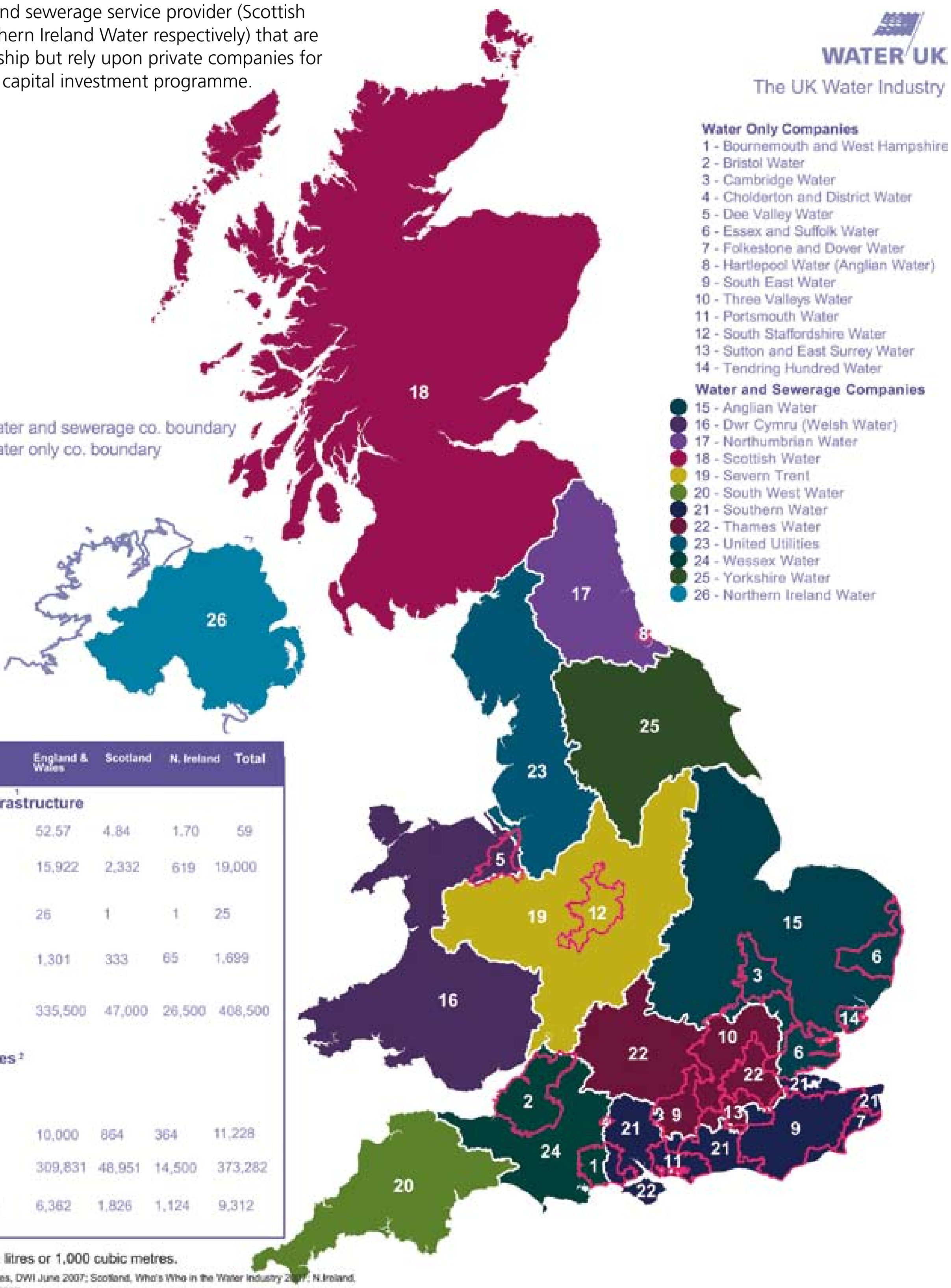
- Recognise that addressing sustainability may create new challenges or benefits for industry, regulators, and policy makers that may not be easy (or cost effective) to quantify.
- Ensure that water company customers are not paying more than they need to in cleaning up pollution from other sectors.
- Take a more active role in supporting industry reporting, including using industry information more widely in policy decisions.
- Ensure water issues are fully taken into account within national, regional and local strategies related to water management, land use and planning, for example by demonstrating how to address pressures on the water environment from expected growth.
- Ensure the Water Framework Directive is implemented in a sustainable way, taking account of financial, environmental and social considerations.
- Support national campaigns to improve public awareness on the causes and consequences of pollution incidents and flooding, and on water efficiency.
- Consider different forms of social policy, such as tax or efficiency incentives, that would support affordability of water for the poorest in the community.
- Ensure environmental and other legislation impacting the water sector is subject to robust regulatory impact assessments and cost-benefit analyses.
- Influence the EU agenda to ensure that legislation affecting the water sector considers all aspects of sustainability.

1 Sector Overview

The UK water industry is made up of 12 water and sewerage service providers and 14 main water suppliers. In England and Wales, the companies are privately owned, and several are subsidiaries of international enterprises. Welsh Water, which supplies services in Wales, is a not-for-profit company. Scotland and Northern Ireland each have a single water and sewerage service provider (Scottish Water and Northern Ireland Water respectively) that are in public ownership but rely upon private companies for delivery of their capital investment programme.

Figure 1.1 – Water company areas

Each day the UK water industry abstracts, treats and supplies nearly 19 billion litres of water to domestic and commercial customers, and collects, treats and returns to the environment over 10 billion litres of wastewater. This requires physical assets such as reservoirs, mains, sewers, treatment works, pumps, vehicles, controls systems and other equipment. The repair and replacement of underground assets - the mains and sewers, which for decades were largely repaired only when necessary, is a major challenge for the industry.



	England & Wales	Scotland	N. Ireland	Total
Water supply & infrastructure [1]				
Population (millions)	52.57	4.84	1.70	59
Water supplied (megalitres*/day)	15,922	2,332	619	19,000
Number of companies	26	1	1	25
Water treatment works	1,301	333	65	1,699
Length of mains (km)	335,500	47,000	26,500	408,500
Wastewater services [2]				
Wastewater received per day (megalitres*)	10,000	864	364	11,228
Lengthsewers (km)	309,831	48,951	14,500	373,282
Wastewater treatment works	6,362	1,826	1,124	9,312

* 1 megalitre = 1 million litres or 1,000 cubic metres.

1) Data sources: England & Wales, DWI June 2007; Scotland, Who's Who in the Water Industry 2007; N.Ireland, Northern Ireland Water June 2007.

2) Sources: England & Wales, DWI June 07; Scotland, DWQR August 07; N. Ireland, Environment & Heritage Service December 06.

2 The governance of sustainability

Governance, or how sustainability is integrated within all decisions, has been a leading theme within the water industry for the last five years, as it is widely recognised that good governance will move sustainability from a theoretical debate towards the development of real solutions.

Measure being developed	**Five year trend** Sustainability is becoming more integrated into policy and industry decision making. This has been driven by policy and regulatory change as well as a growing recognition of the business value of operating in an environmentally, socially and economically responsible manner.

2.1 What is driving sustainability?

The water industry is underpinned by strong regulation that covers all aspects of its core business – drinking water quality, wastewater quality, environmental improvement and price control. Many regulations that directly affect the water industry stem from EU directives – notably drinking water, urban wastewater treatment, groundwater protection, sewage sludge and health and safety at work. Others, for example economic regulation and customer service standards, are specific to all or some parts of the UK.

Sustainability has featured more prominently within regulation in the last five years. The government's strategy, *Future Water (http://www.defra.gov.uk/environment/water/strategy/index.htm),* set out a vision of a sustainable water sector for England. The Water Act 2003 introduced a new statutory duty for the economic regulator in England and Wales to act in the manner best calculated to contribute to the achievement of sustainable development. Water companies are required to incorporate social and environmental costs and benefits within all proposals and business plans, and to produce 25 year Strategic Direction Statements (SDSs). Similarly, a Sustainable Development Duty was placed on Scottish Water under section 51 of the Water Industry (Scotland) Act 2002.

In the last five years, significant change has come from within the industry. Sustainability is now recognised as delivering business value, rather than simply being a response to regulatory requirements or philanthropy. Many companies recognise that acting in a sustainable way can attract employees, build customer trust, drive innovation, improve efficiency and save money, as examples within this report demonstrate.
Water companies have performed well on voluntary external benchmarks, such as the Business in the Community Corporate Responsibility Index where six companies feature within the leading 100 (and three within the top 25). In 2001, four water companies publicly reported on sustainability performance, and this rose to 16 out of 25 in 2007. Today, nine companies have a senior level sustainability or corporate responsibility committee, and 16 have a publicly appointed Director responsible for the delivery of sustainability.

2.2 Regulatory bodies driving sustainability

Water quality is monitored and regulated by the **Drinking Water Inspectorate (DWI)** in England and Wales or **Drinking Water Quality Regulator (DWQR)** in Scotland, and by the **Environment & Heritage Service** in Northern Ireland.

In England and Wales the **Environment Agency (EA)** regulates water resource management, water quality standards and pollution control. In Northern Ireland this function is carried out by the **NI Department of the Environment**, and in Scotland by the **Scottish Environmental Protection Agency** (**SEPA**).

The price that people pay for water is regulated by **Ofwat** in England and Wales, and by the **Water Industry Commission** in Scotland. In Northern Ireland, prices are currently regulated by government, but from 2009 this duty will be taken over by the **Utility Regulator for Northern Ireland**.

The **Consumer Council for Water** (**CCWater**) in England and Wales, **Waterwatch** Scotland and the **Consumer Council** in Northern Ireland provide a voice for all consumers in their respective countries.

2.3 From decisions to delivery

Good governance goes beyond board room committees and reporting. It includes the way in which employees are engaged, the systems which are put in place, the measurement and targets set, and the interaction with all stakeholders.

Delivering more sustainable outcomes remains a challenge, as it requires organisations to plan and act for the longer-term. Within England and Wales, the introduction of SDSs has helped to promote this approach, with the industry producing 25 year statements of intent which include the ways in which they will respond to key challenges within this period. Methods identified by many organisations include raising awareness of sustainability within the workforce, innovation towards more sustainable solutions, and supply chain support and performance.

2.4 Governance - looking forward

- Industry will continue to report on agreed sector-wide sustainability indicators, and seek to improve these indicators where necessary. Information should be verified and monitored against long term trends.
- Industry will strengthen links between annual reporting, business plans and SDSs by developing appropriate longer term aims that can be regularly reviewed and reported.
- Industry will look to support and reward sustainable outcomes and innovation through supply chain performance management.
- Industry will promote and encourage good sustainability practice with customers, suppliers and regulators, to help raise awareness and to improve its own reputation.
- Governments, regulators and interest groups could be encouraged to take a more active role in industry reporting, including using industry information more widely in policy and regulatory decisions – rather than imposing separate requirements for information.
- Governments and regulators could demonstrate how they are using industry information more widely in policy and regulatory decisions.
- Regulators could incentivise and reward good governance and practice on sustainability, such as reducing the frequency or number of reporting requirements for those companies which demonstrate good practice and transparency. Regulators need to work together and be clear on how sustainability is factored into pricing reviews.

Box 2.1
Engaging external stakeholders

Key plans and programmes for the water industry (e.g. water resource plans and business plans) are routinely issued for consultation. Companies are also extending and formalising dialogue with stakeholders. For example:

Wessex Water's Stakeholder Forum brings together representatives of its main interest groups to consider key strategic issues.

Yorkshire Water established an independent Environmental Advisory Panel in 2001, comprising of 22 key environmental stakeholders, to advise on the company's environmental activities and ensure investments continue to offer excellent value for customers whilst delivering real environmental benefit..

Thames Water has a dedicated stakeholder engagement team, which manages communications for major engineering works, oversees public consultation and liaises with local, regional and national government.

Anglian Water has established independently chaired expert opinion panels representing domestic customers, business customers, and their Hartlepool customers, as well as panels representing growth and the environment.

Scottish Water set up a sustainable development advisory group in 2003, which has representatives from external advisers such as Scottish Natural Heritage, Waterwatch and WWF Scotland, to advise and challenge on the implementation of sustainability within the business.

As part of its compulsory metering programme, **Folkestone and Dover Water Services** set up a Strategic Stakeholder Group that included OFWAT, CCWater, the Environment Agency and Waterwise. In addition, the company consulted local stakeholder groups, including Parish Councils, in advance of all metering activities.

Box 2.2
Procurement and supply chain

A growing trend across the industry has been the inclusion of sustainability within supply chain management. For example, **South East Water**'s decision criteria include a 15% weighting on health, safety and environment initiatives. **Thames Water** includes an environmental questionnaire in all tender documents. Weighting systems are also used by **Scottish Water**. **United Utilities** has appointed a sustainable supply chain manager dedicated to improving their supply chain's sustainability performance. **Anglian Water** set a challenge to its largest suppliers to calculate their direct carbon emissions and to draft a climate change adaptation plan by March 2009. **Yorkshire Water** recognises the critical role that contractors play in environmental performance, and has established an Environment Forum to bring its main contract partners together to drive best practice environmental performance.

3 Sourcing water

Almost all (over 99%) of the UK population is served by the public water supply. Maintaining supply without damaging the environment is one of the greatest challenges for the industry.

The UK water industry abstracts nearly 19 billion litres of water per day from more than 1,500 boreholes, 650 reservoirs and at 600 river abstraction points. Abstraction for the public water supply accounts for around half of the total water abstracted from the environment[1]. Regional variability in volumes abstracted from surface and groundwater sources reflects the diversity of geology and land use in the UK. For example, in London and the south east groundwater accounts for around 70% of the public water supply, whilst in Wales almost all of the supply comes from surface water.

Regional variability in water availability does not match closely with demand. In southern and eastern England, rainfall is comparatively low yet population and consumption levels are typically higher. In many catchments this has contributed to the existing total water abstraction exceeding sustainable levels. The EA has classified large areas of southern and eastern England as being water stressed.

3.1 Security of Supply

?

Five year trend
Industry has kept pace with changes in regional population/housing and a changing climate. For example, despite a severe drought affecting parts of the UK in 2004-06, supplies were maintained with only limited impacts on levels of service.

Maintaining the security of water supplies is fundamental to the industry's statutory duty to supply water to domestic and commercial customers, and to meet demands for water from new development. For England and Wales, Ofwat has developed an index of the difficulty in accessing sufficient water resources to satisfy demand, where 100 = no difficulty, and low or negative values = extreme difficulty.

1 Source: Defra (2008) Progress report to Parliament on the steps taken to encourage the conservation of water as required by Section 81 of the Water Act 2003. Available online at http://www.defra.gov.uk/environment/water/conserve/documents/SOS-final-report080721.pdf

Box 3.1
The impact of a changing climate on water availability

Average UK annual temperatures may rise by 2 to 3.5°C by the 2080's. (Source: The UK Climate Impacts Programme (UKCIP): UKCIP02 climate change scenarios). In general, greater warming is expected in the south east than in the north west, and there may be more warming in the summer and autumn. Annual average precipitation across the UK may decrease by up to 15% by the 2080s, and the seasonal distribution of precipitation will change significantly, with winters becoming wetter and summers drier. This could result in up to 50% less precipitation in the south east in summer, and a 30% increase in winter by 2080. The water industry will be undertaking work to embed forthcoming UKCIP 2008 scenarios into its long term planning.

There have been considerable regional and seasonal variations in weather conditions over the last five years. In the south east, below average winter rainfall and higher summer temperatures in 2005 and 2006 caused problems. Six suppliers reported water deficiencies in some supply zones, two of which were acute.

Water suppliers in England and Wales are licensed by the EA to abstract defined amounts of water daily and annually. In Scotland this is licensed by SEPA. The industry holds about 2,100 abstraction licences and the EA and SEPA are responsible for maintaining the right balance between abstraction and environmental protection. Currently a full abstraction licensing system does not exist in Northern Ireland, but is under preparation.

Most companies in the south and east of the UK do not expect to achieve sustainable supply and demand balances without investment in new water resources, such as new or enlarged reservoirs, new water transfer schemes or (as a last resort) desalination. All companies in the region are working with the EA to achieve the most sustainable long-term solutions.

Table 3.1 – Water supplied in the UK (2007)

	England and Wales	Scotland	N. Ireland
Water supplied (Ml/d)[1]	**15,922[2]**	**2,332**	**619**
Surface water sources	**67%**	**83%**	**96%**
Groundwater sources	**33%**	**17%**	**4%**
Distribution network (km)	**335,000**	**47,000**	**26,500**

1 Water UK, Sustainability Indicators 2006/2007
2 Source: England & Wales, DWI June 2007; Scotland, Who's Who in the Water Industry 2007; N. Ireland, Northern Ireland Water June 2007.

Even in other parts of the country, some new resources will be required. For example **United Utilities** relies on surface water sources which are particularly affected by drier summers and autumns, so small scale local groundwater sources need to be developed in addition to the implementation of demand side measures. **Scottish Water** is placing a strong focus on leakage reduction, and is seeking to promote further investment in both demand and supply side options.

3.2 Balancing supply and environmental needs

Five year trend
The quantity and quality of water in rivers has an important part to play in maintaining their good biological status. After major improvements in the early 1990s, the last five years have seen a plateau in river water conditions.

Low river flows, arising from direct abstraction, abstraction from nearby groundwater, and variations in rainfall, impact water quality by reducing the ability of rivers to dilute pollutants. Lower water quality in rivers and aquifers can have adverse effects on water-dependent flora and fauna, as well as increasing the amount of treatment required when water is abstracted for potable supply (which in turn increases the amount of energy used in treatment). Low flows, when combined with high temperatures, can also lead to increased algae growth, which reduces the availability of oxygen to the detriment of water quality.

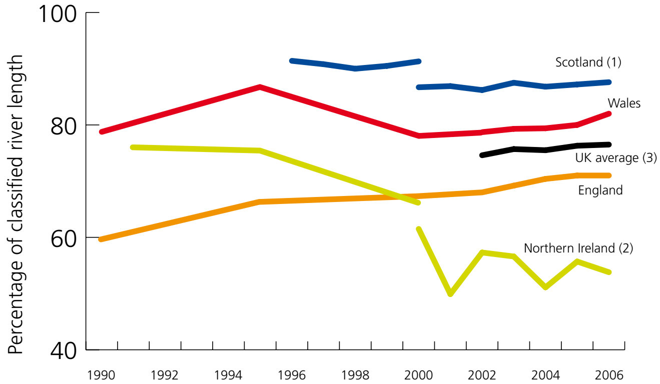
Following the publication of *Taking Water Responsibly*[2], the government instructed the EA to use its powers to revoke or amend damaging abstraction licences. The Environment Agency responded by setting up the Restoring Sustainable Abstraction (RSA) Programme in 1999 to identify and catalogue sites which may be at risk. As part of this programme, the EA has investigated sites designated under the EU Habitats Directive Review of Consents and Sites of Special Scientific Interest (SSSI), in addition to local sites where low flows are a concern. The RSA Programme, and significant investment by the water industry and others, has contributed to major improvements in river water availability and quality. However, the continued challenges of population growth,

[2] Taking Water Responsibly, Government decisions following consultation on changes to the water abstraction licensing system in England and Wales. Issued jointly by the Department of the Environment, Transport and the Regions and the Welsh Office, 1999.

Box 3.2
Recycling water - Northumbrian Water (Essex & Suffolk Water)

Essex is one of the driest counties, and used to import over 50% of its water. Owing to environmental constraints no additional water was available, so innovative solutions were needed. Following ten years of research, construction of the Langford recycling scheme commenced, and was completed in 2003. The scheme disinfects and treats wastewater that was previously piped into the Blackwater Estuary from an Anglian Water wastewater treatment works. The treated water is now released into the River Chelmer, providing more water both for pumping to the Hanningfield reservoir and for abstraction at the Langford water treatment works further downstream (where the water undergoes treatment to bring it up to drinking water standards). The scheme, the first of its kind in the UK, is the result of 10 years of research and development, working closely with the EA and the DWI. It will provide up to 30Ml of water a day (the equivalent of 18 Olympic swimming pools).

Figure 3.1 – Percentage of rivers with good biological quality



1. Scottish combined classification encompassing chemical, biological and aesthetic quality. Scottish river classification network changed in 2000.
2. Northern Ireland classified network significantly expanded in 2000.
3. UK proportionate average

Source: EA, SEPA, EHS

Table 3.2 – Security of supply

Indicator	Result 02/03	Result 03/04	Result 04/05	Result 05/06	Result 06/07	No. reporting (max 23)
Security of supply index score	100 to -256	100 to -24	100 to -63	100 to -91	100 to -53	23
Compliance with abstraction licences (number of days out of compliance)	37 days	512 days	94 days	38 days	109 days	20
Compliance with abstraction licences (Ml in excess of licence)	Not calculated	3,750	4,280	299	815	19

Source: Water UK, Sustainability Indicators 2002/03 - 2006/2007; for water supply data, 23 companies routinely report.

climate change, delivery of sustainable water treatment, and maintenance of secure public water supplies mean that continued monitoring and targeted action by environmental regulators and water companies will be needed.

3.3 Sourcing water – looking forward

- The water industry will continue to plan for and secure a reliable and sustainable supply-demand balance in all parts of the UK.
- Regulators encourage innovative solutions which help to secure supplies whilst reducing the impact from all sources of pollution and damaging abstractions, improving environmental water quality, and minimising resource use. This will require partnerships with other sectors, and implementation of the 'polluter pays' principle.
- Industry, regulators and others need to work together to implement and secure the benefits of the Water Framework Directive, so that all water bodies achieve good ecological status. Appropriate solutions could be incorporated into water industry water resource management plans (WRMPs) and business plans.

4 The water and wastewater networks

In the UK, 408,500 kilometres of pipes are used to supply water to customers, and 373,282 kilometres of sewers return it for treatment. Much of the network uses gravity to keep flows moving, but pumping stations are required where this is not possible.

Some of this network is Victorian in origin, and continues to function adequately despite including iron pipes and brick sewers. However, as these assets age, failures can lead to leaks. In some cases this contributes to flooding that effects local communities and the environment. In the last five years, water companies have focussed on network issues such as the adoption of private sewers, leakage and flooding. Energy used for pumping has become a more significant issue, as a result of rising energy costs and the need to reduce greenhouse gas (GHG) emissions to combat climate change.

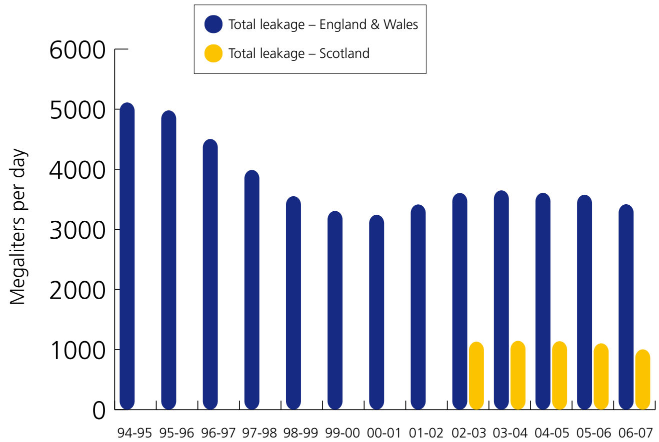
4.1 Leakage

Five year trend

Major reductions in leakage levels were achieved between 1995 and 2002, but since then most companies are now reaching a plateau at or better than the Economic Level of Leakage (ELL) (the level at which the cost to companies and customers of further reducing leakage exceeds the cost of producing water from an alternative source).

Leakage is the amount of water escaping from the supply network between the water treatment works (WTW) and the customers' taps, including from customers' own supply pipes. Reducing leakage has a cost, which must be balanced against the benefits arising from water saved and from the reduction in resources required to treat and deliver the water. The drought of 1995 put water leakage firmly in the spotlight, and under pressure from government, mandatory leakage targets were introduced by Ofwat. Major reductions in leakage levels were achieved between 1995 and 2002, but since then most companies have reached a 'plateau' at or below the target level, while a few companies are still working towards their targets.

Figure 4.1 – Total leakage (includes distribution losses and underground supply pipe leakage)



Source: Total Leakage - England and Wales, Ofwat 2007; Total Leakage Scotland, Scottish Water 2008)

All companies aim to reduce leakage to the economic level. Recently, they have also sought to incorporate environmental and social costs and benefits (e.g. carbon saved through reduced energy use, or costs of disruption caused by street works during repairs) into the ELL equation. **Portsmouth Water's** current target is less than the calculated ELL, and it will seek to reduce this further. **Scottish Water** replaced 2,990 km of old water mains from 2002 to 2006 at a cost of £219 million, accounting for 6% of its water distribution network. It is now working with its regulators towards establishing the ELL in Scotland.

The challenge of finding leaks remains a difficult and costly task. **Three Valleys Water** has reduced leakage by nearly 30% over the last 15 years, and plans to reduce this further through the use of technology such as noise 'listening' devices to detect leaks. **Thames Water** notes that "the current leakage level in London is

Table 4.1 – Water supply and wastewater infrastructure 2007

	England and Wales	Scotland	N. Ireland	Total
Length of mains (km)	335,500	47,000	26,500	408,500
Water treatment works	1,301	333	65	1,699
Length of sewer (km)	309,831	48,951	14,500	373,282
Wastewater treatment works	6,362	1,826	1,124	9,312

Source: England and Wales, DWI June 2007; Scotland, Who's Who in the Water Industry 2007; N. Ireland, Northern Ireland Water June 2007.

Table 4.2 – Leakage

Indicator	Result 02/03	Result 03/04	Result 04/05	Result 05/06	Result 06/07	No. reporting (max 23)
Loss from the Supply Network	4,981 Mld	5,023 Mld	4,950 Mld	4,858 Mld	4,520 Mld	23

Source: Water UK, Sustainability Indicators 2002/03 - 2006/2007

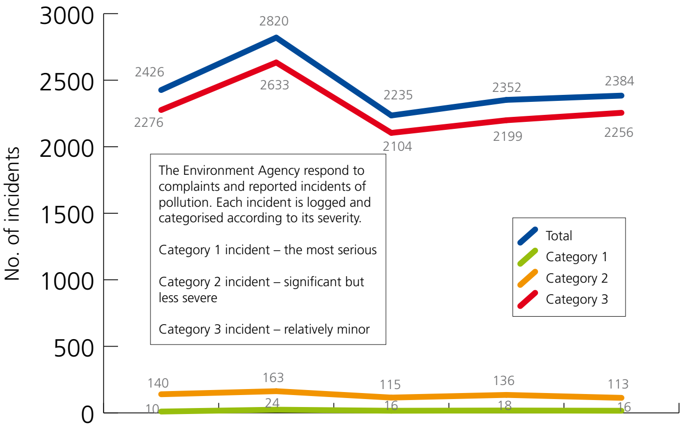
unacceptable", and aims to exceed the industry standard by 2020. In general, companies are moving from 'find and fix' policies to increasing network replacement rates. However, this is more costly, and companies are seeking the right balance between investment and further leakage reduction through consultation with customers and other stakeholders.

4.2 Pollution Incidents

Five year trend
Pollution incidents have decreased since 2002, but the overall number remains high. The sector also has the highest number of reported serious pollution incidents of all industrial sectors in 2006.

Three quarters of water pollution incidents are from the wastewater network e.g. Combined Sewer Overflows (CSOs), pumping stations, rising mains and foul sewers. Incidents can be caused when the sewerage system is overwhelmed by rainfall events which exceed design standards and result in unconsented spills. Increased development and run-off, which water companies are unable to prevent, have added significantly to such risks in many areas. Pollution incidents can also be caused by blocked drains via debris or fats, oils and grease (FOG) due to disposal of items such as cooking fats. FOG is believed to cause 75% of sewer blockages in England and Wales. Examples of actions on this issue include publicity campaigns such as **'Looking after our sewers'** and **'Bag it and Bin it'** [http://www.bagandbin.org/] and also pilot schemes (e.g. by **Anglian Water**) which collect FOG for conversion to biodiesel. Companies have worked to identify hotspots where recurrent or known problems require capital or operational maintenance (for example, relining or additional cleaning of sewers).

Figure 4.2 – Number of Pollution Incidents: Data is based on the calendar year and is for water and sewerage companies only within England and Wales (source: Table EA - 1(d) Annual Report to Ofwat).



Note: Pollution Incident reporting only started in Scotland in 2007/08. In Northern Ireland the Environment and Heritage Service (due to become the NI EA) use a high, medium and low rating as opposed to Cat 1-3 used by England and Wales. These classifications are similar but not the same and a direct comparison is not appropriate.

4.3 Sewer Flooding

Five year trend
Progress has been made over the last five years in reducing properties considered to be at risk of sewer flooding, although the proportion of properties actually flooded has remained constant.

Flooding can be caused by many factors. In June 2007 over 55,000 properties flooded in England and Wales. The Environment Agency estimates that one third of these were flooded from rivers and two thirds from other sources, predominantly surface water run-off which

Box 4.2
Replacing old with better – Southern Water

Southern Water recently completed a £1.75 million scheme to help reduce the risk of sewer flooding to properties in Winchester city centre which could become overloaded during heavy rain. The scheme to upgrade and increase the capacity of the existing sewer network in the city centre included lining the sewer in the high street, and the construction of a small underground pumping station. The completed work has improved the sewerage system to enable it to cope with extra rainwater during storms.

Box 4.3
Responding to flooding in Glasgow – Scottish Water

On 30th July 2002 the average monthly rainfall for Glasgow fell in just 10 hours. The flooding that followed highlighted major problems with the ageing surface drainage and sewerage systems which could not cope with such extreme weather conditions. The Metropolitan Glasgow Strategic Drainage Partnership (MGSDP), formed by Scottish Water, Glasgow City Council, SEPA and Scottish Enterprise, was created to evaluate the city's drainage network in order to develop relevant and sustainable solutions. Significant efforts have been made to reduce the risk; but a range of further measures will be required including:

- Improved surface water management to prevent the sewerage system from being overwhelmed (i.e diversion of water into 'green corridors', flood plains or storage areas until a storm passes).
- Allowing water to flow more freely by opening up historic watercourse culverts which have been covered over in the past.
- Upgrading wastewater treatment works (WwTW), and possibly building storm attenuation tanks.

This approach aims to reduce flood risk, improve water quality in the rivers and burns, support sustainable economic growth and infrastructure development, make improvements to green space and improve quality of life.

Table 4.4 – Sewer flooding of properties

Indicator	Result 02/03	Result 03/04	Result 04/05	Result 05/06	Result 06/07	No. reporting (max 12)
Properties at risk	0.05%	0.05%	0.04%	0.03%	0.03%	12
Flooded	0.02%	0.02%	0.02%	0.02%	0.02%	12

Source: Water UK, Sustainability Indicators 2002/03 - 2006/2007
Notes: % = number of properties at risk of flooding / total number of domestic properties connected to sewerage system

overloaded drainage and sewerage systems[3]. Sewer flooding is largely caused when wastewater infrastructure becomes overwhelmed as a result of high flows from intense or prolonged rainfall events. This is usually combined with a localised lack of capacity in the network or a sewer blocked by discarded materials such as fats, greases and sanitary wear.
To manage the risk of sewer flooding, companies in England and Wales are investing nearly £1 billion between 2005-2010 in sewer system upgrades. This work aims to resolve or mitigate every known high-risk problem of internal flooding from overloaded sewers. For example, in **Anglian Water**'s region, fewer than 600 properties are now included on the risk register, compared with more than 1,100 five years ago.

In addition, companies have been closely involved in the recently completed Integrated Urban Drainage pilot studies (http://www.defra.gov.uk/environ/fcd/policy/strategy/ha2.htm), and on behalf of the industry, Water UK has carried out an extensive review of the summer 2007 floods, making recommendations for companies and the industry (http://www.water.org.uk/home/news/press-releases/final-flooding-report).

[3] Future Water: The Government's water strategy for England. Defra, 2008

Box 4.4
Surface Water Reduction - Welsh Water

Welsh Water has developed a new approach to managing the impact of hydraulic overload on its sewer network due to surface water flows. Under the initial strategy £1 million has been committed to investigate a range of options to reduce or eliminate surface water from combined sewers. Alongside these investigations, detailed studies have been carried out in four major catchment areas around Wales, each with differing characteristics, to identify means of reducing flows by adopting integrated drainage arrangements. These investigations involve partnership working with local authorities, residents groups and the Environment Agency. Learning from this new approach has been applied in developing Welsh Water's investment priorities for the AMP5 period (2010-2015).

4.4 The water and wastewater networks – looking forward

- Industry will continue to manage leakage at its economic level, while also investing in mains replacement where appropriate, recognising the wider benefits in terms of reduced abstraction and treatment requirements.
- Industry, supported by regulators, could explore with local authorities and developers the potential for greater use of more adaptable and resilient drainage systems and above ground storage, including sustainable urban drainage systems (SUDS).
- Regulators could engage with industry to define, agree and communicate the sustainable level of leakage.
- Regulators could agree and communicate a common definition for assessing and reporting pollution incidents.
- Industry will work with others to develop and communicate campaigns to improve public awareness on the causes and consequences of pollution incidents and sewer flooding.

5 Water consumed

In England and Wales, approximately 19 billion litres of water per day is provided from 2,100 licensed surface and groundwater abstractions. Over half of this (an average of 150 litres per head per day) is consumed by households. The level of household consumption is influenced by demographic changes and the ways in which water is used, but has not changed significantly over the last five years. In contrast, consumption by industrial and commercial sectors has been declining, reflecting in part the changing nature of UK industry.

5.1 Improving quality of water supplied

✔

Five year trend
Drinking water quality continues to be high, with improvements gained through a variety of approaches (e.g. catchment management plans, improved network management, the rehabilitation and cleaning of mains, and mains replacement).

The quality of water provided remains very high, and is subject to strict UK and European standards.

However, a key issue for the industry is the rising cost of treating raw water, as raw water quality is deteriorating (levels of colour, nitrate and pesticides are increasing). With climate change anticipated to exacerbate some of these problems, the industry has been investigating options and techniques across the whole of the water supply chain, from source to tap. For example, **United Utilities** is trialling techniques to improve raw water quality. Their Sustainable Catchment Management Programme (SCaMP) centres on land management changes to improve the condition of an upland SSSI and improve raw water quality, while providing a sustainable income for their tenant farmers. [http://www.unitedutilities.com/?OBH=3128]

5.2 Managing Demand

?

Five year trend
The last five years has seen nearly all water companies undertaking water efficiency trials, offering water saving devices, and communicating water efficiency messages to the public. Domestic water demand is stable and non-domestic demand has decreased.

Water companies in England, Wales and Scotland prepare water resource management plans (WRMPs) that set out how they intend to provide a secure and sustainable water supply for the next 25 years. The plans are based on predictions of how much water will be needed to meet customer demand set against forecasts of water available for use. The plans are now subject to public consultation. In areas where demand is expected to be greater than supply, company plans show the preferred water management options needed to maintain a secure water supply. This uses a combination of demand management measures and development of new supply resources,

Table 5.1 – Drinking Water Quality

Indicator	Result 02/03	Result 03/04	Result 04/05	Result 05/06	Result 06/07	No. reporting (max 23)
Compliance with drinking water standards	99.82%	99.83%	99.86%	99.88%	99.90%	23

Source: Water UK, Sustainability Indicators 2002/03 - 2006/2007 (England and Wales, DWI (www.dwi.gov.uk); Scotland, DWQR (www.dwqr.org.uk); N.

Table 5.2 – Total water consumed as an indicator of demand

Indicator	Result 02/03	Result 03/04	Result 04/05	Result 05/06	Result 06/07	No. reporting (max 23)
Domestic	149.1 l/h/d	150.3 l/h/d	150.7 l/h/d	151.5 l/h/d	147.8 l/h/d	23
Non Domestic	1.56 l/£GDP	1.59 l/£GDP	1.47 l/£GDP	1.31 l/£GDP	1.26 l/£GDP[1]	23
Total consumed	13,068 Mld	12,886 Mld	13,355 Mld	13,234 Mld	13,011[2] Mld	23

Source: Water UK, Sustainability Indicators 2002/03 - 2006/2007

1: This has been calculated as the total measured and unmeasured supply to non-domestic properties, converted to litres per year (from Ml/day) and then divided by an estimate of national GDP.
2) From 2007 this figure will include leakage ('Loss form the Supply Network' - 4,520 Ml/day) in Ofwat and Water UK sustainability indicator reporting. Total water consumed for 2006/07 including leakage is therefore 17,531 Ml/day..
Table 5.2 presents average figures for England, Wales, Scotland and Northern Ireland, while Figure 5.1 reports average figures for England and Wales, and Scotland only.

Box 5.1
Managing Demand – Anglian Water

Anglian Water operates in the largest and driest region of England and Wales where rainfall is equivalent to half the national annual average. In spite of the growth of housing development of over 20,000 dwellings per annum since 1989, the highest in the country, water Distribution Input (DI) has remained steady. Anglian Water's long-term focus on leakage management and promotion of metering since privatisation has resulted in leakage falling by over 100 Ml/d, and domestic metering increasing to 62% of households, one of the highest metering bases in the UK.

known as the 'twin track' approach. Water companies have a statutory duty to promote the efficient use of water, and demand management is crucial to sustainable water resource management.

Each year, thousands of customer supply pipes are repaired, cistern devices distributed, and self-audit packs provided to help customers use water more efficiently. Ofwat expects each company to assess the role of economic demand management options within its long-term water resources plan, but more evidence on the water savings achievable from such options is required.

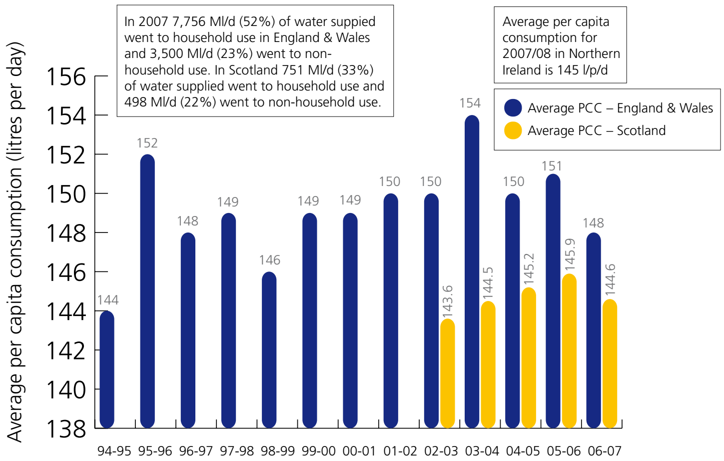
Water consumption per person in the UK is comparable to many countries, but higher than some (e.g. Germany) and lower than others (e.g. Italy). Steps to manage demand are partly determined by regional factors, including the degree of water scarcity, demographics (including projected growth) and affordability. For companies in the south east, demographic changes, new housing development and the likely impacts of climate change are all expected to increase pressure on water resources.

Box 5.2
Evidence base for water efficiency – Waterwise

Whilst the need for large-scale demand management is widely accepted in the UK, more robust economic evidence on the costs and benefits of measures is needed. This is especially important when demand management measures are compared with new resource development options in the water resource planning process.
Waterwise is compiling a set of scenarios for large scale water efficiency programmes based upon the outcomes of water company efficiency projects. These scenarios contain robust cost and benefit information which can be used to inform water company investment into water efficiency. The scenarios consider different approaches to delivering water efficiency, and present various logistical options and their influence on the costs and benefits, for example the methods used to identify households for retrofit and the staff used to carry out the work.

Figure 5.1 – Trends in Domestic Water Consumption.

Source: Ofwat (England and Wales only) Peaks in 1995/96 and 2003/04 relate to the hot summers of 95 and 2003.



Reduced domestic demand, through more efficient use of water in the home, could reduce the extent of abstraction needed for public supply, and help offset new and existing pressures on water resources.

5.3 Water efficiency

Over recent years, the need to effectively manage future demand for water has risen up the political and public agenda. The regulatory and policy framework has been strengthened, with a greater commitment to water efficiency in the Building Regulations and the Code for Sustainable Homes, and Ofwat have proposed the introduction of mandatory water efficiency targets for all water companies from 2010. To achieve success on water efficiency, it is important to combine awareness raising, behavioural motivators, technological progress and innovation.

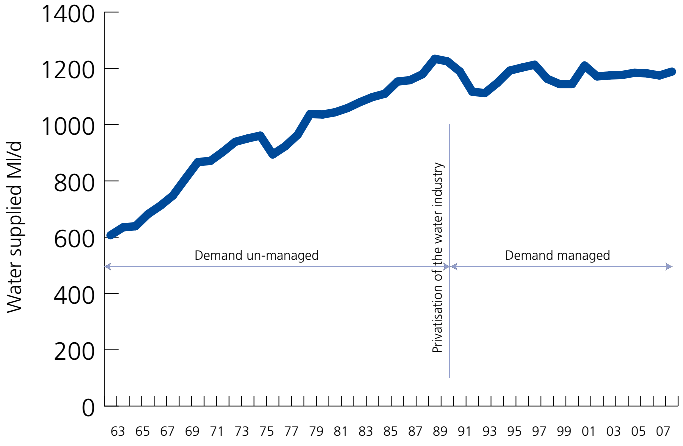
Water efficiency includes practices, products, or systems that use less water than traditional products or systems without sacrificing performance. It includes low or dual-flush toilets, low-flow showers, 'visit and fix' audits, self-audits (includes a water saving check list and basic retro-fitting equipment), differential tariffs and billing systems, and general awareness campaigns.

Understanding customer behaviour is necessary to target water efficiency measures effectively and to communicate the right messages to different customer groups. The industry is actively engaged in the Water Saving Group (www.defra.gov.uk/environment/water/conserve/wsg), and in November 2005 the water industry set up Waterwise (www.waterwise.org.uk) to make the case for large-scale water conservation and to improve the evidence base for cost effective demand management.

5.4 Metering

Around one third of households in England have a water meter (Future Water, 2008) and this is increasing at the rate of 2% per year. This is up from just less than 20% in 2000 and only 7.5% in 1995. However, these figures mask substantial regional differences; for example. 62% of Anglian Water's customers are metered compared to

Figure 5.2 – Trends in water supplied by Anglian Water from 1963 to 2007



only 11% for Portsmouth Water. Research suggests that metering generally leads to a reduction in consumption of around 10%, although there may be significant variation across customer groups. The government says that metering is "a fair way to pay for water, in that customers pay for what they use, and it introduces a financial incentive to save water" (Future Water).

Of course, metering has a cost which must be balanced against the benefits derived. The government has recently announced an independent review of water charging which will look at these issues in more detail (http://www.defra.gov.uk/news/2008/080804a.htm).

In the early 1990s Anglian Water embarked on a major project to install district metering throughout the network. About 3,500 meters were installed dividing the whole distribution network into 1,800 District Metered Areas. All the meters were connected to a telemetry system enabling Anglian Water to respond to leaks almost as soon as they occurred. At the same time, Anglian Water invested in a major programme to replace its iron mains with jointless polyethylene pipes, minimising leakage and improving the quality of water to customers. As a result of this programme, almost 10,000 km out of the 37,000 km of distribution mains were either laid to service new developments or to replace the old iron mains.

5.5 Education

Education is crucial in encouraging a cultural shift in the way we all use and value water. Educational and awareness raising activities are key in ensuring that best practice water efficiency becomes the norm.
Water companies have found that an effective way of communicating messages to inspire behavioural change is to link with other organisations to promote of water efficiency, including local schools, consumer groups, conservation bodies, gardening clubs (for example http://thewaterschool.co.uk/) and even Mobile Education Centres. Some also have partnerships with manufacturers of appliances to improve labelling on water consumption.

5.6 Water consumed – looking forward

- The water industry will work with regulators and others to find solutions for further improving drinking water quality without the use of increasingly disproportionate amounts of resources and energy.
- Regulators encourage more sustainable ways of achieving further improvements in water quality, tackling pollution at source and using more flexible and catchment-based approaches.
- Local, regional and national government ensure that water issues are fully taken into account in planning for growth and in land use decisions.
- Water companies, particularly those in drier areas, will continue to extend meter penetration where the benefits outweigh the costs of so doing.
- The industry will continue to be active in water efficiency, through support for the Water Saving Group and Waterwise.
- The industry will apply information gained over the last five years in the development of large scale water efficiency programmes that can be robustly included in the water resource planning process, as well as looking at international experiences in countries where water is scarcer.
- The water industry, with support from economic and environmental regulators, will aim to meet economic water efficiency targets planned for 2010.
- Economic regulators work with companies to develop appropriate seasonal, 'rising block' or differential tariffs that can play a role in reducing water consumption.
- Government strengthen Building Regulations to embed water efficiency, and consider other initiatives, such as a water efficiency registration scheme for plumbers, point of sale controls on water-intensive products and extension of the Enhanced Capital Allowance scheme to include more water efficient products.
- The work of the Market Transformation Programme, a product labelling scheme, could be introduced for all water-using products in order to show their relative efficiency at the point of sale.

Box 5.3
'Be Smart' – Severn Trent Water

Severn Trent Water's 'Be Smart' programme helps to educate school children about the importance of water, and recognises schools that are making a commitment to the wise use of water. Schools are challenged to meet four goals: auditing water use, promoting water efficiency, promoting the benefits of drinking water, and promoting a greater understanding of water issues locally and globally. Each school is allocated a Severn Trent Water employee to act as mentor, and a pack of resources is provided which includes a Schools Water Audit CDRom. The implemented action plan is assessed, and upon completion the children are presented with certificates and the school receives a trophy. The programme is also designed to provide the mentor with personal and professional growth opportunities.

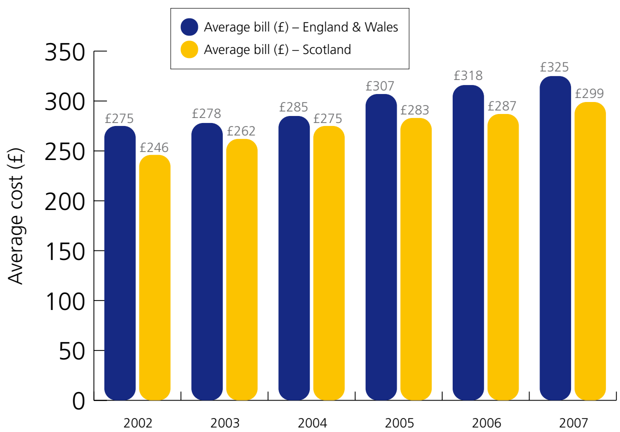
6 Cost of water

In the UK, water and sewerage services cost, on average, less than £1 per day for domestic customers. Over the last five years, the average price of water per household in the UK has increased by approximately 20%. The challenge for the sector is to manage the cost of the provision and treatment of water and wastewater to ensure it can deliver affordable services. A number of factors need to be addressed, including pollution from other sectors, meeting quality and environmental standards sustainably, dealing with an ageing network, and climate change.

The price of water, or what people pay for water through bills, is regulated by Ofwat in England and Wales. Prices set in 2004 cover the period 2005-2010, and in 2009, prices for 2010-2015 will be set. In Scotland, the Water Industry Commission for Scotland sets prices for a 4 year investment period – in 2009 prices for 2010-14 will be set. Prices in Northern Ireland are currently regulated by government but this will change from 2009, starting with the price review for 2010-2015, when the Utility Regulator for Northern Ireland takes over.

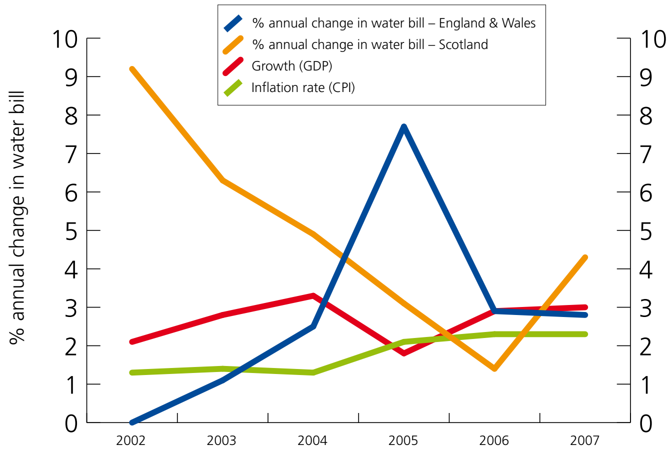
The water companies in England and Wales are financed by customer bills and by public or private investment. The amount of funding needed, above that which is raised through customer bills, has been as much as £1 billion a year since 1990 across these companies. This is why water companies are described as 'cash negative'. Companies obtain much of the extra capital they need as long-term loans that operate rather like mortgages. This helps to spread investment costs over long periods and helps keeps customer bills down. Net returns on this borrowing in 2006-07 were 6.4%. In March 2007 overall borrowing stood at over £27 billion.

Figure 6.1 – Average household bills 2002-2007 (in 2008-09 prices).



Source: Ofwat (England and Wales only) and Scottish Water
Note: Northern Ireland Water does not currently charge households separately for water and sewerage services. Northern Ireland Water left the Northern Ireland Civil Service and became a Government Owned Company 1st April 2007. At present, domestic water charging has not been introduced.

Figure 6.2 – Percentage annual change in average household bills (2002 – 2007) compared to inflation rate.



Source: Ofwat (England and Wales only) and Scottish Water

6.1 Investment in infrastructure

Five year trend
Operating costs are declining as a percentage of the total bill as a result of efficiencies, but capital investment programmes remain significant.

A proportion of the household water bill pays to support capital investment. This includes costs for essential work to maintain and improve water quality and the infrastructure. During the period from 2000 to 2005 water companies in England and Wales spent over £5 billion on nearly 7,000 environmental projects to improve rivers and coastal waters. During Quality and Standards 2 (Q&S2) (2002-2006), Scottish Water invested £1.8 billion and delivered around 2000 major projects to improve the quality of drinking water and to improve environmental quality.

Today's average annual water and sewerage bill would be £100 higher without the efficiency savings made by the companies, according to Ofwat. Regulation means that companies are expected to make enough profit to fund the significant investment needs of the industry, and this is achieved through paying interest and dividends to existing investors, and attracting new investment if it is needed. Since 1990 the cost of the required improvements has been higher than the profits the system has allowed, resulting in the requirement for new investment. In this situation for every £2 the industry makes in operating profit, it invests £3 in the service. Companies that perform well and meet their obligations win investors' confidence, and can obtain funds at competitive rates of interest. This lower cost investment helps to keep customer bills down.

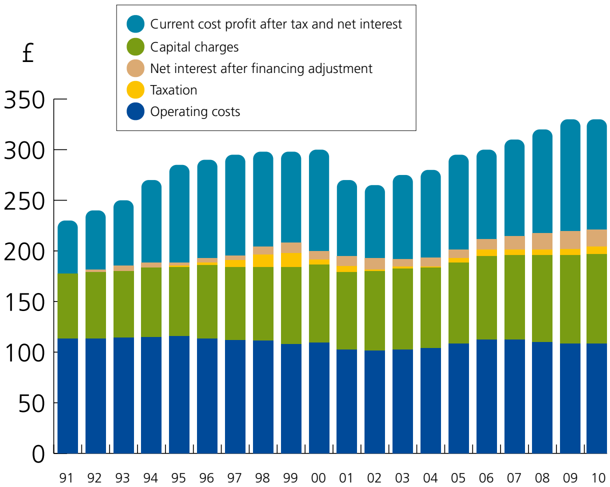
Over the last five years, the maintenance and upgrading of aging assets has become the top priority. In the period from 2005 to 2010, water companies will invest £3.4 billion to improve sewage treatment works and storm

Table 6.1 – Financial indicators

Indicator	2002/03	2003/04	2004/05	2005/06	2006/07	No. reporting (max 23)
Operating cash flow	£4,415m	£4,478m	£4,823m	£5,528m	£5,462m	23
Amount of interest paid	-£279m	-£776m	-£1,124m	-£804m	-£1,261m	23
Investment in assets	£1.67bn	£1.91bn	£1.94bn	£1.98bn	£2.22bn	23

Source: Water UK, Sustainability Indicators 2002/03 - 2006/2007

Figure 6.3 – Components of the average household bill, 1991 – 2010 (Ofwat, Setting price limits for 2010-15: Framework and approach, 2008)



overflow discharges to the water environment, and £4.2 billion to maintain infrastructure. These programmes were designed to deliver improvements to more than 3500 km of rivers and 300 km of coastal waters during the period to 2010.

Box 6.1
Investment and Infrastructure – South West Water

Having delivered substantial improvements in quality and environmental performance over the past 18 years, the challenge for South West Water is to sustain the reliability of its assets as they age, and to improve asset performance where necessary. South West Water has the largest asset value per customer of any of the water and sewerage companies. This is because a small population has had to fund a large number of assets, and in order to sustain the improvements in quality achieved, increased expenditure on maintenance will be required. South West Water has applied the common methodology of the UK Water Industry Research (UKWIR) Capital Maintenance Planning Common Framework (CMPCF). Following these principles across its asset base, South West Water assessed the performance of its assets, projected future performance, and identified the investment required to ensure that assets continued to provide customers with a safe and reliable service.

6.2 Affordability

?

Five year trend
Average bills have increased, but for the majority of the UK population water bills are less than 3% of income, and have remained so over a number of years. Affordability for a proportion of the population is a real issue and remains so despite actions from companies.

The Consumer Council for Water (CCWater) (which replaced WaterVoice), Waterwatch Scotland and the Consumer Council in Northern Ireland provide a national voice and regional representation for all consumers in their respective countries, ensuring that customers receive value for money, that problems are quickly resolved, and that water and wastewater services are of a high standard.

In the last five years, average household bills have risen by approximately 20% while the proportion of customers who pay more than 3% of their income on water and sewerage has remained constant (see table 6.2). Affordability for low income and vulnerable households will continue to remain an issue. Approximately 9% of households have a water and sewerage bill that is greater than 3% of their income. Companies have a requirement to provide funding packages to support debt, but a number of companies have also come up with unique and innovative ways of addressing the issue of affordability in their regions.

Box 6.2
Debt support –Wessex Water

Wessex Water works closely with the Citizens Advice Bureau and other debt advice agencies across its region to help customers who are in financial difficulty. This joint working ensures that customers in water debt have access to good debt advice, can maximise their income via a benefits healthcheck, and can find sustainable solutions to get them back on track.

In addition to their Restart and Restart Plus schemes, Wessex Water has introduced Assist. This is a set of low tariffs which reduce charges for those customers who are in severe financial difficulty and who, despite their best efforts, are genuinely unable to pay the full amount of their water bills. Wessex Water has a dedicated social policy team which administers the Restart Schemes and Assist, as well as WaterSure, and liaises with debt advice agencies.

Table 6.2 – Industry affordability

Indicator	2002/03	2003/04	2004/05	2005/06	2006/07	No. reporting (max 23)
Households with water and sewerage bills >3% income	**9%**	**9%**	**9%**	**9%**	**9%**	**Defra data[1]**

Source: Water UK, Sustainability Indicators 2002/03 - 2006/2007
Notes: 1: Defra (England and Wales only)

In terms of customers' bills, in real terms the SDSs and draft business plans of most companies project a picture of broadly stable or modestly rising bills. There remains a need to address issues such as increasingly expensive water treatment and distribution processes, and the costs of reducing GHG emissions across the industry.

6.3 Cost of Water – looking forward

- Industry, government, consumer groups and others work together to agree a definition of affordability for the water sector, and take steps to support affected customers.
- Government and regulators ensure that water company customers are not paying more than they need to in cleaning up pollution from other sectors.
- Industry will work with others to ensure that the right balance is struck between addressing climate change, improving environmental protection, managing GHG emissions and dealing with other challenges.
- Regulators and government work with companies to explore the impacts of metering on affordability, and the potential for tariffs which protect vulnerable customers.
- Industry will consider including information on the energy and carbon costs of heating water with existing billing literature.
- Governments consider the issue of affordability for the poorest in the community via tax relief, benefits and social welfare policy.
- All stakeholders – companies, regulators and government – work together to maintain investor confidence in the water sector in order to allow future investment programmes to be financed efficiently.

7 Wastewater

More than 10,000 Ml of wastewater is collected every day in the UK through 370,000 km of sewers. After treatment to meet the required standards, this wastewater is returned back into the environment at one of 6,000 consented discharge points. Currently there are an additional 25,000 intermittent / storm overflow discharge points which carry discharges which occur during periods of rainfall.

The provision of effective wastewater collection and treatment is essential for the protection of the natural environment (e.g. biodiversity); public health and resources (e.g. water supply and shellfish waters) and amenity (e.g. safe bathing waters). In the last five years there have been several European Union directives which have driven improvements in the levels of wastewater (sewage) treatment. This has resulted in significant improvements in the quality and biodiversity of our rivers, estuaries, and coastal waters. The legislation has also led to the increased recycling of wastewater treatment by-products to land.

7.1 Wastewater and the environment

?

Five year trend
The water Industry has invested significantly since 1990 in sewerage and sewage treatment, and quality standards have improved. During the last five years the trend initially showed a continuation of this improvement, but standards have now fallen back to the same level as 2002/03[4].

Wastewater collected from homes and businesses is treated and discharged locally into nearby river systems, or in coastal areas via outfalls into the sea. Treatment levels are set independently by the Environment Agency, and the levels are designed to protect the natural environment, resources, and amenity use.

In England, investment during the period 2000-2005 focussed on action to ensure that discharges to coastal waters received the same standard of treatment as that already provided for discharges to rivers. In addition, 85% of storm sewage spillages were rectified, and discharges to sensitive waters received additional levels of treatment (Environment Agency, 2004, Environmental Drivers for the 2004 Periodic Review). In a similar way, the Q&S2 investment programme (2002-06) in Scotland resulted in many improvements in discharges to bathing waters and rivers.

As part of the Environment Programme, the Environment Agency set approximately 4,600 actions for the period from 2005-2010 in England and Wales. Of these, 2,900 were statutory 'must do' actions associated with water quality, including 280 associated with the Urban Waste Water Treatment Directive, 206 associated with the Habitats and Birds Directives, and 1863 associated with intermittent discharges. There was also a call to promote parallel action on diffuse pollution, and emphasis on land and catchment management practices.

Many companies recognise that sensitive receiving waters are at (or close to) their environmental capacity during the summer months when river flows are normally at their lowest. Despite this, significant housing development is planned for the future in some regions. As water quality is affected by a wide range of activities, including land-use practices, urban diffuse pollution from surface water run off, and direct industrial discharges, improvements require a joined-up approach at the catchment scale. This will be accomplished through the implementation of the Water Framework Directive.

[4] There is uncertainty in the figures for the last two years, and this is currently under review. Anecdotal information suggests that the industry is achieving in excess of 95% compliance.

Table 7.1 – Consent compliance for wastewater treatment works

Indicator	Result 02/03	Result 03/04	Result 04/05	Result 05/06	Result 06/07	No. reporting (max 12)
Population connected to compliant WwTW[1]	86.6 %	93.7 %	97.0 %	88.0 %	86.1 %	12

Source: Water UK, Sustainability Indicators 2002/03 - 2006/2007
Notes: 1: This figure should be viewed in the context that the data reported by companies may vary slightly, due to the number of ways that this data can be collected and calculated. This is both in terms of date ranges, change in number of companies reporting, indicator measures and the method by which this overall figure is calculated.

Table 7.2 – Water and wastewater sludge production and re-use

Indicator	Result 02/03	Result 03/04	Result 04/05	Result 05/06	Result 06/07	No. reporting (max 23)
Total sludge produced	1.23m tonnes	1.3m tonnes	1.3m tonnes	1.35m tonnes	1.73m tonnes[1]	19
Sludge reused	72%	77%	81%	88%	79%[2]	19

Source: Water UK, Sustainability Indicators 2002/03 - 2006/2007
Notes: 1: Some of the significant increase in amount of sludge produced is due to improved treatment removing more sludge from sewage and the increased coverage of the sewerage system.
2: This includes reuse, recycling and energy recovery. There may be some minor discrepancies in figures due to some companies collecting 'post-digestion' and others 'pre-digestion'. In addition, there is some variation due to reporting with or without 'grit and screenings'.

7.2 Sludge

Five Year Trend
Recycling of sludge to agricultural land, together with its use in land restoration / reclamation and energy recovery has increased, in part due to improvements in the quality of sludge. Disposal to landfill has been virtually eliminated.

Sewage sludge is a by-product of the sewage treatment process. Over the last five years, the quantity of sewage (and other) sludge produced in the UK has risen to 1.73 million tonnes of dry solids. By 2010 it is estimated that the total volume of sludge for disposal will have increased further as a result of an increase in the number of households connected to the sewerage system, and more stringent requirements for the treatment of sewage effluent. The amount of sludge which is reused has increased as a result of the large increase in the total amount produced. The majority of these biosolids are recycled to agricultural land, with a smaller proportion going to incineration with energy recovery. In the last five years, the landfill disposal route has been all but eliminated from usual practice, although it is recognised that disposal to landfill will remain a viable outlet for a small quantity of sludge.

Thames Water puts 99.9% (2007/8) of its sewage sludge to beneficial use. The majority of sludge is recycled to land as a soil improver, with the remainder used to produce renewable energy. **Southern Water** is treating and recycling solid waste to form sludge 'cakes' and pellets for the farming community. **Yorkshire Water** has developed a sludge treatment process, known as Sludge Phyto-Conditioning, which involves mixing digested, conditioned sludge with green waste from local councils and planting fast-growing ryegrass on this to produce a high quality top soil product. This process has won a number of awards including the National Recycling Award's Environmental Product of the Year in 2006. **United Utilities** has developed and patented a novel process for sewage sludge treatment called Enzymic Hydrolysis. This produces a high quality fertiliser and enables more efficient use of the energy within the sludge.

Sewage sludge can also be digested to produce biogas which can be used to generate electricity and heat. This onsite generation can reduce companies' GHG emissions by reducing the need to purchase electricity from non-renewable sources, and can qualify as a renewable energy source under the Renewables Obligation (RO). **South West Water** produces biogas via an enhanced process which reduces overall sludge volume by 30%. This reduces the transport required to recycle sludge to agricultural land, and the biogas produced fuels Combined Heat and Power (CHP) generation as a renewable source of energy.

Box 7.1
20 year Sludge Strategy – Scottish Water

Scottish Water developed a 20 year Sludge Strategy in 2005; this forms the basis for the management of all Scotland's sludge up to 2025, and will inform successive regulatory investment periods. Scottish Water carried out a Strategic Environmental Assessment (SEA) of the key sludge outlets in Scotland, both at a national level and for each of the 18 sludge catchments.

The SEA process also allowed Scottish Water to engage with stakeholders throughout the various stages of the process. Once the SEA was completed, the draft strategy was launched for public consultation prior to finalisation of the SEA report and the Sludge Strategy. The Strategy enabled Scottish Water to take a long term view on the best treatment processes and outlets, as well as providing information about the best options at a local level.

7.3 Wastewater – looking forward

- Over the next five years the industry will have to address further tightening of standards, for example those associated with the WFD and its 'daughter' directives. The industry will also need to deal with extensions in geographical coverage of a range of environmental designations, such as the 24 additional nutrient sensitive areas announced by Defra. Such changes will require additional investment at sewage treatment works, particularly in the area of reducing nutrient levels in discharges. It is likley that these changes could significantly increase the carbon footprint of some companies.
- Companies will continue to diversify sludge recycling routes and invest to allow further energy recovery in the form of Combined Heat and Power (CHP).
- Governments and regulators ensure that appropriate and improved incentives are provided to encourage the development of innovative treatment solutions for both wastewater and sludge management.
- Governments and regulators continue to work in partnership with the sector to identify issues which are currently hindering a move towards greater sustainability, and to remove relevant regulatory and policy barriers.
- Regulators work with the industry to promote and support investment in catchment management approaches though the WFD, to support further action to control pollution at source, and to encourage more flexible 'end of pipe' solutions which are sustainable in the face of climate change.
- The water industry will need to assess the availability of suitable agricultural land for sludge recycling in the light of Nitrate and Phosphate Vulnerable Zones (NVZs,PVZs), presence of persistent organics and tighter restrictions on metal concentrations.

8 Climate change

Climate change probably presents the biggest challenge to the sustainability of water services. Water company operations and assets are vulnerable to a more volatile climate, and are already feeling the pressure. More frequent droughts, more intense rainfall and increased flood risk are influencing investment planning in all aspects of water services. In the face of forthcoming climate change legislation, the issue of mitigation by reducing GHG emissions, and the challenge of adequate adaptation to a changing climate will become increasingly important for the industry.

8.1 Mitigation of greenhouse gases

Five year trend
Industry is responsible for about five million tonnes of greenhouse gas emissions (CO_2 equivalent) every year. Whilst this represents less than 1% of total UK emissions, it is rising. Despite improved efficiency in abstracting, treating and supplying water, population demographics and consumption growth, along with more stringent treatment standards, are driving energy use up.

The water industry was one of the first to report its energy use and greenhouse gas emissions on a sector basis in 2005. From 2007/08 onwards, Ofwat has required each company in England and Wales to report emissions annually, and to consider the cost of carbon in future business planning. Companies use renewable energy for about 13% of their energy needs, around half of which is generated on-site.

The challenge for the future is to accurately measure and manage GHG emissions in the face of increasing energy demand. This demand is linked to more stringent wastewater treatment requirements and increased numbers of households connected to the network. Recent UKWIR studies in conjunction with Water UK and the Carbon Trust have focused on developing the right tools to measure and report emissions, and on identifying low-carbon, sustainable solutions to future challenges. However, the ongoing improvements to reporting methodologies make comparison of past and future information an additional challenge. Companies and regulators need to work together to ensure that GHG management strategies match the UK targets set by government, and that they and can be achieved while also delivering sustainable water and wastewater treatment solutions. The forthcoming Carbon Reduction Commitment (CRC), which will encompass all UK water companies, will play a role in this.

Box 8.1
Carbon and Sustainability Tool – United Utilities

United Utilities has developed the Carbon And Sustainability Tool (CAST) to assist in making its capital investment more sustainable and carbon efficient. CAST allows the company to compare different solutions in terms of their lifetime contribution to carbon emissions and their overall sustainability. The tool was fine-tuned using the real-life example of the company's sludge strategy, highlighting the option of maximising the use of an existing sludge incinerator, rather than constructing an additional one. CAST is now being used to help in decision making for the planning of the next five-year investment cycle, and is also being used to generate carbon curves for more generic investments for use in the cost estimating stages.

Table 8.1 – Energy and water supply

Indicator	Result 02/03	Result 03/04	Result 04/05	Result 05/06	Result 06/07	No. reporting
Greenhouse gases emitted (total CO_2 equivalent emissions)	Not calculated		4.14m tonnes	4.15m tonnes	5.03m tonnes	21 (max 23)
Average Energy used to supply 1Ml water	602 kWh	663 kWh	663 kWh	586 kWh	559 kWh	22 (max 23)
CO_2e emissions in supplying 1Ml water	Not calculated		0.249 tonnes	0.289 tonnes	0.271 tonnes	17 (max 23)
Energy used to treat 1Ml sewage	814 kWh	645 kWh	663 kWh	634 kWh	756 kWh	12 (max 12)
CO_2e emissions in treating 1Ml of sewage	Not calculated		0.641 tonnes	0.406 tonnes	0.476 tonnes	10 (max 12)

Source: Water UK, Sustainability Indicators 2002/03 - 2006/2007

Table 8.2 – Renewable energy used and generated

Indicator	Result 02/03	Result 03/04	Result 04/05	Result 05/06	Result 06/07	No. reporting (max 23)
% Renewable energy used	6.40%	6.10%	8.45%	14.0%	12.90%	22
Generated internally	343 GWh	345 GWh	392 GWh	493 GWh	515 GWh	22

Source: Water UK, Sustainability Indicators 2002/03 - 2006/2007

8.2 Adapting to climate change

Measure being developed	**Five year trend** The floods of 2007 highlighted pressures on the sewerage and drainage network. The industry has included climate scenarios into business planning for many years, and is developing a strategic framework for adaptation.

Issues relating to carbon and climate change have increasingly been incorporated into planning and decision making processes in recent years. For example, the water industry has worked closely with environmental regulators to ensure that planning guidelines explicitly take account of climate change scenarios for precipitation, evapotranspiration and temperature.

The industry is at risk from an increase in the intensity, severity and frequency of extreme weather events, droughts, storms and floods. Potential impacts include:
- Reduced availability of water in rivers, reservoirs and aquifers at certain times of the year.
- Enhanced water treatment requirements as a result of lower quality of water in the environment.
- Capacity issues in parts of the existing sewerage systems network causing local flooding.
- Damage to the structure and operation of dams and reservoirs, for example from increased siltation and slippage.
- Water and wastewater pipe networks and assets more prone to damage from increased soil movement and increased flood risk.

Considerable work has already been undertaken to assess the impacts of climate change on all areas of asset management and operation. Studies led by UKWIR have identified the main impacts on river flows, groundwater levels and salinity, reservoir flows and safety, extreme rainfall events, storm drainage, water quality, demand for water, levels of service and customer satisfaction, and the resilience of assets and infrastructure. In addition, a water industry adaptation planning tool was developed by Water UK in 2007, and the industry's recent review of the 2007 floods discussed the impact of climate change.

Box 8.2
Carbon Management – Yorkshire Water

Yorkshire Water has delivered a number of initiatives to reduce energy use including the development of the Water Resource Allocation Planning tool. This tool is used to optimise water production and bulk water transmission within the regional grid network and has delivered significant energy savings. Yorkshire Water has recently installed three new wind turbines, generating an additional 8,500 MWhs per year, and a state of the art low-flow hydro-electric device at one of their sewage treatment works. They have also developed a carbon costing model which calculates the embedded carbon associated with capital works and enables carbon impacts to be included within investment decisions.

Box 8.3
Adaptation Strategy – Anglian Water

The effects of climate change in the east of England are likely to include increasing temperature, wetter winters, drier summers, more frequent storm events and rising sea levels. Anglian Water has developed an adaptation strategy to prepare for the implications of these changes. This strategy aims to build adaptive capacity within the company through a programme of raising awareness with staff and undertaking research to investigate the measures required to protect critical infrastructure from future flooding events. With the Tyndall Centre, Anglian Water is also undertaking research aimed at understanding the implications of sea level rise for coastal assets. At a number of sites, actions are already being taken to implement climate change adaptation strategies. An example of this is the development of new lagoons at Rutland Water. As more water is abstracted to meet the demands of growth and the impacts of climate change, internationally important wildlife may be displaced from the reservoir. The lagoons provide new habitat for this wildlife.

Further work is underway to develop a strategic climate change research programme and to incorporate forthcoming UK climate change scenarios via the UK Climate Impacts Programme (UKCIP08). This will inform future investment programming around flooding and drainage, water quality and quantity, and other activities such as the use of biosolids. As well as driving sustainability in the water industry, this will help to inform activity elsewhere, for example, Defra's recently launched framework for adaptation (http://www.defra.gov.uk/environment/climatechange/adapt/index.htm).

8.3. Climate Change – looking forward

- The industry will continue to improve understanding of its own energy consumption and GHG emissions and those of its supply chain.
- The industry will identify economic opportunities to reduce its contribution to climate change through emissions of CO_2 and non-CO_2 gases.
- The industry will seek to increase energy efficiency and the contribution of renewable energy generation where appropriate.
- The industry will continue to undertake research and adaptation to improve understanding of the impacts of climate change and to embed this knowledge into business planning.
- Governments, regulators and other organisations/sectors support the water industry in the implementation of innovation and best practice on climate change mitigation and adaptation.
- Governments and regulators seek to integrate climate change costs and benefits into policies and decision making, demonstrating an understanding of the wider costs and benefits of decisions made.
- All parties look at ways to incentivise water efficiency, along with energy efficiency as a way of reducing carbon emissions.

9 Added value from the industry

The water industry plays an important and active role in UK society, and seeks to add value to the communities in which it operates. As well as direct investment in water services, companies add value through employment, training, investment in community activities and organisations and indirect support to communities and good causes.

9.1 Responsible employer

Five year trend
Employee turnover remains fairly low and stable relative to other sectors. However, investment in employees via training is falling, and the proportion of employees approaching retirement age is rising; this presents a long term issue to the industry in terms of knowledge, skills, retention and continuity.

The water industry in the UK directly employs more than 44,000 people. Investment in employee training and development per person has declined over the last five years.

The value of people in an organisation is increasingly being recognised as a fundamental part of business performance. Factors such as promoting a healthy and motivated workforce and retaining valuable employees are increasingly prominent in company strategies.
Recruitment and selection remains an important challenge for the industry, with the market for skilled technicians and engineers expected to become even more competitive. With an ageing workforce, the importance of retaining and developing the skills of employees is increasingly important.
Water companies' SDSs placed an emphasis on skills, training and development, and many companies have schemes and programmes aimed at the technical and managerial advancement of employees. These include graduate programmes and professional development schemes. Some companies have adopted the Investors in People standard, which provides a framework to help businesses improve their performance through the effective management and development of their people.

Box 9.1 Skills development

Newcastle Business School (part of Northumbria University) runs programmes for employees at **Northumbrian Water** and **Essex and Suffolk Water,** as part of the water companies' ongoing commitment to developing management skills. **Anglian Water** and other companies commonly provide graduate training and management entry schemes.

Box 9.2 Energy and Utility Skills Programme

The industry supports, and is actively engaged in, the Energy and Utility Skills programme which aims to strategically address the skills challenge, and work is underway to develop a two year plan for the industry (www.euskills.co.uk). Energy & Utility Skills is the sector skills council for the electricity, gas, waste management and water industries. Employer-led, the purpose of the programme is to help employers identify their skills needs. It provides effective solutions to improve business performance, such as training tools and funding.

9.2 Investment in communities

Five year trend
Water companies play an active role in communities through investment and charitable donations, providing skills, equipment and access to land and by encouraging staff to get involved.

Good relations between companies and the communities they serve can bring benefits to both parties, helping to build a company's reputation, improve customer loyalty, promote understanding of specific issues (e.g. water efficiency or disposal of fats/oils) and boost worker morale. Water companies interact with communities in a variety of ways, including education, financial support, in-kind contributions, employee volunteering and local initiatives.

All companies are involved in education (www.thewaterfamily.co.uk and www.thewaterschool.co.uk) by providing either teaching resources or, in the case of some of the larger companies, education centres for the local community. Many also run campaigns aimed at helping households and businesses to use water efficiently and responsibly. Some also run initiatives aimed at raising literacy, improving behaviour and promoting healthier living.

Table 9.1 – Worker Profile

Indicator	2002/03	2003/04	2004/05	2005/06	2006/07	No. reporting (max 23)
Employee Turnover rate	7.6%	9.7%	10.3%	10.3%	10.3%	22
Investment in employee training and development	£400/p	£400/p	£390/p	£342/p	£321/p	21
	18 hrs/yr	27 hrs/yr	17 hrs/yr	17 hrs/yr	17 hrs/yr	21

Source: Water UK, Sustainability Indicators 2002/03 - 2006/2007

Box 9.2
'Water is Life' – Northern Ireland Water

Northern Ireland Water employs local community actors to work with staff and explore challenges such as internal and external communication. The Northern Ireland Civil Service Ideas Scheme rewards employees who contribute useful ideas for increasing the efficient delivery of the company's services. As part of a community involvement initiative 'Water is Life', Northern Ireland Water organised a water-focused family fun day at the Silent Valley Reservoir & Country Park. The aim of the day was to highlight the public amenities available, while providing water education through a series of fun activities for children. The focus of the event was highlighting the vital role that water plays in our everyday lives, and encouraging the public to use this precious resource more wisely.

The Water for Health Alliance promotes greater awareness of the importance of good hydration. It is supported by a range of professional organisations who understand the relationship between water services and public health. The Alliance aims to work closely with government and health authorities to influence policy (http://www.water.org.uk/home/water-for-health/water-for-health-alliance).

Financial support to others is given in a number of ways both by companies and individual employees including direct fundraising, payroll giving, sponsorship, grants and community funds. Many companies partner with charities, and employees may run/organise charities themselves. The charity **WaterAid** brings water and sanitation to the poorest parts of Africa and Asia and is directly supported by the industry.

Employee volunteering is encouraged by many companies. At **Yorkshire Water**, 20% of employees are involved in voluntary community work. The company's latest campaign, 'One Million Green Fingers', aims to create over 350 sustainable school gardens and utilise one million green fingers of school children by 2010. **Anglian Water** has an initiative called 'Give Me Five', in which employees invest their time, skills and expertise in various community projects. Companies including **Thames Water** and the **Northern Ireland Water** allow staff time off to participate in community volunteering.

Many companies also provide direct support for local initiatives such as sporting, arts or cultural events, programmes to improve parks and streams, and initiatives to reduce unemployment and local crime.

Despite many companies being active in their communities, it has proved difficult to develop an appropriate measure or indicator for outcomes, and work is ongoing in this area.

9.3 Biodiversity

Currently no measure available

Five year trend

Water companies have a duty to promote conservation and to protect sites of environmental importance. Public service agreement targets for Sites of Special Scientific Interest have helped focus on the goals to be achieved.

The water industry is actively involved in the conservation and enhancement of the natural environment. Companies are working with statutory agencies to maintain and improve the status of Sites of Special Scientific Interest, rehabilitating natural habitats and introducing sustainable water solutions. Many companies employ specialist staff working with a range of stakeholders such as statutory conservation agencies, Wildlife Trusts and local groups to carry out biodiversity, heritage and a wide range of other community based projects. Key challenges include the further conservation and enhancement of habitats and

Box 9.3
Sites of Special Scientific Interest (SSSI) Recovery Project – Yorkshire Water

The UK government has established a public sector agreement target to ensure 95% of all SSSIs are in 'target' condition by 2010. Within Yorkshire Water's area there are 51 Sites of Special Scientific Interest (SSSIs) covering 11,500 hectares. Through Yorkshire Water's SSSI Recovery Project, the company has successfully moved from 9% in target condition in 2004 to 51% in target condition by March 2008. This project aims to persuade tenants to enter into agri-environmental agreements with the aim of increasing the area of SSSI in target condition. Ecological assessments of the land have been undertaken and farm management plans prepared to identify the ways in which improvements in ecology, land use and water quality can be achieved within the agricultural context, and estimate the associated costs. Yorkshire Water has also assisted tenants in making agri-environmental scheme grant applications, and has started significant capital restoration works.

Table 9.3 – Community Investment

Indicator	2002/03	2003/04	2004/05	2005/06	2006/07	No. reporting (max 23)
Value of community investment	**>£5m**	**>£11m**	**>£10m**	**>£6m**	**>£7.6m**	**20**

Source: Water UK, Sustainability Indicators 2002/03 - 2006/2007

Table 9.4 – SSSI condition

Indicator	2002/03	2003/04	2004/05	2005/06	2006/07	No. reporting (max 23)
% of SSSIs on water industry landholdings in Favourable Status	20%	14%	18%	17%	19%	22
% of SSSIs on water industry landholdings in Unfavourable / Recovering Status	66%	74%	68%	72%	74%	22

species and the impacts of climate change. In addition, the national structure of environmental and biodiversity protection means that developing unified indicators in this area has been difficult.

9.4 Added value – looking forward

- The industry will seek to develop strategies for enhancing employee training, providing education programmes, maintaining a skilled workforce, and highlighting staff achievements and other corporate and social responsibility issues.
- The industry will continue to develop specific and common indicators for community engagement and biodiversity.
- Industry will, where appropriate, engage in partnership arrangements with land owners, statutory agencies, regulators and others to establish a cohesive landscape-scale approach to conservation and biodiversity that delivers multiple benefits.
- Companies will continue to protect and enhance their sites for conservation, access and recreation, whilst developing indicators for reporting biodiversity gains.

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