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Aviation emissions

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EU ETS in a CORSIA world

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In Europe, aviation sector emissions are controlled by the European Union Emissions Trading System (EU ETS). However, as from 2021, a new global scheme, the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) will be introduced to offset emissions of international flights. This study assesses how CORSIA might affect the EU ETS, how the schemes might coexist and how effective they could be at reducing emissions.

Over the last few decades, air transport has grown significantly and is expected to continue to grow by 4.4% per year until 2037. Civil aviation is responsible for not only emitting increasing amounts of carbon dioxide (CO_2), but also oxides of nitrogen (NOx), oxides of sulfur (SOx), water (H2O) and soot. To combat the increasing carbon footprint and to encourage the switch away from fossil fuels, two international measures have been designed.

One of these is the EU Emissions Trading Scheme (EU ETS). In 2012, the European Commission extended this to include the aviation sector as a reaction to slow progress by the International Civil Aviation Organization (ICAO). The EU ETS covers flights within the European Economic Area (EEA) and caps emissions at 95% of 2004-2006 levels. It does so through tradable allowances, which permit the emission of 1 tonne of CO2. However, currently 82% of emissions allowances required by the aviation sector are allocated to airlines for free by the EU ETS. From 2021, the EU ETS will start reducing the cap by a yearly 2.2% to meet its 2030 emissions reduction targets.

Almost 20 years after it was tasked with developing a scheme for aviation emissions at the Kyoto Protocol, the ICAO presented the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) in 2016. Starting in 2021, CORSIA will require offsets for emissions above 2019-2020 levels for international flights between the 80 participating countries (the 'CORSIA states'). The offsets will be purchased in the form of carbon credits or by investments in emissions reduction projects in other sectors.

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The offsetting requirements occur at airline level and are a product of an airline's 2019-2020 emissions level multiplied by the industry's average emissions growth since then. From 2030, each airline will need to offset its own emission increase, rather than a product of the industry average.

CORSIA and the EU ETS recognise the advantage of market-based measures over political 'command and control' measures. They aim to reduce emissions through a price tag on carbon and by defining targets. This incentivises and allows the industry to find the most cost-efficient and innovative manner of reducing emissions. The two systems should have a similar environmental effectiveness because it shouldn't matter if emissions are capped or if growing emissions are offset. However, the use of offsets does raise the question of how their reliability and transparency is ensured.

As all EU Member States have joined CORSIA, the question arises about what will happen to the existing EU ETS and how the two schemes will interact? One concern is how the monitoring, reporting and verification (MRV) requirements would change, given that following two different MRV standards could be a significant burden for EU airlines. One practical solution would be to apply the CORSIA MRV to the EU ETS. However, the European Commission has indicated that European operators could simply apply the EU ETS MRV to CORSIA instead.

Because the EU ETS is such a crucial tool for ensuring that the EU reaches its 2030 emissions reductions targets, a further concern is that replacing it with CORSIA could risk those targets being reached. This study evaluates the impact that the following scenarios might have on emissions:

1) Implementation of CORSIA and discontinuation of EU ETS;
2) Implementation of CORSIA and continuation of EU ETS for domestic flights only;
3) Implementation of CORSIA, CORSIA extension to EEA domestic flights and discontinuation of EU ETS;
4) Implementation of CORSIA on flights partially or fully outside EEA and continuation of EU ETS for intra-EEA flights.

An assessment of how the four options fare in terms of aviation emissions covered by the schemes for the period up to 2035 reveals that they grow almost in parallel over the years. The main difference is that the starting share is higher for the scenario in which there is a full continuation of the EU ETS, i.e. scenario 4. Comparing scenario 1 with scenario 4 in 2021, shows that the CORSIA-only scenario would address 1.5% of global aviation emissions with offsets, while the combined ETS and CORSIA system in scenario 4 would cover 4.1% of global emissions. These figures rise to 12.9% versus 15.8% in 2028 and 20.0% versus 23.1% in 2035. This shows that the share of emissions covered by CORSIA will grow at a faster rate than that for the EU ETS.

However, when considering how CORSIA will translate into actual emissions reductions against the set-in-stone emissions reduction under the EU ETS, the figures show a different picture. Having assumed that CORSIA offsets result in 100% emission reductions for the percentages described above, the paper also presents percentages for a more realistic case in which offsets only result in 20% actual emissions savings. A comparison of scenario 1 and 4 in this case shows 0.3% global aviation emissions reductions versus 3.1% in 2021, 2.6% versus 6.6% in 2028 and 4.0% versus 8.7% in 2035.