



Policy paper

Delivering a new vision for water

July 2026
Version 1

The Institution
of Environmental
Sciences



fwr.org

Contents

3	Acknowledgements
4	Introduction
5	Recommendations table
6	Recommendation 1: Define a vision for our water system and embed an outcomes-based approach that delivers for people and the environment
9	Recommendation 2: Regional water planners must work closely with existing catchment partnerships, with clearly defined responsibilities
11	Recommendation 3: Regional water planners must be equipped to support the delivery of multiple benefits
13	Recommendation 4: Resourcing must reflect ambition
15	Recommendation 5: Monitoring plans need to be solutions-focused
17	Recommendation 6: Build a data ecosystem conducive to a systems approach
19	Recommendation 7: Decision making should be risk-based, data-informed and transparent
21	Recommendation 8: Reform must be done in parallel with action

Acknowledgements

Author: Ethny Childs

Design: Bea Gilbert & Lucy Rowland

Thank you to members of the FWR Committee, Water Environment & Ecosystem Services Technical Panel, Water Resources & Quality Technical Panel, and Sustainable Wastewater Management Technical Panel for their input and to those who took part in FWR discussion events.

Special thanks go to:

- Jo Bradley, Stormwater Shepherds UK
- Brendan Bromwich, Technical Director - Systems thinking and Integrated Water Management at Mott MacDonald
- Patric Bulmer, FIEnvSc, Cherrywood Consulting
- Jonathan Fisher, Environmental Economics
- Matthew Fry, Environmental Informatics Manager at UKCEH
- Chris Gerrard, Head of Natural Environment at Anglian Water Services Ltd.
- Robert Grabowski, Reader in Catchment Science at Cranfield University
- Mark Kerwick, Water Quality and Public Health Manager at Southern Water
- Ian Lang, Chair of Urban Drainage Group at CIWEM
- Joseph Lewis, Head of Policy at the Institution of Environmental Sciences
- Mark Lloyd, Chief Executive Officer at The Rivers Trust
- Ana Mijic, Professor of Water Systems Integration at Imperial College London, FWR Committee member, and IES External Policy Advisory Committee member
- Monica Rivas Casado, FWR Committee member and Chair of the Water Environment & Ecosystem Services Technical Panel
- Simon Spooner, Chair of FWR Committee and AtkinsRéalis Fellow for Water Quality and Carbon
- Tessa Wardley, FWR Committee member and Director for Communications and Advocacy at The Rivers Trust
- Adam Young, Policy Officer at Aldersgate Group

About the Foundation for Water Research

The [Foundation for Water Research](#) (FWR) is an independent community of professionals from across the water sector and related scientific specialisms. The community comes together for deliberative discussion to support the development of interdisciplinary solutions to water challenges.

The FWR Community provides guidance and strategic thought leadership for the [Institution of Environmental Sciences](#)' (IES) water activities and collaborates with the wider IES family on issues related to land, air and policy implementation.

The FWR is led by a Committee, which is informed by three technical panels: Water Environment and Ecosystem Services, Water Resources and Quality, and Sustainable Wastewater Management. The Community has representatives from across the water sector, spanning industry, academia, consultancy, regulators and NGOs.

Cover image: © joe888 | Adobe Stock

p.8 - Kingfisher © Mark Hunter | Adobe Stock

p. 21 - Dry bed of the river Skirfare © Bernd Brueggemann | Adobe Stock

Copyright statement

Copyright of these materials is held by the contributors. FWR encourages the use of the materials but requests that acknowledgement of the source is explicitly stated. All design rights are held by the FWR, unless otherwise stated.

Introduction

The UK water sector is in critical need of reform. Repeated pressures have laid bare the limitations of the current system and the inherent flaws of taking a siloed approach to water management. Creating a resilient water system that delivers for people and nature is contingent on a [systems-based approach to its management](#). Incremental reform will not be enough; a transformative approach to the way we govern, regulate, and plan our water system is vital.

Recognising the need for reform, the Independent Water Commission was established by the governments of England and Wales in October 2024 to conduct a major review of the water sector. The central recommendation of its [final report](#) was to embed a systems-based, cross-sectoral approach to water management, focused on delivery of long-term strategic goals. The white paper: '[A new vision for water](#)', published in March 2026, endorses the need for a systems approach and outlined plans for water reform in England, with the green paper '[Shaping the Future of Water Governance in Wales](#)' outlining plans for Wales.

The question is no longer if we need a systems approach, but how we deliver it in practice.

This paper sets out the [Foundation for Water Research's](#) (FWR) views on what a systems approach to water management should focus on and how this can be supported through the delivery of two pivotal aspects of water reform – establishing a regional water planning function and embedding a data-informed approach to water management. It has been informed by two roundtable discussions, which brought together representatives from academia, industry, regulators, consultancy, public bodies, NGOs, and think tanks.

To build a resilient and sustainable water future in the face of multiple stressors, it is essential that cross-sector expertise informs reform and related delivery plans. This paper provides eight recommendations that are needed to embed a systems and outcomes-based approach to water management and ultimately deliver a new vision for water that supports thriving people, a healthy economy, and a flourishing environment.



Recommendations Table

Recommendation 1	Define a vision for our water system and embed an outcomes-based approach that delivers for people and the environment
Recommendation 2	Regional water planners must work closely with existing catchment partnerships, with clearly defined responsibilities
Recommendation 3	Regional water planners must be equipped to support the delivery of multiple benefits
Recommendation 4	Resourcing must reflect ambition
Recommendation 5	Monitoring plans need to be solutions-focused
Recommendation 6	Build a data ecosystem conducive to a systems approach
Recommendation 7	Decision making should be risk-based, data-informed and transparent
Recommendation 8	Reform must be done in parallel with action

Recommendation 1

1. Define a vision for our water system and embed an outcomes-based approach that delivers for people and the environment

To deliver a new vision for water, it is essential that all stakeholders are clear on what the vision is and why it matters. The white paper makes the case for a number of reforms but does not provide a clear vision for the sector. Bringing together the stakeholders needed to deliver a systems approach will require a cohesive and compelling vision, underpinned by clear goals and substantive supporting actions. This should clearly show how different parts of the system need to collaborate to deliver the vision and its objectives. Once the vision is established, outcomes that are aligned to delivery of that vision can be defined.

A systems approach is one that recognises how social, economic and natural systems influence outcomes, adopting ways of working that address the dynamic and complex nature of systems to effect change and avoid unintended consequences. A [systems approach to water management](#) should therefore reflect interactions and collaborations across multiple stakeholders, geographical regions, sectors, and specialisms to ensure positive outcomes for the water environment. This should consider the water system as a whole and should focus on restoring and building resilience within the system, recognising the interconnected nature of its different ecosystem functions.

This must also encompass closely related sectors such as agriculture, housing and energy to understand trade-offs and unlock multiple benefits. Currently, systemic framings are often lacking and result in implementation that addresses narrow interests, with competing or conflicting outcomes frequently evident, for example between abstraction and river health, or between pollution control and flood resilience.

To effectively implement a new systems-based vision, an outcomes-based approach is essential. Regulators must move away from overly prescriptive, specific targets and limit values that do not have a clear link to specific outcomes, and should instead adopt an approach where overall outcomes take precedence. The water sector is responsible for managing water supply and wastewater sustainably and these must be delivered in a way that supports positive ecosystem health and public health outcomes. A systems approach must therefore be used to address the delivery and regulation of water supply and drinking water quality, alongside environmental management.

The Government should outline the outcomes it is looking to achieve alongside the indicators



that can be used to measure and monitor them, using expert insight and evidence. This will reduce uncertainty among stakeholders and will support delivery of approaches that move beyond compliance with specific targets to achieving better outcomes. These outcomes should clearly link to targets already outlined in the Environmental Improvement Plan, providing an integrated set of outcomes that reflect recent changes in policy.

A focus on outcomes would provide the flexibility needed for implementing different approaches and funding models in a context-specific way, such as the use of more nature-based solutions, with the potential to achieve multiple benefits for water quality, water resources, biodiversity, flood protection, climate resilience, and human health and wellbeing. It would also provide an agreed definition of what good looks like in the sector and a clear direction of travel for action.

Establishing an outcomes-based approach would also produce a more effective and proportionate approach to monitoring. Robust data is a fundamental part of delivering a systems approach, so monitoring needs to be driven by a clear purpose, to ensure that data is fit-for-purpose and actionable.

Delivering a systems approach to our water environment will need to be supported by effective implementation of regional water planning and a data-informed approach to decision making. The following recommendations go into more detail on how to implement these aspects of reform in alignment with a systems approach.



“Bringing together the stakeholders needed to deliver a systems approach will require a cohesive and compelling vision, underpinned by clear goals and substantive supporting actions.”



Recommendation 2

2. Regional water planners must work closely with existing catchment partnerships, with clearly defined responsibilities

The shift towards regional planning has the potential to better balance local priorities with national outcomes, acting as the ‘missing middle’ between catchments, regional water resources groups, and governments to deliver tangible benefits for our communities, economy, and environment.

It is imperative that the work done in building and establishing catchment-based partnerships through a [Catchment Based Approach](#) is retained, and that the transition plan is clear how the regional planning function will meaningfully interact with them. Catchment partnerships have demonstrated their ability to bring together local knowledge and expertise across sectors to support the implementation of solutions. The focus of regional planning must be on harnessing what these partnerships have learned and building on their success, rather than ‘reinventing the wheel’ or diminishing their responsibilities.

Regional planners could follow the [catchment system operator model](#) to join

up their approach to water resources management, water quality, flooding, and drainage and coordinate activities across catchments. To do this effectively, they will need to collaborate with and learn from existing regional water resources groups, which bring together water user groups across sectors to balance supply and support water security within and between regions. Regional water planners should be able to direct the allocation of funds effectively at local scales to help realise regional and national objectives. They should have oversight of all relevant plans and activities to ensure that action is not siloed and is focused on holistic solutions that address multiple challenges.

An effective regional planning function would have appropriate:

- **Scale:** Regions need to be clearly defined. They should be defined in relation to the number of catchments they cover, with catchments defined on a hydrological scale, and in relation to the scales needed to achieve



outcomes. The Government should learn from criticisms of the third River Basin Management Plan when defining regions, where river basin districts were criticised for being too large and remote to support local catchments to engage effectively with regional planning. There needs to be a balance: districts should also be big enough to reduce the resource requirements on national organisations supporting attendance at meetings and to attract people of sufficient seniority to attend.

- **Scope:** Regional planners must have clear roles and responsibilities. This includes an outline of areas where integration is needed, and areas where coordination is needed. Water is integral to all sectors, so defining a scope will be challenging, but necessary.
- **Statutory role:** A statutory basis is required so that the regional planners have an effective mandate to deliver change. This will also ensure that they can be appropriately funded and resourced. There should be a duty to collaborate and clear processes for collaboration to ensure engagement from relevant stakeholders.

Learning from the challenges of existing approaches, such as the Catchment Based Approach, will ensure that the regional planning function is effective. Wider reforms must address headline challenges, providing statutory footing, consistent methodologies and processes, and the cross-sector levers needed to manage trade-offs across the system.

Recommendation 3

3. Regional water planners must be equipped to support the delivery of multiple benefits

Regional water planners must have a core role in integration and coordination across different sectors and stakeholders in order to embed a systems approach to water management. Systems approaches demand setting clear boundaries, whilst recognising the different levers, feedback loops, and influences in the system. For some areas, it will be vital that approaches are integrated, such as in agriculture, whereas others will need an obligation to coordinate, such as in the energy sector, so that multiple benefits can be unlocked and unintended consequences avoided. Securing multiple benefits requires multiple funding models, so regional planners need a key role in coordinating resources for delivery.

Regional water planners should ensure their decisions are aligned with other relevant legislation and policy, such as the [Land Use Framework](#) and [Water Framework Directive](#) and regional planning instruments such as the proposed [Strategic Spatial Energy Plan](#) and [Spatial Development Strategies](#), to identify potential trade-offs and synergies. In doing so, cost-effective and optimal outcomes can be prioritised and delivered.

Regional water planners should have a key role in supporting nature restoration at scale by supporting catchments to engage in [Local Nature Recovery Strategies \(LNRS\)](#), embedding nature-based solutions across regions, and spatially targeting interventions effectively. Viewing the state of the water environment at a strategic scale, regional planners will be able to target investment to drive restoration, share lessons across catchments, and identify opportunities to link other areas like Biodiversity Net Gain and carbon markets.

Plans to consolidate existing agricultural water pollution regulations into a single set of national standards are lacking key details, including detail on how water and agricultural policy will be integrated. Reforming policies around agriculture and water will be critical to achieving outcomes and embedding more pre-pipe and nature-based solutions. A key component of this will be considering how Environmental Land Management Schemes can support water resources management and ideally embed responsibility for their distribution to



regional water planners. The commitment that each regional board will include agricultural representation is welcome, but further integration will be needed to provide truly integrated water management.

Recommendation 4

4. Resourcing must reflect ambition

Funding and resourcing must be considered at both the governance level and the delivery level. At the governance level, regional water planners and catchment partnerships must be provided with sufficient resources to deliver on ambitions. Catchment partnerships have often lacked the finance, mandate, and resources to achieve their objectives. This shortfall must be addressed, whilst ensuring that new regional water planners are also equipped with the right level of funding and supported by a secretariat with the resources, expertise, and skills to effectively manage water resources in a transparent and sustainable way. Those involved in regional water planning need training in the relevant technical, [enabling](#), digital, and systems thinking skills. A plan should be in place for how skills deficits will be addressed and how the right people will be involved in the right capacity.

Delivery of solutions aligned with a systems approach will require flexible and alternative funding mechanisms. Regional water planners should be responsible for the allocation of funding to ensure a

systems approach. Funding models and incentives must be developed that can support investment in solutions that address multiple challenges. Currently, funding is often allocated for specific goals, such as improving water quality, and cannot account for any other benefits that could be achieved alongside this primary aim, such as biodiversity or flood resilience improvements. Changing the way funding is allocated so that it places greater emphasis on a more holistic view of the benefits and trade-offs of interventions is essential for an outcomes-based approach, in the face of the multiple stressors facing our water sector: including climate change, increased demand, pollution, ecosystem degradation, water scarcity, and ageing infrastructure.

Funding needs to be secured from public and private sources and allocated via the regional planning function where it can best support delivery of multiple outcomes. The lack of appropriate funding models has been a key challenge to the widespread adoption of nature-based solutions and is limiting integrated approaches to water management.

Water companies in particular need support to apply their investment more creatively so that it focuses less on assets, with the goal of supporting outcomes and water resilience at a wider scale. Allowing more flexibility in the use of water company funds would catalyse further opportunities for co-funding, collaboration, and access to natural capital markets, and would facilitate alignment with other regional priorities such as Local Nature Recovery Strategies, all of which will be needed to drive systemic change.

An example where this could be applied in practice is considering how water company budgets are currently being used and how this could be more effective. For example, compliance with Section 82 of the [Environment Act](#) requires significant and disproportionate resources for the potential benefit; compliance with specific limit levels do not always reflect delivery of desired outcomes. With less stringent requirements in this area, funds could be more effectively leveraged towards integrated approaches to pollution reduction and reducing sewer overflow spills. Given the limited resources available and the scale of the challenges facing the sector, resources should be used in the most efficient and impactful ways.

The complexity of water resources management should be recognised, given the scale and scope of challenges facing the sector, such as emerging contaminants and land use change. Regional water planners must work with water companies, and across sectors and stakeholders to manage water supply and the water environment. Sectors with significant impacts on water must play a role in supporting restoration and resilience. This includes agriculture, industry, transport, and housing.

Lessons should be learnt from the recent recast of the [EU's Urban Wastewater Treatment Directive \(UWWTD\)](#), which has embedded the Polluter Pays Principle and Extended Producer Responsibility to tackle issues related to cosmetic and pharmaceutical pollution. Under the UWWTD, companies must pay for 80% of the cost of quaternary treatment to remove related pollutants.

Ensuring that other sectors are accountable for their impact on water resources and water quality is essential to securing a systemic approach and building a sustainable water sector.

Recommendation 5

5. Monitoring plans need to be solutions-focused

The focus of monitoring needs to shift away from purely understanding the challenges facing the sector, to driving actions and change. Monitoring plans must be developed in a collaborative way across sectors and should be constructed to support the delivery of outcomes. In the face of limited resources, monitoring plans should take a risk-based approach.

National standards and clear guidance on different monitoring methodologies, and what they can be used for, should be made available to stakeholders, along with supporting information on limitations, uncertainties, and training protocols. They should clearly reflect the different types of monitoring, who it is being done by, and for what purpose. Where monitoring is already taking place, particularly for flow and water quality measurements, temporal and spatial factors need to be taken into account and aligned.

There should be a greater focus on biological monitoring and physical habitat monitoring (such as morph surveys) as a key indicator of water ecosystem health, alongside more monitoring of headwaters.

Currently monitoring is disproportionately focused on downstream locations. An understanding of the whole catchment is needed to tackle issues facing water supply and the water environment, with a greater understanding of factors like habitat modification and water storage.

There are significant issues with the accuracy of some real-time continuous monitoring datasets, particularly related to water quality, which need to be recognised and accounted for when that data is used to set targets and inform decisions. For example, the quality of Event Duration Monitoring (EDM) data on storm overflows is impacted by how and where monitors are installed, leading to inaccuracies. Open monitoring will require substantially more monitoring input and is likely to come with its own accuracy concerns. There will also be a time lag before the data is fully understood and robust enough to support decision making.

Monitoring plans should focus on areas that are likely to pose the biggest environmental impacts, such as agriculture, industrial pollution and emerging contaminants,



highways runoff, physical habitat modification, abstraction, and groundwater recharge. Data that we already collect should be used more effectively, and data collection should focus on areas where there are significant data gaps, including data related to invasive species, contaminants (including endocrines, PFAS, pesticides, microplastics and antimicrobial compounds), sediment and flow, headwaters, and the cumulative impact of different stressors. Where data is already collected, there needs to be a good understanding of where this is occurring and why, to ensure that, where appropriate, data can be used for multiple purposes and a more coherent approach to monitoring across sectors is developed. This will also require monitoring data to be made openly accessible for research and policy analysis.

Effective development and use of solutions-led monitoring plans need to be supported by an environmental regulator with the relevant expertise and appropriate resourcing. Developing an integrated water regulator cannot undermine integrated environmental management and pollution control, so it should capitalise on existing expertise and structures to lead its work where possible. Water regulation cannot be isolated from other areas of environmental regulation without undermining an integrated approach, as well as the role of existing regulators like the Environment Agency.

The integrated regulator will need to be able to effectively manage complex trade-offs across water management, environmental regulation, consumer protection, and water security, which will require a clear vision and strategic direction. The Welsh Government's

proposed approach to retain Natural Resources Wales as the primary environmental regulator, while introducing a separate economic regulator, limits the risk of undermining integrated environmental management. The approach taken in England should seek to replicate the benefits of that model.

Recommendation 6

6. Build a data ecosystem conducive to a systems approach

A systems approach to the water sector demands a thorough understanding of the data system that will underpin it. Starting with a clear vision and outcomes for reform will demonstrate what needs to be measured, monitored and modelled, and will ensure that we use the data we already collect more effectively. New data collection should be focused on utility so that the data can be used to effectively convey information to support decision making. The key questions to ask will be what gaps it is going to fill, how it will be used, who will be using it, and how it will complement existing data.

Data collection and open monitoring will not be enough to drive systems change. Data should be developed as a shared infrastructure, designed to meet the needs of data users, data collectors (including citizen scientists), modellers, decision makers, and the whole data ecosystem. There also needs to be open access information on methodologies, that are robust and peer reviewed.

An evidence-informed, data-driven approach to water reform must begin with:

- Open, accessible and transparent data and decision-making tools.
- Common data frameworks and standards to ensure data is collected and reported in consistent and agreed ways. Optimising data for multiple uses would be more efficient, and it would improve integration across datasets.
- Interoperability of datasets for different users and context, so that data can be shared and used across different systems and stakeholders. Data collected now needs to be able to be used alongside historic and future datasets so that long-term time series data on water resources can be maintained and baselines established to support identification and analysis of long-term trends and predictions. This is especially important for research on changes in the water system and potential causes and for ensuring reproducibility of research.
- Quality assurance and independent verification processes to ensure data is fit-for-purpose, robust, and accurate.



- Data literacy among stakeholders, including on data limitations, levels of uncertainty, variations in different places and at different times, and how the data can be used appropriately.

Lessons can be learnt from existing initiatives like the [Catchment Systems Thinking Cooperative \(CastCo\)](#), which has co-developed a shared framework, principles, and tools for collaborative monitoring, and the [Mainstreaming Nature-based Solutions project](#) which has developed draft categorisations of Nature-based Solutions and a draft common data framework tool.

Recommendation 7

7. Decision making should be risk-based, data-informed and transparent

Decision making should be data-informed at all levels of water governance, from developing national policy, to setting regional plans, to delivering local action on the ground.

Shifting towards an outcomes-based approach will require a shift in decision making and how data is used to support decisions. In an increasingly complex regulatory environment, and in the face of multiple challenges and uncertainty, decision making should be risk-based, building in flexibility to allow for adaptive management. Identifying, assessing and prioritising potential risks will require clear and robust data and evidence.

Data should therefore be collected for different parts of the system, including groundwater levels, river flows, water quality, water resources, ecology, and public health and wellbeing, with the goal of ensuring datasets are complementary and can be used to inform decision making that addresses multiple challenges and provides an overview of the system.

Modelling can support effective systems approaches to decision making and should be a key tool for regional water planners. Models have already been developed for catchments and regional levels but need to be validated with open data and new models need to be developed on integrated water systems. Once validated, these models will be able to identify key interdependencies, test different scenarios, and target interventions effectively. Artificial Intelligence has the potential to support sophisticated systems modelling but will require a good understanding of AI functionality by users, as well as risks, limitations, and the importance of transparency about how AI has been used.

Principles of open data should also extend to decision making. Where possible, the process should be openly accessible and transparent, including how datasets have been used, the tools and models used for data analysis, and the process of decision making itself. Transparency around decision making will help to build trust with local communities and support greater buy-in and collaboration across catchments and regions. Without open decision making, collaborative catchment management will not be as effective.



“We also need to ask the hard questions about **why existing plans and targets are not delivering** to ensure these barriers are addressed in new legislation.”



Recommendation 8

8. Reform must be done in parallel with action

The Government has indicated that it will move at speed to develop the legislation for water reform, yet it will still take a significant amount of time for change to happen. Meanwhile, the pressures facing the water sector continue to intensify. It is therefore vital that action to tackle these challenges continues to be taken within the existing legislative framework until new legislation is in place.

We also need to ask the hard questions about why existing plans and targets are not delivering to ensure these barriers are addressed in new legislation. For example, there are currently multiple sources of uncontrolled pollution despite the legislation being in place to prevent it. This includes pollution related to [highways runoff](#), where levels of priority hazardous substances can significantly exceed limit levels but are not currently monitored or regulated by the Environment Agency. Polluting discharges to water should be controlled under the Environmental Permitting Regulations, but in practice this is undermined by a lack of monitoring and enforcement.

The Office for Environmental Protection (OEP) has expressed concern over the

implementation of regulations designed to protect rivers, lakes and coastal waters in England, highlighting that the Government is currently not on track to meet the target of 77% to achieve Good Ecological Status or Potential by 2027 based on the assessment of the current RBMPs. The worst-case assessment by the OEP predicts that only 21% of surface waters will achieve Good Ecological Status in this timeframe and emphasises that it is the implementation of legislation that is hindering progress, not the underpinning legislation itself.

Water regulation in other areas, such as private water supplies, is also a concern. The [Drinking Water Inspectorate's \(DWI\) report](#) on drinking water and private water supplies in England, and the [DWI Chief Inspector's letter to Defra](#), highlighted issues around current regulation and the need for action to address these challenges.

Action to properly deliver regulation under the existing regime must therefore take place in parallel to reform to protect and restore our water environment, support ecosystem health, and improve water quality.



**The Institution
of Environmental
Sciences**



fwr.org