

Speech: Escaping the jaws of death: ensuring enough water in 2050

Introduction: the jaws of death

If you look at the business plans the water companies produce (and rather tragically I not only read them but like reading them) you will notice two things that they all have in common.

First, they all identify the same thing as their biggest operating risk: climate change – which is another good reason to believe in it. It's not just almost every scientist in the world who believes it's happening, but hardnosed companies who are making investment decisions based on their belief that it's a Thing. They would not be spending hundreds of millions of pounds a year on greater resilience in the face of something for which there was not compelling evidence.

The second thing that you find in all the water companies' business plans is a chart in the form of a graph, also known by some as the jaws of death (though that's not what they call it in the glossy business plans). This chart draws two lines across the X/Y axis.

The first line shows predicted water demand over the next several decades in the region the water company serves: and in all the water company plans this line goes up, as more people, homes, and businesses appear over time.

The second line shows the water that will be available to supply those needs: and in all the water company plans this line goes down, as the effects of climate change kick in.

And somewhere out along the timeline, usually around the 20/25 years from now mark, those lines cross. And that, ladies and gentlemen, is the jaws of death – the point at which, unless we take action to change things, we will not have enough water to supply our needs.

Self-evidently, avoiding something called the jaws of death is by and large the sensible thing to do. So how do we do that?

Step one: understand what's going on

First, we need to understand what's happening.

Climate change is what's happening. It means that in the UK we will have hotter and drier summers. By 2040, we expect more than half of our summers to exceed 2003 temperatures.

That will mean more water shortages: by 2050, the amount of water available could be reduced by 10-15%, with some rivers seeing 50%-80% less water during the summer months. It will mean higher drought risk, caused by the hotter drier summers and less predictable rainfall.

Result: on the present projections, many parts of our country will face significant water deficits by 2050, particularly in the south east where much of the UK population lives.

Something else is happening alongside climate change: growth. The population of the UK is expected to rise from 67m now to 75 million in 2050. All those extra people need houses and roads and energy and food and places to work, all of which will require more water.

The environment needs more water too. Example: chalk streams. They are extremely rare – most of the world's are here in England. They are ecologically vital, supporting a rich biodiversity: trout, voles, otters, kingfishers. And they are under threat, because their aquifers currently provide drinking water for millions in South East England, and that is unsustainable in the long term. That's why we are working with the water companies to reduce or in some cases end abstraction from chalk streams.

So: climate change plus growth = an existential threat. To our economy, environment, security, happiness, way of life. We can choose to ignore this problem. Or we can choose to tackle it. I'm betting that you are all in this room because you think the second approach is preferable to the first.

Step two: do something about it – push all the buttons

So what action do we need to take? In the face of water scarcity, we must tackle both sides of the equation: reduce demand and increase supply. The good news is that we can do both of those.

We can reduce demand by reducing leakage, by more water metering, sustainable drainage systems, insisting on new building regulations to drive greater water efficiency, and finding ways to cut down the amount of water we each use as individuals.

And we can increase supply by a mix of methods, all of which we'll need to pursue. We will need to see more water transfers between regions from areas of water surplus to areas of deficit. There's scope to do much more here: currently only 4% of water supplies are transferred between individual water companies.

We will need to build more desalination plants. Thames Water have an impressive one in Beckton, the first of its kind in the UK, which can provide up to 150 million litres of drinking water each day – enough for nearly one million people.

And most controversially of all, we will need to build new reservoirs. Creating some of that new infrastructure will be challenging: we have not built a new reservoir in the UK for decades, largely because clearing all the planning and legal hurdles necessary is so difficult and local opposition so fierce.

But while there will be political challenges, there should be less difficulty over the economics. That's because the investment needed to build the

infrastructure we need to increase our resilience is modest compared with the cost of not doing it.

There is strong support from the National Infrastructure Commission for this approach. Their 2018 report on our national infrastructure needs highlighted the risk of extreme drought, supported the twin track approach of investing to enhance supply and reduce demand, and noted that the investment cost of resilience (£21bn) is roughly half the cost of an extreme drought (£40bn).

A 2016 report produced by the water companies, the Environment Agency and others came to the same conclusion: that investing in water resilience was both affordable and cost-beneficial. That report calculated that while a severe drought would cost each household more than £100, the cost per household of the investment that would greatly reduce the risk was only £4 a year.

What is the Environment Agency doing about all this?

We too are strong supporters of this twin track approach, and are working with the water companies and Ofwat to ensure that the water companies' business plans for the next five year price period (2019-2024) reflect it. And to a fair degree, they do: a significant number of companies have said they will meet Ofwat's leakage reduction target of 15% by 2020, there are over 20 new water transfers proposed, plans for more regional cooperation between the water companies, and a range of large infrastructure plans, including two major reservoirs.

We are also working with the government to set the right level of ambition for water efficiency. We are particularly interested in specific ideas on how we could get this country to Waterwise's ambitious target of 100 litres per person per day. And we are delighted to have recently become a Waterwise Supporter, helping Waterwise to challenge and support all of us in the sector to aim even higher on water efficiency.

That too will require a range of measures. Water labelling is one example – ensuring all products that use water, like a toilet or a dishwasher, bear a label clearly identifying how water-efficient or not they are, so people can choose products which will reduce water use.

Better building standards is another – done right, these can reduce the amount of water used in new and existing properties without adding cost or reducing people's quality of life.

Recent research showed that a mandatory water label for water-using products combined with product standards and building regulations could reduce per capita consumption by 30 litres a day in 25 years.

And a third example is something the Environment Agency is heavily engaged in: sustainable placemaking – working with planning authorities, businesses and local communities to design towns, cities and other places which put the sustainable use of water at the heart of their design and functioning.

The Oxford Milton Keynes Cambridge Arc is a great opportunity to showcase how this could be done, and we are working closely with all those involved to ensure that the blue and green infrastructure (the water and the nature) gets as much attention as the grey infrastructure (the houses, the roads and the industries).

The cost-benefit of blue/green infrastructure is striking: there is compelling evidence that people who live near water or green space, or have regular access to it, are happier, healthier and more productive. Investment in a new wetland, a cleaned up river or a tree plantation is not just a good thing because it creates beauty and habitat. It is also a removal of cost from the NHS.

The Environment Agency is also taking action to protect our water sources and ensure they are used wisely, by reforming the current system of water abstraction.

If you want to take more than 20 cubic metres of water a day from a river or the ground you need an Environment Agency abstraction license. The abstraction licensing system we currently have was designed more than 50 years ago for a world with less environmental protection, less demand for water and no awareness of climate change. Many of the older licenses have no limits on the amount of water that an abstractor can take. Others are out of date or unsustainable. Some are actively damaging the aquifers from which the water comes, draining the water table or hurting the local ecology.

So we are working with the government and the water users to implement reforms designed to give abstractors the water they need while better protecting the environment and our long term water supply. We are currently midway through a programme of reforming those licences, sometimes adding new terms and conditions that will reduce overall water usage or only allow it at times when it will not cause harm. In rare cases we are withdrawing the license altogether.

In parallel we are developing a stronger catchment focus that brings together the Environment Agency, abstractors and our other partners to seek to agree a catchment-wide strategy for water that will balance everyone's needs and address unsustainable abstraction.

With Ofwat, Defra and the water companies we are also developing a longer term national framework for water resources which will produce an inclusive picture of the need for water from all sectors, and which we can use to identify how best to deliver this over the coming decades.

Finally, as well as working for a better future for water in the long term, we are also working for a decent one now: yesterday (18 March) the Environment Agency chaired the latest meeting of the National Drought Group, which brings together the water companies, government and water users to manage down the risks of water shortages over the next few months.

Step three: think (and act) different

Avoiding the jaws of death is a joint effort. We will only succeed if we all work together. The coalition we need is largely in this room: we have representatives here today from the government, the Environment Agency, the other regulators, the water companies, the National Infrastructure Commission, the key NGOs.

All of you – all of us – have done important things over the last few years to help improve the country's long term resilience. Today I want to recognise and thank all of you for your own contribution. But we cannot afford complacency. So let's also agree that we all need to up our game.

The government

The government deserves credit. (How often do people say that?). It's shown leadership with the publication last year of a 25 Year Environment Plan, with ambitious targets and an audacious goal: that we will be the first generation to leave the environment in a better state than we found it. Whatever our personal politics, we can all rally to that cause.

One of the core goals of the 25 Year Environment Plan is clean and plentiful water. And in the plan the government made some important commitments: to increase water supply, incentivise greater efficiency and less personal use.

To these ends the government has committed to press on with abstraction reform. It has promised a new National Policy Statement for water resources that will streamline the planning process for new large infrastructure schemes such as transfers and reservoirs: that will, as I suggested, be controversial. But it's the right thing to do.

The government has also been clear that it wants to see personal water use fall, and that it will work with the industry to set an ambitious personal consumption target and agree cost-effective measures to meet it. Now the government will need to deliver on those commitments. It may also need to legislate to deliver on some of them. We will support it in doing so.

I also want to commend the government for three other announcements that came out last Wednesday which I suspect – given what else was going on in Parliament that day – many people didn't notice. In his Spring Statement, the Chancellor announced that the government would do three things that, done right, could make a huge difference in getting us out of the jaws of death:

- introduce a Future Homes Standard by 2025, so that new build homes are future-proofed with low carbon heating and world-leading levels of energy efficiency. That will help mitigate the main driver of climate change. It would be great if that standard could require that new build homes are also future-proofed with world-leading levels of water efficiency and resilience to drought and flood.

- mandate net gains for biodiversity on new developments, to deliver an overall increase in biodiversity. That will help ensure developers consider the water needs of the animals, plants and environment as well as the needs of the humans.
- undertake a global review into the economics of biodiversity to explore ways to enhance the natural environment and deliver prosperity. I think that is likely to find, as the Stern Review did so powerfully for climate change, that we risk a strategic market failure if we stay on our present course, and that the economic costs of investing in biodiversity are hugely outweighed by the economic benefits.

The politicians

Politicians across the spectrum have recognised that water is a big issue that needs debating, and there is (to coin a phrase) clear blue water between the two major parties on how to deliver water to the public in the future. The issue for me though is not whether water companies remain privatised or are taken back into public ownership: it's what will deliver best for the public and the environment. That is where the debate should start and finish.

The politicians will need to accept that if you will the ends, you also have to will the means. As I've said, greater water resilience will require some controversial decisions on new infrastructure, which the politicians will need to support. And it's not impossible that the price of greater water resilience is that people may actually need to pay more for water itself. That would be particularly controversial, and there are good arguments for and against. But we should not shy away from that debate.

The water companies

The water companies deserve more credit than they sometimes get. They deliver safe, clean water, day in day out. They do it reliably and at a price almost everyone can afford. They invest billions of pounds in improving the environment. They are causing fewer serious pollution incidents than ever before. They work well with the Environment Agency as their environmental regulator. They all have water efficiency retrofit and engagement programmes far more ambitious than ever before.

And they work actively with the EA as an operator: we are often partners in fighting flooding, building infrastructure or enhancing habitats. The fact that water quality in our rivers, streams and lakes is better than at any time since the start of the Industrial Revolution is in large part due to the hard work and investment of the water companies – as well as the work of the regulators like the EA and the NGOs.

All that said, the water companies will be the first to agree that they need to do more to boost public trust. In particular they need to continue to bear down on pollution incidents, redouble their efforts to fix leakage, and focus in particular on the issue we are discussing today: building long term water

resilience through active planning, collaboration with others and significant infrastructural investments. Some of the companies are doing this. But not all are, or not to sufficient degree or with sufficient pace.

The companies need to lead this process. They shouldn't wait to be required to manage down demand and enhance supply. Success will require them to engage with customers even more actively; and so to earn a new level of public trust.

The regulators

There are three regulators of the water sector – Ofwat, the economic regulator; the Environment Agency, the environmental regulator, and the Drinking Water Inspectorate, who regulate to ensure public health. The three regulators work well together on a day to day basis. But we need to think harder together, and with the water companies, about how we craft a joined up regulatory framework in the future which will actively incentivise the strategic thinking and substantial investment in long term water resilience by the water companies that we all want.

The NGOs

The environmental NGOs have played a hugely positive role as our partners in improving habitats and water quality. They are just as important in lobbying all the rest of us – government, the Environment Agency, the water companies – to enhance and not just protect the environment. Please keep doing it: no organisation is perfect, and it helps us do better to know that you will watch and challenge us. But I would also say two things to the NGOs.

First, please recognise that we on this side of the fence – in government, the public sector, and businesses – largely share your goals. We may be human and we certainly make mistakes, but we are not actually evil. Like you, we love our children and we want to make the world a better place.

Second, please recognise that while all of us want to protect our environment, we must also deliver sustainable growth. If we ask people to choose between the environment on the one hand or housing, jobs, and prosperity on the other, they will choose the latter. So we have to deliver both together. And with the right policies, we can. Investing in long term water resilience is a great example: it will create jobs and growth while at the same time delivering a better environment.

The Environment Agency

The Environment Agency itself will need to think differently too. Example: water transfers from one part of the country to another. They are, we all agree, part of the solution to the resilience challenge. But if you transfer water from one river catchment to another, you also transfer the things that live in that water. That means that water transfers, which the EA in principle supports, also carry the risk of spreading Invasive Non-Native Species like Floating Pennywort or the Signal Crayfish, which do serious ecological harm and which the EA definitely opposes. We are going to need to

think creatively ourselves about how to unlock the transfers without unleashing the invaders.

The public

I said that the coalition we need to avoid the jaws of death was largely in this room. There is one missing element of that coalition, possibly the most important of all: the public.

The fact is that we won't have long term water security unless all of us change our behaviour. We all need to use less water and use it more efficiently. Part of this is about technological innovation, to develop machines and processes that use less water better.

But most of it is about human behaviour: changing it. And what we know about this is that we can do it. In the last few decades we've radically changed behaviour on smoking (everybody did it) and seatbelts (nobody wore them). In the last two years we've changed behaviour on plastic. We need water wastage to be as socially unacceptable as blowing smoke in the face of a baby or throwing your plastic bags into the sea. We need everyone to take responsibility for their own water usage.

What might that mean? Here I want to give special praise to our hosts, Waterwise, for their campaigning work, and their readiness to challenge all of us to think different and to use water wisely. At present the average person in the UK uses 140 litres a day. Waterwise estimate that it's possible to get that down to 100 litres a day or less in the next couple of decades.

We in the Environment Agency like that target, which we think is achievable. In parts of Denmark they use just 80 litres a day. After the recent drought in South Africa, they looked at how they could get use down to 50 litres. There are simple steps we can all take to reach the Waterwise target. Get a low flush toilet. Take short showers not deep baths. Get a water efficient washing machine. Only use your dishwasher when it's full. Turn the tap off when brushing your teeth. Don't water your lawn: it will survive without you. It's not rocket science.

We can do this. If by 2050 we reduced per capita consumption to 100 litres a day, leakage by 50%, and did nothing else, it would provide enough water for an additional 20 million people without taking any more from the environment. And who's to say that by 2050 we couldn't get to 80 or 70 litres a day? The world will be very different then. So my final point to you is that while our goal – long term water resilience for this country – may be ambitious, it is also achievable.

Conclusion: snatching life from the jaws of death

I confess I stuck "the jaws of death" in the title of this speech to get your attention. I hope it worked. On one level it's just a dumb name for a graph where two lines cross. But on another, it's real. There's a quote from Sylvia Earle, the distinguished marine biologist, which sums up in twelve words everything that's at stake here. It goes like this: "No water, no life. No

blue, no green. No ocean, no us." Let us resolve not to go there.