

The non-CO2 impacts of aviation must be tackled

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Summary

Non-CO2 effects of aviation have been acknowledged by scientists but ignored by policymakers. It is estimated that gases other than CO2 have at least as large a climate impact as CO2. The European Commission has so far failed to address aviation's non-CO2 effects despite undertaking to do so in 2008. This risks undermining the EU's climate policy. T&E recommends the Commission now acts on its 2008 promise and proposes a charge on NOx emissions and earmarks funds for research into other non-CO2 effects such as contrail and cirrus formation and their avoidance.

1. Non-CO2 effects of aviation ignored

This [report](#), by consultancy CE Delft, reviews the latest research on aviation's non-CO2 climate impacts.

Measures proposed or in place to address aviation's climate impact, such as EU Emissions Trading System (EU ETS), the CO2 standard for new aircraft or the proposed global measure (CORSIA), only address CO2 emissions from aviation. However aviation's non-CO2 climate effects including NOx emissions at altitude, contrails, cirrus cloud formation, soot and water vapour etc. can equal or exceed the climate impact of aviation CO2.

The European Commission proposed in February 2017, for a third time, to maintain the aviation ETS covering intra-EU flights only and said it would review the situation once it was ready to propose legislation implementing CORSIA. Both the CORSIA and aviation ETS address the CO2 impacts of aviation which are estimated to account for about 2% of global CO2. However when aviation was incorporated into the ETS back in 2008, a debate also took place about aviation's non-CO2 impacts and how they should be mitigated. During this debate, MEPs proposed that non CO2 impacts should be accounted for by applying a multiplier to carriers' obligations for purchasing CO2 emission allowances. This proposal was not agreed to by member states. Instead the final Directive (2008/101/EC) provided that CO2 emissions alone would be regulated in the ETS while *"emissions of nitrogen oxides will be addressed in other legislation to be proposed by the Commission in 2008. Research on the formation of contrails and cirrus clouds and effective mitigation measures, including operational and technical measures, should be promoted"*.

2. European Commission fails to follow through

The Commission conducted an extensive study the same year - "[Lower NOx at Higher Altitude](#)". The study recommended a NOx charge, possibly with distance factor, plus research into contrail and cloud formation and how it could be mitigated. The NOx Global Warming Potential (GWP) should be checked as well as the relationship between NOx emitted on landing and take-off (LTO) versus that at cruise altitude. However the study was left dormant. Nor did the Commission follow through with the promised research into non-CO2 mitigation and measures. There were a couple of related projects in the EU's research budget, for example, one Horizon 2020 project, and additionally some work under the Clean Sky Initiative.

Aviation climate scientists tell us there is a dearth of research funds into aviation non-CO2. Industry greatly influences funded research projects and won't have pushed for such work as there are no financial benefits to carriers of reducing non-CO2 effects.

The Commission's [Impact Assessment](#) accompanying its February 2017 ETS proposal restates the high importance of non CO2: "Aviation also has non-CO2 impacts, such as emissions of NOx and water vapour at high altitudes, which have been estimated to have several times the impact of aviation's CO2 emissions. This impact assessment does not further consider these impacts" (Annex 5).

3. Conclusions

So despite their considerable climate impact, the Commission has once again declined to take action on aviation's non-CO2 climate effects. The Commission should proceed now with the 2008 undertaking and propose a NOx charge, as suggested in the CE Delft report, particularly as the report notes that NOx warming primarily occurs in the northern hemisphere. Such a charge could apply to all flights operating to and from EU airports. ETS funds should in addition be earmarked to undertake the promised research into the other effects and potential mitigation measures i.e. through rerouting, with a view to the Commission making a second proposal on non-CO2 mitigation as soon as possible.

Further information

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