

## 10 QUESTIONS ABOUT AVIATION AND CLIMATE CHANGE

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### 1) How much impact does aviation have on climate change, is it the most polluting form of travel?

According to the United Nations' IPCC report, aviation accounts for around 2% of all human-produced carbon dioxide emissions.

This compares to 18% for road transport and 35% for electricity generation. A recent study has shown that shipping produces twice as much CO<sub>2</sub> as aviation.

So no, it is not the most polluting form of travel, far from it. In fact, the latest generation of aircraft - the Boeing 787 and Airbus 380 - have fewer per-passenger emissions than a normal car.

### 2) Does it have more of an impact because of the altitude at which emissions are released?

While carbon dioxide has the same impact wherever it is released and at whatever altitude, there are other emissions such as small amounts of nitrous oxide which do have different affects at altitude.

There is no agreement as to how much this is, but the IPCC uses a 'radiative forcing' multiplier of 2.7 times the CO<sub>2</sub> effect. A more recent study has put this at 1.9 times. It should be remembered that every emitter - cars, trains, power stations - also comes with a radiative forcing effect - usually around 1.5 times.

The IPCC report has estimated that aviation's contribution is 3% of all greenhouse gases released by humans, this figure includes the radiative forcing factor.

### 3) Is it better to go short distances by train if that is possible?

Rail travel does produce fewer emissions than flight over short distances and there are a number of city pairs in Europe in particular where rail is a viable alternative. Of course, many routes are incredibly long distances and can only be covered by air travel. One thing that must be remembered is that rail travel is not emissions-free either - almost no form of mechanical transport is - and the newest generation of aircraft have energy efficiency levels very close to that of high-speed rail.

### 4) Is aviation the fastest growing source of greenhouse gases?

Aviation is growing on average at 4 to 5% per year, while making technological improvements to engine efficiency of around 1 - 2% per year. To say that aviation is the fastest growing cause is very misleading, as it assumes aviation continues to grow, while all other industries reduce their carbon footprint. It also ignores the fact that aviation is at such a low level to begin with, at 2% of the total world CO<sub>2</sub> emissions. *The Stern Report* concluded that electricity generation is, in fact, the fastest growing source of CO<sub>2</sub> emissions.



### **5) Is offsetting my flight actually effective?**

Offsetting works by funding schemes to reduce carbon emissions in other areas. For example, if you flew from London to New York, your share of the aircraft's carbon emissions would be around 0.77 tonnes of CO<sub>2</sub>.

An offsetting company will invest in a scheme that will save the same amount of carbon – a wind farm for example. This zeros-out the carbon that you have created by flying.

Another offsetting company, [www.coolearth.com](http://www.coolearth.com), will purchase rainforest to ensure that it does not get destroyed - did you know for example, that one day's deforestation in South America produces as much CO<sub>2</sub> as eight million people flying between London and New York?

### **6) When I use a carbon counter, I see that one flight from Europe to Australia released more carbon than my whole household did over a year – is this accurate?**

It may be, but you must remember that it is a very long way to travel! If you were to go by ship or (if possible) car, you would have emitted the same amount of carbon if not more. It must be remembered that, overall, aviation is actually a very small contributor to global CO<sub>2</sub> levels.

### **7) Why doesn't aviation have to pay fuel tax?**

Aviation doesn't have to pay tax on fuel used in international flights due to a part of the Chicago Convention which was signed in 1947. Many States will tax fuel for domestic flights. But to suggest that the industry gets a free ride is incorrect, as aviation is often subject to many taxes and charges that are not placed on other industries such as passenger charges and air duties.

Aviation also generally pays for all of its infrastructure, while rail and roads are heavily subsidised by the taxpayer.

### **8) What is the aviation industry doing to reduce its impact?**

A great number of things are being done across the industry by aircraft and engine manufacturers, airlines, airports and air traffic management organisations. For example, a programme in Europe that is supported by all major industry players, ACARE, has a target of reducing emissions by 50% by 2020 from 2000 levels through a series of technological and operational advances.

More information and case studies on the many emissions-reduction schemes underway is available through the website [www.enviro.aero](http://www.enviro.aero).

Airports have a range of initiatives across the world to reduce their emissions footprint, such as:

- Investing in low emissions vehicles and energy saving equipment for airports;
- Recycling building materials, water, waste;
- Charging more for inefficient and polluting aircraft to create financial incentives;
- Participating in emissions trading in Europe;
- Providing emissions reducing services for aircraft at the gate.

### **9) What about the smoke that you see coming out of the engines as aircraft fly?**

There is very little 'smoke' produced by aircraft engines anymore – over the last 40 years, the industry has all but eliminated hydrocarbon emissions, reduced by 70% CO<sub>2</sub> emissions and significantly reduced NOx emissions from aircraft (while also reducing noise significantly).

The white lines you see in the sky under certain climatic conditions are called contrails (or condensation trails) and are, in actual fact, water vapour. These can spread to sometimes create clouds.

Not much is known about the impact that these clouds have on the climate, but some scientists suggest that they may in fact cool the atmosphere, reversing slightly the global warming effect of CO<sub>2</sub> and other emissions, while other scientists suggest they may add to a warming. The industry is engaged in a number of studies into contrails at the moment.

### **10) What alternative fuels are being considered to power aircraft?**

There are a number of research projects underway to look at alternative fuels for powering aircraft. Unfortunately, because of the extreme conditions that aircraft operate at (including very low temperatures), it is not as simple as fuelling motor vehicles. However, a lot of progress is being made in this area, with interesting work being done on biofuels... including algae!

