

September 2023

Future of the Ofwat Innovation Fund

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Welcome and aim of session

**£200m Ofwat
Innovation Fund to
help accelerate
innovation**

**Fund is making a
positive difference.
More needs to be
done to address
future challenges**

**At least £300m
funding available
from 2025-2030**

Today we will share:

- an update on the progress made with the innovation fund so far
- a summary of the latest thinking from government futures teams and what that might mean for the water sector
- a survey for a chance to share your thoughts, and help inform our work, on what the next innovation fund should look like.





Overview of the current Ofwat Innovation Fund

Marc Hannis

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What is the innovation fund?

Set up following the 2019 price review, it makes £200m available to enable the **water sector to better meet the needs of, and create long-term value for, customers, society and the environment through innovation.**

The £200m is distributed through a competition process, with funding awarded to the most promising ideas.

The money for the fund is collected via household water customer bills (approx. £1.50 per household per year) – as such all projects must demonstrate a benefit to household water customers, which could be either directly or indirectly.

**Awarded £105 million
to 77 projects since
January 2021**

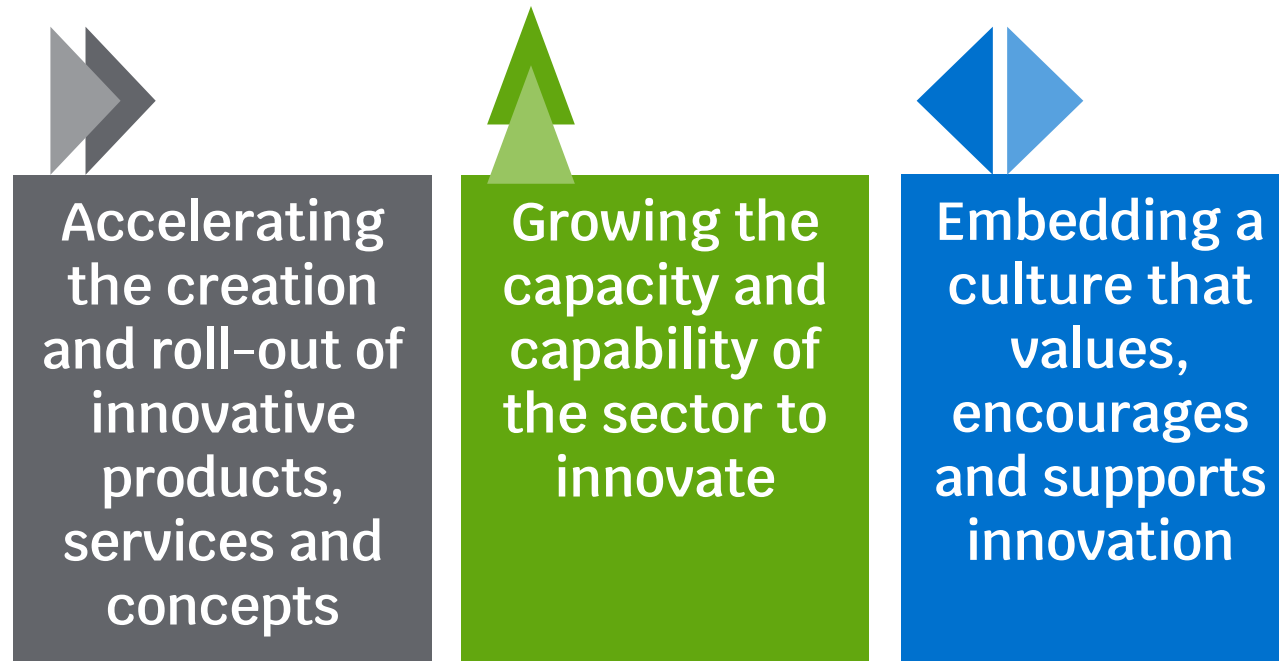
**Circa £90 million
available
to award by 2025**

We are looking for projects that:

- spark **ambitious innovation** to enable new ways of working that go beyond business-as-usual;
- equip the water sector to **address the big challenges** it faces;
- drive far-reaching and **long-lasting benefits** to customers, society and the environment;
- will help to develop and strengthen the sectors **innovation enabling activities**;
- increase and improve **collaboration** and build **partnerships** both within and outside the water sector.

What are we trying to achieve?

The overarching objective of the fund is that the **sector can better meet the needs of, and create long-term value for, customers, society and the environment through innovation.** The fund **aims** to achieve this objective by driving impact in three key areas:



What do our competitions look like?

Designed to drive ambitious, transformational innovation (and enable new approaches and ways of working) to equip the sector to address the big challenges we face now and in the future.

Water Breakthrough Challenge (WBC) – two streams:

Catalyst stream

- Entry value – £150k-£2m
- Circa £8m available per round

Transform stream

- Entry value – £2m-£10m
- Circa £30m available per round

Water Discovery Challenge (Discovery)

- Water companies excluded from entering
- Circa £5 million available to support early-stage solutions
- Each entry could be awarded up to £500k to develop their solution
- Includes a package of non-financial support and water company mentoring

WBC – common design principles

Lead entrant must be a water company or NAV

Entries must align with our innovation themes

Circa £30-40m to award in each round

Run annually

Strong emphasis placed on collaboration

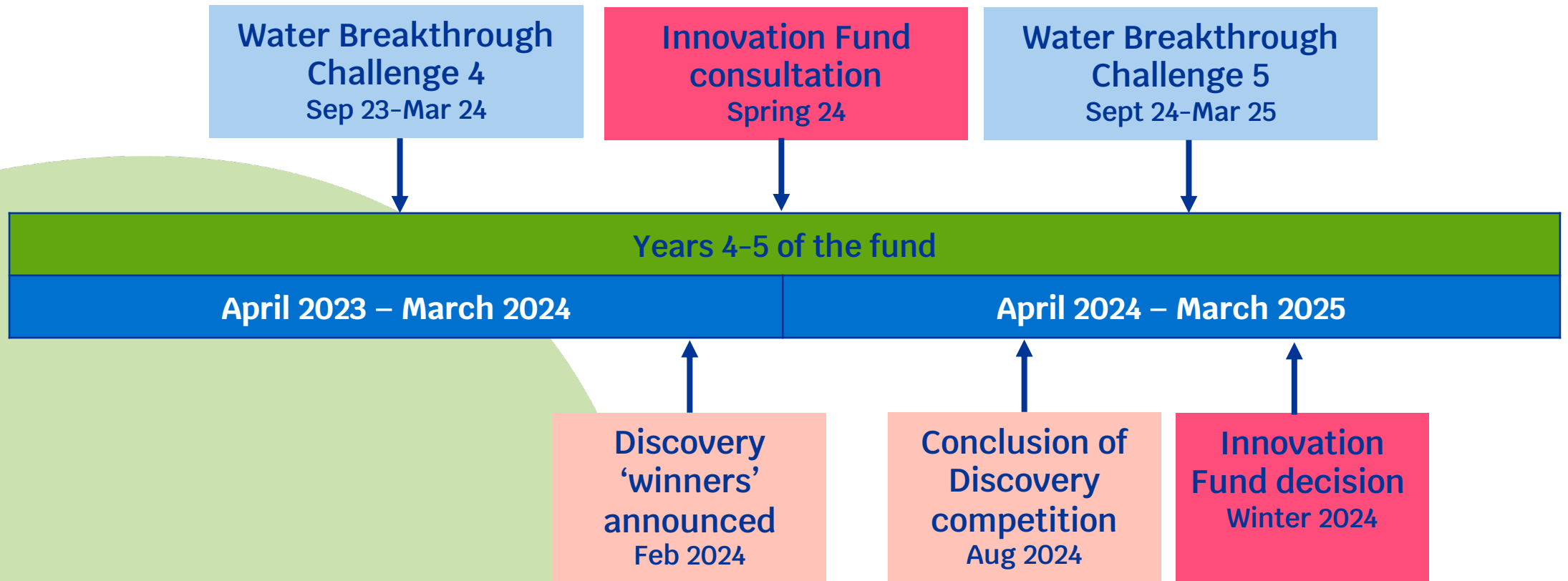
How is it going so far?

- The fund has driven unprecedented collaboration between water companies and other partners. Averaging double digits for partners per entry for our Transform competition.
- A wide range of initiatives across all of our innovation themes – tech and non-tech solutions.
- The quality of competition entries has improved with every round and so has the ambition in those entries.
- Strong trust developing between water companies and Ofwat on innovation, leading to more collaboration and the co-design of our latest competition, the Water Discovery Challenge.
- Ofwat's ambition is growing – what more can we do to support innovation? Innovation Fund confirmed to run until 2030 – next cycle will have over £300m allocated.



Innovation fund 2022-25 timetable

Over the next two years we will be looking to award circa £90 million to innovative initiatives and consult on the future of the fund. We expect the timetable to play out as follows:



Our early assumptions about where we might focus in the future...

- Openness to further evolution of the fund design
- Ensure the fund invests in areas that address future challenges
- Further widen access and remove barriers to entry
- Understand how we can best support scalability and rollout
- Utilise mechanisms for sharing learning across the sector
- Hone our regulatory advice service, [Streamline](#), to innovators breaking into the sector
- Explore working across sectors, e.g. with the Ofgem fund and EAs FCRIP

<https://waterinnovation.challenges.org/>





Introduction to Futures

Andrew Staines

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What is futures and why is it relevant

- Futures or Foresight is the systematic study of emerging trends and issues to try and understand how we mitigate or maximise them
- Thinking about the future is important for the fund as projects will need to be developed to have a long-term impact and operate in a changing situation
- We have worked with futures teams from Defra, the Environment Agency, Innovate UK and Ofwat to look ahead at the big issues for the water sector and environment

Defra have created scenarios looking at how the environment might look like in 2043 and how we could regulate it. These are using the best evidence to project out to what might happen and give you an idea of what might be coming.

- [The Targa Tempus Nullius 2045 Scenarios on Vimeo](#)
- These are potential futures and are to make us consider how we might need to innovate in different futures
- After these videos we will look at future issues for the sector in more detail

Climate Change

- Warmer and wetter winters – up to 20% more rainfall by 2050
- Drier and hotter summers – up to 5.6c warmer by 2050, up to 30% drier
- Continued sea-level rise – up to 30cm higher by 2050



Why this matters

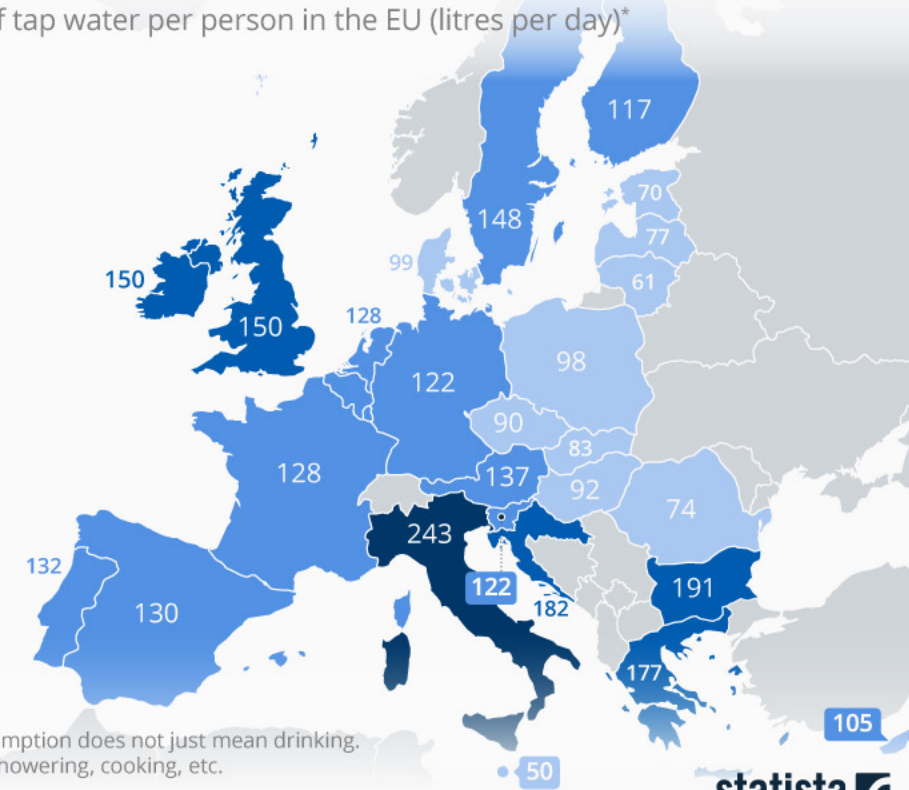
- More prevalent and intense summer drought conditions and increasing water demand & winter flooding
- Extreme weather will lead to increasing asset failure
- It's intrinsic to future water demand due to the potential impact of climate change on volume of water and asset degradation

Demand

- Up to +4,000 M/l day extra needed by 2050
- Total water supply is forecast to decrease by 7% by 2045
- Companies need to half leakage by 2050 (NIC)
- UK still is one of the highest domestic water users in Europe

Where Europeans Consume The Most Tap Water

Average consumption of tap water per person in the EU (litres per day)*



* 2014-15. Consumption does not just mean drinking. Also includes showering, cooking, etc.

Source: European Commission

statista



Why this matters

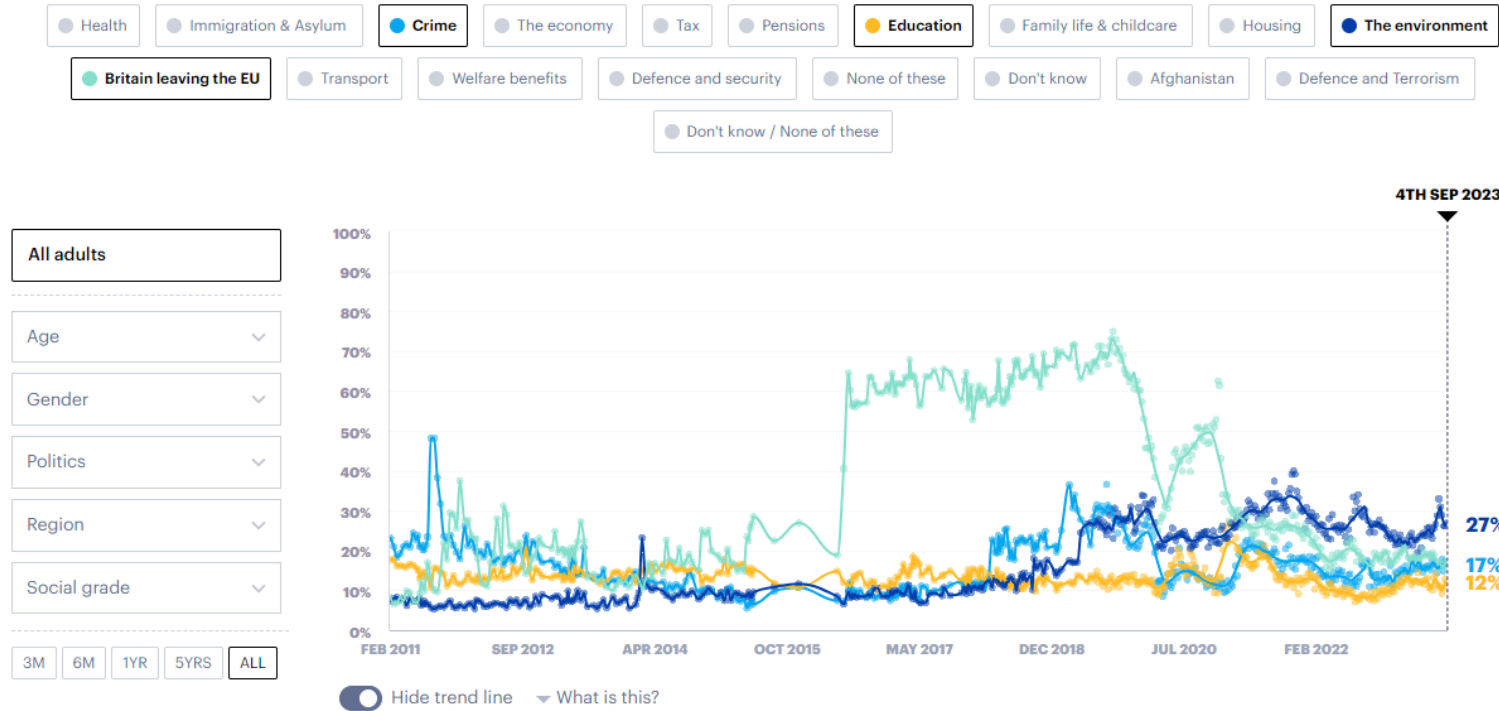
- Consumers will have to become active not passive users of water. 46% of people believe their household uses under 20 litres a day. 20 litres of water is a standard shower running for 2 1/2 minutes!
- 34% of meeting future demand relies on managing domestic demand
- The UK has a growing population and declining water supply. This will lead to risks of no water supply increasing with resultant health and safety, and business outcomes
- Ofwat launching new £100m Water Efficiency Fund in 2025 but lots to do



Societal Shifts

- Environmental importance up 400% over last 10 years on Yougov
- 1bn visits per year to our beaches, rivers and lakes
- Cutting through into politics shown in 2023 Council Elections

The most important issues facing the country



Why this matters

- Water will become even more politicised and create challenges for effective delivery
- The sector could struggle to attract sufficient investment as shareholders reflect the public's desire for more environmental improvements
- Good water quality will be expected in all parts of the system not just at key beaches and rivers
- Good opportunity to use interest for e.g. citizen science monitoring

Sector Technology- from Industry Workshops

- **A Fully smart water supply network by 2035**
 - Automatic detection and repair of potential leaks
 - Robust asset condition information
 - Cyber and digital protection staying ahead of cyber crime
- **Automation in all aspects of water treatment**
- **New Wastewater approaches**
 - Satellite monitoring and advance forecasting of localised surface water rainfall events
 - Bioengineered bacteria enhance sewage treatment
 - Fatbergs are no longer a problem due to biodegradable wet wipes
- **Low-carbon concrete becomes as affordable and available as conventional concrete by 2035**
- **There is a need for low tech fall backs due to the resilience of electricity/digital outages.**



Wider Technology – from forthcoming Innovate report

- **Wireless Power**

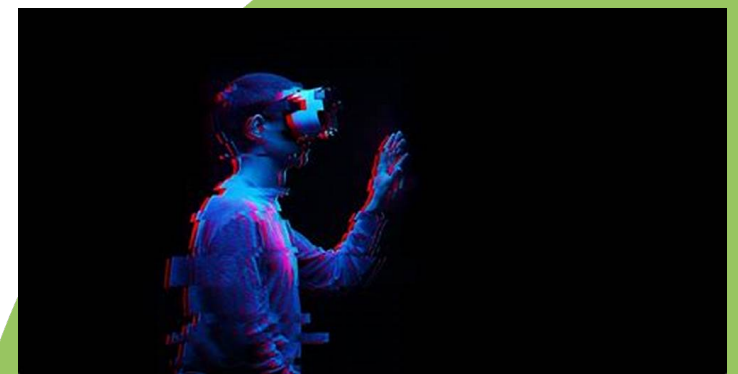
- Enabling wireless transmission of energy without cables changing our approach to how we use our energy. Ideal for remote water treatment.

- **Advanced Materials**

- **4D materials** offers smart materials which adapt over time, with the potential for ‘self-repair’ which reduces our need to perform dangerous maintenance tasks.
- **Biomimetics** using synthetic materials developed using inspiration from nature offer higher structural performance for lower energy input. They are easier to reuse and recycle than comparable materials.

- **Novel immersive interfaces**

- Offers new ways of interacting, creating and displaying content, applications and experiences. These could involve augmented reality, a blend of real and virtual experiences, or a fully simulated digital experience. Could we use this for live and more tangible water management.



Why this matters

- Technology can enable efficiencies and aid issues such as the struggle to recruit to sector
- A good way to modernise our assets and be more agile with more localised intervention
- Big risk that technology either doesn't deliver the big changes we need or isn't resilient to future shocks

Weak Signals and Emerging Issues

- Increasing Devolution and Localism of issues - how will the water sector respond?
- New energy sources hydrogen and nuclear will increase water demand dramatically
- There are a wide range of water contaminants that we still don't have a good grip on which could become the new CSOs
- Geopolitical pressure on supply chains and skills



Innovation Fund – the future

Jeannette Henderson

ofwat

Innovation Fund

What might the future water sector look like if the Innovation Fund projects were adopted?

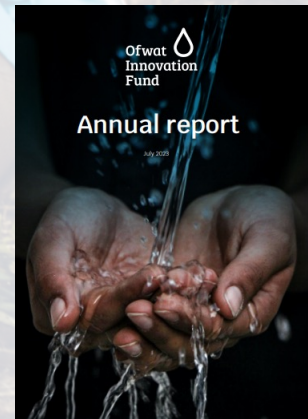
What changes could we see in the sector?

What further innovation could be stimulated?

How should the fund evolve?



Winning projects across the water cycle (from annual report)





Digitisation of the water industry

Real-time monitoring using solar/water powered sensors (*energy harvesting micro-turbine for power remote equipment*)

Better water quality through pre-emptive action to prevent algal blooms or nitrogen pollution (*AI for algal monitoring, Defusing the nitrate timebomb*)

Predictive maintenance of sewer infrastructure (*AI and sewer defect analysis, Pipebots for rising mains*)

Future flood risk prediction (*AI of things enabling autonomous waste catchments*)

Digital twins to model and optimize processes (*Climate and Resilience Demonstrator – Credo, Unlocking digital twins, Ecological Digital Twin*)

Tackling Demand

Testing and accelerating solutions to reduce leakage (*National Leakage Research Test Centre*)


Using 'dark fibres' for leak detection' aims to make use of unused fibre optic cables to detect leaks in nearby water pipes. (*Dark Fibre 2*)

Improving acoustic leak detection methods (*Active Pulse Leak Detection*)

Repairing pipes instead of replacing them (*Designer liner*)

Reducing water usage by understanding and changing (*Project Zero and Water Efficiency in Faith & Diverse Communities*)





Net zero and circular economy

Reducing or eliminating carbon emissions at wastewater treatment plants (*Net zero hub and Triple carbon reduction*)

Reusing waste materials (*Unlocking bioresrouce market growth, Industrial symbiosis, Biopolymers in a Circular Economy, Catalysing a net zero future*)

Generating energy (*A HERU for screenings, Organics Ammonia Recovery*)



Catchment thinking and enhancing environments

Catchment-scale approaches to storing water, tackling flooding, drought and water quality issues (*Mainstreaming nature-based solutions, Water Net Gain, SuPR Loofah – Sustainable Phosphorus Recovery*)

Developing tools for data gathering to better understand river quality (*Catchment Systems Thinking Cooperative*)

Understanding and restoring habitats (*CatchmentLIFE, seagrass seeds of recovery*)



Supporting customers

Understanding and supporting customers better and supporting vulnerable customers and help them to reduce bills and lower their carbon footprint
(Supporting customers in vulnerable circumstances, Fair Water, Water4all, Water efficiency in faith and diverse communities)



Future of the Innovation Fund



What might the future water sector look like if the funded projects were adopted?

How can we make sure successful projects are adopted?

Where are the gaps?

How should the Fund evolve for 2025-2030?



September 2023

Why is this important?

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Why do we want you to think about this?

- Building on the information provided, we are keen to **hear your views** on how the next innovation fund could be designed to best address future challenges and benefit customers, society and the environment.
- We therefore request you complete a short **survey** which would help us to gather your views on the next fund, its aims, themes, design and anything else you would like to share with us.
- We are currently in **discovery phase** and are open to all ideas for consideration.



What next

To find out more about the Fund, visit:

[About the Fund - Ofwat Innovation Fund \(challenges.org\)](https://challenges.org/About-the-Fund-Ofwat-Innovation-Fund)

We will publish the recording here:

<https://iuk.ktn-uk.org/events/future-of-the-ofwat-innovation-fund-webinar/>

Survey is available here:

<https://info.ktn-uk.org/p/2VFU-GCT/future-of-the-ofwat-innovation-fund>

Survey will close on 6th October 2023

