T&E response to the public consultation on non-CO_2 MRV

Two thirds of contrail warming would fly under the radar with the proposed reduced scope of the MRV

Long-haul flights have a disproportionate non-CO_2 climate impact. Excluding them from the non-CO_2 monitoring scheme would:

- **Ignore their outsized non-CO_2 climate effects, including 67% of contrail warming of EEA flights;**
- **Go against the EU ETS agreement by co-legislators;**
- **Weaken the ability of the MRV to inform effective policy options to mitigate non-CO_2 effects.**

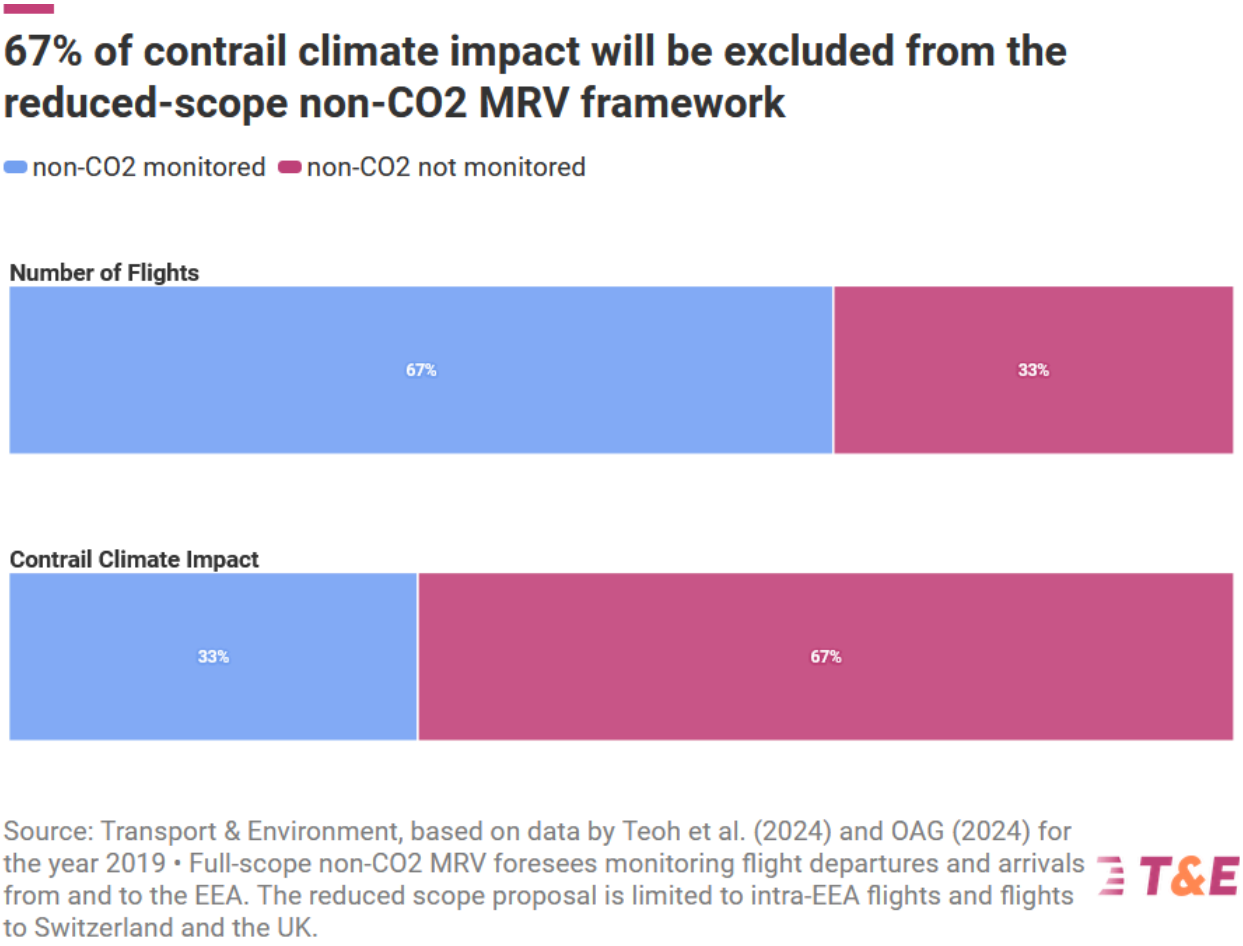
We call on the European Commission to revert to the non-CO_2 MRV framework with full geographical scope.

Aviation's non-CO_2 effects have a significant warming impact, at least as big as CO_2. Twenty-five years after the issue was recognised by IPCC scientists, this problem has finally been acknowledged by EU policymakers. The latest revision of the EU ETS, adopted in May 2023, included the creation of a Monitoring, Reporting and Verification (MRV) framework for non-CO_2 effects of aviation. This is a crucial first step to better understand the issue, and to inform the set of policies that will help deploy mitigation solutions. In practice, this means that airlines will have to report their non-CO_2 emissions at the end of each year to the EU, like they do for CO_2 emissions.

The EU ETS revision required the non-CO_2 MRV framework to cover all flights departing from and arriving into the European Economic Area (EEA). However, efforts from part of the aviation industry have weakened the scope to exclude flights departing from and arriving into the EEA at least until 2027.

Climate: excluding long-haul flights from the MRV would see 67% of contrail warming impact and most polluting routes fall under the radar

The main contributor to non-CO_2 effects is contrail warming. This is mainly caused by long-haul flights, which would be left out of the MRV by a reduced scope. Using peer reviewed data from Roger Teoh et al. (2024), we estimate that 67% of contrail warming from European flights in 2019 would have been left out of an MRV framework with a reduced scope[1]. This result is consistent with an analysis by Estuaire, a company specialised in aviation emissions calculations, which estimates the contrail warming from flights excluded by the reduced scope to be 66% in 2023[2].



Source: Transport & Environment, based on data by Teoh et al. (2024) and OAG (2024) for the year 2019 • Full-scope non-CO2 MRV foresees monitoring flight departures and arrivals from and to the EEA. The reduced scope proposal is limited to intra-EEA flights and flights to Switzerland and the UK.

[1]We compute the average Global Warming Potential (GWP) factors for aircraft and airport pairs using data provided by Roger Teoh et al. (2024) for the pre-pandemic year 2019. We apply these factors to 2019 OAG flight schedule data using an in-house tailpipe CO2 model. Finally, we convert the absolute contrail CO2 equivalents into relative numbers. This is because the relative numbers do not depend on the choice of time horizon for the metric and are less sensitive to interannual weather variability, the fleet composition and other modelling assumptions.

[2] Teoh et al. data for 2019 includes flights between the EEA and Russia as well as Ukraine, which did not take place in 2023. Excluding those flights from 2019 data implies only an increase of less than 3 percentage points in the contrail climate impact covered by a reduced-scope MRV. 64% of contrail warming impact would still escape such an MRV.

Our analysis also ranks all routes to, from and within the EEA in terms of contrail warming, and finds that only 5 of the 100 most polluting ones would be captured by a reduced-scope MRV scheme.

Nitrogen oxides (NO_x) are the second contributor to non-CO_2 climate effects. Their impact is larger when emitted at high altitudes. Consequently, long haul flights have a larger NOx impact than short haul ones, as they spend more time at cruise level. This would be missed as well by the reduced scope of the MRV.

Legality: the reduced scope in the draft implementing regulation opposes requirements in the parent act (EU ETS directive)

According to a legal analysis by Opportunity Green commissioned by T&E, the temporarily reduced geographical scope proposed in Article 2 of the draft Implementing Regulation does not align with the ETS Directive[3], where the scope in Article 14(5) is not restricted, and therefore is intended to cover all flights involving an aerodrome located in the territory of the EEA.

Implementing acts are meant merely to implement the provisions of the parent act. The European Court of Justice[4] has held that the Commission can only adopt measures that align with (and are not contrary to) the legislative act and cannot amend or supplement it. Limiting mandatory non-CO_2 reporting in the first two years to intra-EEA flights could be considered as exceeding the Commission's authority and contradicts the ETS Directive. Additionally, it disregards the co-legislators' clear intent to monitor aviation's non-CO_2 emissions for all flights, first introduced by the European Parliament, and subsequently agreed in trilogues.

Mitigation: the reduced scope weakens the ability of the MRV to inform effective non-CO_2 mitigation policies

According to the ETS Directive, the European Commission can propose legislation to mitigate non-CO_2 impacts of aviation after gathering data in 2025-2026 and conducting an impact assessment. However, without comprehensive data on

[3] Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a system for greenhouse gas emission allowance trading within the Union and amending Council Directive 96/61/EC, (2003) *Official Journal* L 275, p. 32

[4] For instance Judgment of 15 October 2014, European Parliament v European Commission, C-65-13

flights departing from and arriving in the EEA, any proposed future legislation on non-CO2 will be ignoring the major part of these effects and therefore risks not being fit for purpose.

Furthermore, by not addressing the majority of aviation's non-CO2 effects, the EU would fail to realize the health co-benefits due to improved air quality.

Finally, non-CO_2 effects are not covered by any other international scheme. Reducing the scope of the MRV in the EU ETS undermines the only existing scheme to start understanding and addressing them. This risks delaying non-CO_2 mitigation, which is the best opportunity for the aviation sector to effectively and significantly reduce its climate impact in the coming decade.

Key recommendations

1	Revert to the non-CO_2 MRV framework with full geographical scope, as agreed by co-legislators, after the closing of the public consultation on 29 July 2024.
2	Ensure a flexible MRV framework that can be improved with the integration of the latest available science.
3	Use the retrieved data to boost scientific understanding of non-CO_2 effects and mitigation pathways.

Annex: European routes with the highest contrail climate impact

Ranking	Airport Pair	Airport 1	Airport 2	Included in reduced MRV scope?
1	AMS-PVG	Amsterdam Airport Schiphol (Netherlands)	Shanghai Pudong International Airport (China)	No
2	LUX-HKG	Luxembourg-Findel International Airport (Luxembourg)	Hong Kong International Airport (Hong Kong)	No
3	FRA-ICN	Frankfurt am Main Airport (Germany)	Incheon International Airport (South Korea)	No
4	CDG-PVG	Charles de Gaulle International Airport (France)	Shanghai Pudong International Airport (China)	No
5	FRA-PVG	Frankfurt am Main Airport (Germany)	Shanghai Pudong International Airport (China)	No
6	CDG-JFK	Charles de Gaulle International Airport (France)	John F Kennedy International Airport (United States)	No
7	MXP-JFK	Malpensa International Airport (Italy)	John F Kennedy International Airport (United States)	No
8	CDG-HND	Charles de Gaulle International Airport (France)	Tokyo Haneda International Airport (Japan)	No
9	CDG-ICN	Charles de Gaulle International Airport (France)	Incheon International Airport (South Korea)	No
10	CDG-PEK	Charles de Gaulle International Airport (France)	Beijing Capital International Airport (China)	No
11	LUX-CGO	Luxembourg-Findel International Airport (Luxembourg)	Zhengzhou Xinzheng International Airport (China)	No
12	AMS-JFK	Amsterdam Airport Schiphol (Netherlands)	John F Kennedy International Airport (United States)	No
13	AMS-HKG	Amsterdam Airport Schiphol (Netherlands)	Hong Kong International Airport (Hong Kong)	No
14	MAD-JFK	Adolfo Suárez Madrid–Barajas Airport (Spain)	John F Kennedy International Airport (United States)	No
15	CDG-SVO	Charles de Gaulle International Airport (France)	Sheremetyevo International Airport (Russia)	No
16	MAD-MIA	Adolfo Suárez Madrid–Barajas Airport (Spain)	Miami International Airport (United States)	No
17	FCO-JFK	Leonardo da Vinci–Fiumicino Airport (Italy)	John F Kennedy International Airport (United States)	No
18	MAD-BOG	Adolfo Suárez Madrid–Barajas Airport (Spain)	El Dorado International Airport (Colombia)	No
19	CDG-ATL	Charles de Gaulle International Airport (France)	Hartsfield Jackson Atlanta International Airport (United States)	No
20	CDG-HKG	Charles de Gaulle International Airport (France)	Hong Kong International Airport (Hong Kong)	No
21	MXP-ICN	Malpensa International Airport (Italy)	Incheon International Airport (South Korea)	No
22	ORY-PTP	Paris-Orly Airport (France)	Pointe-à-Pitre Le Raizet (Guadeloupe)	Yes
75	HEL-MUC	Helsinki Vantaa Airport (Finland)	Munich Airport (Germany)	Yes

Source: Transport & Environment, based on data by Teoh et al. (2024) and OAG (2024) for the year 2019 • Routes (cargo+passenger) include return flights, except for flights between the EEA and the UK and Switzerland where outbound and inbound flights are listed separately.