

Expanding the EU's carbon market for aviation

Economic and environmental benefits

June 2022

Executive summary

A study commissioned by Carbon Market Watch and Transport & Environment (T&E), and conducted by TAKS analysed the emission reductions, costs and auctioning revenues generated by extending the scope of the Emission Trading System (ETS) for aviation. The three scenarios analysed are **1) the European Commission's (EC) proposal** as part of the Fit For 55 (FF55) package where the ETS only applies to intra-European flights, **2) semi scope**: ETS scope is expanded to include all departing flights from the EU and **3) full scope**: ETS scope is expanded to cover all incoming and departing flights. In scenarios 2 and 3, the UN's offsetting scheme (Corsia) costs for routes covered by the ETS are reimbursed to avoid double coverage. The study also assesses the impact of different baselines and levels of participation in Corsia on the overall results.

Main findings of the study

- ❖ Applying the EU ETS to departing flights would reduce emissions by over 50% more than the EC's initial proposal, and applying it to all flights leaving and arriving in the EU would reduce emissions even more (113%), making it the best option for the climate.
- ❖ Carbon costs related to the ETS are only a small fraction of an airline's operating costs even in the case of the full scope scenario with 5.5% for intra-EEA flights and 6.8% for extra-EEA flights.
- ❖ Full scope combined with an immediate phase-out of free allocation will raise the most revenues by more than three times the amount than the EC proposal (107€ billion over 15 years compared to 29€ billion).
- ❖ The future of Corsia is highly uncertain and could lead to 77% less emission savings compared to the EC's expectations, which is another reason for the EU not to rely on this ineffective offsetting scheme to regulate long-haul aviation emissions.

Policy recommendations

- ❖ Stop relying on Corsia and extend the EU ETS to cover at least all departing flights. Extending the scope will also address competitive distortions between low cost and legacy carriers.
- ❖ Accelerate the phase-out of free allowances to 2024 as there is no reason for it to continue any longer. The [Commission's own impact assessment](#) found no risk of carbon leakage and concluded that the excessive amount of free allowances undermined the price signal. Ending free allocation would also generate additional revenue for climate action.
- ❖ Invest the auctioning revenue in clean technologies such as direct air capture, synthetic aviation fuels, zero-emission aircraft but also modal shift and re-skilling of workers.

1. Context of the study & scenarios

In July 2021, the European Commission presented the Fit-for-55 (FF55) legislative package, which included proposals to reduce aviation's climate impact, such as the revision of the EU Emission Trading System (EU ETS) for aviation and the ReFuelEU regulation for a blending mandate of Sustainable Aviation Fuels (SAFs).

As part of the revision of the EU ETS for aviation, the European Commission (EC) proposed to retain the EU ETS for intra-EEA¹ flights (and flights to the UK and Switzerland). To flights between the EEA and ICAO Member States outside the EEA (other than the UK and Switzerland), Corsia would apply². This division is referred to as the 'clean cut' option.

Corsia was created in 2016 with a resolution of the ICAO Assembly, with the aim of stabilising net emissions of international aviation at 2020 levels, referred to as the so-called carbon neutral growth as of 2020. Corsia requires airlines to offset their emissions above the average emissions of 2019-2020 on all international routes between participating states³. Following pressure from airlines right at the start of the COVID pandemic, ICAO reduced the baseline to only 2019 levels for the pilot phase until 2023. After this period, the baseline should be set again at 2019-2020 levels, but there are ongoing discussions on this topic, with the 2019 baseline still considered as an option.

However, [many studies](#) have shown that Corsia is an ineffective tool for the climate including the Commission's own impact assessment. First, none of the offsetting programmes approved under Corsia meet all of the required criteria and there are risks of double counting emissions savings. Secondly, there is an oversupply of cheap offsets meaning it will not incentivise airlines to use cleaner

¹ EEA = European Economic Area = EU27 + Iceland, Liechtenstein, and Norway

² ICAO = International Civil Aviation Organization. Corsia = Carbon offsetting and Reduction Scheme for international aviation.

³ Least Developed Countries (LDCs), Small Island Developed States (SIDS) and Landlocked Developing Countries and states that have a share of international aviation activities in Revenue Tonne Km (RTK) below 0.5% of total RTKs, are excluded from the scheme.

technology or fuels. Thirdly, large aviation markets like China, Brazil, Russia or India have not yet signalled their participation in the scheme as of 2027. Lastly, there is a general lack of transparency and enforceability of Corsia rules, as it is up to contracting states to implement them, given ICAO has no enforcement power.

Given the effectiveness of Corsia on international routes and considering that over [80% of some EU airlines' emissions](#) are currently not priced effectively by the EU ETS with its restricted scope, this study conducted by TAKS N.V. commissioned by Carbon Market Watch and T&E tries to estimate the impact of changing the scope of the EU ETS to include flights departing from and coming to the EEA.

At a moment where legislators are discussing the FF55 files, it is essential to ensure the EU ETS is revised with the utmost ambition for the climate and achieve the highest emission reductions possible in all sectors, including aviation. In order to do so, this study has assessed the environmental and economic impacts of two alternative aviation policy scenarios to the EC proposal.

1. **Semi scope:** EU ETS covering all intra-EEA flights + all EEA outgoing flights. Corsia covers all flights other than intra-EEA, with monetary compensation for international credits purchased to cover outgoing flights from EEA Member States under the EU ETS scope;
2. **Full scope:** EU ETS covering all intra-EEA flights + all EEA outgoing and EEA incoming flights. Corsia covers all flights other than intra-EEA with monetary compensation for international credits purchased to cover outgoing and incoming flights from/to EEA Member States under the EU ETS scope.

The scenarios take into account the SAF mandate which reduces demand for allowances and international credits as SAFs are zero rated in the ETS and Corsia. To calculate the costs/revenue of/from the ETS and Corsia, projected future prices for allowances and international credits were used in this study. In the beginning of 2022, the price of allowances was €84. This is projected to increase to €100 in 2030 and €125 in 2035. Regarding Corsia, projected carbon prices from the higher price scenario from the Commission's impact assessment study were used. In this price scenario, Corsia international credit prices increase from €1 in 2020 to €22 in 2035.

2. Environmental and economic impacts of extending the scope of the EU ETS

2.1. The larger the scope, the larger the emissions reduction potential



Emissions reductions covered were estimated in two different ways, and the total emissions reduction potential is the summation of these two:

- Reduction within the aviation sector, through reduced passenger demand or improving efficiency;
- Reduction related to the purchase of EU Allowances (EUAs) or international credits, assuming that they reflect equal emission reductions in other economic sectors.

Figure 1 (below) shows the cumulative (2021-2035) reduction potential in emissions in the EC proposal and in the two different policy scenarios.

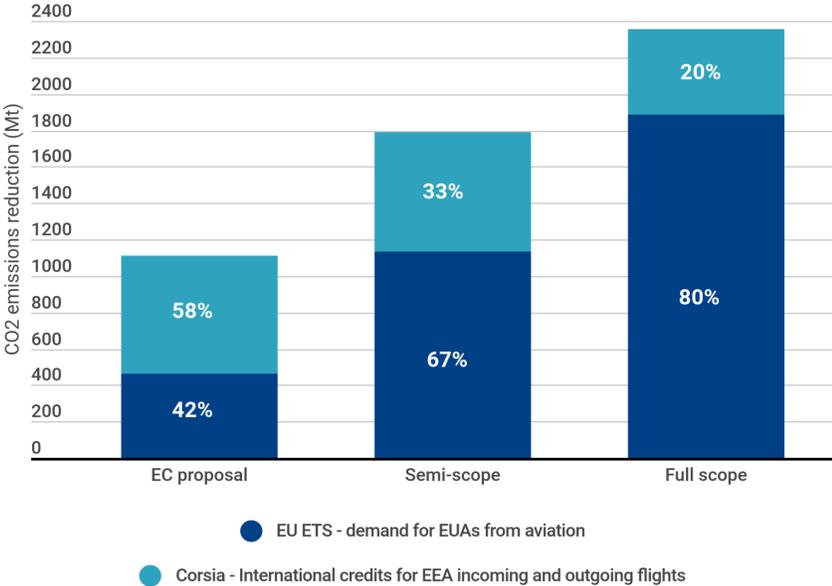


Figure 1. cumulative (2021-2035) reduction potential in emissions in the EC proposal, semi scope and full scope.

Thanks to the expansion of the scope to departing flights, the overall emissions reduction potential under the semi scope scenario amounts to 1,693 Mt, **which is 53% more than what would be achieved under the EC proposal.** Looking at the Full Scope option, the further expansion of the scope brings an additional reduction potential of emissions, with a total of 2.358 Mt, 113% higher compared to the EC proposal and 39% more than under the semi scope.

As explained in the report, the vast majority of the emission reductions potential (around 90%) is related to the purchasing of EUAs and international credits, assuming that they all bring about permanent, guaranteed emissions savings. The actual quality of the EUAs or international credits was not assessed by this study, while other research suggests emissions reduction between EUAs and international credits are of a very different nature. When increasing the scope, the share of reductions due to Corsia credits decreases as the number of flights covered by the ETS increases.

Given the poor quality of Corsia credits and the lack of effectiveness of the scheme, expanding the scope is beneficial for environmental integrity and also better implements the polluter pays principle. This principle is a cornerstone of EU climate policy and is enshrined in EU law.

2.2. Costs of the ETS are only a small fraction of airlines' total costs

The study analyses the costs linked to the extension of the scope of the EU ETS, highlighting that in both scenarios carbon costs are only a small fraction of an airline's operating costs.

The study shows that while carbon costs for intra-EEA flights would be 5.5% of an airline's operating costs under the current scope of the EU ETS, which is still only a small amount, costs for incoming and outgoing flights would represent only 0.3% of an airline's operating costs under the EC proposal. Considering all flights, it would be 1.9% of an airline's operating costs under the EC proposal. This is largely due to the very low prices of Corsia credits which will not drive airlines to decarbonisation on their most polluting routes (extra-EEA long-haul). The increase in operating costs remains limited when expanding the scope with 4% under the semi scope scenario. Even in the full scope scenario, the EU ETS cost would only represent less than 7% of an airline's operating costs.

As shown by an [earlier analysis](#) by T&E and Carbon Market Watch, the exclusion of extra-EEA flights has led to a differentiated treatment between airlines who mainly fly within Europe (typically low-cost carriers) and those who mainly do long-haul flights to and from outside Europe (typically legacy carriers). While long-haul flights only account for 6% of flights, they are responsible [for half of the emissions](#). By expanding the scope, this imbalance between low-cost and legacy carriers can be corrected and the biggest chunk of aviation's emissions can be effectively priced without large economic impact for airlines, as shown in the graph below. The airlines will either way not bear the costs associated with increasing scope as they can pass on the majority of the additional carbon cost to consumers. This will have a very limited impact on ticket prices (€7 max under full scope for extra-EEA flights) as confirmed by the [Commission's impact assessment](#).

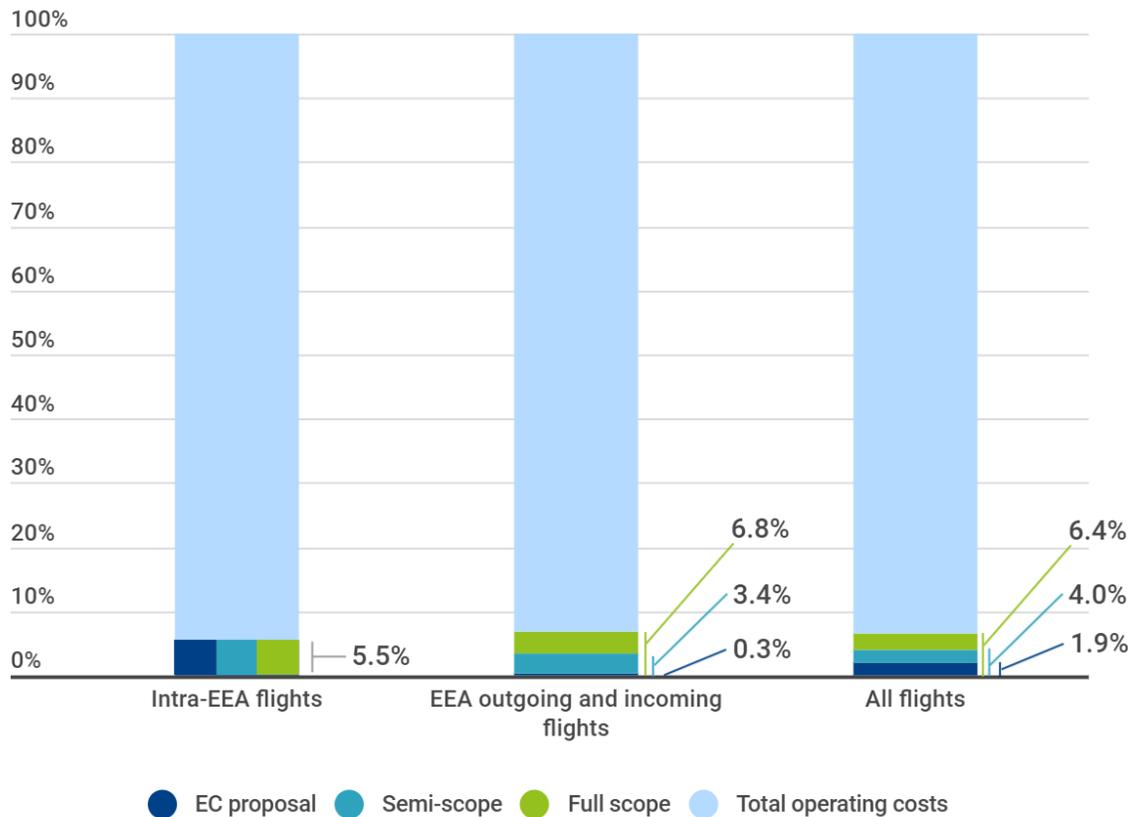


Figure 2. Carbon costs as share of airline’s operating costs in the for intra-EEA flights (left), extra-EEA flights(middle) and both intra- and extra-EEA flights (right).

2.3 The larger the scope, the more revenues available for climate action

Purchasing European Union Aviation Allowances (EUAs) implies a cost for polluters that are buying them, in this case, airlines, but also means generating auctioning revenues that can be used to invest in the decarbonisation of aviation (synthetic aviation fuels, hydrogen, electric aircraft, direct air capture, non-CO₂ effects mitigation etc.) and the re-skilling of workers. Under the EC proposal, revenues generated for purchased EUAs between 2021 and 2035 would amount to €26.1 billion. For semi scope and full scope, the auctioning revenues would increase to €60.8 billion and €95.4 billion respectively.

However, by applying the polluter pay principle, meaning ending the allocation of free allowances to airlines, there could be a further increase in the auctioning revenues, with airlines that have to purchase an allowance for each tonne of CO₂ emitted. In this case, the report shows that revenues

raised under the EC proposal would rise to €29.4 billion; those raised in the semi scope and full scope scenarios would increase to €68.4 billion and €107.4 billion respectively.

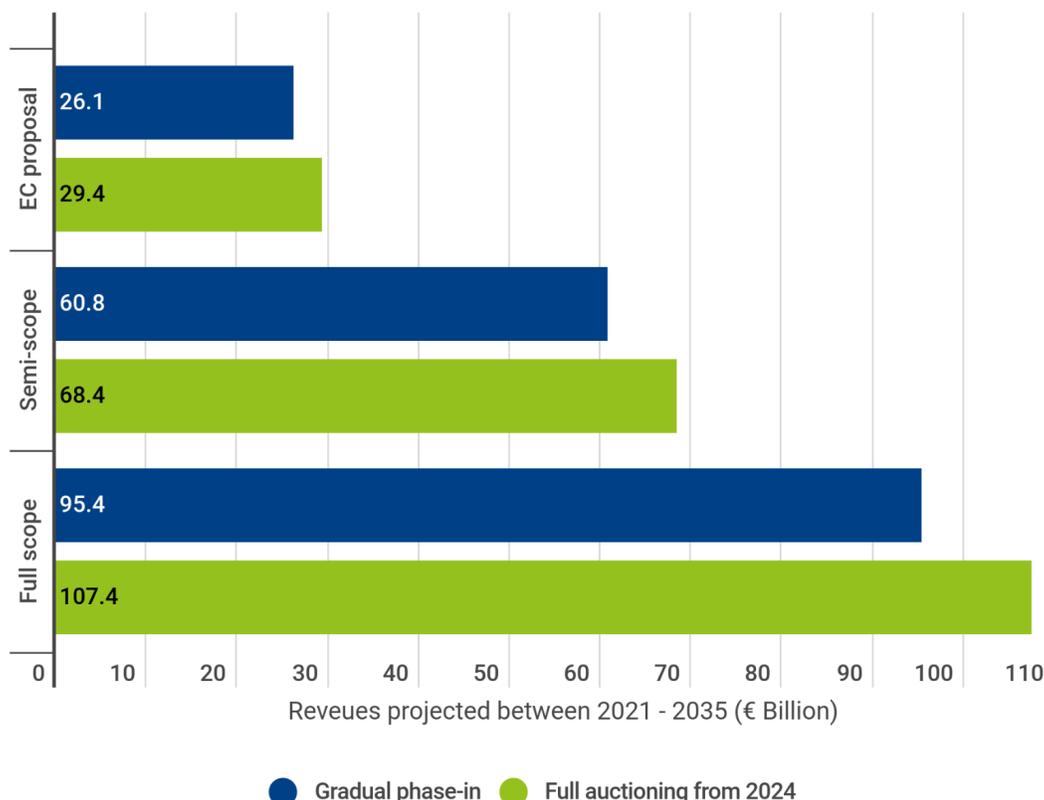


Figure 3. Revenues generated under the EC proposal, semi scope and full scope.

In order to avoid double coverage of emissions when expanding the scope in the scenarios, airlines would be reimbursed for their Corsia expenditure on routes covered by the EU ETS under the scenarios analysed in the study. Given the very low prices of Corsia credits, this only accounts for 10% of the additional revenue generated by expanding the scope, which leaves net additional revenues available for member states and EU funds for climate action.

2.4 Corsia’s uncertainties and weaknesses risk further delaying aviation decarbonisation

As mentioned in section 1, there is significant uncertainty regarding Corsia’s baseline post-2023, namely whether it will revert back to the average 2019-2020 levels of emissions or not. The study

shows that if the baseline for Corsia remains at 2019 emissions after the pilot phase, **demand for international credits on incoming and outgoing flights would be reduced by 63% under the EC proposal.** This is due to the 2019 emissions being much higher compared to the average 2019-2020 emissions, given airlines' reduced activity in 2020 and thus emissions. This change of baseline results in much smaller offsetting requirements given airlines aren't expected to come back to 2019 levels before 2024.

Another relevant uncertainty about Corsia that the study points out is related to whether five major aviation countries would actually participate in the scheme: China, Russia, India, Brazil and Vietnam. These countries did not join the voluntary phase, and there are still huge uncertainties on whether they will actually join the second Corsia phase that will start in 2027. **The report shows that if these countries do not join, the demand for international credits on incoming and outgoing flights will be 25% lower than the original EC proposal.** Their absence could also influence other countries' participation in the scheme as for example the [US stated that](#) "continued U.S. support for Corsia assumes a high level of participation by other countries, particularly by countries with significant aviation activity." It should be noted that currently, the US cannot fully implement Corsia as the relevant authority (the Federal Aviation Administration) lacks the authority to do so.

The study concludes that in the worst-case scenario, 2019 remaining as the baseline and China, Russia, India, Brazil and Vietnam not joining Corsia, **the total demand for international credits on departing and incoming flights from and in the EEA, in case of the EC proposal scenario, will be reduced by 77%.** All this means that only about a quarter of the international credits that have to be bought to cover the offset obligations for these flights would take place with a reasonable degree of certainty, further confirming the weakness of the scheme to address aviation emissions.

3. Conclusion & policy recommendations

This study shows that expanding the scope of the EU ETS for aviation has major benefits: significantly higher emission reductions, creating more balanced pricing between low cost carriers and legacy airlines, generating higher amounts of revenue that can be used to decarbonise aviation with limited costs for airlines. Therefore it is positive that the ENVI Committee in the European Parliament has proposed to enlarge the scope of the EU ETS and cover all departing flights. T&E and Carbon Market Watch recommend that decision makers:

- Stop relying on Corsia and extend the EU ETS to cover at least all departing flights.
- Accelerate the phase-out of free allowances to 2024 as there is no reason for it to continue any longer. This would also generate additional revenue for climate action.
- Invest the auctioning revenue in clean technologies such as direct air capture, synthetic aviation fuels, zero-emission aircraft but also modal shift and re-skilling of workers.

Further information

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