HOUSE OF LORDS

Environment and Climate Change Committee

Corrected oral evidence: Drought preparedness

Wednesday 19 November 2025

10 am

Watch the meeting

Members present: Baroness Sheehan (The Chair); Lord Ashcombe; Lord Duncan of Springbank; Lord Jay of Ewelme; Lord Krebs; Lord Layard; Lord Lennie; Lord Mancroft; Lord Rooker; Lord Trees; Baroness Whitaker.

Evidence Session No. 3 Heard in Public Questions 31 - 50

Witnesses

I: Kathryn Brown OBE, Director of Climate Change and Evidence, The Wildlife Trusts; Callum Ellis, Head of Climate Resilience, Marsh; Yetunde Abdul, Director of Industry Transformation, UK Green Building Council.

Examination of witnesses

Kathryn Brown, Callum Ellis and Yetunde Abdul.

Q31 **The Chair:** Good morning and welcome to the Lords Committee for the Environment and Climate Change. Today is the second evidence session in our inquiry into drought preparedness and we will be looking into the impacts of drought on the urban and rural environments. I remind everyone that this session is webcast live and that a transcript will be taken and made public. Witnesses will be able to review the transcript and make minor amendments. I take this opportunity to warmly welcome our witnesses and thank them for taking the time to be with us today. I invite you to briefly introduce yourselves, starting with Kathryn, then Yetunde and then Callum.

Kathryn Brown: Thank you very much, Chair. I am director of climate change and evidence at the Wildlife Trusts. We are a federation of 47 charities that manage about 100,000 hectares of land across the UK and have about 2,500 nature reserves.

Yetunde Abdul: I am director of industry transformation at the UK Green Building Council. We are a membership-led charity that focuses on the radical transformation of the built environment to make it more sustainable. We have been in operation for almost 20 years and we have a passionate mission and a whole range of members to do that.

The Chair: Would you move the microphone a little bit closer to you? You are a little bit quiet.

Callum Ellis: Good morning, everyone, and thank you for inviting me here today. I am a director and head of climate resilience for Marsh here in the UK. Marsh is a global leader in insurance broking and risk advisory. We are centred on helping organisations navigate critical risk issues all around the world, working across various sectors and geographies. We are also one of four businesses, part of Marsh McLennan, that covers risk strategy and people. My specialist area is in natural hazard modelling and physical climate change. I co-lead Marsh's global centre of excellence on climate and we have a much broader team ranging from climate scientists to engineers and economists. The likes of Professor Swenja Surminski, who sits on the Climate Change Committee, is part of our broader group that presents advice to the clients and all those we work with.

The Chair: Excellent. Thank you very much indeed, once again. Before moving on to questions, I should remind members that all relevant interests should be declared the first time they speak. Lord Ashcombe, you have indicated that you would like to.

Lord Ashcombe: Yes, chair. As Mr Ellis and I work for the same company, I will not be asking any questions today. I am merely a listening partner.

Q32 **The Chair:** Thank you very much. Before asking the first question, I

would like to declare that I am a director of Peers for the Planet. I will put the first question to Kathryn and then ask Yetunde and Callum to come in with their responses. How has the understanding or awareness of drought risk changed in your respective sectors in recent years? When you give your answers, can you also say whether there are any knowledge gaps that need to be addressed?

Kathryn Brown: At the moment, my experience is from working for a large nature conservation organisation. From that perspective, drought has become the top climate risk, possibly surprisingly. We did a bit of research on this last year for our annual climate change adaptation report. The Wildlife Trusts publishes one every year. We surveyed all our reserve managers and staff to see what they thought the largest pressures were for all our nature reserves, and drought came up as the top pressure. It was the current top pressure—again, quite surprisingly—and it also came top of the future pressures list. That was above things such as land use change, development, pollution and other human pressures. It is definitely a very live and worrying issue for many of us; colleagues across other nature organisations have said the same thing.

I should declare that in my previous role, I led the UK's climate change risk assessment process. Maybe we can talk later about some of that evidence and how—

The Chair: Which organisation was that with?

Kathryn Brown: It was for the Climate Change Committee.

Yetunde Abdul: Working for a built environment charity, whose membership spans the entire value chain, we pride ourselves very much on being the voice of the sustainable built environment as well. Drought has always been a consideration for the built environment sector and for professionals within it, but this year we launched our climate resilience road map, which was informed by a multitude of organisations. Hundreds of individuals and experts fed into it to try to define this road map for the UK on how we can become more climate resilient. It identified a number of hazards as well and drought was a key part of that, alongside overheating, flooding, storms and wildfires. It has been a standout important topic; alongside those other hazards, drought is starting to come to the fore. We also see quite a few points relating to water scarcity and water efficiency, and how we increase capacity for that within the built environment sector.

On the knowledge gaps that came out through that process, we are hearing more and more from our members and other organisations in the built environment relating to having standardised metrics and targets for drought risk. It is about understanding what the challenge is in a consistent and standardised way, then using that to build in solutions and understanding adaptive pathways to mitigate and adapt to the impact of the drought, which is set to continue to grow.

Callum Ellis: I will try to answer from both an insurance and a business perspective, as we bridge the gap in between. The point that Kathryn made about drought being a top issue for the natural environment is interesting. In our industry, there has been a long awareness of drought and we are very familiar with the types of impacts it has. Quite often, that is undervalued in certain areas where flood risks and wind-related risks are typically top of mind, particularly with the insurance industry driving a lot of the insured losses that we see across the sector. We are seeing some of the drought exposures tick up that agenda, incrementally, with the insurers and the businesses we work with. A lot of businesses are now trying to consider the financial materiality of different climate-related issues. Certainly, we are starting to see the more water-intensive manufacturing industrials trying to think about drought more broadly.

While drought is obviously a key peril, a lot of organisations think more around the secondary perils that are a consequence of drought. That might be subsidence, increasing wildfires—this year, I think that we have had the most widespread wildfires in the UK ever—and issues of extreme heat and water stress. If we think about it in that context when it comes to some of the gaps around this issue, for us in the insurance industry and for the businesses that we advise, it is about having robust modelling that allows them to properly identify the right risks, quantify them in various terms and then also help them adapt to those issues.

The modelling component is critical. We have some great data from the British Geological Survey and the Met Office here in the UK, but there is a bit of a gap when it comes to the robust quantitative models that insurers can rely on properly to address some of these issues. I will perhaps explore that a bit further as we go through today.

The Chair: Absolutely. That will be quite critical to understand what informs your understanding of drought. I hope that we will understand that fully before this session is out.

Lord Duncan of Springbank: I should declare an interest as the chair of the Confederation of Forest Industries and former chair of the National Forest. I have two very brief questions, one to Ms Brown. Do you represent English trusts or is it for the whole of the UK?

Kathryn Brown: The whole of the UK.

Q33 **Lord Duncan of Springbank:** That is helpful. The second question is: what preparations are you making for drought-resilient species? We have spent a lot of time on native species and protecting them, but if the direction of travel is, truthfully, that climate will change, is there work being done now on the careful introduction of non-native species within the mix to allow for resilience to drought?

Kathryn Brown: It is a varied picture, as you will be well aware, I am sure, across different organisations. Most of the nature conservation charities, including the Wildlife Trusts, are still very focused on native species. In areas that have been affected by ash dieback, for example—

not necessarily drought-related—where restocking needs to be done, they will often allow natural regeneration to see what works best and allow those natural processes to dictate the species that come into those areas. However, we are in active discussions with other bodies, including the Forestry Commission, about whether non-native species should be preferably selected for planting. It is not a common practice yet across the nature and conservation bodies.

Lord Duncan of Springbank: That is helpful. Thank you.

Q34 **Lord Krebs:** I should declare an interest in that Kathryn and I worked closely together when I was chair of the Adaptation Sub-committee and Kathryn was head of adaptation at the Climate Change Committee.

I want to ask my question to Kathryn. Which drought impacts are of greatest concern from an ecological perspective and which factors contribute to the vulnerability of different habitats to these impacts?

Kathryn Brown: One point I want to make is that often when we think about and see reports about drought and the natural environment, we think about rivers, ponds and wet areas, but the reason we are so concerned about drought as a risk is because it is all-pervasive. It affects all of our terrestrial and coastal habitats. Some of the areas where we are most concerned about vulnerability, which I know you know all about, are things like peatlands drying out because they are incredibly important carbon stores. Our peatlands in the UK contain something like 3 billion tonnes of carbon. When they dry out—and we have seen it this year with the horrendous wildfire risks, which I am sure we will all be talking about more as well—we are losing that carbon drastically.

The way to make those peatlands resilient is to try to keep them wet at all costs, pretty much. We are very concerned about vulnerable habitats like chalk streams but also what you would call more terrestrial habitats like peatlands. There is a whole range of quite rare species, particularly aquatic species, and when we see these droughts, particularly in the upstream regions with the loss of our river networks, some of those rivers are drying. In 2022 the upper reaches of the Thames dried up completely, I think, for its first five miles. Of course, when that happens everything in that stretch dies. We are concerned about the spatial areas but the vulnerable habitats, particularly peatlands and chalk streams, are top of our list at the moment.

Lord Krebs: I live very close to the River Thames in Oxford and this summer during the long drought, it virtually stopped flowing and became intensely covered with an algal bloom of blanket weed and duckweed. I assume that that has negative implications for fish populations and aquatic invertebrates. As well as rivers and streams drying out, even that major river—the River Thames—was presumably in very poor condition with low oxygen and high levels of nutrient pollution. Can you say a bit on that?

Kathryn Brown: Yes. You get a combination cascade effect happening where algal blooms will lead to deoxygenation, particularly when they start to break down and you get a lot of bacterial growth happening at the same time. That can lead quite quickly to fish kills. I am sure the Environment Agency, if you speak to it, will tell you about that because it has jurisdiction to move fish, which we are not able to do. It keeps a close eye on that. You also get higher water temperatures, which again lead to deoxygenation. From the work that we did in the Climate Change Committee, we know quite a lot about the thresholds at which many of our rarer fish species start to struggle; they are quite low, particularly for species like salmon that do not have the capability to withstand temperatures. It is about 17 degrees, quite a lot lower than you might think. We are very worried about those sorts of species.

The River Wye is a particular one for us at the moment because there is such a big pollution problem there this year, and it suffered from algal blooms as well this summer. We get these very fast effects that mean it is hard for us to react once the algal blooms have taken hold.

Lord Krebs: As you know, the Government have a legally binding target to halt the decline of biodiversity by 2030 under the Environment Act 2021. Will drought be a significant headwind in meeting that target?

Kathryn Brown: Yes, I think so, particularly for how the SSSI network contributes to that target and the species present in those SSSIs. I think something like two-thirds of our SSSIs are freshwater aquatic habitats. If they are in unfavourable condition, we know that those species are not thriving in those habitats. Once that takes hold and we have not prepared for it in advance, it is very hard to react.

The Chair: Kathryn, may I ask where you get your data from? What are the sources?

Kathryn Brown: Mostly through the UK climate projections for the long-term data. I know you have already spoken to colleagues at the Met Office. The latest risk estimates that we have produced are based on the 2018 UK climate projections, but we have used some work that has been done from the University of Reading to translate those into low-flow estimates for us on a spatial scale.

The Chair: Do you collect data from the physical environment and how do you go about doing that?

Kathryn Brown: Yes. Again, we rely quite heavily on others. UKCEH does a lot of spatial monitoring work across the UK. It also produces very useful real-time estimates of hydrological flows and a monthly outlook. We are very interested in the short-term outlook for the next six months. That is the time range we are most interested in, but we also do a lot of monitoring on our own sites across the country and feed those things in. A lot of collaborative efforts such as the National Biodiversity Network do data collection, so we try to put all of our data into those national schemes.

The Chair: I have one last question. Do you have a good handle on whether the effects and impacts that you are seeing on waterways, rivers, ponds et cetera are through lack of rainfall? Are you able to quantify to what extent levels of abstraction from waterways contribute to the problem?

Kathryn Brown: We do not do that quantification but we have looked at how others have done it.

The Chair: Which others, sorry?

Kathryn Brown: I believe it is mainly the Environment Agency but I can double-check with colleagues. We definitely have seen over-abstraction from chalk streams, particularly during times of drought when water companies can be permitted to extract from them. We know that has happened on the River Test and the Itchen. Southern Water has had drought permits to abstract during times of drought, so that happens, but I believe over-abstraction of boreholes in the south-east has been a problem as well. I can write to you with a bit more detail on that.

The Chair: That would be really appreciated. Just finally, something that has occurred to me is: to what level do you liaise about local situations with local authorities?

Kathryn Brown: Yes, quite a bit. This happens at the local trust level. I mentioned in the introduction that we have 46 local wildlife trusts which work very closely in their local areas. They are mainly county-based organisations. They work closely with their respective local authorities to understand the situation. However, we are not very well plugged into local resilience forums and local resilience planning and we would like to see more connectivity into the NGO sector.

Q35 **Lord Rooker:** How does the effect of drought on these enormous environmental threats—you have covered lots of them—compare to the impact on the biodiversity loss? Can you rank them at all? We will end up with a load of man-made biodiversity in the end, will we not? That is the reality of what we are going to do. We will put back what we think we have lost, but we do not know what would have gone on if it was left. Where does it compare and is it possible to rank it? It may not be, I do not know.

Kathryn Brown: On the effects of drought specifically?

Lord Rooker: Given our total environmental impacts, with the risk of fires, subsidence and all the other effects, where does the loss of biodiversity come within that? Would you be able to rank it? Is it higher, lower, a bigger threat or not?

Kathryn Brown: It would be hard to rank it quantitatively. These things are all connected. One of the reasons why drought comes out as the top issue for our nature reserves and our reserve managers is because it is all-pervasive, so it affects every part of the system and for a very long time. Wildfire is another risk that we are very concerned about because

of the devastating impact that it causes, whereas something like extreme heat or flooding tends to have, at the moment anyway, a shorter-term impact, so the recovery is easier. As we have already been discussing, particularly with multiyear drought, it is very hard to actively intervene to make the situation better if you have not already tried to make the system as resilient as possible. That is the main reason why drought is such a big issue for us.

On being able to rank the biodiversity loss associated, one of the big issues we have is that it is very hard to quantify the impact on biodiversity in a numerical sense from drought periods. We have almost anecdotal data or statistics from previous events but we do not have that full picture and that is a big evidence gap for us.

Lord Rooker: To be unfair, but in a sentence: what is your message to the public about drought on a day like today?

Kathryn Brown: We are still in drought; that is my one-sentence answer. I live in the Thames catchment and we are still under a hosepipe ban.

Q36 **Lord Jay of Ewelme:** I want to ask what we can do about it, really. What interventions could we reduce the severity of the environmental impact of drought? Is what we could do already being implemented or are there things that you think are not being implemented that could be? I will ask Kathryn first but it would be interesting to get views from the other two of you as well.

Kathryn Brown: I will try to make my response to that shorter. Many of the ways that we try to improve resilience in the natural environment is to make it more diverse, more well connected. These are all the Lawton principles and they apply to drought as well. Particularly, we try to manage water in the environment. We do things like rewetting of peatlands, managing the land so that it holds more water, slowing down the flows of rivers, for example rewiggling of rivers. We do that to control flood risk but it is also very useful for holding water back.

The Wildlife Trusts is very big on beavers. We have beavers all over reserves that are all currently enclosed but the Government have now passed policy to allow wild beaver releases. Beavers are fantastic ecosystem engineers and they hold water really effectively in the environment. You can see the impact that they have, particularly in other countries at the moment when there is a drought. It is using a range of what we know are the keystone species while trying to manage the land effectively to hold in water. There are some policy barriers that mean it can be difficult to do that, which I can come back to.

Lord Jay of Ewelme: You use the word "we" a lot. Who is we? Who is supposed to do it? What you have outlined is an awful lot of rather complicated things, which presumably are the responsibility of a lot of different organisations. Who is we?

Kathryn Brown: Yes, that is correct. We is us—the Wildlife Trusts—but I say "we" in a broader sense as well, because other nature conservation organisations like the RSPB, National Trust, Woodland Trust, WWT and the big landholding NGOs are all doing very similar things in resilience building. Across us, while it is a small percentage, the percentage of the land that we look after across the UK is notable. "We" is also a lot of the government statutory bodies like Natural England, the Forestry Commission and the Environment Agency. We work closely in collaboration on these issues.

Lord Jay of Ewelme: You talk to each other?

Kathryn Brown: All the time, yes.

Lord Jay of Ewelme: Is there any kind of formal group for getting you together or is it just that you pick up the phone when you think you need to decide what will happen in the Thames valley because a drought is forecast for the next couple of years or so?

Kathryn Brown: Some of my colleagues operate through some formal structures like the national drought resilience group, for example, but a lot of it is the latter. We pick up the phone and we have those relationships between the different organisations, which are really important.

Lord Jay of Ewelme: Do you think that works?

Kathryn Brown: I think it works well except for the gap I mentioned, which is that the NGOs are not well plugged into emergency planning systems in the UK. I would like to see us being brought into those much more at the national level.

Lord Jay of Ewelme: Thank you. Callum, do you have thoughts about this?

Callum Ellis: Listening to what Kathryn was saying, we would typically bracket some of those interventions into what we call nature-based solutions: peatland restoration or rewetting, planting of trees to hold water in the soil. There are some fantastic benefits that improve some of the drought-based impacts that we see but also help with wetter winters. There is a dual role for some of those nature-based solutions to play. I think what is potentially quite exciting is there is a lot of private interest in adding to those kinds of interventions. Bringing together public initiatives and private sector ambitions to help improve how we use nature across the UK could represent quite a positive opportunity for us to handle drought and the flood risk that we might see later in the year.

The Chair: Are you implying that that could be monetised?

Callum Ellis: Potentially, yes. It is interesting you mentioned the beavers. They have come up in an insurance context, believe it or not, specifically in looking at whether adaptation, as we call it, has some kind of financial benefit to the insurance ecosystem, to businesses and to

home owners as well as they are looking to be more resilient to some of these impacts. It tends to be more on some of the acute risks, like subsidence or some of the flood-related perils, but they are all interrelated, as we all know.

Lord Jay of Ewelme: Yetunde, do you have views on this at all?

Yetunde Abdul: I think they have mainly been covered. There is a lot to be said for nature-based solutions and, as Callum said, the benefits they can add in mitigating drought by holding the water and then supporting the cooling of the built environment as well. One aspect that really stands out and is really interesting, coming back to what you were saying about peat, is sustainable urban drainage systems, which is all about holding water, storing it and diffusing it into the built environment, through soft landscaping, in a slower way. That in itself not only helps to mitigate flooding; it supports cooling of the built environment and helps to mitigate the urban heat island effect. There are multiple connected benefits that can be there as long as they do not dry out.

Lord Jay of Ewelme: Thank you. One final question for Kathryn Brown, Callum talked about planting trees. As I understand it, not much more than half of the target for trees has been planted in the last year. What is so difficult about planting enough trees?

Kathryn Brown: It is surprisingly difficult. I have moved from a role where I was advising the Government, working with Lord Krebs on tree planting targets, to trying to get trees in the ground and it is surprisingly difficult. I think the main reason is that when you are planting trees and you are trying to access government grants and you are also trying to use government-approved schemes like the Woodland Carbon Code, for example, you have to take a large number of steps to make sure that you are meeting the guidance and requirements that allow you to come under those schemes. You have to do them in a very specific order. You cannot actually put a tree in the ground until you have done, say, the first 10 steps of that process and that can take time.

Accessing grants varies across the UK. We have had particular problems in Wales recently in trying to access government grants and the trusts have been speaking to the Welsh Government about that. Again, there is a huge amount of paperwork that needs to be done. It is a very bureaucratic process.

Lord Jay of Ewelme: Could it be less bureaucratic but still effective? Is all that bureaucracy needed?

Kathryn Brown: I would hope it could be less bureaucratic, yes, because obviously we are desperate to get trees in the ground. The way we plant our woodlands is also very resilient to drought. We have seen that a lot this year: our trees have done very well, despite the conditions. We are actively discussing with the UK Government, the devolved Governments and organisations like the Forestry Commission how we can

streamline the process to speed it up, because we are desperate to do that.

The Chair: That is a really important issue that Lord Jay has unearthed, and not one that I was fully aware of, so any further information you can give us on what is required to cut through some of that red tape would be very helpful. We will have Lord Krebs, then Lord Trees and then Lord Duncan.

Q37 **Lord Krebs:** Very briefly to come back to the earlier conversation about land ownership, Kathryn mentioned that the National Trust, RSPB, Woodland Trust, Wildlife Trust are significant landowners, as are the Government through MoD, Crown Estate, Network Rail, the Forestry Commission and so on. However, the bulk of the land in the UK and in England is privately owned. Are these measures to promote resilience to drought and protection of species and habitats also being implemented by private landowners and, if not, what pressure can be brought to bear on them to implement measures?

Kathryn Brown: In some cases there are incentives to do so, particularly in the agriculture sector, obviously. On the environmental land management scheme in England, I would characterise trying to embed adaptation into that as tricky. We have been working on it with Defra for the last four or five years. I am just trying to think of the words to describe why it is so difficult.

Again, you are trying to incentivise the right actions in the right places and often it is quite hard to create a national scheme that allows that to happen. There has to be a bit of local decision making and local responsibility taken. We are trying to see that with local nature recovery strategies as well. We also, as well as owning land, we also give advice to private landholders and we do that across. We own about 100,000 hectares, we give advice on about 200,000 hectares, and we have a number of schemes. We work a lot with farmers and agricultural landowners, but private companies as well. We have something called Biodiversity Benchmark, for example, which is a corporate flag mark for good biodiversity action on land. There are incentives.

There is a lot less regulation, particularly for something like drought, which I do not think is top of the agenda and has not been in Government for quite some time.

Lord Krebs: I wonder whether the public money for public goods incentives, like ELMs and so on, might be money misspent if it is not spent on habitat and biodiversity improvement that is resilient to drought.

Kathryn Brown: I agree with that, yes.

Q38 **Lord Trees:** Thank you for coming to talk to us. We have a question later about interventions in the urban environment, so we will not go into that just yet, but on the face of it one can think of lots of such interventions. I am interested in interventions in the natural environment, which I would

have thought would be much more challenging. There is reference in our notes to designing drought-tolerant landscapes to reduce the need for water. Could you comment and enlarge on that a bit?

You talk about rewetting peatland, which is clearly important but that needs water, of course. You have to get water from somewhere on to the peatland. Trees do not go with peatland. We made big mistakes in the Flow Country in the north of Scotland in planting conifers on bogs and peatland. Could you talk a bit about how you can restore natural environments with water loss or the lack of it?

Kathryn Brown: I know that from the Met Office, when Jason Lowe spoke to the committee about this, he gave evidence that the amount of water in rainfall has actually gone up slightly, which seems counterintuitive depending on whether you are in drought or flood. What we are seeing—and this has been predicted for 30 years, so should not be new to anybody working in this space—is that we are getting drier summers and wetter winters. We have seen that start to take hold, but we are also getting very dry springs and that is a real problem. I know you have heard about this already in how soil moisture is being affected and how that is affecting vegetation in particular.

There is water there and it is about trying to keep it where we want it, rather than letting it go. One thing I would emphasise, from my previous role at the Climate Change Committee, is that when we look at future projections of water scarcity, we start to see something called negative available resource. It is where, if you tried to meet current environmental flow requirements in the future during times of drought, there would be no water left at all for abstraction. That is the definition of negative available resource. We looked at this in the last UK climate change risk assessment.

The areas that come out as riskiest in the short term are not the south-east of England but the west, Wales, the north-west and the south-west. A lot of that is to do with how water is not held in the environment. You get what we call flashy catchments in those parts of the country: the water runs into the river system and to the sea, and you get big problems with flooding as a result. For us, the main area, and it is a core part of most of our adaptation actions for climate change, is about how we use water and hold it back in the environment.

The actions that we have talked about so far--peatland restoration, river restoration, trying to manage wetlands so they do not dry out, those are all about holding water in the environment. We have not yet gone into the process of changing entire landscapes so they no longer reflect what you would consider a native British landscape but, as Lord Rooker pointed out, the baselining of what is natural and native, and what is not, is quite difficult. I do think that we will see quite big changes. Some landscapes probably will not be able to exist in the future because of what is coming with climate change, even if we start to see really ambitious mitigation action. We have not yet taken decisions at a national level to let some

landscapes go but those discussions are starting to be had, and we use something called the RAD framework, which is an American adaptation.

The Chair: What is it called, sorry?

Kathryn Brown: Sorry, Chair. The RAD framework. It stands for Resist-Accept-Direct. It is something that the natural environment organisations are starting to use a lot to think about when you stop trying to prevent change and accept it, and then you can start to direct change. Natural England, in particular, has started quite a lot of work on this and is trying to create management plans in a much more adaptive style for things like SSSIs. We are collaborating quite closely on this to understand when you take that step of letting something go.

Lord Duncan of Springbank: Following on from that point, we spoke about trees before. We are nowhere near hitting the tree-planting target, with no prospect of ever hitting it. In many cases, the backlog of applications for tree planting is measured in several years, to the point at which investment is actually disappearing. The people who pay money to plant the trees now just cannot do so.

Going back to your RAD question, we are reaching a point where the challenge will be a test between planting softwood versus hardwood in a world in which people want and need the softwood and cannot afford to plant the hardwood. The tensions that now exist in government policy are the problem and unless there is some radical change to that, we will never hit the tree-planting targets. Given that trees are so integral to our ambitions within the climate change environment, we will fail. That is clear even now. Would that be fair?

Kathryn Brown: There is a second part to that thought process: that it is about not just the planting but the persistence of those trees in the landscape. We are obviously very focused because the target is about planting, and we all know we are off track for that, but those trees need to stay alive and to be sequestering carbon 50 or 100 years into the future. The work that we do is very much, as you might expect, focused on broadleaf woodland establishment and mixed woodland establishment.

From what we see, those woodlands are the ones that are more resilient and more likely to persist. I mentioned the tree planting we have done this year. We have a temperate rainforest restoration scheme, which is funded through Aviva. The insurance sector is by far and away the most active sector in this space at the moment. We have been planting trees, going through the bureaucratic process and getting trees in the ground this year, and those saplings have done very well in the conditions we have had.

Lord Duncan of Springbank: There is a slight contradiction, I suppose, in that softwoods will begin to sequester carbon far earlier. Again, if you are planting them for commercial purposes—I have to declare an interest in this—the truth is that once you cut down the tree, the carbon is still stored, so it does not then immediately relinquish the carbon unless you

are burning it for biomass. There is a balance to be struck between broadleaves that will continue to sequester while they are alive and softwoods that will continue to sequester while they are used within the built environment, which is crying out for softwoods. Trying to find the balance between the two is a more sensible approach than saying the only approach is broadleaves because they are the ones that live longer, presumably.

Kathryn Brown: The activity space we are in is broadleaf planting, clearly. I think there is a nuanced picture about where the wood goes when you are harvesting softwoods, so not all of it ends up being locked up in the built sector. You may want to talk more about that but, yes, the balance is important.

Lord Duncan of Springbank: A substantial proportion does; that is the point, and it is often overlooked. I think it is worth noting that.

Q39 **The Chair:** Excellent, thank you. Before we move on to the urban environments, Kathryn, could I get your brief comments on the statement made by the Wildlife and Countryside Link to the Environment Agency's consultation on drought management earlier this year, where it said that drought management focuses "overwhelmingly on public water supply whilst neglecting environmental and agricultural impacts"? I just want to hear your comments on that.

Kathryn Brown: There is a lot to that. Again, I know in previous sessions you have talked about the definition of drought. What we can see is environmental droughts happening that are not necessarily affecting public water supply. The action that is taken can be quite different in that situation. Those situations can be overlooked much more easily because the policy triggers are not being effected in those situations.

Obviously, public water supplies need to be secured and safeguarded. I do not think anyone would argue that is not a really critical issue. People can do two things during a drought: you can try to increase supply longer term and you can reduce demand. Temporary use measures like hosepipe bans are very useful for trying to protect the natural environment but other measures where you actually increase abstraction for human use, with drought permits and the like, are the really damaging ones for the natural environment. I think we would like to see more scrutiny of what is happening there. Is that the right system, or can we do more on the demand reduction measures to weather these periods more effectively so that the natural environment is less affected?

Q40 **Lord Lennie:** What are the main impacts of drought on buildings and the urban environment? What are the interventions to recover it? This is to Callum and Yetunde.

Callum Ellis: I will answer this through two main dimensions. When we think about impacts on the built environment, we typically consider it through the lens of impacts that can cause direct damages—to buildings, effectively—and those that can cause disruption. Drought does not

directly cause damage in the same way that a flood might impact a building, so we have to think about it slightly differently. If we are thinking about drought as a primary peril, the built environment is relatively resilient from a damage perspective. It is those indirect or business interruption-type losses that are worth considering.

How does the built environment interact with water? For example, if you are a water-intensive manufacturer, your ability to operate as intended will be far more impacted compared to an industry that is not water intensive. Where that does not hold true is perhaps in some of the secondary perils that may occur as a consequence of drought. Subsidence is a prime example of this. Subsidence predominantly occurs within the shrink-swell clays that we see in southern or south-east England and it has a direct impact on building stability. A lot of our residential housing stock is older, so it does not necessarily meet current codes that are designed to withstand subsidence-related impacts, but that can have a direct damage-based impact on what we might see. It is similar with some of the other secondary perils. If wildfire meets a building or an agricultural asset, that will have a direct impact on damage-based conditions.

Breaking it into those two dimensions can help think about how we determine what the impacts are. It is a lot easier for us to start quantifying some of those direct damages. It is a lot harder to quantify some of the intangible business interruption-type losses or disruptions that we might see across the built environment where that occurs.

Yetunde Abdul: Callum has again covered quite a lot of it, but I will add that with drought and various other hazards related to climate resilience, one aspect is overheating. I bring that back again alongside buildings, homes, non-domestic buildings and issues like subsidence, depending on the soil type, to the surrounding environment and the importance of vegetation as well, to how street trees and so on are impacted. It is about helping to maintain a cooling-type effect and temperature within the streets, and within the grey spaces that we occupy in cities and buildings as well.

The term nature-based solutions was mentioned earlier on. Green roofs, green walls et cetera also contribute to mitigating what is called the heat island effect. As they dry out—coming back to a lot of what Kathryn was saying—there is an added challenge for the comfort levels of human habitation, but this also comes back to biodiversity in the urban environment. There is the damage to buildings and infrastructure, but then also the link back to the urban and natural environment, all of it culminating in that liveable and comfortable environment for human habitation in an urban space.

Lord Duncan of Springbank: To pick up on Callum's point, I was curious when you were saying that the drought might have less of an impact in urban areas. I am thinking of London and the London clay. The potentially impact of drought here would be really quite significant with the drying, the swelling and so on, and the result of cracks in roads, the

notion of subsidence. I would have thought particularly in London, because of the geology, that would be a real issue for the insurance world.

Callum Ellis: It is definitely on the agenda. Subsidence in its broader form would typically be insured under a standard housing policy. I am not familiar with all the intricacies of insurance policies. A lot of our critical infrastructure does not always get insured purely by subsidence. The losses are typically what we would call attritional, so they might be covered by the company or the owner of a particular set of buildings. The Highways Agency, for example - The cracking of roads and potholes would be more of an attritional loss that would not necessarily be insured. There is a bit of a gap in being able to properly assess some of these impacts in quantifiable terms. They are definitely occurring, but do we have numbers that we can put behind them for some of the economic costs that might cause?

Lord Duncan of Springbank: I am just curious. If it is an accumulated effect and, year on year, that accumulation continues to cause deterioration, one would think that at a certain point in an insurance world you would need to be alert to that fact. If you are measuring over decades, the impact on critical infrastructure—I am thinking of the London Underground and various other aspects—would be real and the impact on the insurance world would be very real too. I imagine that you would be expected in certain circumstances to compensate the individuals.

Callum Ellis: I agree. With 2025 being one of the hottest and driest years on record, that has driven this up the agenda for some organisations. I know there is a question coming about economic impacts and I will try to cover some more on that then.

The Chair: Thank you. Before we move on, you mentioned sinkholes. That conjures up quite alarming pictures. Who monitors the incidence of sinkholes? Is that data captured?

Callum Ellis: I think I might have referred to shrink-swell, which is the swelling of the soils. Sinkholes do occur. They tend to occur in slightly different geological settings and I will not claim to be an expert in sinkholes. It is probably worth looking at something like the British Geological Survey or some of the other organisations that are centred around examining some of those risks. They can occur in absence of other environmental factors like drought; they can just happen because of unstable geological underpinnings in an area. I will probably leave my answer there if that is okay, Lord Chair.

Q41 **The Chair:** Let us put that to one side, but are there data gaps on impacts of drought in the urban environment that you would like to see addressed in a more formal way by government bodies, or do you feel as though the insurance industry, for example, has a good handle on the issue?

Callum Ellis: We have a good understanding on the core impacts that are directly linked to the insurance industry. That tends to be centred around the issues related to subsidence. Where there are other broader impacts across other perils that may have some kind of insurable impact, for example wildfires, there are definitely gaps in our understanding. Where there is also potentially an area for improvement is in understanding the impacts across a broader variety of sectors. Overwhelmingly, our focus is on the residential housing market within the UK. There are clearly other sectors, as I think Lord Duncan just pointed out, that can be affected by drought-based impacts. Having a cross-sector look at these issues would be quite valuable.

The Chair: Excellent. What I am really trying to understand is: who is responsible for monitoring drought impacts in the urban environment and is that done in a holistic way?

Callum Ellis: Is it done in a holistic way?

The Chair: Is it done at all?

Callum Ellis: It is done in certain silos. In the insurance industry, taking subsidence again as an example, soil moisture deficit monitoring does occur in certain regions, particularly in the south-east, as a way of being pre-warned on potential subsidence issues. Insurers' costs will effectively be reduced if they can act earlier on the signals that some of these impacts might be occurring. That monitoring or pre-warning is a really important part of this. Is it connected between the Environment Agency, the geological survey and the insurance industry? I have not personally seen it. There might be some connectivity somewhere, but there is probably room for better work in that space to better monitor these impacts.

The Chair: Okay. I am just going to indulge myself a little and talk about urban gardens, which I think we may not cover in the questions we have.

Baroness Whitaker: I was going to ask about those.

The Chair: Okay, excellent. I will move over to you, Baroness Whitaker.

Q42 **Baroness Whitaker:** Thank you very much. I ought to declare that I live in a national park. It is subject to drought and there certainly are not enough beavers, but we are in the urban scene here. You have covered quite a lot of this, particularly in Yetunde's evidence, but could we go a little more fully into what interventions could improve the resilience of the urban environment to drought? Particularly, what is the appetite for these within the business and the built environment sectors? That is the private and public, if you can. Is that for you, Yetunde?

Yetunde Abdul: That is fine. I like to look at this by working from the inside of the building, then moving out and thinking about the environment that surrounds it as well. I think someone earlier talked about it being pretty straightforward what types of interventions there can be within buildings and within our own homes—our non-domestic

buildings as well. Low water-use fittings, so treating water as a precious resource and using it—

The Chair: Yetunde, could I just stop you there? It is quite noticeable that we can hear you more clearly when you are speaking into the microphone. I know it is angled a little bit away from you but if you could do that, that would be really helpful. Thank you.

Yetunde Abdul: No problem. I am used to just panning the room when I am speaking, so I will try to keep straight. It is about treating water as a precious resource within the building and, from that point, trying to use it as little but as efficiently as possible by having low water-use fittings, low equipment, so washing machines, dishwashers and so on, in the home but also in non-domestic buildings. Then from there it is thinking about how we can reuse or recycle water, taking advantage of the natural environment and the rain that we have. Again, perhaps no great surprise, it is thinking about rainwater and grey water recycling.

It has always been a bit of a challenge. First, to look at retrofitting existing buildings is not impossible but a bit of a challenge. Then there are always the questions about management and maintenance. In a non-domestic building, fair enough, that might be covered by your facilities management team, but at home then it is very much for the home owner. I am thinking about the potential cost of the burden on the home owner or what they might see as a burden there as well. It is really about how thinking best to raise awareness but also manage the real challenges that might well be faced by the home owner or the home occupier.

Going external to the building—we have talked about that quite a lot—we start to think about issues of subsidence, flooding et cetera. None the less, it is still a case of trying to capture the water and hold it in some way. In the external environment, in gardens and green spaces—I am not sure if anybody here has a water butt; again, no great surprises here—there is a need for more local storage at the point of the home or the building. Again, it is to hold the water and store it for times of drought.

Then moving further outside and coming back to vegetation, it is about drought-resistant vegetation, native versus non-native species. I was really interested to hear what Kathryn said about non-native species especially. That will be quite a difficult one to navigate in holding the character of our local and urban spaces, but also responding to the very real march of increasingly dry summers and springs that we just cannot ignore.

The interventions in some ways have been very clear and in some ways are very simple with those low water-use devices: holding on to the water, recycling it as much as possible and treating it as a precious resource. I think the challenges come when it is about how you integrate that into the existing environment and how you manage the vegetation that exists within the urban environment. There is only so much that you can expand that while ensuring that it remains living, given the hotter

temperatures that we are facing. The built environment sector is grappling with a lot of interventions but also real practical challenges. That is also for local authorities and local governments in their communities as they begin to, or continue to, try to navigate these issues.

Baroness Whitaker: Thank you. Before we move on to Callum, I would like to ask, there is quite a lot of nature in the urban environment. There are allotments, gardens and parks, some privately owned, some public owned. Is there a comprehensive view about what should be done in all those city or town green areas to conserve water?

Yetunde Abdul: A number of local authorities have their views and ideas as well. It is them that would look at the bridging together of the public and the private. While they might have their views or thoughts, again it comes back to retrofitting existing buildings and how that information is then disseminated and integrated into upgrades, maintenance and so on. If you are a private home owner, even if a local authority shares information with you, it is ultimately up to you whether to take that forward. I would say that collective view is held by the local authority in how that is shared with their communities, but how that is acted upon is a different matter.

Baroness Whitaker: I would like to come on to that but, first, Callum has something to add.

Callum Ellis: I will keep my answer brief. A lot of what you were talking about I completely agree with, and it centres around effectively preventive measures to stop these impacts occurring. The local storage point is really important. If you look at some of the water management plans that the water companies have put out, a lot of them are looking at moving to desalinisation plants, which prevents us drawing or extracting out of groundwater and actually moves to desalinating saltwater from estuaries as a way of keeping water to be available in urban spaces.

The other piece that is quite important is recoverability. We know that these impacts will increasingly happen, so being prepared to handle them is increasingly important. Resilience is not just about physical measures that we can put in place; it should also be about the plans or processes we have in place. For example, should other businesses be required to have water management policies? I think water utilities are the only group at the moment required to do so, but there are other varying water-intensive industries that perhaps sit in urban environments and could benefit from thinking about how they adapt to water stress, for example.

The other one I have written down that is perhaps a bit different and is a bit broader than just physical resilience is financial resilience. We often focus on the physical measures, but we see a lot of requests coming in for how businesses can be financially resilient to drought in a broader context. Drought is not traditionally insured in the same way that

subsidence might be, so a lot of organisations are trying to look at more innovative ways of protecting their interests.

One area that I will mention is called parametrics; we get a lot of requests around this. Unlike a traditional policy, parametrics are based around a parameter. If rainfall is below a certain amount or water reservoirs drop below a certain level, when that parameter is breached the insurance basically pays out, effectively instantly—over days rather than months or years—for it to be arbitrated. That allows businesses to respond quickly to the consequences. If they are incurring additional costs associated with drought, they are able to explore more options and then adapt resiliently. I thought that was worth mentioning.

Q43 **Baroness Whitaker:** It is interesting but that is rather bolting the stable door after the horse has escaped, is it not?

My final question is: there are quite a lot of good ideas about what should be done, and there are some even that we have not had time to go into, but how are we going to make sure people do that? Where do incentives have a place, financial or otherwise, where does regulation have a place, where does just a local authority person going around saying, "Did you realise you could do this" have a place? To what extent are all these things thought about and worked out? There is no point in having good ideas if nobody can be bothered to do them.

Callum Ellis: Maybe I can comment from more of a business built environment perspective. In the UK specifically, a lot of businesses have now been required to report on what we would call material climate risks particularly.

Baroness Whitaker: Required by regulation?

Callum Ellis: By regulation. One piece of regulation is the Task Force on Climate-related Financial Disclosures. That has now been wrapped up into other sets of regulation, but it has pushed businesses to think about what are the material climate risks that affect their business. That was a starting point for a lot of organisations. Most of them have gone through that process now and quite robustly as well. Where they have landed on is a set of risks that they know are relevant to their organisations and to the building stock that they privately own or look after. Now they are moving on to the adaptation point: how do we handle these impacts; how do we better protect our assets; how do we mitigate them? Investors, in particular, are looking at this with more scrutiny and that acts as a bit of a driving force to take action around this topic. Over the last five or six years that I have been working on this, it has been brilliant to see a lot of progression around these effects.

I think drought is probably underrepresented in that for a lot of businesses, all being said. Perhaps there are more incentives around drought in particular that we can think about. Regulation is quite a hard way of pushing some of these things, but maybe there are softer mechanisms through which we can encourage businesses to take this up.

Baroness Whitaker: Softer mechanisms like information, or are you talking about grants?

Callum Ellis: Yes, I think information. Adaptation is really hard because it is not like there is one answer that fits all. You have to take into account the specific circumstances of different building types, commercial, industrial. Guidance around how to adapt or become resilient in the right way, that is consistent across the UK, would be enormously valuable.

Baroness Whitaker: That is helpful. Yetunde, any thoughts?

Yetunde Abdul: It is almost as if he set it up because I was going to say that is something that the UKGBC focuses on trying to provide. I completely agree. It is consistent guidance and also metrics to help inform what we can do, and sharing case studies and information about what has already been done that has been successful and acts as a guide for others who are embarking on this as well. Again, there is no need to reinvent the wheel—really important. Raising the amount of information and guidance out there that supports consistency and also developing a set of metrics that supports this is really important.

On regulation, coming back to the *Climate Resilience Roadmap* that we launched earlier this year, drought was a part of five key hazards for the UK. One aspect that I looked at was the whole topic of resilience for the UK and whether it is in some way, perhaps with central government, inadvertently slipping down the cracks, because there is no central point that looks at resilience in general. One of the policy recommendations that we made was to put resilience at the heart of government by creating an office for resilience in the Cabinet Office and restoring the role of the Minister for resilience. In that way, there would be an absolute focus on this topic and all hazards, including drought, across the UK, working collectively with government departments and filtering down into the non-departmental bodies and so on, supporting the Environment Agency in England to be able to focus on this topic and provide recommendations for legislation, regulation and what else might need to change.

Baroness Whitaker: Are you saying that this recommendation has been implemented? Is that for a national resilience board and national resilience committee, because I was wondering where they came into it, or are you under the impression that this recommendation has not been implemented?

Yetunde Abdul: The policy recommendation that we have made has not been implemented. There is a lot of discussion there to encourage the setting up of this office, as well as a Minister for resilience, working with various government departments to support and reinforce the benefits of something like this for the UK.

Baroness Whitaker: Maybe you could write to us with details of exactly what that recommendation was and what stage it is at. That would be

very helpful.

Yetunde Abdul: Absolutely, that would be great.

Another aspect I just wanted to come back to is on the power that local authorities and local communities have to support, on a local level, the private and the public as well as the natural and green spaces that exist in communities—requiring them but also empowering them to be able to put in place and also deliver on climate resilience policies in whatever way they see fit. It varies for different communities and there is not necessarily a one-size-fits-all depending on the circumstance, the situation, the community, the culture, the cultural setting and so on. It is a bit of a split approach, I suppose.

The Chair: Thank you. We are running tight for time. I will allow two supplementaries on this, from Lord Krebs and then Lord Trees. Then we will move to Lord Mancroft's question followed by Lord Layard's question 6a.

Q44 **Lord Krebs:** I will be very brief. This is really to you, Yetunde. Do the building regulations and the future homes building standards say enough about resilience in the face of drought for buildings?

Yetunde Abdul: I think the answer is that there is always more that they could say. One aspect that we have been looking at is whether there could be a follow-up future homes and future buildings standard in time for the 2028 building regulations to go into this issue in more detail and focus on the different hazard types, including drought. I think the answer is there is more that could happen there.

Lord Trees: I have a follow-up on that issue, which is very important. We are now seeing solar panels integrated into new-build houses. It has taken a long time, but it is a lot cheaper to build things in rather than retrofit. We know drought is not going to go away and the climate change problems will persist. What is the impediment to having building regulations that create buildings, either domestic housing or public buildings, that are structured to capture water, to reuse it and so on? Is it a planning issue? Is it that the cost-benefit is not apparent? Is there a lack of incentive?

Yetunde Abdul: That is a really good question, which, if I may, I would like to come back to you on with a written answer.

Lord Trees: Yes, sure.

Q45 **Lord Mancroft:** What are the economic costs of drought and how are these risks accounted for by business and the insurance sector? Which sectors are particularly vulnerable? I think that is really aimed at you, Callum.

Callum Ellis: Yes, this is a very big question and so I will try to unpack the economic side of things. In my view, there is not yet a full economic assessment that covers all sectors in a comprehensive manner and looks

at the economic side or the economic impacts associated with drought. There are certainly threads that I can draw on in my answer here.

Thinking about economic impacts more broadly, you have a combination of direct losses where you might have direct damages; indirect losses associated with revenue loss, business disruption or home-owner disruption; emergency response costs; and potentially productivity impacts as well. But the easiest lens to probably focus on is the direct losses where there is a bit more evidence to draw on. I thought it would be best to focus on subsidence, as that is an area where we have good modelling—not the best modelling but there is there is data available to us.

We are fortunate that, in the UK, the Association of British Insurers pulls a lot of the information out on how we might look at the claims implications resulting from subsidence-based impacts. If I take a residential focus, typically in a normal year we might expect something around 15,000 to 20,000 claims occurring from subsidence-related impacts and that costs us around £50 million to £100 million across the insurance sector in the UK. We then have what are called surge years, where drought-based conditions are more pervasive and that can create quite a significant uptick in the number of claims, breaching the 20,000 mark, and we would typically see claims exceeding £150 million in a given year. The years 2018, 2022 and this year have all been surge years, to give a bit of a reference. What is quite interesting about 2025 is that we breached that £150 million claims volume halfway through the year and so the expectation is we might breach the £300 million mark this year in particular. That is just insured subsidence on the residential market.

When you layer some of the climate change estimates on some of those financial impacts—and we do a lot of work across our actuarial teams, Marsh and our sister company, Guy Carpenter—those adjustments get uplifted a bit further. The modelling is not perfect here, but if you can extrapolate some of those historic claims, apply some of the climate scenarios that we might expect and account for things like property inflation, we might expect an uplift of around 35% per degree of warming out towards the end of the century. If we take a kind of business-as-usual or a more conservative scenario, those average annual losses might reach £300 million to £430 million in a given year, so quite a significant uplift. That is just residential.

In commercial and industrial, we do not see those economic impacts being too different because a lot of commercial and industrial buildings are typically built to a higher specification, whereas housing stock is sometimes a bit more susceptible to this.[1] It is very hard to then layer in some of the infrastructure impacts on top of that—roads, railways, critical power infrastructure—and I do not, unfortunately, have any numbers

[1] Note by witness: "…more susceptible to subsidence."

there. It gets quite difficult with the numbers behind some of those economic impacts.

One final point—just to contextualise that against some of the other risks we see in the country—flood risk is about twice that of subsidence, and wind-related impacts are about twice that of flood, so four times subsidence. Relatively, it is smaller in the insurance space that we sit in. We do not have any modelling around wildfire-based impacts, which is another drought-related assessment. That is another key gap.

Lord Mancroft: I will quickly follow up. The information in your answer is very helpful, but it is based on residential. I do not know what proportion of buildings or infrastructure in Britain is residential and the rest, but if we are only looking at residential—and I recognise that bigger modern buildings are probably better built—city centres, public buildings, anything that is not residential will be significantly more, will it not?

Callum Ellis: I suspect so. I will be honest: it is a gap. We are looking at improving a lot of the quantification work we do in trying to get to the financial impacts around this. One of the things that we need to get better at is being able to capture some of the uncertainty and variability in the climate system and accounting for that in some of the subsidence modelling we do and some of the other drought-related perils. It is a difficult one to pinpoint financial numbers to.

Lord Mancroft: If we look at the numbers you have given us, you are suggesting that claims or the cost is going up by three times.

Callum Ellis: Three to six times.

Lord Mancroft: That will happen in the public sector as well as private residential. The public buildings and public infrastructure is significantly larger than the residential sector. That is huge, and is it not very worrying that we have no idea quite what that cost could be?

Callum Ellis: Yes, I agree. It goes back to something I mentioned earlier, which is a lot of those impacts tend to remain uninsured. If we take the infrastructure sector, you have huge distributed power networks that go all around the country, road networks and rail networks. A lot of that—cracking of roads or warping of railways—tends to get fixed in quite isolated ways and then that is just covered as part of the ongoing operational costs. It is quite hard to pinpoint exactly how much this is costing. It is difficult.

Kathryn Brown: Could I come in very briefly just on the same question, Lord Mancroft? Thinking about the total impacts of drought, particularly when you bring in the natural environment as well, the work that the Climate Change Committee does on the UK climate change risk assessment tries to put an economic cost on some of those impacts. It has been a real struggle in previous years. The OBR has started to look at this in quite a lot of detail, so it is worth looking at its latest climate risk forecast but also work done by the London School of Economics. Professor Nicola Ranger does a lot of it. She looks at the total

macroeconomic impact of things like nature loss and climate change together and comes up with huge impacts—12% of GDP was her latest estimate—but what we are not doing is factoring that back to the hazard driver, so working out how drought is impacting on, say, total nature loss and then interacting with the other impacts. That is partly because the monitoring is not there. It is often the monitoring of the impacts that is the first thing to go in budget cuts.

Organisations such as the Met Office and UKCEH are absolutely critical in allowing us to make better estimates of those economic impacts. I will declare an interest because I am joining UKCEH in the new year as its new science director. On the work done by the UKCEH and the Met Office—which I know has been in to speak to you—I just wanted to highlight that we cannot get the economic costs without the monitoring to underpin it.

The Chair: That is really interesting, thank you very much. Lord Duncan, you have a question.

Q46 **Lord Duncan of Springbank:** It is a very quick question. Following your trend, there must come a point where an insurance company says it will not insure, presumably, and you will be thinking about that now as you look at the figures. There will be a stage where you will say that you will simply remove subsidence from the insurance package. Is that on the horizon for your organisation?

Callum Ellis: I do not know whether it is on the horizon. The way I would think about it is in two dimensions: availability and affordability. Insurance change is gradual, so can we afford to buy the type of insurance we want to? That could change and that is different depending on individual circumstance. Then availability refers to whether we can buy the type of insurance we might want to. Can we see restricted terms or coverage, which might not cover us in the way we would to be covered?

Lord Duncan of Springbank: Would that be based on an actuarial table where you plug in all the data and then work out at which point you offer a package, which is almost disproportionately expensive, to cover your risk as well as to cover the likelihood of the eventuality?

Callum Ellis: In sorts, yes. Individual insurers will have their own risk appetite and so it will differ by organisation. We, as Marsh and Guy Carpenter, do our own kind of actuarial modelling around this to try to think about what a sensible approach to managing that risk would be. That is where I have drawn some of those figures from.

Q47 **Lord Mancroft:** I think I am right in saying for the most part central government and Whitehall self-insure. Do we know whether local government self-insures?

Callum Ellis: For public buildings?

Lord Mancroft: Yes, and public infrastructure.

Callum Ellis: I would have to check with our local government practice, so I can write to you on that.

Lord Mancroft: It would be very useful to know that, I think, because the two biggest bodies in Britain must be central government and local government. If central government is self-insuring, which I believe is the case, it is putting a very significant risk factor on the public purse. I do not know if it is quantified anywhere.

Lord Rooker: Yes, schools are not insured, for example; they just carry it. Local government carries it.

Lord Mancroft: The National Health Service self-insures, does it not? NHS hospitals are self-insured. That is a staggering risk if central government has not quantified it. I do not know if there is any way we can find out about that.

Callum Ellis: I could do some digging on our side.

Lord Mancroft: If you could find any information and give it to us, based on local and national government—local government would be particularly interesting. Thank you.

The Chair: Indeed, and I am sure the clerk's team has made a note of that for when we have the Government in front of us. It is a question that we will put to them. Lord Layard, your question.

Q48 **Lord Layard:** Just finally, so that we can get some perspective on drought as compared with other environmental risks, I am asking you to guess here because you said you do not have numbers necessarily and obviously to include non-insured as well insured risks. We have flood, we have wildfires, we have wind—I suppose that is what would also be called storm—and then we have drought. Maybe each of you would be willing to offer us your ranking of those in the total cost to the nation?

Callum Ellis: It is a difficult one to answer. From my own perspective, looking at the ability to impact our urban and built environment, wind is probably the most pervasive peril that we have across our country and the losses that we experience from wind are probably among the highest. Flood gets a close second, I would say; there are a lot of impacts associated with flood-based impacts. Then I would probably put drought beneath that. There is a gap on the wildfire side. A lot of the impacts with wildfire are centred on the natural environment and our agricultural areas. There is less of a built environment impact at the moment, but I do not really have an ability to rank the financial losses on that side, unfortunately.

Kathryn Brown: It comes back to the point I said at the beginning of the session. For us, from a natural environment point of view, drought and with it wildfire are by far and away the biggest threats for permanent losses and irreversible change. Flooding from a natural environment point of view is very different because, actually, we want to use the natural environment to hold back floodwater in many cases. As Yetunde was

talking about, nature-based solutions are really important for managing flood risk, but the permanent loss is the really big issue for us.

The OBR has done some work—and also I think the Treasury has done some work on this—about the cost estimates of different hazards from a macroeconomic point of view.

The Chair: It would be interesting to have that piece of work in that case. I think we should just remind ourselves that Baroness Brown, chair of the Adaptation Committee, when she was before us last week, mentioned the impact of urban wildfires in 2022, I believe, and she said that was the year when the fire service saw the highest number of call-outs since the Second World War. I do not know whether you saw any of the impacts of that in your work, Callum.

Callum Ellis: For 2022, no. I know there has been a huge number of call-outs in 2025 and I think the Army was brought in to deal with some of those impacts in certain areas of the country as well, which tells you about how much stress was put on the firefighters across the nation. The best examples to draw from are probably some of the impacts we have seen from wildfire overseas, particularly, as you will probably all have heard about, the California wildfires that happened.

From an urban perspective, the main area of concern is what we call the wildland-urban interface, which is the suburban zone between the centre of a city and rural landscapes. That is where we see more gardens, more combustible vegetation and so actually it is not a massive issue in the UK at the moment, but could it be in the future? I think yes is the answer to that. Maybe there is some thinking to be done on building resistant materials in more of the suburban and defensible spaces. Those kinds of things could potentially become more important in the future.

Lord Layard: It is very interesting what you say about wind. I have not heard much discussion of wind and climate change so far here. Do you have any idea as to whether that is expected to go up?

Kathryn Brown: I can cover that one. The Met Office is the real expert on this, but the latest estimates do not show much change in average wind speed. The climate models are not fantastically good at projecting extreme winds. I know Jason talked to you about the issue we have with where the UK is situated and how the jet stream affects local weather patterns—therefore, how we get different what we call blocking episodes, whether it is a heatwave or a cold period or stormy weather. It is those extreme wind speeds where we see the super damage impacts come in. They are very hard to project, so we do not have very good estimates of those at the moment, but I know that the Met Office is working very hard to address that.

Q49 **Lord Trees:** Last week, Baroness Brown told us in some detail about the analyses in France of the effect of a major drought they had and suggested their monitoring systems may be better than ours. Do we have adequate mechanisms to gather data and then share it between your

different sectors? Do you think our government departments have enough understanding of the impacts of drought on the environment and the economy? To some extent, you have been dealing with that in the last question, I know.

Callum Ellis: Where there is insurable interest, we gather good data on some of the impacts, whether that is claims or interventions that prevent things like subsidence happening again, and those are really valuable insights. We also in the UK, fortunately, sit on some of the best data globally from the modelling work that has gone through the Met Office and some of the work that the British Geological Survey does to help us understand these impacts, and those are really valuable resources. The data that we are gathering is overly focused on some of the primary damages, certainly in the industry that I work within and actually better impact monitoring to gather data across some of the other indirect losses, emergency response costs and attritional losses that we have talked about, where they do not necessarily touch the insurance industry, there needs to be better data gathering within that space.

I think there is an opportunity to bring together those that are gathering slices of data on this topic. I have written here a cross-industry working group; I have seen value in that for other perils, whether in the UK or some of the work I have done overseas. That has been incredibly valuable in knowledge sharing, bringing different insights to the table, and different approaches to managing the impacts of drought-based hazards. I think that would be a good path forward to consider. You have probably some interesting thoughts on this, both of you, as well.

Kathryn Brown: No, there is never enough funding coming into monitoring. When Jamie was here from UKCEH, he talked to you about some of the work that it has been doing, and a lot of the monitoring infrastructure and schemes are currently funded through the research councils. The research councils are feeling the pinch financially, as everybody is, and UKRI is. A very interesting area is how business is going to come in and maybe start funding some of this for its own uses, but certainly we have seen a lot of that with the nature investment space. Businesses are really coming into the nature investment space at the moment.

The other side of it is the speed of the digital infrastructure and our ability to monitor at vast scales much more quickly because of remote sensing, AI sensors and all these new technologies coming through. That is a very exciting space, but a conversation about where the money is coming from and valuing, as I was saying earlier, that monitoring so that we can derive economic impact and a whole load of other use cases is really important.

Yetunde Abdul: I think the only thing I will come back on and just reinforce is the creation and gathering of data from industry groups, because quite a lot happens and can happen ad hoc. Identifying how to make that data intelligible by and through consistency is really important. It has worked quite well, as Callum was saying, in the past. Also from our

experience working across the built environment sector, we need to bring together groups to try to develop robust frameworks that then result in data gathering that goes on to inform the design and retrofit of buildings, new-build or existing buildings, and how that filters back then into infrastructure.

Is there a gap? Yes. Is there ever enough good data? Not always. Could we be doing more? Absolutely. From an industry perspective, yes, but also I wonder, coming back to government, whether there might be some guidance there that government could provide and share across the built environment sector in the UK.

Q50 **Lord Jay of Ewelme:** I have one final question, if I may, for Kathryn Brown. Thank you to all three of you, first of all. It has been a really helpful session. I think you said that, for Defra, drought was not top of the agenda or had not been top of the agenda for quite some time. Do you think it should be higher up the agenda or indeed at the top of the agenda?

Kathryn Brown: I think it should be more recognised at policy level and when thinking about spending reviews and budget distribution. Flooding has been a huge issue for Defra obviously for many years. It is currently the biggest risk in a lot of ways that the Government have to deal with, including impacts on people. We have seen this and we used to talk about it a lot in the Climate Change Committee that a lot of the risk prioritisation is about recent lived experience, and we have not been through a major drought in this country. We have had quite a few near misses with multiyear droughts over the last 10, 15 years or so.

The trick is to put that preparation in place before you get the impact. We know historically the country is not good at doing that. It has got a lot better at flood, but I think drought is the real hidden risk, along with extreme heat and wildfire. There are three that go together—wildfire is the other one that really worries me. I know that there is a lot of discussions going on in government at the moment. Every time there is a big drought risk, like at the moment, those discussions ramp up but then they die down again in the intervening years. I think we need to keep that momentum going. It will get much worse before it gets better.

The Chair: Excellent. I do not think there are any further questions, so I will take the opportunity to say thank you all very much. I think we have all learned a huge amount. With that, I bring this public session to a close.