

Aviation's contribution to cutting climate change likely to be small

June 22 2021



Credit: Unsplash/CC0 Public Domain

Although the emissions targets for aviation are in line with the overall goals of the Paris Agreement, there is a high likelihood that the climate impact of aviation will not meet these goals, according to a new study.

Aviation is an important contributor to the [global economy](#), but contributes to [climate change](#) by creating carbon dioxide (CO₂) as well as non-CO₂ effects such as forming nitrogen oxides, ozone and contrailcirrus clouds, which all contribute to global warming.

Researchers believe that, as long as the industry stages a recovery, the restrictions placed on [global air travel](#) in response to COVID-19 lockdown will only have a temporary effect on the overall [climate](#) impact of aviation.

Publishing their findings today in *Nature Communications*, an international research team including experts from the University of Birmingham believes that non-CO₂ effects will continue to make a major contribution to aviation's climate impact over the coming years.

However, these effects are not included in the International Civil Aviation Organisation's (ICAO) goal of climate neutral growth and only partly addressed in Flightpath 2050—the European Commission's vision for aviation.

Although Flightpath 2050 emissions goals are likely to stabilize aviation's climate impact and ICAO's offsetting scheme CORSIA will surpass the climate target set to support the Paris Agreement's 1.5 °C goal between 2025 and 2064, the researchers warn that an increasing aviation-induced global warming effect is likely despite the implementation of a range of mitigation options within the sector.

Study co-author Dr. Simon Blakey, Senior Lecturer in Mechanical Engineering, at the University of Birmingham, commented:
"Technological improvements to engines and airframes and operations won't be enough to sufficiently reduce the impact of aviation on climate change. We must explore all mitigation options in parallel—including the increased use of sustainable fuels and market based measures in

order to limit aviation's impact on the environment.

"Accounting for sustainable fuels must include the impact of non-CO₂ emissions in use as well as the CO₂ emissions in fuel production. If we base all our calculations on CO₂ alone, we miss the large improvements in non-CO₂ emissions that these fuels can offer, particularly in reducing particulate matter emissions which contribute to an increased warming effect at cruise conditions."

There is currently significant interest in policies, regulations and research aiming to reduce aviation's climate impact. The researchers modeled the effect of these measures on [global warming](#), analyzing potential technical improvements and challenging assumptions of sector targets with a number of scenarios up to 2100.

Their assessment also covered several COVID-19 recovery scenarios, including changes in travel behavior, as well as including feasible technological advancements and the availability of sustainable aviation fuels.

In order to better understand the possible implications of the pandemic on the climate impact of [aviation](#), the researchers assessed three different pathways for the international recovery from the lock-down of nation states and the associated dramatic reduction in air travel.

They took into account a fast recovery of three years, a slow recovery of 15 years and a change in habits due to experiences during the lock-down, for example, a shift towards web conferences instead of face-to-face meetings.

More information: Evaluating the climate impact of aviation emission scenarios towards the Paris agreement including COVID-19 effects, *Nature Communications* (2021).

Provided by University of Birmingham

Citation: Aviation's contribution to cutting climate change likely to be small (2021, June 22)
retrieved 20 June 2024 from <https://phys.org/news/2021-06-aviation-contribution-climate-small.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.