

When Net Zero?

Myles Allen

Frank Jackson Professor of the Environment, Gresham College

Professor of Geosystem Science, School of Geography and the Environment & Department of Physics, University of Oxford



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LONG-TERM DECISIONS FOR A BRIGHTER FUTURE

What was not that interesting about the PM's speech



What was great about the PM's speech

- 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.

What was kind of irrelevant in the PM's speech

- We've had the fastest reduction in greenhouse gas emissions in the G7. Down almost 50% since 1990.
- France? 22%. The US? No change at all. China? Up by >300%.



What was rather intriguing about the PM's speech

- 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.

What does a \$250 per tonne cost of disposing of carbon dioxide mean?

It means the royalties and profits in what we pay for gas are enough to capture every single molecule of CO_2 that gas generates back out of the atmosphere and pump it back under the North Sea. Twice over.

But before anyone tweets that I'm the only scientist in Britain endorsing the PM's new approach

- He didn't actually say he was going to do this.
- The cost of "decarbonising gas" is about 4p/kWh (\$250/tCO₂).
- That's £500 per year on an average bill by 2050, an increase of £25 every year for the next 20 years.
- Faced with that, those who can will opt for a heat-pump, assuming we keep electricity prices under control.
- Potentially pushing the gas network into an ugly death spiral, with network costs borne by ever fewer, mostly poor, users.

And what was frankly a bit weird about the PM's speech

- The proposal for 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.

4½ reasons why Rishi Sunak's speechwriters might still think climate change is a bit of a joke

- It's not happening at all because climate scientists used a "trick to hide the decline" in global temperatures.
- Because scientists cannot prove human activity is actually causing the observed warming.
- Because the impacts of climate change won't be as bad as scientists claim.
 - Because we are totally doomed anyway.
- Because Bill Gates is going to fix it by turning down the power of the sun.

Why we still need to explain the evidence on climate



29°

FIRST 100 DAYS

EPA HEAD: CARBON DIOXIDE NOT 'PRIMARY CONTRIBUTOR' TO CLIMATE CHANGE

Scott Pruitt | EPA Administrator

TODAY

CHICAGO

DETROIT

29° HOUSTON

S& CNBC





🗲 78°

Why we still need to explain the evidence for^{k Box"/Thursday} human influence on climate

- CNBC presenter: "Do you believe it has been proven that CO₂ is the primary control knob for climate?"
- Scott Pruitt, EPA Administrator, 2017: "I would not agree that it is a primary contributor to the global warming that we see."



The wrong response



The wrong response



Even Pruitt sees warming:



Both human activities and natural factors have been disturbing the global energy balance.



We know the climate system conserves energy...



...but we don't know how large the responses to human and natural drivers are.



...but we don't know how large the responses to human and natural drivers are.



So we estimate them from the data, assuming first that CO₂-induced warming to date is zero



So we estimate them from the data, assuming first that CO₂-induced warming to date is zero



Residuals are improbably well correlated with the expected response to human activity































Best fit, no unexplained residual suspiciously resembling human-induced warming, at 0.8°C CO₂ warming in 2017



Responding to speculation with facts

- The best explanation of the observed global mean surface temperature record, in a simple least-squares sense, is that CO₂ emissions from human activity have contributed about 80% of the observed warming since 1870.
- Attempting to explain the observed temperature record with natural factors alone, allowing any amount of amplification of the response to low- and high-frequency solar variability and volcanic activity, leaves an unexplained residual that is suspiciously well correlated with the expected response to human activity.

Evolution of the Intergovernmental Panel on Climate Change's "attribution" statement



1995: "The balance of evidence suggests that there is a discernible human influence on global climate."2001: "Most of the observed warming over the last 50 years is *likely* to have been due to the increase in greenhouse gas concentrations."

- 2007: "Most of the observed increase in global average temperatures since the mid-20th century is *very likely* due to the observed increase in anthropogenic greenhouse gas concentrations."
- 2013: "It is *extremely likely* that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in greenhouse gas concentrations and other anthropogenic forcings together."
- 2013b: "The best estimate of the human-induced contribution to warming is similar to the observed warming over this period."
- 2018: "Human activities are estimated to have caused approximately 1.0 °C of global warming above preindustrial levels, with a *likely* range of 0.8 °C to 1.2 °C."
- 2021: "It is unequivocal that human influence has warmed the atmosphere, ocean and land." (2021)
 - Likely=P>0.66; Very likely=P>0.9; Extremely likely=P>0.95

And bringing this all up to date: +0.1°C in 5 years

2023



ClimateChangeTracker.org

🉈 🛛 Climate Change Tracker \Xi 🖉 Share link 💙

Version 0.9.6, last update September 15, 2023





When Net Zero?

Every five years delay in starting to reduce emissions adds 0.1°C to peak warming.

We still have to explain the evidence that climate change is serious.

Because some still struggle to take it seriously.



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