

Benefitting Business without Harming Households: the Impact on Consumers of Upstream Market Reforms in the Water Sector*

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Introduction

Upstream activities (abstraction, treatment, distribution) account for about 90 per cent of the water sector value chain, and are thus the major element in the liberalisation of the sector and the major source of potential efficiency gains. The remaining 10 per cent comprises retail activities.¹

This article reviews the various forms of upstream competition and considers the impact that they are likely to have on household and business customers. This discussion identifies both benefits and certain risks to customers. We also consider the risks that might arise under the UK Government's Water White Paper proposals² and how they might be mitigated.

Throughout the whole of this discussion, it is assumed that the retailing activity is competitive only in respect of business customers. In other words, competitive retailers can serve business customers, but household customers will remain the monopoly of the historic monopolist. This differential treatment at the retail level might disappear in due course, but while it lasts, liberalisation might have significantly different effects on households and business. This is the focus of the present article.

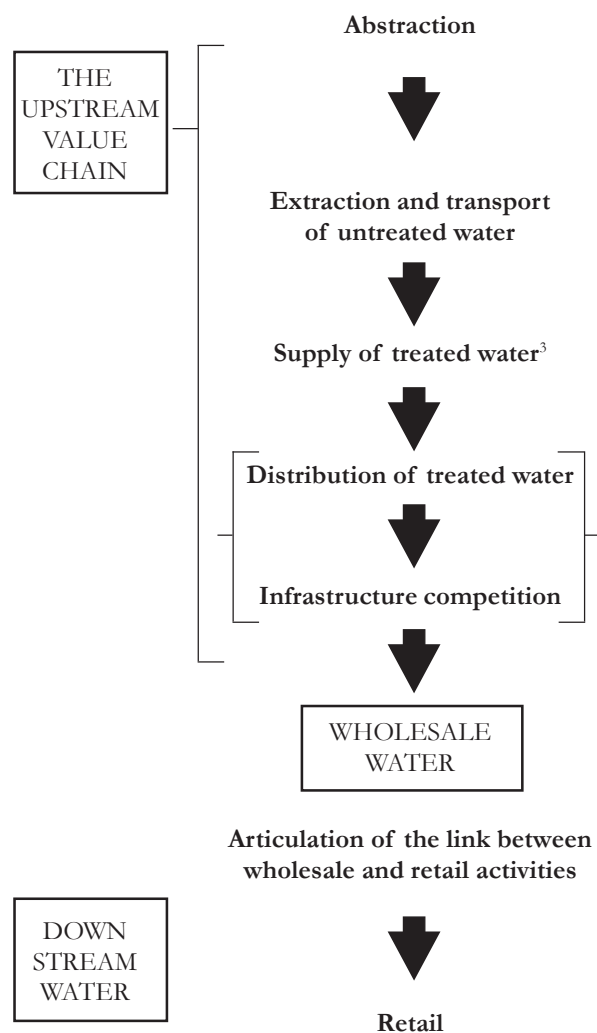
Competition can be inserted into the upstream in many ways, and must be supported by accompanying measures to ensure that competitors have access to distribution and other assets which they require. Figure 1 illustrates the various links in the water value chain, and the points, up and downstream, at which competition can, in principle, be introduced.

The water sector in England and Wales currently approximates to a vertically integrated monopoly. Rivalry in the sale or purchase of rights or services can be introduced in the following ways:

- abstraction rights can be held by competing firms and traded among them; this process can allow competitors to contest with the incumbent water company the supply of wholesale or retail water;

- untreated water can be sold into a market either from outside it, or by a new entrant;
- competition can occur in a locality in the supply and demand for treated water; this already occurs to some degree through bulk supply tariffs; and
- the construction of mostly local infrastructure can be contested, via new appointments and variations ('NAV', formerly known as inset appointments).

Figure 1: The water value chain



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¹ Retail activities chiefly involve marketing (where it is done) and billing, including such things as meter reading. The precise dividing line between wholesale and retail is a debatable point, which we do not go into here.

² Water for Life, CM 8230, available at <http://www.official-documents.gov.uk/document/cm82/8230/8230.pdf>.

³ In this account, treated water is 'supplied' at the exit of the treatment plant. It is then distributed via a network of pipes to customers' premises.

Wholesale water is finally ‘converted’ into a retail product and sold to a customer. The retailing activity can be either monopolistic or competitive, and the set of retailers can either acquire wholesale water from a single source (representing a ‘single buyer’ of raw or treated water) or they may contract separately with a number of upstream suppliers, in bilateral trades. In this case retailers would also need to pay distribution charges to the incumbent to use its pipes.

Under existing competition arrangements in England and Wales (under the Water Supply Licensing regime (‘WSL’)) competition in treated water is in principle possible, but arrangements for access pricing, notably application of the so-called ‘costs principle’,⁴ have made it commercially unfeasible.

If competition is to work, the margins left for a competitor buying wholesale water to retail it, or paying to deliver water through the incumbent’s pipes must be adequate to cover its costs and deliver the savings that customers want. At present, the margins set under the costs principle are very low or even negative; if competition is to succeed, they must rise. But if they are too high, they might encourage inefficient entrants into retailing, which is not desirable.

The benefits from competition have generally been assessed at an aggregate level, for example, in the regulatory impact assessments (‘RIAs’) accompanying the UK Government’s Water White Paper. But the benefits of competition could be shared amongst a number of stakeholders in various ways.

An important split occurs between producers and consumers. Producers will be due a share to incentivise and reward their efficiency effort, but there is a risk of disproportionate gains to investors, reflecting residual monopoly power. Different groups of end users will experience different costs and benefits, and for some customers, competition may have adverse consequences in the short term.

Competition for water resources may also reveal for the first time the implicit scarcity value of those resources. A price will be created for water resources and windfall gains might accrue to existing licence holders. This extra cost may then be passed on to customers, whose bills will rise.

Forms of competition

We now examine the effects of competition in respect of (i) abstraction rights, (ii) treated and untreated water, and (iii) infrastructure.

Abstraction

In relation to *abstraction rights*, the status quo is one in which public water suppliers (that is, vertically integrated monopoly incumbents) hold slightly less than half of the licensed

abstraction volume. At present the annual charge made for abstraction rights, recoverable under the price control regime, is low and based on administrative costs of the Environment Agency (‘the EA’).

A competitive market for abstraction rights would generate prices which reflect the value of rights in particular locations, which in some cases will be high due to scarcity. If a market operated in which one firm was dominant, abstraction prices would also reflect monopoly rents so prices would be even higher.⁵ In this case it might be preferable to set an administered abstraction charge which would provide a price signal for where water should be abstracted and avoid monopoly rents.⁶

The impact on end user prices of the emergence of the scarcity value of water in either an abstraction charge or in traded abstraction prices would depend on the regulatory approach. In a trading scenario, an integrated water company would have an incentive to appropriate the revealed scarcity rents by passing them through into higher downstream end user charges – if it were allowed to by the Water Services Regulation Authority (Ofwat) within the price control system. This could increase returns to water companies at the expense of customers.

In the alternative scenario, where a charging system (with variations to reflect relative scarcity) is imposed on all abstractions, the effect would be to raise average end user bills, compared with the present system of low administrative charges for abstraction – the extra revenue going to the government. This revenue could be recycled (passed back to customers) to keep down average bills, or used in the form of social tariffs to protect particular groups (for example, the vulnerable).

In both cases, the impact on different groups of end users would depend on the form of the link between retail and wholesale.

Thus if there were a single wholesaler of water (see below) that company could spread abstraction costs evenly over all customers. Alternatively, higher charges could be focused on consumers who were supplied with more scarce and expensive water. The justification would be to encourage metered customers to use more expensive water efficiently. A tariff policy of this sort would lead to different price and bill impacts on different customer groups. Customers using water in summer or in areas of scarcity would face higher charges. This might affect discretionary use (for example, garden watering or car washing) but would also affect in particular large users of water (for example, large families). The tariffs could, however, be structured to include a social element.

Treated and untreated water

Sales of *untreated water* across regions date back to the 19th century. They are accomplished through bulk supply agreements. Similar agreements can be made in relation to

4 The ‘costs principle’ is a term used to describe a regulatory rule, based on an interpretation of a provision in the Water Services Act 2003, for determining the margin between an incumbent’s retail and wholesale prices of water. According to the principle, the margin is equal to a parsimonious version of the costs saved when an incumbent, instead of supplying a retail customer directly, supplies a wholesale service to a retail competitor.

5 This distinction can be illustrated as follows: the number of shop fronts on New Bond Street is limited, and this scarcity tends to raise the price at which they can be rented. But this is distinct from a situation in which a monopolist owns the whole street, and pushes up prices by restricting the supply. The former is a scarcity rent, the latter a monopoly rent.

6 Such charges can be varied over the year or in response to the level of river flows.

treated water, which can be bought either from a neighbouring licensee (the incumbent water company in an adjoining area) or from a company within the operator's own service area. The regulatory regime can require an incumbent water company to meet its obligation to supply its customers' needs by purchasing water from the cheapest sources, thereby forcing it to choose between buying water from competitors or self-supplying its own input. Bulk supplies of these kind account for about 5 per cent of the total public water supply. That figure is capable of rising considerably as trade develops further.

If trades are to occur, buyers and sellers must gain financially. But <if?> the supply or the demand side of the market <is to?> be highly concentrated (as will be the case in respect of trades confined to two neighbouring incumbents), there is a case for these trades to be regulated as to price.

Where direct bilateral contracts between upstream producers and retailers or large customers are possible, retailers competing for business customers could, in principle, develop or gain access to new, cheaper sources. This would benefit business customers, whilst non-competitive domestic customers could be adversely affected by being left with a higher average cost of supply. Incumbents would have an incentive to raise their prices. Equitable treatment for different groups of domestic customers in the same locality may then be an issue. Customers in revealed low cost to supply areas may seek equivalent pricing to that obtained by business customers, rather than continuing to pay a regionally averaged charge. The current system in England and Wales of postalised <meaning?> regional charges and the implicit cross-subsidies could then start to be unpicked.

Trading would be expected to increase supply flexibility and network resilience, as it would increase supply options and therefore the ability to manage risk. But security of supply may be diminished in some competitive scenarios which rely heavily on trading and might in the long run reduce excess capacity. In the case of cross-border trading between incumbents, there may be an incentive for it to sell water resources to a neighbour and put at risk security of supply for its own customers. Whilst this may seem unlikely, to be clear, customer valuations of supply security should be reflected in the penalties for assuming such risks. Also, if, to replace traded water, a selling company were to elicit greater demand reductions from its own customers, those customers might be seen to be bearing cost whilst the company stood to profit. Some form of compensation for demand reduction may mitigate this.

There could also be an effect of trading on water quality. Water companies are used to mixing water within their existing networks and the Drinking Water Inspectorate (the DWI) oversees an effective and rigorous system of quality regulation. Its role might be more challenging with competition, but this challenge is not likely to be insurmountable. Nonetheless, increased risk could lead to increased cost of risk management, which could be passed on to customers, raising the question as to whether customers in the non-competitive segment should contribute to such costs. At the same time it would be important to ensure that the incumbent did not use spurious quality concerns as a means of restricting entry. The Competition Act would apply to such actions, but *ex ante* codes of access could also be designed to avoid this possibility.

Infrastructure competition

Finally, competition to build infrastructure can occur as the result of rivalry between an incumbent and entrants, especially through new appointments and variations ('NAVs').⁷

Infrastructure competition could lead to benefits in terms of reduced bills to NAV customers, at the cost of higher bills for the remaining customers of the incumbent, which would be faced with a higher average cost of supply. This might arise if the incumbent's customers were landed with higher cost resources and older pipes and other facilities which face higher maintenance costs. This outcome could be addressed through regulated access pricing and bulk supply pricing arrangements.

There is also a risk that the NAV appointee may not pass on the benefit of competition to customers (home owners or tenants) if those customers have little countervailing market power (if they are 'captive' customers of a developer). The beneficiary would be the NAV appointee (in this case the developer). This problem may require some price regulation of the NAV appointee; alternatively, Ofwat could use its competition law powers to act against an appointee abusing a dominant position by overcharging its customers.

Summary

There are thus a number of alternative options for upstream entrants into the water sector. They can also choose to combine upstream and retail activities. Generally, rivalry between firms is likely to increase efficiency, by creating pressure to lower costs, through a better relation between price and cost (so that prices can incentivise more conserving behaviour where water is scarce or expensive to treat or carry), and through increased innovation (by ensuring providers face an ongoing threat from rivals).

These efficiency gains, which will apply to the whole upstream activity, should be passed on to consumers. In addition, customers should benefit from increased supply security and improved resilience of networks that may come with the increased range of supply options introduced by new upstream entrants and improved upstream trading possibilities within and between regions. Where there are risks to end users, these can be addressed through attention to appropriate rules and design of markets.

The Water White Paper

The UK Government's Water White Paper, published on 8 December 2011, covers a wide range of issues affecting water policy in England.⁸ Here we focus on those concerned with competition, especially upstream competition.

In relation to abstraction, the Water White Paper proposes a wide-ranging model to deal with problems of

7 Formerly known as inset appointments, these are licences to build to supply customers within an area currently supplied by an incumbent, allowing the new appointee effectively to take over in the specified area.

8 Many aspects of water policy are now devolved in the United Kingdom.

over-abstraction and the need to use water resources more efficiently. This involves, among other things:⁹

- better reflecting the value of water to customers, and its relative scarcity; and
- driving efficiency in water use, using market forces and smart regulation to lower costs and reduce burdens.

As a result of the changes, all abstractors should be able to make use of a more dynamic market in water and water rights.

The Water White Paper also supports the increased interconnection of networks and trading of bulk supplies, although it anticipates that at current levels of scarcity, bulk transfers over short distances will predominate. The effect will thus be to increase resilience rather than shift large quantities across the country. But it is noted that this would change as scarcity increases.¹⁰

A number of further upstream changes are foreshadowed. As the Water White Paper puts it,

Taking an evolutionary approach to reform, the Government will introduce deregulatory legislative changes to make the existing competition regime work more effectively. This will increase competition in the market for water and sewerage customers and expand opportunities for innovative new entrants to enter the market.¹¹

It notes that this must be done in a way which does not risk unsettling investor confidence.

The changes follow the opening up in England in December 2011 of the retail water market to competition for customers with an annual use of at least 5 million litres per year, down from the previous level of 50 million litres per year. The Water White Paper also foreshadows legislation which will allow any business customer to choose its own preferred retailer of both water and sewerage services, as well as allowing qualified customers to self-supply by buying water directly from wholesale suppliers.¹²

The regime for establishing the price of wholesale water will change from the present one, based on the costs principle,¹³ which, as noted above, offers retail competitors a very small margin between the price at which they buy wholesale water from the incumbent and the price at which that incumbent sells it at retail.¹⁴

The chief upstream changes are as follows.¹⁵

- A new water Bill will offer encouragement to new entrants who want to sell raw and treated water into an incumbent's network. The regulatory system will provide incumbents with an incentive to seek out cheap supplies.
- A new class of licence will allow an operator offering raw or treated water to a water company to do so without selling at retail.

- Access to an incumbent's mains and pipes will be augmented by a right of access to treatment and storage systems.
- Infrastructure competition will be encouraged by requiring Ofwat to make bulk water supplies and sewerage services more readily available to holders of NAV appointments.

The proposed changes are summarised in Table 1.

Table 1: Water White Paper proposals

Activity	Water White Paper changes
(1) Abstraction rights	Further study; some use of markets; no emphasis on pricing reform
(2) Supply of untreated water	As (3) below, but receiving less attention
(3) Supply of treated water	Trading encouraged; new licence type to permit entry of new suppliers
(4) Distribution of treated water	Abolition of 'costs principle', which stifles entry
(5) competition	Improvements in arrangements for new appointments and variations
(6) Wholesale to retail model	Either wholesale supply by incumbent or bilateral trade
(7) Retail	All business customers to have choice of retailer

Assessing the effects of upstream competition

This section presents the framework for analysing the Water White Paper proposals, drawing on the analysis in previous sections. It begins with a reiteration of the objectives of reform and then outlines the findings of the Water White Paper regulatory impact assessments (RIA). These relate to the impacts on overall efficiency. An outline of how these gains might be shared between different stakeholders is then presented. The next section assesses the Water White Paper proposals.

What has emerged from the above analysis is that 'upstream competition' can take a variety of forms. This means that priorities have to be assigned. It may make sense to focus at the start of liberalisation on particular forms of competition, such as trade between existing operators, combined with retail competition for business customers, and to neglect others, such as competition in abstraction rights. The Water White Paper proposes an evolutionary path, the pace of it depending on whether reforms require new legislation or can be implemented more quickly.

The general objectives of introducing upstream competition

The key starting point of any regulatory policy is its objectives. For the purposes of this section, it is assumed that the standard objectives of efficiency (in all its

⁹ Water for Life, CM 8230, paragraphs 2.11 to 2.18.

¹⁰ Ibid., paragraphs 2.19 to 2.24.

¹¹ Ibid., paragraph 5.32.

¹² Ibid., paragraphs 5.24 to 5.31 and 5.42.

¹³ Note 7 above.

¹⁴ Ibid., paragraph 5.41.

¹⁵ Ibid., paragraphs 5.46 to 5.50.

dimensions: productive, allocative and dynamic – see below) are applied in relation to upstream competition in general.

The first objective of *productive competition* is straightforward. Production should avoid wasteful expenditure and inputs should be combined in ways which reflect their true costs.¹⁶ In the context of a regulated sector productive efficiency is supported by methods of price control which give operators an incentive to reduce costs. It is important to note that a price control regime which favours the use of capital inputs over current inputs (the ‘capex bias’ widely believed to exist in the England and Wales water sector) involves a significant departure from productive efficiency.

The costs to be minimised to achieve productive efficiency are all the costs of production, including those imposed on the environment in the course of abstraction of water. We assume here that such environmental costs are not explicitly valued, but that the environmental outcome is achieved by direct controls over the volume of water abstracted at a particular location.

The second aspect is *allocative efficiency*, which measures the consumer satisfaction attainable from given resources and given technologies. In certain circumstances, this is maximised by confronting consumers with a schedule of prices for goods and services which equate the marginal prices paid by customers to their marginal costs.¹⁷

In the water sector the absence of metering of consumption of a majority of households in England and Wales is a major impediment to the attainment of allocative efficiency since unmetered households face a zero marginal price for water and thus tend to over-consume.

Allocative efficiency can also be sacrificed to equity objectives. This would happen if it were decided in the case of certain customers with limited means deliberately to sell water below cost, in order to ensure that the service was affordable.

Finally, there is *dynamic efficiency*. This generates productivity growth over time, resulting from innovation. Monopoly does not provide an environment conducive to innovation for two reasons. A monopolist does not need to innovate, since its customers by assumption cannot go elsewhere. Second, the fact that a monopolist’s innovations often supplant its own existing technology makes innovation less profitable than in a competitive industry where innovators can attract new customers. In assessing the effects of competition, one of the most controversial aspects is the assumption made about the size of the effect of competition on the rate of productivity growth.

¹⁶ This has a strong consequence, to the effect that any regulatory measure designed to control retail prices which operates on input prices is always dominated by another measure which preserves productive efficiency. In terms of water competition, this implies that if we want to control directly the retail prices of a particular group of consumers, it is more efficient to subsidise the retail price of those consumers than to give the producer of that water access to abstraction rights on favourable terms. This is so because the latter measure increase costs of supply across the whole sector, by skewing water usage. The former preserves efficiency in production.

¹⁷ It is important to note that allocative efficiency is promoted provided that prices equal to marginal cost apply only to the last units which consumers buy. In metered premises where water is priced on a per unit basis, it is consistent with allocative efficiency for a price schedule with rising or declining block tariffs to contain above- or below-cost ranges, provided that the final units consumed are priced at marginal costs.

This breakdown is rather abstract, and a more detailed quantitative appraisal is needed to expose the key factors determining the desirability or otherwise of upstream competition, via regulatory impact assessments.

Regulatory impact assessment (RIA)¹⁸

The Water White Paper’s RIA addresses different scenarios, named here A and B:¹⁹

A: Upstream water and sewerage licences. This include unbundling of the current combined supply licence in the water supply licence and creates new upstream water and sewerage licences, access pricing, market and operational codes and publication of costs at water resource zone (WRZ) level introduced through legislation or changes to regulation, and also expands the range of assets to which these licences have access.

B: Upstream water and sewerage licences + network licences . This includes all the measures in A but also a revised regime for network infrastructure licences, which would replace the present new appointments and variations (NAV) regime.

In assessing both scenarios Defra used productivity assumptions broadly in line with those adopted by the Independent Review. These include elimination of a proportion of the efficiency differences between water companies; better utilisation of water resources through trade; and improved capital efficiency over time.²⁰

The RIA does however take into account more recent data and the fact that it is likely that investment up to 2015 will be protected from the risk of stranding, with resulting consequences both in reduction in efficiency gains and in the cost of capital. It is assumed that only 20 per cent of the full benefits of competition are realised.

The Defra RIA assumes that the increased cost of capital applies only to new ‘unprotected’ investment. In the central case, the cost of capital rises by 1 per cent per annum, above the base case.

Option B also includes reforms to the new appointments and variations regime, which makes it possible for a new company to be appointed and replace the existing appointed water and or sewerage company for a specific geographic area.

The discounted net present value over 30 years of the benefits in the central case is shown in Table2.

**Table 2: Results of the Defra RIA
central case: 30 year NPV**

A: £1,952 million
B: £2,449 million

Effects on consumers

As noted above, the primary object and effect of upstream reform is greater efficiency (productive, allocative and dynamic) leading to lower prices, higher quality and more choice. Efficiency gains of the three types ultimately determine the maximum degree to which there are gains

¹⁸ Available at <http://archive.defra.gov.uk/environment/quality/water/documents/wwp-ia-upstream-1347.pdf>.

¹⁹ Called Option 2 and option 3 in the Defra RIA.

²⁰ M Cave, Independent Review of Competition and Innovation in Water Markets, 2009, at 125 to 136.

for consumers. The benefits from productive and dynamic efficiency are reaped in the form of reducing the upward pressure on customer bills over time. Allocative efficiency gains are achieved if customers consume levels of services in response to appropriate price signals.

Competition for water resources may also reveal for the first time the implicit scarcity of these resources. A price will be created for water resources, and potential windfall gains accrue to existing licence holders. If these are passed through to customers, they will see their bills rise. But this is a transfer from customers to producers and investors (or, alternatively, the government, if it raises abstraction charges), not a loss to the economy.

It is also important how the efficiency gains from competition (assessed in the RIA at an aggregate level) are shared between customers and other stakeholders (notably producers and their investors). Producers will be due a share to elicit and reward their efficiency effort, but there is a risk of disproportionate gains to investors, reflecting residual monopoly power.

Finally there will also be different impacts across different groups of consumers; some groups may even be adversely impacted in the short term before the productivity effects of competition kick in. It is thus important to consider the variation that might be seen by customers of different types, in particular as between business and domestic customers, and between customers in different regions. It is also useful to explore whether the reforms might induce or create pressure for geographic de-averaging of tariffs within existing company boundaries and their implications for greater choice and sophistication of tariffs.

Evaluating the Water White Paper proposals from the standpoint of consumers

This section provides a broad assessment of the impacts on consumers that might be expected from the proposals set out in the government's Water White Paper. It also considers questions of timing: the likely scale and pace of reform and hence the potential impacts on consumers over time.

The impact of the Water White Paper reforms

The UK Government proposes a model of upstream competition with a single buyer for household, but also envisages bilateral contracting with competing retailers and large customers in the business market. In addition, the UK Government proposes more thorough going infrastructure competition to replace the existing (NAV) regime.

The government's regulatory impact assessment or RIA identified the main benefits to consumers as the following:²¹

Customer benefits

End customers can benefit from lower bills and improved service. Improved service may take the form of more reliable water supply as a result of infrastructure and water, sewerage and waste treatment

improvements. Intermediate customers, such as developers, are likely to benefit from more responsive service, lower prices and more tailored solutions. The Independent Review does not quantify these benefits and this IA follows the same approach.

The benefit of lower bills is caused by the efficiencies that the upstream entrant makes over and above the incumbent, which therefore enable the upstream entrant to charge a lower price. The Cave [Independent] Review does not quantify these benefits and this IA follows the same approach but they are implicit in the quantified efficiencies assumed. (paragraphs 180 to 181)

Our overall assessment is that the reforms have the potential to secure significant gains in efficiency, which should feed through to customers, in terms of reduced upward pressure on bills. It should, therefore, be possible to devise an outcome in which all parties, except those now receiving monopoly rents, benefit from the proposals. However, absent appropriate interventions, the route may not be smooth in the short term, before productivity gains cumulate, because the benefits in bill size to business customers may predominate, while risks in respect of security of supply and water quality may fall on all customers. Further, (again, absent appropriate regulatory intervention) the benefits may not be spread evenly over the country, or between different groups of customers within company regions, and there may be some rebalancing of tariffs if present geographic and other implicit cross subsidies unwind.

However, all the above risks can be mitigated by judicious complementary regulatory policies. This sets a challenge to Ofwat, the EA, CCWater, the companies and other stakeholders to work together to ensure effective and equitable implementation of the government's reforms. The phasing of reform – in particular, the adoption of the step-by-step approach recommended by the Independent Review and endorsed by the UK Government in the Water White Paper – may also assist in rolling out the benefits with minimal risk. In terms of timing of impacts, few effects from liberalisation will materialise before 2015, given the legislation needed and the very long timescale envisaged by government for abstraction reform. The regulatory framework is now being reformed by Ofwat as part of the 2014 Price Review.

Risks and Mitigants

We now outline some of the key risks and possible mitigants.

The gains from abstraction trading reforms are likely to be limited by market dominance and the small size of trading zones (constrained by environmental characteristics). To mitigate this, in the absence of a feasible or practical means of divestment, *ex post* competition law might be applied. More immediately, the government would be well advised to address abstraction charging issues with greater immediacy. This would carry the risk of driving up customer charges. This may be a desired outcome over the longer term (ensuring that the value of water is reflected in prices and helps to drive more efficient water use), but in the short term the impact could be limited by constraining the overall level of charges and focusing on marginal price differentials, by gradual phasing in of programme of higher charges, or by some form of revenue recycling.

²¹ Available at <http://archive.defra.gov.uk/environment/quality/water/documents/wwp-ia-upstream-1347.pdf>.

More opportunities for trade lie with raw, and particularly with treated water. Where trades do emerge, this might lead to windfall gains for sellers, possibly not shared with customers, and an upward revaluation of certain abstraction assets (possibly pushing up customer bills). Mitigation would lie in the regulatory treatment of gains from trade, and of enhanced asset values. As noted above, it is also practicable to pre-empt scarcity rents from abstraction rights for the government by an appropriately amended abstraction charging regime.

The possibility of bilateral contracting between upstream sellers and business customers adds another dimension. Here the risk is that the benefits of cheaper resources and/or treatment options may be captured disproportionately by business customers. This could mean that domestic customers benefit less from upstream competition, and at worst, there could be upward pressure on bills. However, the scale of business competition may limit the effect. Mitigation lies in regionally averaged wholesale price control regimes for water destined for all customers, and in maintaining a regionally averaged retail price regime for households.

Where trade revealed different abstraction prices for different sources, and seasonal differences, this could create pressure for de-averaging customer bills. The mechanism would not be direct (unless incumbents chose to do this), but would be via de-averaging in the business market, through bilateral contracts, which might then create pressure for de-averaging of domestic bills. Mitigating these effects, if they were considered socially undesirable, would fall to the price control regime.

The Defra proposals also allow for infrastructure competition, with the associated potential risks of higher costs for the incumbent's remaining customers. Mitigation can be sought here via access price and bulk supply pricing regulation. The further risk that developers may not pass on the benefits of cheaper infrastructure to their own customers (due to monopoly power) may be mitigated by price regulation of the provider, or *ex post* via the Competition Act.

The Defra proposals offer the opportunity for business customers to benefit from a wider range of service offerings from suppliers, including help in reducing their bills through adopting water saving measures. Whether this helps to benefit domestic customers (by deferring costs of future resource development), or leaves domestic customers to pick up a greater share of the network fixed costs, depends on whether the business customer is supplied by a new upstream entrant or by the incumbent. Mitigation would lie in price control arrangements.

As for supply security, Defra's competition proposals are not without risk. However, again, the risk may be managed through careful regulation, including ensuring that customer valuations of supply security are properly reflected in rewards and penalties for increases and reductions in supply security, including appropriate compensation for supply failures.

Finally, whilst there may be increased risk to the quality of water supplied, due to increased mixing of water in the network, there is a strong presumption that the DWI would respond by regulating to remove these risks.

These conclusions are summarised in Table 2.

Table 2: Summary of Water White Paper risks to end users and mitigants

Reform	Risk to end users	Mitigants
Abstraction – simpler approach to trading Raw/treated water – licences for producers; bilateral deals with retailers/end users/single vertically integrated buyer for domestic customers	(i) Market dominance of incumbents in water markets pushes price above scarcity value; water companies engross revealed value of abstraction assets in retail charges (ii) Producers sell rights/water and risk supply security.	(i) Price cap regulation to remove monopoly rent element; wholesale caps, and cost pass-through rules to determine extent to which scarcity values are passed through to end user charges (ii) Regulatory rules to ensure end user supply security valuations drive incentive mechanisms.
Distribution – replacement of costs principle	(i) Access pricing permits cherry-picking entry pushes bills up for incumbents' end users; causes loss for producers (ii) Creates pressure for de-averaging leading to differential end user impacts.	(i) Access pricing principles avoid harm to captive customers by regional averaging; rules for dealing with stranded assets (ii) Clarity required re acceptability of de-averaged bills, and on tariff consequences of metering.
Infrastructure – reform of new appointments and variations regime; creating infrastructure licences	(i) Cherry-picking of low cost areas increases incumbent's household bills and adds to pressures for geographic de-averaging of end user bills.	(i) Wholesale charges to ensure incumbents remunerated for costs to serve.
Wholesale to Retail – single buyer for domestic customers, combined with bilateral contracts for retailers and large business users.	(i) Domestic customers suffer whilst business customers gain; leading to de-averaging pressures.	(i) Ofwat uses regulatory powers or competition law powers to regulate single buyer; mitigants as above for distribution.

The scale and pace of reform

The Water White Paper has adopted a cautious, step-by-step approach as recommended in the Independent Review. Implementation of the reforms will be dependent on the legislative process which is intended to enable changes to be in place to support the imposition by Ofwat of the next set of price limits from 2015. Abstraction reforms are likely to be the slowest to emerge, and these reforms themselves still see a heavily regulated process at the centre. Accordingly, impacts on end users will start emerging gradually from the second half of this decade and the development period provides a window for consumers' representatives such as CCWater to influence the detail of the policy and its implementation.

Initial impacts will emerge through the price review process itself, when an approach such as encouragement of bulk supply, supported by a strengthened economic purchasing obligation on incumbents, can be implemented, whether or not the legislative process is complete in time. In this period too, challenges by retailers and end users under the existing regime may emerge and trials will proceed with abstraction trading. In the short term, this will provide evidence to assist the reform process.

Ofwat will face a significant challenge to deliver simultaneously both its price limits for the regulated incumbents and the framework of access regulation that will be needed to ensure an effective roll out of the competition reforms in a way which avoids undesirable impacts on end users. An integrated approach to the access framework and price cap setting is crucial to avoid misaligned incentives and unintended consequences, but it will not be easy to accomplish.

The Water White Paper reforms also hold out the prospect of evolutionary developments, such as the emergence of a business market across England and Scotland, retail mergers, voluntary separation of companies' retail arms. Upstream, the pieces are in place for evolution which could over time have more significant effects on industry structure and entry. This will nonetheless be constrained by the need to limit asset stranding.²² It will also depend on the fundamental economics of new entry and the influence of price cap and access regimes, requiring little further by way of legislation.

Turning more specifically to consumers, the set of expected changes should trigger a rethink by legislators, policymakers and regulators of which features of the current monopoly regime should be retained and which should be subject to managed change. Once these decisions have been reached, it is possible to identify a number of issues from a consumer perspective to which attention will have to be given during this evolutionary development.

- *Abstraction reform.* This may be more effectively progressed through a more thoroughgoing reform of abstraction charges. The question would then arise as to whether this would be accompanied by some means of recycling revenue, to avoid higher charges. Government and Parliament should consider this in the drafting and consideration of the relevant Bills.

- *Bulk supply trades.* Ofwat may need to oversee these trades where the market is concentrated, to avoid abuse of market power. It may also want to establish rules regarding the treatment of gains from trade, and to determine the size and the timing of any share due to customers. The potential for local agreements to be reached, and ways of getting input from local customer groups could also be explored.
- *Bilateral trades.* The possibility has been noted that business customers might be the main beneficiaries in the short term at the expense of domestic customers, and that this form of competition might give rise to pressure for retail de-averaging. This will depend on the design and implementation of non-discrimination rules applying to the access regime, and the access prices themselves. If maintaining the present structure of prices is an objective, the opportunity for bilateral trades can be delayed to a later stage, when business retail competition is established. Upstream entry can still be opened up within the framework of a single buyer. It is likely that these decisions would fall to the government.
- *Supply security and trades.* In order to ensure trades do not compromise supply security, penalties and rewards for maintaining it should be in place, calibrated in accordance with customers' valuation of a secure supply. This should prevent situations in which companies profit from external trade whilst customers face irksome demand restrictions. The price review process may provide the opportunity to elicit these valuations. The Consumers Council for Water may have a role in coordinating a consistent approach to this work by the water companies.
- *The costs of establishing competition.* As customers in the non-competitive sector are likely to gain significantly from competition, through the pressure put on wholesalers, and some 'trickle across' of retail efficiencies to domestic retail, it is not reasonable to expect all the costs of competition to be borne by the competitive segment. This would prevent upstream competition from taking root (echoing the difficulties experienced with the operation of the costs principle following the 2003 Act) and deprive customers of the benefits which competition can bring. This is an issue for government and Parliament to address in legislation to replace the costs principle and for Ofwat to take account of in setting price limits.

It is clear that, as upstream competition develops, the sector will remain highly regulated. It will, therefore, be important to take care to avoid unintended consequences. This can be achieved by the judicious design of legislation and regulation, and through attention to effective stakeholder engagement and the phasing of reforms. The evolutionary approach means there will be increasing potential for both risks and benefits to end users to emerge.

Whilst regulation can be developed to deliver the incentives and outcomes that are desired, given the distributional aspect of many of the risks (who gains and who loses) there will need to be clarity and agreement about the objectives and goals, and particularly about trade-offs between efficiency and equitable outcomes. The process of customer engagement that is being developed in the forthcoming price review should assist in this process.

²² The risk of asset stranding is significantly reduced by valuations in the regulatory asset base of assets acquired at privatisation; these are heavily discounted, compared with replacement cost, to take account of a low acquisition cost at privatisation in 1986.