Why aviation needs to be limited

Flying is one of the most environmentally damaging human activities, and yet - until recently - international aviation emissions have managed to avoid scrutiny: hence they were not included in the UN climate targets of the 2015 Paris climate agreement.

In 2019, UK aviation emissions reached a record high, and an increasing number of organisations, including the government's official climate advisers, have been advising that getting aviation emissions to net zero by 2050 will require limits on growth and possibly a reduction in flying.

However - currently - our government disagrees, and instead is pinning all hopes on future technologies and fuels delivering 'clean growth', and on the aviation sector achieving "Jet Zero" without the need for direct intervention to limit demand. Indeed, so-called sustainable aviation fuel (SAF) sounds like the answer to all our prayers - allowing us to fly as far and as often as we like without excessive emissions.

What we have found is that the holy grail of clean air travel is a long way off. That is why we believe that aviation needs to be limited by making the highest polluters compensate for the damage they are doing to our environment.

Why is flying one of the most environmentally damaging human activities?

Here's just one rather sobering example: e*ach passenger* on a return flight from London to Singapore accounts for around *3 tonnes of carbon-dioxide (CO2)*. That's roughly the same amount of CO2 produced to heat a family home for 1 year!

When you consider the number of people flying today, and the fact that CO2 is responsible for *80% of <u>global</u> warming,* it's plain to see why aviation is receiving so much attention.

But CO2 emissions aren't the only issue. For example, we now know that *aviation contrail-cirrus* causes *<u>local</u> warming* (see below).

And yet **aviation continues to be poorly regulated**, which is why the issues caused by aviation are growing faster than any other mode of transport. For example, in 2018, aviation emissions accounted for 7% of all UK greenhouse-gas (GHG) emissions, and were 88% above 1990 levels. In 2019, aviation emissions accounted for 8% of all UK GHG emissions.

One of the big positives from COP26 was the launch of the **International Aviation Climate Ambition Coalition** and a declaration by member states to work together to support the adoption of an ambitious global goal for international aviation CO2 emissions by the International Civil Aviation Organization. They also committed to supporting specific measures to reduce aviation emissions including sustainable aviation fuels, the voluntary CORSIA global offsetting scheme, and new aircraft technologies.

Perhaps more significant is that - as part of the UK's sixth Carbon Budget (CB6, published in 2021, which covers the period 2033 to 2037) - the UK government enshrined in law a new target to

reduce the UK's share of international aviation and shipping emissions by 78% by 2035 compared to 1990 levels.

Sadly, it seems that these **pledges are now being ignored by the UK government**, and it turns out that SAFs and carbon offsetting are **more of a ploy to greenwash aviation** than a solution to help tackle the climate emergency.

Apart from a shortage of supply and high costs leading to low take-up of SAFs, what we have discovered is that such fuels can be very damaging to our planet. And carbon offsetting is turning into a scammer's dream scheme!

What is Sustainable Aviation Fuel (SAF)?

Sustainable aviation fuel mostly refers to **biofuels** made from crops or waste products. But 'waste' biofuel sources are insufficient to cope with demand. And, in order to meet the demand, rainforests and land currently used to feed our growing population is being acquired to produce biofuel instead – hence the ongoing land grabs, deforestation, palm oil plantations, etc.

Most people already know that palm oil plantations have a devastating affect on biodiversity. What they may not realise is that, overall, producing biofuel may be worse than extracting fossil fuel! And if the current drive to produce affordable biofuels is allowed to continue, there is a danger it will also disrupt food and feed supplies!

Another form of so-called SAF is **Recovered Sustainable Aviation Fuel** (from plastic and used oil), which also cannot meet demands. In fact there is an insufficient supply to meet the demands of trucks and ships that are already using it. Plus it originates from fossil fuel and is therefore not truly sustainable.

We should also mention **Synthetic Sustainable Aviation Fuel** (made from hydrogen and carbon). Although it is a technically feasible replacement for kerosene, producing sufficient quantities would consume massive amounts of energy – e.g. approximately 75% of the whole of the UK's grid supply!

Whichever SAF is used, in order to avoid making climate change - and ecology and biodiversity issues - even worse, it is vital that governments ensure that it's production is 100% sustainable.

What is contrail-cirrus?

In addition to the global warming effect of high CO2 emissions from the consumption of kerosene by jet engines, another aspect of aviation that has been played down until recently is the local-warming effect of contrail-cirrus - cloud produced by aircraft engine exhausts.

Aircraft engines not only spit out 3.16 kg of CO2 for every kilogram of fuel burned, they also produce 1.23 kilograms of water vapour for every kilogram of fuel burned. At high altitudes, low air temperatures turn that water vapour - together with soot from combustion - into ice crystals, forming contrails which can remain for hours, trapping even more warm air in the atmosphere. In fact, we now know that contrail formation from jet exhaust has a larger, more immediate impact on climate than CO2 emissions!

The good news is that studies by the German Aerospace Center have shown that jet aircraft powered by cleaner burning jet fuel made from *truly sustainable sources* can produce fewer soot particles, resulting in fewer ice crystal formations in the atmosphere. Also, the crystals that do form tend to be larger, fall more quickly, and melt in the warmer air below - which means less localised warming from contrail-cirrus clouds. However, limited production and high costs of SAFs mean that only around 0.1% aviation fuel consumption is currently sustainable.

The ugly truth behind carbon offsetting schemes

Flying less isn't something everyone is able or willing to do. To try to compensate for the effects of aviation emissions, we are seeing an increase in carbon offsetting in the form of Emissions Trading Schemes (ETSs) – e.g. CORSIA, the new Carbon Offsetting and Reduction Scheme for International Aviation which is currently being tested. This promises to make flights carbon neutral by funding projects that *capture CO2*. However, it is becoming increasingly obvious that such schemes are simply a distraction from the worsening environmental destruction. For example, most private jets will be excluded from CORSIA. We don't think that this is reasonable, ethical or fair.

New aircraft technologies

Green Sky Thinking have made a series of short, informative video clips about Sustainable Aviation. Part 10 covers the MASSIVE inequality of flying:
https://www.youtube.com/watch?v=NW_hH3xCiAY
It also debunks the myth that new aircraft technologies will enable us to continue to increase aviation whilst also satisfying essential climate goals.

Current regulation and taxation of aviation is extremely unfair.

Thirty years ago, the **'1992 Rio Declaration'** or **'Earth Summit on Sustainable Development'** concluded that we need to strike a balance between economic growth, sustainable development, and the application of the precautionary principle, in order to improve the quality of life for all. This was also where the '**polluter pays**' principle was widely agreed.

A 2021 research briefing (cbp-8826) on 'Aviation, decarbonisation and climate change' also shows that the UK government have been aware of global warming issues for some time. And now the local effects of global warming are increasingly being felt here in the UK – with more and more extreme weather events.

At the 2020 Citizen's Assembly on Climate Change participants "resoundingly rejected" industry projections for a future in which air passenger numbers would rise by 65% between 2018 and 2050, saying that it would be "counter-productive" for tackling climate change.

And yet our UK government listens more to airline and fossil fuel lobbyists – hence it continues to allow airport expansions and rejects the most effective and fairest measures that any government can take to tackle the climate emergency, which is to tax the highest polluters.

We are increasingly aware of the damage that aviation does to our environment and yet **jet fuel is exempt from both excise duty and VAT** (SN00523)! Note: motorists pay 57.95 pence per litre excise duty plus 20% VAT on top of that for petrol, diesel.

UK government statistics for England show that most flights are taken by a *minority of people*. And while the highest polluters produce *increasing* levels of emissions and are apparently not even aware of the consequences, the poorest in society suffer more and more from the worsening effects of global and local warming (and air and noise pollution).
For example, in 2017, 1% of people took 20% of all flights abroad, and 10% of people took 52% of all flights abroad, and yet poor areas of England are over 3 times more likely to be flooded than rich areas. This is simply not fair.

Vehicle Excise Duty (VED) or 'car tax' is designed to encourage the uptake of lower emission vehicles on our roads. Why can't a **frequent flier levy** be applied to encourage the flying minority to also consider the environment?

What can our government do to truly help tackle the climate crisis?

As aviation contributes significantly to climate change, we believe:

- air traffic growth should be limited by stopping all airport expansions
- the production of SAFs should be regulated by ensuring that only sustainably produced materials are used in its production
- 20% (or higher) VAT should be added to the sale of all kerosene – included that blended with SAFs
- a carbon price – passed onto passengers in the form of a frequent flyer levy - should be incorporated in the price of flying to cover the damaging emissions that each flight produces.

Further Information:

https://www.theccc.org.uk/wp-content/uploads/2020/12/Sector-summary-Aviation.pdf
https://commonslibrary.parliament.uk/research-briefings/cbp-8826 - Aviation, decarbonisation and climate change
https://researchbriefings.files.parliament.uk/documents/SN00523/SN00523.pdf - Taxing aviation fuel
https://committees.parliament.uk/writtenevidence/43033/html - from Velocys which produces sustainable fuels
https://www.gov.uk/government/publications/cop-26-declaration-international-aviation-climate-ambition-coalition
https://www.gov.uk/government/news/uk-enshrines-new-target-in-law-to-slash-emissions-by-78-by-2035
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