

Water: Myths, Facts and Inconvenient Truths

Thank you for inviting me back.

Two years ago today at this event I gave a speech called [Defusing the Weatherbomb](#). That set out the Environment Agency's new strategy for managing the greater flood risks which climate change is bringing – that in addition to our traditional approach of trying to prevent communities from flooding by building and maintaining flood defences, we would also help make people and places more resilient to flooding when it does happen so lives are not endangered and life can get back to normal quickly afterwards.

And as we meet here today the country is struggling to get back on its feet after we were hit by another weatherbomb. Three in fact – Storms Dudley, Eunice and Franklin: the first time we have had three named storms within a week since the current system was introduced. My thoughts are with all those affected, and with all those Environment Agency staff who have been working round the clock over the last several days to protect communities from the risk of flooding.

Two years ago I said that all of us need to think differently if we are to tackle successfully the new reality of the climate emergency. Today I want to make the same appeal to think differently in order to defuse another ticking time bomb: the water crisis.

In recent months public interest in the state of our waters has surged. This is an unqualified good thing. Water matters: it's essential for life and everything else. Water quantity and quality is the single biggest X factor for the state of nature. I'm grateful to all the campaigners whose hard work and activism has raised the profile of water. They are right to do so, because ensuring clean and plentiful water is one of the biggest challenges we face, and delivering it – which we can – would be one of the biggest gifts we can give to future generations.

So it's great that we are talking about water more. What is less good in this lively public debate is that not everything being said is accurate. In the age of social media, fake news and clickbait journalism this is to be expected: it applies to everything, not just water. But if we are serious about protecting and enhancing our waters we need to start with the facts. If we are to frame the right response and leave our environment in a better state than we found it, we need to know what state it is in now.

So today I aim to set the record straight on water. I want to separate myth from fact and get to the truth of what we need to do to protect it. Spoiler: the truth is more complicated and less convenient than you might hope. It does not fit into 280 characters on Twitter.

Three myths

Let's start with three common myths you may have heard recently about water:

Myth number 1: "all our waters are in a terrible state."

Wrong. It's a lot more complicated than that. There is bad news and good news, myth and fact. It's the Environment Agency's job to tell it like it is. So let me give it to you straight.

First, the bad news: our waters are nowhere near the condition we want. The state of our rivers is flatlining. Only 14% of them currently meet the criteria for good ecological status, and that number has stayed stubbornly the same for the last several years. We are still seeing too much pollution from sources we have known about for years: sewage, farming, industry and road-run off. Meanwhile new threats are seeping into our waters, including microplastics and so-called forever chemicals. Campaigners are right to be saying that this is not good enough. I agree. It isn't.

The good news is that:

- There are now far fewer serious pollution incidents damaging our waters than three decades ago. In the 1990s the water and sewerage companies were responsible for over 500 every single year. Since then we have seen a progressive and dramatic drop. In 2020 the number of serious incidents caused by the water companies reached the lowest number ever – 44. That is still 44 too many, and we have made clear the aim must be zero. But while continuing to demand better, we should recognise the major progress that has been made.
- Sewage treatment works are now discharging much lower amounts of harmful chemicals into our rivers: 67% less phosphorus and 79% less ammonia than in 1995. That matters: phosphorus causes eutrophication, a process that starves water of oxygen and kills off wildlife, and ammonia is toxic for aquatic ecosystems.
- The bathing waters around our coasts are in much better condition than they were. In 2021 99% of the 400-plus bathing waters in England met or exceeded the required standards. That is the highest number since new tougher standards were introduced in 2015. Two decades ago, most of those waters would have failed to meet even the minimum standard.
- As our waters have improved, nature has recovered. Biodiversity in many of our rivers is a lot better than it was. In 2019 76% were at good status for invertebrates, which are a critical part of the food chain for thriving river wildlife. Here in London's Bankside if you looked out of the window at the Thames in the 1960s you would have looked at a river that had been declared biologically dead. Now it is home to sharks, seals and seahorses.

One of the main reasons for all of these improvements is regulation: tougher rules to protect our rivers and coastal waters from pollution, robustly enforced by the Environment Agency. The right regulation is not red tape: it is what gets you blue water and a green country.

Myth number 2: “the state of our rivers is the Environment Agency’s fault.”

I hear this a lot. It is true that as the environmental regulator it’s the Environment Agency’s job to protect our waters, that we don’t always succeed, that we should listen to criticism (we do), and that while we have a strong track record we should – like all good organisations – always be seeking to do better.

But our ability to protect our waters depends on us having the powers and resources to do that, and that hasn’t always been the case. More fundamentally, the EA is not responsible for the pollution in our waters. The people responsible for that are the people who pollute them, and it is on the polluters that most of the fire should be directed. They need to clean up their act. I agree with Ofwat that water company chief executives should have their pay linked to levels of pollution their companies cause.

We need to remember though that the polluters are not just big water companies or careless businesses – they are us, the public, too. Every time we flush a wetwipe down the toilet or pour cooking oil down the sink the end result is to pollute one of our watercourses. Every time we leave the tap running unnecessarily we take water out of a river, lake or aquifer and put a bit more strain on the environment.

So yes, the Environment Agency does need to play its full part in preventing pollution and improving water quality; we are; and we will continue to do so. But if we are going to succeed, so does everybody else.

Myth number 3: “the biggest problem we have is water quality”

Water quality is currently getting most attention in the media and public debate. It is good that people are demanding better. We should remember though that rivers have never been maintained for human health but for wildlife and nature. While the pandemic has brought people closer to nature and they rightly want more from the water environment, it will take a very long time and a very large amount of money to meet those greater expectations.

And improving water quality isn’t the only or even the biggest problem we face. The biggest long term threat to the environment, our economy and our lifestyle, and the one on which I’d like to see the media and NGOs campaigning equally hard, is water quantity – simply having enough for people and wildlife.

This is about avoiding what I have called The Jaws of Death: the point on water companies’ planning charts some 20 years from now when if we don’t intervene, the demand for water in this country will outstrip supply. We face that risk due to a toxic combination of a changing climate, which will make water supply more erratic and cause more droughts, and increasing demand as our population grows.

We know how to avoid the jaws of death: reduce demand by using less water more efficiently; and improve supply, including by investing in the right

infrastructure. And we have a plan to do that: an initiative the Environment Agency launched last year, the National Framework for Water Resources. This includes hard targets: that the risk of needing severe water restrictions will be limited to no more than 0.2% in any given year; that we will get water consumption down to 110 litres of water per person per day from the current average of 150 litres or more; halving leakage, which currently loses around 20% of water put into the public water supply; and developing new supplies through reservoirs and transfers. We are working with the water companies, the other regulators and the government to ensure all this gets done. It's vital that it does, because while good water quality is essential, the right water quantity is existential.

Three little-known facts

Let me turn now from some of the myths about water – things which people believe which are wrong – to some facts – things which are true but which many people don't know.

Fact number 1: water is far more precious than we think

Perhaps because we all know the photo of our blue planet we tend to assume that water is free and limitless on Earth. It isn't: it is astonishingly rare and easily damaged.

It is astonishingly rare in the universe. We know of no other planet anywhere which has liquid water, though Mars and some other planets may have had it millions of years ago.

And drinkable fresh water is pretty rare here on Earth itself. It makes up only 2.5% of all the water on our blue planet, and only 1% of that is accessible. And as our population grows we will experience more and more water stress. That could have severe geo-political consequences. US Vice President Kamala Harris has warned that wars in future will be fought over water not oil. Growing water scarcity also has major economic implications, which is why Goldman Sachs told investors a few years ago that water is "the petroleum of the new century." I wouldn't call water the new petroleum myself: water is a lot better for the environment and arguably a lot more valuable. So I'd call water the new gold.

Water is precious not just because it's relatively scarce but because it's also fragile: the water that nurtures us humans, wildlife and plants is very easily damaged and that damage can last for a long time. Example: mines. Almost all the mines in England closed decades, sometimes centuries, ago. But the pollution seeping out of them is still damaging many of our streams and rivers today. I saw that for myself on a visit earlier this month to County Durham, where we and the Coal Authority are cleaning up the water seeping out of the local abandoned coal mines. Some 1,500kms of our rivers are also polluted by abandoned metal mines, which is why we and the Coal Authority have constructed three schemes which treat 7.4 billion litres of mine water each year and prevent 800 tonnes of metals from polluting our waters, improving rivers in Northumbria, Cumbria and Cornwall.

The Environment Agency is also examining the new risks now posed to our waters, and to human and animal health, by so called forever chemicals, or PFAS (perfluorinated and polyfluorinated alkyl substances). These were used for decades in products like non-stick pans, outdoor clothing and fire-fighting foams and are now ubiquitous in waters around the world.

Fact number 2: farming is doing as much damage to our waters as sewage

The water companies have rightly been condemned for allowing far too many sewage spills into rivers, and the Environment Agency is currently conducting a major criminal investigation into that. But the water companies are not actually the main source of pollution for most of our rivers and streams.

Farming and rural land management impacts a higher proportion of our water bodies – 45% – than any other source, mostly through what is called diffuse pollution: chemicals from fertiliser and other things put onto land which then run off into watercourses. This is harder to see and to tackle than the sewage spills caused by water companies. But the damage is just as or more significant, because the main chemicals that leach into our watercourses from farming, nitrogen and phosphorus, starve the water of oxygen and kill a lot of the wildlife.

This isn't to demonise farmers. I've met a lot of farmers and most of them regard themselves as custodians of the land and do their best to protect the environment. But if we are serious about getting all our waters to good quality, we need to put as much focus on helping farmers farm in ways which don't pollute our waters or erode our soils as we do on stopping water companies dump sewage in rivers. The EA is stepping up our own efforts here with the help of new money from the government that is funding more EA inspections of farms. That is allowing us to provide advice and guidance on how to farm without harm. It will also help us – if necessary – to enforce the rules that protect our waters from harmful farming practices.

The wider food and agricultural sector needs to raise its game too. Farming is the only profession where all the responsibility for getting the multiple technical, competing demands right falls on the individual farmer's shoulders alone. There are few if any duties on the agriculture industry and wider food supply chain to require minimum standards for farmers' impact on the natural world.

Fact number 3: the EA does a lot more than you think to protect water

Most people know about our regulatory work, which is largely about seeking to ensure that the laws that protect our waters are upheld and that those who fail to do that and cause severe or deliberate damage are punished. Example: the record £90m fine we secured last year against Southern Water for deliberately polluting a large stretch of coastal waters. We do a lot of other things beyond regulation to protect and enhance water. We work with the government to develop policy that will enhance water quality. Example: the new Environmental Land Management Scheme which will replace the Common Agricultural Policy and pay farmers to protect and enhance our waters. We work with the water companies and Ofwat to ensure that the water companies

are investing in better infrastructure to improve water quality in future. We carry out around 90,000 water quality sampling visits a year from 13,000 locations. We respond to thousands of environmental incidents every year: last year, more than 76,000 were reported to us, including flood, drought, fires, fish kills and pollution incidents. We work with NGOs and local partners to improve water habitats, remove invasive species, open up rivers for salmon, restock them with fish for anglers, and restore them to their natural state. We regulate water abstraction to protect chalk streams and aquifers, and manage drought risk. We manage the Thames and other major river navigations for the benefit of river users, the water companies who abstract water for public supply, and wildlife. I know most of the Environment Agency staff who do these things. Every single one of them is committed to creating a better place. They do a great job, day in day out, 24/7, often in difficult circumstances. They will always go the extra mile for the people and places they serve. They make a massive difference for the better, and they all deserve our thanks.

Three inconvenient truths

Finally, after the myths and the little known facts, three inconvenient truths.

Inconvenient Truth number 1: You get the environment you pay for

Nothing in life is free, and that includes better water quality. If we want it, it will have to be paid for.

The first people who should be paying to protect and enhance our waters are the polluters themselves. At the moment they aren't. Not all those we regulate are paying the full costs of the work the EA needs to do to stop them polluting. That is why we believe there is a good case for increasing those regulatory charges. We welcome the government's recent agreement to increase the charges we apply for some of the abstraction licences we issue. Those are designed to stop water companies and others taking unsustainable amounts of water from the ground or our rivers.

Nor are water companies, farmers and others whose activities can damage our waters currently paying the costs of repairing the damage that they do cause. When we prosecute serious polluters, the fines that are imposed on them go to the Treasury, not back into restoring the environment. That is why the EA is increasingly using Enforcement Undertakings whereby polluters agree to fund the clean up of damage they have caused in exchange for the EA deciding not to prosecute them. We are only prepared to consider those undertakings, let me stress, in minor cases. Where an operator causes major or deliberate harm, we will normally always prosecute and seek the highest available penalties. And we'd like to see higher penalties than in the past, because the biggest polluters are not yet paying enough in fines to really deter them and others from future offences. That is why we welcome the tougher sentencing guidelines now in force and the recent record fine against Southern Water.

We would also like to see the water companies putting even more investment into improving the state of our waters. Too many parts of our sewage system

are not fit for the 21st century and have not been upgraded since Victorian times. If water companies are to continue their social licence to operate, they need to be putting more of their profits back into the environment and less in dividends to shareholders.

Clean and plentiful water is a public good. So it is right too that the government – which means ultimately the taxpayer – should pay some of the cost of achieving it, including by funding the work the EA does to protect and enhance our waters. We welcome the government's recent decision in the Spending Review to give us new money to step up our efforts to do just that. It will fund a major uplift in our inspections of farm and sewage treatment plants, support our work to tackle mining pollution, and allow us to invest in our water transfer networks which help prevent drought and water shortages.

And if we accept my argument that water is a really precious commodity, then it is right too that as consumers we pay a fair price for it and know how much it really costs. That is why we support water metering so people can see how much they are using and what it's costing; and why we work closely with the economic regulator, Ofwat, to ensure that the water bills we all pay do fund the necessary investment by the water companies to deliver the clean and plentiful water we all want.

Inconvenient Truth 2: climate change may make things worse before they get better.

Over the long term though the biggest determinant of the state of our waters won't be what the Environment Agency or the government or the water companies do but what happens to our climate. Climate change is driving heavier and more violent rainfall: that rainfall is overwhelming sewage systems more frequently, leading to more discharges into rivers; and it's washing more soil and contaminants into those rivers, causing greater flood risk and pollution. Climate change is also driving hotter temperatures and lower summer rainfall, causing higher drought risk, damaging water quality and killing river wildlife.

So if we want to fix water, we need to fix the climate. The Environment Agency is playing its part here too, by regulating down the emissions of greenhouse gas that cause climate change, by helping our communities adapt to its effects through building more flood defences and working with the planners to create more resilient cities, and by walking the walk ourselves with our own commitment to make the EA a net zero carbon emitter by 2030.

Inconvenient Truth 3: if we want better outcomes, we need to think differently

We have made good progress in protecting and enhancing our waters over the last couple of decades. As I've said, we still have a long way to go. And getting to lasting solutions will take decades. But we know what the problems are and we know how to address most of them. Those are good foundations on which to build. But if we really want to shift the dial then we will also need to think and act differently.

One idea, put forward recently by Parliament's Environmental Audit Committee, is to build a network of citizen scientists to help monitor our rivers and inform the action we take to protect them. The Committee have recommended that the Environment Agency explore providing a publicly-available platform for people to enter water quality readings in a way that would allow those results to be verified by other users, regulators or companies – a kind of Wikipedia of Water.

I like the concept. I like the principle it embodies: that all of us are responsible for the state of our waters. I like the practical benefits it could deliver: better understanding, in real time, of what's happening in our rivers allowing us to act better and faster. And I like the way it could do a lot with a little: at a time of scarce resources the way to do things better with less is do them together. So we are looking at whether we could do something on those lines, and I invite all the campaigners and NGOs to consider how you can contribute – we are keen to work with you.

Another leftfield idea that I like: energy from mine water. At the moment we think of mine water as a problem, because as it seeps out of abandoned mines it carries pollutants down into our rivers and aquifers. But what if we could turn that problem into a solution? A solution that helps local communities and tackles a global problem.

With our support, the Coal Authority are doing just that by looking at using mine water to heat local homes and businesses. 25% of homes in the UK are located above former coal mines. The water in those mines is warmed by natural processes and is not affected by seasonal variations. With the right technology it can provide renewable, secure, low carbon heating for buildings in coalfield areas, benefiting local communities and helping tackle climate change.

Conclusion

So, to sum up. The state of our waters is complicated: in the last thirty years we have seen some great improvements but there is still a lot to do and new threats to meet. We should pay as much attention to water quantity – ensuring we have enough – as we do to water quality. Clean and plentiful water is everyone's responsibility, not just mine or the water companies'. Water is more precious than we think. Much of the damage being done to it is coming from farming, not just from water companies spilling sewage, so we need to focus as hard on harm-free farming as we are on good water company performance. Ultimately we will get the water we are all prepared to pay for. And we cannot have the water we want unless we also tackle the climate emergency and think, and act, differently.

But we shouldn't be downhearted. Because we are already doing many of these things and seeing results.

A final point: who put the otters back?

Let me illustrate that without using any more figures, because you can always contest numbers and what they mean. So let me end with a real life

illustration that we can make progress: the otter.

Until the 1950s otters were common in Britain, but by the 1980s they were on the brink of extinction. The main reason for that was that otter need clean streams, good habitats and rivers filled with fish, and by the 1980s our watercourses had become so polluted with pesticides and other pollutants that many of them were no longer habitable either for the fish or their otter predators.

Today otters are back in every county of England. Not everyone is happy about that because the otters eat the same fish the anglers are trying to catch. Indeed the EA is sometimes accused by anglers of having restocked the rivers with otter. That is another myth. I can confirm today that there is no secret EA laboratory breeding supersized fish-eating otters and no covert EA operation to slip them into rivers at dead of night.

The truth is simpler and more uplifting. The otters are back not because the EA put them there but because the rivers are healthier. That is still a fragile recovery for the otter, and we need to ensure that it doesn't go into reverse again. But as we disentangle myth from inconvenient truth, let's remember the otter. And let's resolve to ensure that its story ends happily – by cleaning up all our waters and creating a better place for people and wildlife.