The world has made more progress on climate change than you might think, or might have predicted a decade ago

November 16 2021, by Myles Allen

Credit: AI-generated image (disclaimer)

It must be painful for Boris Johnson to be a footnote, especially a footnote in French, but at the end of a very long two weeks, there were always only two outcomes possible at the UN climate summit in Glasgow. A Copenhagen-style meltdown, putting the implementation of

the Paris Agreement on hold for years. Or a footnote.

A meltdown was never in anyone's interest, so we have ended up with a footnote. A long footnote, an important footnote, but a footnote nonetheless. The Glasgow Climate Pact saw rules clarified (sort of), more finance, especially for adaptation (but still not enough), greater clarity on long-term goals and the treatment of climate-related loss and damage, and some (still inadequate) progress on short-term commitments.

And if we step back and look at the decades-long process that started with the UN Framework Convention on Climate Change, it's important, particularly for tired school-strikers, to realize how far we have come.

It was only 16 years (or, more depressingly, 0.3°C) ago, in 2005, that my fellow-scientist Dave Frame and I gave a talk pointing out that the 1992 convention's goal of stabilizing atmospheric concentrations of greenhouse gases—which for carbon dioxide meant 50%–80% reductions in global emissions by 2100—was unlikely to be enough to stop global warming. Warming was primarily determined by cumulative carbon dioxide emissions, so to halt warming we would need to reduce annual CO_2 emissions to net zero.

Later in 2005, we even gave a crude estimate of the "carbon budget," or the amount we could dump in the atmosphere from burning fossil fuels over the entire industrial epoch before driving global temperatures over 2 degrees Celsius: one trillion tons of carbon, which is equivalent to 3.7 trillion tons of CO_2. The latest estimate combining historical and allowable future emissions from the 2021 Global Carbon Budget is 3.74 trillion tons of CO_2.

To be fair, Dave and I were over-optimistic in that we didn't account for carbon sinks weakening as soils warm and forest fires become more

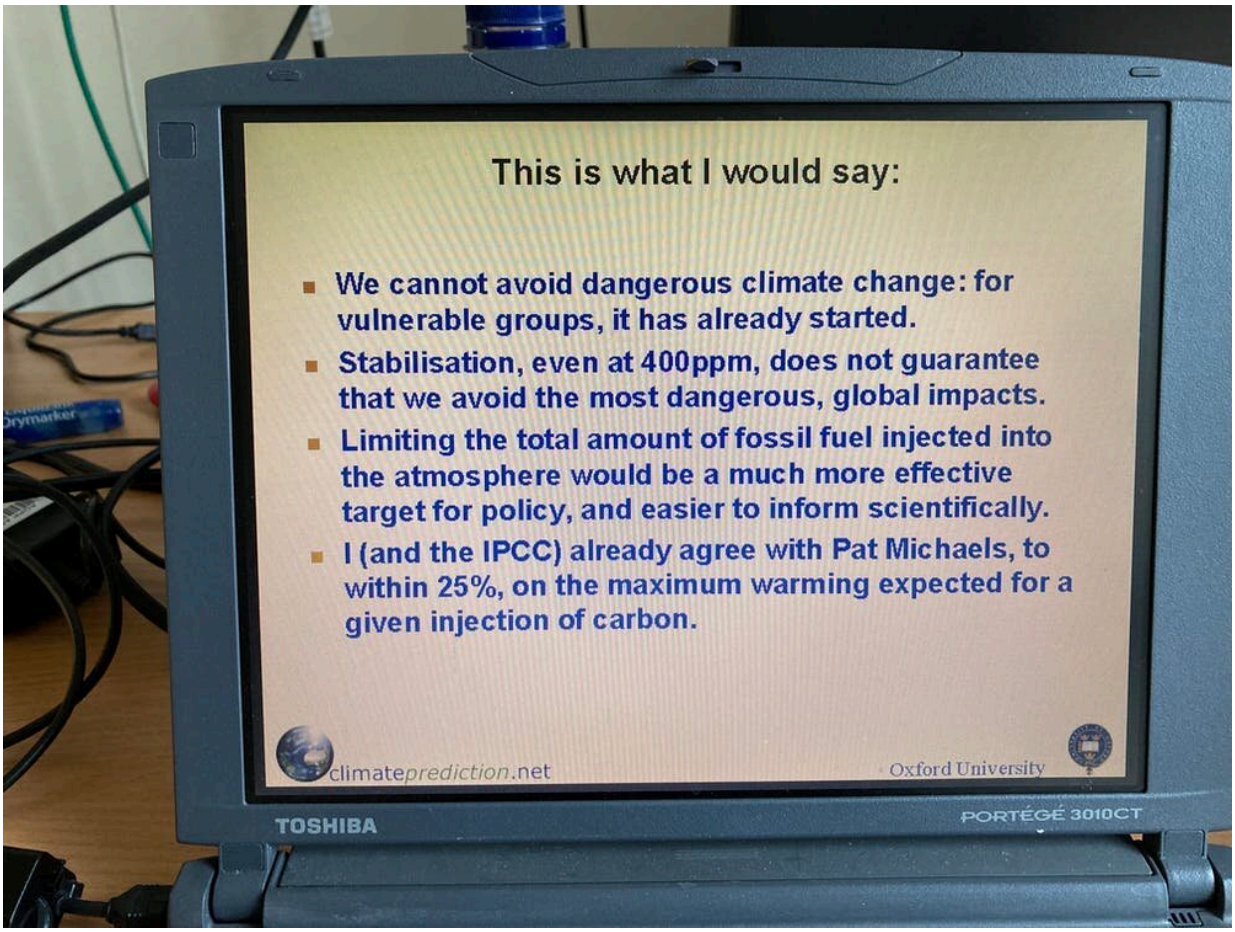
frequent. We thought just limiting fossil fuel emissions to that trillion tons would be enough for 2 degrees Celsius.

But by the time we fixed all this and published the result in 2009, along with several other groups drawing similar conclusions, it was clear we would have to limit all CO_2 emissions, including those from deforestation and not just from fossil fuels, to around a trillion tons of carbon to limit warming to 2 degrees Celsius. And that remains the estimate today—although we continue to eat into this total budget every year that emissions continue.

That wasn't because these early groups were particularly clever or foresighted. It's because the problem turned out to be simple. The most surprising thing about researching how global temperatures respond to greenhouse gas emissions is how few surprises there have been. Global temperatures continue to rise, decade on decade, pretty much exactly as predicted back in the late 1970s.

And the simplicity of that response must be a factor in how conversations at the UN's annual climate summit have moved on. At COP10 in 2003, the first I attended, there were smartly-dressed young Americans walking around in pairs handing out leaflets explaining how the case for human influence was unproven and coal was the fuel of the future.

The world has changed, and I wonder how many of those young men (they were all men) were back at COP26 as chief sustainability officers of major multi-national corporations, or taking their daughters to Fridays for Future marches.



Notes from the 2005 talk, recently found on the author's old laptop. Credit: Myles Allen, Author provided

Our 2005 talk wasn't particularly well received—"unhelpful" is the word I remember. This is perhaps unsurprising since the title of the conference was "Stabilization 2005," and we were grumbling that stabilization targets were beside the point.

Cumulative emissions since pre-industrial had just passed half a trillion tons at the time, so people were concerned the message seemed to be: "Relax, we're only halfway there." Well, we're now over two-thirds of the way.

Reasonable odds of 2 degrees Celsius

But if (and it's a big if) countries manage to honor the pledges they've made since Paris, most importantly China's declaration of carbon neutrality by 2060 and India's net zero by 2070, even if serious global reductions don't start until after 2030, we would (just) save the trillionth ton of carbon.

This would give us, depending on what happens to other emissions, reasonable odds of limiting global warming to 2 degrees Celsius. Talking at COP18 in Doha in 2012 (the next COP I attended, at which the idea of net zero was still seen as a bit radical), I would not have expected to be able to write that in 2021.

Of course, it's not enough, because while global temperatures have responded to emissions pretty much as expected, the climate impacts associated with even today's level of warming, as we pass 1.2 degrees Celsius, have proved much worse than we would have predicted back in 2005. These were the unwelcome surprises.

So the world decided in Paris in 2015 that 2 degrees Celsius was clearly not "safe," and we should aim instead to limit warming to 1.5 degrees Celsius. And that is where the Glasgow pact falls short.

We have made progress in acknowledging where we want to get to, not how we're going to get there, still less actual evidence we have started. Nations could only agree to "phase down," not "phase out," the use of unabated coal power and inefficient fossil fuel subsidies. That's an agreement to slow, not stop.

At least they agreed to mention fossil fuels in a UN climate agreement for the first time. At a time when the industry is back to making record profits, it clearly has to be brought (kicking and screaming or not) into

the tent and made to play its part in the solution, and not just allowed to carry on selling the product that is causing the problem, still less being subsidized to do so.

Precisely because carbon dioxide accumulates in the climate system, early reductions matter. It's just like the braking distance: the sooner you hit the brakes (slow global warming), the shorter your stopping distance (lower peak warming). And we don't even know how well the brakes work.

The greatest uncertainty of all, and one they don't talk about much in COP meetings, is that until we actually start to reduce global emissions, we won't find out how hard—or easy—it will be. Once we actually get started, transitions often turn out to be not nearly as expensive or traumatic as feared. We may be surprised again.

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