Water: Supply, Prices, Scarcity and Regulation

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by

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About the author

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Executive Summary

- The drive to attain ever-increasing water and environmental quality at ever-increasing cost must come to an end.
- Continual increases in bills are causing social problems for consumers, especially in the south-west of England.
- The regulator should set an indicative price cap so that water prices increase by no more than the rate of inflation (and preferably by less). Within that stable price cap water companies would be able to plan long-term investment on a proper economic basis so that there would be less regulatory control of investment and less destabilising short-term decision-making around regulatory reviews.
- Regulators should explore the possibility of negotiated settlements between water companies and customers to determine any price increases.
- There should be greater trading of water, including of abstraction rights, encouraged by the regulatory framework.
- Though a water grid to transfer water from areas of surplus to areas of shortage might be appropriate, it should arise by evolution encouraged by an appropriate regulatory framework. Such a grid should not be centrally planned.
- Mechanisms such as water trading and abstraction-right trading, together with incentives to take a long-term view when taking investment decisions, can help to alleviate water shortages and encourage companies to ensure that water finds its way to parts of the country where it is most scarce.
- More retail water competition in England should be encouraged.
- Tariffs designed to regulate demand through the price mechanism during times of likely shortage should be extended. For example, special summer tariffs or special tariffs for hosepipe use would be preferable to blanket bans on certain types of water use.

Introduction

"Water, water everywhere and not a drop to drink": not quite – we have not seen standpipes in the streets since 1976, although privatisation saved Yorkshire from this in 1995.[1] But there have been drought orders and hosepipe bans, mainly in eastern and south-east England – often followed by heavy rain. They may have been rescinded as a result of the worst summer for 100 years, but they show that the efficiency of water supply is a problem that should not be ignored.

This is not as it should be. Customers should be able to water their gardens and improve their environment at tariffs that are both generally affordable and cover the cost of extending supply. This requires a combination of enshrining of property rights, removal of regulatory barriers, more active regulatory leadership, and reform of the incentives facing companies and customers.

Many of the barriers and counter-productive incentives stem from a mistaken view that water is in a non-renewable resource: in fact, water is naturally recycled and the important issues are more about storing it and allocating it between competing uses, e.g. between human beings and the environment, than conserving it. We have inherited the Roman ability to store and transport water and have added the ability to treat it more effectively.

[1] It is difficult to believe that the Treasury would have agreed to expenditure on the special measures that Yorkshire Water took in 1995, including tankering water up the Dales.

Investment: quantity versus quality?

Privatisation saw a large and sustained increase in investment, driven by the concerns of environmental lobby groups, acting directly or through the European Commission or other arms of the European Union. Little investment has gone to relieve any supply shortages.

In the early 1990s Chris Patten exploited the government's ability to impose environmental obligations without, as was the case under public ownership, requiring resources from the Treasury, leaving the hapless regulator to ensure that there was the finance (through higher price limits for water companies) to carry out these obligations. Once government discovered an "off-its-balance-sheet" way of financing environmental improvements, it soon found new obligations. Following the 2004 price review people began to talk as though costs and prices would rise inexorably above inflation. The climate change debate escalated these pressures into a mantra of "decarbonisation".[2]

Initially, it may have been correct to give the regulatory system a bias towards capital expenditure. In 1989 we were regarded as the "dirty man of Europe" and faced an alleged backlog of environmental spending. Environmental spending is now distorting investment.[3] We should now be looking at the most effective lifetime cost solutions (i.e. the highest net present value solutions) to enhancement of water and environmental quality, and to the enhancement of supplies. We should switch the emphasis from the volume of investment to its quality, to better returns from assets, to better management of networks, to the trading of water and abstraction rights and to the regulatory monitoring of outcomes rather than of projects.

Meanwhile, increases in bills have created social problems for customers, particularly in the south-west.[4] It is necessary to reactivate the "Cost of Quality" debate, initiated by Ofwat in 1992, and to integrate the results of this debate more closely into the Price Review Process. Enhancement projects should not be accepted until they have been publicly and fully costed and subjected to analysis and debate concerning their costs and benefits.[5] Where government wishes a major new outcome in terms of water quality or the environment, its cost and benefits should be openly and individually tested in the price review process, taking full account of both costs and benefits.[6]

When considering enhancements to supply, companies and regulators should consider the extent of metering and the associated tariff design; progress on reducing leakage; the scope for trading;

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[2] Yet rapid global warming is to be found in the computer models and not on the ground. See Andrew Turnbull: The Really Inconvenient Truth or "It Ain't Necessarily So, Global Warming Policy Foundation, Briefing Paper No 1 May 2011.

[3] It has also led to undue focus of the cost of capital, a slippery, albeit intellectually interesting, concept, which, owing to quantitative easing, will be very difficult to evaluate at the next price review.

[4] "Drought what drought? It's still raining money in water company boardrooms" Martin Vander Weyer Spectator 15th May 2012.

[5] This does not necessarily mean conventional economic cost:benefit analysis, but, unless questioning of priorities is a systematic part of the analysis, resources will be wasted and customers subjected to regulatory stealth levies/taxes.

[6] This would fulfil the recommendation in the Walker Report (Anna Walker Independent Review of Charging for Household Water & Sewerage Services December 2009) that customers should not be expected to pay for quality improvements unless the consequences for their bills were fully analysed and set out transparently. A better incentive would be created if government were obliged to pay for these collective environmental enhancements out of taxation. It is helpful that – at the instigation of the regional arm of the Customer Council for Water - the proposal to build a costly sewage tunnel under London is, albeit tardily, being more fully investigated with the possibility of government assistance in raising finance.

and the nature of the price control: namely whether prices or revenue are controlled, either providing incentives for additional output or a curb on additional supplies.

Although the effect of extending metering to household customers has not yet been fully studied, it seems that the mere existence of a meter will reduce household consumption by some ten per cent. Some companies, such as Anglian and Cambridge, moved from the beginning to promote meters; some, such as Thames, moved slowly and reluctantly, perhaps to avoid revenue uncertainty.

Companies appear to like levying much of their revenue through standing charges, with low volumetric charges. This can provide perverse incentives for both customers and companies. At the regulatory level, there has been a shift away from controlling prices to controlling revenue as part of the drive to reduce the use of water - damaging incentives to increase supply. Much has been written on leakage and it easily generates anger among customers. But the problem of leakage should be subject to economic analysis.[7] Water networks are not uniquely subject to leakage[8], but seepage is endemic in their innumerable joints. Under regulatory and political pressure, water companies have significantly reduced leakage in the years since 1995.[9]

Martin Cave investigated the trading of water in 2009.[10] He concluded that there was scope for trading, both of water between companies and of abstraction rights. Companies have built their own local water grids, but connections between grids are few and far between partly, perhaps, because of Environment Agency reluctance to see water shifted between catchments. Severn-Trent Water, geographically at the heart of any trading arrangements, have recently proposed that trading should always be considered as a way of enhancing supplies and that regulators should be more active in stimulating it.[11]

All these considerations should fit into a different approach to setting price levels by the regulator. The level of the price cap should be considered as an integral part of the process of the periodic regulatory review and not as a number to emerge as a result of complex calculations made after taking account of environmental policy and to provide a sufficient incentive to the City. In the initial stages of a price review, the economic regulator could indicate a “par” position, a figure which would stand unless strong arguments (with the burden of proof on those who wanted to depart significantly from the par) were produced, after full consultation with customers. The incentive to present a special case for increasing one category of expenditure could be removed by giving a much longer term indication of price levels.

[7] Measuring the economic level of leakage involves balancing the cost of reducing leaks with the reduction in the costs of augmenting supply. There are arguments for extending this to social costs, such as traffic congestion, and environmental damage resulting from over-abstraction.
[8] There is systematic leakage from both gas and electricity networks, but it is little commented on.
[9] Until privatisation, leakage was not measured and is still subject to a considerable margin of error. It has been reduced recently but remains excessive in Northern Ireland, as seen in the cold winter of 2010, where taps were left running to avoid freezing pipes.
[10] Martin Cave, Independent Review of Competition & Innovation in Water Markets, Final Report, April 2nd 2009.
[11] Tony.Ballance and Bill Easton, Changing course through water trading, June 2011.

How should we determine the "Price Cap"?

It is now widely recognised that we face a constrained overall economic situation, scarcely to be influenced by government policy. We thought that we could be assured of stability and growth, and share its fruits. But a significant part of the capacity was not really there; underlying productivity growth seems low, and the eurozone crisis persists.[12]

As the household sector faces falling living standards; utility bills are sensitive. Back in 1993, I warned that water customers would not be happy if their bills rose above the rate of inflation or above the rate of increase in household income. In those days that implied that water prices should rise by no more than 0 to 2 per cent above inflation (k factor). Now the same logic, given falls in living standards, points to a future K factor of 0 to minus 1 or 2 per cent, with a continued commitment to price stability or price reductions.

When five-year price limits are set, the regulator should indicate the "par" position for the subsequent period. This would also link expected revenue to longer-term investment (around 25 years) and resource planning. Such a policy would help deal with the variations in investment that take place around a price review as a consequence of the uncertainties surrounding the outcome of that review. The incentives facing a company would be to devise a business plan that took full account of operating costs and capital expenditure trade-offs. This approach could supersede the complex capital investment incentives that are currently in place[13] because water companies would have long-term incentives to determine the right level of investment just like other businesses.

This approach would also reduce the emphasis on the "Regulatory Capital Value" (RCV) approach to price setting and perhaps supersede it. The incentive for the regulator would be to consider the broad implications of the plan for investment and to abstain from delving into detailed numbers, complex incentives and micro-management.

This would change the incentives on quality and environmental regulators. Currently, they have an incentive to press for ideal quality and environmental outcomes, provoking potential conflict with the economic regulator. Declaration of objectives for prices would make them prioritise outcomes, particularly with respect to timing. This would be compatible with a monitoring regime where the responsibility for monitoring water and environmental quality outcomes lay solely with the quality regulators, the Drinking Water Inspector (DWI) and the Environment Agency (EA).

We should also explore the implications of different mechanisms for determining prices. For example, there is currently much talk of the importance of customers, including proposals from Stephen Littlechild[14] and others to allow for "negotiated settlements" and/or "constructive engagement"

[12] Like Mr. Micawber we lived beyond our means; and all that turned up was a banking crisis.
[13] Working through a complex retrospective mechanism, neither easy to explain nor comprehend.
[14] Stephen Littlechild: A new approach to water regulation?, Utility Week, 23rd Oct. 2008.

between companies and their customers, with the regulator acting as a kind of referee. But these ideas will not be fully translated into action unless incentives are changed; and the regulator's function will remain crucial.

How does improvement of supply fit in to this scenario?[15]

During the early part of this year, there was enormous concern about water supply during the summer. As it happens, the summer turned out to be one of the wettest on record. But with a growing population, especially in the south east, and, in due course, increasing affluence, supply problems will not disappear. What should be done?

First, any expenditure on improving supply should fit within the price cap. This would include the financing cost of any additional capital expenditure and any additional operating cost, allowing for the cost of buying out existing property rights. It would involve trading off such expenditure within a total net present value "allowance" for quality and quantity enhancement.[16]

Secondly, the Environment Agency needs to evaluate the various options relating to quality and the provision of supply, running from dealing with water stress to the speed at which we can afford to implement EU Directives.[17] Thirdly, incentives need to be carefully structured so that all parties respond in a systematic way. Such incentives need not be exclusively financial, but the prices paid for abstraction, bulk supply, retail water and final consumption are crucial.

There are already promising developments to build on. Metering is now spreading, with a fair wind behind it.[18] Tariff design, with separate standing and volumetric elements differing by time of year and so on, is at last getting proper attention. Following the Shotton case at the Competition Appeals Tribunal (CAT), there is now a better understanding of how the "costs-principle" of the 2003 Act could and should be interpreted in setting access charges. Catchment Abstraction Management Strategies (CAMS) are also being developed and Ofwat has devised a performance index that could be used to discourage harmful abstractions.

Other elements in the policy framework are showing unhelpful rigidity. The trading of abstraction licences is possible and this could be a useful way of ensuring that abstractions harmful to the environment (e.g. those in water stressed areas) are reduced and replaced by more environmentally friendly abstractions. But Environment Agency policy acts as a disincentive, by only allowing trading if it is part of a package that reduces abstractions overall. The Environment Agency is, in turn, restricted in its charges for abstractions – they can only cover administrative costs - although more could be done to reform the structure of charges within the existing constraints. And there seems great reluctance to compensate companies for reducing abstraction rights and so giving them financial resources to develop new supplies of water or to buy water from other water companies.

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[15] Several worthwhile studies, from water companies, consultants and the World Wildlife Fund (WWF) have been produced recently. These include papers by Tom Le Quesne at al, The Itchen Initiative, published by WWF in 2011; Simon Less, Untapped Potential: better protecting rivers at lower cost, published by Policy Exchange in 2011; and Peter Simpson and Dan Elliott, A Right to Water, published by Anglian Water and Frontier Economics in 2010.

[16] As drinking water quality has now achieved satisfactory quality, this should give some scope for action, strategically timed, to relieve water stress in certain parts of the country.

[17] The Agency should explain how it has made these decisions in a consistent and transparent way, after deciding what techniques are to be used – after consultation with interested parties. Economists naturally turn to a cost:benefit approaches; but this may not be the best approach in the circumstances

[18] Despite the hindrance of Michael Meacher's shift in 1998, in effect, to optional metering only.

Water companies should also be more open to new supplies, such as those that can arise when old boreholes are re-opened, new ones developed and rising water tables tapped. Despite a helpful ruling from the Competition Appeals Tribunal (CAT), Thames Water declined to purchase the water available from Albion Water, preferring to construct a desalination plant.[19] In another bulk supply case, the supply of water to a non-household user, Shotton steel in Wales, Ofwat made very heavy weather of the issue, so protecting the incumbent, Welsh Water against an entrant (again Albion Water).

Transfers of water between companies could transform the situation in the south-east.[20] Some transfers of water are long-standing. For example Birmingham and Liverpool get water from Wales. Kielder Water in Northumberland was built to meet rising demand throughout the north-east England and even Yorkshire.[21] The regional companies have all developed their own regional grids. Linking these grids would be the first step in creating a national grid. Ofwat has powers to determine the bulk supply charges that could facilitate this, but seems to believe that it always has to be asked to intervene by the parties involved, in particular by the potential buyer. Water companies have, however, traditionally been anxious to control all their supplies and much prefer to develop their own supplies rather than to buy from each other. Some inter-connection between them seems overdue; but this should be developed incrementally and not as part of a national plan.

More analysis, by regulators, is needed on the supply side. There is a world of difference between the extent of water scarcity in Northumberland and Kent. Is the marginal damage to the environment, which is what matters operationally, greater in some “stressed” zones than others? What is the shape of a damage function with respect to quantities extracted? When we know the answers to these – and doubtless other questions – it could become possible to attach values to raw water and to see what water transfer would alleviate the alleged problems of scarcity.

The lesson of the 1995 drought is that, in dry conditions, additional supply usually means access to unused or abandoned bore holes. Companies were good at finding these extra sources in 1995, although the water may require further treatment.[22] The other options (such as trading or regulatory direction) that could achieve desirable transfers need to be examined in each situation.[23]

Other useful changes include the creation of more customer-orientated retail suppliers as a result of retail separation, though this has only happened in Scotland so far; and the greater granting of inset appointments whereby, in England, new appointees get rights of retail supply within a specified part of the area served by a regional company. The disentangling of the resource activities of water companies from their treatment and infrastructure activities will enable much better understanding of abstraction and transport costs and materially help in establishing better access charges and bulk supply tariffs.

Greater customer choice is much to be preferred to “demand management”. In other words, people should be allowed to do what they wish to do facing the full costs of their decisions rather than demand being managed through hose-pipe bans, revenue rather than price caps, requirements on

[19] This case involved a transfer pricing issue, where Thames preferred to build a desalination plant that would increase its regulatory capital value rather than buy from another supplier.
[20] See the valuable work done by Severn Trent Water: Tony Ballance and Bill Easton, Changing course through water trading, June 2011
[21] In the event, such transfers were not required as de-industrialisation reduced demand. But the capacity remains and the river system of the Tyne, Wear and Tees could provide much of the requisite transport. Meanwhile Alex Salmond talks of the potential for water exports from Scotland.
[22] The water table is rising in some urban areas, such as London and Birmingham, where de-industrialisation has reduced the demand for water.
[23] Both have been used in different parts of the world

companies and exhortations to customers to save water. Seasonal tariffs could be useful and are being tried. Those wanting water for their gardens could be offered special tariffs that would exempt them from a hose-pipe ban.

Such work would move us closer to understanding the value of water, remembering that liberalisation is a discovery process.[24] It involves experimentation, and close monitoring of such experiments. To get results will take time; but now is the time to start.

[24] See Jon Stern and Jonathan Mirrlees-Black, A Framework for Valuing Water in England & Wales from 2015 Onwards, CCRP, City University Working Paper October 2011.

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