Chris Stark: Towards Net Zero

On 2 May, the Committee on Climate Change will publish new advice to the UK Government and the Devolved Administrations on the UK's long-term climate change targets.

Ahead of that report, the CCC's Chief Executive, ***Chris Stark****, addressed the Business Green Leaders Briefing to share his observations about the 'climate choices' that lie ahead, the scale and feasibility of the net zero challenge, and the importance of effective governance and leadership for long-term UK climate action.*

Thank you for the opportunity to speak today. This is a 'crunch' moment for us at the CCC – one of the 'crunchiest' in our decade of existence. That is thanks to the renewed interest in the UK's climate target – and the ambition of 'net zero' emissions in the UK.

We are here today, discussing credible strategies to reach net zero transport emissions in the UK. Two weeks ago, the Government sanctioned £40bn of infrastructure spending over the next decade to deliver 30GW of offshore wind – a third of the UK's electricity needs in 2030.

Last week, the Chancellor announced the phase out of fossil-fuelled heating in new UK homes. Just a few years ago all of this would have been incredible; now it is barely news.

It is worth reflecting on how the public discourse has shifted to permit these moments. It feels very much that the 'Overton Window' has moved – and rapidly in recent months.

Why?

I hope to cover some of the reasons in this talk today – how the science has developed, but crucially how the economic and policy drivers of decarbonisation have shifted. These are key factors in the advice that we are now preparing for government on the UK's long-term climate targets.

We will publish our report on the 2nd of May. No spoilers today on our recommendations. Instead, I want to expose some of the choices that we now face in reaching our conclusions – and some of the evidence that we've gathered to help us to take an informed view.

A statutory framework for emissions

In the UK, we've had The Climate Change Act in place for a decade, although we've had a framework for reducing emissions for even longer. It's legitimate to ask what has been achieved under these frameworks.

In 2008, the first action of the newly-independent Committee on Climate Change was to advise on the appropriate 2050 target for emissions.

At the time, there was no globally agreed temperature goal. So we judged, based on the available climate science, that an appropriate global climate objective would be 2°C, and to avoid an extreme danger threshold of 4°C.

An 80% reduction in greenhouse gases by 2050, from their 1990 level, was our best estimate of the appropriate UK contribution to that goal. We said it was "challenging but feasible" and that it carried a cost – of 1-2% of GDP – which was affordable to avoid a much greater economic cost in the future.

Parliament agreed – and since then we have been advising on the best, most cost-effective route to get there under the framework of carbon budgets and government plans that are required.

But a great deal has changed since 2008. The UK has signed the Paris Agreement, which expects greater ambition from developed countries – and references 1.5 degrees as a global temperature goal. Global emissions have continued to rise – making one of our 2008 scenarios for peak global emissions in 2016 look very optimistic. And other shifts have occurred too – crucially, our understanding of the path to full decarbonisation and the costs of some the key technologies.

The CCC's task is now – effectively – to re-run the 2008 analysis in light of this new information. But underlying it remains the same basic problem as before – that fossil fuels are the underpinning of the modern economy – and that they are warming our planet.

Global warming

It is easy to forget why we are doing this. In fact, there is a whole enterprise in making this issue more complicated than it needs to be. I think it's worthwhile returning to first-principles.

• Climate change is a global issue. Emissions of greenhouse gases can come from any part of the world – they warm the planet regardless of their geographical source, making this fundamentally an issue of international cooperation.

• By burning fossil fuels, we are releasing from safe, geological storage, carbon that has accumulated over millions of years. Releasing this CO2 and other long-lived gases means they enter the earth's atmosphere and stay there for a long time – effectively forever for planning purposes, given the mid-to-end century timescales that we are now focused on.

• Crucially, there is a near-linear relationship between cumulative CO2 – the stock of carbon dioxide in the earth's atmosphere – and global temperatures.

• That linearity is key. It gives rise to a simple statement of the problem: that if we want to cap temperature at a particular post-industry threshold – and that is the logic of the Paris Agreement – then we know with reasonable precision how much more CO2 can be permitted to enter the earth's atmosphere.

We must stop burning fossil fuels, or start sequestering carbon, or both.

• More troubling still – we also know that there is far too great a quantity of known, recoverable fossil fuels to stay within that CO2 budget if they are burned unabated.

In fact, on current trajectories, we'll breach the 1.5-degree temperature threshold within the next 20 years. That's the period over which the global economy will double in size – global infrastructure too – driven principally by the growth of our cities.

So, we are now on the clock if we want to break the fossil-fuelled economic paradigm that has served us so well for the past 150 years. We risk locking in emissions that cannot be easily unwound later.

Climate impacts

And the impacts are now upon us. Substantial warming of the climate has already been observed. Warming has regularly exceeded 1C in recent years; the five-year period to 2018 was the hottest ever recorded.

Global warming can no longer be described as a future event. It is now driving a change in the climate system. The consequences of warming are more and more apparent – recent decades have seen rapid decreases in summer arctic sea ice cover – 13% per decade. The IPCC tell us we can

attribute recent extreme weather events to warming at this scale with confidence – these events are becoming more likely and more extreme.

Global emissions

So how is the world responding to this unfolding drama? All signs show that we are still gripped by unabated fossil fuel use. Emissions continue to rise – and cumulative CO2 and temperatures rise with it.

There are some signs of a shift in the growth trajectory, but it is very clear that we have not – yet – made a decisive leap on global emissions.

Global temperatures – and the climate choice

So here are the facts. We have successfully moved from the business as usual line of a few years ago. We were heading to 4C warming. That we are not on that path anymore is because policy has begun to work.

But we are on track for 3C – still a destructive level of warming. And we are nowhere near – yet – the emissions trajectories for the 1.5C and 2.0C goals in the Paris Agreement.

It's tempting to fall into line with the current vogue and label this as our 'climate crisis'. But it's really a 'climate choice'.

A choice to act now – to invest in the new paradigm of carbon neutral economic growth. Or, a choice to wait and spend more – much more – in adapting to higher temperatures and the associated destructive climate impacts.

It is an inescapable choice. Because there is no 'do nothing' option. This is the backdrop to our current work on 'net zero'. So on now to some of the issues that have arisen from our work so far.

I would like to offer five observations – linked – on where we now stand:

1) UK's role as a global leader

Firstly, we have become accustomed to describing the UK as a global leader on climate change – and it is clear that we continue to outperform many of the major developed economies.

But what does global leadership really mean? In the UK we have seen a 42% fall in production emissions from 1990 levels, while growing the economy by 70%. This is evidence of a genuine decoupling of emissions from growth. We are well on the way to the closure of coal – and an increasingly renewables-based electricity system.

We can feel proud of that performance in the UK – and proud too of the policies and governance, under the Climate Change Act, that have kept the UK on track when other countries have not stayed the course.

But whether we can continue to claim global leadership now depends on what we do next.

Post-Paris, we've seen other developed countries around the world begin to set tougher emissions targets. Sweden became the first country to legislate a net zero target – with a 2045 date, albeit excluding aviation and shipping and using international credits. France is working on a net zero Bill to come before parliament this spring. The European Commission has proposed a vision for a net-zero carbon Europe by 2050.

In thinking about the UK's position in the world – on this most global of issues – two things stand out:

a) The international signalling of the UK setting – and then achieving – a tougher emissions target can be a powerful signal to other countries. Particularly the developed countries, who are all tasked with greater ambition by the Paris Agreement.

b) Setting a tougher target is not the only test of global leadership. It must be leveraged with wider, complementary, actions to support the global effort. The UK is well-placed for this – even in a post-Brexit world – we can offer international diplomacy on climate change, capacity building, and we can play a role in transferring the key technologies that we are developing, piloting and deploying here in the UK market.

2) Costs and benefits of action

My second observation is on the costs and benefits of acting. In the letter from Ministers that we received in October, there was a specific request to consider the expected costs and benefits of a tougher target. This was a surprise – a welcome one. And it has driven us to look closely at a collection of revealing economic issues.
We have always said that there were costs to this transition – 1-2% of GDP to reach 80% as I mentioned before.

In our retrospective on the last ten years, it's now clear that the costs of some of the key transition technologies are much lower than we thought they would be in 2008. Remarkably, if we put the right steps in place, we can look forward to the transition in some sectors carrying negative GDP impact – that is, it will be cheaper to decarbonise them than not. Surface transport that we have been discussing today is likely to be one of those sectors.

This is a stunning conclusion – one that the National Infrastructure Commission has also reached. And it is only possible because the key technologies to decarbonise and electrify the economy have fallen so far in price.

A decade ago we said, "decarbonise electricity generation, then electrify the economy where you can – there is a cost, but it's worth it". It turns out we were very right about that strategy; but pleasingly wrong about the cost. The key technologies – wind, solar, batteries – globally have fallen in price, to become cost competitive in some cases with fossil-fuelled systems.

That means that innovation has been the key – driven by policy – in ways that we did not fully expect ten years ago. Globally, a clear goal to decarbonise, with co-benefits of improved air quality in cities, has stimulated commercial innovation.

And here in the UK, we have successfully specialised in those areas where it is possible for the UK to move at a different pace – where UK policy can drive innovation at a different pace. Learning by doing. That is the offshore wind story – and I believe the conditions are there for the UK to drive innovative, rapid transitions and cost falls in other sectors too.

But it is equally true that ten years ago, the CCC were overly optimistic about cost falls in some other technologies – nuclear for example.

And there are other economic concerns.

We understand more and more the true scale of structural change required to reach deep emissions reduction – and it is daunting. And we also understand that the winners of decarbonisation are often not the same as the losers.

This speaks – overall – to a strongly positive story on costs and benefits, when Government acts and puts the right conditions in place to hasten the transition. But it raises very strongly the importance of genuinely strategic policy making.

3) Good policy design

So, my third observation – on the importance of good policy design – really follows on from the second.

It goes without saying that good policy is absolutely vital to keep costs low and maximise benefits. You can expect the CCC to look more and more closely at these policy design issues in the future. The existence of a policy is not enough; it must also be an effective policy. And our understanding of what works is another of the lessons from the last decade.

Good policy provides a stable long-term direction; it has clear governance and regular, transparent reviews to maintain flexibility; it makes use of markets where it can to find the best solutions; and it tailors approaches to the needs of each sector – while maintaining an integrated view overall.
Easy for me to say.

But we do not currently have many of policies with these hallmarks in place.

Most important of all. While the economic costs of decarbonisation overall may be smaller than we thought – potentially allowing the UK to go further for the same cost envelope. I doubt we will make further progress without a thorough review of how these costs are distributed – and the appropriate strategic policy levers.

It follows that we must consider the appropriate balance of 1) cost for the Exchequer; 2) costs on the consumer; and 3) economy-wide costs. And we must make use of the right tools – carbon pricing, tax, financial incentives, information or regulation.

But I think we can also say that for many of the key technologies we can increasingly consider policy's role as enabling investment rather than subsidising – and that makes me more optimistic about achieving deep emissions reductions than I have been before.

4) Scale and speed of the transition

That is important because of the fourth observation. On the scale and speed of the transition.

There are many who criticise the UK's Climate Change Act – and the CCC with it. They're right to ask questions about the mission it provides for the UK. But one important reflection acts as a counter to their concerns.

In the last decade we have learned that we now know how to do this.

A transition to a near zero carbon economy is now technically achievable – credible scenarios now exist to achieve near-full decarbonisation in most sectors. This is genuine progress.

Electrification with zero carbon supply takes us much of the way – and there are now credible alternatives, like hydrogen, for those applications where that strategy won't work. And even in those

sectors where emissions look set to continue, we can match emissions with greenhouse gas removals.

So it is possible. But that does not mean it is feasible. The scale of the change is enormous, and this transition must take place at remarkable (although not unprecedented) speed.

The implication of any tougher long-term target is very clear. If there was ever an idea that we could approach this as a 'sequential' transition – moving from Power, to Transport, to Heat, to Industry and Agriculture – then that thought needs to be re-examined.

Tougher targets imply a different kind of sectoral strategy. Bluntly, we will need to move quickly to decarbonise every sector in unison. And policy reforms need to start sooner rather than later.

Progress in the UK is not in line with this kind of strategy. We continue to see emissions falls, but it is a strategy of diminishing returns. The Power sector has been the great success story in the UK over the last decade, but we will shortly run out of coal-fired power plants to close.

Again, this points to the need for well-designed policy. Many of the challenges we face are infrastructure challenges – on those timescales, we will shortly have to begin considering asset lives and asset turnover.

Prices – and policies that influence prices – matter immensely. But so, now, does speed. Twenty years ago, we might have had the luxury of allowing prices and carbon pricing to do the heavy lifting required, but we have been too slow globally to respond to climate change – and we are now up against hard, scientific deadlines.

So, it is vital to consider how regulation can be deployed to drive more rapid change – often by providing a firm backstop date for a transition for example, to encourage a swifter market response.

That matters more for some categories of assets. Think, for example, about the UK switch from internal combustion engine vehicles. If we require zero carbon surface transport by 2050, we have to consider how long vehicles remain on the road. A new car on the road today, for example, will probably remain there for about fifteen years. So a 2040 'mission' is simply too late.

And we know from bitter experience that swift economic transitions must be very carefully handled, to avoid damaging regional and employment impacts. It really should be a 'just transition', but that will not happen by osmosis.

So, while the CCC advice on the UK's long-term target will no doubt be the headline-grabber, I think this is about something more fundamental than simply long-term aspirations.

There is already a need for a fundamental shift in the UK policy approach to the long-term transition. Any increase in ambition makes that harder to hide from. We will need to shift from the current piecemeal approach, relying on departments and sectors to make incremental improvements, to something much more broad-based. Something which elevates the place of emissions reduction in government above its current status.

5) Governance

Which brings me, finally to the last of my five observations on where we stand. On Governance.

This is the quickest of my observations, because it is not so led by the evidence; more by intuition.

Regardless of whether the UK's target for emissions is changed, I think it is legitimate to start the discussion of how well-prepared the institutions of government are for what comes next.

We have – in the Climate Change Act – a very strong statutory framework, mixing long-term goals with the medium-term requirement to plan and the short-term requirement to act. It has served us very well so far, but it is about to be tested like it has not been tested before.

What is clear is that the task of good policy-making, of allocating new economic costs, of conceiving of new strategic policy – at the right scale, of managing a fundamental transition requires leadership at the highest levels in Government. And the attentive oversight of Parliament.

Many of the policies that will drive progress will not be designed in Westminster – they are for Scotland's, Northern Ireland's and Wales's Parliaments to define. And they may even be defined at a more local level.

We see already how hard it can be for some arms of government to integrate, even though the carbon targets are in statute. That is not negligence – Government and civil society has an enormous range of outcomes it is trying to balance. Climate Change might be low down on that list for any number of legitimate reasons.

So it must be led from the centre.

And finally…

It will not surprise you to hear that we're unlikely to recommend a loosening of the current targets for emissions reduction. But tougher targets mean that we need maximum flexibility – to be prepared to move quickly and to ensure that we have good strategies for those approaches that don't work as well as we thought they would.

That requires the strongest leadership in the heart of government. And that – in the end – will be the key marker of our future success.

Thank you.