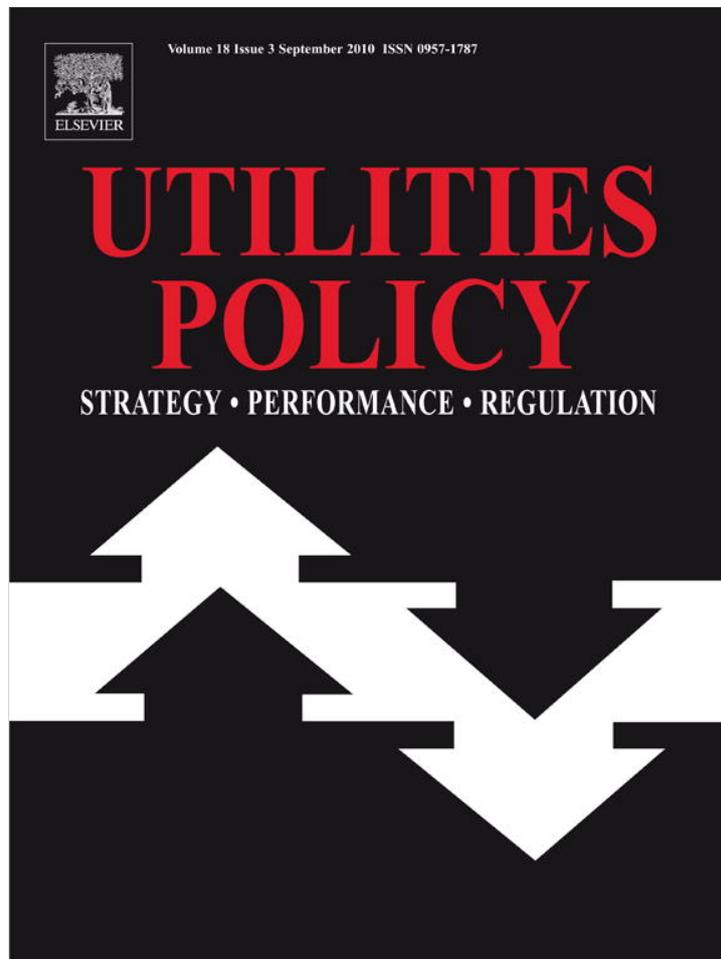


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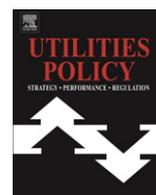
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A strategy for introducing competition in the water sector

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ABSTRACT

The authors took part in an independent review of competition and innovation in the water industry in England and Wales, undertaken for United Kingdom and Welsh government ministers. Privatised twenty years ago, subject to a price control regime which has permitted high levels of investment, and unchanged as a set of vertically integrated regional monopolies, the sector now faces fresh challenges associated in particular with the consequences of climate change. The review identified a programme for the introduction of competition and use of market-type instruments into the sector, beginning with opening up retailing to business customers and reforms of the arrangements for abstraction and discharge which are intended to achieve a more rational use of water resources and to stimulate trading across company boundaries. Then, subject to an appropriate governance structure, competition would be introduced into upstream treatment activities, either by the creation of a single buyer of wholesale water or through a common carriage regime. At the same time, the balance of risk of and return to companies' remaining regulated activities would be changed to encourage more innovative approaches, especially those which avoid heavy capital investment. Heightened stimuli to investment would also flow from relaxing restrictions on mergers and takeovers, and measures to enhance the innovative capabilities of companies. The paper explains the logic of the proposed measures and of their sequencing.

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1. Introduction

In 2008, the Governments of England and Wales commissioned an independent review of competition and innovation in the provision of water and sewerage services (Cave, 2008, 2009). The review's remit was to recommend changes to the legislation and regulation of the industry in England and Wales which would deliver benefits to consumers, particularly the more vulnerable, and the environment. It was completed in April 2009.

The water industry in England and Wales has delivered a great deal since privatisation in 1989, but bills have risen by 42% in real terms, even though the industry has become more efficient. There are ongoing challenges of continued infrastructure renewal, environmental improvement and higher customer expectations. And while the industry has become more efficient under regulation, there remain significant differences in the performance of individual companies.

Added to this, the challenges of climate change and population growth mean that the future cannot simply mirror the past. Projections for England and Wales indicate that net overall river flows could fall by up to 15% by 2050 with winters becoming wetter and summers drier, particularly in south-east England where 15% of water resource zones are already classified as seriously water stressed. The population of England is projected to increase by 15% to 62 million by 2030, with the largest increases in those areas with least water available.

Together, increased demand and lower supply place a premium on the industry finding new and more efficient ways of allocating, treating and using water and wastewater – not only to ensure sufficient supply, but also to protect the environment through the use of fewer inputs and reduced need for new assets. These changes will also have implications for the reliable collection and treatment of wastewater and the need for lower impact discharges back to the environment.

The review concluded that competition and innovation have an important role to play in addressing these issues. But in an industry made up of vertically integrated regional monopolies, there is no real competition between providers, few customers can choose their supplier and takeovers are discouraged. Incentives to innovate are also limited and often are too weak to outweigh the risks.

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The situation is also complicated by the failure of a recent attempt to introduce competition through the Water Services Act 2003. The reasons for, and the lessons learnt from, this failure are discussed below.

2. Approach

In assessing the scope for and benefits of reform, the review recognised that over the long-term, benefits to end users of water and sewerage services and environmental improvements are likely to be driven primarily by innovation. The current organisation of the industry as a series of heavily regulated vertically integrated regional monopolies is ill-suited to the encouragement of innovation. In some parts of the value chain, the gradual introduction of different forms of competition could deliver benefits in relation to innovation.

However, this would also have to be accompanied by regulatory reform, since not all of the value chain is contestable and the continuation of the present regulatory approach is not conducive to meeting the challenges of the 21 century and beyond. Being heavily reliant on cost-plus regulation at five-yearly price reviews, the present approach perpetuates the use of traditional capital- and energy-intensive technologies, which runs counter to the sustainability of the industry. It compromises attempts to mitigate and adapt to climate change, challenges the sustainable financing of the industry and puts at risk the affordability of services to customers.

The sequence and speed of market and regulatory reforms is important. Following the approach adopted in Scotland (WICS, 2009), the review proposed initially to introduce competition at the retail level for all businesses customers, numbering about 1.2 million. This reflects a view that opening up the retail market will create a constituency in favour of competition and choice and help to challenge the status quo and the power of vested interests. It is also an approach that poses least risk to the perceived stability of the sector, and hence is least likely to alienate investors.

Retail competition would thus be a precursor to and stimulus for developments in upstream activities. However, primary legislation is needed to get even retail competition started. This must change the regulated margin from a level set under the 2003 Act based on a very narrow definition of avoided retail costs,² calculated by the operator, to the identification by the regulator of the full economic costs of retailing.

This retail reform should be accompanied by changes in the regulation of abstraction of raw water and of discharges of wastewater. The abstraction and discharge proposals set out below, which involve the creation of a market for abstraction rights and differential pricing of abstraction and discharge in different geographical areas, can start the process of introducing greater rationality in the use of the raw material, which is necessary in an era of increasing water shortage.

The review also recognises that competition in water is an unfamiliar concept among operators, end users and investors, not only in England and Wales, but also internationally.³ This justifies a cautious approach, which takes care to avoid increasing the cost of capital to a sector which has a persistently high demand for investible funds. We describe our approach as based on a 'trust and verify' principle, which operates gradually. It starts with abstraction and retail, where the risk-benefit is most favourable. Gradually it advances further towards a widening and deepening of competition – widening it by extending choice to other customers,

eventually even domestic ones, and deepening it by application to upstream activities.

This progression is envisaged to take place only after careful, systematic and transparent examination of results, and subject to a governance regime which will require the passage of legislation as well as regulatory change. Whilst the regulator may be expected to have a key role in implementing this progression, robust governance arrangements are necessary both to ensure a transparent and inclusive process of developing the competitive framework and to provide an appropriate balance of direction by Government and regulatory discretion. In this way, the confidence of all stakeholders may be maintained and unintended consequences minimised.

Fig. 1 reflects the standard division of clean water activities into abstraction, treatment, delivery and retail, as shown across the top. (A similar division for sewerage could also be given.) The status quo – production by local monopolies which are regulated as to price and quality across the whole value chain – is represented in the bottom row. The review's proposals for each activity are shown above that row, in a gradation of three categories to be implemented progressively:

- first, increasing use of market-like instruments; an example is the imposition on companies of an obligation for the 'economic purchase' of treated water, either from its own facilities or from an adjacent producer;
- secondly, introduction of competition for the market, as would arise if the supply of treated water to meet additional demand were made via a competitive process, possibly by an independent procurement entity or 'single buyer';
- thirdly, competition in the market, as would occur at an early stage in the retail market according to the review's proposals for business customers; but also extending to competition in abstraction and treatment markets; and later possibly to direct contracting between suppliers of treated water and retailers and large customers, with delivery accomplished by common carriage supplied by the pipes networks.

The prevalence in the figure of changes marked by the letter 'L', as requiring legislative change shows how heavily the review's proposals rely on the passage of new laws. It is clear that such change will now follow the election of a new Parliament in 2010.

The next sections set out the proposals in more detail.

3. Retail

At the present time, only those few non-household customers likely to use at least 50 ML a year are able to choose their retailer and such retailers are unable to offer attractive terms. The vast majority of networked customers are supplied by their local incumbent with prices and quality standards determined by Ofwat. While this ensures delivery of minimum service standards at a determined price, customers are unable to choose the combination of service and price that they would like. Research for the Consumer Council for Water (the end users' representative body) shows that 84% of business customers were supportive of competition in principle, and 61% were very or quite likely to switch in the right circumstances (MVAConsultancy, 2007).

To address this, the review recommended that in time all non-household customers should be able to choose their supplier. The retail arms of water companies should also be legally separated where this is in customers' interests. Given the costs of introducing choice and the size of the average domestic customer's bill, the case

² This approach is known as the 'costs principle'.

³ Apart from the experience of retail competition in Scotland, the principal illustrations of competition in water are to be found in Australia; see Rowe (2008).

	Abstraction	Treatment	Pipes	Retail
Innovation measures	Heightened economic and environmental regulatory incentives (R); re-establish technological capability(L); changes to the merger regime(L)			Promoted by competition,
Use of competition in the market	Increased trading (but in possibly dominated market)(L)	Transition to common carriage with new access pricing rule(L)	None	Business users, with regulated retail margin(L)
Use of competition for the market	None	For new/ replacement capacity or via single buyer(L)	Insets(L); network expansion(L)	None
Use of market -type instruments	Economic pricing of abstraction and discharge rights(L)	Enhanced economic purchasing(R)	None	None
Use of dominant firm regulation	For legacy rights	Continues to operate on large scale	Predominant form for foreseeable future	Household sector's retail prices regulated

Fig. 1. Summary of progressive changes proposed in the review through legislation (L) and regulatory change (R).

for extending competition to households was found to be weaker, though this may change in the future.

These changes should be accompanied by negotiated settlements between a strong consumer representative body, retailers, wholesalers and other stakeholders to determine quality and service standards for wholesale supply and retail supply to households.⁴ The review suggested that initially, these settlements should have a weight in price limits of perhaps $\pm 3\%$ of turnover. Together these measures will allow many non-household customers to choose the combination of service and price that they prefer. Retailers will also be able better to represent their customers' interests with wholesalers. Although household customers will not be able to choose their supplier, they will benefit from any spillover effects from non-household competition and will have a greater say over the services they receive.

4. Abstraction and discharge

At present, abstraction licences are issued on a first-come, first-served basis. Charges are limited to cost recovery and are relatively crude. Many historic licences are held in perpetuity, although more recently licences have been issued on a time limited basis. While such a framework supplies water at low administrative cost, it fails to ensure that water goes to those who value it most or that it is used efficiently. It also lacks a mechanism to deal with growing shortages as a result of population growth, environmental pressures and climate change.

The review therefore recommended that, where licence levels are sustainable, licences should be fully tradable. In those areas which are over licensed,⁵ the Environment Agency should adopt a risk based approach, allowing trading where actual abstractions are below the sustainable threshold. In over abstracted areas, the Agency should reduce abstraction levels through negotiated agreements, reverse auctions and the greater use of existing powers.

However, trading will only work properly in a workably competitive abstraction market. When, as now, abstraction rights are held predominantly by monopoly water companies or self-supplying industrial users, abstraction rights markets are likely to be distorted by, for example, hoarding by the incumbent. One countermeasure to this is to set an abstraction charge reflecting in each catchment area or other geographical unit the scarcity of water. This price would be reflected in end user tariffs.

Such an approach would support the efficient and sustainable abstraction of water across England and Wales by encouraging incumbents and others to exploit differences in availability of water and in the cost of alternative measures, such as leakage control, to meet demand at the lowest economic and environmental cost. This would involve not only the optimisation of water resources within company boundaries, but also across wider areas through the transfer of raw and treated water.

The current system of discharge consents suffers from the same problems. Discharge consents should be tradable. In addition, the Environment Agency should pilot trading between point sources and diffuse emissions. Consent conditions could also better reflect the impact of discharge on the environment, for example, through real-time control of discharge limits.

Together, these measures would encourage the more efficient and sustainable discharge of wastewater delivering benefits to both customers and the environment through reducing the cost of meeting consents, encouraging the discharge of water where it was of most value and reducing the need for inputs such as chemicals and energy in existing treatment works and decreasing pressure for new capacity.

5. Upstream

At the present time, the provision of water and wastewater treatment, sludge treatment and disposal and infrastructure is dominated by the local, vertically integrated, monopoly incumbent. The degree of innovation is therefore primarily determined by Ofwat's system of economic regulation. While such an approach ensures that customers receive a significant share of any efficiency savings and do not pay for failure, it deters

⁴ See Littlechild (2008).

⁵ This means that if all licences were fully utilised, there would be overabstraction.

companies from investing in risky, but potentially more valuable innovations.

In contestable activities, competition could stimulate innovation and reduce costs. As a first step, the economic regulator (Ofwat) should impose an economic purchasing obligation into the regulatory price control process conducted every five years, requiring incumbents to procure the best value combination of water, wastewater and infrastructure supplies as part of the regulatory process. Companies' decisions would be scrutinised by Ofwat, in the light of other opportunities which adjacent companies or others would be encouraged to put forward. More information will also be vital to better decision-making. Water companies should therefore be obliged to publish water and wastewater supply costs at a water resource zone level and transport costs across their regions based on a common methodology.

At a later stage, an independent procurement entity or single buyer, that contracted for delivery of water and wastewater services at best value and supplied competing retailers, could deliver greater benefits to customers and the environment. Competition could apply either to all supplies, or to incremental supplies. In practice, there might not be much difference between the two regimes, as an existing treatment plant in which costs had already been sunk would be recognised as having a bidding advantage over a plant which had not yet been built, save in cases where the latter offered very significant cost reductions.

At a still later stage, the competitive regime might shift to a common carriage one, in which competing suppliers of treated water contracted directly with large customers and retailers, purchasing transport services at costs from a pipes business. Unlike the single buyer regime, this would almost certainly disturb the present structure of tariffs, at least for those customers (possibly business customers only) for which retail competition applied.

In keeping with the step-by-step regime for decision-making recommended in the review, the choice among these options would be deferred. As noted above, it would depend in part upon the likely consequences for the cost of capital of introducing the risk of stranded assets.

Such an approach, reforming both the regulatory and market frameworks of the industry, would encourage greater innovation and the better use of existing resources and reduce the cost of new or replacement assets at low cost. This would benefit customers through lower prices and the environment through the development and adoption of alternative technologies and the more efficient use of existing assets.

6. Industry structure

Currently, the special merger regime means that any water company with an individual turnover of more than £10 million is unable to merge without a referral to the Competition Commission. While such a regime supports Ofwat's current approach to regulation, which relies upon an examination of data reflecting the performance similarly situated monopolies (comparative competition), it also reduces management incentives, limits the scope for the transfer of best practice between companies and increases financing costs. In the case of neighbouring companies, it also prevents the better optimisation of assets, including water resources. The use of other approaches for assessing company performance, the introduction of accounting separation and development of retail competition, would also reduce the need for the present number of comparator companies.

The review proposed that the threshold for the special merger regime should be raised to £70 million and applied to the smaller of

the merging companies, as with the wider merger regime. For mergers above this threshold, the Office of Fair Trading should be given power to undertake an initial assessment of potential mergers, which might make a subsequent referral to the Competition Commission unnecessary. To support such an approach, Ofwat should publish a methodology for assessing the loss of a comparator. This should be transparent, based on clear criteria and replicable.

7. Innovative capacity

The current framework of economic regulation does not encourage significant investment in research and development or the trialling or adoption of innovations. This is because, given the strong element of rate of return regulation in current procedures, the rewards for eschewing capital-intensive are small, while the risks are high. The balance can be redressed by a combination of competition and regulatory changes, particularly directed to correcting the current tilt in incentives towards capital-intensive solutions. Here as in other areas, the introduction of competition can usefully be co-ordinated with regulatory reform.

But there are also doubts about the innovative capacity of the industry, where spending on research and development has halved in the past ten years. To respond to this problem, the review proposed that the Government, industry, regulators, suppliers, the UK's research councils, the Technology Strategy Board and others should agree a shared research and development vision for the industry. This should be supported by an industry research and development body which would allocate funding of up to £20 million a year to support research, development and trialling of prototypes. Ofwat should also be given a clearer mandate to support innovation through a statutory duty.

8. Conclusions

The UK government consulted on the proposals in late 2009 (DEFRA, 2009), but with no immediate prospect of the necessary implementing legislation. Nonetheless, as authors of the review, we believe it represents a broad but coherent approach to a problem of growing importance - the need to exploit the scope for innovation in the sector in the interests of both end users and of the environment, and to use the instrument of competition both to enhance efficiency and to offer customers a choice. The 'trust and verify' approach and proposed sequencing over time are intended to ensure that subsequent detailed design decisions are based on careful analysis of options and costs and benefits at each stage, performed transparently with the involvement of stakeholders and under clear and credible governance arrangements.

References

- Cave, Martin, 2008. Independent Review of Competition and Innovation in Water Markets: Interim Report available at: www.defra.gov.uk/environment/water/industry/cavereview.
- Cave, Martin, 2009. Independent Review of Competition and Innovation in Water Markets: Final Report available at: www.defra.gov.uk/environment/water/industry/cavereview.
- DEFRA, 2009. Consultation on the Cave Review of Competition and Innovation in Water Markets. Department for Environment, Food and Rural Affairs.
- Littlechild, Stephen, 2008. Constructive Engagement and Negotiated Settlements – A Prospect in the England and Wales Water Sector?, mimeo.
- MVAConsultancy, 2007. Setting Strategic Direction: Competition Research with Business Customers available at: www.ccwater.org.uk.
- Rowe, Lyndon, 2008. Competition in the water and wastewater industry. Network (Issue 29, September), 2–8.
- WICS, 2009. Competition in the Scottish Water Industry. Water Industry Commission for Scotland.