

Future Water Association response to consultation on Driving Transformational Innovation in the Water Sector

Future Water Association (FWA) is a membership organisation representing c.150 companies in the Water and Wastewater supply chain; our members employ some 40000 people across the UK. We are a non-political organisation working collaboratively with clients, regulators, academia, Government and other key stakeholders in the sector.

The Association has a focus on innovation, education, skills and engagement, by bringing together companies and organisations from across the sector through a diverse membership, including utilities, Tier 1 contractors, equipment suppliers, manufacturers, innovators, academia, insurers, investors, data & cyber specialists. Future Water helps to drive a collaborative approach to sector wide challenges and we strive to work with professional bodies, research organisations and trade associations throughout the sector. With SMEs making up over 70% of the membership and a focus on innovation and skills, Future Water sits at the heart of the debate on creative thinking and brings in a cross-sectoral dimension to our work, through our hosting of the UK Society for Trenchless Technology (UKSTT) and close relationship with Energy Utilities Association and Pipeline Industries Guild.

Our aim is to shape the future of water and push innovation towards a business as usual operation for utilities. An important part of our focus is Water Dragons, a 'Dragons Den' style initiative, operating for more than ten years, which has brought hundreds of innovations into the sector and put them in front of the utilities. Future Water has established an innovation hub to lead the organisation's activities and also to directly engage with regulators including OFWAT, helping to drive innovation across the sector in consultation with the regulators, utilities and other stakeholders.

FWA view of innovation

The FWA understands that innovation is a broad-based concept that ranges from incremental improvement of existing ideas and practice, to discoveries that produce counter-intuitive changes to our paradigms that create significant benefits to society. The FWA agree with the definition of innovation set out and would also add that from practical experience of our members, innovation should also include novel application of ideas from one sector to another, innovative extraction of insight from existing data that can be usefully actioned and holistic joined up thinking across traditionally separate inter-sector boundaries (e.g. capturing excess flood water and utilising this for non-potable demand).

FWA Principles

The Future Water association:

1. Supports Ofwat's strategic shift in their strategy to include driving transformational change;
2. Recognises that such transformational innovation has not and will not occur in the current "business-as-usual" regulated utility sector structures;
3. Supports the creation of an innovation pot funded by customers to drive Transformational Innovation in the Water Sector;

4. Considers the fund portfolio should be strategically managed and deployed to address specific agreed national challenges against which annual international competitions for funding would be run. This entails taking higher investment risk decisions where necessary;
5. Thinks that the fund should not be used to create physical assets that last longer than any single project needs, these assets already exist in the UK, or are already funded through the investment programme agreed with Ofwat under PR19;
6. Considers that at least 50% of any single project (and the overall fund) should be spent supporting SME involvement in meeting the challenges, splitting the support by growth stage and or technology readiness level;
7. Thinks that the fund should be independent from “business-as-usual” utility activities and subject to transparent governance, flexible engagement terms with an oversight board of stakeholders and a strictly independent chair. Administration of the fund should cost no more than 1-2% of the overall fund value;
8. Considers that any reward and/or claw-back initiatives would add uncertainty to the fund and strict project governance and oversight should be sufficient to ensure good value for money;
9. Believes that OFWAT can ‘foster more innovation’ by setting out focus areas, linking the innovation more closely to ODI framework – The UKWIR big questions ¹could form the basis of this approach;
10. Recognises that transformation needs to be driven by people, therefore the human capital/skills element is critical to this discussion and support mechanisms/training to facilitate the cultural change must be part of the process, along with knowledge transfer and dissemination;

Q1 What barriers, if any, are there to the development and implementation of innovative technologies and methods in the utilities sectors?

FWA has sought views from members on this very subject, sharing them with OFWAT at a number of meetings throughout the past year. The following items have been identified as most significant:-

1. Multiple water companies each appear to need to trial and prove new innovations themselves before adoption, leading to long-term delays at a significant cost to suppliers. Opportunity to overcome this requires a network of sharing facilities and trusted results (prove once and roll out).
2. Access to and engagement with senior decision makers in water companies is very difficult. Ideas either being presented too early in life cycle or unproven can often lead to rejection of a nub of great idea. There is an opportunity to overcome this through start-up/innovation concept, supported by government or not for profit sponsoring organisations. FWA have observed this working in other

¹ UKWIR Big Questions - <https://ukwir.org/eng/big-questions-facing-uk-water-industry>

countries such as Israel where government sponsored incubators and accelerators exist to aid good ideas through to market readiness².

3. Current framework models managed by Tier 1 contractors generally perpetuate existing practices with very few truly identifying and applying innovations at scale. The reason is that the contracts are so rigid (or commercially restricted) that they restrict the ability to adopt innovations without. Most innovation ideas exist at the Tier 2 or 3 supply chain level but do not get exposed to the Tier 1 contractors/client. Opportunity for Tier 2 or 3 suppliers to present ideas to Tier 1 contractors/clients without giving away all IP or margins needs to be made available. FWA argue that water companies could potentially ring-fence gain-share from framework partnerships to ensure Tier 2/3 innovations receive rewards.
4. Innovation uptake - procurement teams can be too focused on looking for standard products and services within frameworks – they can drive a ‘need to buy commodities’ not necessarily a solutions approach and this can lead to the innovation potential of a product or service being overlooked in favour of obtaining a cheaper price. FWA argues that more use of market notices to define problems and seek innovative approaches to desired outcomes from market would be one option to challenge existing procurement systems.
5. FWA also recommends that introducing new forms of contract engagement may encourage innovation in procurement. Arrangements such as the P13 commercial handbook – this ICE proposed (Institution of Civil Engineering) enterprise model could be a way forward for the sector in terms of future framework/alliance models as could those used by the UK Defence sectors³

Q2 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?

FWA consider that the financial support is an appropriate mechanism to help stimulate innovation across the water sector – the key element is that it brings additionality into the functioning of the current price review process. Indeed, the Association has previously argued in response to the *HM Treasury Consultation on Encouraging Innovation in Regulated Utilities*⁴, that such an ‘innovation levy’, properly managed and ring-fenced is a pragmatic and necessary approach to stimulating innovation.

² Israel Business Incubators & Accelerators Explained - <https://investinIsrael.gov.il/Media/posts/Pages/Israeli-Business-Incubators-and-Accelerators-Explained.aspx>

³ Examples ICE led initiative ‘Project 13’ see <http://www.p13.org.uk> and Enterprise models used by UK Defence sector https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/692445/NWP_-_UK_Defence_Innovation.pdf

⁴ Encouraging Innovation in Regulated Utilities - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/752041/encouraging_innovation_in_regulated_utilities.pdf

One important element that needs to be managed is that the levy does not displace existing plans to support innovation within the water companies – the proposed financial support must be ‘additional’ to existing spending plans.

In terms of the proposed funding of up to £200m, this represents across the course on the next AMP period, 0.004% of the planned £50bn spend by the water companies. Is it enough? Future Water Association considers this to be the wrong question – it is more appropriate to consider what ratio of additional investment in the sector (over the existing spending plans) is leveraged by the establishment of the fund – perhaps similar to the OFGEM Low Carbon Fund, a ratio of 1:4.5-6.5 might be a good target.⁵

FWA believes that “matchable” funding by private investors, should be allowable alongside the fund to encourage co-financing on specific challenges, this funding could be from Corporate Venture Capital (CVC) funds or from any company interested in water or entrepreneurship e.g. Santander bank, Barclays, Nestle or Coca Cola, not just utilities, venture capital or private equity.

More importantly, the association argues that the fund should be targeted, for example, largest share of the fund needs to finance/support innovations above TRL7 = the “ramp-up” phase as this is the financial “valley of death” where SMEs run out of cash.⁶

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

FWA believes that the principles are sensible in the context of the fund but that the principles should reflect:

- That existing ideas/innovations are part of the approach to stimulate innovation particularly as the support should also focus on increase adoption of technology and/or new business processes
- Skills-Human Capital – FWA, from the work of its Corporate Knowledge Retention Group and the Young Water Dragons – Skills for the Future Initiative, recognises that a critical component is the level of skills across the sector – it is estimated that up to 50% of people will leave the water industry within the next seven years and this loss of knowledge and experience represents a major challenge to innovation, development of ideas etc.
- FWA has found that the sector faces a ‘skills attraction’ challenge; not enough people are joining the sector and whilst some of the ‘gap’ can be managed through increasing the adoption of Artificial Intelligence systems, robotics and machine learning, this is only part of the answer. Future Water Association believes that there should be a ‘**skills for the future**’ challenge supported through the additional funding mechanism as this is a key component of supporting the cultural change (and transformation) needed – this should be reflected in the principles as it will encourage future generations to join the sector!

⁵ OFGEM Low Carbon Networks Fund <https://www.ofgem.gov.uk/electricity/distribution-networks/network-innovation/low-carbon-networks-fund>

⁶ Bridging the Valley of Death, UK Parliament Science & Technology Committee - <https://publications.parliament.uk/pa/cm201213/cmselect/cmsctech/348/34805.htm>

- The Association supports the ‘open-by-default’ approach managed properly to support IP, linked to the new technologies/ideas and alongside this a recognised ‘approval mechanism’ so that new technology can be used with confidence by any water company.
- FWA further recognises that during all of the stakeholder discussions that the water companies have conducted with customers – ability to pay was not a priority – customers wanted to see improvements and advances from the water companies. Customers appear willing to pay for real change in the utilities. Such change will benefit customers going forward.

Q: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?

Future Water Association recognises that the collectively funded competition model has a lot of merit but alongside this the association would like to raise the issue of ‘innovation uptake’ and we argue that there are a lot of innovations, technological and processes, that already exist in the market place – these innovations must be allowed to come forward into the proposed process. These are innovations already identified for example via the Northumbrian Water Innovation Festival, through Isle Utilities or via the FWA Water Dragons annual competition. Bringing innovations forward, faster, that have already been assessed, would be a boost to the early part of AMP 7 and would bring technologies into all aspects of water operations; this FWA argues is important ‘additionality’ and a key part of starting the support offered under the fund.

FWA also believes that:

- A competition model must build on initiatives that already exist (such as the FWA Water Dragons which has been running for ten years);
- Existing initiatives could be used as a basis for partnerships across the water companies, particularly as they would be a natural conduit to the SMEs who take part in for example Water Dragons (this would also bring in for example the work of the WaterHub⁷ who have a proof of concept initiative alongside Water Dragons that operates in partnership with Northumbrian Water);
- The focus of the fund should be attracting the additional investment needed to apply the innovation alongside proving its viability. This would enhance the joint working/collaborative approach where water companies provide additional investment, alongside the fund, bearing in mind that the SME’s will have already made considerable investment themselves;
- The administering entity must build-in existing initiatives as part of the development of the framework; be lean in terms of its structure; and be transparent. Existing operational water innovation platforms are already in place with the FWA and the WaterHub and these can be shared with OFWAT;
- The costs of administering the competition, setting up the framework of operation must be kept to a minimum and FWA argue strongly that such costs should be no more than 1-2% of the total fund;
- Establishing an annual event that highlights the innovations’ progress, and presents new ideas and technologies, would be an important way to enhance the role of the fund – the defence sector utilises such an approach;

⁷ The WaterHub - <https://www.thewaterhub.org.uk>

- There could be a role for coaching support as part of the transformation process, the Horizon 2020 programme is an example of where coaching is proving beneficial in supporting cultural change with innovation⁸.
- Partnership models need be part of the discussion – models where the water utilities and supply come together to focus on a particular challenge, such an open-innovation model that focus on ‘value-proposition’ is well established and a role to play in the water sector⁹.

Q: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?

Future Water Association believes that end-of-period roll-out reward makes sense if the additional revenue is targeted to support investment in the technologies and processes identified towards the end of the AMP period and most importantly the dissemination of learning from the innovation and the embedment of it in water company operations. This can be as costly as developing the innovation itself especially if it is accompanied with training and ongoing development. This is particularly important in the context of new skills in the sector and the training they will need. This would ensure that innovations are developed throughout and beyond the AMP period.

The Association argues that the reward should be geared towards the companies that take forward the innovations faster – alongside sharing the innovations across the sector.

Q: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?

FWA believes that regulators should in addition have a duty to develop resilience dividends¹⁰– this approach proposed by organisations such as the Rockefeller Institute, rewards organisations for developing systems that help the sector and wider community to become more resilient. FWA believes that a ‘resilience dividend duty’ alongside the innovation fund would increase customer engagement. As a result Regulators could work with the utilities and supply chain to develop methodologies that allow companies to report annually against a resilience measure, designed for example to capture the number of “avoided” incidents as a result of actions taken – such as schemes in place, or innovations deployed. These could then be measured for example against challenging climatic/weather related conditions e.g. severe cold spell, but with xx thousand fewer customers affected than in a previous year, or a long drought period.

FWA believes that such a duty would go beyond the existing ODI system and the proposed innovation funding mechanism outlined. Success would be measured by the number of major events avoided (flooding, interrupted supply, drought etc). In this way resilience dividends would achieve a great deal more than simply bringing innovation into the sector and would therefore be more openly ‘transformational’.

⁸ <https://ec.europa.eu/easme/en/tags/horizon-2020-sme-funding-innovation-framework-programme-coaching-business>

⁹ 2019 Q3 edition of the Institute of Water Magazine – “How to Align Water Utilities and SME’s to foster Open-Innovation’

¹⁰ Valuing the resilience dividend - <https://www.rockefellerfoundation.org/blog/valuing-resilience-dividend/>

FWA argues that the ‘resilience dividend’¹¹ approach would support creative thinking, stimulate new ideas and innovation and drive the achievement of a more dynamic, agile supply chain.

FWA also believes that options such as vouchers¹² used in the circular economy field could be used to drive innovation against certain challenges – this could be another additional funding option.

Q: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?

FWA supports the approach outlined in section four, specifically:

Sector Wide Innovation Strategy

The framework for approaching this joint initiative should be the UKWIR (UK Water Industry Research) organisations big 12 questions as they focus on the sector wide challenges of leakage, asset maintenance, pollution, flooding etc. but adding skills into the sector wide challenge. It is eminently sensible in our view to use these as the Industry has invested much time and effort in developing the questions as the common challenges. A sector wide approach is also likely to drive more collaboration and sharing of information about assets, this is working in the defence sector who have recently published their priorities¹³ and also with the Hydro-Nation Initiative¹⁴ in Scotland.

Centre of Excellence

Establishing a Centre of Excellence is a sensible step but given the test centres across England & Wales that exist already, the universities specialising in water and the various trade associations and research bodies, the Centre should act as a ‘coordinating’ system for activity and knowledge in the sector. With modern technology the centre can be established as a ‘virtual’ operation acting as a signpost to the relevant resources. This should not therefore be about the creation of a shiny new test facility that simply duplicates what is in existence already.

The open by default approach, where there is no IP conflict has to be the way forward – it has been shown to work in other sectors such as Aerospace and Formula 1.

Other Activities

FWA understands and recognises that the introduction of Totex (Total Expenditure) and Outcome Delivery Incentives (ODI’s) has helped the sector to move forward and the plans for an innovation fund are an important next step, but in addition the Association believes that there should be a requirement for each water company to produce an annual innovation report (individually and collectively) that describes activity, successes and challenges associated with defined priority focus areas set out by Ofwat. In addition, in order to hear a different perspective to water companies themselves FWA suggest that other industry bodies are

¹¹ Valuing the resilience dividend - <https://www.rockefellerfoundation.org/blog/valuing-resilience-dividend/>

¹² Designing Circular Prosperity - <https://c-voucher.com/>

¹³ Defence Innovation Priorities -

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/831427/20190906-InnovationPrioritiesPub_Final_.pdf

¹⁴ Hydro-Nation Water Innovation Service - <https://www.hnwis.scot/about-us>

able to submit their responses, commenting on what suppliers think of the water companies across a number of metrics. The potential metrics to rate the companies could include:-

- Degree of engagement/collaboration with supply chain
- Number of trials undertaken
- Update of new ideas/Innovations adopted
- Degree of effort required by suppliers to access right staff - similar to the customer score currently used
- Willingness to share outcomes of innovation trials across the sector
- The extent to which utilities develop skills to match their needs of and support the supply chain
- The cultural changes and skills that are being developed within the water companies
- A formalised and effective knowledge exchange/dissemination policy and process to ensure the take up of innovation across the whole water industry

From an FWA perspective, the intention would be to get the supply chain to also score companies in an independent and rational manner, provide some evidence and publish a league table. The industry would then be incentivised to collaborate on sharing best practice from those doing well and exploring barriers / constraints for those that are struggling. This would be a very different “voice” to that heard by Ofwat traditionally from water companies.

In addition, there already exist a cross industry innovation scorecard which could be used as a basis for benchmarking efforts and results against other industries, examples are consumer technology association ¹⁵and PWC scorecard¹⁶

Q: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?

In addition to the resilience dividend approach described earlier, Future Water Association believes that there is a need for a ‘single utility management’ approach. The Association has for the past 15 years or more had an annual conference examining all options for leakage and network management and 2019 will see FWA lead a workshop for alternative leakage strategies. The outcomes from these event has been that participants have asked if it is now time for ‘a single utility management’ approach to network systems, whereby the utilities establish an entity focused on water and wastewater networks, to support the delivery of forward thinking, better management and innovation,. FWA believes that measures that support and bring a focus to such a development would be a major step forward, supporting more focused approach to network management, which would enhance the uptake of new ideas, innovations and other sector practices, for example trenchless technologies widely used in the gas and oil industries. Regulators could

¹⁵ <https://www.cta.tech/cta/media/policyImages/policyPDFs/Full-Scorecard.pdf>

¹⁶ <https://www.pwc.com/us/en/services/consulting/innovation-benchmark-findings.html>

have a duty to develop the framework that would bring together water and wastewater network management (including all associated assets) into a single focus across the utilities.

Within the mix of ideas proposed what about a water innovation Knowledge Sharing system to maximize fund investments and avoid duplication?

Final Comment - Future Water Association would like to see greater cooperation and coordination of regulatory functions among the utility regulators. Such an approach would focus priorities, for example bringing IT/Telecoms infrastructure up to current standards across the whole country, this would greatly help to support the digital revolution, which is beginning in the water sector, but which needs to accelerate. A more comprehensive digital, telecoms infrastructure would support better data transfer, more real time information to drive decision making.

Future Water Association through its Innovation Hub and Intelligent Water Management Group is happy to elaborate on any of the above.

Kind regards,



Paul Horton
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