



## Discover the Water Sector Webinar Transcript

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### Key:

A = Arlene Goode

C = Caecilie Hougaard Pedersen

B = Bart Schoonbaert

O = Oliver Raud

CP = Carly Perry

P = Paul Horton

- C: Okay, people are still joining but I think we will get started. So welcome everyone, welcome back to the people who were here last week and also welcome back to anyone who is a newcomer, we're really excited to have you back to share some more insights in the water sector and support for the Water Discovery Challenge. Do feel free to introduce yourselves, where you're joining from, your organisation and all of that in the chat so that we can all get to know each other. Also a quick welcome to our speakers, if we could change the slides, thank you very much all for being here today. I'll let you all have 30 seconds to very quickly introduce yourselves, so I am Caecilie, I'm from Challenge Work and we are part of the team delivering the Water Discovery Challenge on behalf of Ofwat Innovation Fund. So Arlene?
- A: Thanks, Caecilie, hi I'm Arlene Goode, I'm Associate Director with Arup and have been working with Challenge Works, Isle Utilities on awful lot of course on the delivery of the Innovation Fund and welcome to the session today.
- B: I think I'll go next, hi everyone I'm Bart. I'm with Arup in Arup's Water Advisory Team. I've been in the industry for probably 15 to 20 years working in or around the industry and several of those years with Ofwat who of course is [unclear 0:03:19] running this Innovation Fund, this Discovery Challenge. Good to be here.
- O: Hi all, my name's Oli Raud. I'm the Program Manager for CREWW which is the Centre for Resilience, in Environment, Water and Waste, a collaborative research development and innovation program between Southwest Water and the University of Exeter. I have some years of experience within the water industry itself and notably within the broader Ofwat Innovation Fun having written bids, been successful with bids and delivering projects as they stand at the moment. Good to meet you all.
- CP: Hi everyone, Carly Perry, Managing Director of Spring Innovation. We are the innovation centre of excellence for the water sector across the UK and Ireland. I've been in the sector for 15 years now working for strategy, regulations, innovation, hugely passionate

about problem solving and collaboration and I'll explain more about what we do later in the presentation. Paul, over to you.

- P: Thanks Carly. Paul Horton, CEO of Future Water. I've been in the sector a long time, through many, many changes but I firmly believe that this is such an important sector, the most precious resource, we're at the heart of public health. It's just brilliant and fantastic and we're open for ideas, open for new collaboration and we just want to start doing things not just the best we can but as differently as we can as well. Looking forward to speaking during the presentation later.
- C: Great, thank you so much and you'll hear a lot more from our speakers later on during the webinar. So just before we get properly started there's just a little bit of housekeeping. So if there are any issues during the webinar feel free to use the chat, our team is ready to help you and they'll also be sharing lots of relevant links and material throughout the presentations. At the end of the webinar, we'll have plenty of time for live Q&A. So we'll be using sli.do for our Q&As. The platform's live already so please use the QR code that you can see on the screen or you can use the link that's being shared in the chat to access the Q&A and to ask any questions that you might have. You can ask questions during the presentations or during the Q&A and we'll address those on a first come first serve basis and we hope to get through all of them but there is 150 plus of you so if there are any questions that we might not be able to address please feel free to email us directly with any questions that might still be unanswered. Also just a note that if your question is for a particular speaker today do feel free to add that as well otherwise we will open the question up to the full panel. So without taking up any more time I will hand over to Arlene to get us started with today.
- A: Fantastic, thank you. This is an early session, there's a series and we'll see more about what other webinars are coming up, but we felt that as we were embarking on the Discover series that it was important to help understand what the water sector looks like in the UK but in particular within England and Wales, within Ofwat's regulatory reach. So this session is going to focus on introducing the structure of the sector and we're also going to explore some of those key players and the innovation ecosystem. So the agenda is Mark's going to talk us through the water sector, that is the environment, the structure, the regulation and some of the wider, broader ecosystem points. We're then going to move on and Olly's going to talk us through the innovation opportunities and challenges and he will touch on that, that will be covered more in the next session. Carly will then come in and join us and talk more about Spring the Centre of Excellence and Paul is going to provide us with the supply chain perspective. So hopefully with that you will leave today with a rounded view of the water sector and ready for your next session. So without further ado I am going to now pass on to Bart who's going to take us through the water sector, so thanks Bart.
- B: Thank you very much, Arlene. So I will take you through the water sector including those players in it. I understand there's going to be a lot of people on the call who are really not very familiar with this sector at all so I'll keep it relatively basic but for those of you who understand this some of this will be pretty obvious and familiar but I hopefully strike the right balance. Just starting, don't worry I'm not going to give you hydrology 101 with what transpiration is really all about but the reason why we chose this slide is because it has a river on there, it has a lake or a reservoir and it has ground water on there. So really the thing to draw out here is, because a lot of people in the UK well everywhere in the world think well it comes out of the sky doesn't it, so what's the big

deal here, it's actually to give a bit of a sense of before we get into the water comes through, where are we getting our water from, or at least where the water companies get the water from that they provide to us all.

So in terms of the UK about a third of the water that is used in the public water supply comes from ground water or from aquifers and about two thirds of it comes from reservoirs and lakes and rivers, surface water as people call it. That ratio is of course different in different parts of the country and so increasingly more ground water in the south and increasingly more surface water in the north. That does matter and I'll leave it at that but for example when you hear in the news lots of things about the risk to the chalk streams which are so unique and so precious to the UK, the reason why some of these are under stress is because some of the water that is being taken from the ground water supplies are the same water that recharge and refresh those chalk streams. So again very basic, there's groundwater and there's surface water where we get from and there're different kinds of complex and complications around where it comes from.

If we go to the next slide please. So this is what would be considered a very traditional way of looking at the end-to-end cycle of water and wastewater companies, I'll come in a minute to who they are and where they are, but really in terms of the services provided this is a traditional chain or the value chain, depending on the perspective that you take. So you go all the way on the lefthand side from water being taken from the environment, and I've already said a little bit of where that comes from. Then a water company and a wastewater company they will [unclear 0:10:25] that water and they will treat it, they may store it before it gets distributed to users, to the customers, it can be households, it can be non-households who will use that water for the purposes that they need it for and then to dispose of it down the pipes and the sinks and the baths and all those kinds of good things. That then gets collected by the wastewater company who then treat that wastewater and then release that treated wastewater back into the environment. So it's a chain, it's also a cycle.

So again you will hear a lot of terminology around this within the sector, a lot of it's often thought about the water side of it which is the lefthand side of the use and then the wastewater side of it which is the righthand side of the use. So these kinds of terminologies you'll become very familiar with very soon. I said this is a traditional way of looking at it, having said that this is how it works. There're a few things that are changing that I think it's important to draw out. First of all conceptually I think increasingly, Paul eloquently spoke about it, the importance of the sector at the heart of society and public health. The world is moving on from looking at water and wastewater companies as just purely transactional service providers, more as environmental business parts of society that have an impact much bigger on the services that they provide. So there's a conceptual change to how the sector is being perceived.

Secondly the use bit in the middle, customers are increasingly rightly not just sitting as asset recipients of those services, you know, I'll get some water, I'll use it and I'll put it down the drain but actually the extent their behaviours in terms of using water and how much they use all the way through to throwing wet-wipes down the drains, their behaviour has really impacted on the system so the customers are really at the heart of the system and behaviour change is instrumental to help address some of the challenges of the industry faces. So we're all in this together in that sense. So use has really gone from passive to increasingly active.

Then thirdly, and lastly, to say about the changes is that a lot of the traditional ways of work are really changing. So really a water sector that just works with these traditional supply chains to build big plants and big pipes a lot of that is still in place and will remain in place but the types of things that are being used to do what they need to do is really changing. So for example wastewater treatment increasingly people are looking at different types of treatments and can we use a natural treatment processes like wetlands? So the types of things that are being used are really changing as well across this value chain in part because of the environmental impact of some of the existing processes, so the carbon impacts, the biodiversity impacts. So there's really a lot of change happening across this traditional chain from end-to-end.

Moving on to the next slide then please. So this shows you the entirety of the UK with what's really drawn out in different shades of blue is the remit of Ofwat as the regulator in England and Wales and of course we also have Scottish Water and Northern Ireland Water which I'll come back to in a second. Basically there are two types of company and you might here this acronym, this industry's loaded with acronyms so forgive us collectively for that! You'll here about WASCs which are water and sewage companies and you hear about WOCs which are water only companies and it kind of does what it says on the tin. So the water only companies, they were the lefthand side of the previous slide, the method of use all the way to customers so they extract water and provide water. The water and wastewater companies are the water and sewage companies, they do that as well as providing the wastewater side, the sewage side of the services. So what that means, quite obviously but I'll spell it out anyway, is that the water only companies where they serve customers there will also be a water and sewage company to provide the wastewater side of the services to the same customers that are provided by the water only company.

So it's a combination of the two and you can kind of see on this map the different ones. Some are very big, some are relatively small, some are more urban, some are more rural and more sparsely populated. So very big differences in the companies and the topology that they serve and the customers that they serve. It also shows here this thing called NAVs, yet another acronym, you don't need to know too much about that but basically for any given company a subset of it's services in a very specified region could be provided for by other organisations through a new appointments regime for example. So they will be supported by other companies in certain locations. These companies, and I'll come to that as well, are all regulated by Ofwat. Scottish Water has its own regulator called WICS and Northern Ireland Water has a utility regulator which regulates gas, water and electricity. Now all of these companies come together with Northern Ireland Water and Scottish Water and also other organisations to develop the UK 2050 Water Innovation Strategy through great processes of collaboration. So that's kind of what the sector looks like in terms of the organisations serving customers.

We go on to the next slide please. This is the more regulatory government context around these companies. I'll go from the bottom up, it's probably the easiest way of doing this. So this is focused on England and Wales specifically. So you have the customers, you can think of these as household customers and non-household customers which is an obvious distinction to start with but there is actually a big difference there in the sense that household customers are served directly by the water and wastewater companies and the water only companies. You are served by the company that serves the area where you live so if you live in London you very likely will

be a customer of Thames Water or Affinity Water because that's the area that they serve. If you are a business, actually this is a competitive market in the sense that as a business you could be provided by a spectrum of retailers that can compete for your business and you could switch for example between being served by one retailer versus being served by another so it's a competitive business market in England. Not in Wales I should add, so this is only in England. So the water and wastewater companies serve the retailers who then serve the business customers.

So you have the regional water and wastewater companies above that and then you have the regulatory structure around these companies. If you are a water company in the UK you are very lucky you have three regulators to their endless joy no doubt. There's the environmental regulator which is the EA and it's the NRW in Wales. They're focused on more than the water industry specifically but it's really about the environmental impact of water and wastewater companies around extraction, around pollution and they're really focused on everything to do with the environment. I'll jump to the drinking water inspectors, the DWR, the Drinking Water Regulator and this is pretty focused on making sure our water supplies are safe and healthy to drink. So an incredibly important role really specifically focused on the quality of our drinking water. Ofwat is the economic regulator, or I like to call it the regulator that applies solid, economic thinking but they basically really set price and service packages for the water and wastewater companies on a five yearly basis. It does a lot more than that but is really a key part of what it does is basically setting the amount of money companies can recover from their customers and the service that they need to provide to their customers to be allowed to do that and also to be able to finance their functions.

There're interactions between these three regulators, so Ofwat will make sure that what's really important in terms of the environment and what's really important in terms of the DWI and water quality feed through its regime. Then on the righthand side you have the Consumer Council for Water. So this is not a regulator as such but it is a statutory body for consumer representation in the water industry. So they do a lot more than that as well, they do a lot of research on insight into customer views, customer preferences, customer concerns. Also it's a statutory body in the sense of the complaints process for customers in the industry who start with the company but maybe things aren't resolved it kind of goes through the Consumer Council for Water. So an incredibly important part of the broader regulatory and statutory ecosystems.

Then above that sit the government departments, it's DEFRA in the UK, it's the Welsh Government in Wales and so these are the departments responsible in the sense for the sector. Then of course above that there is international influence and input, we put the EU between brackets for obvious reasons, having said that a huge amount of the regulation that is in place and remains in place was driven from the EU over many years in terms of water standards, water body standards, wastewater treatment standards and so an enormous amount of influence and content that came out of the EU. Then of course the World Health Organisation's drinking water quality. There's a lot of input and influence into the regime that we have.

Swiftly moving on, I've only got one or two minutes left. So on the next slide, I won't go into this too much it's quite detailed but basically Ofwat has a five yearly cycle, they've called price controls which basically again is the period for which revenues and service packages are set and they're called ERs, you will hear that a lot, you'll hear PR24 a lot which is the next one, the last one was PR19. I think this graphic, looking at it, it's a bit

too spikey in terms of the investment, it's not like it goes all the way up and it drops all the way off but there is... it's cyclic to some extent, it will go down a bit and then go up a bit more so it's a bit extreme the way it's depicted here but there are basically regulatory cycles that influence the investment cycles within the industry.

Then I'll just move on to the last one or two slides. I've spoken about the water company, I've spoken about customers, I've spoken about regulators, I've spoken about government but there's actually a huge ecosystem around the industry in general, but also really in terms of the innovation landscape. This is quite a big ecosystem to navigate all the way from the industry bodies like Water UK and others, universities that are really linked into the water companies. The NGO community which is really important, they're definitely driving all the innovation, and even if you go to the next slide which I could only read some of, it gets increasingly more impressive and daunting as you look at this. The point being water is at the heart of our society, a lot of people are interested, a lot of people care and so it's a big and exciting ecosystem to navigate, and I'll stop there. Thank you.

C: Thank you very much, Bart. Sorry, I'm just jumping on for 30 seconds and then I will hand back to you, Olly, just to say that we are aware that Zoom is having some technical difficulties at the moment and that it seems like the chat is unavailable for a lot of you. So really apologising for the inconvenience but you can use sli.do, we've got the teams ready on sli.do so if you do have comments or questions do feel free to share them in sli.do instead while we're trying to work out what the glitch is with Zoom. Just very quickly saying that, and Olly I will hand back to you.

O: Thank you, Caecilie it's very kind. So yeah I'd like to take just maybe five minutes or so just to talk a little bit more around some of the challenges and opportunities we face in the sector at the moment relating to innovation and really we're trying to draw those out within Discovery Challenge and find new entrants, new opportunities and think differently really. So if you indulge for 5 or 10 minutes I'll hopefully take you through what is a bit of a whistle-stop tour of some pretty big challenges and some pretty wicked intractable things that are going on in the world right now which the water sector is grappling with and what essentially we're looking for support with from a broader base. I've been in the water sector now for about three years or so, I've seen a great deal of change in that time as well and I think this really is an exciting to be part of that, the sector is transforming, it's needing to transform, the expectations are different compared to maybe where we were a few years ago. The external pressures and inputs on the sector are different and they are changing and they are changing rapidly as well.

So none of what I'm going to go through is exhaustive, there are many, many more challenges we face and many more opportunities also, but just to give you a flavour of the things that we're obviously needing to react to. So from a global perspective and acutely locally in certain terms linked to maybe this summer's drought and the other kind of wetter periods we were having, climate change is a huge impact on our system and the way we think about management of water. Then broader than that, population growth we see that especially within transient populations in different areas of the UK, acutely felt down here in the southwest with a huge swell of population from tourists and tourism. So each of our regions need to grapple and understand those kinds of demands issues and supply issues. Some of our asset bases are indeed ageing as we need to maintain and promote that maintenance and ongoing updating of those assets

and also taking into account new technologies and maybe things which are disrupting the way in which we see our assets and how we use them.

I think it's also important to look at areas where a just and fair transition to net zero and circular economies are promoted within this, as Bart showed on the slide earlier maybe some of the thinking before as very much in a linear way but how do we add value and how do we promote value within a circular context and water is at the very heart of that as well, and wastewater as well. You will no doubt be aware of the huge disruption around data, AI, machine learning and other types of digitalised systems, kind of industry 4.0 what is the water 4.0 looking like as well so we have projects that are ongoing at the moment looking at that future state of the sector. How do we leverage, how do we embrace data, we're very data-rich companies, we've very maybe insight poor at times and how do we manage that shift and how do we embrace that challenge? I think crucially as well, and we see this a lot within the kind of media and the press at the moment as well and those increasing expectations of water sector, environmental Stewardship and regulated performance in that kind of context as well as not just environmental stewardship but also in terms of affordability now given the context we play in today. These are all, as it says, they're all challenging those conventional approaches that we've had previously before and it's a very exciting time to be part of that transformation.

So next slide please. This, like I said, is trying to characterise that change a little bit more. So we know that BAU is not enough and this is why we really applaud the initiative from Ofwat and the water company as well and the sector to embrace this need for change, need to think differently and need to bring in new voices and enfranchise new views and different views from across not just the water sector but adjacent sectors from outside of that as well. So we've often been criticised for the speed at which we deploy and bring innovation and we develop that within the sector. Sometimes we hear criticism again around getting into the sector is always difficult, there's a kind of overriding, overruling procurement and entrant pain point let's say for a lot of innovators. How do we make that more easy? I think again a lot of those barriers have been taken down but some of the efforts that we're doing, we're putting in to place at the moment.

It has, to all intents and purposes been quite a traditional industry for many years, it's been a kind of a silent service and that's been a sense of pride for a lot of people that you don't necessarily always think about water and the way you consume it. It's a 24/7 food grade product which is always on-tap, excuse the pun, and it's all around that reliability and operability and how do we innovate and how do we leverage that innovation and new thinking when you have those [unclear 0:28:26] especially from a drinking water perspective, regulator regimes which protect health as well as the environment. But there is a real, unprecedented collective energy, I think we want to draw that out for you guys as well, to kind of create, to bring in these different changes as well which are cost-effective solutions which challenge the status quo and deliver against those kinds of multi-capitals we talk about. So not just bottom line to shareholders but crucially the environment, society, customers as well as our more traditional financial bottom line. So how do we engender and how do we embrace that type of multi-capitals approach and how does innovation feed into that. Then really, sorry for the acronym there, business as usual! The development and the employment of those technologies and skills and an innovation culture is crucial to bring those two and make sure that the sector is actually performing against the expectations and

needs of our broader civilisation.

Then finally, the last slide, just to give you a bit of a sense of where those anchor points are. So this is pulled from the research program that I manage with our colleagues at the University of Exeter. So by no means again is this exhaustive but this hopefully gives you a sense of some of the future horizons around research, innovation and where you might be able to find hooks into making that change and that impact through innovation. So that could come through drinking water quality, wastewater, how do we manage our pollution, how do we manage those down, how do we build in that resilience into the sector and crucially how do we manage water to avoid leakage and make sure that the water stays in the system where it needs to be. Then as a kind of cross-cutting theme and how is technology, skills, people, culture, how does that really underpin those changes that we want to see. So that's all from me, it's a bit of a whistle-stop tour like I said, but others will pick up on how we are going about that and how the Discovery Challenge and the broader Ofwat Innovation Fund actually enfranchises people to get in there and make a difference alongside us at the water sector and water companies. Thank you.

CP: So for anybody who wasn't on the call at the start my name's Carly Perry, I'm the Managing Director of Spring Innovation. I've been in the sector for 15 years and am hugely passionate around innovation, solving problems and collaboration and Spring is here to do both of those things. In the next five minutes I'm going to give you a quick overview of what Spring's role is and how we are helping to accelerate innovation across the water sector.

So if we jump into the next slide please. So Spring is the innovation centre of excellence for the water sector and a lot of what Olly was just talking about we are here to respond to that and help be a front door for innovators trying to understand and enter the sector. So we're here as an innovation accelerator to enable collaboration within and beyond the water sector to drive transformational innovation. We've been created by the sector through extensive engagement with water companies with supply chain, with regulators, to meet a need and what we're doing is we're prioritising innovation areas for people to focus on, so we're taking what Olly just showed you from a regional level and putting that into a national level creating and then connecting to existing processes to allow innovators to submit ideas in. We're building collaborations to solve ideas in an efficient way and we're sharing knowledge from innovators to accelerate learning as well. So all of this is set up to remove duplication of innovation projects in the sectors. On average an innovation project is duplicated four times and whilst brilliant stuff is going on regionally there are efficiencies that we can make by running some of the innovation projects nationally.

So if we can skip through to the next slide please. So we have the Water Innovation Strategy 2050, that has been mentioned a few times throughout the launch call and this call already. This document was created in 2020 and it's hosted on the Spring website. The first step in change is really understanding your challenges and creating an ambition for the future and this document does that. So it's got seven themes that were created from key stakeholders across the sector from providing the services society needs and expects all the way through to enabling diverse future-ready people and partnerships working. There are high level ambitions that we want to achieve by 2050 underneath each of those and if you go into the document there's much more detail about short, medium and long-term ambitions for innovation in the sector. If



you're an innovator on the call and you're new to the sector I'd highly recommend having a look at this document and making sure that your product or service is aligned to the ambitions that are in this document. It will really help you to drive your connection with water companies. We'll also be doing a session that goes into this document and the ambitions in it in more detail on Thursday, so you can sign up to that session to get more information. What Spring is really doing here is prioritising you, the innovators, around these problems to make sure that we've got innovation coming in to meet the needs of the sector.

What we're doing is we've also got two service offerings that we're running to help achieve our ambitions within Spring. If we click through to the next slide please I can walk you through the first of those. So we've got the Spring accelerator and we've got knowledge transfer. So first of all the Spring accelerator. This is an end-to-end process from ideation through to adoption. We'll take the ambitions from that Water Innovation Strategy and either put calls for innovation out yourselves or we'll partner with people who are already working in that way in the sector. We'll assess those ideas and then, really importantly, Spring will facilitate collaborative projects that then can move from idea to value in a faster way. So this is really about removing that duplication that I mentioned within the sector. Just as a quick example of the first round that we did of this, so we chose 'achieve net zero carbon' from the Water Innovation Strategy and put a call for innovation out. We had four ideas in pitching, we're currently mobilising three of those ideas, there is a fourth innovation that we are in discussions with as well that we're looking to mobilise into a collaborative project. We're on our second round of these accelerated processes at the moment and we've got a pitching day coming up soon. So really keep your eye out for when we launch calls for innovation and when we partner with other people around building collaborative projects from the innovation coming in through their channels.

The second service that I just wanted to quickly talk through, and if we click through to the next slide please, is knowledge transfer. So knowledge transfer is all about accelerating learning in the sector and we've got two elements to this service. So one is the knowledge library that sits on the Spring platform and there are links to that in the chat. That has used cases of innovation projects with insights across project objectives, outcomes, videos relating to those projects, importantly information on adoption and how you can adopt the innovation. You can go into that platform, search for use cases and learn in your time there. The second service offering is around deep dive showcases into innovation projects. So we'll work with a project team, the water company and all the partners to design a deep dive showcase. We have anywhere between 11 and all 19 water companies attending, anything from 120 through to 180 people attending those. We have a really high registration, a really great channel that's happening for these showcases. So if you are an innovator that wants to share insights from a project you've worked on with water companies this is the channel for you to do that. Please get in touch with us, again details will be in the chat around that.

So really just to summarise for us, if we can flick through to the next slide please. So Spring is here as the water sector innovation centre excellence across the UK and Ireland. We're here to be a front door for innovators, we're here to prioritise the innovation challenges for you to solve. But we're here to also facilitate collaborative innovation projects and to help share and scale effective solutions. So there're a few contact links here, there's our website with our platform where the knowledge library that I mentioned is held and there's an admin address for you to get in touch with us if

you've got any questions. So at that point I will pause, you can ask questions in the panel session or on sli.do and I'll hand you over to Pual Horton.

P: Brilliant, thanks very much Carly. Obviously I'm probably going to be covering the whole supply chain so I know it says England and Wales supply chain perspective because it's linked to the Discovery Challenge but who are we as Future Water? Well we're there to challenge government, inform government, work across the sector, bring all the different aspects of the supply chain together, lead the discussions and drive certain areas where we're passionate as an organisation about skills and innovation. We're also passionate about inspiring the next generation. We wanted to help to change the narrative about the sector because there's fantastic things happening, some brilliant people work across the sector as well and we need to recognise that. Actually the sector is very much a part of the whole industry across the whole of the UK and I'll touch on that in a minute.

If you look at the next slide, thanks to one of the innovation groups, Wipro, for pulling this together but Olly touched on a lot of these things. The sector is a cycle and I know that seems a bit obvious but it's always worth mentioning because as a cycle it links in to everything, we've got to talk about delivery, we've got to talk about demands, we've got to talk about everything that happens not just at the utility level but across the whole of the sector, the major water users and all of the suppliers that link into that and how that all knits together, not just in terms of supply but obviously the demands, the procurement, all sides of this. This is why the sector's so fascinating and yes it's challenging but it also is why it needs all the areas of innovation and Olly touched on those in his presentation which was really good. If we're going to tackle things like carbon just look at all the different elements on this slide that link into all of those. This is why innovation itself is so important and we as an organisation bring to the table Water Dragons which dovetails very much with what Spring is all about.

So if we look at the next slide, we've been doing something called Water Dragons, a simple version of Dragons Den for over 10 years and we've been looking at what it is people bring to the market, what do you know about the market itself for the whole sector, why is your innovation different, and these are all important questions, and what happens when you implement your innovation, what does that mean for existing practices and systems. This is all the right way of looking at these things and where a short, sharp assessment, and I think we dovetail what we do very much into the way Spring operates, so it takes things to that next dimension. If you think back to what Olly presented about the challenges of climate change and population and net carbon zero and all of those elements, process emissions monitoring, you end up with different areas coming together, flooding of wastewater, water resources, environment, all coming together. If you drew the classic Ven diagram there's an area in the middle where they all cross over with each other which represents some of the challenging areas that we're trying to deal with as a sector. This is where I think suppliers have a real potential to bring things to market and probably bring things to market faster than what can be done in a more traditional way.

Next slide please. Just a few pointers, so if you think of it from a potential client's viewpoint yes there's the water companies but the environment agency if you think all the monetary requirements that are going to be used not just in terms of CSOs but more broader impact on the environment, on river systems, on coastal areas etc, you've got the technology companies who are wanting to much more broadly bring things to

market, the industry operators and investors. The investors are not just at the utility level, they're not just built into the [s.l. ant 0:42:26] cycle process, there are investors out there who look at this space and see some things that are different. When you look at differences I think it's important to recognise that the sector's open for a lot of different types of ideas and I might call them inventions more so than innovations. Just look at one of the Earth Shot prize winners who built a seaweed based product to hold water, absolutely fascinating. I think we need to also now go outside of the box and the core areas, leakage, digital, remote, are all a hugely important part of this challenge. When you think the sector itself has got 350,000 kilometres of water mains and probably close to double that in terms of sewers and drains, all underground, needing to be looked at, managed and maintained. There's a huge, huge area.

If you look at the next slide, I've put this into the mix because it's a theme-scape map and it's based on some work we as an organisation did with a company called Clarivate and the reason we did this is you start to see conversions. What do I mean by conversions, it's conversion of technology, so we tend to think oh water sector, right what is everyone doing in the water sector? Actually we're developing IT systems. We're developing things that are outside of the sector that come from other areas, we're developing monitoring sensors, we're developing control systems, cloud based systems, using satellite technology and additives and all of these areas, you know, things to build into all the areas of carbon reduction and as Olly mentioned AI machine learning. You start bring all those into the mix and you realise these are technologies and ideas that have been developed across several different sectors and outside the water sector. So developing something like this brings to the table actually where is the convergence and where can we start to think about, and that's important in what we're trying to do.

Next slide please. Just to build on what Carly was mentioning, if we look at just two or three success stories. We've had some great things around leakage, we'd be battery free, be different types of sensing stuff. We've also had some really good things around air lift pumping, so a dramatic reduction in energy. The air lift pumping was actually developed with a company coming out of Canada, and so what's interesting here is that we're open to some great ideas across the sector from other industry sectors, from other countries and it's all building this into the mix which is why the competitions are so fascinating and why the Discovery Challenge is really fascinating as well. I openly encourage everyone to get involved in this, as I said before we're at the heart of society, we're at the heart of public health and we constantly need to be doing things differently when we recognise all of the challenges. Thank you.

A: Thanks Paul, and what a great finish to a great set of presentations, thank you to everyone. So before we go on to Q&A and don't forget you can add your questions into the sli.do for Paul but I thought I would very quickly just say that there is a whole series of webinars coming up. Please do join us on it. We'll go on to Q&A in a second but you can see here what the timetable is, we've got them going all the way up to mid-February and March and we have an entry clinic at the end of Feb. So yeah, brilliant, thank you. Let's go on to Q&A now. If everyone on the panel wouldn't mind putting their cameras on and I shall field the questions to whoever is appropriate I think. So we've had some great questions and thank you. There is a question here, Caecilie I wonder if you can answer on if you already have a link or have links with a water and you're entering the challenge, can entrants work with them rather than have a random water company allocated to support?

- C: I think that this is probably a question relating to the kind of sector-led mentoring where we will match finalists with water companies. So the way that finalists are matched are at random. So you cannot select what water company to work with if you are successful in your finalist stage, but if you are successful in becoming a winner at the winner stage they are matched based on appetite both between the water companies and the winners, but at the initial stage it's allocated at random and that comes from both sides, the water companies and for the finalists. Olly, I'm happy for you to feed in on that one as well.
- O: Yeah, nothing more to add other than that really. Naturally we want to be able to support innovations and ideas coming through the sector so I think it just goes without saying that anyone that would be partnering with you will have the sector at the front and centre of their interests and will supporting and promoting the benefits from that wider perspective as well. So yeah, I don't know if there's anything else I can add other than really.
- A: Okay I think that's all good. We have another question which has come in and it's quite topical given today's the third anniversary of Brexit. What role does the EU still have in the UK regulatory environment for water. Bart, you touched on this quite a lot in the slide, in the presentation that you've just done so I wonder if you're able to elaborate on that.
- B: Yeah, I mean I guess just very briefly so number one as I mentioned earlier that a lot of the existing regulation and legislation was driven by the European Union around things like the water practice and directive so a lot of the existing regulation is driven by the EU, number one. Number two, there are already some changes now being implemented on the back of Brexit that are really affecting the industry and so for example the switch from the common agricultural policy, the payments to the agricultural sector and farmers in terms of what they were being incentivised or subsidised to produce food basically and how much land they produce it on is being shifted to something called Environmental Land Management. Again lots of background but these are really quite important changes that is really all about the extent to which the agricultural community can change its practices which impacts on the watercourses and so this is really quite relevant to the water. So we're really seeing some changes already that are happening because of Brexit.

Then thirdly, as anybody who reads the papers will now that there is kind of a government initiative around looking at some of the extent to which EU driven regulation and legislation could be adjusted, amended, altered on land on the back of Brexit. It's not for me to opine, I don't know what will happen there and so we'll see what happens. I think importantly though from an innovation perspective is that this is really beyond the UK borders and the water industry will learn and share practices in the UK with the EU and more globally so I think that's quite an important point to bear in mind irrespective of Brexit.

- A: Thanks Bart, that's great. Paul, I'm going to bring you in on a slightly different question here and it's around what the opportunities are around nutrient removal or nutrient recovery. I guess that spans quite a large area but if we think about what are some of the opportunities around nutrient recovery from say waste water treatment works and then resulting in high quality drinking water potentially from that. Have you got a view on that?

P: That's a good question, a very good question. Just to briefly touch on the last thing, regulations and standards are still being followed in terms of the EU context the UK. Where do I start? There's significant potential, a few of the innovations coming through and some that we assessed as an organisation back in December through Water Dragons obviously linked to phosphorous, linked to the use of algae etc but massive potential and when you start to look at what happened last year the amount of things we can do with treated wastewater in terms of recharge and support for potentially drinking water is significant. It would need the adoption of regulatory support, particularly from the Drinking Water Inspectorate but I think with any of these things some of it comes down to economics, clearly but when we look at things like phosphorous I think it goes beyond economics, it's a resource that we need to recover, it's something that's limited. When we think of the fact that ortho phosphates used in terms of ensuring we don't get lead coming into drinking water supplies or if it does it becomes inert. We can't keep using that as a dosing system.

So the recovery of this is significant I think, and that will be one of the major areas that I would advise any suppliers to think about. There are technologies out there but you then run into scale and it's the scale of the recovery that becomes the important aspect here.

A: Thank you. I'm just going to go back quickly to Bart in your presentation on your section you talked about how the water sector is changing, how it's becoming more multi-organisational, multi-sector. We've had a comment about the importance of agriculture and the part that that plays within the water sector and the use of water. I'm just wondering if you've got any views on the agricultural part and how important that is going forward in the water cycle.

B: Yeah, I think it's critical. Back to my point at the very beginning around how traditionally this was about the water sector extracting and going back in and it's putting it back into the water environment which rightly Paul and Olly just said it really is a cycle, absolutely it is. I think what's increasingly becoming known if not necessarily appreciated by the public is actually that what matters is really [unclear 0:53:43]. For example river water quality is what matters, the wildlife within it, the fact that we go swimming in it is what matters and actually if that's what you really are focused on you need to look at all the people that contribute to that and that will be different in different areas. But actually over time the water sector was really the worst contributor to some extent and that's really a huge, huge improvement that's really changed and so agriculture is increasingly coming out proportionately in terms of the impact that they have. If you want to start spending money in the most efficient ways you want to really make sure that all the other sectors are at the table in terms of what matters. So it's really, really important, collaboration is no longer about the single industry and it's [s.l. open 0:54:27]. So that's one point.

Then just to add to your previous question also that Paul was answering, I think it was kind of a re-use question in there. The public perception and the public opinion is really, really, really important in terms of the acceptability and the acceptance of some of the practices on the water and on the wastewater side. So it might be the greatest idea from a technology perspective and it might be the best solution on paper but if you don't bring the public along in terms of acceptance then some of these things will hit a wall at some point. So that's really important.

- A: Thanks, Bart, and of course you've mentioned there about how there're all sorts of organisations involved in the solutions that we need to change the water sector. For example there's a question here and it's a good point actually about lots of collaborative projects with, for example, the Met Office that are coming through and those are really helping the water sector. So I think Caecilie for you do you mind just sort of saying about whether the likes of organisations such as the Met Office or those within the meteorological and other areas are eligible to apply into the innovation front for the Discovery Challenge?
- C: So if this is like projects that are currently working with the Met Office whether they're eligible or not if that's what the question is relating to I don't think is particularly clear, then yes, as long as the project is [unclear 0:56:02] for innovation themes of what we're looking for with the Innovation Fund and they qualify under the eligibility criteria, that they're incorporated in the UK and hold a UK bank account then they are eligible to enter and to compete for funding through the innovation fund. I did read the question, I'm not sure if it's relating to whether similar innovation funds exist in the weather sector. If that's the question then please do email us and we'll try and support you in that way, I don't know that off the top of my head, but you would be eligible as long as your project fits within the innovation theme.
- A: Thanks. Carly I just wondered if you could answer one maybe with Caecilie here around what Spring's role is in terms of how does it relate to the challenge grant, presumably that means funding through the Discovery Challenge.
- CP: Sure, Caecilie shall I go and then...
- C: Yeah that's fine, you start that one and I'll jump in afterwards.
- CP: Okay wonderful. I will try and answer a second question that I saw come through as well. So I think there're probably four things to mention here for Spring to quickly walk through those. So we can be the single door into water companies across the UK and Ireland so we can facilitate between if you've got questions that you want to be answered we can be that front door for you. So there are formal processes through the Water Discovery Challenge for you to do mentoring but if you have broader things that you want to check in about feel free to reach out to us. We are building a single trial framework so once you get to the point of trialling your innovation with water companies we will have a process that's there to make sure the scope of that trial is relevant to the majority rather than minority, so we'll be able to help with that with the Discovery Challenge. Knowledge transfer is another area that we'll be able to help with, so I walked you through that service offering. So once you've got insights in your project we can help you share those across the sector to make sure that we're getting mass exposure and it's got the potential to scale.

The last thing to mention is just around matchmaking with UK companies. I know this question keeps coming up around how an international companies matchmake with UK companies, we can be a conduit to do that as well. So again please reach out to us if you would like us to do that and we can connect with others like Future Water and others in the supply chain and the ecosystem to make that happen.

C: I think I won't add a huge amount to that, also conscious of time, but I think Spring is heavily involved in any kind of innovation taking place in the water sector so it totally makes sense for them to be involved in the Discovery Challenge as well. Just as the water companies are supporting it and Future Water Association is supporting it and [unclear 0:59:01] is supporting it and Spring has a critical position within the water sector and can support the talent, reach a much bigger audience and can connect people to knowledge and companies within the water sector. So yes, just adding that, that if you are sitting outside the UK to reach out, there might be an opportunity there to partner and to collaborate with someone who is incorporated in the UK and that would make you eligible to enter.

A: Great, thank you. I think that's about all we've got time for now. There're a couple of questions still on in the chat so we can reach out with some answers if needed. I want to just thank everyone in the panel for the presentations and all the hard work and good luck to everyone in your entries and please do join us at the rest of the Discover webinar series, there's lots more to learn about the water sector and, yeah, welcome aboard. Thanks everyone.