

Although nowadays the [aviation] industry pays lip-service to the notion of sustainability, its demands are essentially unchanged. It wants more of everything - airports, runways, terminals.

Chris Mullin, British MP

FUELLING CLIMATE CHANGE

Aviation is contributing significantly to climate change; there are a number of reasons for this:

- 1) It allows us to cover a similar distance in a day equal to what most of us drive in a year.
- 2) The damage aviation does is not limited to the CO₂ it emits. It also produces nitrogen oxide and other harmful gases and particles which are particularly bad when released at altitude.
- 3) Aviation emissions have been growing faster than any other source of greenhouse gases. Unless we tackle aviation it has the potential to undermine our other attempts to address climate change.

‘Be examples in all countries, places, islands, nations, wherever you come, that your life may preach among all sorts of people’
George Fox 1656



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TRAIN OR PLANE? ETHICAL CHOICES



An introduction for Quakers who are concerned about the environmental impact of aviation

TRAIN OR PLANE?

Aviation currently accounts for 2% of global CO₂ emissions. Although this may not seem like much, compared to its economic size it pollutes disproportionately and the industry is growing rapidly. If you include other greenhouse gases (GHGs) emitted through aviation the picture becomes much worse, with aviation accounting for anywhere between 2-12% of global GHGs.

The question of how much or how often we should fly detracts from the bigger question of how much we should be travelling at all. It is clear that both factors need to be considered.

Understanding these issues can often be a minefield; here we attempt to provide a simple overview to give you an idea of the impact your travel habits may have on climate change.

HOW MUCH CO₂ DOES A FLIGHT EMIT?

The figures below are presented in CO₂ kilograms per passenger kilometre (pkm).

DEFRA (UK) estimates 158g, 130g and 106g pkm for short, medium and long haul flights respectively.

This, however, is based on a series of fragile assumptions. There are several variables that make it hard to accurately calculate CO₂ emissions from aviation. What is agreed upon by most commentators though, is that flying is considerably worse for the environment

and climate change than most other forms of transport.

COUNTING CO₂ EMISSIONS

The following factors all need to be considered when counting CO₂ emissions from aviation:

- Aircraft model
- Number of passengers
- Seat class
- Fuel used for cargo or freight
- Fuel used as a result of detours and delays
- Other GHG emissions (eg. nitrous oxide, water vapour)

Selective use of variables can result in vastly different estimates. For example, a simple return flight from London to Paris could produce between 81kg of CO₂ per passenger and 613kg of CO₂ equivalents per passenger depending on which estimate you rely on¹

‘On a return flight from London to New York, every passenger produces...the very quantity [of emissions] we will be entitled to emit in a year once a 90% cut in emissions has been made’.
George Monbiot¹

¹On-line carbon calculator *TRX travel analytic*

Calculating emissions from trains is also tricky especially as their emissions have not been studied and documented as extensively as planes.

CO₂ EMISSIONS FROM TRAINS

The main variable when working out emissions for trains is whether they run on electricity or diesel. Electric trains are normally a lot more efficient but it depends upon the mix of electricity that feeds them.

For example, France runs very low-emission trains but they are heavily dependent upon nuclear power. The UK on the other hand has a broader energy mix but is a lot more reliant on polluting fossil fuels. The spectrum varies from about 6g of CO₂ pkm (according to SNCF for an electric train) to about 100g of CO₂ pkm (for a diesel train in the UK).

FOR MORE INFORMATION:

There is a wide range of information available publicly. We have tried to consolidate much of this into an extended paper which is available at www.quaker.org/qcea. Alternatively, you can contact Steve Hynd at shynd@qcea.org (+32 2 234 3060) with any questions, queries or comments.

¹ Monbiot, George (2007) *Heat, how we can stop the planet from burning*, (London, Penguin Books), p. 173

All information and sources can be found in the original paper which is available on the QCEA website