



Innovation consultation
Ofwat
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Driving transformational innovation in the sector

This letter and associated appendices provide our response to the consultation on 'Driving transformational innovation in the sector'.

We start by observing that the existing regulatory framework does already encourage innovation, but we also agree with the core thrust of Ofwat's consultation that more can be done to encourage transformational innovation as part of the toolkit to address the major challenges the sector faces from pressures such as climate change, growth and the need to reduce abstraction.

We also recognise that innovation is not solely about gadgets. It needs to be about a whole culture that is open, outward looking and embraces innovation and transformation in relation to processes, mindsets, and technology.

Our Approach

Our approach is exemplified by our Innovation Shop Window, set in and around Newmarket in Suffolk. It began as a trial project to optimise water pressure and calm our network in the area. It has gone on to develop into a live test-bed to pilot our suppliers' best products and approaches. If successful, these can be rolled out rapidly across our business. Now we are working with more than 100 organisations across 95 projects and we are engaging at a deep level with our customers on their water use at home.

We also see collaboration as an essential element of innovation. We use the Shop Window as a platform for collaboration and sharing of best practice. We have hosted numerous visits, tours and workshops in Newmarket to a wide range of stakeholders. On average we host over 50 organisations per year. These have included the majority of the UK's Water and Sewerage Companies, global utilities, regulators, politicians, local authorities and environmental bodies.

Innovation is also fostered in our supply chain, and those who may not yet be part of that supply chain, through our Water Innovation Network (WIN).



THE QUEEN'S AWARDS
FOR ENTERPRISE:
SUSTAINABLE DEVELOPMENT
2015

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an AWG Company

The WIN comprises over 1,000 small and medium sized businesses who can propose innovative solutions to live challenges to industry experts and decision makers within Anglian Water. WIN provides feedback, advice, support and access to specialist equipment, allowing contributors to develop their solutions further.

The latest manifestation of our innovation culture is Innovate East.¹ This event, co-hosted with Essex and Suffolk Water, was attended by around 1,800 people from water companies around the globe, other industries, charities, regulators, academic institutions and the supply chain. This included three days of 'sprints' and 'hackathons' covering complex topics such as making investment decisions in the face of climate change. We were delighted that the Ofwat Chairman was able to attend one day of the event, and we have reflected on its success in responding to this consultation.

Direct funding to support innovation: our proposals

Despite the good examples of innovation throughout the sector, we agree there is merit in the proposal to directly fund innovation.

We suggest that Ofwat should structure their innovation funding proposal around the five Water UK Public Interest Commitments. These would align with Ofwat's suggested goals to deliver stretching outcomes for customers using innovation funding.

We have also spent a lot of time thinking through the merits of a competition-based approach compared to a collaborative approach, noting that Ofwat's comparative competition approach already drives a general competitive dynamic which needs to be considered in thinking through the best approach to a new innovation funding system.

A competition and reward approach of the type proposed by Ofwat could introduce additional competitive dynamic, which is usually to be welcomed. However, we conclude that, in this context, this dynamic is at odds with the goal of fostering greater collaboration to drive innovation.

Our experience at Innovate East shows that the best outcomes are achieved when as many people participate as possible. It will be difficult for organisations and individuals to balance the competitive and collaborative mind-set. Competitions also involve significant bureaucracy for both companies and the organisation assessing proposals. This reduces the already limited funding available for delivery of actual innovation.

¹ <https://www.innovateeast.org/>

In place of competitions, we therefore propose an approach based on funding centres of excellence, building on the success of this type of model in Germany (Fraunhofer), the UK (Catapult) and elsewhere. These centres would enable companies to collaborate to address challenges and deliver their Public Interest Commitments. There are already existing examples of these such as the UK Water Industry Research (UKWIR).

We also believe that a higher level of funding should be considered and supported by a longer term commitment that such funding will be available beyond AMP7. We believe increased funding with a long term commitment to its availability is more likely to deliver transformational change and long term thinking than a one-off £200m funding pot.

There are a number of issues to be considered, such as how best to involve small and medium enterprises (SMEs), intellectual property rights etc. These will take time to work through as an industry but the lessons from the UK catapult system can be useful to draw upon. We are keen to work actively with Ofwat and the industry to further develop this framework and would suggest that engagement with Innovate UK would also be helpful in this regard. We would like to be involved in the proposed workshops on this topic, and look forward to receiving the relevant details in due course.

We trust these comments will help inform Ofwat's work. Please do not hesitate to get in contact if you wish to explore anything further, either directly with me, or with my colleague Arun Pontin (aPontin@anglianwater.co.uk 07973 965537).

Yours faithfully,



Alex Plant
Regulation and Strategy Director

Appendix 1 – consultation questions and responses

There are many examples of successful innovation in the water sector. We have reflected on the lessons learned from our recent Innovate East event when responding to this consultation. We provide a case study on Innovate East in Appendix 2 of this letter.

1) What are the main barriers to innovation in the sector and why?

There are good examples of collaboration and innovation in the industry. Establishing the UKWIR Big Questions framework² has provided an opportunity to increase collaboration and focus in the sector towards our long term goals and has started to identify areas where transformational innovation is imperative in meeting the challenges that we face as route maps are established. However we recognise that barriers remain.

One barrier is that there are limited industry focal points for transformational innovation with limited incentives for companies to share successful learning (and even less for unsuccessful efforts). Currently companies largely work in isolation, duplicating effort and resources. Competitions for funding may not change this sufficiently. Where companies work in collaboration it is often focussed in early stage research with universities. A number of successful platforms exist to foster greater collaboration including the Twenty65 and Water Infrastructure and Resilience CDT. However these are research council funded and as such time limited.

There is some risk aversion in the sector, both financially and culturally. Price control settlements are unforgiving to unsuccessful innovations, even though it is to be expected that some trials fail and that learning itself is useful. Comparative regulation during the price control setting process represents a strong disincentive for companies to share innovations that help reduce costs.

The water sector is responsible for a precious resource and holds important public health and environmental quality duties. Ofwat, CC Water and the quality regulators must also embrace innovation in the sector and be accepting of failure, and companies must ensure projects are designed to fail safely rather than be fail safe.³ Lack of appetite may lead to companies adopting a portfolio of innovation that is more heavily weighted to incremental innovation that delivers improvements in service and efficiency

² <https://ukwir.org/eng/big-questions-facing-uk-water-industry>

³ A positive example of working with quality regulators is our joint working with the Environment Agency on our Ingoldisthorpe Treatment Wetland.

<https://www.anglianwater.co.uk/news/norfolk-wetland-hailed-a-success-as-anglian-water-outlines-plans-for-800million-of-environmental-investment/>

and has historically had a higher success rate over more speculative and transformational innovation that may have a higher potential return but also an increased rate of failure.

There may be barriers to rolling out successful innovation, especially if the business case is novel or benefits are expected to accrue across multiple AMPs. We also observe that the relatively regular and cyclical nature of AMPs and price controls can influence appetite and resources available for investment in innovation.

Changing and influencing customer behaviour could deliver transformational change in the sector, for example through reducing consumption. However there can be a lack of awareness amongst customers about some of the challenges and consequently the importance of changing behaviours. Changing behaviours is harder in the context of falling bills in AMP7, potentially sending signals that water is not a scarce resource and that the industry is not facing significant challenges.

One barrier highlighted in the 'European Innovation Partnership on Water' report⁴ is financial flows and returns being low compared to other sectors. This could lead to a perception that the industry is not as exciting as other technology sectors and could influence the attracting of top talent to the sector.

We observe that there is a proliferation of technologies and solutions that are not exactly tailored to the needs of water companies and are not ready for immediate deployment. We believe that direct funding could support the development and refinement of solutions so that they are ready to deploy by water companies. The role of the problem owner is critical to effective solution development and is often lacking, particularly in the early stages. Our approach in establishing the Water Innovation Network is designed to increase the dialogue with SMEs offering products and services to our sector.

2) Do you think that the financial support cited in section three is required to stimulate innovation in the sector? If so, what do you believe is the appropriate amount of funding and why?

We support the principle of financial support. We believe that a higher level of funding should be considered and be supported by a longer term commitment that such funding will be available beyond AMP7. Financial support could help drive cultural change and should not be solely focused on technology development, for which there is an existing market.

⁴ https://www.eip-water.eu/sites/default/files/DiagnosisBarriersBottlenecks-Final_0.pdf

Similar funding mechanisms for energy networks have made substantially more funding available over a period from 2005 to at least 2023. This included the Innovation Funding Incentive (IFI) which made 0.5% of base revenue available to electricity distribution companies from 2005. This incentive continued in the 2010-2015 price control through the £500m Low Carbon Networks Fund (LCNF). Ofgem's current RIIIO price controls expanded the LCNF beyond electricity distribution to gas distribution and both gas and electricity transmission.

The challenges of mitigating the impacts of climate change, accommodating increased demand and ensuring resilient supplies are common between the water and energy sectors. We also note that the energy network component of energy bills is similar to the size of a water bill. On this basis we struggle to see why less innovation funding would be made available in the water sector when the challenges are similar, the background regulatory framework is the same, as is the materiality of the impact on customers and affordability.

Ofwat envisages funding mechanism set-up costs being covered by the £200m, further reducing the scope for the funding of actual innovation. We note that if the potential allowance is higher, that does not necessarily mean it will be used, just that it is available.

We believe the five year timescale proposed is too short to realise transformational change and innovative outcomes. A longer commitment to this funding would also create the opportunity to develop a healthy programme with a balance of higher risk projects addressing the needs of the sector. We believe increased funding with a long term commitment to its availability is more likely to deliver transformational change and long term thinking than a one off £200m funding pot.

3) Do you agree that our proposed draft principles for additional financial support will effectively safeguard the interests of customers?

We believe that the principles are largely appropriate, with some caveats. We note that these principles are high-level and customer protection needs to be an on-going consideration as the detail of the mechanisms is developed.

A key omission from the principles is a recognition that not all innovations succeed – but learning that an intervention or solution does not work is still valuable learning. If every project funded succeeds then that might indicate that only 'safe' projects have been funded. This must be recognised in any business case or return on investment analysis. Many start-ups fail,⁵ investors often have a portfolio of investments and it's the return on the

⁵ <https://www.ft.com/content/cb56d86c-88d6-11e7-afd2-74b8ecd34d3b>

portfolio that's important, not the specific projects. It important that appropriate timescales are considered when looking at returns on investment.

We agree with the principle of 'open by default'. However detailed consideration is needed on the appropriate treatment of intellectual property. This is a critical concern for both large businesses and crucially SMEs. If these arrangements are not calibrated correctly they will stifle innovation through these funding mechanisms.

While the industry shares many common challenges, not all will impact all companies equally or have the same priority due to different strategies and geography. Therefore the principle of all innovation benefitting all customers may be difficult to achieve or become a constraint unless appropriately framed.

As stated earlier, we believe the five year timescale proposed is too short to realise transformational change and innovative outcomes. We believe increased funding with a long term commitment to its availability is more likely to deliver transformational change and long term thinking than a one off £200m funding pot.

We support the principle that companies will be required to fund a proportion of project costs to ensure risks are appropriately shared between customers and shareholders. Incorporating an element of match funding will help ensure commitment to projects and follows a successful methodology employed when companies work with universities and UKRI. We believe that this is also important in order to maintain skills necessary to deliver transformational change.

4) What are your views on the collectively funded innovation competition model which we describe in section three? What other key considerations not highlighted should we take into account in designing/ implementing the competition?

A funding competition introduces a competitive dynamic that we believe is at odds with the overall desire to foster collaboration. A key barrier to innovation in the sector is the currently limited incentive to collaborate and share success. We do not support the competition model.

Experience in the energy sector suggests that competitions tend to attract large scale projects. These require appropriate scrutiny to ensure they have a robust methodology and represent good value for money. It is difficult to see how Ofwat could facilitate the funding of large scale projects without being more directly involved in the decision making than is currently proposed.

It is likely that over time, incumbents will develop and entrench relationships with suppliers, partners and academic institutions through these competitions. Companies may be less inclined to partner with new and unproven organisations through what are likely to be expensive and intense competitive processes. This will restrict the free flow of ideas, fresh thinking and innovations across the sector.

Competitions funding large projects involve significant bureaucracy for both bidders and assessors. In the energy sector, network companies could recover up to £100,000 of bid costs. Such large bid costs will either reduce the funding available for innovation if they are recoverable or reduce company appetite to bid if they are not.

If a competition is pursued, there may be an opportunity to involve UK Research and Innovation (UKRI) in the assessment process. There could also be the potential for matching funding from UKRI. The funded innovation competition model is similar to existing schemes under UKRI for example, and so we question how effective it would be in driving the desired change.

An annual competition also restricts the timetable for innovation. We would like to see a more agile approach than having an annual submission window like the one proposed to enable the industry to better respond to emergent challenges across the sector.

We recognise that it may be very difficult to accurately measure the success of the proposed solution in isolation. In our experience all innovation initiatives must work cohesively to maximise success. Initiatives such as our Innovation Discovery programme, the Innovation Shop Window and WIN are intrinsically linked and they combine to produce a better outcome than they would individually. Therefore separating benefit down to specific investments or initiatives will be very difficult. This is why we propose an alternate approach in response to question 6.

We are keen to work actively with Ofwat and the industry to further develop this framework.

5) What are your views on the end-of-period innovation roll-out reward we describe in section three? What other key considerations not highlighted (e.g. whether it should be collectively funded or individually funded) should we take into account in designing/ implementing the reward?

A roll-out reward introduces a competitive element that we believe is at odds with the overall desire to foster collaboration. A key barrier to innovation in the sector is the currently limited incentive to collaborate and share successes and learning that would be of benefit.

The competition element could drive this towards being some form of 'beauty contest', with flashy materials and a coherent narrative potentially as likely to be rewarded as an innovation that delivers benefit to customers. We believe the uncertainty about whether funding will be received after the fact makes it unlikely to change business decisions on its own. This appears to be a weaker incentive to drive transformational change. A risk of leaving this until the end of the period is that we do not maximise sharing and subsequent efficiency during the period missing the opportunity for an earlier and wider roll out. Early assessment and reward would encourage additional sharing.

If a reward is pursued by Ofwat, we believe it should be individually funded. It does not appear appropriate that customers from one area fund a reward for an incumbent in another area.

6) What other potential alternative mechanisms for funding/ rewarding innovation not discussed do you think we should be considering? Which financial support mechanism or combination of mechanisms should we introduce and why? What would be an appropriate split of available funding/ reward?

We propose the establishment of innovation catapults or centres of excellence for the water sector. This would work in a similar way to the UK's existing catapults and would synergise well with Ofwat's suggested centres for excellence.⁶ This mechanism could build on the work being undertaken by UKWIR, who could potentially act as the allocator of funding. We believe this approach will result in greater collaboration, facilitate involvement of small and medium enterprises (SMEs) and avoid some of bureaucracy associated with Ofwat's proposals. Centres of excellence could also access or leverage other sources of funding, such as the successor to the Horizon 2020 programme.

An alternate option that should be considered is an innovation funding allowance. This would operate similar to Ofgem's Network Innovation Allowance. This appears to be the most successful of Ofgem's innovation funding mechanisms, facilitating small scale projects with proportionate governance. Companies would receive a revenue allowance to fund small scale projects in line with their stated innovation strategy. Companies would self-certify compliance with relevant governance arrangements and report project progress at appropriate intervals. Under this mechanism companies are free to collaborate with other companies who share similar challenges.

There may be barriers to rolling out successful innovation, especially if the business case is novel or benefits are expected to accrue across multiple AMPs.

⁶ <https://catapult.org.uk/about-us/>

Ofwat could also consider funding the roll-out and deployment of proven solutions where benefits accrue in later price controls. This would be similar to Ofgem's Innovation Rollout Mechanism.

7) Do you think the potential industry activities discussed in section four could help drive innovation? Are there other activities not identified which you think the industry should be considering?

The proposed sectoral activities appear sensible. However companies can face significantly different regional challenges and the preferences and priorities of customers vary by region, as can be seen in the wide range of regional results for customer willingness to pay for service improvements. On this basis an industry strategy would have to be very high-level to be sufficiently all encompassing. We recognise that our challenges and ambitions may be legitimately different to those of companies, particularly with regard to water scarcity. It may be more useful if strategies for specific challenges are developed by companies sharing those challenges. One approach would be to use the structure of the Water UK Public Interest Commitments. These would align with Ofwat's suggested goals to deliver stretching outcomes for customers using innovation funding.

We agree that centres of excellence could help support transformational innovation. UKWIR could act as the basis for one or more of these centres of excellence. As discussed above we believe these are more promising funding routes than those proposed by Ofwat to deliver transformational innovation.

8) Do you think the proposals in section five will help drive innovation? Are there other activities not identified which you think Ofwat should be considering?

We agree that increased collaboration amongst regulators and government, and in some cases appetite, from regulators is vital to support innovation. We observe that some new regulatory requirements can reduce likelihood of innovation, such as the Security of Network & Information Systems Regulations 2018. While these regulators serve an important purpose, we are experiencing their impact on our innovation decisions. It is important that there is recognition that some innovations will fail and acceptance of this among regulators. Gaining common understanding of the acceptable risks / benefits of testing innovation will allow companies to innovate and trial new solutions with confidence.

Appendix 2 – Innovate East: case study



Key information

Event: Innovate East

Date: 10-12 September 2019

Location: Trinity Park, Ipswich, Suffolk

No of attendees: 1,800

Organisations attended: 280

Connections made: 14,000

Headline sponsors: aimi, EWM Alliance & Mott MacDonald

Summary

Innovate East was a collaborative innovation event hosted in equal partnership by Anglian Water and Essex & Suffolk Water. Building on both organisations' work in the innovation space, it aimed to capitalise on the complementary progress and combine efforts to find solutions to some of the most pressing issues facing the water industry, the eastern region and society as a whole. It was supported by a range of high profile and relevant sponsors.

Approach

The event was structured around problem solving in four key areas:

- Digital twin
- Leakage
- Natural capital
- Social purpose

Design sprints, hackathons and daily dashes were used to guide the troubleshooting process which ran over three days. These frameworks allow for open and imaginative thinking to be underpinned by a structured timing and staging process. Hackathons put data at the heart of the problem and use data scientists, software engineers and others involved in the digital world to produce products and outcomes. Daily dashes are shorter versions of design sprints and take one day to complete.

Twelve inflatable domes housed 14 sprints, hacks and daily dashes over three days. Each was sponsored by a relevant organisation that holds an interest in helping to solve the problem it was trying to address.

The event also hosted a STEM challenge with students from the local area and region. Over 50 students from Peterborough UTC attended day 1 to work together on a 'Sustainable Community Challenge' designed to harness their

thinking around climate resilient and carbon neutral towns. Students from St Pauls in Milton Keynes and Norwich UTC took part remotely using streaming technology, ultimately reducing associated carbon emissions. The task was based around the redevelopment of Waterbeach Barracks in Cambridgeshire, aiming to meet some of the real life challenges relating to water supply, climate change and surface water flooding.

Groups of students gave a short presentation outlining their ideas to the panel of judges including representatives from Cambridgeshire County Council, Anglian Water and Urban and Civic. The panel and wider team were hugely impressed with the standard of the presentations and the winning team from Peterborough UTC have been invited to meet the judges again to discuss their ideas further with the possibility of implementation. Seventy eight per cent of students said they would now consider a career in engineering after attending the event.

Each day began with a motivational keynote speaker to set the tone, encourage and inspire guests for the day ahead. They all cumulated in a wash up session to share the progress groups had made each day. An innovation lab and wellbeing dome were also situated on site. The lab supported problem solvers to create prototypes and showcase the technology already being used by Anglian Water and Essex & Suffolk Water in their own work. The well being dome demonstrated different ways for guests to manage their own physical and mental health to keep them as fit and productive as possible.

Attendees

The event was largely aimed at a b2b audience. The idea was that knowledge and perspective from other sectors and industries would only enhance and build on the work already done by Anglian Water and Essex & Suffolk Water to date. Over 1800 guests from almost 300 organisations joined the event from data scientists and councillors to construction experts and third sector specialists. Diversity was championed, with guests encouraged to leave status and hierarchy (as well as suits) at the door to create an equal, open minded and productive environment. Blendology 'one touch' badge technology meant that 14000 connections were made over the three days and almost 170kg of paper saved through the absence of business cards and paper agendas.

The event demonstrated that water companies can and will work together to address issues through innovation. Almost every UK water company attended the event and representatives from Southern Nevada Water Authority and Gruppo Hera also joined through links with the Leading Utilities of the World consortium.

Outputs

It was important to both companies to ensure customer feedback was available to support and guide the development of solutions. Access to Anglian Water’s online customer community was made available to all groups on day 2 to test the viability of their ideas. Customers were able to feedback over night and this information was used to refine and clarify progress on day 3.

From the outset, both companies were committed to a joint £100,000 legacy fund to provide a platform for development post event. Four of the most developed ideas (one per core theme) were chosen and announced on day three of the event as those that would receive instant funding and the green light to proceed immediately. These ideas were:

DIGITAL TWIN

Twinder’

This is an application which enables data sets to be shared across sectors with a simple swipe of a mobile phone, similar to dating app Tinder. This will enable all utilities and companies to share information on their digital twins – cutting down on duplication and enabling better understanding of the environment in which we’re operating.

LEAKAGE

DMA DNA

This idea seeks to makes use of data analysis to find patterns of water usage within a DMA to help identify where leakage might exist or where high levels of water usage might be reduced.

NATURAL CAPITAL

Water farms

A model for enabling farmers to improve the way they store water and engage with other farmers so they can transfer water between farms during dry periods.

SOCIAL PURPOSE

Climate change resilience

A programme designed to investigate and support community resilience to climate change.

The other ideas that were developed will be able to draw on the funding pot post event. The collaborative mindset developed over the three days will be carried forward by the teams to bring the ideas to life over the coming months.

Useful links:

Event day 1 highlights – <https://youtu.be/iOCOLBv7yNU>

Event day 3 highlights – <https://youtu.be/zQiMjQlesho>