

# Speech: Back to the Future

On the 3rd of November 1966, “an exceptional quantity of water” was reported in the Arno River, heading towards Florence, Italy.

The flood killed 101 people. Each one of those deaths would have been a private tragedy for the families affected.

It could have been many more. The 600,000 tonnes of mud and sewage hit Florence on a public holiday – so many more deaths were avoided.

Alongside concern for the people affected, the international community was horrified that the city of the Renaissance – the home of the Medici, Machiavelli, Michelangelo, and Leonardo Da Vinci – was devastated.

The feeling was that Florence’s cultural contribution to the world would have been an unacceptable loss.

Assistance was immediate. Picasso auctioned a painting; UNESCO launched a global appeal; the city of Edinburgh in Scotland sent double decker busses to help people travel around.

The funds raised have contributed to extraordinary developments in art and architectural restoration that continue over 50 years later.

It’s a striking example of the value people imbue in places, and of what we are not prepared to lose to extraordinary weather.

Last year, the Intergovernmental Panel on Climate Change agreed there are 12 years to bring global temperature rise within 1.5°C of the pre industrial era before climate change reaches a significant tipping point.

Even at 1.5°C, the frequency, intensity, duration and timing of extreme weather – including flooding and heatwaves – will increase.

Do nothing and we are potentially heading for a 4°C temperature rise...

When we talk about adapting to the impacts of climate change, we quite rightly focus on people’s safety and economic stability.

As impacts intensify, will we still be able to create places of lasting cultural value and aesthetic beauty?

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I think yes.

But, to do that requires immediate action across organisations and sectors: Governments; regulators; businesses; NGOs; with you – as leaders in construction and development – leading the charge.

According to the Institution of Civil Engineers, over 45% of National

Infrastructure and Construction to 2020/21 will be financed through the private sector.

I know that as attendees of Futurebuild 2019 many of you are already innovating and taking the action to prepare for the impacts of climate change.

But time is running short and none of us are keeping up.

The UK will be different in 25 years' time.

The population will have grown by 10 million and more people will live in cities. Smaller family units will mean that the number of households is forecast to increase by 23%.

By the mid-2020s, the government aims to have increased house building to 300,000 new homes a year.

As the population grows, we are likely to see the number of properties built on the flood plain almost double by 2065.

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Last month, the Committee on Climate Change and the Adaptation Committee released a report: "UK housing: Fit for the future?"

This looked at whether the UK's housing stock is prepared for climate change in terms of reducing emissions from UK homes and ensuring homes are adequately prepared for the impacts.

It said:

- Emissions reductions from the UK's 29 million homes have stalled, while energy use in homes – which accounts for 14% of total UK emissions – increased between 2016 and 2017.
- The UK's legally-binding climate change targets will not be met without the near-complete elimination of greenhouse gas emissions from UK buildings.
- And, efforts to adapt the UK's housing to rising temperatures, flooding and water scarcity, are lagging.

The Committee recommends that new homes are built to be low-carbon, energy and water efficient, and climate resilient.

The Environment Agency's purpose is to create better places for people and wildlife – and promote sustainable development.

The National Audit Office says that every £1 invested in flood management

saves £9.50 in damages.

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Here in London, the target is 66,000 new homes per year.

The Environment Agency has worked closely with the Mayor of London's Growth and Infrastructure Team to lock environmental outcomes into plans.

At Old Oak Common and Park Royal in West London – which has the potential to deliver 26,500 new homes and 7,500 new jobs over the next 20 years – we're helping the authority to write their local plan, to influence strong environmental standards, and help realise the authority's environmental aspirations.

The £1 billion regeneration of Kidbrooke, Greenwich – which plans to deliver 5,000 new homes, a new railway station, schools, and health care facilities – will include 35 hectares of green spaces, and sustainable drainage systems like ponds and wetlands.

Not too far from there, we've also helped development at the new Pinewood Studios.

This will include 15 new green roofs and 2 large basins providing 13,000 cubic metres of flood storage, alongside over 1km of swales and drainage ditches.

This helps protect the studios from flood in the long-term and is good for both local wildlife, and James Bond.

I use these examples to illustrate that engagement and partnership in development unlocks better outcomes for people and the environment.

We are not realising those opportunities fast enough.

In the future, threats to property and infrastructure will be greater.

Because we have a strong scientific consensus about this exponential – and existential – risk, historians will look back with astonishment at how we repeatedly rebuilt our world for a vanishing status quo.

We shouldn't draw up plans for previous weather extremes, we need to build back better for what is to come.

Just across the river from here, the Thames Barrier helps to protect 1.3 million people, £275bn of property and infrastructure, and places of indeterminable historical and cultural value, like The Tower of London, 10 Downing Street and Westminster Abbey.

The Thames Estuary 2100 Plan – which has a stand here at Futurebuild – looks beyond the life of the Barrier.

Like the Humber flood strategy – it is an example of an adaptive pathways

approach to place based flood plans.

It responds to the latest science, economic drivers and environmental changes.

This isn't only about new technology, it's about planning through uncertainty and being flexible.

Last week, the Environment Agency published long-term investment scenarios for flood.

These internationally leading economic assessments to help planning for flood and coastal risk management will form the basis of our 100 year flood strategy – which we will be consulting on this year.

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The report considers a full range of climate change scenarios and the measures needed to create climate resilient places.

We estimate an average annual investment of over £1 billion in flood and coastal risk management is necessary to stop the level of risk increasing.

Current planning policy and implementation limits the impact on flood risk – but how people make investments and planning decisions will be vital.

In theory, very high levels of protection could make a big positive difference to managing long term flood risk.

But, social pressure and technical limitations can make this difficult to achieve in many places.

The value people put on the look and feel of a place means we have to think even more innovatively about how to reduce risk – but this can lead to even better results.

In Keswick, we used glass panels instead of stone to increase the effective height of defences while keeping much loved views of the river.

In Cockermouth, a self-raising barrier was used to allay local concerns about the look of the flood scheme.

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These challenges are not peculiar to England.

Even in the Netherlands – a country whose identity and culture is entwined with its sea defences – communities oppose the idea of ever higher flood schemes.

At Hondsbossche, sand dunes support sea defences so the existing dikes don't rise ever higher.

Natural flood management like this is adaptable to different levels of

climate change – and it supports tourism, which helps the local economy.

Similarly, at Scheveningen Beach near The Hague, the innovative one kilometre long “underground dike” reduces wave sizes from eight meters to two metres while providing locals with a beach.

In Japan, the authorities are innovating ever more extraordinary flood defences to protect communities from tsunamis and typhoons, because once again, people want alternative solutions to vast walls.

Last year, I was lucky enough to visit the vast silos protecting Tokyo from flooding.

Their awe inspiring size and technical brilliance is a stark illustration of the scale of the world’s challenge.

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The Environment Agency works with Japan and the Netherlands – and authorities all over the world – to share information and peer review flood schemes at home.

This will continue long after Brexit.

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In my other role – as UK Commissioner to the Global Commission on Adaptation – I am looking at how to accelerate international collaboration on climate change resilience to assist all areas of the globe.

But, our focus needs to be on both adaptation and emissions reduction.

Don’t look at these as different agendas, competing with each other for the same pot of money – instead look at how they support each other.

If we develop in a way that contributes to climate change – even in the adaptive schemes we construct to protect society – then we will still fail to keep pace with the rate of change.

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For the past 2 years, the Environment Agency has started to measure the embodied carbon – (or, the carbon dioxide emitted during manufacture, transport, construction, and end of life) – locked up within our flood schemes.

This has allowed us to set a target for reducing it: a 40% reduction from project start to finish.

The tool we use to do this is called ERIC and is similar to the BBC’s tool for calculating the impact of their programmes – which is called Albert.

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We continue to trial new materials such as low carbon concrete and have embraced methods such as cathodic protection.

Cathodic protection puts a small current through reinforced steel inside concrete, and this prevents it from rusting in saline environments – that makes it particularly useful in coastal protection schemes.

This significantly increases the design life of schemes which means their lifetime carbon impact is reduced.

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We are beginning to look at how we can steer projects using the UN Sustainable Development Goals.

The way we work – and what we do – means that we already hit quite a few of them – and the construction of the Boston Barrier is a good example of how we have started to map our impact.

Our new contractual arrangements for construction partners will have Sustainable Development Goals built in from the very start – projects will have to map out benefits against them.

By making this a core part of how we work, we aim to help form a common language for the links between the goals and business opportunities.

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Such change is a cultural challenge for everyone, our own colleagues and project managers alike, which means training and support.

But – it represents the early first steps on the road to drive down emissions.

And, make no mistake – that is the road we are travelling on.

Last week's record breaking heat – IN FEBRUARY – was a reminder that as temperatures rise, there will be more frequent heatwaves and increased pressure on water resources.

Today, I have mainly talked about flood, but I hope in the questions after we will discuss other climate challenges.

The moral question raised by this conference is: How should we build when we know about the climate challenges that are coming our way?

The novelist Victor Hugo, said: "What is history? An echo of the past in the future; a reflex from the future on the past."

It's impossible to say what aspects of contemporary culture will last through the ages.

But I do know that climate change will be a swift and stern judge of the developments we build today.

And, unless we start taking action, the 11 years we have to reduce carbon emissions will be gone, and our contribution to the history of the world will be eclipsed by sadness, and anger.

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But, that doesn't have to be the case...

I remain optimistic and we are all here at Futurebuild to do better than that.

So, let's work together, reduce our carbon emissions, and create places of cultural value with natural resilience that can be treasured for generations to come.