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Aviation and climate change: our position

Emissions from aviation continue to grow but need to fall. There are no technical fixes. Instead we need to curb frequent flying and stop airport expansion.

Summary

Most people like to travel, and air travel continues to grow. But greenhouse gases and other emissions from aviation are a growing cause of global warming. There are no easy technical fixes to this problem. Instead, to avoid dangerous climate change we need to act urgently to reduce emissions from flying.

An ambitious emissions reduction target is needed. This will require higher taxes – they should be fair and based on the polluter pays principle.

Facts about aviation

1. **Emissions of greenhouse gases from aviation are becoming increasingly important.** They were about 7.5% of the UK total in 2016, with most being from long-haul international flights. While relatively small, this proportion is increasing. Between 1990 and 2016, aviation emissions more than doubled, while overall emissions reduced by 43% over a similar period.
2. **Indirectly acting emissions.** Aviation also produces emissions such as NO_x that indirectly contribute to global warming. The science is uncertain, but it is estimated that this roughly doubles the harm caused by flying.
3. **UK aviation is increasing substantially.** It grew by around 4% per year between 2011 and 2016. The Department for Transport forecasts that in the absence of airport capacity constraints, aviation will grow from 267 million passengers per annum (mppa) in 2016 to 495 mppa in 2050, an increase of 85%.
4. **Most air travel is for leisure.** In 2016, 72% of passengers to/from UK airports were traveling for leisure. In most cases, more climate friendly holidays could be taken closer to home.
5. **The majority of plane trips are made by relatively few people.** UK government statistics from a survey in 2014 showed that just 15% of passengers made 70% of all plane trips.
6. **Unconstrained aviation growth is inconsistent with current and future UK emissions targets.** The UK currently has a 2050 target to reduce overall greenhouse gas emissions by at least 80%, compared to 1990 levels. The Committee on Climate Change (CCC) has indicated that meeting this target requires aviation growth to be no more than 60% above 2005 levels. Following the 2015 Paris Agreement, it now says a more ambitious overall UK target is needed: net zero emissions by 2050. Friends of the Earth welcomes this, but believes that net zero by 2045 at the very latest is possible and necessary. The committee identifies several possible aviation measures to help reach net zero, including

further limits on growth.

7. **Technology developments are not able to keep up with the growth of passenger numbers.** Planes are gradually becoming more efficient and will continue to do so, but not at the pace necessary to allow for unconstrained growth in flights and passenger numbers. This means that aviation needs to be constrained.

The problem

Aviation is responsible for an increasing proportion of greenhouse gas and other emissions. There are no easy solutions. The industry is trying to stave off effective measures to constrain emissions by promoting alternative approaches. These alternatives don't stand up to scrutiny.

Biofuels

The aviation industry is banking on biofuels as a future fuel. But this would require industrial-scale cultivation of biomass – things like maize, palm oil or woody crops. It would compete for land with food production and nature protection, as well as risk displacement of local communities. Clearance of forests to make way for plantations can itself lead to massive greenhouse gas emissions.

Use of waste and newer biofuel production methods might help, but there's currently no sustainable way to produce aviation biofuel at scale.

In addition, biofuels do not eliminate all climate warming emissions. For example, reductions in emissions of indirectly acting NO_X are small or zero. The CCC envisages a limited role for biofuels as aviation fuel (up to 10% in 2050).

Carbon offsetting

The International Civil Aviation Organization has adopted a carbon offsetting scheme (CORSIA) that will require airlines to buy carbon offsets to compensate for their growth in CO_2 emissions.

But CORSIA is a very poor scheme. It has a weak overall target that allows gross aviation emissions to grow rather than decrease, as is necessary for the world as a whole. It doesn't cover domestic aviation, ignores emissions other than CO_2, and its

rules fail to ensure it has an effective offset mechanism.

Many CORSIA offsets are likely to be based on the United Nations' Clean Development Mechanism (CDM). Evidence shows that such offsetting often doesn't work in practice. In 2016, a report for the European Commission found that only 2% of projects under the CDM had a high likelihood of being effective. In any case, the CCC net zero advice rules out international offsets.

Innovation

Several innovative solutions are being investigated, including electric and hybrid aircraft, more efficient engines, and use of renewable electricity to produce fuel. These may have a role to play, but none is currently ready on the scale needed, and most will not be readily available for decades.

Non-climate change impacts

Noise and air pollution are also serious problems caused by aviation, as is the impact on nature from airport expansion, although these are not the focus of this short paper.

How we can reduce emissions from aviation

Emissions from aviation must not be allowed to grow. Instead they need to decrease, starting now. The UK government needs to adopt a range of measures, including a tougher emissions target:

Encourage alternatives to air travel

We need to develop alternatives to air travel. For example, long distance train travel (which has much lower emissions per passenger mile), and improved wifi and video-conferencing facilities.

Support development of new technology, but don't rely on it until it's ready

New technologies may bring new solutions in future. But we can rely only on technology that's known to be workable at large scale and that will be available when we need it.

Encourage institutional responsibility

Businesses and other institutions should be encouraged to limit their use of aviation and to consider the environmental impacts before choosing to fly. A requirement for organisations to report on their air travel should be considered. Individuals should also be encouraged to use alternatives to flying.

Constrain aviation

We need to reduce emissions from air travel. With current aviation technology, that can only mean fewer flights. This will require measures such as a frequent flier levy, removal of tax breaks on aviation fuel, and limiting numbers of flights at airports. Taxes should be fair and based on the polluter pays principle, for example with higher payments for longer distances.

Reject airport capacity increases

A number of airports across the UK are seeking to expand. But we need fewer flights and less emissions, not more. We must stop plans to expand airport capacity, and the decision to grant Heathrow permission to build an additional runway must be reversed.

Ensure fairness

A frequent flyer levy would be a step in the right direction. Flying shouldn’t become a luxury reserved for the wealthy. Alternative approaches, such as rationing of flying, may be worthy of exploration.

Reject false solutions and promote a much better international aviation agreement

The UK government should formally reject CORSIA and offsetting. It should also more actively promote an international aviation agreement that reduces aviation, rules out unsustainable use of biofuels, covers all climate warming emissions, and is consistent with the 1.5°C limit. But it shouldn’t wait for this agreement – it should show international leadership and adopt its own measures.

Set a tougher UK emissions reduction target for aviation

Aviation needs to play its part in ensuring the UK delivers on the Paris Climate Change Agreement to limit global warming to 1.5°C. Friends of the Earth is calling for an aviation emissions target that is more stringent than the 22 $MtCO_2e$ in the CCC's ambitious 'speculative' demand constraint option. This is because this CCC target ignores the indirectly acting emissions mentioned above.

While Friends of the Earth's target is an exacting target it is not punitive. For illustration, taking into account the direct and indirect climate impacts from aviation, and sharing out aviation fairly, it would still allow for every person in the UK to take just over two return economy class trips to Rome every three years, or one economy-class return flight to Australia every 17 years.