ESG
24 April 2024

Aviation: Uncertainty around Carbon Offsets

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What is CORSIA and why is it important?

To address emissions from international aviation, the UN's International Civil Aviation Organization (ICAO) adopted the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) in 2016. The aviation sector, which is responsible for ~2.5% of global CO2 emissions, has committed in 2021 to reach net-zero emissions by 2050. Emissions from the aviation sector are expected to increase significantly if measures are not put in place to reduce them. In order to achieve net-zero emissions, purchasing CORSIA-eligible carbon credits is one of the measures to complement other decarbonisation measures such as implementing innovative aircraft technologies, streamlining flight operations and deploying sustainable aviation fuel.

Baseline and offsetting requirements

CORSIA is implemented in phases (Table 1) and aims to address any increase in total CO2 emissions from international civil aviation over a set baseline i.e. 2019 emissions as the baseline for the pilot phase (2021 – 2023), and 85% of 2019 emissions as the baseline for subsequent compliance phases (2024 – 2035).

Table 1: Phased implementation of CORSIA

Pilot phase	First phase	Second phase		
2021 – 2023	**2024 – 2026**	**2027 – 2029**	**2030 – 2032**	**2033 – 2035**
Voluntary participation for international flights between volunteering states, but CO2 emissions from all international flights need to be monitored, reported and verified annually.		Mandatory for all international flights, with exemptions for: Least Developed Countries, Small Island Developing States (SIDS), Landlocked Developing Countries (LLDCs) and states which have less than 0.5% of air traffic (unless they choose to participate on a voluntary basis)		

*With the exceptions of humanitarian, medical and firefighting flights, all international civilian operations of aeroplanes are covered by CORSIA.
Source: IATA

Upon the completion of each 3-year compliance cycle, airline operators have to meet the offsetting requirements by cancelling the appropriate number of CORSIA-eligible emissions units. The deadline to complete the cancellation of the required emissions units for the 2021 to 2023 compliance cycle is 31 January 2025, following the administration authority's notification of final offsetting requirements by 30 November 2024 (Annex A).

CORSIA Phase 1 developments: Which carbon credits are CORSIA-eligible?

CORSIA Phase 1, which commenced on 1 Jan 2024 after the pilot phase, is mandatory for international flights between volunteering states. With 126 countries committed to participate in CORSIA Phase 1, a significant proportion of international flights covering approximately 80% of annual emissions from the aviation sector are subject to CORSIA compliance. In the Asia Pacific region, countries that have committed to participate include Singapore, Malaysia, Indonesia, Thailand, Japan and the Republic of Korea.

The vintage window for CORSIA-eligible carbon credits is still 2016 – 2020 for most programs, as their 2021+ credits are not approved to be CORSIA-eligible yet. This is because the ICAO has decided to keep major voluntary carbon standards, including Verified Carbon Standard (VCS) and Gold Standard (GS), under conditional approval for CORSIA Phase 1. Only American Carbon Registry (ACR) and Architecture for REDD+ Transactions (ART) can issue CORSIA credits for use by airlines during the current phase.

Guyana is the first country with carbon credits deemed eligible for use by airline operators in CORSIA Phase 1, where 100% of revenues will be directed to low-carbon and sustainable development priorities. ART issued 7.14 million jurisdictional REDD+ carbon credits (2021 vintage) to Guyana as the Government of Guyana announced the world's first Paris Agreement corresponding adjustment[1], thereby fulfilling the requirements for the carbon credits to be CORSIA-eligible. The issuance of the first post-2020 CORSIA-eligible carbon credits marks a significant milestone, contributing towards an estimated demand of 100 – 200 million carbon credits from airline operators in CORSIA Phase 1.

Uncertainty lies ahead

With few CORSIA-eligible carbon credits available for airlines to purchase currently, there is fear of a looming supply shortage. The supply shortage can be attributable to a lack of readiness from host countries to provide the corresponding adjustment, partly because of the lack of clarity on how to operationalise Letters of Authorisation from a host country to grant a corresponding adjustment at a later stage. This highlights the complexities of the voluntary carbon market pertaining to corresponding adjustments and preventing double counting.

Eleven carbon offset programmes have applied or reapplied to ICAO to supply CORSIA-eligible carbon credits for CORSIA Phase 1, including Asia Carbon Institute and Isometric. The ICAO's Technical Advisory Board will review the submissions against the Emissions Unit Criteria, and has invited the public to submit comments on the applications till 11 May 2024. However, there is still limited supply from countries even as more registries gain approval. Supply clarity for airline operators can drive compliance demand, as they begin to implement their CORSIA Phase 1 strategies.

[1] A corresponding adjustment is a mechanism under Article 6 of the Paris Agreement to ensure that emissions reductions are not double counted. If the same carbon credit were to be counted toward a country's Nationally Determined Contribution (NDC) and used to achieve CORSIA compliance, the credit would have been double counted. Corresponding adjustments will ensure that carbon credits bought by airlines are not also used to meet national obligations under the Paris Agreement.

Moving forward

From 2027, CORSIA participation will become mandatory for most countries with some exemptions (Table 1). To complement other decarbonisation strategies to curb the growth in emissions, airline operators would anticipate a greater supply of CORSIA-eligible carbon credits when it approaches CORSIA Phase 2. The first CORSIA-eligible carbon credits for CORSIA Phase 1 from Guyana may push other countries to accelerate processes required to operationalise corresponding adjustments. This ensures that carbon credits bought by airline operators are not also used to meet national obligations under the Paris Agreement.

Relying solely on carbon offsets to mitigate aviation emissions is insufficient, as it does not address the fundamental issue of reducing aviation sector emissions. Rather, airline operators could focus on prioritising decarbonisation strategies such as (i) improving operational efficiency, (ii) implementing innovative aircraft technologies, (iii) operating a young fleet, and (iv) increasing the use of sustainable aviation fuel (SAF). CORSIA complements these strategies by mitigating residual emissions that cannot be reduced through technological/operational improvements or SAF.

However, the International Energy Agency (IEA) reported that the aviation sector is not on track to achieve its net-zero goals with the current challenges. The demand for aviation fuel is currently dominated by jet kerosene, while SAF accounts for less than 0.1% of all aviation fuels consumed. There is limited adoption of SAF due to high costs and limited availability, with current planned production capacities estimated to provide only 1% – 2% of jet fuel demand by 2027. Increasing SAF adoption would require a significant ramp up of investment in production capacity and supportive policies including low-carbon fuel standards and incentives, for it to be a successful lever in achieving the aviation sector's net-zero goals.

Sources: ART, Government of Guyana, IATA, ICAO, IEA, NEA, Sylvera, WEF

Annex A: Compliance cycles and respective deadlines

Compliance cycle	Notification of final offsetting requirements	Cancellation of emissions units	Submission of verified emissions unit cancellation report
2021 – 2023	By 30 November 2024	By 31 January 2025*	By 30 April 2025
2024 – 2026	By 30 November 2027	By 31 January 2028*	By 30 April 2028
2027 – 2029	By 30 November 2030	By 31 January 2031*	By 30 April 2031
2030 – 2032	By 30 November 2033	By 31 January 2034*	By 30 April 2034
2033 – 2035	By 30 November 2036	By 31 January 2037*	By 30 April 2037

*Or, if the notification of final offsetting requirements occurs after 30 November, 60 days after the notification of the final offsetting requirements.

Source: IATA

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