

Changing Course

Delivering a sustainable future for the
water industry in England and Wales



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Severn Trent Water Limited

Severn Trent Water Limited is one of the ten privatised water and sewerage companies in England and Wales. We provide water to 7.4 million people and sewerage services to 8.5 million people in an area covering 21,100 square kilometres in the Midlands and mid-Wales.

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Foreword

Martin Cave, Warwick University

January 2010

In April 2009 I submitted an independent review of competition and innovation in the England and Wales water sector to the Chancellor of the Exchequer and the Secretary of State for the Environment, Farming and Rural Affairs.

The Government commission reflected concerns about whether the structure of the sector and its regulation were adequate to the current stage of its development and to the challenges it will face as a result of climate change and a greater focus on sustainability.

The review set out a number of proposals for changes in legislation and regulation. These envisaged the gradual insertion of market-like mechanisms and competitive forces into the sector, in a measured process designed to maintain investors' confidence in the sector and avoid an increase in the cost of capital.

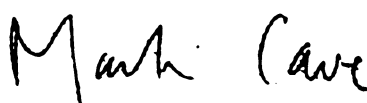
The process would start at opposite ends of the value chain. Downstream it would allow competing retailers to give business customers in England and Wales the choice of supplier which they have said they want and which their Scottish counterparts already have. Upstream, it would introduce greater rationality in the manner in which abstraction rights are allocated. This would introduce greater opportunities and incentives to use our water resources more efficiently, obviating the need for some further investment in reservoirs and treatment plants and creating a regime which will better cope with water shortages as they develop. The proposals also embraced, in a second stage, more direct competition in the supply of water and sewage treatment, initially in respect of incremental capacity.

It will be some time, however, before these measures to promote competition take effect, and not all aspects of water supply can be exposed to competition. Therefore it is widely agreed that, following the current price control period, regulation must adapt to the new challenges, by moving away from the current high levels of micro-management and giving companies greater incentives to assess and assume the risks associated with more innovative approaches to the operation of their businesses.

I am delighted, therefore, that many of these views are shared by Severn Trent Water, in publishing a report which takes the debate forward in helpful ways. I note in particular the proposals for the encouragement of water trading and for a more flexible approach to environmental regulation, which reflects technological advances in monitoring and control. Additionally the report emphasises that innovation must be a company-led process, and that the roles of Government and regulator are, respectively, to provide some fundamental R&D support and to create an incentive structure with the right balance of reward for assuming innovation risk. Some useful revisions to regulatory mechanisms to create these incentives have been proposed.

The need for change in the structure and regulation of the water sector is widely recognised by suppliers, Government, regulators and end users. There is also a degree of consensus about the required direction of change. Some of it will require legislation, and I hope this will be forthcoming fairly early in the next Parliament.

This report is an important contribution to the broad discussion we need to have now about how to progress the changes.



Martin Cave
Warwick University

Executive Summary

The water industry in England and Wales has reached a pivotal point. Two decades have passed since privatisation, during which time the industry and the regulatory framework have evolved.

While the framework has delivered higher customer and environmental standards the consequences have been significant water company debt, higher bills to customers and increased carbon emissions. We believe now is a critical time for all of us with a stake in the industry to question what future direction we should take. Without significant changes to the policy and regulatory framework the sector does not look sustainable.

The past 20 years have been a success

The achievements of the water industry since privatisation in 1989 are well documented – service to customers has improved, new drinking water standards have been met, tighter environmental standards have been achieved and new investment attracted. These successes have been driven by an effective regulatory framework which has encouraged better service and incentivised companies to become more efficient, so keeping bills lower. It has also provided investor confidence, allowing companies to attract financing for an investment programme of around £85bn over the last 20 years to deliver the improvements.

But this has not been without consequences

The water industry begins the next 20 years in a very different and in some ways more challenging position to that experienced in 1989:

- Industry debt now stands at around £33bn in total (which was zero at the time of privatisation) and around £1,500 per customer. Industry gearing as a result stands at around 72% (compared to 0% at privatisation).
- Bills to customers have risen faster than inflation (45% higher in real terms in 2010 than in 1990). 11% of households now pay more than 3% of their income in water bills¹. The scope to mitigate bill increases through efficiency is less than at the time of privatisation.
- Carbon emissions are increasing due largely to higher, more energy-intensive treatment standards being adopted. The sector is, therefore, not contributing to the Government's target to reduce UK emissions by 34% by 2020.

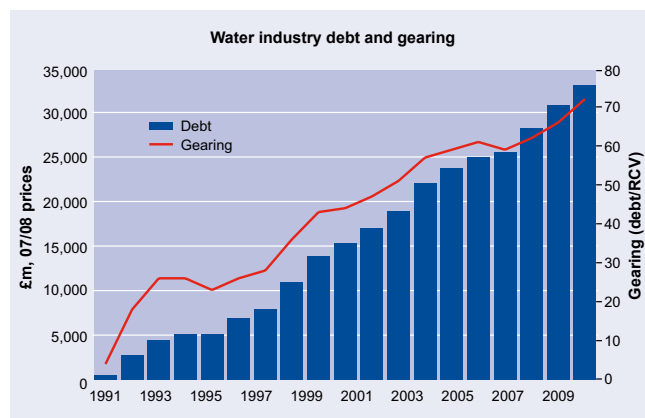


Figure 1: Debt has risen from zero to around £33bn in 20 years
Source: Ofwat annual financial performance reports

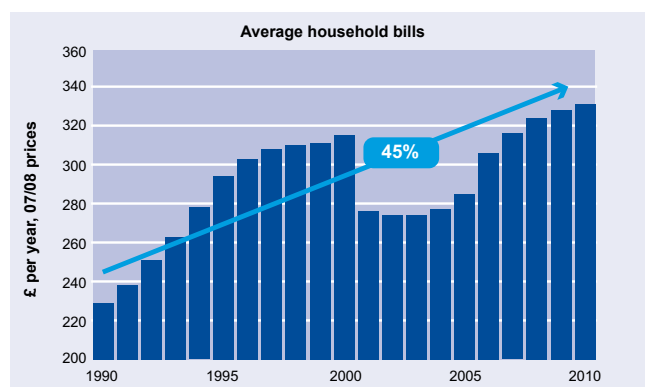


Figure 2: Water bills have risen steadily since privatisation
Source: Ofwat annual water and sewerage charges report

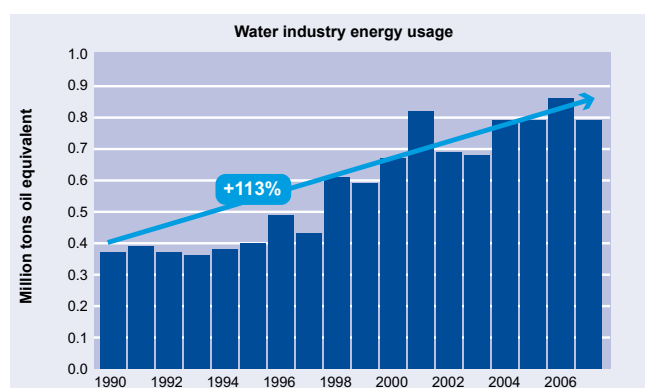


Figure 3: The water industry's energy use has increased steadily since privatisation
Source: Fuel Use by 93 Economic Sectors, 1990 to 2007, Department of Energy and Climate Change

¹ Defra, Cross Government Review of Water Affordability (2004)

And the future does not look sustainable

Given these circumstances and the projected level of capital investment over the next 20 years which amounts to an additional £96bn with annual operating costs rising by £535m by 2030, the future of the sector does not look sustainable.

This investment is largely being driven by the requirement to deliver further statutory and other improvements, as well as adapting to climate change (for example, improving the resilience of our assets) and making our contribution to climate change mitigation (for example, by reducing carbon emissions).

It is also heavily influenced by the nature of the regulatory regime. Its present framework of incentives and prescriptive output setting encourages a risk averse approach to meeting standards and can mean that more sustainable solutions are overlooked in favour of capital intensive solutions.

Figure 6 sets out these drivers of investment and the consequences.

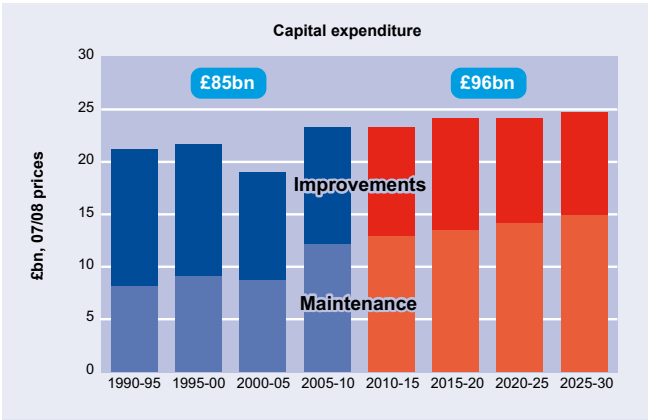


Figure 4: Investment is projected to continue to rise
Source: Ofwat financial performance reports, Future water and sewerage charges 2010-15: Final determinations, and Severn Trent projections

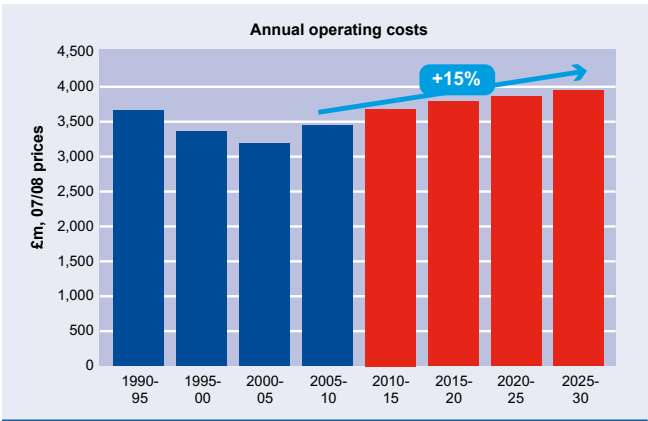


Figure 5: Projected operating cost increases
Source: Ofwat financial performance reports, Future water and sewerage charges 2010-15: Final determinations, and Severn Trent projections

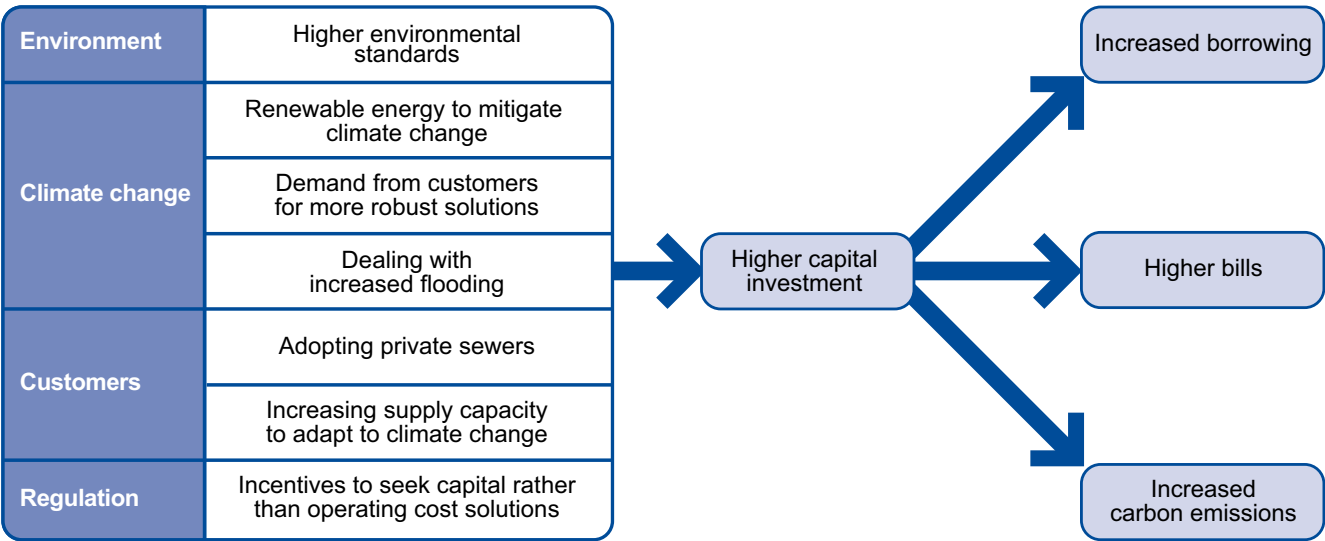


Figure 6: Investment drivers and consequences

It is not clear that such a continued high level of investment is sustainable in terms of whether it can be financed, whether customers are willing to pay for it and the associated detrimental impact on carbon emissions.

It is questionable whether the industry can continue to rely on borrowing to finance a programme of such a size, particularly following the recent global financial crisis which has led to a re-pricing of risk. An additional £27bn of debt does not look fundable particularly given the very different position that the industry is in today compared with that at the time of privatisation in terms of the level of gearing, companies' credit ratings and the allowed returns.

The consequences would be very high debt levels of around £2,300 per customer.

Such increases in investment would also require water customers' bills to rise by some 27% from their current levels. Whilst historically the industry has been able to make operational efficiencies to limit the impact of the improvement programme on bills, to continue to deliver efficiencies we will need to improve our processes through much greater innovation.

The increased investment leads to higher carbon emissions, in many cases as a result of implementing more energy-intensive processes.

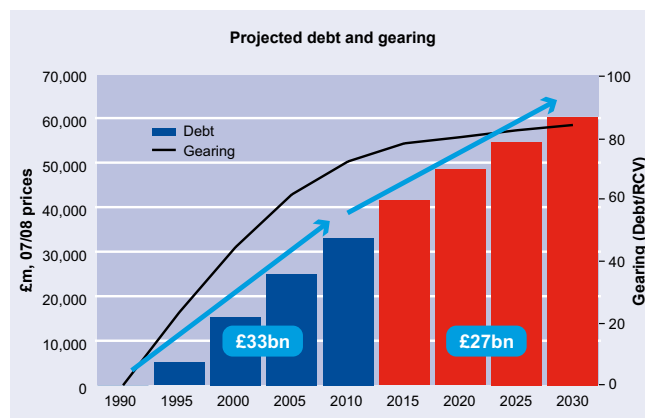


Figure 7: The projected level of debt and gearing required to finance the investment programme does not look sustainable

Source: Ofwat annual financial performance reports and Severn Trent projections

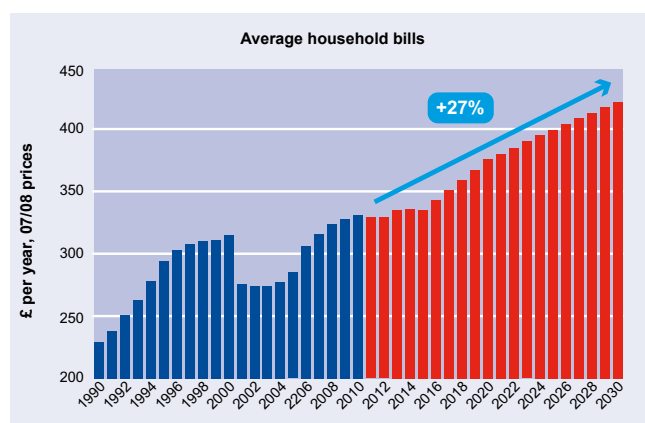


Figure 8: Customers may be unwilling to pay the projected increases in bills

Source: Ofwat annual water and sewerage charges reports and Severn Trent projections

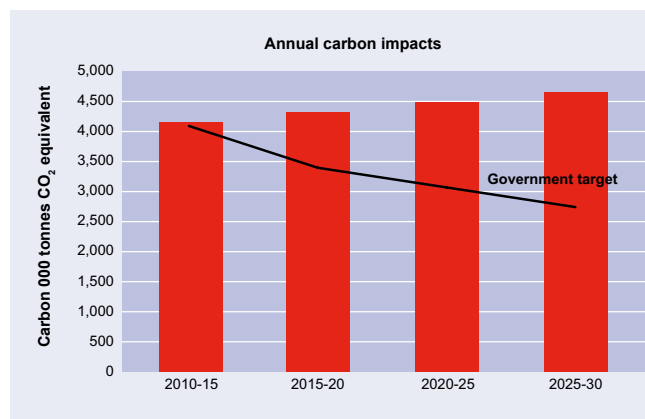


Figure 9: The carbon impact does not look sustainable

Source: Severn Trent projections

The current policy and regulatory framework will not resolve these problems

These outcomes – higher debt, higher bills and higher carbon emissions – do not appear sustainable. Preventing them will require strategic, long-term and innovative approaches to be taken. The current regulatory and policy framework, however, does not encourage such behaviours.

The policy framework is too narrow in its focus

1. Implementation of EU Directives does not take sufficient account of the impact on carbon emissions or customer bills

Implementation of the Water Framework Directive (WFD), for example, risks driving investment which in turn will increase carbon emissions and customers' bills.

2. Supply issues are addressed using regionally focused, capital intensive solutions

Most companies are projected to face significant supply/demand imbalances for water over the next 25 years, driven by water scarcity, climate change and increasing demand. The current regulatory framework encourages companies to look for regional solutions to address these issues. These are often capital intensive, focusing on developing new water sources. There are limited opportunities for realising the most optimal solution for the sector nationally.

The regulatory framework has limitations

3. Environmental regulation is too inflexible

The framework for environmental regulation often requires companies to invest in, and operate, capital-intensive processes rather than seeking out more innovative solutions. For example, the Environment Agency's current approach of consenting discharges at works or specific points encourages companies to rigidly apply the same level of treatment to achieve standards without taking into account variations in river conditions.

4. Economic regulation no longer provides the right incentives

Regulation is not providing the right incentives for sustainable financing, and in particular the retention of equity. Too great a reliance on debt financing will potentially increase the risks faced by companies, and in the long term, customers.

In addition, by incentivising capital investment, encouraging short-term solutions and meeting specific outputs, economic regulation fails to provide appropriate incentives for companies to innovate and seek out sustainable solutions.

These issues are compounded by a complex and detailed price-setting process which diverts regulatory and company focus from key strategic issues. We all become blinded to the bigger picture.

The industry often fails to play its part

5. Companies need to be more innovative

Companies have tended to apply standard, capital-intensive solutions to meet regulatory requirements (often because they represent a 'cheaper' option in the short term) rather than taking on responsibility for developing the innovative, sustainable solutions required to address future challenges (despite the fact that they may provide greater value in the long term).

Implementation of the sector's strategy is not clearly defined

6. The sector's strategy does not address how it should be implemented

A single strategy for the sector exists, but it does not address how it should be implemented by the sector's independent regulators. There is a lack of clear ranking of priorities for different strategy objectives.

The consequences of meeting new challenges without addressing these limitations do not look sustainable.

Significant changes to the framework are therefore required

In this report we explore how water companies and the policy and regulatory frameworks we operate in can better adapt and innovate to meet future challenges. We also set out the consequences of continuing without change.

We are not talking about revolution, but if we are to deliver the best possible outcomes for our customers, the environment and investors in the future, the regulatory framework must evolve significantly and quickly.

We believe six key changes to policy, regulation, and industry conduct are required to meet future challenges.

Two changes in policy are required

1. Flexible implementation of the Water Framework Directive

More flexible interpretation and implementation of the WFD would ensure a better trade-off between carbon emissions and costs by:

- Assessing whether costs are disproportionate to benefits and therefore if objectives should be re-interpreted or achievement phased; and
- Enabling more cost-effective approaches, such as catchment management, to achieve objectives.

Such a consideration of the full costs and benefits (both environmental and monetary) should underpin how other Directives are implemented.

2. Developing competition through water trading

A new market-based framework for water trading would enable companies to optimise the use of resources nationally rather than just regionally. Inter-company transfers of bulk treated water could be an economic means to move additional water to water stressed areas. If this allows investment in new resource schemes to be deferred then the costs of increasing water supply to adapt to climate change and supply a growing population will be lower.

Two changes in regulatory approach are required

3. A more flexible approach to consents

The Environment Agency should transition from prescriptive point-based consenting to more flexible approaches such as consenting at catchment level and varying consents with river conditions.

This would widen the scope for more cost-effective and less energy-intensive approaches to treatment to be taken, but whilst still meeting water environment objectives.

4. An improved price-setting process

Ofwat should adapt the price-setting process to provide the right incentives for sustainable financing, increased innovation, more sustainable solutions and more accurate business planning. Substantial simplification of the process is required to enable focus on the key issues.

Companies will need to respond

5. Companies driving innovation

Companies must change their approach to risk and take a leading role in driving innovation – both in terms of the strategic and technological solutions they pursue and in shaping the wider direction the industry takes. If regulation is to change to allow for more flexible and innovative approaches to be taken, companies must be prepared to deliver them.

In order to effect these changes successfully, the overall institutional framework needs to operate in a way that ensures consistency between the overall strategy, the desired outcomes and the required outputs.

6. Prioritising national outcomes to deliver the strategy

Government should prioritise national policy outcomes and ensure that the regulatory framework is able to facilitate the delivery of these outcomes. Greater customer involvement should be secured using constructive engagement to agree the regional outputs required to achieve these outcomes.

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Change will deliver better outcomes for customers, the environment and investors

Delivering these changes will help create a framework to ensure that the sector is financeable, customers receive the lowest possible charges and that helps the UK meet its carbon emission targets while still maintaining the high water quality standards that have been achieved to date.

By modelling future scenarios based on a package of these measures using the best available public information, the cost base for the industry looks far lower.

Lowering the cost base (in particular the capital requirements) would deliver a number of positive outcomes:

Investors would benefit from reduced financing requirements. Continuing to finance the programme entirely from borrowing would lead to gearing rising to 84% by 2030 – we do not consider this to be financeable. Implementing the changes set out above could hold gearing down to 78%. In itself this means there is still a requirement, however, for more equity in the sector as even these lower debt levels may well be seen to be unsustainable.

Customers' bills would, on average, be 11% lower than if we take no action. We can limit bill increases to around 13% (in real terms) over 20 years, compared with a possible 27% under the current course.

The environment would benefit from carbon emissions being 13% lower than if we continue with current trends.

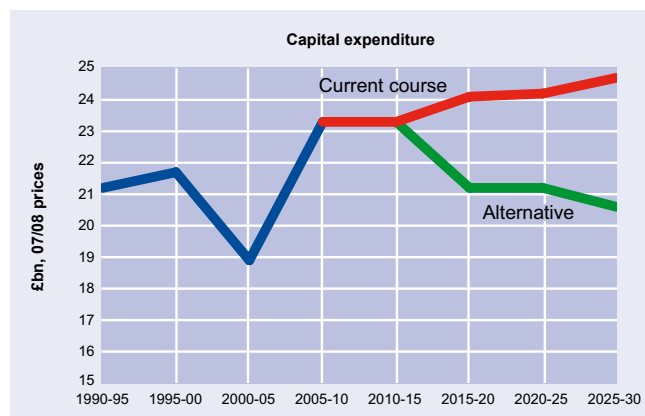


Figure 10: Capital requirements would be significantly lower
Source: Ofwat annual financial performance reports and Severn Trent projections

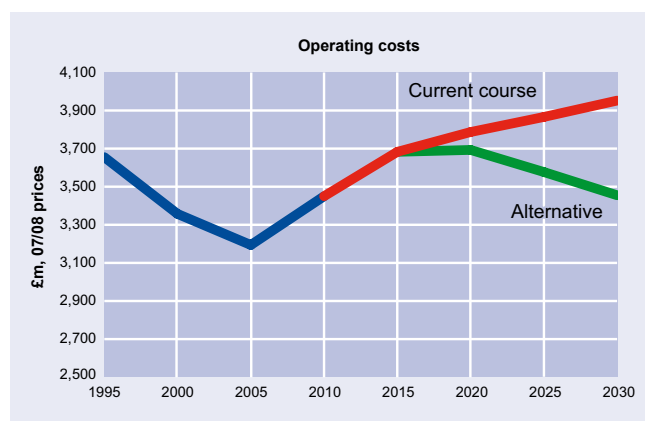


Figure 11: Operating costs would be significantly lower
Source: Ofwat annual financial performance reports and Severn Trent projections

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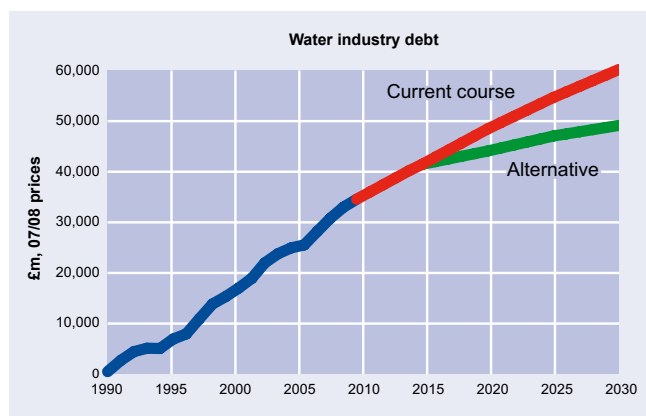


Figure 12: Water industry debt would be lower under the alternative scenario
Source: Ofwat annual financial performance reports and Severn Trent projections

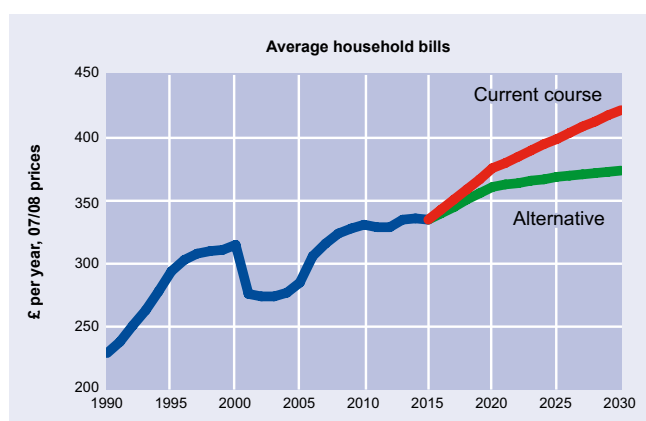


Figure 13: Water bills would be lower under the alternative scenario
Source: Ofwat annual water and sewerage charges reports

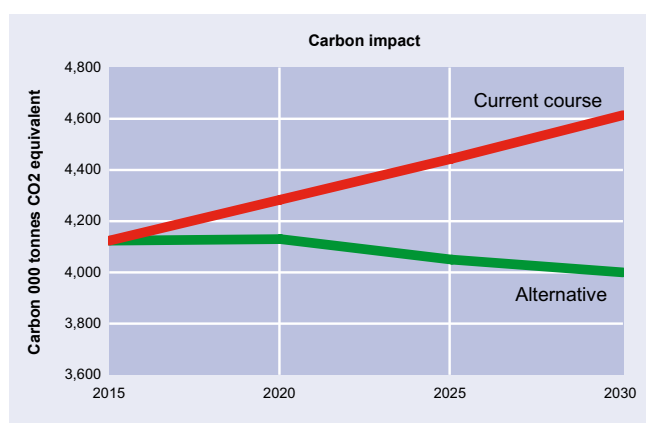


Figure 14: The carbon impact would be lower under the alternative scenario
Source: Severn Trent projections

Change is needed now

A limited window of opportunity to implement these changes exists now.

Plans are in place, and investment committed, to deliver the WFD during its first planning cycle. There is an opportunity, however, to change our approach ahead of the next cycle (2015-21).

Ofwat and the Environment Agency can act now to encourage greater water trading between companies by developing market codes and greater transparency about resource availability. The Government is considering greater competition in the sector. It has the opportunity to embed water trading in its future strategy

As one price review draws to a close, now is the time to review how the next is carried out. Ofwat has begun a review of regulation for the water industry which needs to be completed well in advance of the next price review, and in time for companies to respond to these changes in their business planning. A step change in innovation by companies is also required.

We are not alone in talking about evolution. CCWater has discussed 'consumer-led' regulation. The Environment Agency, working with Ofwat, is considering how we can place more of a value on water. The independent Cave and Walker Reviews recently made recommendations relating to innovation and competition and household charging respectively.

And in other industries facing similar challenges, regulators are reviewing their approaches. Ofgem, the gas and electricity industry regulator, is considering its use of RPI-X regulation through its RPI-X@20 Review.

We believe it is time for the industry to take the lead in shaping our future. We want this report to make a constructive contribution to the emerging debate and will continue to develop our thinking in this area.

1

The achievements of the current regulatory and policy framework

Over the last 20 years, the English and Welsh water sector has delivered for its stakeholders. Services have improved, new environmental and drinking water quality standards have been met and efficiency has increased.

These outcomes have been facilitated by an effective legislative and regulatory framework which has driven substantial performance improvements by companies and enabled the improvements to be financed.

Privatisation 20 years ago aimed to address significant challenges

Prior to privatisation in 1989, water and wastewater services in England and Wales were provided by ten regional unitary water authorities (funded through revenue from customers and public finance) and 29 statutory companies supplying water only (representing about 25% of the industry).

During the 1980s, it became increasingly evident that funding the investment programme required to ensure industry compliance with existing and new European Union (EU) quality standards would place significant pressure on public finances. Privatisation provided the opportunity to use private capital markets to finance the substantial investment necessary and lessen the burden that would otherwise, in the absence of public finance, have been placed on customers' bills.

Privatisation was not without precedent. Throughout the 1980s, previously nationalised industries such as telecommunications and gas had been privatised by the Conservative Government. It fitted well with the Government's wider policy aims: freeing up public finances; providing proceeds to the Treasury from the sale of assets; and bringing private sector commercial skills to a previously public industry.

The Government published a White Paper in 1986, which set out the rationale for privatisation of the ten regional water authorities. On 5 February 1986, the Secretary of State for the Environment, announcing the publication of the paper to Parliament, noted that:

*"Privatisation is the next logical step. It will bring benefits to customers, to the industry itself and to the nation as a whole in improved quality, more efficient service, greater commitment of the staff to the work they are doing, and greater awareness of customer preference."*²

The Prospectus issued for the sale of water company shares at the time of privatisation also provides an indication of the investment challenges faced. It notes existing EU quality requirements under the Bathing Water Directive and Drinking Water Directive that must be met – a known upward pressure on investment programmes. The Secretary of State for the Environment expected that the industry would need to make £22bn of capital investment during the following decade³. In view of the scale of investment, the Government wrote off £5bn of existing debt, so that on privatisation the industry had no debt, and provided an additional £1.6bn cash "green dowry".

The Prospectus, however, also pointed towards the possibility of future directives relating to waste, nitrates, and dumping of waste at sea that could impact on the industry. In 1990, the Secretary of State announced an acceleration of the implementation of the EU Bathing Waters programme and the cessation of dumping sewage at sea by 1998. In 1993, implementation of the Urban Waste Water Treatment Directive (UWWTD) was announced, with an expected cost of £6bn⁴.

It was still considered, however, that investment could reduce after 2000. Ofwat predicted "whilst investment will remain high in the second half of the 1990s, it could revert to more normal levels in the early years of the next century"⁵.

Figure 1.1 illustrates how industry investment has changed over the last century. There is a marked increase immediately post privatisation. By 1991, investment had doubled (compared with 1988 levels) and has remained consistently higher than pre-privatisation. At its 1994 price review, Ofwat predicted investment would return to 'normal levels' by the end of the century. Since 2000, however, investment has been consistently higher than these predicted levels.

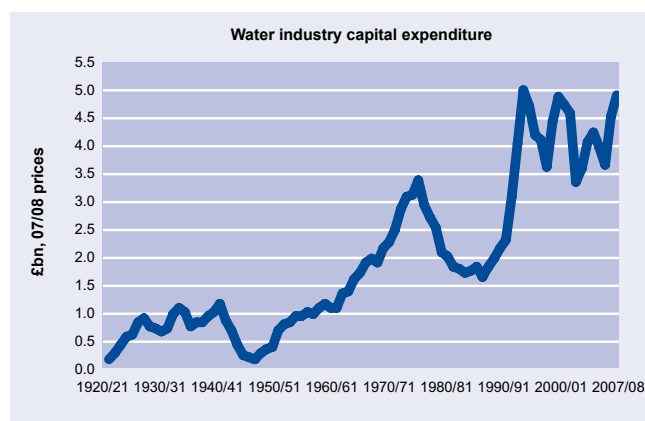


Figure 1.1: Capital investment has been consistently higher post-privatisation
Source: Future charges for water and sewerage services, Ofwat, 1994, and Ofwat's annual reports on financial performance and expenditure of the water companies in England and Wales

² HC Deb 05 February 1986 vol 91 cc287-97

³ Ofwat, *Future charges for water and sewerage services: the outcome of the periodic review*, (July 1994), p.23. In 1987-88 prices

⁴ Ibid. In 1993-94 prices.

⁵ Ofwat, *Future charges for water and sewerage services: the outcome of the periodic review*, (July 1994)

With privatisation came a new framework for regulation

A key element of the new framework was the division of responsibilities initially between three separate bodies to regulate the activities of the new water and wastewater companies: Ofwat (with provision made for ten Customer Service Committees), the Drinking Water Inspectorate (DWI) and the National Rivers Authority (succeeded by the Environment Agency in 1995). A fourth body, the Consumer Council for Water (CCWater), was created in 2003.

The Environment Agency

(formerly the National Rivers Authority)

The Environment Agency's responsibilities for the water industry principally relate to regulating:

- water quantity, by licensing of abstraction and directing companies' water resource planning; and
- environmental impact, through the use of a consenting regime for sewage treatment discharges.

The Drinking Water Inspectorate (DWI)

The DWI monitors and safeguards drinking water quality. Companies have a statutory duty to supply wholesome water, and must meet standards set out in the Water Quality Regulations. It is also responsible for reporting on drinking water quality to the EU under the European Drinking Water Directive. In the event of failures, the DWI has a duty to require water companies to take remedial action.

Consumer Council for Water (CCWater)

The growing importance of the consumer agenda has also been recognised with the creation (by the 2003 Water Industry Act) of a new organisation to represent consumers, CCWater. CCWater has strengthened the independent voice of customers in the framework (by replacing the Customer Service Committees appointed by Ofwat). Its statutory powers, however, are limited compared to those of the industry's regulators.

Ofwat

Ofwat's statutory duties have evolved and expanded since its creation in 1989. It currently has three principal duties:

- to ensure that water and sewerage companies' functions are properly carried out;
- to ensure that companies are able (by securing reasonable returns) to properly finance the undertaking of those functions; and
- to protect the interests of consumers, wherever appropriate by promoting competition.

It has secondary duties which include the promotion of economy and efficiency, and to contribute to the achievement of sustainable development.

The governance structure of Ofwat has also changed since its creation. Originally established with a Director General of Water Services, the Water Act 2003 replaced the Director General with a Water Services Regulation Authority including provision for non-executive members. This is now a common arrangement for regulatory offices. Ofgem, Ofcom and the Office of Rail Regulation also use board-based governance structures.

Ofwat's duties are principally exercised through the price-setting framework. Originally prices were set for a ten-year period, with provision for a five-year review if required. A price review was required in 1994 and subsequently the period was fixed at five years.

Policy context and framework

These regulators operate in an overall policy context set by Defra and the Welsh Assembly Government. Both the DWI and the Environment Agency are accountable to Defra; Ofwat directly to Parliament.

These regulators formed a new framework that provided independent protection of the interests of customers and the environment. They use a combination of:

- incentives, to encourage performance improvements;
- monitoring, to scrutinise whether required outcomes and outputs are delivered; and
- enforcement action, in the event that companies are not delivering their obligations.

Price-setting mechanism

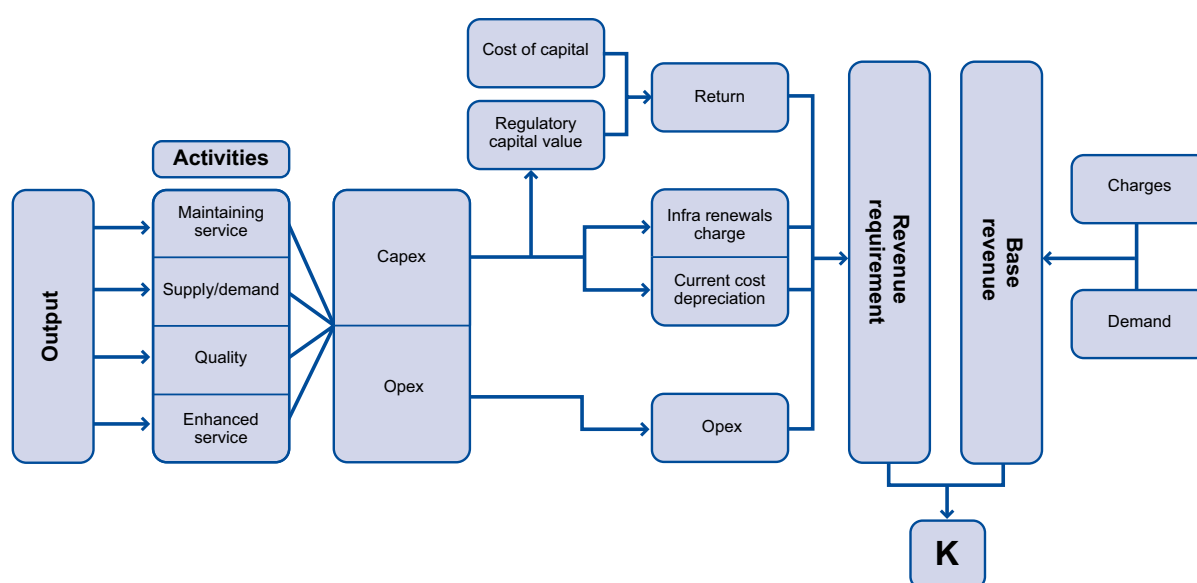
As Box 1.1 explains, Ofwat primarily uses incentive based RPI-X price regulation to exercise its duties. This mechanism, already employed in the telecommunications and gas industries, was embedded into the regulatory framework at privatisation.

Box 1.1: Ofwat's use of RPI-X

RPI-X regulation works on the premise that prices (or revenue) are capped for a given period, and are allowed to increase by RPI minus an allowance for expected efficiency (X). Companies are incentivised to deliver greater than allowed for efficiencies as they are able to keep the benefits of outperformance until prices are next set (at which point they can be passed on to customers). For water, due to the size of the capital investment programme, RPI-X was actually set out as RPI+K because of the expectation of a positive K factor, where K reflects both efficiency and capital expenditure requirements.

Ofwat's building blocks approach

In common with other regulators, Ofwat uses a 'building blocks' approach to determining an appropriate K factor. A stylised illustration of these building blocks is set out below. Chapter 3 examines these building blocks in more detail.



Ofwat also uses measures of service performance, ensuring that services are maintained and any improvements included in price limits are delivered. In the event that companies are not complying with their licence conditions and properly carrying out their functions, Ofwat can also take enforcement action, in the form of a legal undertaking or financial penalties.

Role of the European Union

EU Directives also have an important influence on the industry, regulators and Defra's strategy. The most significant new Directive in the last decade is the Water Framework Directive (WFD) which sets out a common framework for safeguarding the water environment.

Once transposed into UK law, these EU Directives set out statutory obligations and standards that companies must meet, and which the Environment Agency and DWI enforce.

The extent to which they are transposed is a policy matter for Government. Water UK estimates that around 80% of water industry legislation comes from the European Parliament.

Many of the challenges of 20 years ago have been substantially addressed

Since 1989, the framework has served the industry and its stakeholders well, responding to many of the issues faced prior to privatisation by driving greater efficiency, improving service levels, complying with tightening EU standards and securing private investment.

Customers, the environment and investors benefited from the framework

Customers

The regime's economic framework, driven by Ofwat's application of RPI-X price regulation, has provided an effective impetus for companies to deliver efficiency savings.

As Figure 1.2 shows, companies have reduced baseline operating costs by 21% since Ofwat's first price review in 1994. These efficiencies have kept bills lower than they would otherwise have been. Ofwat calculates that without regulation, bills would have been 30% higher.⁶

In addition to making substantial efficiency savings, service to customers has also improved. During the early 1990s, companies quickly and substantially reduced the number of service failures (as measured by Ofwat's DG measures).

Figure 1.3 illustrates that, despite some annual fluctuations, the industry has largely sustained these early improvements in service.

New, tighter standards for drinking water have been met and the sector's compliance with statutory drinking water quality standards is consistently higher than 99.9%.

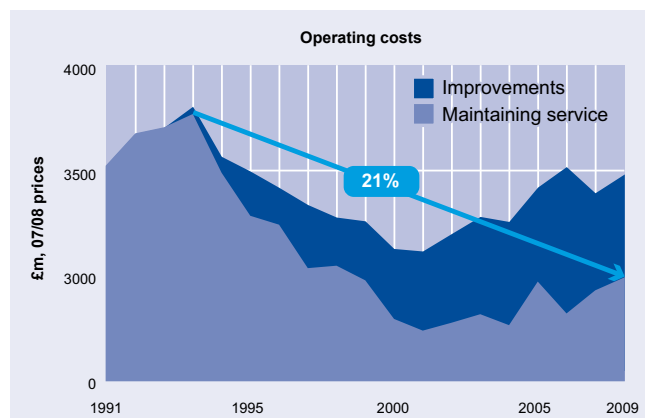


Figure 1.2: Reduction in sector operating costs
Source: Ofwat June Return data

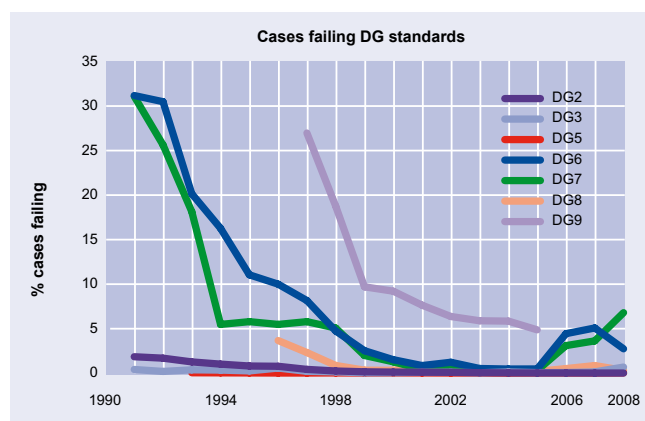


Figure 1.3: Improving standards of service
Source: Levels of service report, Ofwat (2000, 2003, 2008)

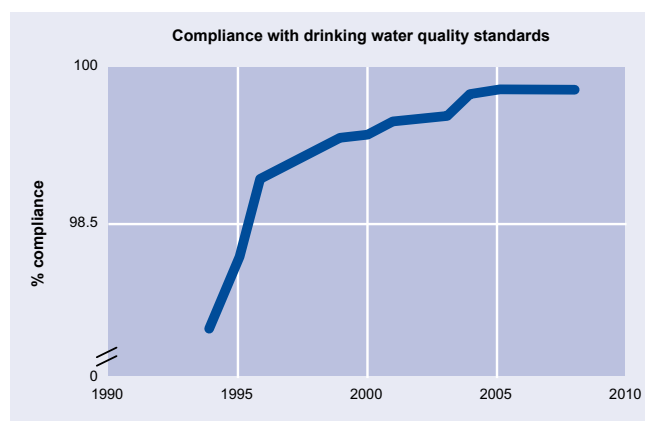


Figure 1.4: Compliance with drinking water quality standards has increased from 99.27% in 1994 to 99.96% by 2008
Source: Drinking Water Inspectorate annual publications on drinking water quality

⁶ Philip Fletcher, in a presentation to CIWEM conference (30 April 2009).

The environment

Since 1989, the industry has invested over £80bn to catch up on historic underinvestment and to meet EU environmental and water quality obligations. This investment has delivered significant environmental and drinking water quality improvements, ensuring that compliance with existing standards has improved and new, much tighter, standards have been met. The Environment Agency has reported that “water companies and others have made significant inroads into addressing many of the issues. Our water quality is at its highest at any time since the Industrial Revolution”. The improvement is shown in Figures 1.5 to 1.7.

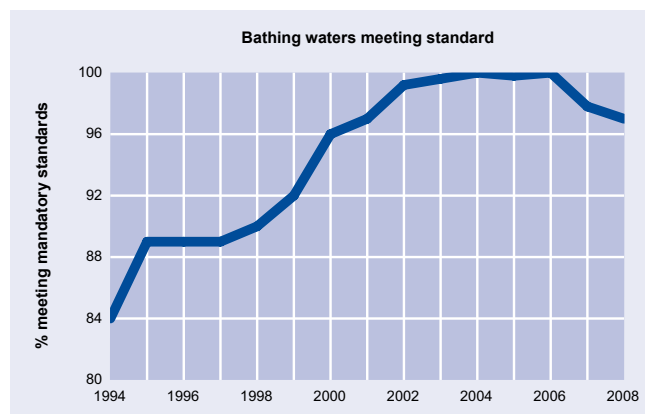


Figure 1.5: Bathing water quality has improved from 84% compliance with standards to 97% by 2008

Source: Annual Ofwat reports: Service and delivery – performance of the water companies in England and Wales

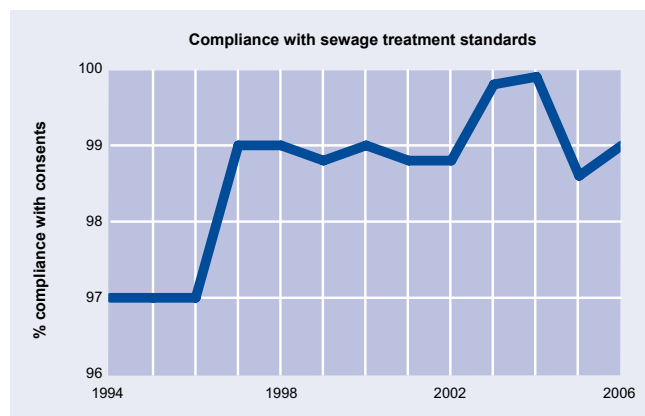


Figure 1.6: Compliance with sewage treatment has increased from 97% to 99% by 2006

Source: Annual Ofwat reports: Service and delivery – performance of the water companies in England and Wales

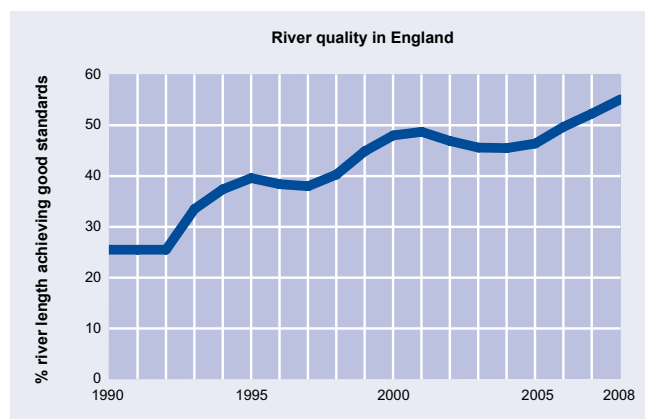


Figure 1.7: The percentage of river length achieving ‘good ecological status’ as measured by the Environment Agency has increased to 55% by 2008.

Source: Environment Agency’s annual General Quality Assessment

Investors

The certainty provided by the regulatory framework has helped to secure investor confidence (both debt and equity), and, as intended at privatisation, service and environmental improvements have been financed without the need for public funding or Government intervention.

Whilst investors' perceptions of the framework for economic regulation tend to vary depending on the outcome of price reviews, to date they have been generally positive. Since 2003, Water UK has commissioned independent surveys of investors' views of the water industry. They have consistently reported that investors value Ofwat's predictable approach to price setting⁷. RPI-X is a tried and tested methodology, and Ofwat's use of a Regulatory Capital Value (RCV) upon which a return on capital is earned, underpinned by financial ratios, is a known quantity to investors.

Investor confidence in the regime has allowed the large investment programme to be financed with a lower rate of return than expected to be necessary at privatisation.

The framework has worked well. As Chapter 2 explains, however, the industry is in a very different position from 20 years ago, and the challenges it faces are changing.

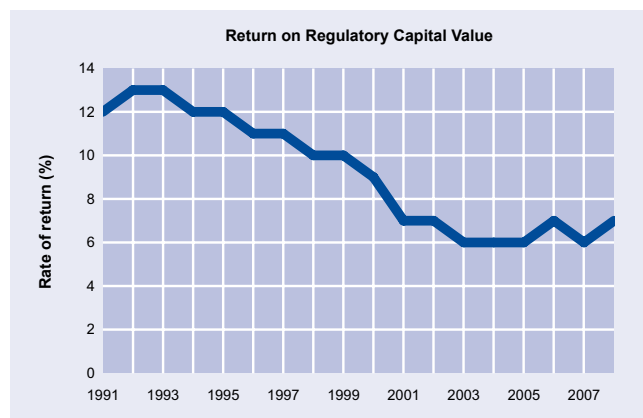


Figure 1.8: Investor confidence has enabled the rate of return to be reduced
Source: Ofwat reports on financial performance and expenditure of the water companies in England and Wales

⁷ Investor Survey Ofwat's PR09 Draft Determinations (Indepen, 2009), p4.

2

The current course does not look sustainable

The sector has performed well since 1989. It is, however, in a very different position from 20 years ago, and the challenges it faces are changing. Without change now, we could face an unsustainable future.

The industry is in a very different position from 20 years ago:

- Borrowing has increased from zero to around £33bn in 20 years.
- Water bills are becoming less affordable (45% higher in real terms in 2010 than in 1990).
- The scope for further efficiency savings to mitigate bill increases is declining.

The industry's future investment requirements do not look sustainable:

- Environmental requirements under EU directives are continuing to tighten.
- The industry needs to adapt to the impact of climate change and reduce its carbon footprint to mitigate climate change.

The current policy and regulatory framework needs change to facilitate effective decision-making, provide incentives for sustainable solutions and for innovation.

Otherwise we face:

- A capital programme which could be even larger than that of the last 20 years.
- An unsustainable requirement for an additional £27bn borrowing.
- Customer bills rising by 27%.
- An increasing carbon footprint.

The industry is in a very different position from 20 years ago

As described in Chapter 1, an effective regulatory and policy framework has facilitated the delivery of improved service to customers and the environment, and enabled the finance to be raised to achieve these improvements.

However, the water industry begins the next 20 years in a very different, and in some ways far more challenging, position to that experienced in 1989.

Borrowing has increased

A key driver for privatisation of the sector in 1989 was that it would provide access to private finance to fund investment. In the absence of this finance, the burden would have been placed directly and immediately on customers' bills.

The sustained capital programme, however, has meant that water companies have substantially increased their gearing beyond what was initially planned at the time of privatisation and beyond. In addition, as pointed out by Professor Dieter Helm⁸, *“there has been a gradual but remorseless flight of equity since the mid-1990s, accelerating after 2000; and financial engineering has exhausted balance sheets and broken the link between physical investment and borrowing”*.

And whilst the increase in gearing in the late 1990s was principally attributable to financing the capital programme, in more recent years it also reflects reduced confidence in the ability to make an adequate return within the regulatory framework (following the 1999 price review) and increasing borrowing to take advantage of low interest rates.

As shown in Figure 2.1, industry debt now stands at £33bn in total (compared to zero at the time of privatisation) which equates to £1,500 per customer. Industry gearing as a result stands at around 72% (compared to 0% at privatisation).

⁸ Utility regulation, the RAB and the cost of capital, Dieter Helm, May 2009

Changing Course

Delivering a sustainable future for the water industry in England and Wales

The sector's continuing ability to deliver significant investment programmes relies on it being able to fund them. There are significant questions, however, about whether sources of financing will be available for this investment in the future, and if so, whether they can be secured at an affordable level.

Gearing is now significantly higher than assumed by Ofwat at the 2009 price review. Reducing the industry's gearing to the levels assumed by Ofwat will either require a large reduction in the capital programme going forward or significant equity injections in the companies in the form of rights issues.

Falling returns and increasing gearing have led to ratings agencies reducing credit ratings. The change in Severn Trent's rating is shown in Figure 2.3. Other companies have also experienced downgradings. For example in January 2010 United Utilities' Standard and Poor's credit rating was lowered from A- to BBB+. Lower credit ratings are associated with both higher cost of borrowing and fewer sources of funds being available.

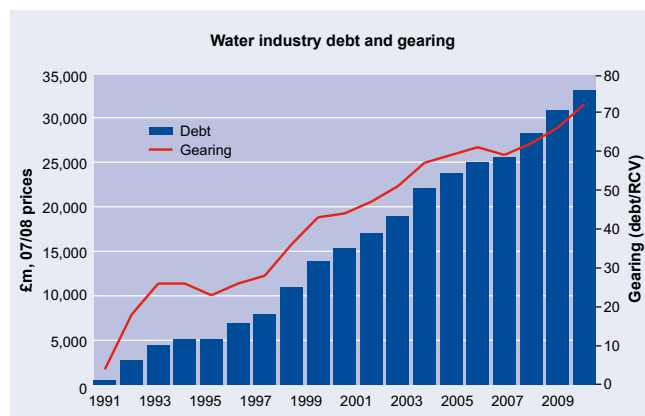


Figure 2.1: Debt has risen from zero to around £33bn in 20 years
Source: Ofwat annual financial performance reports

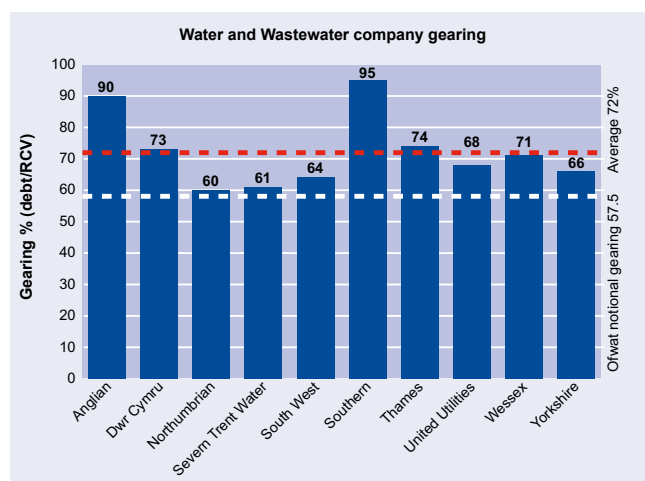


Figure 2.2: In 2008-09 water company gearing was much higher than the notional gearing assumed by Ofwat
Source: Ofwat 2008/09 report on financial performance and expenditure of the water companies in England and Wales

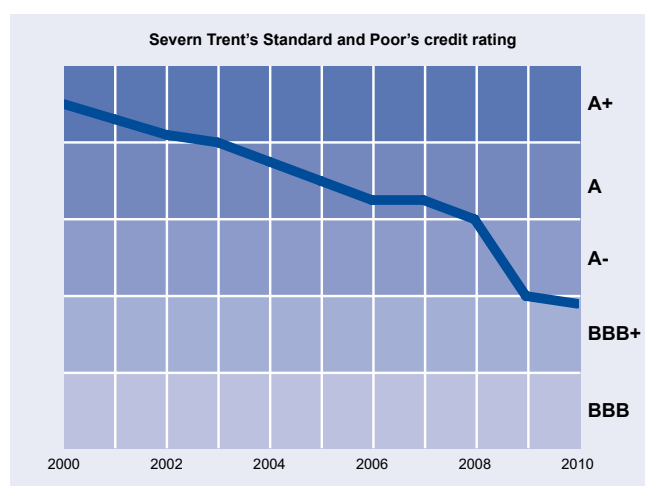


Figure 2.3: Severn Trent's Standard and Poor's credit rating has changed

Equity participation is at risk

Since 2000, the English and Welsh water and wastewater sector has benefited significantly from the buoyant equity markets, which resulted in low equity risk premiums. In addition, costs of borrowing have been low. The future cost of equity and of borrowing, however, is likely to be higher.

Owat's 2009 price review (PR09) target equity risk premium of 5.1% proved unattractive to equity investors after the draft determination. Eleven out of 14 investors surveyed by Water UK said the sector was less attractive, and four of those would not invest in the sector again⁹. Reduction in equity participation will limit flexibility and the ability to innovate and will potentially expose consumers to greater risk. Companies with high levels of borrowing are more likely to get into financial difficulties, which would change the perception of the risk of investing in the whole sector, driving up the cost of finance and hence customers' bills.

The cost of capital set in the 2009 price review partly reflects the benefit of earlier borrowing when interest rates were low. Figure 2.4 demonstrates how the cost of borrowing (particularly for riskier BBB+ rated debt) has increased.

The financial market crisis has probably had a long-term effect on market pricing of risk. The implication of this is that:

- The cost of capital is likely to be higher than in the past.
- It may not be possible to finance a continuing large capital programme at reasonable cost solely through continuing to increase borrowing.

Therefore incentives need to be in place both to retain existing equity and to attract the additional equity which will be needed.

Water bills are becoming less affordable

Bills to customers have risen faster than inflation (45% higher in real terms in 2010 than in 1990). Among developed countries this rate of increase has been surpassed only by water-stressed countries such as Australia and the US. Eleven percent of households now pay more than 3% of their disposable income in water bills¹⁰. In South West England this proportion rises to 30% of customers¹¹. The burden of water bills falls disproportionately on the lowest income groups. In England and Wales, the proportion of income required to pay water bills for households with the lowest 10% of incomes is higher than that for any other OECD country except Mexico¹².

Figure 2.5 shows the increase in bills, mitigated by a reduction over time in the rate of return, particularly in 2000, which led to temporarily lower bills. Now with returns at historic lows, there appears to be no scope for further reductions in returns to mitigate bill increases.

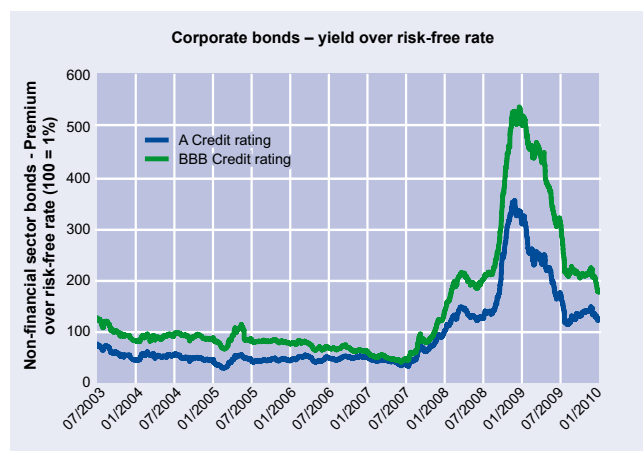


Figure 2.4: The cost of corporate borrowing has increased
Source: BNP Paribas

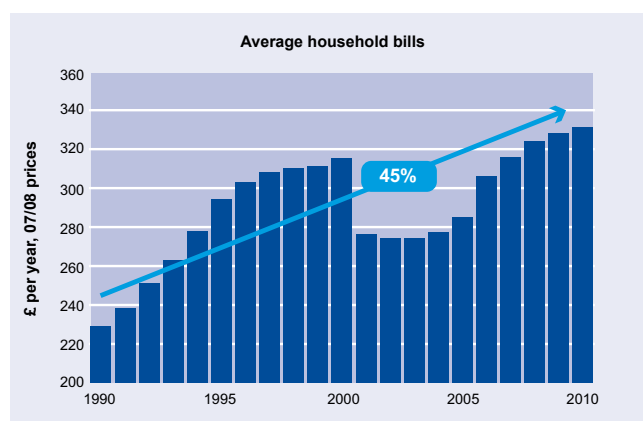


Figure 2.5: Average household water bills in England and Wales have risen steadily since privatisation
Source: Ofwat annual water and sewerage charges report

⁹ Investor Survey: Ofwat's PR09 Draft Determinations.

A report by Indepen for Water UK (September 2009)

¹⁰ Defra Cross Government Review of Water Affordability (2004)

¹¹ Ofwat Price Review 2009, House of Commons (July 2009)

¹² Improving Water Management – Recent OECD experience, OECD (2003)

There is potential for this situation to deteriorate due to the current economic recession as reduced earnings and higher unemployment further reduce customers' ability to pay (and therefore increases bad debt levels for companies).

The scope for operating efficiencies is declining

By making operating efficiencies, companies have historically been able to lessen the upward pressures of large investment programmes on customers' bills. Recent evidence suggests, however, that the scope for making these efficiencies using traditional approaches is declining.

The RPI-X regime used by Ofwat creates strong incentives for companies to minimise their costs and outperform the price determination. This approach, and the savings made, ultimately benefits customers. At price reviews, Ofwat resets price limits and takes account of the achievements of companies in reducing costs so that customers may benefit through lower prices in the future.

Ofwat has historically identified the scope for operational efficiency by calculating a common frontier of operational efficiency, and used benchmarking to determine the comparative performance of companies. Ofwat's methodology relies heavily on econometric models which, inevitably, have significant limitations in terms of the ability to accurately compare companies' efficiency. This mechanism worked well in early price reviews because there were large estimated efficiency gaps between the most efficient and the average company.

However, as Figure 2.6 illustrates, the identified scope for further efficiencies has decreased over time. While Ofwat's 1994 price review (PR94) and 1999 price review (PR99) identified increasing scope of efficiencies (up to 2.7%), this dropped to 1.4% in subsequent price reviews. Furthermore, Ofwat estimates of the efficiency gap between the most efficient and average company have dropped significantly since 1994 suggesting there is less scope for "catch up" by less efficient companies. The remaining gap is likely to be more as a result of limitations in efficiency assessment rather than real differences in inefficiency.

This reducing scope for traditional operating efficiencies, coupled with an increase in operating costs due to the continuing investment programme, will drive up customers' bills, unless new, innovative approaches can be found to hold cost increases to a minimum.

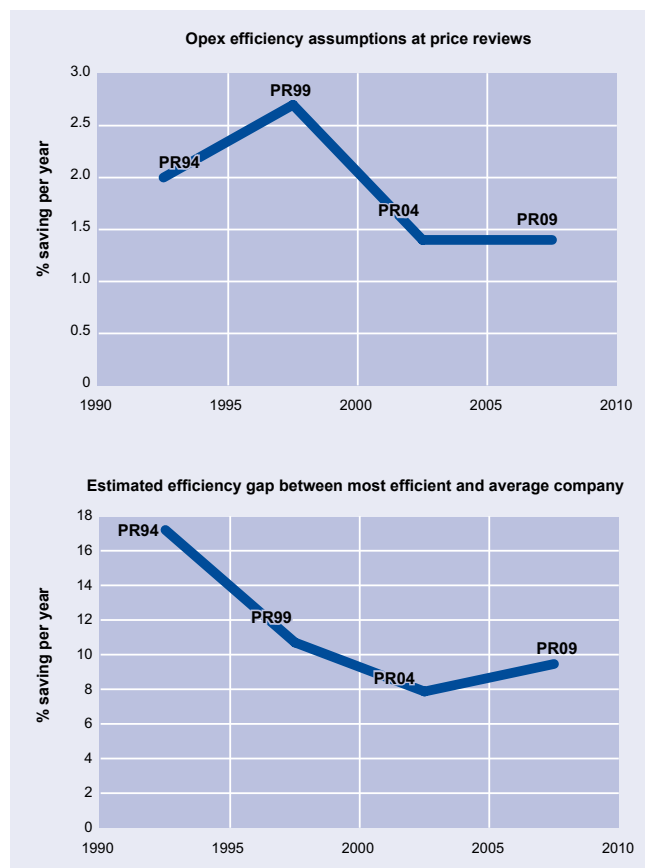


Figure 2.6: The scope for further efficiencies identified by Ofwat has diminished over time
Source: Ofwat final determination reports

Carbon emissions are increasing

The sector's carbon emissions are increasing due largely to higher, more energy-intensive treatment standards being adopted. The sector is not, therefore, contributing to the Government's target to reduce UK emissions by 34% by 2020. Figure 2.7 shows the sector's energy use (the principal contributor to the industry's carbon footprint) has more than doubled since 1990.

The industry's future investment requirements do not look sustainable

As set out above, the industry is in a very different position now from that in 1989. In addition, it faces significant challenges in terms of future investment requirements, which are being driven:

- By continued tightening of environmental standards;
- In response to climate change; and
- To meet the costs of adopting private drains and sewers.

At the time of privatisation and during the early 1990s, this continuation of investment was not anticipated beyond the end of the century. And, it does not look sustainable in terms of the impact on financing, customers' bills and carbon emissions. Figure 2.8 below shows the future investment drivers and consequences.

We have made an assessment of capital expenditure, operating costs and customers' bills over the next 20 years. Our forecasts have been based on the following sources:

- Costs of the environmental programme – "Preliminary Cost Effectiveness Analysis of the Water Framework Directive", published by Defra.
- The costs of the future programme to increase water supply capacity – water companies' Draft Water Resource Management Plans.

Environment	Higher environmental standards
Climate change	Renewable energy to mitigate climate change
	Demand from customers for more robust solutions
	Dealing with increased flooding
Customers	Adopting private sewers
	Increasing supply capacity to adapt to climate change
Regulation	Incentives to seek capital rather than operating cost solutions

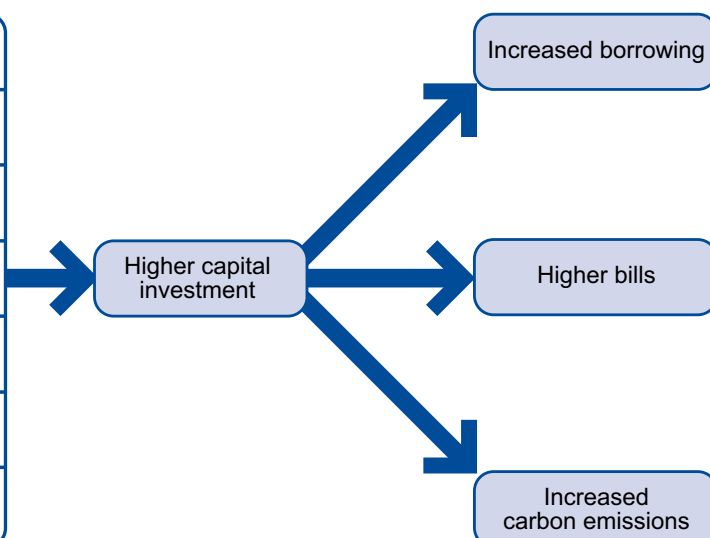


Figure 2.8: Investment drivers and consequences

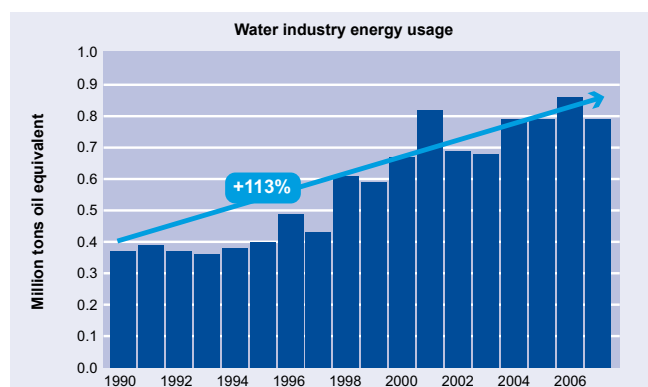


Figure 2.7: The water industry's energy use has increased steadily since privatisation
Source: Fuel Use by 93 Economic Sectors, 1990 to 2007, Department of Energy and Climate Change

- Increases in energy prices – the Government's "UK Low Carbon Transition Plan"

Further details of our forecasts are given in the Technical Appendix. The main drivers of the future programme are described below, and the levels of expenditure and resulting impact on bills are shown for each of the main drivers.

Environmental standards are continuing to tighten

Water UK estimates that about 80% of UK legislation relating to the water industry is transposed from European Union Directives¹³. These Directives have been, and continue to be, a significant driver of companies' investment programmes.

The most significant new Directive in the last decade is the Water Framework Directive (WFD) which sets out a common framework for safeguarding the water environment. It came into force in 2000.

The overall objective of the WFD is that all EU water bodies (for example, rivers and lakes) should achieve 'good ecological status'. The UK has some way to go to achieve this. The classifications adopted within the UK mean that most water bodies (nearly 75%) are assessed as not currently achieving good status, despite the major improvements already achieved.

It will be expensive to meet these objectives. Despite a £4.5bn water industry environmental programme in the five years to 2015, there will be little change in that position – in 2015 an estimated 70% of rivers will still not achieve good status.

The preliminary cost-effectiveness analysis carried out by Defra suggested that the annual cost of meeting Water Framework Directive requirements could be nearly £30 per water customer¹⁴. In total, a capital programme of about £8bn would be required, and £250m per annum would be added to operating costs. This would be required to achieve higher sewage treatment standards and replace sources of water withdrawn in order to increase river flows.

The implications of the WFD for the UK water sector are significant. The environmental capital programme would continue at its current high level for the next 20 years. It is, however, just one Directive that is currently driving investment programmes. Over the next five years, companies will be investing to meet the requirements of Directives including (but not exhaustively) the:

- Bathing Water Directive;
- Freshwater Fish Directive;
- Shellfish Waters Directive;
- Groundwater Directive; and the
- Urban Wastewater Treatment Directive (UWWTD).

Meeting the requirements of EU Directives could involve significant costs in the longer term. For example under the UWWTD there could be very substantial costs for reducing frequency of overflows from sewers at times of heavy rain.

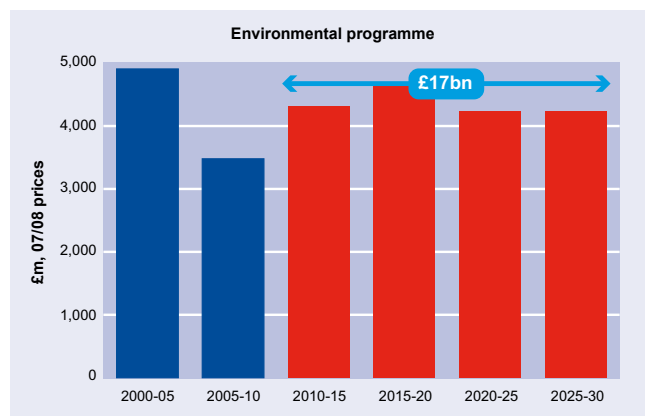


Figure 2.9: The potential environmental programme to 2030
Source: Ofwat annual reports on the financial performance of water companies, Future water and sewerage charges 2010-15: Final determinations, and Severn Trent projections

Figure 2.9 above shows that the environmental programme over the next 20 years could come to £17bn. This is not a maximum figure; higher estimates have been made of the cost of meeting WFD and UWWTD requirements. For example, Ofwat has stated that "the Water Framework Directive, could cost between £30 and £100 billion in England and Wales by 2027. Much of the cost of this investment is likely to fall on water customers"¹⁵.

Potential programme 2010-30	
Capital expenditure	£17bn
Operating costs by 2030	+£0.5bn
Bill impact	+19%

¹³ www.water.org.uk/home/policy/positions/european-directives

¹⁴ Defra, Preliminary cost effectiveness analysis of the Water Framework Directive (December, 2007)

¹⁵ *Delivering sustainable water* – Ofwat's strategy, March 2010

The sector must adapt to climate change

Despite efforts to mitigate the effects of global climate change through greenhouse gas (GHG) reduction, the effects are already upon us in the form of increasing water shortages in some areas and flooding in others. The latest UK Climate Projections (UKCP09) are published in detail at: www.ukclimateprojections.defra.gov.uk.

The sector is currently assessing the impact of the UKCP09 forecasts. As there is uncertainty about the impact of climate change, water companies will need to be flexible in their approach and solutions will need to be implemented which allow for this uncertainty.

Climate change presents two key challenges:

Increasing water scarcity

Parts of England and Wales are projected to experience significant water scarcity by 2035. As can be seen in Figure 2.10, several regions in England (particularly in the south-east) are expected to suffer from severe water scarcity by 2035, while one region is expected to have a water surplus.

If the current structure of the industry and the nature of the regulatory framework remains unchanged, water-stressed companies will plan and develop capital and carbon intensive investments to prepare for future scarcity within their appointed areas (for example, a major reservoir development is planned by Thames Water). Increasing movement of water across these areas has the potential to address supply/demand deficits at reduced cost and lower environmental impact. Water is available outside the South-East at lower marginal cost.

In addition to addressing climate change, population is growing fastest in the South East. For example, Thames Water expects population growth to average 68,000 per year over the next 20 years.

Increasing resilience against flooding

Another effect of climate change in the UK is likely to be more flooding due to an increased intensity of rainfall. As evidenced during the exceptional floods of 2007, such flooding can put water and wastewater assets at risk, resulting in a direct impact on service to customers. The Environment Agency estimates that the 2007 floods cost the UK £3.2bn. Of this, £186m was borne by the water industry¹⁶.

The Pitt Review issued at the end of June 2008 reflected on the lessons to be learned from the summer floods of 2007¹⁷. Sir Michael Pitt stated that *“higher levels of protection for critical infrastructure are needed to avoid the loss of essential services such as water and power.”* The Review called for urgent and fundamental changes to the way the country is adapting to the likelihood of more frequent and intense periods of heavy rainfall. The Review recommended that:

- Defra should work with Ofwat and the water industry to explore how appropriate risk-based standards for public sewerage systems can be achieved.
- Ofwat should give appropriate priority to proposals for investment in the existing sewerage network to deal with increasing flood risk.
- Defra should amend emergency regulations to increase the minimum amount of water to be provided in an emergency, in order to reflect reasonable needs during a longer-term loss of mains supply.
- A specific duty should be placed on economic regulators to build resilience in the critical infrastructure.

In the future, substantial investment will be required by water companies to ensure asset resilience through measures such as storm water separation, contingency measures, flood defences and network reinforcement. Investment of £414m has been included in price limits for the period 2010 to 2015 to increase the resilience of services to external hazards, but more will be needed in future periods.

There will also need to be increased investment to prevent sewer flooding problems arising from more intense rainfall. This will involve increasing capacity of the sewer network, developing sustainable drainage systems and the separation of some surface water drainage from the foul sewer system.

¹⁶ Environment Agency, *The costs of the summer 2007 floods in England* (January, 2010)

¹⁷ In response to the 2007 floods, the Cabinet Office commissioned an independent review by Sir Michael Pitt. See *Learning lessons from the 2007 floods* (June 2008).

The sector must contribute to climate change mitigation

In addition to adapting to climate change, companies are also, quite rightly, expected to contribute to climate change mitigation.

The UK water sector is estimated to contribute approximately 1% of national greenhouse gas (GHG) emissions¹⁸. The UK Government has set a target to reduce UK GHG emissions to 34% below 1990 levels by 2020 and to 80% below 1990 levels by 2050¹⁹. Supporting the overall UK targets will mean that the English and Welsh water sector would need to reduce annual GHG emissions to approximately 3.5 Mt CO₂e by 2020, a 20% decrease.

The increased treatment needed to meet new environmental standards, however, is limiting success in reducing carbon emissions.

Figure 2.11 shows in the specific case of Severn Trent Water how GHG emissions are being reduced by generating more renewable energy and by energy efficiency measures, including moving to more energy-efficient premises and reducing leakage (which reduces energy used in water treatment and pumping). These reductions are being offset, however, by the energy used in the increased sewage treatment required to meet quality standards.

Figure 2.12 summarises the expected costs in England and Wales of balancing supply and demand, including the effects of:

- Addressing climate change and population growth through additional water resources;
- Dealing with sewer flooding problems arising from higher rainfall; and
- Meeting the demands of a growing population.

Addressing climate change has been delayed until the effects of the latest UK Climate Impacts Programme scenarios have been assessed, so a step up in spend after 2015 is expected.

Potential programme 2010-30	
Capital expenditure	£13bn
Operating costs by 2030	+£0.2bn
Bill impact	+10%

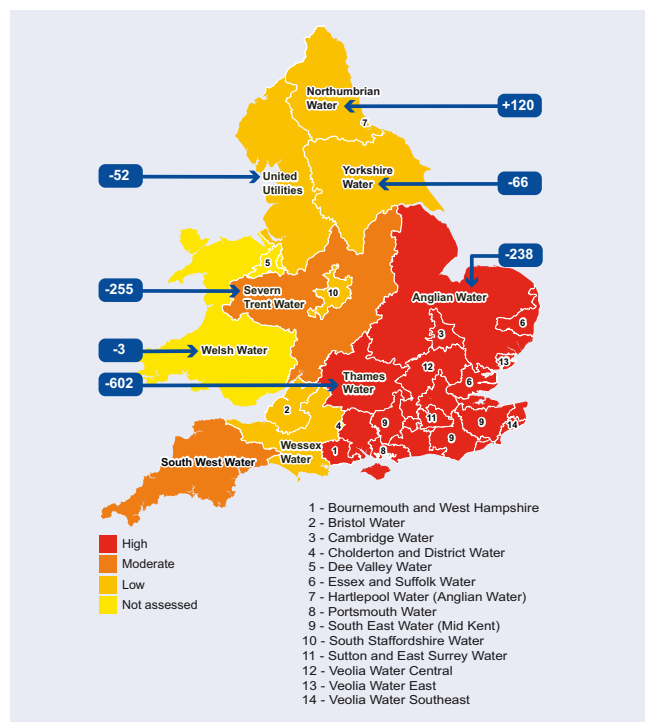


Figure 2.10: Serious supply/demand deficits are expected in the South East by 2035 (figures in Ml/d)

Source: Water companies' Draft Water Resource Plans

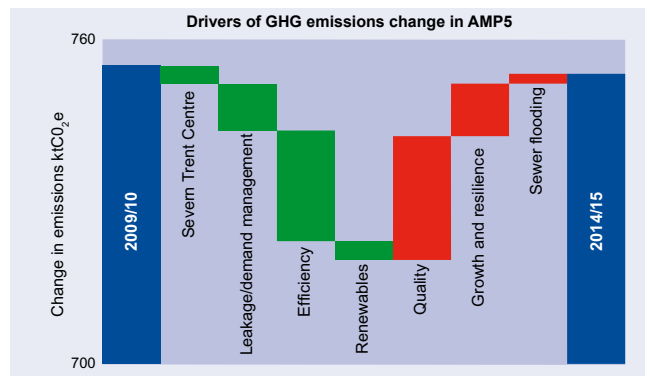


Figure 2.11: Energy efficiency measures are being offset by energy use required to meet new quality standards

Source: Severn Trent Water Final Business Plan, April 2009

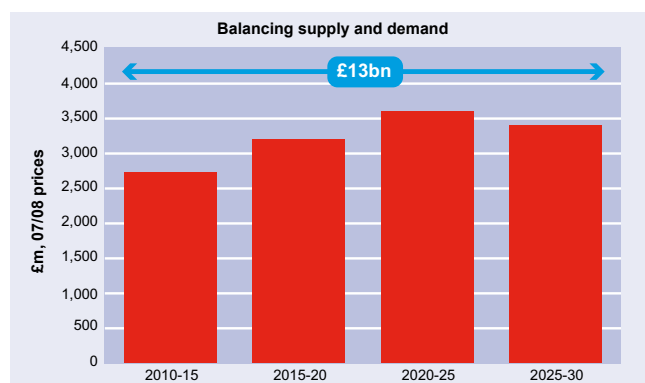


Figure 2.12: Projected supply/demand costs in England and Wales

Source: Ofwat, Future water and sewerage charges 2010-15: Final determinations and Severn Trent projections

¹⁸ Mitigation position paper, Water UK (May 2009)

¹⁹ The UK low carbon transition plan, DECC (2009)

Adopting private sewers

In February 2007 the Government announced that private sewers in England and Wales would be transferred into the ownership of water and wastewater companies. The transfer is expected to take place in 2011.

Many customers are unaware that they have private sewers until those sewers fail, leaving them, in some cases, with major repair bills. The adoption will, therefore, give significant benefits to some customers. Adoption will, however, significantly add to the industry's costs, both in terms of initial costs of bringing problem sewers up to standard and in continuing maintenance and operating costs.

The Government's consultation on private sewer adoption estimated a national average impact on bills of £10 per customer.

Private sewers are likely to require additional capital expenditure of around £3bn over the period to 2030.

Potential programme 2010-30	
Capital expenditure	£3bn
Operating costs by 2030	+£0.05bn
Bill impact	+3%

Other improvements

In addition to the challenges set out above, there will be a continuing need for other improvements to ensure that services meet required standards and customer expectations, including:

- continuing to meet drinking water standards;
- dealing with odour from sewage treatment works;
- reducing low water pressure problems; and
- improving drinking water taste and odour.

This is likely to require a capital programme of around £7.2bn to 2030.

Potential programme 2010-30	
Capital expenditure	£7.2bn
Operating costs by 2030	+£0.01bn
Bill impact	+5%

Maintaining assets

In addition to the improvement programme, maintenance has been increasing in order to replace assets installed since privatisation where they are reaching the end of their economic life. A continued increase is necessary if the improvements which have been achieved in customer service, drinking water quality and environmental performance are to be sustained. The increased asset base requires a higher level of future maintenance. Our projections allow for a further increase in maintenance of £2.7bn from 2005-10 levels (over a third of which is already built into 2010-15 price limits).

Potential programme 2010-30	
Capital expenditure	£55bn
Operating costs by 2030	-£0.2bn
Bill impact	+2%²⁰

²⁰ Represents the net effect of higher capital maintenance, offset by lower operating costs due to efficiency savings

Without action now we face an unsustainable future

We have set out above our estimates of the potential future programme. There is considerable uncertainty about future requirements but we consider that these represent reasonable central estimates. In summary, these projections include:

- Allowance for a continuing large environmental programme, averaging nearly £1bn of capital expenditure per year and adding almost £0.5bn of operating expenditure per year by 2030, to meet the requirements of EU Directives including achieving good status for all water bodies under the WFD.
- Meeting growing demand and the impact of climate change through reservoir development in the South-East.
- Energy costs rising in real terms, in line with the projections set out by the Department of Energy and Climate Change.
- Increasing capital maintenance, as a result of the asset expansion of the last 20 years requiring replacement.
- Allowance for more frequent storms, leading to a requirement for continuing expenditure to increase the resilience of assets to heavy rainfall, including a significant sewer flooding programme throughout the period.
- A rising cost of finance as a result of the change in investors' perception of risk and a continued increase in borrowing to finance the capital programme.

Figures 2.13 and 2.14 show the overall required expenditure.

Figure 2.15 shows that the environmental programme is the largest element (nearly half) of the improvement programme. The second largest block is balancing supply and demand, which includes additional water resources to adapt to climate change and serve a growing population and expenditure to address sewer flooding. The projections include some continuing expenditure, shown as "other improvements", for service improvements such as dealing with odour from sewage treatment works and reducing water pressure problems.

It is questionable whether the industry can continue to rely on borrowing to finance a programme of such a size, particularly following the recent global financial crisis which has led to a re-pricing of risk. An additional £27bn of debt does not look fundable particularly given the very different position that the industry is in today compared with that at the time of privatisation in terms of the level of gearing, companies' credit rating and the allowed returns. The projections in Figure 2.16 show gearing rising to 84% by 2030. We do not consider this to be a sustainable position. Borrowing would increase from £33bn to £60bn, an increase in debt from around £1,500 per customer to £2,300.

The borrowing projections assume no further gearing up through swapping equity for debt, but that the capital programme continues to be financed from debt.

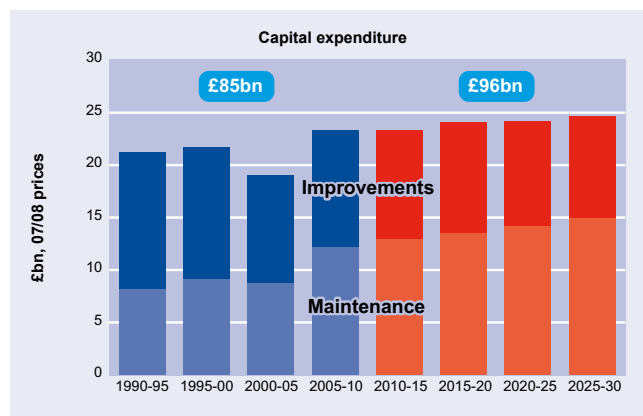


Figure 2.13: Capital investment is projected to continue to rise
Source: Ofwat financial performance reports, Future water and sewerage charges 2010-15: Final determinations, and Severn Trent projections

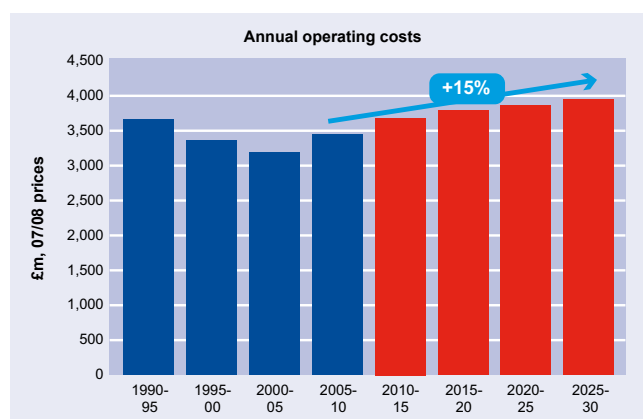


Figure 2.14: Operating costs will also continue to rise
Source: Ofwat financial performance reports, Future water and sewerage charges 2010-15: Final determinations, and Severn Trent projections

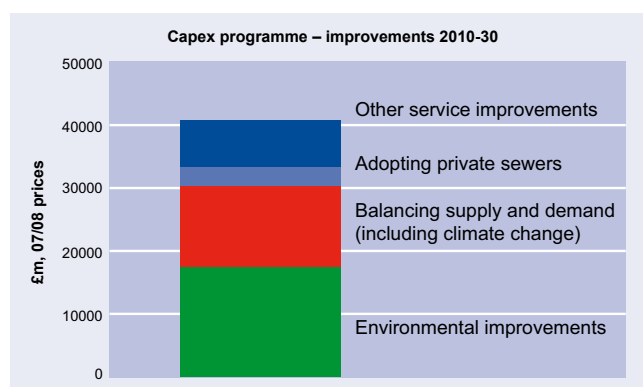


Figure 2.15: The projected future improvement programme
Source: Ofwat financial performance reports, Future water and sewerage charges 2010-15: Final determinations, and Severn Trent projections

The increases in investment would also require water customers' bills to rise. Whilst historically the industry has been able to make operational efficiencies to limit the impact of the improvement programme on bills, to continue to deliver efficiencies, we will need to improve our processes through much greater innovation. Bills are expected to increase by 27% from 2010 to 2030, an average additional cost to each household of around £90.

Summary of bill impacts	
Environmental improvements	+19%
Balancing supply and demand	+10%
Adopting private sewers	+3%
Other improvements	+6%
Maintaining assets	+2%
Change in cost of capital	+2%
Other changes ²¹	-14%
Total	+27%

The increased investment also leads to higher carbon emissions, in many cases, as a result of implementing more energy-intensive processes.

In order to address these challenges and develop a more sustainable programme, we need an appropriate policy and regulatory framework.

The current policy and regulatory framework is not capable of addressing these challenges

The challenges the sector faces are considerable. The policy and regulatory framework it operates in is critical in addressing these issues. The sector needs:

- A policy framework that facilitates effective decision-making.
- A regulatory framework that encourages the right behaviours from companies including developing long term outcomes-focused strategies, finding sustainable alternatives to capital-based solutions, and a willingness to innovate.
- Companies to respond to these incentives by becoming more innovative.

We believe, however, the sector is falling short of these requirements. We risk compounding, rather than addressing future challenges.

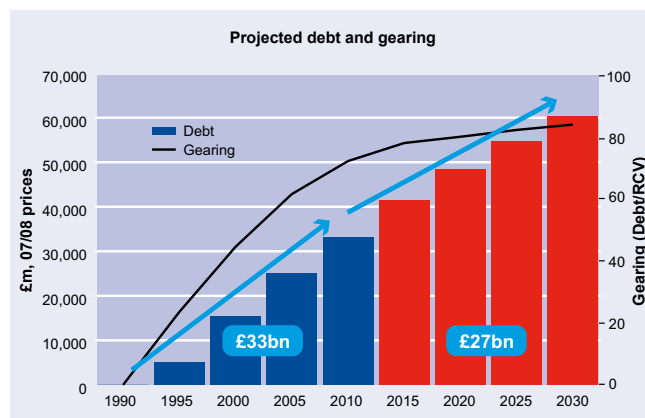


Figure 2.16: The projected level of debt and gearing required to finance the investment is not sustainable
Source: Ofwat annual financial performance reports and Severn Trent projections

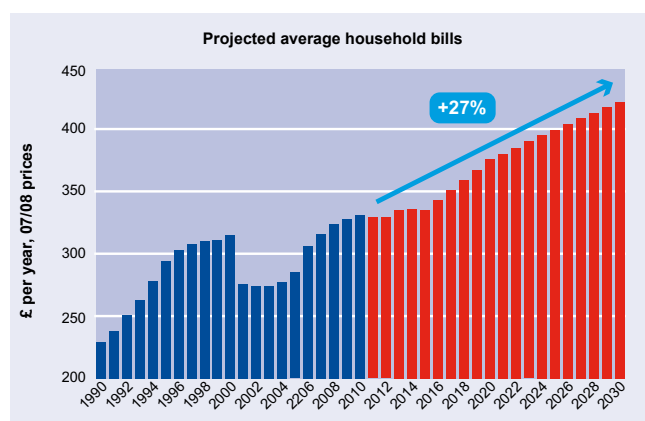


Figure 2.17: Customers may be unwilling to pay the projected increases in bills
Source: Ofwat annual water and sewerage charges reports and Severn Trent projections

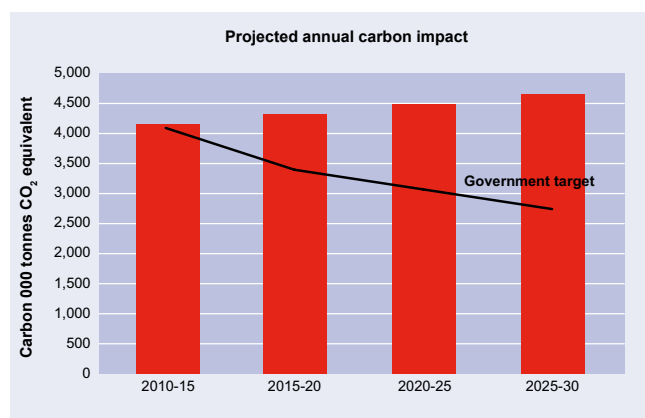


Figure 2.18: The carbon impact does not look sustainable
Source: Severn Trent projections

²¹ Includes changes in the cost of capital, tax and income changes. Totals may not add due to rounding

The policy framework is too narrow in its focus

There are two key areas where decisions taken risk being too narrow in their focus.

1 Implementation of EU directives does not take sufficient account of the impact on carbon emissions or customers' bills

Since privatisation, capital investment required to meet statutory obligations has generally been made without reference to either the resulting carbon emissions, or the impact on customers' bills. The bill increases and carbon impacts which could result from meeting further changes in standards may not be justified by the environmental benefit. These include potential further requirements under the UWWTD and the Environmental Quality Standards Directive.

As part of the PR09 process, all investment proposals were subject to a cost benefit analysis, which included an assessment of the carbon impact and customers' willingness to pay. Where investment to meet standards prescribed in the UWWTD for example, did not prove to be cost beneficial under this analysis, because it is a statutory requirement, this was nevertheless included in Ofwat's Final Determination. The key issue for the future is the approach to be taken to implementation of the Water Framework Directive. Full achievement of good status for all water bodies would have unacceptable impacts on customers' bills and on the industry's carbon footprint.

2 Supply issues are addressed using regionally focused, capital-intensive solutions

The effects of climate change are placing a premium on how we use our water resources. The current policy and regulatory framework encourages companies to solve supply/demand issues by developing resources within their own area rather than considering wider regional or national options for inter-company transfers of water.

The economic and environmental framework has limitations

3 Environmental regulation is too inflexible

Environmental regulation has tended towards strict legal interpretation of standards and ensuring 100% compliance with them, 100% of the time. Companies face penalties for non-compliance and invest heavily to mitigate any risk of failure.

The current approach for achieving water environment quality objectives, which involves the consenting of wastewater discharges at works or specific points, typifies this. This prescriptive approach encourages companies to apply rigidly the same level of treatment to achieve standards without taking into account variations in river conditions.

It also has wider costs that are often not taken account of: capital and energy-intensive treatments are both expensive and drive up carbon emissions.

4 Economic regulation no longer provides the right incentives

Regulation is not providing the right incentives for sustainable financing and for companies to innovate and seek out sustainable solutions. It is also too complex and costly, diverting resources from resolving the key strategic issues. The table below summarises the key issues and problems.

Issue		Problem
a.	Lack of incentives for sustainable financing	A failure to retain and attract equity
b.	Lack of incentives for sustainable solutions i. Incentivising capital investment ii. Encouraging short-term solutions iii. Incentivising meeting specific outputs and discouraging new approaches	Lack of innovation
c.	Scope for mistrust and "gaming"	A failure to focus on critical issues – and "getting the answer wrong"
d.	Excessive detail	Diversion of focus from strategic issues and increased costs

a. Regulation is not providing the right incentives for sustainable financing, leading to a failure to retain equity

In view of the current high level of gearing and the large capital programme which needs to be financed in the future, there needs to be a review of the approach to the cost of capital to address whether the right incentives are in place to enable new investment to be financed in a sustainable way. Two recent reports have commented on this:

“WACC [The Weighted Average Cost of Capital] is used to address two issues:

- *Incentivisation of new investment; and*
- *Remuneration of existing assets.*

Increasingly it is becoming clear that a single forward-looking WACC cannot address both issues”

Regulatory Incentives And Information Requirements, forthcoming UK Water Industry Research report

“British utility regulation does not reward equity properly. RPI-X is designed to promote high-powered incentives, and that requires equity. But RPI-X does not set the financial framework in harmony with these incentives.”

Utility regulation, the RAB and the cost of capital, Dieter Helm, May 2009

It is questionable whether it is appropriate to have a uniform cost of capital and there is a case for it to be varied with the level of gearing and the scale of the future capital programme, in order to encourage equity to remain in the sector.

b. It does not incentivise sustainable solutions, leading to a lack of innovation

i. It incentivises capital investment

Companies earn a return on capital investment, which also grows their regulatory asset base. Since privatisation therefore, companies have had an incentive to develop capital-based solutions rather than adopting solutions which might be potentially more innovative, or more cost-effective, but are operating expenditure based. This applies to, for example, leakage control or water efficiency as an alternative to resource development, or catchment management as an alternative to increased treatment.

ii. It encourages short-term solutions

Planning has been insufficiently long-term. Resetting outputs at each five-year period leads to a fluctuation (roller-coaster) in investment and shortage of project resources late in each five-year period, detailed in Figure 2.19.

iii. It incentivises meeting specific outputs and discourages new approaches

The current regulatory regime is not able to incentivise innovation adequately due to:

- An imbalance between rewards and penalties. Companies perceive that the risk of being penalised for service failure is too great to take the risk necessary to innovate. Penalties for failure need to be related to the potential consequences, for example, it is appropriate to have high penalties to ensure risk aversion on drinking water quality but in other areas a more balanced approach is appropriate. Innovation is therefore stifled, with the focus remaining on following traditional processes.
- Highly prescriptive output setting (for example specifying exact investment schemes, rather than targeting outcomes) that does not provide scope for innovation or consideration of other cost effective options.
- Uncertainty about whether companies will earn a return from innovation, or whether the benefits will be immediately passed to customers, discourages investment in innovative solutions such as new ways of generating renewable energy.

Due to the regulatory mechanism, the focus for companies is on reducing operating costs rather than incentivising and encouraging innovation. Game-changing innovation is inherently risky and long-term – hence, not encouraged by the current regulatory regime.

c. It creates scope for mistrust and ‘gaming’, leading to a failure to focus on critical issues – and “getting the answer wrong”

The current economic framework is vulnerable to mistrust and accusations of companies ‘gaming’. Figure 2.20 illustrates this potential in more detail. If companies form an expectation that the regulator will cut-back on their business plans, they may take a cautious approach and ‘over-bid’. The regulator in turn may form an expectation that companies have over-bid, and seek to cut back on their proposals. A cycle of mistrust between companies and regulator develops, which in turn leads to increasingly onerous business planning and information requirements as each side seeks to substantiate their position. The focus of regulation becomes “getting the answer right”, rather than allowing incentives to drive companies to deliver the “right answer”.

d. The level of detail diverts focus from strategic issues and increases costs

The high regulatory burden placed on both water companies and regulators diverts resource away from key strategic issues. In many areas, the focus is on following the process rather than addressing the right trade-offs needed for the best outcome for the sector as a whole. Regulatory submissions, including the companies' business plans and the annual performance report, the June Return, have grown significantly in recent years, reflecting the increased level of detail desired by Ofwat.

Taking capital maintenance as an example, the industry as a whole submitted over 6,000 pages of information on this subject in their Final Business Plans for PR09. It is hard to see how Ofwat can absorb so much information and the effectiveness of the process is therefore called into question.

Ofwat's proposals for separate price caps risk exacerbating problems of cost and diversion of focus. There is a role for competition in addressing the challenges which the industry faces. However, Ofwat's current proposals for separate price caps for different parts of the water supply chain, based on an allocation of accounting costs, risks compounding problems by:

- Blocking the development of competition by preventing an effective approach to access pricing. The approach needs to ensure that prices for access to water company networks will be low where water resources are scarce, to encourage new supplies. This will not be achieved by pricing based on an allocation of average accounting costs.
- Adding to regulatory and company costs.
- Further diverting attention from the key strategic issues by adding to the volume of detailed information required.

Ofwat is funded by water companies through Licence Fees, paid annually. The costs of regulation in the water sector have risen significantly since privatisation and continue to do so. As Figure 2.21 illustrates, Ofwat expects its budget to further increase over the next three years.

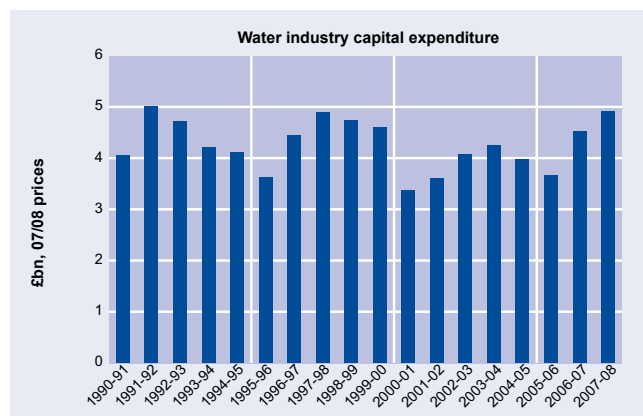


Figure 2.19: Capital investment has fluctuated with price control periods
Source: Severn Trent June Return data submitted to Ofwat

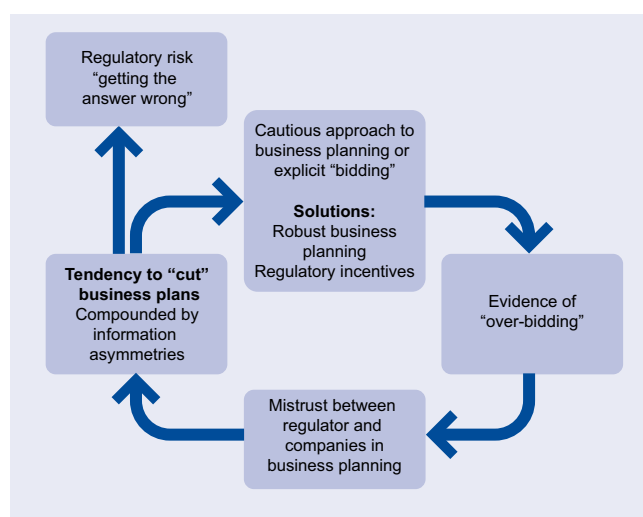


Figure 2.20: Focus of regulation becomes 'getting the right answer' rather than providing the right incentives

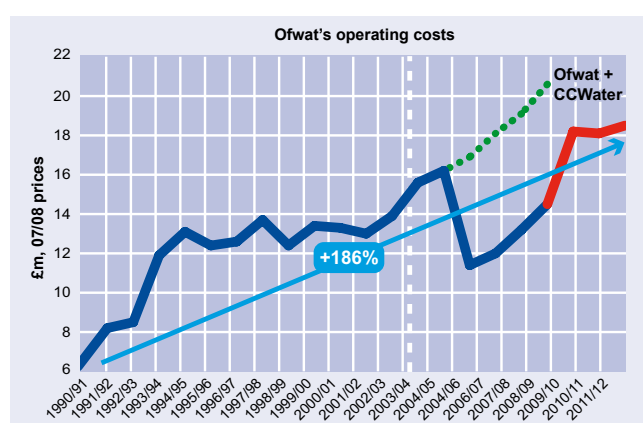


Figure 2.21: Ofwat's operating costs are increasing
Source: In 07/08 prices. 1990-1999 data from External Efficiency Review of Utility Regulators (HM Treasury, 2001), Ofwat Resource Accounts. Forecast data from Ofwat forward workplan for 2009-10 to 2011-12 and CCWater forward work plans.

5. Companies need to be more innovative

Companies have tended to apply standard, capital-intensive solutions to meet regulatory requirements, sometimes seeing themselves as ‘contractors’ rather than taking responsibility for strategy and developing innovative, sustainable solutions.

The Council for Science and Technology has commented that: *“The water industry’s performance in terms of investment in technology and application of innovative solutions is highly variable between companies... There is an urgent need for a step-change”*²².

6. The sector’s strategy does not address how it should be implemented

Currently, the framework does not currently clearly identify each stakeholder’s role and how strategic outcomes will be prioritised.

The sector’s framework has three tiers:

- The Government, through Defra, sets an overall long-term national strategy.
- The sector’s regulators facilitate the delivery of that strategy, which they exercise through their own specific statutory remits and responsibilities.
- Companies put forward plans and are responsible for actual delivery of desired outputs.

If the system functions effectively, these outputs should contribute to the overall achievement of the Government’s national strategy. There is, however, a need to ensure that a balance can be struck between different stakeholders’ priorities so that long-term planning can be developed to implement the strategy.

The sector’s strategy does not address how the strategy should be implemented to achieve desired outcomes

At present, Defra in England, and the Welsh Assembly Government in Wales, decide the sector’s long term strategy. *Future Water: The Government’s strategy for England* and the Welsh Assembly Government’s *Strategic Position Statement on Water* seek to set out the challenges the sector faces. *Future Water* explains the Government’s vision for the sector in 2030.

Future Water does not address, however, how regulation should facilitate its implementation. This creates significant challenges for regulators and companies. Parliament’s Environment, Food and Rural Affairs Committee (EFRA) considered this issue as part of its report into Ofwat’s 2009 Price Review. It noted that:

²² Council for Science and Technology, *Improving innovation in the water industry: 21st century challenges and opportunities* (March 2009).

“The challenge for Ofwat is to balance the requirement for sustainable water supplies, delivered by water companies able to pay for necessary environmental improvements, with bills that are affordable for consumers. This must be delivered against the background of the current economic recession and the predicted impacts of climate change.”²³

Nor are the accountabilities of regulators fully aligned with the Government’s strategy. Ofwat is accountable to Parliament for the fulfilment of its statutory duties and not to Defra or the Welsh Assembly Government. Both the Environment Agency and the DWI are accountable to Defra; and, based on their recommendations, Defra provides ‘guidance’ to Ofwat in key policy areas for each price review. Ofwat, however, does not have to take account of this guidance in the price-setting process.

This arrangement can be problematic if, in exercising their specific remits, authorities take different views of what is a priority, or if their priorities are conflicting in some way. For PR09, for example, companies were encouraged by the Environment Agency to increase levels of metering to help manage demand. Ofwat, however, disallowed some companies’ proposals on the grounds that they were not demonstrated to be cost-beneficial and therefore not in the interests of customers.

There is a mismatch in the timing of a number of critical processes

A further consequence of this arrangement is that there is a mismatch in the timing of a number of regulatory processes. For example, during PR09, the timetable for companies’ Water Resource Management Plans (WRMP), 25-year plans for balancing supply and demand which must be approved by Defra, did not fit with the timetable for submitting Final Business Plans, on which Ofwat bases its final determinations. Ofwat announced its final determinations before a number of WRMPs were finalised.

Customers’ priorities have limited weight

There is also a question about the role that customers play in this framework. Ofwat, CCWater and companies made progress at PR09 at taking account of customers’ priorities. However, the role of the quadripartite process (involving The Environment Agency, DWI, CCWater and companies) in the price review was not clear. Regular meetings were held to discuss companies’ plans and reach agreement, where possible, on the programme, but Ofwat had its own separate process to review proposals.

Under the current framework, there is limited scope for customers’ preferences to have a real impact on all the outputs companies deliver. For example, because environmental and drinking water quality standards are embedded in statute, they can take priority over customers’ preferences which do not have the same legislative backing. A potential conflict arises if the consequences of meeting these standards, for example higher bills, are not supported by customers, or are achieved instead of improvements that customers have rated more highly in willingness to pay research.

It is now time to question if we can take action to resolve these issues and achieve a more sustainable outcome.

²³ Environment, Food and Rural Affairs Committee, *Ofwat Price Review 2009: Fifth Report of the Session 2008-09*, (House of Commons, 15 July 2009), para 13.

3

Immediate changes to policy, regulation and industry behaviour are required to address future challenges

In order to address the future challenges the sector faces immediate action is required. Six changes to policy, regulation and industry conduct need to be made.

Two changes to policy are required:

1. Flexible implementation of the Water Framework Directive would ensure a better trade-off with carbon emissions and costs by:
 - a. assessing whether costs are disproportionate to benefits and therefore if objectives should be re-interpreted or achievement phased; and
 - b. enabling more cost-effective approaches, such as catchment management, to achieve objectives.
2. A new market-based framework for water trading would enable companies to optimise the use of resources nationally rather than just regionally.

Two changes in regulatory approach are required.

3. The Environment Agency should transition from prescriptive point-based consenting to a more flexible approach to consents, widening the scope for more cost-effective approaches to meeting water environment objectives.
4. Ofwat should improve the price setting process to provide greater incentives for innovation, sustainable solutions, more accurate business planning and more sustainable financing.

Companies need to respond.

5. Companies must change their approach to risk and take a leading role in driving innovation – both in terms of the technological solutions they pursue and shaping the wider direction the industry takes.

And, in order to effect these changes successfully the overall institutional framework needs to operate in a way that ensures consistency between the overall strategy, the desired outcomes and the required outputs.

6. Government should prioritise national policy outcomes and ensure the regulatory framework is able to deliver these outcomes. Greater consumer involvement should be secured using constructive engagement to decide the regional outputs required to deliver these outcomes.

Two changes in policy are required

Change 1

Flexible implementation of the Water Framework Directive

Issue: Full achievement of 'good ecological status' under the WFD will be costly and will increase carbon emissions. In addition, there may be substantial costs in meeting the requirements of other EU Directives.

As we explain in Chapter 2, a £4.5bn water industry environmental programme over the next five years will only result in limited progress being made towards the UK's water bodies reaching good ecological status. Achieving 100% good status over the period to 2027 would lead to significant increases in bills and higher carbon emissions because of the energy use required to meet higher treatment standards.

Solution: Objectives and planning for the second and third WFD implementation cycles should consider an appropriate trade-off with carbon emissions and costs. Such an approach should underpin how all EU Directives are implemented.

The WFD provides member states some flexibility in application. In particular, where the achievement of objectives is technically infeasible or disproportionately costly, alternative objectives may be set or achievement delayed. Case study 1 suggests that there are variations in approaches taken by EU countries.

Within the UK, the Environment Agency has been designated as the 'competent authority' responsible for translating the WFD into water quality standards for companies to deliver. Planning for the achievement of WFD objectives is carried out around three six-year cycles. Approval of the first cycle, which achieves limited progress towards achieving WFD objectives, was attained on 22 December 2009.

Case study 1:

European progress towards implementing the Water Framework Directive

Interpretation of, and progress towards, the WFD varies significantly across Europe. At the 2nd European Water conference (2-3 April 2009) it was revealed that:

- A survey of the draft river basin management plans (dRBMPs) of member states shows that many surface water bodies will not reach good status by 2015.
- Progress towards reaching good status for surface water bodies varies greatly across member states from below 10% to above 80%.
- Setting of alternative objectives is common. For surface water bodies, 80% of dRBMPs reviewed applied exemptions (from meeting the objectives). The exemption of "extension of deadline" was most frequently applied.

Source: conference report for the 2nd European Water Conference

The key issue now is what steps will be taken in the next two cycles. There is a window of opportunity for the plans that will be developed for later cycles to take into account whether the full costs (including carbon emissions) associated with achievement of WFD objectives are disproportionate to benefits and whether objectives can be achieved in a more cost-effective way. Parliament's EFRA Committee, in its report into Ofwat's 2009 Price Review recommended similar action:

"We recommend that Defra explore the potential for derogation to the implementation of the EU Water Framework Directive's requirement to enable the phasing of environmental improvements and their related costs where the near term burdens on customers would be severe".²⁴

Moderating WFD targets where costs are disproportionate could be complemented by further changes to environmental regulation. These too would facilitate a more cost-effective way to meet overall water quality requirements. They are explained in the next section.

These issues are not limited to the WFD. In addition, there is a risk of substantial costs associated with further requirements under the UWWTD and the Environmental Quality Standards Directive. These Directives should be modified so that disproportionate costs can be taken into account in the same way as they are for the WFD. There needs to be more action by Government, regulators and companies in future to influence EU policy before Directives are finalised.

Action

In advance of the next two WFD planning cycles, the Government and the Environment Agency should seek to ensure an appropriate trade off with carbon emissions and costs by:

- agreeing with companies the right approach to assessing environmental benefits;
- assessing whether costs are disproportionate to benefits and therefore if objectives should be re-interpreted or achievement phased; and
- enabling more cost-effective approaches, such as catchment management, to achieve objectives.

Change 2

Developing competition through water trading

Issue: *Seeking to address supply issues using regionally focused, capital intensive solutions limits the scope to optimise the use of national resources.*

As we discuss in Chapter 2, most companies are projected to face significant supply/demand imbalances for water over the next 25 years, driven by water scarcity, climate change and increasing demand. The current regulatory framework encourages companies to look for regional solutions to address these issues. These are often capital intensive, focusing on developing new water sources. There are limited opportunities for realising the most optimal solution for the sector nationally.

Solution: *A market based framework for water trading across regions would lead to better use of resources nationally and scope to defer capital investment.*

The independent Cave Review²⁵ considered a package of market based options to facilitate further innovation and a more optimal use of resources. Our analysis suggests that the greatest benefits from increased competition will be in the better allocation of water resources.

Inter-company transfers of bulk treated water (predominantly by displacement via existing networks) could be an economic means to move additional water to water stressed areas. If this allows investment in more expensive new resource schemes to be deferred, then the costs of increasing water supply to adapt to climate change and supply a growing population will be lower.

In Australia, similar market based approaches including water trading and competition for abstraction rights are being established. Case study 2 provides more detail on the Australian experience.

If such approaches were pursued in the UK, then they could optimise a much greater segment of the value chain than retail competition alone. At present, however, there are limited incentives for either 'exporters' or 'importers' to pursue trading. Box 3.1 explains how the current framework discourages water transfers.

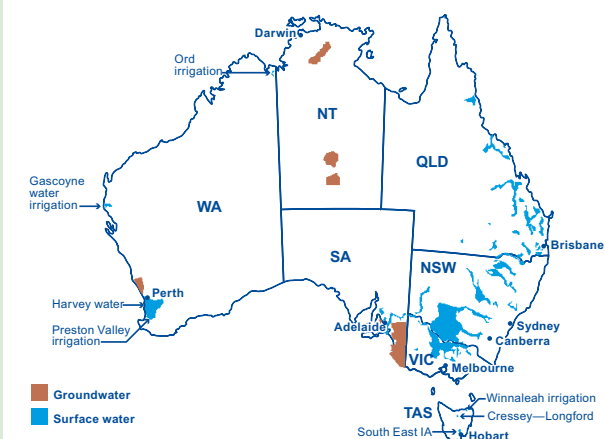
24. Environment, Food and Rural Affairs Committee, Ofwat Price Review 2009: Fifth Report of the Session 2008-09, (House of Commons, 15 July 2009), para 33.

25. Cave, M., Independent Review of Competition and Innovation in Water Markets: Final Report (April 2009).

Case study 2:

As one of the most water-stressed countries in the world, Australia has a pressing need to optimise water resources. Australia has allowed trading within states since the late 1980s and the first inter-state pilots began in 1998. During 2007-08, Australian water traded was valued at A\$1.7bn with 97% of it traded in Murray-Darling Basin (MDB) states in the South East of the country.

Principal water systems where trading is operational



Australian water trading is currently relatively fragmented with numerous exchanges and brokers on offer. In the two dominant exchanges, real time transactions offer more benefits than pool price auctions. While water trading has increased by 126% (2004-08) in the MDB, the markets are not yet deep or transparent.

Source: NWC Australia Water Markets Report 2007-08; MDB Commission, Briscoe, *op cit*; expert interviews

Box 3.1: How the present framework discourages water transfers

- i. There are a lack of incentives to purchase water from neighbouring companies:
 - Each company's priority is to meet its own supply/demand requirements for itself and to own and control resources.
 - The current regulatory regime means that companies will continue to balance supply and demand by themselves, driven by investment on new resources being added to the regulatory capital value.
 - Bulk supplies also result in increased operating costs which negatively impact on Ofwat's assessment of a company's operating efficiency.
- ii. There are a lack of incentives to supply water to neighbouring companies:
 - There is little margin as a result of the current application of the so-called 'costs principle'.
 - The revenue benefits of supplying water would only be kept for a maximum of five years under the current rolling price review mechanisms.
- iii. Negotiating bulk supplies is complex:
 - While Ofwat has powers to determine the terms of bulk supply agreements they have not been used extensively (ie since the late 1990s when they were used in the South East).
- iv. There is a lack of transparency:
 - Current supply costs, demand points and future demand requirements are not visible.

A series of reforms could be used to increase incentives for trading, reduce complexity, and increase transparency about costs. More could be done by Ofwat and the Environment Agency to expose the potential for, and facilitate, trading. This includes:

- companies being required to consider bulk supplies more in their business planning;
- a common network code, setting out guidelines or 'rules' for trading; and
- interpreting the costs principle which underpins current access prices differently.

The Cave Review also recommended a number of changes which if implemented would facilitate trading:

- A legal obligation for incumbents to procure best value supplies.
- Scrutiny by a procurement panel.
- New upstream licences to introduce water into supply.
- Publication of supply costs at Water Resource Zone level.
- Access prices by Water Resource Zone based on economic costs and long run avoidable costs.
- Common binding operational codes and systems.
- Powers for Ofwat to investigate non-compliance.

Further details on how effective competition can be encouraged are set out in papers "A framework to implement a water trading model" and "Competition and pricing for water" available on the Severn Trent Water website, www.stwater.co.uk

Actions

A firm policy commitment to water trading is required and it should be identified as a fundamental component of the Government's future strategy for the industry.

The Environment Agency and Ofwat should seek to facilitate greater trading before the next price review by placing a requirement on companies to consider options for bulk supplies in their business plans and developing, in consultation with companies, a common network code.

Regulation needs to evolve in two ways

Change 3

A more flexible approach to consents

Issue: *The current form of works-based and points-based consenting limits the scope for more cost effective catchment-management solutions to water pollution to be pursued.*

The current approach for achieving water environment quality objectives involves the consenting of wastewater discharges at works or specific points to meet standards. This prescriptive approach requires energy-intensive sewage treatment and limits the scope for more flexible approaches which allow treatment to be varied with river conditions to be pursued.

In addition, the potential Ofwat penalties for failing to maintain serviceability are such that companies often operate at well below consent levels to remove risk of failure – the increased energy use to do this increases costs and the carbon impact.

Solution: *More sustainable approaches including increased catchment management, consents at the catchment rather than work level, and consents varying with river flow should be adopted. There should also be a review of the appropriate approach to risk in meeting consent standards.* Instead of regulating water companies through works-based and points-based consents, using catchment-based consents (total discharge from treatment works to a river catchment) would give companies greater scope to work with the Environment Agency to consider the most cost-effective solutions to meet overall water quality requirements. Companies would be able to decide at which works to improve standards. The Environment Agency has recently used such flexibility in consents for removal of phosphorous.

Variable consents would allow water and wastewater companies to vary the extent of treatment based on environmental factors such as river flow. For example, varying standards depending on river flow would ensure that high water quality is maintained while reducing the energy consumed by sewage treatment works. Increasing treatment targets during low flow and reducing them during high flow would maintain consistent water quality while reducing overall operating costs and carbon emissions. Severn Trent Water is currently working with the Environment Agency to trial such an approach on a project "Balancing Carbon and River Ecology". The aim is to meet the requirements of the WFD at the lowest carbon footprint and smallest cost.

Case study 3: Examples of catchment management in action

Yorkshire Water (Ingbirchworth Pesticide VI)

Yorkshire Water has used powdered activated carbon to remove pesticides from raw water for many years. However, increases in pesticide levels would have required upgrading the removal technology to Granular Activated Carbon and Ozone needing capex of between £4-5m and increased operating expenditure.

Yorkshire Water has worked with farmers, agronomists and tenants and invested in training to develop crop management plans, change crops planted and reduce pesticide usage.

This benefited farmers in reducing fertiliser and pesticide costs and avoided £4-5m of capital investment compared to an end-of-pipe solution. The project reduced detections above the regulatory standard from 15 in 2003 to 0 in 2006.

Wessex Water (Farm Liaison work)

Wessex Water urgently needed to address the rising nitrate and pesticide levels in groundwater sources which form 80% of its resource. The Farm Liaison project aimed to deal with sources of pollution proactively instead of resorting to end-of-pipe solutions.

The project used a catchment management team of four to measure nitrate and pesticide levels on farms in the catchment and advise farmers to reduce their pesticide use.

This benefited farmers by reducing their costs and avoided five nitrate and pesticide removal plants savings £20m in capital investment. It also limited pesticide levels in drinking water to a peak of 280ug/l during the 2006/07 floods, a factor of 10 lower than earlier peaks in 2002.

Source: Case Studies of Water Company Catchment Approaches to Water Management, Water UK & Water for Wildlife (March 2007)

To be most effective, these changes would need to be complemented by:

- Changes in company behaviour. For flow-based consenting to be effective and reduce costs and carbon impact there will need to be innovation, with introduction of technology which will enable companies to vary their level of treatment with river flows.
- Changes in economic regulation. There also needs to be a review of whether companies are currently encouraged to be too risk-averse in meeting treatment works consent standards, for example, because of the potential Ofwat penalties for not meeting serviceability requirements. Often companies operate at well below consent levels to remove risk of failure – a less risk-averse approach in some cases would have carbon benefits without adverse environmental impact.
- Changes in the behaviour of others. Other solutions that could be pursued include incentivising farmers to reduce nitrate run-offs and enacting policy changes to remove the use of phosphates from detergents.

These (and other such measures) could achieve the same overall outcomes but with lower capital investment, carbon emissions and operating costs than current solutions.

Actions

The Environment Agency should continue to develop its approach to setting discharge consent conditions based on real-time volume flows and seasonably variable conditions in rivers, using trials with companies where appropriate. The application of catchment-based consents should be extended.

Ofwat, the Environment Agency and companies should review the current approach to incentives for meeting consents and the appropriate level of risk.

Change 4

An improved price-setting process

Issue: There are limitations to the current regulatory framework which prevent it from addressing future challenges. As Chapter 2 explained, the current economic regulation framework has limitations. These are summarised in the table below.

Regulation is intended to protect consumers and encourage efficiency where competition is not fully effective. As far as possible, regulation should aim to achieve its objectives through the same mechanisms as the market, ie through rewards for success in efficiently providing the services which customers want, and penalties for failure. Ofwat has previously defined its mission as “*To regulate in a way that provides incentives and encourages the companies to achieve a world-class service in terms of quality and value for customers in England and Wales*”²⁶. The framework for regulation should be more closely-aligned to this incentive-based objective.

Solution: Regulation needs to be focused more on outcomes, “placing greater reliance on principles and outcome-focused, high-level rules as a means to drive at the regulatory aims we want to achieve, and less reliance on prescriptive rules”, as described by the Financial Services Authority in ‘*Principles-based Regulation, Financial Services Authority*’ (April 2007).

For each of the four limitations set out in the table below we have identified solutions which we believe will result in significant improvement.

Limitations in the current regulatory framework

Issue	Problem	Solution
a. Lack of incentives for sustainable financing	A failure to retain and attract equity	New approach to the cost of capital
b. Lack of incentives for sustainable solutions i. Incentivising capital investment ii. Encouraging short-term solutions iii. Incentivising meeting specific outputs and discouraging new approaches	Lack of innovation	Equalisation of incentives between opex and capex Longer term outputs Service improvement incentives Ensuring a return is earned from cost-saving investment
c. Scope for mistrust and “gaming”	A failure to focus on critical issues – and “getting the answer wrong”	Incentives for accurate business plans
d. Excessive detail	Diversion of focus from strategic issues and increased costs	Simplification of the framework Higher level outputs

²⁶ Ofwat, *Forward programme 2007-08 to 2009-10*, (April 2007).

a. Issue: *Regulation is not providing the right incentives for sustainable financing.*

Continuing to finance the capital programme through increased borrowing does not look sustainable, in that costs of financing will rise and there will be an increasing risk of difficulties in obtaining finance.

In addition, highly-g geared companies will be too risk-averse, which will discourage much needed innovation. Dieter Helm has also pointed out that:

“Very highly geared companies may fail completely, and in the run-up to collapse may focus on cash management, cutting back on OPEX and CAPEX”²⁷.

Solution: *A revised approach to the cost of capital would ensure that the right incentives are in place for both debt and equity financing.*

There needs to be a review of the approach to the cost of capital to ensure that the right incentives are in place to enable new investment to be financed.

An approach needs to be adopted which ensures that:

- The return on existing assets is sufficient to ensure continuing equity participation in the sector.
- The return on new investment is sufficient to ensure that new equity finance is attracted into the sector.

It is likely that a single cost of capital cannot address both issues. This suggests that there may need to be a higher rate of return for new investment – varying the assumed rate of return according to a company’s actual gearing would incentivise continued equity participation in the sector.

b. Issue: *It does not incentivise innovation and sustainable solutions*

i. Issue: *It incentivises capital investment*

Basing returns on the Regulatory Capital Value (RCV) has been successful in giving investors confidence that they will earn a continuing return on their investment and has, therefore, kept down the cost of capital. This is widely recognised for water and for other regulated industries. For example, in reviewing prices for Stansted Airport, the Civil Aviation Authority considered a number of alternatives to the RCV approach for price-setting and decided that continuing to use RCV was the best basis²⁸. However, there may currently be an incentive to invest in capital solutions rather than operational solutions, for example investing in additional water resources rather than increasing leakage control or water efficiency measures. This is because a return is earned on investment but no return is earned on operational solutions.

Solution: *Incentives need to be changed to remove the incentive to invest in capital schemes rather than operating cost solutions*

In order to equalise incentives, there needs to be scope for initiatives involving operating expenditure to earn a return. One way of achieving this is the approach being implemented by Ofgem for electricity distribution (explained in Box 3.2 overleaf). This would treat all network investment, network operating costs and indirect costs in the same way by capitalising a fixed percentage of costs across all these activities into the RCV. It ensures that incentives are equalised and economic trade-offs are not distorted between capex and opex solutions.

²⁷ Helm, D., *Utility regulation, the RAB and the cost of capital* (University of Oxford, May 2009)

²⁸ Competition Commission, *Stansted Airport Limited – Q5 price control review* (2008).

Box 3.2: Extract from “Electricity Distribution Price Control Review Final Proposals”, Ofgem
Equalisation of incentives

2.34. Current regulatory arrangements may provide DNOs with a skewed incentive to solve network performance or constraint problems through further investment in transformers and cables, rather than maintaining existing assets to prolong their life or seeking to reduce or manage load, even when the latter solution is cheaper. ...These arrangements also provide DNOs with an incentive to reclassify costs from operating expenditure to network investment where the associated incentives are lower. A significant amount of our time in running the annual cost reporting process is spent on policing the boundaries between these categories.

2.35. It is particularly important that we get the balance of incentives right given the large increases in forecast cost for the DPCR5 period. We want to ensure that DNOs give appropriate consideration to innovative solutions, including the use of new techniques to safely and efficiently defer greater volumes of work and doing more to actively manage and monitor levels of risk...

2.40. Our methodology is to treat all network investment, network operating costs and closely associated indirect costs in the same way. This means that a fixed proportion of costs across all these activities will be funded through a return on the company's Regulatory Asset Value (RAV) and depreciation, and the same sharing factor will apply between customers and the DNO for any over or underspend against allowances. This should remove the distortions discussed above and mean there are less cost boundaries for us to monitor over the DPCR5 period...

2.42. Our decision is that 85 per cent of all costs (other than business support costs) will be capitalised, and that customers will fund DNOs for this proportion of the DPCR5 investments over a 20 year period. This is our estimate of the proportion of costs that would have been funded through this route under the DPCR4 arrangements.

ii. Issue: Regulation encourages short-term solutions.

As set out in Chapter 2, outputs being set for only five-year periods leads to fluctuations in expenditure around the regulatory cycle. This can lead to inefficient delivery and precludes the long-term planning which is necessary for development of sustainable solutions.

Solution: Outputs need to be set on a longer-term basis

The time may not yet be right for extending the price-setting period beyond five years. However, this would not prevent some outputs being set for a longer period. This could be applied to, for example, elements of the environmental programme, and the programme to balance water supply and demand. This would enable longer-term planning.

iii. Issue: Regulation incentivises meeting specific outputs and discourages new approaches.

There is currently an asymmetrical approach to output delivery by companies, with little reward for improvement and potentially large but uncertain penalties for failure. This discourages innovation as companies will be unwilling to try new approaches which may not be successful. For example, developing water resources, where there is a certain outcome in terms of additional water provided, may be preferred to finding new methods to control leakage where the benefit in terms of leakage reduction is uncertain. This is because there are penalties for missing leakage targets but no reward for outperformance.

In relation to service improvements, Ofwat has a presumption that companies will put forward too many improvements – proposals may be deleted even if supported by the regional CCWater committees (representing customers) and it has been identified that benefits of proposed improvements exceed the costs.

Proposals for service improvements have to be supported by very detailed information and the resulting outputs are set in a very detailed way, which limits the flexibility of companies to make improvements in ways which will best meet customer needs.

Solution: The balance between rewards and penalties needs to be reviewed to promote service improvement and innovation.

An improved approach would involve predetermined rewards for improvement and penalties for deterioration in service against the current baseline level of service, with rewards/penalties based on value to customers (assessed by surveys of customer willingness to pay for improvements, as carried out for the 2009 price review). This is similar to the Ofgem approach on incentives for reducing the level of interruptions to supply, or the service incentives applied to Network Rail and to BAA (see case study 4).

Case study 4: Penalties and incentives for meeting airport service quality levels at Heathrow and Gatwick airports

Due to challenges with airport service quality at Heathrow and Gatwick airports in the 2002 Q4 review from the Competition Commission, a Service Quality Review (SQR) scheme was put into place to ensure that BAA paid small rebates to airlines when service fell below a defined standard in a particular terminal. This scheme was further revised in the 2007 Q5 review by the Competition Commission.

The scheme covers different aspects of service quality across facility availability, security queues, customer satisfaction, cleanliness, wayfinding, information and congestion with targets set for measures in each area. The revenues at risk are currently set at 7% of airport charges with service quality bonuses of up to 2.25% of revenue based on the service elements, performance standards and bonus levels.

Source: Competition Commission, BAA airports market investigation: A report on the supply of airport services by BAA in the UK (March 2009)

This would have the following benefits:

- It will encourage innovation and reveal the full potential scope for improvement.
- It will discourage risk aversion to avoid large penalties eg there is arguably too much risk aversion on sewage treatment compliance, which results in excessive energy use and carbon impact.
- Rewards and penalties could be based on assessment of customer willingness to pay and engagement with local customer representatives, ensuring that company strategy meets customer needs.
- There will be greater clarity and less need for detailed scrutiny to get the costs right and report on individual projects.

In order that there is acceptance by all stakeholders that the values for service rewards and penalties are set at the right level, there will need to be agreement on a common framework for assessing customer willingness to pay. A current joint industry project provides the opportunity to achieve this.

Solution: *Mechanisms need to be changed to ensure that companies earn a return from innovation.*

At present, if companies invest in developing new cost-saving technology then they may never earn a return from this investment. For example, in the 2009 price review, cost savings from investment in generating renewable electricity were taken into account in price-setting so companies will

not earn any return. The benefits of savings from investment in cost-saving innovation should not be passed immediately to customers in the price review. Companies should keep the benefit for a long enough period until it is passed on to customers for there to be an incentive to innovate.

c. Issue: *Regulation creates scope for mistrust and “gaming”.*

Lack of confidence in company business plans has led to increased regulatory scrutiny and considerable increases in information requirements. Ofwat introduced a Capital Incentive Scheme (CIS) in the current price review which was intended to encourage accurate business planning. However, it has not been operated as originally intended.

Solution: *Mechanisms should be developed to encourage accurate business planning and in turn increase regulatory confidence in company business plans.*

The CIS's future operation should revert to the original intention, with rewards and penalties according to accuracy of plans, rather than being used to penalise companies for putting forward proposals which Ofwat does not support.

The credibility of company estimates of operating costs needs to increase. We therefore propose that a similar mechanism be introduced for operating costs.

This would work in the same way as for capital expenditure and incorporate the same incentives to accurate planning.

d. Issue: *The very detailed approach to price-setting discourages regulatory and company focus on the key issues and increases costs.*

In Chapter 2, we discuss the increasing size and complexity of the regulatory submissions that companies are required to complete. Reporting and analysing such large volumes of information can distract both companies and Ofwat from addressing the bigger picture. There is scope for both parties to get lost in the detail.

Furthermore, as KPMG's 2009 report *Building trust in regulation* highlights, having confidence in regulatory submissions is a critical part of securing good relations between regulators and the regulated²⁹. Regulators rely on timely, accurate and relevant information. Regulated companies need assurance that the information that they dedicate significant time to compiling is required for effective regulation and fully utilised.

29 KPMG, *Building trust in regulation: A global study of operator-regulator relationships* (2009)

Solution: *Regulatory reporting requirements should be simplified to allow both regulators and companies to focus on strategic issues*

Change can be effected in the following ways. The first is through direct action, others a consequence of simplifications made elsewhere:

- **A review of current, and future, regulatory submissions.** As regulatory information requirements generally evolve with regulatory approaches it is important to continually review whether existing regulatory reporting remains necessary. If regulation is to be demonstrably proportionate, it would be good process for Ofwat to consider formally if new information requirements can replace, rather than be in addition to, existing reporting requirements. According to KPMG's report, Ofgem has already put in place rigorous processes to demonstrate that there is a need for the information they request.
- **A movement to monitoring higher level outputs and outcomes.** Prescriptive monitoring of specific inputs, projects and outputs is, by its nature, a data intensive approach. A monitoring framework more focused on the achievement of outcomes would not only lessen information requirements, but as we explain above, would provide companies with more scope to pursue innovative approaches.
- **A review of wider reporting requirements.** Companies currently report information to a number of different authorities. For example to Ofwat (in 5-year business plans) and the Environment Agency and Defra (in 25-year water resource management plans). A review of companies' wider reporting requirements to Government and regulatory authorities may reveal there are synergies that could be better exploited.
- **A review of the 'building blocks' currently used in price setting.** Reviewing or changing some of the building blocks used in the price review process should also have an impact on the level of information collected. For example, we explain below how Ofwat's approaches to assessing capital maintenance needs, determining investment in balancing supply and demand and to setting depreciation assumptions for price limits are information intensive, and how the same, or better, outcomes could be achieved using an alternative, less information intensive, approach.

We have reviewed each element of the price-setting process, shown in the 'building blocks' right, to consider where improvements are needed and in the light of the issues set out in Chapter 2. The blocks shown in green are where we do not consider change to the economic regulation framework are needed. The Quality (environmental) changes needed are addressed in Change 1 above – the application of the price-setting process in this area is not problematic. Blocks highlighted in red show where there is a pressing need for change. Amber and yellow blocks indicate where there is scope for improvement, but are lesser priorities.

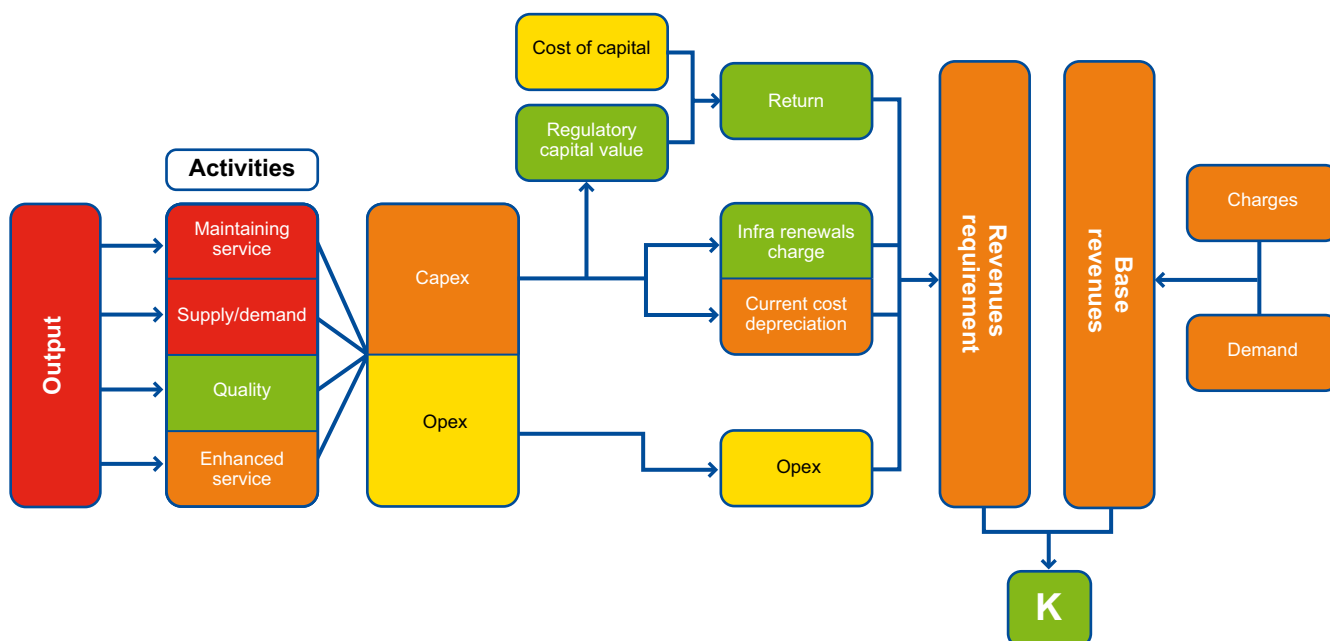


Figure 3.1: Scope for improving Ofwat's 'building blocks'

The table below summarises the improvements required and in which section below the detailed solutions are set out.

Maintenance	Validity of the case lost in the detail – reward for following the right process (See “Assessing capital maintenance needs”).	Capex/opex Over-estimation of costs and mistrust of company plans (See “mechanisms should be developed to encourage accurate business planning”). Outputs at too low a level (See “A movement to monitoring higher level outputs and outcomes”).	Current Cost Depreciation Extremely complex approach with no real benefit (See “Assessing capital charges”).	Income Extremely complex approach with no real benefit.
Quality	Addressed in Change 1			
Enhanced service	The approach to price setting and planning is too detailed and activity focused. Need to encourage sustainable solutions and the right level of outputs (see “Balancing supply and demand” and “The balance between rewards and penalties”).			
Supply/ demand				

Solution: *Review and simplification of several of the 'building blocks' used in Ofwat's approach should encourage more strategic and less data-intensive business planning.*

Some examples of how simplification can be implemented to give better outcomes and reduced regulatory costs are given below.

Assessing capital maintenance needs

The current approach leads to the validity of companies' cases being lost in the detail. In our last business plan, Severn Trent Water made a 400-page submission – some others submitted more (6,000 pages in total). It is not possible for Ofwat to absorb and assess the level of information provided.

There is a reward for following the right process rather than real maintenance needs and companies have to follow the regulatory approach rather than identifying for themselves what is the most efficient way to plan maintenance.

A higher-level approach would involve a check on consistency with previous spend and asset life profile.

Ofwat could require more detail when:

- a company wished to make a case for higher spend;
- there are concerns about service performance; and
- there is evidence that assets were not being adequately maintained.

The governance over regulatory submissions would be improved as there would be greater focus on fewer, more important issues.

Where a company wished to make a case for a larger increase it should risk a lower assessment than it would receive from a high-level approach – the potential downside could match the company proposed increase over the high-level estimate. This would ensure that companies would only put forward more detail where they had a robust case.

Assessing capital charges

Current Cost Depreciation is one of the "building blocks" in price limits. It recovers the real cost of investment over the lifetime of assets, and provides for capital maintenance.

The regulatory methodology means that changing Current Cost Depreciation only changes the timing of income received by companies – over time it has a neutral effect – so getting it "right" is less critical than some other areas. This one building block requires much more data than any other:

- 106 lines, spread across 8 tables of the June Return
- 244 lines in 10 tables of the business plan
- A revaluation of assets, costing around £6m across the industry at the last price review.
- Ofwat employs two people to look at capital charges, full time

The detailed Current Cost Depreciation calculation could be replaced with a depreciation provision based on a single asset life, using a weighted average. The Office of Rail Regulation has adopted an approach of this type.

There would then be no need for Current Cost Accounting or asset revaluation.

Simplifying income forecasting

There is now a settling-up process for income which reduces the need for forecasting accuracy. In any event, the level of detail required has not contributed to getting the answer right. A simplified approach would be based on main customer groups and a high-level assessment of demand trends is needed, without the detailed breakdown between small customer groups and charges which is currently required. This would allow greater focus on whether the overall trends are realistic.

Replacing the new income adjustment mechanism with a simplified calculation, with annual "settling up" on actual revenue compared with assumed revenue would also simplify the process and allow the current complicated "tariff basket" formula for price-setting to be simplified.

Balancing supply and demand

The current framework has limitations both in terms of price-setting and encouraging competition:

- Outputs are set at a very detailed level, discouraging innovation.
- The extent of information requirements is disproportionate in view of uncertainties on future supply/demand.
- Business plan supply/demand schemes are used to assess avoidable costs for "retail minus" access prices (to use the existing water mains network for competitive entry). This produces very high access prices as few schemes are assessed to be avoidable with new entry. The case-specific approach produces uncertainty for potential entrants, as no entrant knows the charges they will face before they have incurred significant costs in developing proposals.

There is scope for improvement:

- The framework can be simplified, to encourage accurate planning and encourage competition, by an improved link between costs in company business plans and access prices for the network.
- Access pricing for competition could be based on average cost estimates for supply/demand schemes, without the need to demonstrate that a specific scheme will be avoided by competitive entry.
- The incentive for over-statement of costs in company business plans will be removed as, if costs are overstated, then access prices will be too low, encouraging competition.

- The incentive for under-statement of costs avoided in access pricing will be removed – this would lead to too low a figure for costs in price limits, so companies would not recover the costs of resource developments.
- This will give a more effective framework for competition as access prices will be more realistic and predictable (replacing the current case-specific approach with very low avoidable costs).

Cost estimates will be more credible – which would enable higher-level outputs to be set, encouraging innovation.

Actions

Ofwat has committed to undertaking a review of its approach to price setting. A transparent process for consulting with all stakeholders at the earliest possible opportunity should be developed and published.

Ofwat should review the methodology to setting the cost of capital and introduce a new approach which applies a rate of return for new investment sufficient to attract equity financing. In the long run this will be lower cost than the existing approach of relying on debt financing.

Ofwat should seek to implement a process to ensure the need for new information requirements is demonstrated to companies, and considered in the light of whether any existing requirements could be discontinued.

Companies need to respond

Change 5

Companies driving innovation

Effective regulation relies on incentivising ‘desired’ behaviours from companies. If the changes proposed in this chapter are to be effective, companies, as those responsible for actual service delivery, must respond positively to them. Greater innovation is vital in this regard.

Issue: *A step change is required in companies’ approach to innovation and activity, both in terms of the technology they use, and their approach to supply.*

The challenges explained in Chapter 2 will require a step change in both approach and innovative activity. For example, if we are to achieve both higher water quality and lower carbon emissions, a more holistic approach to target setting by Government and the Environment Agency will not achieve this end alone – it needs to be complemented by more innovative solutions by companies.

The level of innovation in the sector has come under recent scrutiny. The Council for Science and Technology (CST) is critical of the state of innovation in the water sector³⁰.

It concludes that:

- Investment in research and development for the sector is generally low;
- Innovation is largely driven by the regulatory framework and is applied unevenly across the supply chain; and
- Insufficient attention is being given to long-term technology planning within the water sector in responding to its environmental impact (in particular climate change), its energy use and carbon footprint.

The report suggests that, in terms of encouraging innovation in the industry, the current position is not sustainable.

And whilst it proposes that changes need to be made to a regulatory regime that “militates against innovation” the industry itself needs to look beyond simply innovating in response to regulation’s drive for greater efficiency³¹.

The CST report identifies two issues with companies’ present approach to innovation:

- Whilst they do embed research, development and innovation into their businesses their focus is largely on addressing short-term targets and needs; and second
- Innovation within the industry is fragmented, with sub-optimal sharing of information – risking different approaches being developed to the same issues.

30 Council for Science and Technology, *Improving innovation in the water industry: 21st century challenges and opportunities* (March 2009).

31 Ibid., p3.

Box 3.3 details CST's recommendations for encouraging greater collaboration and a more effective approach to innovation. These sentiments are echoed by the Cave Review. It too proposes there should be a greater drive for innovation within the industry. It recommends the establishment of a national industry research and development body to facilitate greater industry collaboration.

Box 3.3: Council for Science and Technology recommendation 3

Government, together with Ofwat and the water companies, should put in place mechanisms to deliver a more co-ordinated approach on strategic, medium-longer term R&D in the water industry by:

- devising mechanisms to encourage the necessary structures for this research to be commissioned by and undertaken in partnership with the industry, for example by strengthening the resources of UKWIR or a similar body
- setting up an Innovation Platform on Water Technologies through the Technology Strategy Board to identify mechanisms for continuing to drive up water quality standards whilst at the same time driving down the energy footprint
- devising mechanisms to incentivise water and sewerage companies to collaborate more and share information on leading-edge solutions, along the lines of the Dutch model, through a Knowledge Transfer Network for the water industry

Source: Council for Science and Technology, *Improving innovation in the water industry: 21st century challenges and opportunities* (March 2009).

Solution: Companies must take a leading role in driving innovation

It is through greater innovation that companies can deliver sustainable service and environmental improvements at lower cost (both in terms of expenditure and carbon emissions) and in doing so address many of the new challenges the industry faces. They now need to take on this responsibility more fully.

Action

Companies must take a leading role in driving innovation. Despite notional incentives to focus on delivering capital expenditure solutions, companies must in future explore the potential for more sustainable solutions.

Change 6.

Prioritising national outcomes to deliver the strategy

Issue: *The national strategy for water does not address how it should be implemented.*

The sector needs to have a clear long-term direction so that long-term plans can be developed and sustainable solutions identified. Progress has been made with *Future Water: The Government's strategy for England* and the Welsh Assembly Government's *Strategic Position Statement on Water*. These documents set out the challenges the sector faces until 2030, and *Future Water* explains the Government's vision for the industry in 2030.

The sector, however, is not adequately addressing how we actually achieve this vision. There is scope for improvement in two regards:

- How the long-term outcomes are prioritised; and
- How the outputs that are required to deliver those outcomes are decided.

Solution: *Where there are conflicting policy outcomes, Government should prioritise them.*

In order to achieve the Government's long term strategy, decisions need to be made about the outcomes that are required to deliver it. The achievement of one outcome within the Government's present strategy can create a trade-off with another:

- Can we improve the water quality of our water environment and ecology as well as cutting greenhouse gas emissions?
- Can we embed climate change adaptation, manage flood risk and maintain high levels of drinking water quality whilst keeping bills affordable?

Chapter 2 details where these conflicts are already coming to light. A transparent way of prioritising outcomes and dealing with these conflicts is required.

The Government should define more closely the long-term policy framework so that trade-offs are resolved and it is possible to carry out long-term planning and develop innovative solutions. The EFRA Committee recommended in its report into Ofwat's 2009 Price Review that:

*"Defra sets out how it envisages the delivery of Future Water's objectives will impact on the industry and regulator"*³²

In addition, where policy decisions of national importance are made, there is scope for greater consultation. Decisions about the extent to which EU Directives are transposed into UK law in particular can have a significant and long term impact on investment programmes and customers' bills. The Walker Review recommends that the Government should be required to consult before agreeing to water quality improvements that will impact on customers' bills (see Box 3.4).

32 Environment, Food and Rural Affairs Committee, *Ofwat Price Review 2009: Fifth Report of the Session 2008-09*, (House of Commons, 15 July 2009), para 25.

Solution: More constructive engagement should be used to decide regional outputs

At price reviews, companies set out the outputs they will deliver in order to contribute to the achievement of long term outcomes. At present, there is limited scope for the views of customers to be fully taken account of in the process. A regional process to discuss openly the outputs each company should deliver over price review periods, and their impact on customers' bills, should be implemented.

Within the existing framework, a form of constructive engagement could be developed. Options for constructive engagement have been researched by Ofgem as part of its RPI-X@20 review for the gas and electricity industries, and have been in part implemented by the Civil Aviation Authority (CAA) in airport regulation. There is a spectrum of approaches that could be pursued ranging from the economic regulator acting as the arbitrator and final decision maker in discussions, to customers and companies negotiating and agreeing outcomes directly.

Within the water industry, constructive engagement has been considered by both the Cave and Walker Reviews. The Cave Review considers that in the absence of competition, CCWater could negotiate regional agreements with companies reflecting local priorities and willingness to pay. Ofwat, as the economic regulator would give preferences weighting in final price limits.

The Walker Review proposes that existing mechanisms could be strengthened. During the 2009 price review, quadripartite group meetings (consisting of the Environment Agency, DWI, CCWater, companies and, in some cases, Natural England) were used to help companies develop their business plans. Walker believes that this process was beneficial as the early engagement of customers lessened the incentive for companies to 'over-bid', and encouraged 'self-regulation' by ensuring their business plans were in line with customer priorities³³. The quadripartite mechanism, however, currently has no formal standing in the price-setting process.

CCWater has already indicated its intention to press for consumer-led approaches to regulation in advance of the next price review:

*"Now we will pursue greater consumer led regulation; with consumers having an increasing say on the service and investment package delivered by their water company and the price they pay for it. This will increase the legitimacy of the process, getting regulators and water companies delivering what consumers want."*³⁴

Box 3.4: Options and recommendations for greater constructive engagement and customer involvement in the English and Welsh water industry

Cave Review recommendation 5.46:

"...For those customers ineligible to choose their supplier, I recommend that there should be further negotiated settlements between customer representatives and monopoly retailers, initially to determine retail quality and service standards. Again, these should have potential weight in price limits of plus or minus three per cent of turnover and reflects local priorities. It will be for the Consumer Council for Water, together with other stakeholders, to negotiate the size of the settlement, whether it is symmetrical, and what service and quality improvements the local incumbent should deliver. As the economic regulator, Ofwat would remain responsible for agreeing and incorporating the results of such negotiations in price limits."

Walker Review recommendations:

"CCWater, consulting with the UK Government and Welsh Assembly Government, Ofwat, and members of the quadripartite group, should put in place arrangements to engage with and consult customers on a regional or water company basis, on any issues affecting their bill, particularly proposals for future quality improvements, not simply on price control issues. The quadripartite machinery set up for the latest price review should be established on an ongoing basis"

"The review team recommends that there should be a new requirement on government to consult with customers before agreeing any water quality improvements which water customers will have to pay for, to set out the costs and benefits including the impact on household bills and ensure effective consultation through CCWater and any agreed customer consultation arrangements."

Source: Independent Review of Competition and Innovation in Water Markets: Final Report (April 2009) and The Independent Review of Charging for Household Water and Sewerage Service: final report (December 2009)

Actions

The Government should review *Future Water* setting out how regulation should facilitate its delivery and how outcomes should be prioritised where there are potential conflicts.

Ofwat, working with CCWater, should assess how a framework for constructive engagement could be implemented before the next price review. This would need to determine:

- How functions would be split.
- How duplication of activities would be avoided.
- How the appropriate skills and knowledge would be shared between the two bodies.

³³ The Independent Review of Charging for Household Water and Sewerage Services: final report (December 2009), p.146.

³⁴ Consumer Council for Water, Draft forward work programme: 2010-11 to 2012-13

4

Change will deliver better outcomes to customers, the environment and investors

In the previous chapter, we set out six changes to policy, regulation and industry conduct that should be made to respond effectively to the future challenges the industry face.

Making these changes will deliver better outcomes to customers, the environment and investors than if we continue with the current course.

The capital programme and borrowing will be around £10 bn lower, average customer bills will be almost £50 lower and the carbon footprint will reduce instead of increasing.

In addition, there is considerable uncertainty about future requirements and the impact of climate change. Our proposals will deliver solutions which will be more flexible and can be modified as the scale of future requirements becomes clear.

Lower capital investment and operating expenditure will be required

Implementing the changes set out in Chapter 3 will deliver improved outcomes for customers, the environment and for investors. While all the proposed changes would positively impact these outcomes, only some can be quantified objectively.

We have conservatively assumed that, compared with the current course set out in Chapter 2, implementing the changes proposed in Chapter 3 will have the following impact.

Change 1: Future implementation of the WFD ensures an appropriate trade-off with carbon emissions and capital costs

Modelled impact:

The environmental programme in the 15 years to 2030 is about half that of the current course, as a result of modifying achievement of WFD objectives where costs are disproportionate to benefits and identifying more cost-effective means to achieve objectives than further treatment improvements at sewage treatment works.

Capital expenditure to 2030	-£7,500m
Operating costs by 2030	-£379m
Bill impact	-9%

Change 2: A market based framework to optimise the use of resources nationally needs to be established

Modelled impact:

The need for resource development in the South-East is reduced by water transfers from the Midlands and the North. This will have a lower environmental impact, as the environmental pressures of water abstraction are less outside the South-East, and make use of water available at lower cost.

Capital expenditure to 2030	-£1,500m
Operating costs by 2030	-£21m
Bill impact	-1%

Change 4: An improved price-setting process provides greater incentives for innovation, operating expenditure solutions, and more accurate business planning

Modelled impact:

From 2020 measures to stimulate innovation mean that operating expenditure to maintain current services increase by 1% per annum less than RPI – this is on the basis that around half of the potential gains from competition identified in the Cave Review can be achieved through a more effective regulatory framework.

Capital expenditure to 2030	-£1,025m
Operating costs by 2030	-£170m
Bill impact	-2%

Changes 1 to 5: A lower capital programme, together with a new approach to the cost of capital leading to increased equity investment, slow the increase in borrowing

Modelled impact:

The lower capital programme means that financeability is less of an issue, so the pre-tax rate of return is 0.1% lower than in the current course.

Bill impact	-1%
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There will be better outcomes for customers, the environment and investors

Customers would benefit from lower bills compared with the current course. The reduction in capital and operating expenditure facilitated by the changes set out in Chapter 3 would result in bills in 2030 being 11% lower than if no action was taken. The capital programme would be 14% (£10bn) lower over the 15 years to 2030 and operating costs would be 14% lower by the end of the period. As shown in Figure 4.1, the most significant reduction would be in the scale of the environmental programme.

Instead of bills continuing their previous upward trend, there would be very little increase after 2020.

The environment would benefit from lower carbon emissions compared with continuing with current trends. Operational carbon emissions by 2030 could be 4 mega tonnes of CO₂ equivalent (MtCO₂e) compared to a level of 4.1 MtCO₂e today and a potential level of 4.6 MtCO₂e in 2030 from the current course – a 0.6 MtCO₂e decrease in carbon emissions between the two.

Investors will benefit from the reduced perception of risk from reduced gearing compared to continuing on the current course. Current projections of water companies' gearing from the current course indicate a very high leverage (debt/RCV) of 84% and borrowing increasing to £60bn. The reduced capital investments needed in the alternative course and increased equity investment could reduce this to 78% – a 6% reduction, with around £10bn less borrowing. Debt per customer would be £1,800 compared with £2,300 in the current course.

Changing Course

Delivering a sustainable future for the water industry in England and Wales

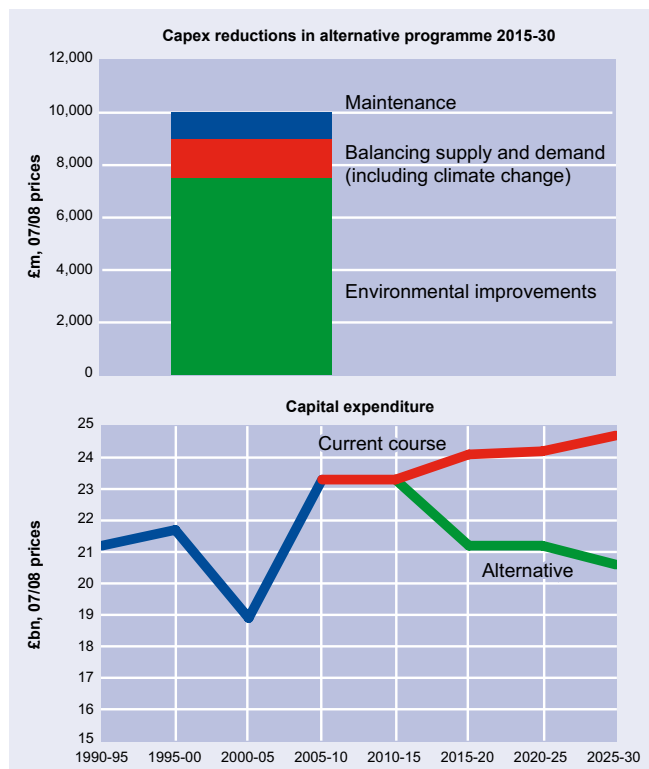


Figure 4.1: Capital requirements would be significantly lower and reducing
Source: Ofwat annual financial performance reports and Severn Trent projections

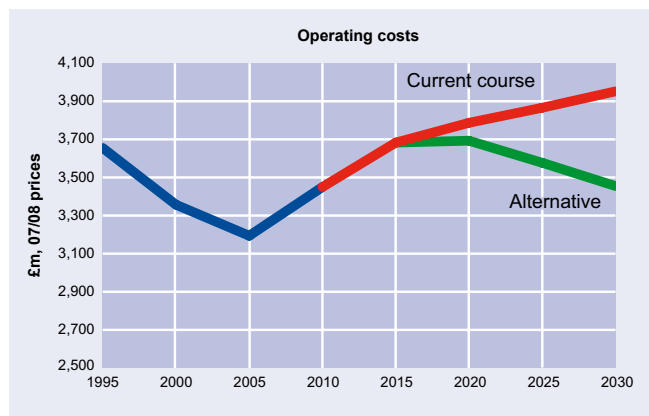


Figure 4.2: Operating costs would be significantly lower
Source: Ofwat annual financial performance reports and Severn Trent projections

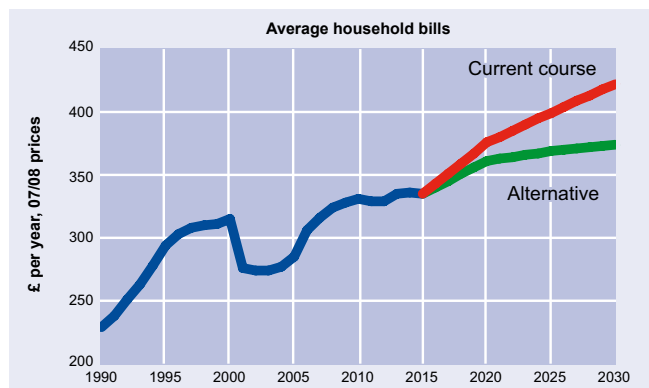


Figure 4.3: Water bills would be lower under the alternative scenario
Source: Ofwat annual water and sewerage charges reports and Severn Trent projections

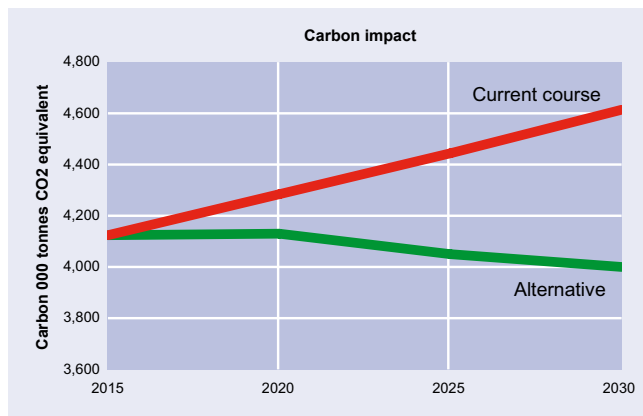


Figure 4.4: The carbon impact would be lower under the alternative scenario
Source: Severn Trent projections

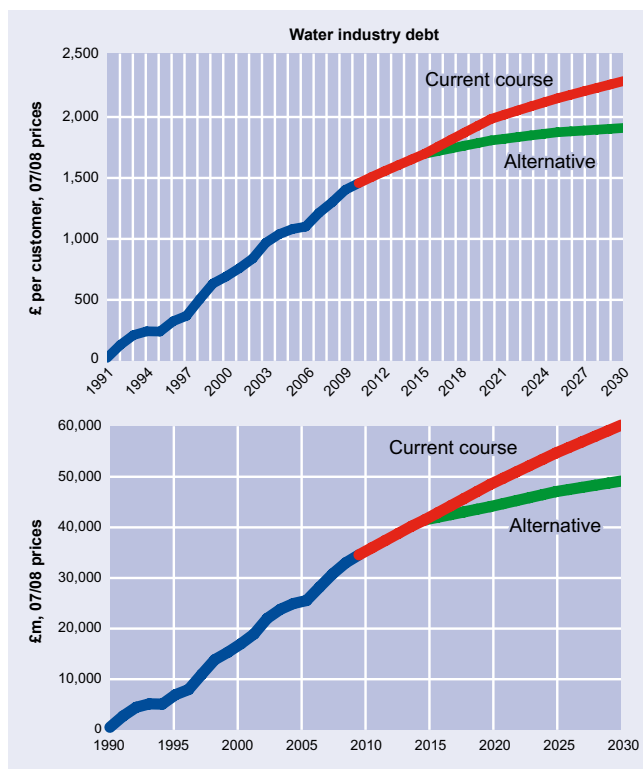


Figure 4.5: Water industry debt would be lower under the alternative scenario
Source: Ofwat annual financial performance reports and Severn Trent projections

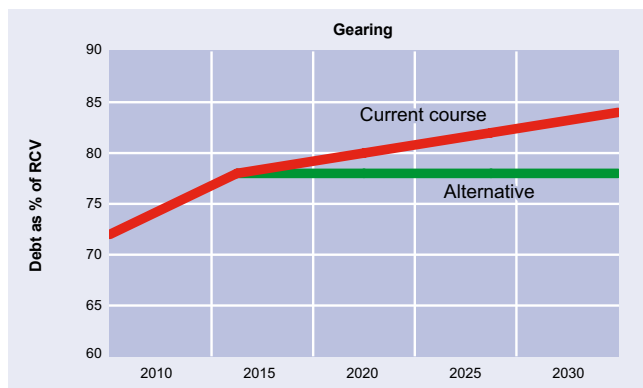


Figure 4.6: Gearing will stabilise
Source: Ofwat annual financial performance reports and Severn Trent projections

5

There are choices to be made, and actions required

The six changes set out in Chapter 3 will deliver better outcomes for customers, the environment and investors, than if the sector continues as it has done.

In order to effect this change, however, action by all of us with a stake in the industry is required. We summarise those actions here.

We will continue to develop our thinking on these issues and engage other stakeholders in the emerging debate.

1. Future implementation of the WFD should ensure an appropriate trade-off with carbon emissions and costs

Delivering improvements in the water environment is important. But we must recognise that there are costs, particularly in terms of investment and carbon emissions, in doing so. We can lessen the impact of these costs in the future if we take a flexible approach to implementing the WFD.

Action required

In advance of the next two WFD planning cycles, the Government and the Environment Agency should seek to ensure an appropriate trade off with carbon emissions and costs by:

- Agreeing with companies the right approach to assessing environmental benefits;
- Assessing whether costs are disproportionate to benefits and therefore if objectives should be re-interpreted or achievement phased; and
- Enabling more cost-effective approaches, such as catchment management, to achieve objectives.

Potential impact	Very high
Timing of action	Medium-term

2. Competition through water trading should be established

We need to place a premium on our water resources and the future level of customers' bills. Inter-company transfers of bulk-treated water could be an economic means to move additional water to water-stressed areas and to defer the investment in more expensive new resource schemes. If investment is deferred then average bills will be lower than they would otherwise have been.

Action required

- The Government is consulting on the recommendations of the Cave Review. However, a firm policy commitment to water trading is required and it should be identified as a fundamental component of the Government's future strategy for the industry.
- The Environment Agency and Ofwat should seek to facilitate greater trading before the next price review by placing a requirement on companies to consider options for bulk supplies in their business plans and developing, in consultation with companies, a common network code.

Potential impact	Medium
Timing of action	Medium-term (but need to avoid the wrong short-term decisions)

3. The Environment Agency should transition from setting point source consents to a more flexible approach to consents

We can also seek to make the right trade-offs between water quality and carbon emissions by pursuing catchment management approaches. Companies would be better placed to do so if the Environment Agency transitioned from setting point-source consents to high-level catchment based consents and consents varying with river flow.

Action required

- The Environment Agency should continue to develop its approach to setting discharge consent conditions based on real-time volume flows and seasonably variable conditions in rivers, using trials with companies where appropriate. The application of catchment-based consents should be extended.
- Ofwat, the Environment Agency and companies should review the current approach to incentives for meeting consents and the appropriate level of risk.

Potential impact	Medium
Timing of action	Medium-term

4. Ofwat should improve the price-setting process by providing greater incentives for innovation, sustainable solutions, accurate business planning and sustainable financing

Since privatisation, economic regulation has sought to address the challenges the industry faces. The nature of these challenges is changing. Regulation needs to change with them. Ofwat should seek to improve its price-setting process to provide greater incentives for innovation, sustainable solutions, more accurate business planning and sustainable financing.

Action required

- Ofwat has committed to undertaking a review of its approach to price setting. A transparent process for consulting with all stakeholders at the earliest possible opportunity should be developed and published.
- Ofwat should review the methodology for setting the cost of capital and introduce a new approach which applies a rate of return for new investment sufficient to attract equity financing. In the long run this will be lower cost than the existing approach of relying on debt financing.
- Ofwat should seek to implement a process to ensure the need for new information requirements is demonstrated to companies and considered in the light of whether existing requirements can be discontinued.

Potential impact	High
Timing of action	Immediate

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5. Companies need to respond to these changes by making a step change in their approach to innovation

Companies have historically reacted to regulation, seeking to deliver the best possible outcomes within the parameters it sets. In the future, companies will not just need to innovate to exploit further efficiencies and deliver improved service standards as they do at present. Meeting the new challenges that the industry faces, such as climate change, will require a step change in both approach and innovative activity.

Action required

- Companies must take a leading role in driving innovation. Despite notional incentives to focus on delivering capital expenditure solutions, companies must in future explore the potential for more sustainable solutions.

Potential impact	Medium
Timing of action	Medium to long-term

6. A single strategy and mechanism to prioritise outcomes for the sector to deliver is required

The sector needs to decide the long-term direction it will take. Within this wider strategy, it needs to make well-informed decisions, recognising that trade-offs exist, about the outcomes it will deliver. A process to determine these priorities, involving all stakeholders, is required.

Action required

- The Government should review Future Water, setting out how regulation should facilitate its delivery and how outcomes should be prioritised where there are potential conflicts.
- Ofwat, working with CCWater, should seek to introduce a framework for constructive engagement before the next price review.

Potential impact	Medium
Timing of action	Immediate

Technical Annex

Financial forecasts for “Changing Course”

Forecasts have been based on the following sources:

- Scale and costs of the environmental programme – “Preliminary Cost Effectiveness Analysis of the Water Framework Directive”, published by Defra in December 2007.
- The scale and costs of the future programme to increase water supply capacity – water companies’ Draft and Revised Water Resource Management Plans, 2009 and 2010.
- Increases in energy prices – the Government’s “UK Low Carbon Transition Plan”, Analytical Annex, Department for Energy and Climate Change, 2009
- Private Sewers – Impact Assessment of transfer of private sewers and lateral drains to statutory water and sewerage companies, Defra, November 2008

Economic and demand trends

The following assumptions apply to both the modelled scenarios:

- Economic growth returns to previous trend levels during 2010-15(AMP5).
- Housing and population growth in the south-east of England is at a higher rate than in the rest of the country.
- Consumption per head grows only marginally, reflecting water efficiency measures, and commercial demand continues to fall, but total demand rises as a result of population growth.
- Climate change has significant impacts on supply and demand for water, particularly in the south-east, and more frequent storms lead to increased sewer flooding problems to be addressed throughout the country.

“Current course” scenario

The forecasts include the following:

Capital programme

- Environmental programme: The preliminary cost-effectiveness analysis carried out by Defra suggested that the annual cost of meeting the Water Framework Directive objectives in England and Wales would be £1.08bn, with £0.67bn of this borne by the water industry – nearly £30 per water customer. This annual cost is equivalent to a capital programme of about £8bn being required, and £250m per annum would be added to operating costs.

The projections include this cost and the cost of meeting other environmental requirements, including the Habitats Directive, Countryside and Rights of Way Act, Bathing Waters Directive and UK Biodiversity Action Plans. There are a number of investigations being carried out under these drivers during the next five years and some of these can be expected to require expenditure in future. The cost of completion of the Thames Tideway project by 2020 (£2.2bn total cost) is also included.

These costs are highly uncertain and it is possible that costs will be much higher. Ofwat has stated that *“The costs of implementing EU legislation are considerable. For example, the Water Framework Directive could cost between £30 and £100 billion in England and Wales by 2027. Much of the cost of this investment is likely to fall on water customers”*. In addition, there is particularly high uncertainty on the costs of reducing overflow frequency (under the Urban Waste Water Treatment Directive) and costs of removing substances such as metals (under the Environmental Quality Standards Directive).

The table below is an extract from the preliminary cost-effectiveness analysis sector summary. Option 1 provides for implementation of all technically feasible measures to meet WFD standards by 2015. We have used the results from Option 2, which provides for phased implementation of measures to meet WFD standards by 2027 at the latest.

Summary of water industry costs of achieving good status for all water bodies

Sector totals £m	Pressure	Option 1			Option 2		
		England	Wales	Total	England	Wales	Total
Water industry	Phosphates	273.0	3.4	276.4	125.9	1.0	126.9
	Sanitary	341.0	10.3	351.3	314.8	9.1	324.0
	WR – low	147.9	3.0	150.9	62.3	2.5	64.8
	WR – high	1045.3	61.8	1097.1	73.6	30.7	104.3
	Chemicals	296.1	32.9	328.9	117.7	13.1	130.7
	Morphology	1.5	0.2	1.7	0.4	0.0	0.5
	Total – low	1059.5	49.8	1109.3	621.1	25.8	646.8
	Total – high	1956.9	98.5	2055.5	632.4	54.0	686.4
	Total – ave.	1508.2	74.1	1582.4	626.7	39.9	666.6

Source: Table 5.1, Preliminary Cost Effectiveness Analysis of the Water Framework Directive, Defra

- **Private sewers:** Adoption of private sewers is assumed to take place in 2011 – forecast bills have only been adjusted from 2015/16 onwards, although it is likely in practice that there will be an adjustment through an Interim Determination before that. The Defra impact assessment suggested that annual costs would be £135m in terms of infrastructure renewals and operating costs, with an additional £129m per annum one-off costs in the first ten years. The projections are shown in the table below.

Estimated PV costs and monetised benefits, £m 2008 price base

	5 year totals				PV first 10 years	PV first 20 years	PV 60 years
	2011-12 – 2015-16	2016-17 – 2020-21	2021-22 – 2025-26	2026-27 – 2030-31			
One off capex upgrades	1,037	43	-	-	1,080	1,080	1,080
Recurring annual cost (IRE, MNI, plus opex)	559	495	407	333	1,054	1,794	3,318
All costs	1,596	538	407	333	2,134	2,874	4,398
All benefits	683	590	510	440	1,273	2,223	4,448
NPV					-861	-651	49

Source: Table 3, Impact Assessment of transfer of private sewers and lateral drains to statutory water and sewerage companies, Defra, November 2008

- **Supply/demand:** Higher expenditure will be needed to meet growing demand and the impact of climate change through reservoir development in south-east England. Thames Water's revised Water Resource Management Plan makes provision for a reservoir supplying an additional 202 Ml/d being completed by 2025/26. Provision is also included in our projections for new reservoirs in Kent, Sussex and Hampshire.
- **Capital maintenance:** Increasing capital maintenance is projected, as a result of the asset expansion of the last 20 years requiring replacement. Capital maintenance expenditure has been increasing since 2000 and our projections allow for a continuing increase but at a lower rate.
- **Flooding:** Allowance for more frequent storms, leading to a requirement for continuing expenditure to increase the resilience of assets to heavy rainfall, including a significant sewer flooding programme throughout the period.
- **Carbon impacts:** the carbon impacts derive from increased energy use, mainly for the environmental programme.

Base operating costs

- Base operating cost efficiency savings have been set at 1% per annum, offset by rising costs especially energy prices, giving a net decrease in base opex of 0.6% per annum
- Energy costs are assumed to rise in real terms, in line with the projections set out by the Department of Energy and Climate Change, which suggested that non-domestic energy bills would rise by around 30% from current levels by 2020.

The table below shows the DECC estimates of the impact of energy policies on prices by 2020.

Estimated impact of package on average non-domestic energy bill at varying levels of energy consumption

(£'000s)	Current			2015			2020		
	Small consumer	Medium consumer	Large consumer	Small consumer	Medium consumer	Large consumer	Small consumer	Medium consumer	Large consumer
	60	1,281	7,502	64	1,396	8,124	68	1,499	8,672
	62	1,383	7,909	67	1,506	8,621	83	1,813	10,560
	2	101	406	3	110	497	15	314	1,888
	4%	8%	5%	5%	8%	6%	22%	21%	22%

Source: Table 13, Analytical Annex, The UK Low Carbon Transition Plan, DECC, 2009

Financial assumptions

- The cost of finance is assumed to rise above PR09 levels as a result of the change in investors' perception of risk, a continued increase in borrowing to finance the capital programme, and a diminishing benefit over time from borrowing at low rates before the financial crisis, as this borrowing falls due for renewal. Overall, the assumed pre-tax rate of return is 6.1% compared with 5.6% at PR09.
- There is assumed to be no net outperformance in financing or expenditure – returns are in line with the cost of capital.
- A Capital Asset Pricing Model approach is used, with the cost of capital assumed not to vary with the level of gearing, other than through the tax advantage of debt. Therefore the cost of equity changes with the level of gearing to give a constant overall cost of capital.
- Dividend payments are assumed to be flat in real terms, other than changes due to changes in gearing, and are in line with the cost of equity.

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The capital programme and financial forecasts are summarised below.

Capital expenditure

£m, 07/08 prices	2010/11 to 2014/15	2015/16 to 2019/20	2020/21 to 2024/25	2025/26 to 2029/30
Maintenance	12,863	13,506	14,181	14,891
Quality programme	5,418	5,482	4,982	4,982
Supply/demand	2,728	3,200	3,600	3,400
Enhanced service	1,120	900	900	900
Private sewers	1,152	882	442	428
Total	23,281	23,970	24,105	24,600

Operating costs

£m, 07/08 prices annual average	2010/11 to 2014/15	2015/16 to 2019/20	2020/21 to 2024/25	2025/26 to 2029/30
Base	3,618	3,509	3,404	3,302
Quality programme	71	202	357	518
Supply/demand	41	86	121	156
Enhanced service	3	5	7	9
Private sewers	50	49	48	47
Total	3,733	3,804	3,889	3,984

Financial performance

£m, 07/08 prices	2014/15	2019/20	2024/25	2029/30
Turnover	9,677	10,833	11,514	12,158
Opex	3,683	3,802	3,889	3,985
Current Cost Depreciation	2,275	2,515	2,752	2,984
Infrastructure Renewals Charge	820	896	896	894
CCOP	2,928	3,620	3,978	4,296
RCV (average)	52,424	59,341	65,208	70,421
Net borrowing	41,471	48,470	54,667	60,197
Pre-tax return	5.6%	6.10%	6.10%	6.10%
Average bills (£) (07/08 prices)	335	375	399	421
Average bills (£) (09/10 prices)	346	387	412	435

Alternative scenario

- The environmental programme in the 15 years to 2030 is slightly less than half that in the current course scenario, as a result of modifying objectives where costs are disproportionate to benefits and identifying more cost-effective means to achieve objectives than further treatment improvements at sewage treatment works. This reduction has been made by reviewing:
 - for how much of the quality programme benefits exceed the costs, derived from reviewing assessments by Severn Trent, the Environment Agency, and other companies where available.
 - The assessment in Defra's preliminary cost-effectiveness analysis of the relative cost-effectiveness of water industry measures compared with other sectors.
- From 2020 measures to stimulate innovation mean that opex to maintain current services increase by 1% per annum less than RPI – this is on the basis that around half of the potential gains from competition identified in the Cave Review can be achieved through a more effective regulatory framework.
- The need for resource development in the South-East is reduced by water transfers from the Midlands and the North.
- The lower capital programme means that financeability is less of an issue, so the pre-tax rate of return is 0.1% lower.

The capital programme and financial forecasts are summarised below.

Capital expenditure

£m, 07/08 prices	2010/11 to 2014/15	2015/16 to 2019/20	2020/21 to 2024/25	2025/26 to 2029/30
Maintenance	12,863	13,506	13,830	14,217
Quality programme	5,418	2,982	2,882	2,082
Supply/demand	2,728	2,800	3,000	2,900
Enhanced service	1,120	900	900	900
Private sewers	1152	882	442	428
Total	23,281	21,070	21,054	20,526

Operating costs

£m, 07/08 prices annual average	2010/11 to 2014/15	2015/16 to 2019/20	2020/21 to 2024/25	2025/26 to 2029/30
Base	3,618	3,509	3,319	3,137
Quality programme	71	96	124	139
Supply/demand	41	79	107	135
Enhanced service	3	5	7	9
Private sewers	50	49	48	47
Total	3,733	3,689	3,557	3,420

Financial performance

£m, 07/08 prices	2014/15	2019/20	2024/25	2029/30
Turnover	9,677	10,436	10,643	10,783
Opex	3,683	3,689	3,557	3,420
Current Cost Depreciation	2,275	2,442	2,553	2,669
Infrastructure Renewals Charge	820	896	896	896
CCOP	2,928	3,408	3,637	3,799
RCV (average)	52,424	56,804	60,612	63,314
Net borrowing	41,471	44,098	47,055	49,153
Pre-tax return	5.6%	6.00%	6.00%	6.00%
Average bills (£) (07/08 prices)	335	361	369	374
Average bills (£) (09/10 prices)	346	373	381	386

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