

KEEP Kirdford and Wisborough 'Green'

APRIL 30TH, 2024: DR JILL SUTCLIFFE, ENVIRONMENTAL SCIENTIST MSc and PhD Env Tech, Imperial College
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Is time running out for Europe's hard-to-abate sectors?

AVIATION AND CLIMATE CHANGE

1. I am taking the issue of climate change and its causes as read. The UK independent Climate Change Committee, CCC, and the Independent Panel on Climate Change, IPCC, have pointed to the issue of the Climate Emergency as being human driven and they emphasised the need to reduce emissions of those gases contributing to the climate emergency and stressed the urgency with which this needs to happen.
2. First, I would like to point to the statement made by Finlay Asher, aerospace engineer and member of community group Safe Landing at the open meeting on February 28th in the afternoon just before my own statement made at 4pm. He works at Gatwick, has been involved in the work to understand and develop more sustainable types of fuels for aviation and spoke knowledgeably and clearly without notes about the current situation, the drawbacks and the future role of airports and aviation.
3. The issue of aviation emissions is regarded by the independent Climate Change Committee as one of the most intractable facing the UK's commitment to reach Net Zero. **47%** of all CO₂¹ emissions from the global aviation sector have been emitted since 2000 whereas emissions from the rest of the economy in that time have fallen by c40%.
3. Currently, the answers to these issues are to fly less frequently, less far and *not* to build any extra capacity
4. A current petition is seeking signatures for a proposal to ban domestic flight on routes which can be travelled by train in under 4.5 hours.
5. In this way, time can then be used for creating appropriate solutions which are currently being worked on. While they will take more time than we currently

¹ *Nature communications*, Evaluating the climate impact of aviation emission scenarios towards the Paris agreement including COVID-19 effects

KEEP Kirdford and Wisborough 'Green'

have but it is urgent as some 6 of the 9 climate tipping points² which have been identified are currently being breached³.

- Current levels of greenhouse gas emissions risk triggering these climate tipping points
- These are shifts in the climate system that cause devastating irreversible changes, such as sea-level rise.
- Nine parts of the climate system are sensitive to tipping, including ice sheets, ocean currents and major forests.

United Nations *Synthesis report 2023*

6. And the current evidence all points to an acceleration in these issues – highest average temperatures in the summer during the year, highest average sea temperatures and melting ice sheets and glaciers.

The impact of aviation on climate change is a topic of significant concern. Let's delve into some key facts:

Contribution to Global Emissions⁴:

7. Aviation accounts for approximately 2.5% of global carbon dioxide (CO₂) emissions¹.

- o When considering non-CO₂ impacts (such as contrails and cirrus clouds), aviation's share increases to 3.5% of effective radiative forcing¹.
- o In terms of greenhouse gas emissions (including all gases), global aviation contributes 1.9%¹.

8. Challenges and Disparities:

- o Air travel disproportionately affects individual carbon footprints, even though aviation overall contributes a relatively small portion to global emissions.

² **Climate tipping points** are critical thresholds in the climate system. When these thresholds are crossed, they lead to significant, often **irreversible changes**

³ Potsdam Climate Change

⁴ Lee, DS et al, 2021

KEEP Kirdford and Wisborough 'Green'

- The inequality in flying frequency—many people cannot afford to fly—contributes to this disparity.
- International flights are not attributed to any specific country, making it challenging to incentivize emission reduction efforts.

9. CO₂ Emissions from Aviation:

- Most flights rely on jet gasoline, which produces CO₂ when burned.
- In 2018, global aviation (passenger and freight combined) emitted approximately **1.04 billion tonnes of CO₂¹**.
- Efforts to decarbonize aviation remain crucial.

10. Beyond CO₂:

- Besides CO₂, aviation emits nitrogen oxides (NO_x), soot, and water vapor.
- Contrails and cirrus clouds formed by aviation also impact climate through radiation.

11. Climate Assembly, *The Path to Net Zero, Full report* and House of Commons Environmental Audit Committee, *Net zero and the UK aviation sector*, Third report of Session 2023-24 | Dec 18, 2023

12. Future Projections: A recent study suggests that aviation contributes around 4% to human-induced global warming and could cause approximately 0.1°C of warming by 2050 if growth continues². I would like to point again to the statement made by Findlay at the open meeting on February 28th, 2024.

In summary, while aviation's direct CO₂ emissions are relatively small, its broader impact on climate change extends beyond carbon alone.



KEEP Kirdford and Wisborough 'Green'

APPENDIX 1: Climate Change and the latest evidence:

Currently the UK is *not* on track to meet the Paris Agreement to keep global temperature from exceeding 1.5 °C above pre-industrial levels (Independent Climate Change Committee report, 2023).

“We need to mitigate the damage from climate change, by reducing or stopping the human activities which are causing it. We can do that....by cutting our emissions of greenhouse gases.”

Sir James Bevan, CEO of the EA, 2019

MET OFFICE, Oct 2022: Key messages

- The world has warmed by about 1.1C, leading to more extreme weather events
- The amount of future warming depends on future emissions
- The UK is expected to see: warmer, wetter winters; hotter drier summers; and more extreme short-lived rainfall events
- Observed sea-level rise is accelerating, driven by increased ice mass loss
- UK sea-level rise will be greater in the south than in the north, and continue well-beyond 2100
- *Without* ice sheet instability processes, latest IPCC projections are similar to UKCP projections
- Ice sheet instability processes *could* lead to much larger rates of future sea-level rise
- Important to monitor sea-level rise and develop “early warning systems

Global surface air temperature highlights:

- 2023 is confirmed as the warmest calendar year in global temperature data records going back to 1850

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- 2023 had a global average temperature of 14.98°C, 0.17°C higher than the previous highest annual value in 2016
- 2023 was 0.60°C warmer than the 1991-2020 average and 1.48°C warmer than the 1850-1900 pre-industrial level
- It is likely that a 12-month period ending in January or February 2024 will exceed 1.5°C above the pre-industrial level
- 2023 marks the first time on record that every day within a year has exceeded 1°C above the 1850-1900 pre-industrial level. Close to 50% of days were more than 1.5°C warmer than the 1850-1900 level, and two days in November were, for the first time, more than 2°C warmer.
- Annual average air temperatures were the warmest on record, or close to the warmest, over sizeable parts of all ocean basins and all continents except Australia
- Each month from June to December in 2023 was warmer than the corresponding month in any previous year
- July and August 2023 were the warmest two months on record. Boreal summer (June-August) was also the warmest season on record
- September 2023 was the month with a temperature deviation above the 1991–2020 average larger than any month in the ERA5 dataset
- December 2023 was the warmest December on record globally, with an average temperature of 13.51°C, 0.85°C above the 1991-2020 average and 1.78°C above the 1850-1900 level for the month. You can see information specific for December 2023 in our [December 2023 report](#)

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• **Ocean surface temperature highlights:**

- Global average sea surface temperatures (SSTs) remained persistently and unusually high, reaching record levels for the time of year from April through December
- 2023 saw a transition to El Niño. In spring 2023, La Niña came to an end and El Niño conditions began to develop, with the WMO declaring the onset of El Niño in early July.
- High SSTs in most ocean basins, and in particular in the North Atlantic, played an important role in the record-breaking global SSTs

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The unprecedented SSTs were associated with marine heatwaves around the globe, including in parts of the Mediterranean, Gulf of Mexico and the Caribbean, Indian Ocean and North Pacific, and much of the North Atlantic

CLIMATE CHANGE UPDATE

Two Years to Save the World: Simon Stiell at Chatham House

10 April 2024

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Humanity has only two years left “to save the world” by making dramatic changes in the way it spews heat-trapping emissions and it has even less time to act to get the finances behind such a massive shift, the head of the [REDACTED] climate agency said.

With governments of the world facing a 2025 deadline for new and stronger plans to curb carbon pollution, nearly half of the world's populations voting in elections this year, and crucial global finance meetings later this month in [REDACTED], United Nations executive climate secretary Simon Stiell said Wednesday he knows his warning may sound melodramatic. But he said action over the next two years is “essential.”

The solution lies in climate resilient development.

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KEEP Kirdford and Wisborough 'Green'

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United Nations 2023 IPCC Climate Change *Synthesis* report

¹ Vidal John.22 Feb 2022 article in the *Guardian* Time to face the truth: UK aviation, as it exists today, and tackling the climate crisis are incompatible

¹ **Climate tipping points** are critical thresholds in the climate system. When these thresholds are crossed, they lead to significant, often **irreversible changes**

My name is Dr Jill Sutcliffe, an environmental scientist, who worked for Natural England, chairs the Local KKWG, the Keep Kirdford and Wisborough Green Group, co-chairs the ONR-NGO Forum⁵, was a member of our PC and have lived in W Sussex for 40 years.

My experience as I live under the flight path

⁵ Office for Nuclear Regulation-Non- government Organisation Forum