

Should CORSIA be changed due to the COVID-19 crisis?

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The International Civil Aviation Organization (ICAO) is currently deliberating on the implications of the COVID-19 crisis on its Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). From 2021 onwards, the scheme requires airlines to either adopt mitigation measures, such as using more efficient aircraft, or to buy carbon credits from greenhouse gas mitigation projects to compensate for the growth in CO₂ emissions from international flights above 2019-2020 levels. This paper analyses a recent proposal by the aviation industry to change the scheme in the light of the COVID-19 crisis. We find that the proposal delays climate action by the industry for several years and could reduce the overall mitigation achieved through CORSIA by about 25-75%. This would not set the right incentives for the industry to achieve a green recovery and embark on the transition towards zero emissions that is ultimately needed to achieve the goals of the Paris Agreement. Our analysis also suggests that under CORSIA's current rules the COVID-19 crisis is unlikely to strongly impact the industry's offsetting requirements. We recommend maintaining current rules until a review scheduled for 2022, which should revisit the overall ambition of scheme.

Impact of the COVID-19 crisis on aviation emissions

The COVID-19 crisis severely affects the aviation industry. With travel restrictions in place around the world, many airplanes stay grounded. This will translate in a significant reduction in CO₂ emissions from aviation. These emission reductions could also affect the action that airlines need to take to satisfy their obligations under CORSIA.

CORSIA is implemented to achieve the aspirational goal of ICAO to ensure a "carbon neutral growth" from 2020 onwards. This goal can be achieved through a basket of measures, including technical and operational improvements, the use of alternative fuels, and the purchase of carbon credits. While ICAO's goal refers to the year 2020 only, CORSIA uses the average emissions of 2019 and 2020 as the basis for determining how many carbon credits airlines must purchase to fulfil their requirements. From 2021 onwards, airlines must compensate for any increase in emissions above 2019-2020 levels.

To assess the impact of the COVID-19 crisis on airlines' offsetting requirements, two questions are important:

- How far will aviation emissions drop in 2020?
- How fast and to which levels will aviation emissions grow thereafter?

Lower 2020 emissions due to the COVID-19 crisis could imply that airlines need to purchase *more* carbon credits. The emissions growth in the coming years matters because lower future emission levels could imply that airlines need to purchase *fewer* carbon credits. The **net impact** of these two effects depends on how far emissions will drop in 2020 and how strongly they will grow thereafter.

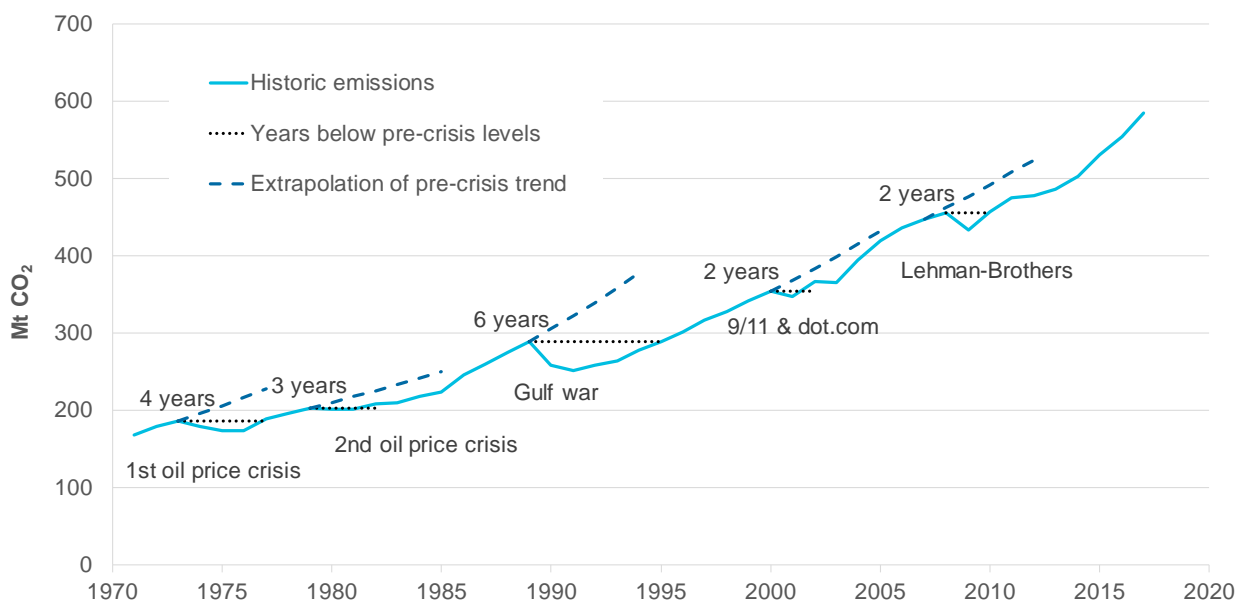
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For the recovery of aviation demand, three main scenarios are considered (EDF 2020; IATA 2020a; ICAO 2020):

1. **V-shaped:** a brief period of sharp decline followed by a quick recovery;
2. **U-shaped:** a prolonged contraction and muted recovery;
3. **L-shaped:** a long downturn in economic activity with slow recovery.

These scenarios mainly differ in the shape and speed of recovery. An important separate question is whether emissions will ultimately return to the trend level expected before the crisis, or whether the crisis will lead to a sustained lower emissions trend. The experiences with previous crises provide important insights into these questions (see Figure 1).

Figure 1 Global CO₂ emissions from international aviation



Source: IEA (2020)

Two lessons can be learned from past recessions:

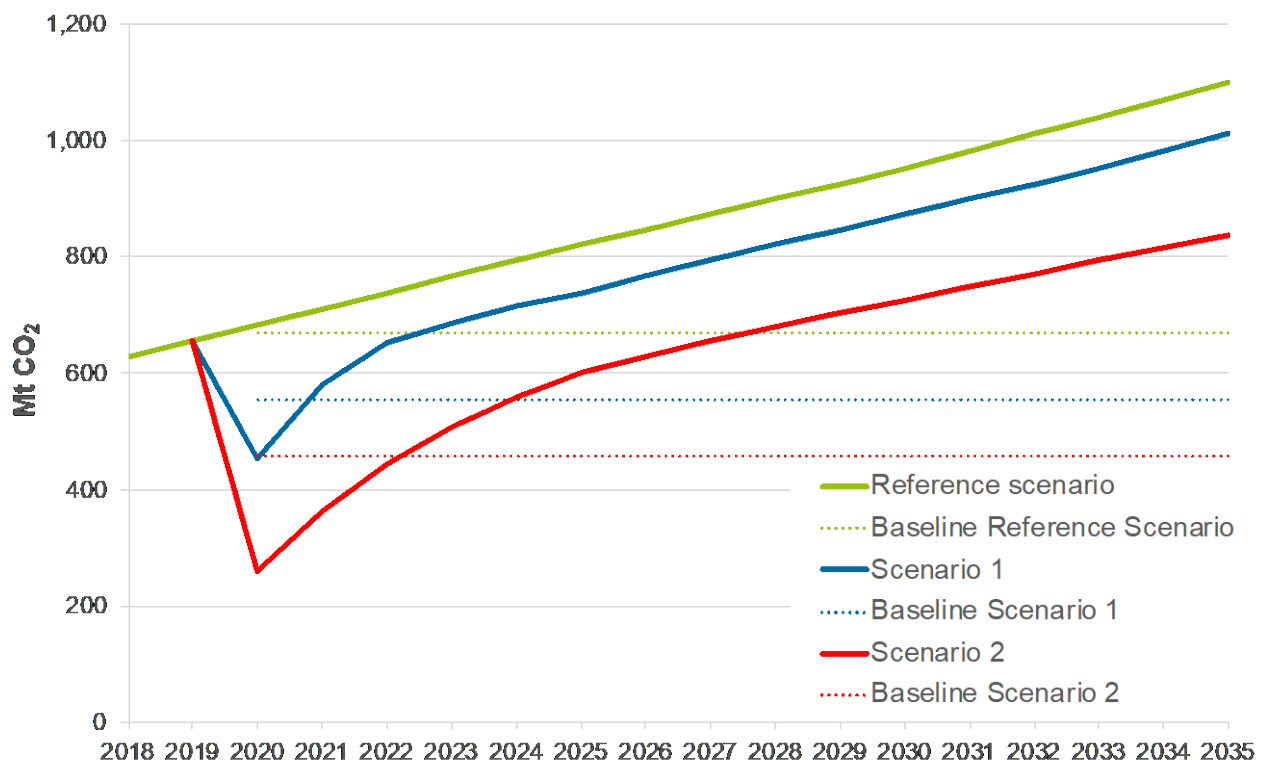
1. **Recovery takes time:** In previous crises, it took 2-6 years for aviation emissions to reach pre-crisis levels. This will also be the case for the COVID-19 pandemic, as aviation is more severely affected by the crisis than other sectors and the decline in aviation activity is unprecedented. The International Air Transport Association (IATA) also expects that "air travel may recover more slowly than most of economy" and that "international air travel may not recover 2019 levels until 2023-24" (IATA 2020a).
2. **Recessions resulted in a sustained lower trend line:** In previous crises, emissions growth continued after recovery with similar rates as seen before the crisis but with a delay of a few years. This led to a sustained lower emissions trend, as shown in Figure 1. This is also expected by IATA which assumes a "return to growth post-COVID but at a lower level", with passenger kilometres assumed to be 10% below pre-COVID expected levels in 2025 (IATA 2020a). Some industry experts also expect that the crisis could lead to sustained lower growth rates, even after recovery (Roland Berger 2020). This could, for example, occur if more meetings are conducted through virtual means as a result of the crisis.

Based on these considerations and drawing on data and scenarios by ICAO and IATA, we build three scenarios to assess the implications of the COVID-19 crisis (see Figure 2):

- **Reference scenario:** In this scenario (green line in Figure 2), we assume the pre-COVID-19 emissions development, as projected by ICAO's Committee on Aviation Environmental Protection in 2019 (CAEP 2019).
- **Scenario 1:** In this scenario (blue line in Figure 2), we use ICAO's most optimistic scenario for the decrease of seat capacity of international flights in 2020, which assumes a drop by 38% compared to the pre-COVID-19 situation (ICAO 2020). We further assume a fast recovery to 2019 emission levels within less than three years and continued growth thereafter at the same rates as expected prior to the COVID-19 crisis, similar to expectations by IATA (2020a).
- **Scenario 2:** In this scenario (red line in Figure 2), we use ICAO's most pessimistic scenario for the decrease of seat capacity of international flights in 2020, which assumes a drop by 71% compared to the pre-COVID-19 situation (ICAO 2020). We assume a slower recovery than in Scenario 1, and thereafter continued growth but at slightly lower rates than expected prior to the COVID-19 crisis.

In Scenarios 1 and 2, we estimate that emissions from freight transportation drop by 10% in 2020, taking into account that freight transport in March 2020 was about 20% lower (ICAO 2020). We further assume that freight transportation makes up 15% of all international aviation emissions. Figure 2 illustrates the three scenarios with the resulting 2019-2020 baseline.

Figure 2 Scenarios for global CO₂ emissions from international aviation



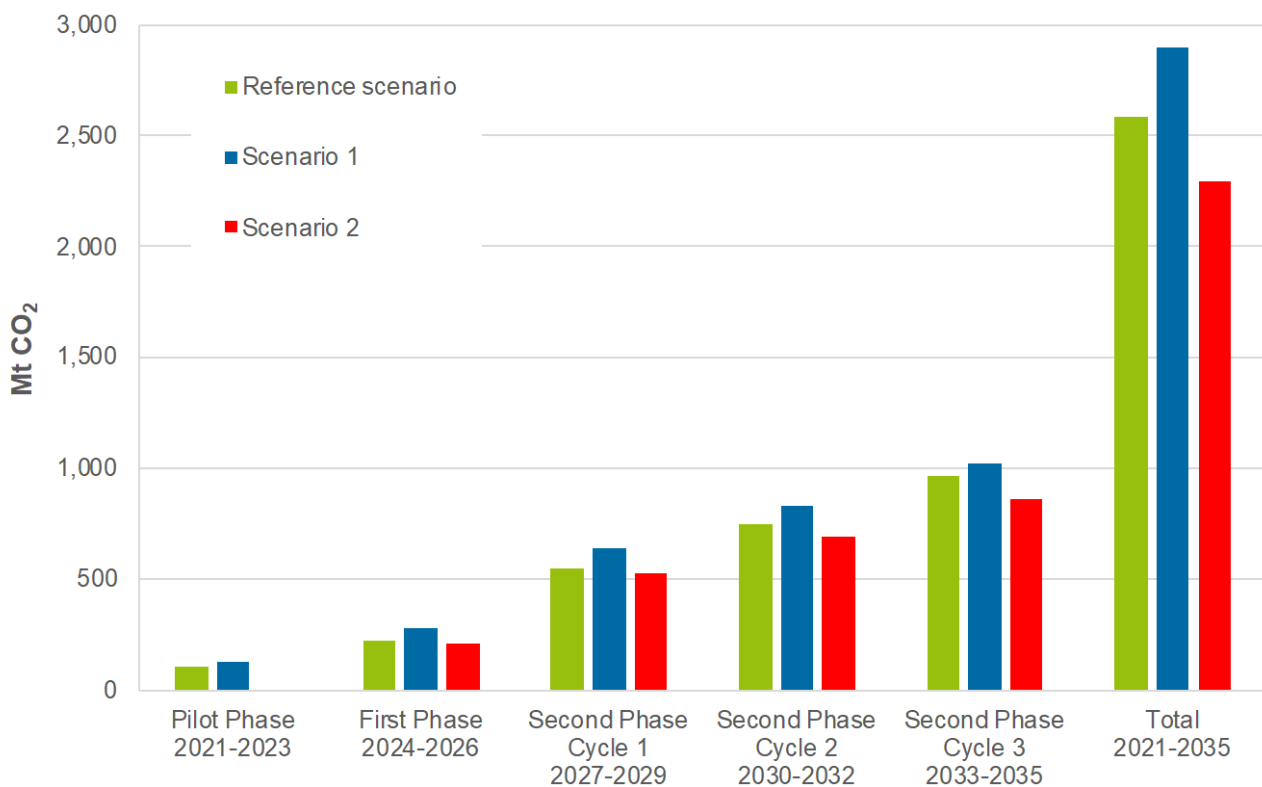
Note: The figure shows total emissions from international aviation, not considering the coverage of CORSIA.
Source: CAEP (2019); Source: Own calculations

Implications for offsetting requirements under CORSIA

Figure 3 shows the implications of the COVID-19 crisis on the offsetting requirements of airlines, comparing the number of carbon credits that airlines must purchase under Scenarios 1 and 2 and the Reference scenario. In Scenario 1, which represents a smaller drop in aviation demand and a faster recovery, airlines need to purchase slightly more carbon credits than in the pre-crisis scenario. In Scenario 2, which represents a stronger drop in aviation demand and a slower recovery, airlines do not need to purchase any carbon credits in the pilot phase from 2021 and 2023 and slightly fewer carbon credits in the remaining phases of the scheme.

Overall, the implications of the COVID-19 crisis are relatively limited in our scenarios. This is because the effects of a lower baseline and a lower trend of future aviation emissions partially net out. A significant *increase* in offsetting requirements would only occur if aviation emissions were to quickly bounce back to pre-crisis levels. This is, however, neither supported by historical data from previous crises nor expected by the aviation industry (IATA 2020a). Conversely, a significant *decrease* in offsetting requirements might occur if the COVID-19 crisis were to have longer and more far-reaching consequences, leading to an even slower recovery than assumed in our scenarios.

Figure 3 Airline offsetting requirements under a 2019-2020 baseline



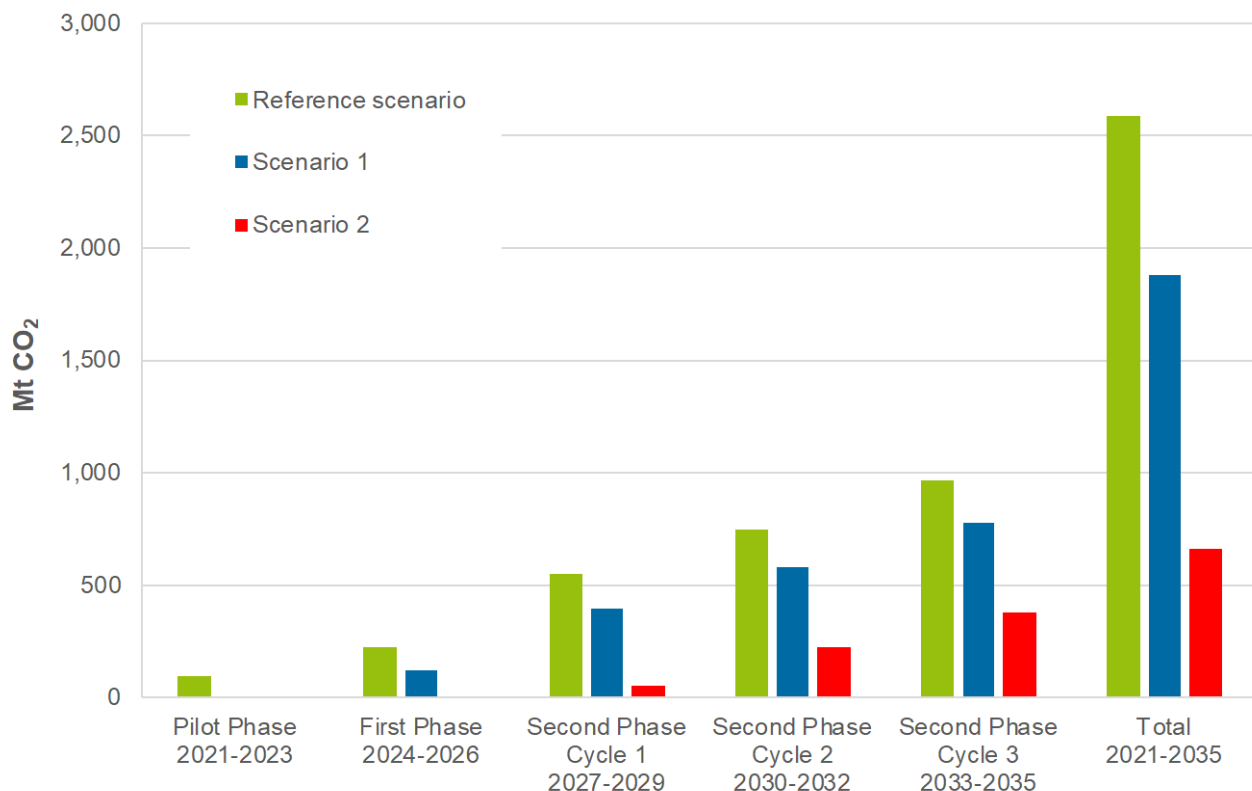
Note: In calculating offsetting requirements, the coverage of CORSIA is estimated to be 50% for 2021-2026 (pilot and first phase) and 80% for 2027-2035 (second phase), as derived from information provided by CAEP (2019). Note that actual offsetting requirements could be somewhat lower during the pilot phase if Parties were to make use of a flexibility provision for the pilot phase (paragraph 11(e)(i) of the ICAO Assembly Resolution A39-WP/530).

Source: Own calculations and estimates by CAEP (2019) for the Reference scenario.

Implications of IATA's proposal for a 2019 baseline

Recently, the IATA proposed to change the baseline under CORSIA in the light of the COVID-19 crisis, using only 2019 emissions instead of 2019-2020 emissions (IATA 2020b). Figure 4 illustrates that IATA's proposal would cut airlines' offsetting requirements considerably. In Scenario 1, offsetting requirements would be entirely waived in the pilot phase, halved in the first phase, and be reduced by more than a quarter over CORSIA's entire operation time. In Scenario 2, offsetting requirements would be waived both in the pilot phase and the first phase and be reduced by about three quarters over CORSIA's entire operation time.

Figure 4 Airline offsetting requirements under an IATA proposal for a 2019 baseline



Note: A 2019 baseline is used in the Scenarios 1 and 2. A 2019-2020 baseline is used in the Reference scenario.
Source: Own calculations.

Conclusions and recommendations

Our analysis of historical data from previous recessions showed that aviation emissions reached pre-crises levels only after a period of years and followed thereafter a sustained lower trend line. This pattern is also expected by the industry for the COVID-19 crisis. Our two scenarios suggest that the offsetting requirements under CORSIA may not change substantially due to the COVID-19 crisis, as the impact of a lower baseline and a lower future trend in aviation emissions partially net out. By contrast, the proposal by IATA to use a 2019 baseline would delay mitigation obligations for the industry by several years and most likely waive any offsetting requirements in the pilot phase, and possibly even in the first phase of the scheme. The proposal would also fall short of ICAO's goal of achieving carbon neutral growth from 2020 onwards. Most importantly, the proposal would remove incentives for the industry to achieve a green recovery and to take the necessary steps and

investments to embark on the transition towards zero emissions that is ultimately needed to achieve the goals of the Paris Agreement.

We recommend maintaining the current 2019-2020 baseline for the first phase of CORSIA and revisiting the overall ambition of the scheme as part of the regular review scheduled for 2022. By that time, more information will be available on the implications of the COVID-19 crisis on 2020 emissions and future emission trends. Even if emissions were to rebound in 2021 much faster than the aviation industry currently expects, there is no shortage of carbon credits, as the supply of carbon credits from already eligible programs – and more may become eligible – outstrips CORSIA demand (EDF 2020). Moreover, countries also have the possibility to apply a flexibility mechanism under CORSIA, under which offsetting requirements for the pilot phase can be adjusted downwards (EDF 2020).

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