



EU ETS vs CORSIA: Which better navigates the turbulence of the climate crisis?

Revealing and comparing the gaps in carbon pricing policy for the aviation sector

POLICY BRIEF November 2024



Introduction

Emissions covered by the European Union's Emissions Trading System (EU ETS) in 2023 increased by 10% in the EU aviation sector compared to 2022 levels, at a time when sectoral climate impacts should be decreasing dramatically.

From 2026, flights departing from and landing in Europe will be required to pay for all their CO₂ emissions under the EU's carbon market, the EU ETS. Over the past decade that price was paid for barely half of the CO₂ emissions from flights within Europe. Except when flying to the UK and Switzerland, flights departing in the European Economic Area (EEA) to outside its borders are fully exempted from paying this EU carbon price.

Such international flights are covered by the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). This mechanism does not cover all CO₂ emissions, but only those that exceed a high baseline, and utilises often unreliable carbon credits to offset them.

In addition to carbon dioxide, aeroplanes also harm the climate through other non-CO₂ emissions including water vapour, nitrogen oxides (NO_x), sulphur dioxide (SO₂), and soot particles. These emissions lead to atmospheric processes such as ozone formation and contrails.

It has been established that non-CO₂ aviation effects can represent as much as 75% of aviation's climate impact. Yet, the carbon price paid by airlines under the EU ETS today does not reflect this environmental footprint since these significant non-CO₂ aviation emissions are still outside the mechanism's scope.

Approximately only 20% of CO2 emissions from flights to and/or from the EU were priced under the EU ETS in the last decade, representing at best only 7% of the climate impact from the EU aviation sector. This resembles the tip of the iceberg, for a sector responsible for 4% of the EU's total CO2 emissions.

As a matter of urgency, policymakers must be more stringent in how they regulate the aviation sector. The industry must finally take steps to mitigate its disastrous ecological consequences and better align itself with its own [Long-Term Aspirational Goal \(LTAG\)](#) of carbon neutrality by 2050.

While initial actions are underway at the European level to finally monitor non-CO2 effects, policies that properly address international emissions - responsible for [61% of the EU's aviation emissions](#) - must also be initiated, as the European Parliament, NGOs and other stakeholders have long requested.

To advise this process, Carbon Market Watch commissioned environmental consultants [Ricardo](#) to produce a [study](#) comparing the functioning of the EU ETS and CORSIA, and their respective climate ambitions. In this policy briefing, we present the study's main findings and formulate policy recommendations.





Emission Trading System (ETS)
aka 'Cap-and-trade system'



CORSIA
emission offsetting scheme



ROUTES



2021-26: only a voluntary measure between States
2027-35: theoretically between all States, except LDC, SIDS, landlocked developing and small aviation countries

MRV Scope

Economic Scope

OPERATORS

> 10ktCO₂ /year and with > 243 flights in a 4-month period.

Non-commercial operators > 1ktCO₂ /year on in-scope flights

> 10ktCO₂ /year

> 500ktCO₂/year (ca. 88% emissions in 2022)

MRV Scope

Economic Scope

EMISSIONS TYPE

Only CO₂. Non-CO₂ impacts intra-EEA covered from 2025. Extra-EEA from 2027.

Only CO₂. Potential legislation expected by 2028 for measures on non-CO₂ impacts

Only CO₂.
No plan for non-CO₂ impacts

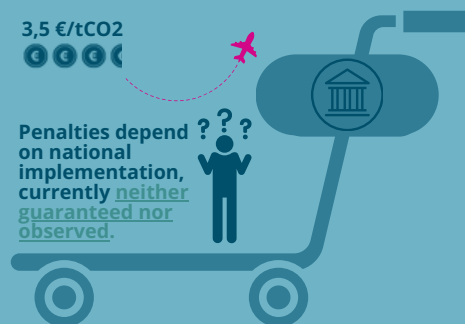
MRV Scope

Economic Scope

Emissions subject to carbon price



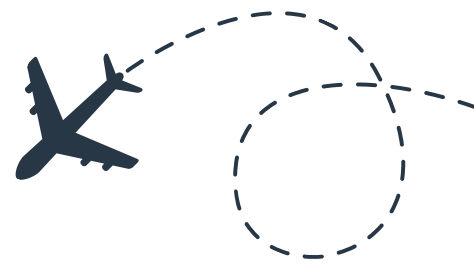
All revenues to climate spending



Revenues to project developers and carbon credit businesses, and possibly local communities

The EU ETS and CORSIA are fundamentally different schemes, with noticeable distinctions in terms of functionality, ambition, scope, and cost.
MRV: monitoring, reporting & verification

Main findings of the study



EU Emissions Trading System

The EU ETS covers all flights departing from and arriving to an airport based in the European Economic Area (EEA) comprised of EU member states plus Norway, Iceland, and Liechtenstein, as well as flights departing from the EEA to the UK and Switzerland. Exceptions are granted to most flights involving an outermost region of a member state.

As a cap-and-trade system, the EU ETS obliges airlines to purchase allowances to gain permission to emit their reported CO₂. Credits purchased can then be traded on a needs-to-comply basis.

The overall amount of allowances on the market is capped and decreases over time, adding an incentive for airlines to decarbonise due to the pressure on allowance supply, which typically drives up the carbon price.

The study shows that the cost pressure increase over time can also be extended to travellers, who may as a result be encouraged to fly less. For a flight from Brussels to Athens, there was an add-on emissions cost of €5 per passenger in 2022, which is projected to increase to €21 in 2030.

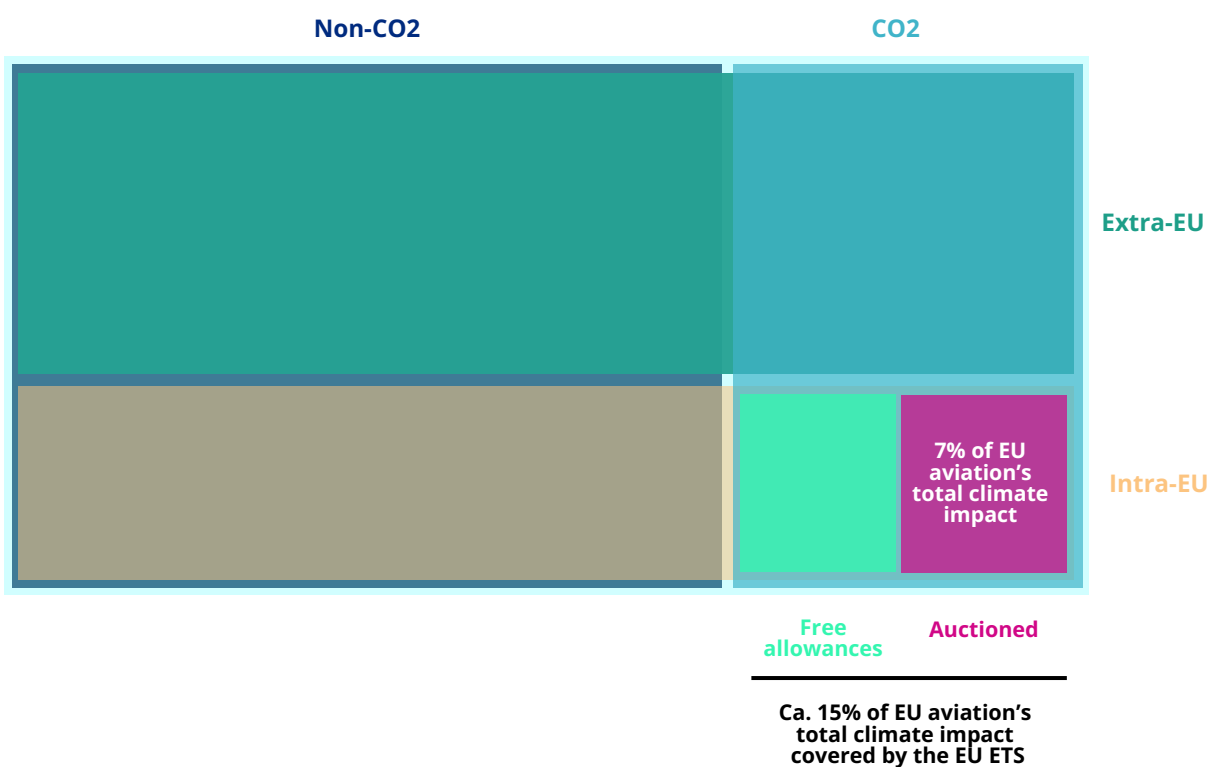
Until now, the carbon pricing of travel has been significantly distorted and its impact limited due to the large allocation of free allowances. Indeed, as has been the case for other sectors covered by the EU ETS such as heavy industry, aviation has greatly benefited from free allowances until now - meaning that operators (airlines) are not required to purchase those allowances and receive them for free instead, based on the claim this would enable preventing a [supposed 'carbon leakage' risk](#). The study finds free allowances represented around half of the total amount of allowances surrendered by airlines over the period 2013-2023.

These 'freebies' are currently being phased out and will no longer exist from 2026. With a higher carbon price now (60-80€/tCO₂ in 2022-2024) than a few years ago (around 20€/tCO₂ or less, before 2021), the scheme could encourage airlines to take further actions faster.

However, the EU ETS currently does not cover non-CO2 aviation effects - although Monitoring, Reporting and Verification (MRV) of these emissions will start in 2025 but initially only for intra-EEA flights. Small aircraft operators, such as for small private jets, are also excluded.

The EU ETS must be considered as a scheme with great potential to deliver substantial emission reductions in the aviation sector, but crucially it is incomplete. It should be recalled that non-CO2 aviation effects could represent as much as three quarters of aviation's climate impact, and extra-EEA flights amount for 61% of the EU's total CO2 emissions from aviation. The EU ETS does not price any of those.

As it stands, the EU ETS could cover less than 20% of the climate impact of total EU aviation and has only priced about half of that total from 2013 to 2023. Even after the planned phase out of free allowances in 2026, this is far from an adequate contribution from a sector causing a significant amount of EU emissions and benefiting only the privileged few that do fly regularly and account for far more than their fair share.



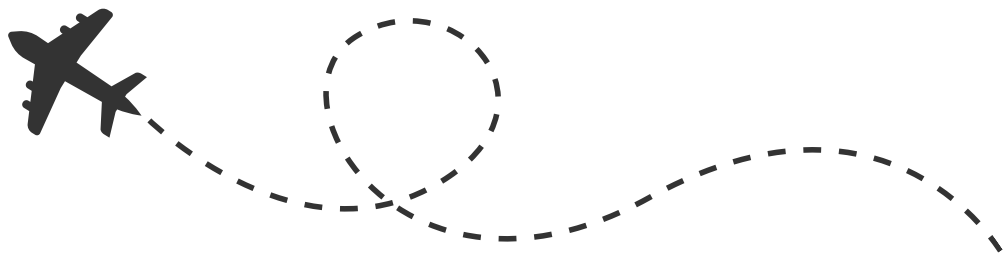
Methodological note

The 1999 IPCC Special Report and the 2020 EASA report and literature including [Lee et al.](#) and [Teoh et al.](#) confirm that the non-CO2 climate impacts of aviation are at least as significant as the CO2 emissions, and could be as much as three times larger, depending on the climate metric (e.g., expressed as Global Warming Potential - GWP) and time horizon (e.g., 20, 50 or 100 years).

In this figure and throughout this briefing, we take an intermediary approach by assuming non-CO2 impacts are two times higher than the impacts of the CO2 emissions. Therefore, the share of non-CO2 aviation effects is considered to represent two-thirds of aviation's total climate effects.

By factoring in that the EU ETS prices neither non-CO2 effects (two-thirds of the total) nor climate impacts from extra-EEA flights (61% of the total), we calculate that the EU ETS covers 14% of the total aviation effects on the climate (considering both intra- and extra-EEA routes and CO2 and non-CO2 climate impacts). Of EU-ETS-covered emissions (14% of the total), half (7% of the total) were compensated for by free allowances on average in 2013-2023, excluding the 2020 and 2021 COVID crisis years.

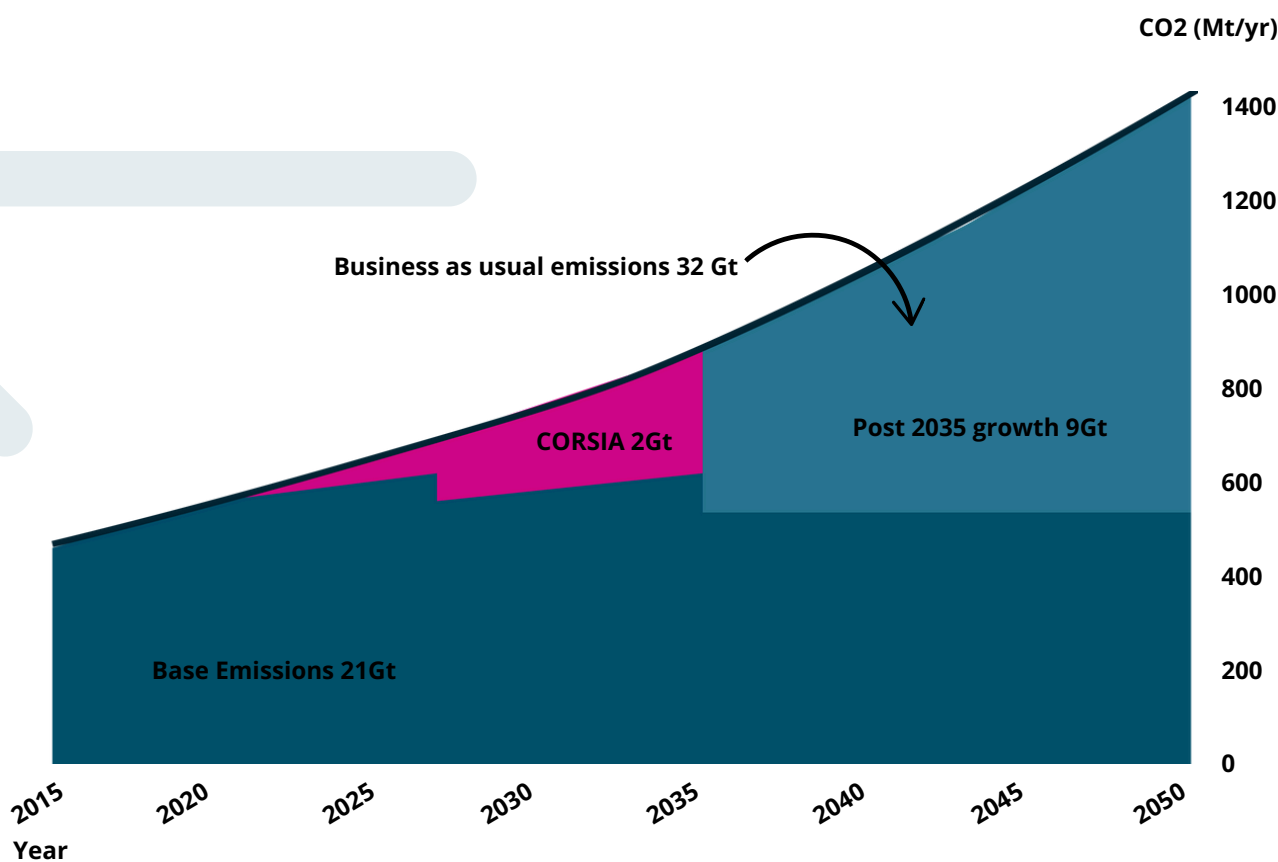
This means that approximately 7% of the EU aviation's climate impact has been priced by the EU's carbon market until now. If we now only consider the share of CO2 emissions that the EU ETS prices, we only consider the pricing exemptions for the climate impacts from extra-EEA flights (61% of the total) and from half of the remaining intra-EEA flights (39%, therefore ca. 20%) due to free allowances. This leaves us with an average of ca. 20% of CO2 emissions from EU aviation that were priced in the last decade.



CORSIA

Unlike the EU ETS, CORSIA is not a cap & trade scheme. Its sole aim is to ensure the industry's '[carbon neutral growth](#)' in emissions. CORSIA only addresses the sector's growth in emissions (additional emissions) compared to a given year, and applies a baseline that does not take into account emissions below the set threshold. This baseline - only considering emissions from covered routes and operators - would be set at 85% of the total 2019 CO₂ emissions, i.e. ca. [425 Mt CO₂](#), as of 2027 if all covered countries join phase 2.

In the scheme's current form, these emissions would never be mitigated. According to the study, "Currently, there is no discussion on making further changes to the CORSIA baseline in the near future."



Source: ICSA, [ICSA Views on a Long-Term Climate Goal for International Aviation](#), 2018

Furthermore, the scheme started its pilot phase in 2021 until 2023, during which there was no offsetting of emissions). In 2024 it commenced its first phase, and as was the case for the pilot, it is voluntary and time-limited, lasting until 2027.

The second phase will be compulsory for its covered countries running from 2027 until 2035, though nothing prevents a country from not applying it (cf. page 9). Furthermore, there is no plan beyond 2035.

In addition, it is expected that the baseline will be exceeded only from 2026, meaning that airlines would not have to start offsetting excess emissions until then.

For the sector to reach what it defines as 'carbon neutral growth', airlines can use CORSIA Eligible Emissions Units, which can consist of either CORSIA Eligible Credits or CORSIA Eligible Fuels.

The 'eligible credits', purchased by airlines to 'offset' their emissions, are known to often be of dubious quality at best, or claim outright false climate benefits at worst based on the problematic projects they represent.

Non-permanence of emissions, non-additionality, and human rights abuses on and around project sites characterise the most [significant flaws](#) of such projects and their related offsetting credits. As the study mentions, "Offsetting schemes do not effectively incentivise in-sector climate mitigation efforts since the price of carbon credits tends to be substantially lower than in-sector abatement costs."

In 2022, CORSIA included 63% of reported routes for all operators and 88% of reported operators for all routes under its scope, although none of the emissions was charged since their total amount was below the baseline.

Certain countries producing the largest aviation emission totals (Brazil, China, India, Russia and Vietnam) remain absent from the scheme. China, India and Russia's participation in the compulsory phase 2 in 2027 is in doubt. Because the scheme is compulsory only in theory, a country can "file a difference", gaining them an opt-out. Considering the size of these countries, their refusal to participate would mean far fewer fly paths and, consequently, far fewer emissions covered by the scheme.

Regardless of whether or not the abovementioned countries decide to join or not, national implementation of CORSIA's rules (requiring monitoring of emissions, calculation of the amount of offsets required for a specific airline, and control) has been slow across the board.

Many countries, including the USA, still have to take the necessary steps to legislate the offsetting guidelines required by CORSIA. There are serious risks that the scheme is not going to be implemented in some countries, or implemented only partially. Although this risk applies to many international schemes, the International Civil Aviation Organisation and its member states do not appear to be taking implementation with the seriousness the issue warrants.

As is the case for the EU ETS, CORSIA does not cover non-CO2 aviation effects, but unlike the EU ETS, it does not have an MRV plan. Furthermore, it neither prices nor monitors emissions from small aircraft operators such as private jets.



Not only are CORSIA credits often of low quality and typically do not represent actual compensation for a given amount of CO2 emitted, but their price is also meagre.

For example, CORSIA credits only averaged around a few euros per tonne of CO2 in the last few years (3.20€/tCO2 in 2022), compared to the EU ETS, which was priced at €80 per tonne of CO2 in 2022. Although prices might rise slightly in the following years, e.g. to 10-20 €/tCO2, these levels are far short of a genuine incentive for an airline to decarbonise and/or passengers to fly less. Based on the indicative price, ticket add-on is expected to be only 40 cents per passenger in 2030 on a Brussels-New York route covered by CORSIA.

Illustrative flight	% Priced emissions in 2022 and 2030 (*)	Add-on price in 2022 and 2030 (€ per pax or tonne of cargo) (**)	Add-on price in 2022 and 2030 (€ per pax per km or tonne of cargo per km) (**)
Passenger flight Brussels – Athens under EU ETS (4,198km roundtrip)	2022: 45% 2030: 100%	2022: 5.1 €/pax 2030: 21.2 €/pax	2022: 0,0012 €/pax/km 2030: 0,0051 €/pax/km
Passenger flight Brussels – New York City under CORSIA (11,764 km)	2022: 0% 2030: 20%	2022: 0 €/pax 2030: 0.4 €/pax	2022: 0 €/pax 2030: 0.000034 €/pax
<i>Difference factors between EU ETS covered flight and CORSIA covered flight</i>		2022: x [∞] 2030: x53	2022: x [∞] 2030: x150

Source: Ricardo analysis and Carbon Market Watch

Note 1: CO₂ emissions per passenger or tonne for each origin/destination were extracted from the ICAO Emissions Calculator

Note 2: (*) Emissions to be offset or allowances to be purchased out of total MRV emissions

Note 3: (**) Assuming full cost pass-through to final users



Conclusion



CMW [has long refuted](#) the compatibility of CORSIA with the EU's climate goals and the Paris Agreement objectives.

After being tasked in 1996 to address international aviation emissions, [the ICAO took 20 years](#) to develop its scheme. The 10th anniversary of the agreement on CORSIA is in sight, yet the scheme doesn't aspire to carbon neutrality for the sector and doesn't even include any emission reduction target.

Considering the two lost decades it took ICAO to develop its ill-designed scheme and a further 10 years to implement it (CORSIA becomes "compulsory" only in 2027), who can tell how long it will take for the UN agency to confront the reality that its mechanism is entirely off track from climate science demands and Paris Agreement targets — quite something for a sector that is nimbly, yet unfairly, [escaping taxation](#), too.

While its cousin UN agency, the International Maritime Organisation (IMO), has followed a disappointingly similar trajectory until now, serious discussions are now underway to agree on international measures that would decarbonise the shipping sector by mid-century.

Despite not having its own CORSIA (fortunately, perhaps!), the maritime sector could find itself further along in incentivising a switch to green fuels and abating its climate impacts over the next two and a half decades.

In July 2026, the Commission will publish a report assessing CORSIA's environmental integrity, including its alignment with the Paris Agreement and the share of international aviation emissions it covers. If this assessment is negative, supplementary legislation could propose to cover all flights departing from the EEA as of 2027.

Already in 2020, the EU's executive shared its evaluation of the market-based measure, casting doubts exactly on those aspects - its alignment with the Paris Agreement and the proportion of international aviation emissions it addresses - as well as the lack of compliance enforcement and carbon credit integrity.

Our study expects the 2026 Commission report to arrive at the same conclusions and propose extending the EU ETS to extra-EEA flights.

Recommendations



Pricing all flights departing from the EEA (i.e. to destinations within and outside the EEA) under the EU ETS from 2027, while allowing airlines to deduct any costs incurred from CORSIA offsetting on those routes to avoid double charging.



Simultaneously, allowing airlines operating these routes to access the 20 million allowance pot to finance Sustainable Aviation Fuel uptake, focusing the aid on the most sustainable fuel types (e-fuels and hydrogen), and extending the scheme beyond 2030.



The EU should encourage third countries that are the primary destinations for its international flights - and therefore linked via routes accounting for most of the EU's aviation emissions - to commence regional monitoring, reporting and verification measures on non-CO2 as soon as possible.



Amending the EU Fuels Quality Directive as soon as possible to increase stringency and limit the emergence of non-CO2 aviation effects from NOx, sulphur or soot, on top of potential future economic measures.





CARBON MARKET WATCH

Author

Bastien Bonnet-Cantalloube, Expert on Decarbonisation of Aviation and Shipping

Kind review from T&E

Editor

Gavin Mair, Communications Specialist - Carbon Market Watch

Cover design and layout

Noemí Rodrigo Sabio, Communications Specialist - Carbon Market Watch

Photo credit

Tookapic, Pexels

CONTACT

Bastien Bonnet-Cantalloube

Expert on Decarbonisation of Aviation and Shipping

bastien.bonnet@carbonmarketwatch.org

PDF of the policy brief here:



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