Regulating for innovation and smart water – speech by David Black at Smart Water Systems, 25 April 2018

Innovation is a necessity, not a nice-to-have

Hello everyone, it is a pleasure to be here this morning. I am going to talk about regulating for innovation and smart water.

I will set out how our approach to economic regulation and role of markets in the sector is informing, enabling and incentivising water companies and service providers to innovate and to provide more customer focused and resilient services.

But first I think it's worth restating something that may seem obvious.

Innovation is a necessity, not a nice-to-have. That is why it is not just one of our four priorities of the 2019 price review – but the critical enabler of the other three: great customer service, resilience in the round and affordable bills for all.

We all know the sector faces significant challenges.

Population growth – increasing demand for water resources and water and wastewater networks. However the level of growth is far from certain.

ONS forecast that UK population expected to exceed 70 million by 2029 – up by 3.6 million. However, forecasting population growth is a tricky task, in 1965, the ONS forecast that Britain's population would be 76 million by 2000, when it turned out to be 59 million, 16 million people less than forecast. This underlines the importance of developing flexible and agile solutions.

The power of agile demand side and leakage reduction to meet growing demand is illustrated by the graph (insert) which shows that despite population growth of 17% in the South East of England over the last 15 years, demand has remained flat, thanks to lower leakage and improved demand management including roll out of metering.

Climate change – leading to increased evaporation and heavier rainfalls, raising concerns for drought resilience and surface water drainage.

Rising expectations around impact of the sector on the environment, both in terms of discharge of wastewater and abstraction of clean water. Practices such as storm water overflows in rivers are becoming increasingly unacceptable.

Similarly rising expectations of customer service as services improve in other sectors. And customers are more likely to compare their water services with other products rather than pre-privatisation service levels.

Affordability pressures – according to CCWater research 1 in 5 customers do not feel their bill is affordable. While RPI inflation is easing, it has been running at 4% with real incomes falling. As any high street retailer will attest, customers are feeling squeezed.

Diminishing efficiency gains from the old regulatory model – as the low hanging fruit from reducing operating costs following privatisation was enjoyed. And it’s not just cost efficiency – there has been little reduction in leakage in the last 15 years too.

We have also seen some more immediate challenges to the sector:

- calls to move the sector back to a public ownership model;
- claim RPI-X regulation has reached used by date and ought to be replaced with a system operator approach;
- significant anger following supply interruptions in certain parts of the country following the freeze/thaw incidents in late February and early March; and
- the challenge laid down to the sector by the UK Government (and Ofwat) to improve financial resilience and legitimacy.

To address the challenges it faces, the sector needs to find ways to do more for customers and the environment, while at the same time reducing cost.

Impossible? Without, innovation, yes, but with innovation unlocking new ways of delivering service and new services, it becomes possible to square the circle.

But innovation isn’t all just about responding to challenges. There are many exciting new possibilities arising from new technology and interacting with customers

Here are just a few examples:

- Will developments such as graphene mean that desalination of water, currently expensive and not attractive from sustainability perspective, enable low cost, environmentally sustainable and abundant new sources of water in the future? Researchers at Manchester University have demonstrated that graphene-oxide membranes can be used to filter common salts out of salty water and make it safe to drink. This could potentially dramatically reduce cost and energy requirements for desalination.

- Will re-use of effluent for water supply and waste for energy generation reduce or even remove need for clean water abstraction?
- How will development of telematics, electronics, remote video, AI and big data impact on network management and resource utilisation? Big data is already making a big impact in a range of sectors. While there is already a range of data inside companies, the decreasing cost of sensors, drones, remote video open up scope for much richer data sets. Not to mention the ability of using social media analytics to highlight customer issues before they become apparent to network operators. The Facebook controversy aside – many sectors are using such data to understand, pick up and even predict customer behavior, and respond accordingly.
- How will interface with customers change? Will customers see water as part of package of household connectivity services- integrated and controlled with heat and light in their homes?

Companies are now changing from being an asset focused business to a data and customer focused business. This is not say water companies won't be asset intensive businesses in the future – but data, smarter systems and working with customers likely to be central to their success.

On data there is a lot happening.

- Some promising work from individual companies in recognizing and acting on the value of the data they own – and opening it up. Yorkshire Water is committing to open data by default approach, where it releases its internal operational and service data to public and third parties.
- Installation of smart water meters by some companies. And increasingly seeing smarter systems and sensors to overcome operational and longer term challenges.
- Water companies have new ability in the Digital Economy Act to share data with other utilities and social services to better identify customers in vulnerable circumstances.

But it is worth remembering that the world moves on. The sector is still seems in many ways a laggard with data.

To catch up and lead other sectors, the water sector will need frontier shifting innovation.

Our strategy is to inform, enable and encourage innovation. I will now discuss our approach to informing innovation, how we see a greater role for markets in enabling and encouraging innovation and what we are doing in PR19 to encourage innovation.

Informing the scope and potential for innovation

We see one element of a role as championing and stimulating fresh thinking around the opportunities for innovation. In the last two years, we ran a series of events and publications, including:

- Tapped In which focused on the benefits to companies of viewing customers as active participants in the sector rather than passive recipients.
- Unlocking the value in customer data, which highlighted how companies can make much better use of customer data and drive customer service and innovation.
- Retail Services Efficiency, which set out recommendations for companies to improve their debt management and reduce bad debts.
- Resilience in the round, which highlighted examples of how companies could approach and enhance resilience for the benefit of their customers

And most recently you may have also noticed Spark! – our digital channel in February, which focused specifically on innovation itself.

An important part of this series of events and publications has been looking, both within and outside of the water sector, to shine a light on good practice.

By doing this we want to raise the bar for 'normal' in the sector, as well as encouraging transformational innovation.

Enabling innovation through markets

Markets and competition are growing drivers of innovation in the water sector. Markets can reveal information on costs and value. Competition drives firms to better understand what their customers want and deliver for their customers.

Within the regulatory framework set by the English and Welsh governments, we are driving innovation by opening up markets, and exposing market participants to competitive pressures.

In the new business retail market, we are starting to see some of the service innovations that save companies time and money. Demand-side service innovations are already starting companies to manage their water usage, to improve resilience and defer system reinforcement requirements as well as reduce bills.

Already around 130,000 supply points have switched, we have seen new players enter the market and some incumbents exit. We see a range of benefits to customers:

- For multisite customers, there will be opportunity to procure service from single retailer or self supply.
- For other customers such as SMEs, better service, convenience and avoidance of hassle likely to be important in choice of retailer.
- Still other customers will choose based on value added services such as leak detection and water efficiency.

We expect to see increased innovation and service differentiation as the market develops. An early innovation is the development of self supply, where customer essentially self provides own retail service and buys direct from a wholesaler. Clearly, this is not for everyone, but arrangement has already taken up by large multi site and manfacturing customers such as Whitbread, Greene King and Coca Cola.

In terms of other markets, where appropriate, in the 2019 price review, we will promote markets to encourage innovation through:

- water trading;
- the bioresources market;
- greater third party involvement in large projects, through direct procurement; and
- Markets for ecoservices – using market platforms to reveal better solutions to catchment challenges.

In doing this, we want to enable current and future industry participants to find new ways of delivering better outcomes for customers, the environment and wider society. Innovation could also help to develop markets, and new approaches to catchment management.

Water markets

Since privatization, many incumbents have invested in their networks to improve resilience and enable water to move around to area of greatest need. However, there has been little progress on resource sharing across company boundaries. We see scope for increased water trading between incumbents to improve resilience and meet demand.

However, since privatization, the proportion of water traded between incumbent appointees has been unchanged. The move to outcomes and totex helps address previous regulatory barriers, which may have lead incumbents to prefer to self build rather than buy.

We provided trading incentives in PR14 to address inertia in the sector and promoting provision of market information to help parties identify scope for trading. We are continuing with trading incentives and in PR19 and have encouraged parties to consider full range of demand and supply alternatives including trading in their water resource management planning.

We are seeing some welcome signs of interest in bilateral trades between companies as well as more complex multilateral trades. However, our review of draft water resource management plans indicates there is still some way to go. We will publish our views on company plans as part of our response as an official consultee to these plans later in May. Early reading suggests that there still too little effective sharing of resource across company boundaries and too little ambition on reducing leakage beyond 2025 and reducing per capita consumption. Third party providers are concerned that incumbents are not treating their supply options in the same way as a company’s own supply options.

Under the provisions of the Water Act 2014, there is potential for water retail market to extend upstream to water resources and treatment. Water resources and treatment are not a natural monopoly. A market opens up the scope for bilateral relationship between independent retailers and other water resource providers.

In effect this allows water resource providers an alternative route to market, using the incumbents network as required to supply retailers. This expands the scope for competition to drive innovation in terms of service and choice to customers and would extend focus of competition from retail to resources and treatment. It also offers an alternative route to market for third party resource providers who are finding incumbents difficult to deal with.

Bioresource markets - Bioresources or sludge is a product of sewage treatment. Bioresources can be transformed by anaerobic digestion into biogas and fertiliser. This means that bioresource processing and disposal is no longer a cost to dispose of but value creating process – benefiting customers and the environment. Advances in anaerobic digestion is increasing energy intensity from bioresources.

Anaerobic digestion is not natural monopoly and same process is used outside the sector for other organic waste. So it makes sense to think that restricting market to incumbent monopoly wastewater company will not maximize value.

Ofwat has introduced separate price control for bioresource service to separate out from monopoly network plus wastewater business and promoted the provision of market information to enable trading between incumbents and third parties.

I welcome the recent announcement by Veolia that it is launching an online trading bioresources platform in the UK that makes it easier to sell and buy organic resources.

Direct procurement for customers – There is no reason to presume that where major new infrastructure is required, that this ought to be provided by the incumbent. There are benefits in terms of efficiency and innovation in opening the design, construction and financing of these projects to competition.

For PR19, Ofwat is proposing to require companies to consider procuring large discrete projects from third party provider (where large is defined as over £100m of lifetime totex).

Thames Tideway illustrate the significant financing and efficiency benefits of enabling competition. It is also interesting to note the focus on embedding a culture of innovation at Thames Tideway and on fostering cross-industry innovation, indicating that new providers can bring fresh thinking and new approaches. And why we featured them in our Spark! Innovation campaign.

There are a range of potential approaches to DPCs, from early stage tenders, where the design of the approach forms part of the tender to late and very late stage tender, where tender is for a particular design solution. Early stage tenders allow scope for much greater innovation around the design of a particular scheme to deliver an outcome. For example, it could allow both demand and supply side options to address a water resource deficit. It enables a wider range of providers to develop and propose solutions and so helps ensure that the best option is chosen to deliver. DPCs enable new ways to involve the supply chain and to share risk, creating a richer set of possible options.

Eco-service markets refers to water companies mitigating environmental impacts such as reducing pollution by contracting with land owners/managers to reduce run off from land into rivers and coastal waters. This builds on the catchment management approach discussed above.

Wessex Water has established a market platform, called Entrade, to procure catchment based nitrogen reduction. Traditionally, Wessex, like other water companies, would have installed expensive new treatment facilities in response to tightening pollution standards. However, water companies aren't the only source of nitrogen pollution in catchments. Run off from agricultural land can be a significant source too.

Wessex Water used EnTrade to invite farmers to bid for funding to grow cover crops over winter to reduce the nitrogen leaching into the water course. They ran their first auction in June 2016 advertising a 20 tonne target. The auction reduced cost by 30% compared to alternative approaches to catchment management and about 90% cheaper than conventional water treatment process. This illustrates both potential savings from catchment management via markets against other catchment approaches and more conventional approaches. There seems huge scope to extend this type of approach more widely across the sector.

The development of markets, both in terms of retail business markets and wholesale markets have potential to provide new avenues for injecting fresh approaches and innovation into the sector. There are also some very interesting feedback loops – markets will reveal new information about efficient costs and these in turn can feedback into how price controls are set. I look forward to company business plans making use of new markets to innovate and help demonstrate best value.

PR19 and innovation

The issue of innovation and productivity growth is at the heart of the current debate on the legitimacy of the sector. Innovation and productivity gains are the means for shifting out the frontier of what is possible to deliver to customers. It enables companies to address the long term challenges facing the sector and improve service while at the same time lowering bills.

Yet traditionally, economic regulation made innovation rather difficult. The five yearly price review settlements locked companies into delivering a specific set of schemes. Companies were punished for departing from the settlement, but there was nothing to recognise companies that went further for their customers. The settlement encouraged companies to take the tried and true methods of delivery, hardily a recipe for innovation.

Our regulatory framework is now designed to enable and encourage companies to innovate. Innovation is one of the four key themes for PR19.

Our initial assessment of business plans will assess business plans and fast track or recognise with exceptional status those companies that put forward plans which are high-quality, ambitious and innovative. For the first time, we will assess the innovation culture and capacity within company plans as well as look for evidence of the results in what company plans deliver for their customers.

The combined impact of the focus on customer engagement, outcomes, totex will free up companies to innovative and recognize and reward companies that succeed.

The move to an outcomes framework provides companies with significantly more flexibility to make sure they are delivering the right schemes to meet customer needs and to innovate. Prior to PR14, companies were held to deliver outputs (particular schemes) or even individual elements of those schemes (for example, due to logging up process). In PR14, we introduced outcome delivery incentives, which recognize where companies deliver beyond the expected stretching level of performance as well penalizing companies that fall short. In PR19 we will go further to promote innovation through enhanced performance payments for frontier-shifting performance for delivery of the common performance commitments. This recognizes the challenge for leading companies to really press forward and deliver sector leading performance. We also expect companies to propose innovative, bespoke performance commitments that reflect customer preferences. We also encourage companies to take a long term view by setting out their expected performance commitment levels out to 2035, a decade beyond the end of the next price review period.

Before totex, Ofwat looked at operating and capital expenditure separately. While there were relatively strong incentives to deliver schemes and operate efficiently, there was less incentive to swap operating expenditure for capex or to bear down on capital expenditure as this was added directly to the RCV.

Combining operating and capital expenditure into totex places water companies more in line with those of an ordinary business where there is an incentive to bear down on costs across the board.

The combination of focus on customer, outcomes and totex means significant scope for productivity gains in the sector.

A workshop we held last month – and an accompanying report - highlighted some great examples of companies using this flexibility to innovate, do things differently and improve efficiency and outcomes.

It is also clear that there is a lot that companies can learn from each other and that the totex and outcomes framework can deliver even more in the next control period than the current period.

Just a few examples here:

- Severn Trent are using Satellite imaging for asset monitoring and leakage detection.

- United Utilities are trialling new Home Usage Reports for 100,000 metered customers. These online reports will present customers with user friendly, timely information on their water consumption to empower them to manage their bills through improved water efficiency.
- We also heard from Servelec Technologies global provider of telemetry hardware and software products and systems who are working with a number of companies on smart monitoring of their networks, as well as network and investment optimsation.

KPMG estimate efficiency savings of 5% to 17% over 2020-25 from combination of totex and outcomes. This could amount to around £15 to £20 off customer bills by 2025. Along with bill savings from a lower cost of capital of £15 to £25, the combined savings amount to £30 to £45 off or around 10% off customer bills at PR19.

Now, clearly every company faces a different set of challenges and is in different place in the life cycle of investment. And this may mean different levels of enhancement expenditure for each company. Companies also will have had different levels of reconciliation adjustments from PR09 embedded in current bills and different reconciliation adjustments for end of period PR14 ODIs.

So as with previous price reviews, we expect that companies will have different bill profiles for 2020-25, however, there are certainly grounds for expecting we might see some companies top the largest bill reduction at PR14, a 10% reduction for water and wastewater company and 20% for a water only company, and the sector to match or beat the average 5% reduction from PR14. This is allowing for the head wind they face from move from RPI inflation indexation to CPIH, meaning that a real reduction in PR19 is more challenging than PR14.

Legitimacy

The sector has been in the public spotlight in recent months with the nationalisation debate and concern around high dividend payments, opaque financing structures and levels of executive remuneration. And this concern was probably exacerbated by the performance of a number of companies who struggled to respond to the demands of the recent freeze-thaw incident.

I draw two important points out of the recent debate:

Firstly, on the importance of delivering service to the customer – the sector needs to continue to improve its value proposition to customers. The Frontier Economics report commissioned for Water UK highlights the strong productivity gains achieved by the sector since privatization, at around 3% per year, better than the wider economy. However, these have tailed off in recent years, as the low hanging efficiency improvements following privatization have been captured. And this is reflected in the modest cost efficiency improvements in recent years and the tailing off in improvement on some key metrics with static leakage reduction over the last 15 years. Most of speech has been devoted to describing changes in the role of markets and our approach to regulation to stimulate more innovation and productivity. So this is one element of addressing the legitimacy challenge.

The second element is addressing the concerns around excess dividends and financing returns, particularly from companies with high gearing and lack of transparency around financing structures. The PR19 methodology introduces a number of changes to shift the focus of companies away from financing the operations of their business including cutting the cost of capital to lowest ever level and indexing the cost of new debt and increasing the importance of outcome delivery incentives. We also taking steps as part of finance and governance work programme to improve corporate governance via our board leadership and transparency principles and improve financial resilience.

Tomorrow, we will set out further steps, publishing more guidance on our expectations for companies to demonstrate financial resilience in their PR19 business plans and improve transparency around the link between executive remuneration and company performance. We will consult on a change to our methodology to require highly geared companies to share the benefits of higher gearing with their customers. This both helps to mitigate the incentive to gear up under existing arrangements as well as ensuring that where shareholders benefit, customers will too. We have also opened up the debate around the future of the sector and invited companies and other stakeholders to play their part on designing the future of the sector.

Conclusion

As companies develop their business plans for the PR19 review, it is an important moment to reflect on the challenge and opportunity of innovation.

Whether it is PR19 business plans, developing new products and services in the business retail market, or the range of everyday challenges that companies face, innovation can help to drive a step-change in efficiency, customer service and resilience.

Innovation is a critical enabler for water companies to be ambitious in PR19.

Through innovation companies can deliver more for customers, the environment, and wider society. And this is more important than ever, as the sector legitimacy comes into question. Thank you.