

## **COP26: Adaptation, loss and damage. Discussion with James Ritson**

**Andrew Belt:** This month, we are engaging with COP26 and asking members of staff at UCEM and other stakeholders of the university to engage with the topics which are being discussed and the theme days at the event. So, for our adaptation, loss and damage day, we've brought in James Ritson, UCEM's building surveying programme leader, to ask a few questions on this particular topic. Hi, James.

**James Ritson:** How's things?

**AB:** All well, thank you. How are you?

**JR:** Very busy at the moment, keeping up to date with all the presentations and the different events going on [at COP26].

**AB:** So yes, plenty to keep you busy and hopefully there's enough time to properly absorb all of it. So, let's move on to our first question. Climate change has already caused extreme weather conditions across the world. What is being done to mitigate this in terms of our built environment?

**JR:** That's a good question. I think we need to put this into the context of what we mean by this. Children born today are seven times more likely to face extreme weather events than their grandparents were, and I think that's a consequence of our collective actions when it comes to climate change.

What we need to do in terms of mitigation is adapt our built environment for these new conditions, lower our carbon emissions and deal with the built environment we already have. That's probably one of the biggest issues that we're going to face.

History has taught us that if we don't react to these dangers, they will have an impact on us and they will be catastrophic.

**AB:** So what do you think needs to be done to make our built environment more resilient?

**JR:** I would focus on what we have already. I think that's an important one. I think we constantly look at the new builds in terms of zero carbon and, of course, new builds around the world are very important for people moving to cities. In developing countries and newly developed countries, we're seeing a huge migration from rural to urban environments, which involves a huge amount of new buildings.

But I think certainly in the more developed world, actually dealing with the cities we already have and dealing with the buildings we already have needs to be the focus. And I think that if we have more focus on that and mitigating and adapting those to deal with these common environmental conditions, then I think we'll be in a much better way than we currently are.

**AB:** Climate change is causing unprecedented challenges for our cities and towns. Can you provide an example which shows how unprepared our cities and towns are when extreme weather hits.

**JR:** One of the things that we are going to be facing is that when we design buildings and we construct buildings, we design to a particular scenario.

[This scenario is] typically a one-in-100-year weather event. Now, as these become much more common because of climate change, some of the cities that were designed to maybe

deal with a hurricane once in a hundred years, suddenly will have to deal with them maybe every decade. An example of this is Hurricane Sandy which hit New York [in 2012].

The damage caused by Hurricane Sandy was over \$60 billion and it caused so much damage because, not only did it hit the areas that were typically expected to receive hurricanes at least once a year, it moved so, instead of turning back towards the Atlantic, it actually turned landwards and naturally moved into New York.

New York wasn't designed to deal with that. And that's one of the big issues that we are going to be dealing with: extreme weather events in cities that aren't designed to react and adapt to those extreme weather events. That's a big thing. Because if you look at, say, the infrastructure and the big damage that was caused, for example, in New York, the subway was flooded which is one of the major public transport systems in the city.

Not everybody in the city uses cars and instead use the public transport infrastructure, and, if one of those major infrastructures goes down - such as the subway, then you're going to have issues of getting people around the city. There is also the impact on the other types of built environment infrastructure, such as damage to the buildings such as hospitals.

It's not only the developing world affected, it's the developed world as well that's going to be affected massively by these changing weather conditions.

**AB:** That's looking back at a scenario which adversely affected one of the world's most developed capitals.

It's, of course, vital to consider what can be done to prevent such devastation elsewhere. And with that in mind, can you provide an example of a scenario which could devastate a city and what could and should be done to prevent this before it happens?

**JR:** A very interesting one is, in fact, London, the capital of the UK. Although there has been huge investment in flood defences - the Thames Barrier was, at the time, the biggest civil engineering project in the UK when it was built - there are models now that show that, in extreme weather events that collide with a high tide, it could fail.

If the Thames Barrier failed and we had flooding along the Thames and it affected London, then let's look at that scenario again. Like New York our major public transport infrastructure is the Underground - the Tube. And again, you don't want to be using that in such a situation.

And then let's have a look at the other utilities. Well, luckily for us, our major power stations are no longer in the centre of the capital, however, quite a lot of our major hospitals are right by the River Thames. Our Houses of Parliament are right by the river.

So, again, you could see how an extreme weather event could have a massive impact on a major city. And then there is the economic impact. We are a service economy in the UK, with predominantly financial services leading that way. The biggest financial centre in London is Canary Wharf which is on the river and the second largest is the City of London. Both are in the flood zone. If we know then that the Thames Barrier is vulnerable, who's going to want to insure the buildings? They'd be close to uninsurable.

So then, that's going to be a big problem for the construction, finance and investment industries, or they're going to have to be government-backed which would lead to an increase in taxation. There are also very big economic costs associated with not adapting the built environment to the challenges caused by climate change.

People discuss the cost of doing all of these environmental alterations, but they don't consider what the cost of not doing it could be, and I think that's something you must bear in mind.

**AB:** That's quite the nightmare scenario you've given there for London. In terms of what could and should be done to prevent this, the answer then is to invest to stop the barriers even, getting into such a state with a greater likelihood that an extreme weather condition could ensure that the banks overflow. Is it as simple as that?

**JR:** No, it's actually much more complicated than that because it's not just a case of building a bigger barrier because if you build a bigger barrier then you've actually got to build the walls around it because it's already as high as the floodplains around it.

You couldn't just make the barrier bigger and stop the flood. You'd have to build the walls and the flood defences and bear in mind those living next to the Thames.

What we want to be looking at is stopping that happening [extreme weather conditions] in the first place. This is why you're hearing these two numbers continually. There's a three-degree temperature change and a 1.5-degree temperature change. They seem so close. They seem insignificant, but the difference between those two numbers is the huge magnitude and the likelihood of such disasters happening.

So, by keeping that degree low we're decreasing those chances of extreme weather.

No matter what you do with your infrastructure, they're not impenetrable by extreme weather events because even if you stop the storm surge or the flooding, you might not be able to stop the hurricane.

We want to prevent the extreme weather from happening in the first place. The best way to do that is to bring down our increase in global temperatures and to manage those rather than trying to build these defences around every city.

**AB:** So it's the holistic solution we're looking for, which obviously COP26 is hopefully focusing political minds to make these changes. A more general example than those you've provided is the embodied carbon within our buildings. So how do we go about the issue of decarbonisation?

**JR:** I hear things about knocking down buildings and replacing them with energy-efficient buildings. The difficulty about that is you're then reusing more carbon. It takes about 30-plus years to recoup the carbon that's used in the construction of a building. So, what I mean by that is that even if the building is zero-carbon, it takes 30 years of the embodied carbon in the construction to catch up.

What we have to do is use the buildings we already have and not waste those, and I think there's a lot we can do with our existing cities. We can look at schemes in India and Switzerland, where they are adapting and changing the existing environments, as well as creating new cities around ecological and sustainable principles.

One advantage of historic cities, in particular, is that they were originally designed to be quite sustainable because when they were originally built, very few people had vehicles or private transport. People walked everywhere.

Looking back to how cities used to work can inform how we're going to be moving them forward in the future. The big thing I think we need to look at, particularly in the developed world and the already developed world, is how we're going to deal with what we already have and not waste that already-consumed and budgeted carbon in our buildings.

**AB:** So very much on the adaptation theme and using what we have there rather than demolishing buildings and starting all over again, which might be seen as a solution for some.

You've mentioned the economic impact. There's going to have to be an awful lot pledged to achieve the aims of COP26.

So, on this particular issue, how much money - obviously very much a ballpark figure - needs to be invested to safeguard our cities and housing stock? And how urgently is this needed?

**JR:** I think it would be virtually impossible to give an exact figure. We look at some of the studies that have been done on this, and I think that it comes down to the danger of what is the cost of not doing it.

If we start reacting and start doing what we're proposing in COP26, and we start tying ourselves into the Paris Agreement, we're looking at probably between 1% and 3% of budget. The cost of not doing it, carrying on as we are, is predicted to be well in excess of 10% of our GDP. So, whatever the cost of doing it, it's going to be significantly less than not doing it.

We should want to do it, not just on the economic front, but because we want our children to have a better world than what we have. And I think that's really important. At the moment, we are going on a trajectory where we're creating a world that is worse than the one we inherited and I think that's quite an alarming state of affairs; but, throughout human history, generation upon generation have seen an improvement in conditions as a whole. There are, of course, examples - wars and so forth - where that has not been the case, but, in general, the trajectory has been improving generation on generation.

Children born today are much more likely to extreme weather events - to see drought, to see poverty because of climate change. We're actually changing that trajectory by saying that we're not going to change, but the people this will cost are our children. So, the future generation is going to pay the costs.

I think there's a moral reason for acting on climate change. The message is we've got to afford to do it too, because the cost of not doing it is so much greater, morally, economically, financially - and I think ethically as well which is really important to bear in mind.

We've got to react now to prevent what could be one of the biggest disasters in the existence of the human race.

**AB:** And that is it in a nutshell. Of course, hopefully these discussions [at COP26] will lead to the actions which are needed. Thank you very much for your summary of why this all matters, in particular zoning in on today's theme of adaptation, loss and damage. It's all been really interesting and highlights the devastating damage which has, and can, be caused to cities, but we do have to frame it in such a way and understand how it can affect us and the cities we know and love and hope our our children will love as well.

**JR:** Thank you, Andrew. On the topic of adaptation, I think that throughout our history on this planet, humans have constantly adapted to change, and I think that if we take the positive view that we can adapt to this new demand upon us and we take the view that we can do it, I think that there is all the technology and I think there's all of the possibility that we could do it.

**AB:** Always nice to end on a positive. It's important to recognise that it's in our hands and we have the power to change things and engender a better world for all.

Thanks for steering us into it in a brighter direction at the end there, James!