



UK Water Partnership newsletter

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Welcome from Sarah Hendry CBE

Welcome to the second edition of our new series of newsletters designed to keep our members up to date with the latest news, views, and developments from the UK Water Partnership.

I'm delighted to report that since we published our first newsletter late last year, our extended UKWP network has made significant progress across all of our key workstreams, details of which can be found below. In particular we've made a strong start with our three new initiatives – Greenhouse Gases, Public Value of Water and Water Resilient Places – selected by members attending our annual event last November.



And with that in mind, it's time to ink October 18 into your diaries as the date for our 2023 annual event, at which you will be invited to select our next set of strategic initiatives. The event is co-promoted by UKWP and our friends at British Water and Spring, and we're grateful to Arup for hosting us at its offices at 80 Charlotte Street in London. Further details about the event and a shortlist of potential new initiatives will be circulated in the next few weeks.

Finally, I would also draw your attention to our news item on [UK India water industry collaboration](#), a hugely encouraging development and a great example of how a piece of UKWP thought leadership – in this case within our Digital Water workstream – can help to initiate discussions and bring stakeholders together to tackle a challenge that can potentially benefit countless millions of people.

We hope that you find the content in this newsletter interesting and informative. If you have any questions or feedback, don't hesitate to contact alex.wilkinson@theukwaterpartnership.org.

Sarah Hendry CBE, Chair, UK Water Partnership

Introducing our new strategic workstreams

At our annual event in November last year, members selected three new strategic initiatives – Greenhouse Gases, Public Value of Water and Water Resilient Places. Here's what's been happening on each over the past six months:

Greenhouse Gases

Scottish Water has set ambitious targets to achieve Net Zero across all of its operations by 2040, and its process emissions a decade earlier, by 2030, goals that are translatable across the UK water sector as a whole.

Our new Greenhouse Gases workstream is a collaborative effort led by the Scottish Hydro Nation Chair (HNC) programme and Arup, with the support of UKWP Director Chris Newsome. Its primary objective is to identify and quantify all major sources of greenhouse gas (GHG) emissions throughout the water cycle.

Current attempts to quantify emissions often underestimate their magnitude and do not fully account for the impact of more potent GHGs, such as methane and nitrous oxide, both considerably more damaging than CO₂. It is proposed to establish a measurement framework to identify upstream and downstream emissions, in addition to those produced directly during water and wastewater treatment.

The collaboration between the HNC Programme, Arup and UKWP provides an opportunity for increased engagement and enhanced reach to facilitate a transformational work-package in this area. The workstream will begin as a year-long programme to engage stakeholders from across the industry, academia, and third sector to establish a community of interested parties and identify available resources to contribute to a wider network working on GHG emissions in the water sector.



To make this happen, a key early action for the workstream is to draft and submit a grant application to the Engineering and Physical Sciences Research Council (EPSRC).

Public Value of Water

As water supply and environmental challenges, both here in the UK and around the world, continue to accelerate, predominantly due to climate change, the public is placing increasing value on water, once regarded as a free, unlimited natural resource. This new workstream aims to help improve the long-term approach to infrastructure investment decisions that integrate wider sustainability considerations, alongside economic and social outcomes.

A key objective is to improve public trust by better reflecting the views of citizens, and communicating how the water industry is providing clean, resilient and sustainable water supplies for the future. To achieve this requires the sector to work together to respond to the challenge of creating a comparable process, that is robust, and sufficiently broad, integrating environmental and social impacts into business case methodologies.

This workstream builds on previous activity by UKWP and will enable members and other stakeholders to work collaboratively to achieve our collective goals. So far, we have been carrying out a desktop research study informing a report published to UKWP members later this year. Among the contents will be:

- a survey of UKWP members to establish the current level of understanding and usage of the Greenbook wellbeing guidance.
- an initial investigation into sources of potential innovation funding with the objective of securing £50,000 of funding by October.

We will also publish case studies and hold events to share outputs of the research. A report with case studies will be shared with members in July.

Water Resilient Places

This workstream has been set up in response to the concept of the 'Resilient Place' becoming increasingly prominent in government and agency policy agendas across the UK and beyond. It will specifically address the concept from a water sector perspective, with a focus on developing water-resilient solutions for new places.

It is being led by a steering group comprising representatives from Hydro Nation Chair, the UK Centre for Ecology and Hydrology, the Department for International Trade, along with UKWP Directors Tom Flood and Hans Jensen, with potential future support from the Welsh Government.

Its first task is to develop an agreed and shared understanding of what 'Resilient Place' means from a water sector perspective, with supporting materials demonstrating key concepts and deliverables. This will be done by building on the UKWP's work on resilience and government and regulatory policy frameworks. Next the workstream will explore and develop place-based synergies and collaborations with key sectors such as professional institutions, practitioner forums and policy makers across the UK.



Ultimately, the workstream aims to work with a broad spectrum of stakeholders to co-create policy and a thought leadership digital resource, available to all.

Save the date for our 2023 annual event

All UKWP members are invited to help shape our next set of priorities by joining our 2023 annual autumn event on **Wednesday, October 18, 2023**. Co-promoted by UKWP and our friends at British Water, the Water Industry Forum, UKWIR and Spring, the event will take place at Arup's offices at 80 Charlotte Street in London. Please save the date and stand by for more details, who will be speaking and for the shortlist of new initiatives to be discussed and selected.

Progress reports on existing strategic workstreams

Circular Economy

- The circular economy initiative has progressed well throughout 2022 and early 2023 with excellent stakeholder engagement in a series of workshops to define the requirements for a water sector circular economy marketplace. The workshops identified the priority resources that the marketplace will focus on, the language that should be used to ensure that the purpose is unambiguous and is easy for stakeholders to engage with and the functionality that it will offer to users. We are currently exploring potential funding options to enable the formal development to commence.
- In parallel we have developed a thought leadership paper that articulates the rationale for and opportunities related to circular economy in the water sector. A draft will be circulated to UKWP stakeholder for comment in week commencing 15th May inviting feedback and comments with a view to publishing the final paper in June 2023. This will be a call to action aimed at raising awareness of and garnering wider support for the development of the marketplace.

Digital Water

- UKWP's Digital Water White Paper identified key areas of commercial opportunity for the UK plc, while an accompanying action plan featured focused research, increased collaboration, and proactive marketing of UK digital water expertise, to help it win its share of the global \$30 billion digital revolution in water.
- The UKWP has been supporting the Forth Environmental Resilience Array (ERA) catchment project in central Scotland since its launch, utilising digital twin technology to better manage water at the landscape scale. The Forth ERA - a digital observatory of the Firth of Forth's entire water catchment - focuses on climate adaptation and green recovery, with themes such as carbon sequestration, healthy waters, urban sponging, and energy recovery. The project utilises technologies such as synthetic aperture radar, soil moisture measurement, and high resolution imaging for water quality monitoring.
- We will continue to support the Forth ERA project and other initiatives utilising digital technology to better manage water resources. And we will take every opportunity to



collaborate with the UK water industry and global partners to advance UK digital water expertise and leadership.

See news item: [UK India water industry collaboration](#)

How the UKWP's *Digital Water* White Paper played its part by helping to initiate a discussion with the Indian Water sector, which led to wider stakeholders becoming involved and through their commitment the establishment of the UK India Digital Water Working Group – an opportunity to enhance Indian water resource management and the lives of many.

See thought leadership: [Forth-ERA - an exemplar for digital water across the UK](#)

Professor Andrew Tyler from the Scotland Hydro Nation Chair programme explains the significance of the Forth Valley Environmental Resilience Array (Forth-ERA) as an exemplar for digital water across the UK.

Net Zero

- The UK Water Partnership has been continuing to work closely with Jon Rathjen, the Scottish Government's Deputy Director of Water Policy and Climate Change, to ensure that Scottish Water's sector leading work on Net Zero is shared as widely as possible, to inform the activities of water and wastewater companies throughout the UK.
- "By the end of 2022 exactly half of the greenhouse gas emissions associated with the delivery of Scotland's water and wastewater services have been eliminated, when compared to the 2006/7 baseline figure," report Jon. The details are published in [Scottish Water's Net Zero Annual 2022 Update](#).
- "The Scottish Government has also launched [Net Zero Nation](#) to bring together information on the national drive to net zero. I would recommend both to UKWP colleagues and partners.
- Adds Jon: "From a UKWP perspective, I think it's important to be seen to be keeping up the pressure on Net Zero progress, not least under the intense scrutiny around issues such as Combined Sewer Overflows, which could cause the focus to shift away from the single biggest area of necessary progress from a strategic perspective. It's also important, I think, to link Net Zero with our work on Resilient Places, which is becoming a critical area of adaptation in the face of climate change, making it clear that we need to keep mitigating if we are to moderate the need to adapt."

Water Resilience

- Following the publication of our Water Resilience White Paper and Capability Capture last year, we have been working an updated version featuring new exemplar case studies of UK expertise in water resilience.
- All UKWP members are welcome to submit case studies for consideration, please do so via [this form](#).
- Meanwhile, our thanks to Arup's Martin Shouler for presenting an overview of UK water resilience capability on behalf of UKWP at the World Water-Tech Innovation Summit in London in February.
- A joint UKWP/Department for International Trade water resilience showcase event is being planned for later this year. If you would like to showcase your water resilience project, contact [Martin Shouler](#) or [Francisco Fuenzalida Concha](#).



Thought leadership

Forth-ERA - an exemplar for digital water across the UK

By Professor Andrew Tyler of the Scotland Hydro Nation Chair programme

Whether we like it or not, we have been shaped by our environment and we're now living at a time when the environment is changing at a rate that is unique in our planet's history. Water is at the core of our life and economy and is also the primary medium through which we are feeling the effects of a changing climate.

Increasing global temperatures result in more evaporation and energy within our climate system. Across the UK we are witnessing the consequences of these effects through increasing rainfall intensity separated by ever prolonged periods of drought.

These hydrological extremes result in shocks to our natural and built environment and are accompanied with deterioration in water quality. Deteriorations occur through the complex interaction of water, climate and land use changes, and impact our lakes and reservoirs, rivers and seas. Increased surface water runoff also overwhelms our sewerage systems and wastewater treatment operations, spilling untreated effluent into our rivers.

These impacts have direct and non-linear intersections with biodiversity declines, carbon losses, food security threats, and complex human health, social and wider economic impacts. Their effects are only set to intensify in the future (UK Climate Risk Assessment, 2022).

Despite this, the natural diversity of our landscape, interconnected with river, estuary and coastal environments presents many of the opportunities to enhance our natural environment and find nature-based solutions to help us adapt to and mitigate against climate extremes. The solutions to managing water must move away from increasing 'end of the pipeline' investments, to solutions developed and changes made within catchment, utilising nature-based solutions wherever possible.

This would allow us to address the challenges at, or closer to, the source of the problem before impacting on the wider environment. How we manage the water cycle at the catchment scale therefore has the potential to increase our resilience to extreme events, reverse biodiversity declines and increase our carbon storage, helping us to reach net zero more quickly.

The implementation of blue/green infrastructure in urban environments also has additional health and wellbeing benefits for our communities. Equally, water and wastewater offers opportunities for sustainable resource recovery, the development of the circular economy and energy recovery or generation. Water has the potential therefore to contribute to the new green economy and make a significant contribution to our transition to a net zero society.

A whole system approach

Our understanding of the water continuum has become compartmentalised or even siloed through geographical, institutional and disciplinary bias. The need to report on status across numerous environmental directives has also resulted in data fragmented across organisations.



This siloed approach is hindering our understanding of the complexity of the water system and its component parts. These issues are compounded still further by the compartmentalised jurisdictions of the stakeholders responsible for water and wastewater management. In moving forward from this status quo, we must also accept that we all, as individuals, have a responsibility and a role to play in the management of this most valuable of resources.

Inevitably, the challenges associated with water extremes provide a focus around place and provide an opportunity to drive change by bringing communities together with regulation, industry and researchers to develop and broker valued and sustainable solutions. A new paradigm of water management at the river basin scale is needed urgently to address not only these complex environmental challenges, but also promote environmental stewardship and stimulate opportunities for growth and prosperity.

The digital revolution now provides the opportunity to drive a transformation in our understanding of water and wastewater, enable smart solutions to optimise treatment processes, reduce greenhouse gas emissions and innovate across our working practices and find in catchment solutions for water and wastewater management.

Critical here is the opportunity for an open data approach to stimulate wider dialogue and partnerships in the management of the water cycle. The added benefits are immense, allowing us not only to improve health and wellbeing but also catalyse new business and innovation opportunities in resource recovery and the circular economy.

Digital technologies provide the mechanism through which we can inform and transform our relationship with the environment and through effective and responsible leadership and partnerships, we can collectively deliver on the health and wellbeing economies, tackle the climate and biodiversity emergencies, and promote green recovery.

Scotland's International Environment Centre (SIEC) is a £22 million initiative, funded by the Scottish and UK Governments through the Stirling and Clackmannanshire City Region Deal. SIEC will lead regional and sectoral environmental research and innovation at scale, so that the protection and enhancement of our natural resources becomes an enabler of inclusive growth and supports the transition to a net zero carbon economy.

However, we need a new level of understanding of the water continuum to achieve this sustainably. The first phase of SIEC is the Forth Valley Environmental Resilience Array (Forth-ERA). This is a regional scale living laboratory with near real-time data flows to transform environmental management, stakeholder collaboration and business innovation, reduce carbon consumption and emissions, and promote sustainable technologies, products and services.

Forth-ERA will harness sensor networks and satellite technologies, as well as autonomous vehicles, and couple these with modelling and artificial intelligence (AI) capabilities to deliver a Digital Observatory of the Firth of Forth Catchment. It will provide the evidence to mitigate the extreme effects of climate, provide the digital fabric to support innovation in sustainable water management



across the water continuum in both the built and natural environment, while enhancing our natural capital (biodiversity and carbon sequestration).

Leading by example

Forth-ERA is a cornerstone Digital Observatory supporting the development and showcasing examples across the water continuum to demonstrate the benefit to cross sector water management. Exemplars are being co-developed with key agencies (including Scottish Water, Scottish Environment Protection Agency, Nature Scot and NHS Highlands).

Forth-ERA facilitates the testing of the digital approach to optimise and realise the benefit of strategic interventions that support carbon capture, reverse biodiversity declines, and develop a holistic understanding of catchment processes including the implications of unregulated emerging pollutants associated with population growth and land use intensification. Forth-ERA provides the building blocks to develop digital twins to identify and implement effective interventions and mitigation strategies.

This approach will support better regulation and equitable water resources at times of increasing pressures of demand and deliver wider societal and environmental benefits. The approach facilitates cross sector working that is engaged with communities to find and agree workable, sustainable and valued solutions.

Use cases are being developed across the water continuum and include:

1. Measuring and modelling the benefit of peatland and wetland restoration in carbon capture, biodiversity, mitigating extreme water events and improving water quality
2. Finding and optimising within catchment solutions to negate the need for ever increasing end of pipeline solutions
3. The coupling of smart water networks of wastewater systems with state-of-the-art and next generation sensors across the rural-urban divide to provenance source of pollution and understand event-based controls on pollutant release on freshwater ecosystems.

A platform for growth

As a Digital Observatory Testbed, Forth-ERA is a cornerstone of the Scotland Hydro Nation Chair (HNC) programme, which is driving research and innovation to support Scottish Water and the wider water sector's strategic ambition of supporting a flourishing Scotland and going beyond net zero by 2040. The approach has attracted engagement from start-up companies and SMEs to test next generation in-situ and satellite-based sensing of water and waste waters.

SIEC is quickly becoming a hub of environment innovation excellence in the heart of Scotland with the Hydro Nation Chair programme being its vanguard, stimulating opportunity and prosperity within some of Scotland's most deprived communities and supporting the just transition to a net zero society.

Forth-ERA is now recognised as an exemplar for digital water across the UK, attracting additional funding from UKRI and engagement with government departments, innovation opportunities for sensor manufacturers and water management, and gaining supersite status with the DANUBIUS-RI pan-European research infrastructure on River-Sea systems.



On behalf of the UK water industry, the UK Water Partnership now wish to shine the spotlight on Forth-ERA as an exemplar of best practice and to bring even greater collaboration to bear from which the efficacy of digital technologies and interventions can be tested and appropriately scaled up across the UK and internationally to the benefit of all.

News

UK India water industry collaboration

The Indian water sector is at the cusp of large-scale transformation with ongoing government programmes like Jal Jeevan Mission (JJM) and Atal Mission for Rejuvenation and Urban Transformation (AMRUT).

While the drive on infrastructure development for water and wastewater continues, there is also an accompanying focus on embracing digital solutions to enable and optimise service delivery. With digital approaches helping to tackle challenges and take advantage of opportunities, they are a critical enabler to achieve water security and resilience.

Moves to forge closer links between the UK and India to capitalise on the latest digital technologies currently transforming the global water sector have taken an important step forward with the establishment of the UK India Digital Water Working Group.

Jointly chaired by water sector business leaders from the UK and India, backed by the UK Department for Business and Trade (DBT) and supported by British Water, the Working Group provides an important platform for water industry stakeholders in India and the UK to meet, share information and explore opportunities to support and accelerate digitisation of Indian water resource management.

The Working Group spans a wide range of stakeholders, including Professor Tony Conway, a member of UKWP Leadership Council and Lead Author of the UKWP *Digital Water* White Paper (published in 2020).

During development of the UKWP *Digital Water* White Paper valuable feedback was received from DBT trade representatives which helped shape the paper into a format which overseas staff would find helpful when engaging with the water sector in their host country.

Following publication, DBT staff in India utilised the UKWP *Digital Water* White Paper as one element of an approach to help initiate and stimulate a discussion with the Indian water sector. From this early-stage engagement, the relationship has progressively developed to include a wide range of stakeholders and through their commitment the establishment of the UK India Digital Water Working Group, chaired by Victoria Edwards and Sourav Daspatnaik.

Professor Tony Conway, reflecting on the UKWP *Digital Water* White Paper commented: “This is a good example of how a piece of UKWP thought leadership can play its part by helping to initiate a discussion, which leads to wider stakeholders becoming involved, actions being developed and



moved forward, and culminates in a positive tangible outcome. In this case the establishment of the UK India Digital Water Working Group with the opportunity to enhance Indian water resource management and improve the lives of many.”

Rishikesh Chanda, Sector Lead – Infra for DBT India added: “The UKWP *Digital Water* White Paper by Tony Conway highlights the digital interventions in the water sector and has been an important tool in developing the ‘UK India Digital Water’ report. It has also helped in creating a strong platform for the UK-India Digital Water Working Group, which acts as a centralised body of knowledge, enhancing relationships between the UK and India in the digital water space.”

Capabilities Directory updated

The [UK Water Capabilities Directory](#), developed by UKWP in partnership with the Department for International Trade, has been updated to provide additional exposure for UK-based organisations wishing to improve their access to UK and international markets.

Inclusion in the directory is free and easy for any UK organisation operating in the water sector. And when firms register, they’re also invited to submit any relevant case studies for UKWP to use to showcase UK capability in documentation, presentations and events.

The new UK water capabilities directory is now being led by HR Wallingford and Arup in partnership with the Department for Business and Trade. A Steering Group includes the Environment Agency, Anglian Water Services, Costain Group Plc, Mott MacDonald, Centre for Ecology and Hydrology, and Twenty65.

Your chance to be at COP28

The UK Government is busy preparing for COP28, to be held in the United Arab Emirates in November 2023. If you are championing innovation in the green transition and water resilience, please send over a summary of your business offer to be considered for inclusion in the UK Pavilion. To express an interest, please contact info@theukwaterpartnership.org at UKWP or Katherine.Tyson@trade.gov.uk at the Department for Business and Trade.

Future meeting dates

Leadership Council	Monday 4 th September 2023
Delivery group	Tuesday 5 th September 2023

Membership events

UKWP Autumn Event Wednesday 18th October 2023

Share your case studies and opinions

As a collaborative, enabling organisation committed to sharing best practice, we’re keen to feature exemplar case studies that support and illustrate our workstreams. If you or your organisation has a



case study that you believe demonstrates innovative approaches or solutions to the challenges within our workstreams, we'd be pleased to feature them on our website.

We're also looking for thought leadership material from our members. For example, if you have published a blog or article recently that adds to the debate on the important issues we are all wrestling with, please share it with us for our consideration and potential inclusion in our communications channels.

If you have a case study or thought leadership piece, please send it to us at:
alex.wilkinson@theukwaterpartnership.org