



When Net Zero: The Climate Braking Distance

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Last year, I talked to you about Why Net Zero – what net zero emissions mean and why it is needed to halt global warming. This year, we are going to be focussing on When Net Zero, how soon we have to get to net zero, which depends on how fast global warming is happening, how confident we can be that human activity is the cause, what the implications are for weather, societies, and ecosystems around the world, and what the most serious risks are of continuing on our current trajectory.

While these lectures are going to focus on the impacts of greenhouse gas emissions, I'm going to try very hard to avoid this turning into a catalogue of doom. The last thing I want is for you to end up feeling hopeless because that is when people either give up altogether or, perhaps worse, reach for panic-stricken measures like solar geoengineering: the idea of injecting material into the stratosphere to turn down the power of the sun.

So, whenever I'm telling you about the harm climate change is doing or may do if we carry on as we are, just remind yourself, as I emphasized last year, that this is a solvable problem: the gross profits of the fossil fuel industry in 2022 would have been enough to stop the products they sell from causing any further global warming right now. We don't need to carry on dumping carbon dioxide into the atmosphere. It is a choice.

That said, this is a depressingly timely lecture, with the announcement last week by our Prime Minister, Rishi Sunak, of major – or perhaps, on closer inspection, not-quite-so-major – reforms to the UK's Net Zero strategy, to applause from the mainstream press and, if the first public opinion surveys are to be believed, the approval of a majority of the public.

The main headline of the Prime Minister's speech was to delay the introduction of a ban on new petrol and diesel car sales from 2030 to 2035, much to the annoyance of the Society of Motor Manufacturers. With Labour promising to stick with the original timetable, this is shaping up to be a major issue in next year's election.

Like many election issues, there is a great deal less in this than it might appear, both on the environmental side and on the impact on consumers. The main reason is that the ban was only ever going to apply to brand-new pure petrol and diesel cars – and the fraction of new cars in this category was plummeting anyway. If current trends continue, the vast majority of new cars sold in Britain (only 20% of the total) will be battery-electric or hybrid by 2030, and hybrids were never included in the ban. They were only ever going to be phased out from 2035, and I don't think anyone has said what is going to happen to them now.

So, the only consumer that will be directly affected will be the classic car enthusiast who's determined to buy a shiny new V8 in 2031, which is probably quite a small group (although it does include Matt Ridley). People worry about the impact on the second-hand market, but you won't be able to find a second-hand diesel that's less than ten years old by then anyway, and the only reason for buying a pre-2015 diesel in 2030 is if you're a council candidate who wants an excuse to complain about the ULEZ.

On the environmental side, as the Climate Change Committee has pointed out, the exemption for plug-in hybrids meant that the impact of the 2030 ban on emissions was always going to be quite muted. Full disclosure, we drive a plug-in hybrid, which means we can do most journeys on the battery if we're completely

studious about plugging it in at every opportunity, but when we get onto the motorway, its consumption is no better than our old diesel. If lots of new cars sold in 2030 were going to be plug-in hybrids anyway, then the ban would have been a step in the right direction – particularly if the manufacturers could install software to switch cars automatically to battery in urban areas – but not nearly as big a deal as the previous government (should we talk about “the previous government” now we have Sunak 2.0?) made out.

So, there was a lot less in the rollback of the ban on internal combustion engines than meets the eye. And there was also a lot, from a climate perspective, that was very good in the speech. The Prime Minister assured us, and I quote:

- No one can watch the floods in Libya or the extreme heat in Europe this summer, and doubt that it is real and happening.
- We must reduce our emissions...we will still meet our international commitments and hit Net Zero by 2050.
- We're now going to have a better, more honest debate about how we get there.
- So, when Parliament votes on carbon budgets in the future, I want to see it consider the plans to meet that budget, at the same time.

These last two points are particularly important. I've long argued that it's a problem that the only people engaged in the discussion of *how* we get to net zero are climate enthusiasts. Everyone else is either not that interested or insisting, like the Net Zero Scrutiny Group in Parliament or the Global Warming Policy Foundation (which staunchly resists actually talking about Global Warming Policy), that there is no need to bother at all, or at least not until China moves first. A big reason why I was so keen to give these Gresham Lectures is that we should involve many more people, particularly young people, in *how* we are going to get to Net Zero (which, by the way, is the topic of next year's lectures).

The fact that we have already reduced emissions a lot doesn't make these decisions any less urgent, nor any easier. The Prime Minister made a point of emphasising how the UK has managed to halve our emissions since 1990. He might have added we are the only member of the G7 whose emissions are now lower than they were in the 19th century. But that's because our emissions were outrageously high in Victorian Britain when we had by far the most advanced economy in the world. And they were still pretty high in 1990.

His implication is that we have already made huge sacrifices relative to other countries, so why should we be expected to do more? But what is actually impressive is how much of that reduction has been achieved with remarkably little sacrifice by UK consumers. We switched from coal to gas for electricity, sacrificing miners who Mrs Thatcher was determined to sacrifice anyway. We got landfill emissions under control – back in 1986, methane from rotting food waste in a landfill site literally blew up this bungalow in Loscoe. Three people were badly injured, and it was a miracle no one was killed. Sorting out our landfill problem was hardly a great sacrifice on behalf of the world's climate. And we had the BSE and foot-and-mouth crises that decimated the UK's livestock herd.

At some point over the last decade, someone seems to have decided “OK, we've done the easy ‘upstream’ stuff: now we're going to have to start asking consumers to change their behaviour.” That's the point where we should have had a much bigger conversation if only more politicians had been interested in having it.

We are making big decisions, that will affect people's lives, and these decisions often have to be made years before their impact becomes evident. One of these is clearly the decision to electrify home heating in the UK – the heat pumps everyone is talking about. This is where the Prime Minister's speech becomes rather intriguing. Again, I quote:

- We'll never force anyone to rip out their existing boiler and replace it with a heat pump.
- And to help those households for whom this will be hardest I'm introducing a new exemption today so that they'll never have to switch at all.
- Now, this doesn't mean I'm any less committed to decarbonising our homes. Quite the opposite.

Now the only way to decarbonise home heating while allowing some people to “Never have to switch at all” would be to decarbonise the gas supply itself.

Did someone in No. 10 spot my lecture last year where I pointed out that “The royalties and profits in what we pay for gas are enough to capture every single molecule of CO₂ that gas generates back out of the atmosphere and pump it back under the North Sea. Twice over.” Gas prices have come down since then – it would now be merely 1½ times over.

Now before anyone tweets that they have found a scientist who supports the Prime Minister's new approach, he didn't actually say they were going to do this. It might not be a good idea, but we could, in principle, fully decarbonise home heating by 2040 or so without requiring anyone to change anything at all, through some combination of upstream CO₂ capture and mixing hydrogen into the supply (we could add up to 20% without changing a single appliance), and recapture of the remaining CO₂ emitted from gas boilers back out the atmosphere, pumping it all back under the North Sea. With today's technologies, this would add about 4p per kWh to the cost of supplying gas. That's £500 per year for an average household by around 2040. What it would do to prices depends on the balance of supply and demand, so hard to predict, but it would definitely make gas more expensive than it was, say, back in the 2010s before Putin started to drive up prices.

Faced with the certain prospect of more expensive gas, and provided we keep electricity prices down, most people would probably opt for a heat pump anyway. This raises the ugly prospect of the gas network going into a kind of death spiral, where rich, high-margin customers leave, and the fixed costs of maintaining the network are borne by an ever-declining circle of people who can barely afford their gas in the first place. We've seen this before in things like post offices and rural bus services. Plus, decarbonised gas is still gas, and still subject to the vagaries of Vladimir Putin. So, the wise folks at the Climate Change Committee and Department of Energy Security and Net Zero obviously decided it made more sense to transition everyone to electricity as soon as possible.

But this is exactly the kind of decision – short-term hassle to save costs in the long-term – that every MP and columnist in the country should have a view on because it will affect every single one of their constituents or readers. But the only ones who engage are the enthusiasts, who don't want to question the recommendations of the Climate Change Committee, and the dismissive, who seem happy to caricature climate policy as “they are coming to get your boiler and make you pay £10,000 for a heat pump” without suggesting any alternative.

Unfortunately, although he said he wants a more honest debate about how we get to net zero, some other points in the Prime Minister's speech suggest otherwise. This is where the speech got just a little weird:

- The proposal for the government to interfere in how many passengers you can have in your car. I've scrapped it.
- The proposal that we should force you to have seven different bins in your home. I've scrapped it.
- The proposal to make you change your diet – and harm British farmers – by taxing meat. Or to create new taxes to discourage flying or going on holiday. I've scrapped those too.

As many people have pointed out, the odd thing about these policies is that they don't exist. And this is what is really worrying because the Prime Minister's speechwriters clearly think it's clever to equate the Net Zero policy in people's minds with forcing everyone to have seven recycling bins. They know what they are doing, because to judge from the opinion polls, that is exactly what they have done. And lots of journalists seem to agree with them. This suggests there are still plenty of people in our political and media establishment, depressingly many of them probably educated at Oxford University, who think climate change is a bit of a joke, a chance to poke fun at the Wokerati. If you were actually serious about climate change, you wouldn't equate it, as the Prime Minister himself did in those debates with Liz Truss last summer, with numbers of recycling bins.

Which brings us to the point of these lectures. We need to take a deep breath and step up once more to make the case that climate change, and the UK's Net Zero policy, do actually matter. There are, broadly, four reasons why Rishi Sunak's speechwriters might think climate policy is a bit of a joke.

First, it's not happening at all because climate scientists used a “trick to hide the decline” in global temperatures. This view was actually quite prevalent not that long ago, and while it is slowly dying out, I do still get an email a week or so telling me what a total fraud I am.

Second, because scientists cannot prove human activity is actually causing the observed warming. This one is worth spending a bit more time on because the all-too-often-repeated response “97% of scientists agree, so shut up” isn't good enough. People deserve to have the nature of the evidence explained to them, so we will devote the rest of this lecture to how we quantify the magnitude of human influence on global temperatures, which was actually the scientific problem I cut my teeth on before I knew anything about the carbon cycle and Net Zero.

Third, because the impacts of climate change won't be as bad as scientists claim or, in a variant that, oddly, some people seem to be able to believe at the same time, because we are totally doomed anyway so there is no point in trying. We'll be addressing why limiting warming as close as possible to 1.5°C is a good idea in

the next lecture; how climate change is impacting our weather already in the following one; and what the evidence is that “we’ve crossed a tipping point so it’s already too late” in the next one (spoiler alert, there isn’t any).

Fourth, and finally, there is the odd position that we don’t need to do anything about climate change because Bill Gates is going to fix it by injecting material into the stratosphere to turn down the power of the sun. I will devote my final lecture to this idea of solar geoengineering, not because I think it will ever happen for long enough to make any difference, but because I think the very idea of it is extremely dangerous. The idea of a single government (and it would be a single government, however, they might try to pretend it is a “coalition of the willing”) taking it upon itself to control the world’s weather, which is exactly how it will be perceived whatever the outcome, is a geopolitical nightmare. Given recent events, I don’t really understand how any thoughtful folk can be doing anything other than firmly pointing this out shutting down the whole idea.

So, global warming is real, and it is overwhelmingly caused by human activity. Every five years delay in starting emission reductions, so putting back our plans for 2030 to 2035 without bringing forward some other plan to compensate, adds another tenth of a degree to peak warming. And every tenth of a degree matters for changing risks of heatwaves, floods, wildfires, droughts, and hurricanes around the world – as well as increasing the chance of someone doing something really stupid like solar geoengineering.

I thought this argument was over, at least in the U.K., but sadly, it seems it isn’t. Even if our Prime Minister claims he is convinced, his advisers and speechwriters, and much of the UK media, certainly aren’t.

Rishi Sunak has called for an honest debate about how we get to net zero. Not how fast or even, perish the thought, whether to bother at all. Fine, let’s have it. It’s not a great start for this debate to begin with a dishonest equation of net zero with a non-existent proposal about seven recycling bins, but let’s assume that was just an over-zealous speechwriter. But this debate has to be informed by the evidence: there is no point in arguing with Mother Nature. And, as Rishi Sunak loves to remind us, the numbers have to add up. If we’re going to go slower in one sector and still reach the same destination, we have to go faster in another. If we’re going to ask less of fossil fuel consumers, we need to ask more of fossil fuel producers.

It's high time we had this conversation. Bring it on.