Introduction to CORSIA

By ICAO Secretariat

Addressing climate change requires cooperation among all States to reduce the impact of greenhouse gas emissions on the global climate. The international civil aviation sector plays a key role in the global efforts to address climate change. While it presently accounts for about 1.3% of the global CO_2 emissions, its contribution is projected to increase in the coming decades as the world becomes more connected. ICAO and its Member States have recognized the impact of the emissions from international aviation on the global climate, and have resolved to minimize this impact, while ensuring the sustainable growth of international aviation.

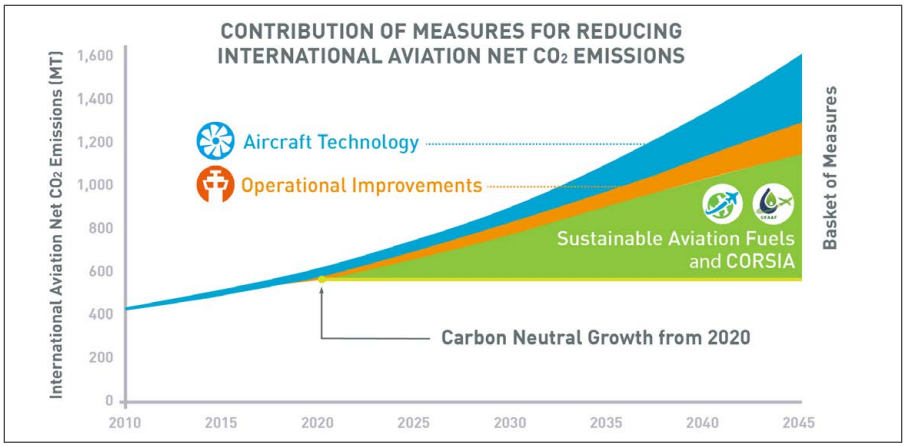
In 2010, the 37th Session of the ICAO Assembly adopted two aspirational goals: i) to improve energy efficiency by 2 per cent per year until 2050, and ii) to achieve carbon neutral growth from 2020 onwards. These goals are to be met with the implementation of a basket of measures that includes technological innovations, operational improvements, sustainable aviation fuels, and market based measures.

Since the 2010 Assembly which requested the Council to explore the feasibility of a global market-based measure scheme for international aviation, various options for such a global scheme were discussed and analyzed by the Council and experts around the world, in light of key principles such as environmental integrity, cost effectiveness, and simplicity of such a scheme. Following the important milestone at the 2013 Assembly, which decided to develop a global market-based measure for international aviation, further discussions on its design features and implementation mechanisms were undertaken, including possible means to address special circumstances and respective capabilities of States.

At the 39th Session of the ICAO Assembly in 2016, States finally adopted a global market-based measure scheme for international aviation, in the form of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), to address the increase in total CO_2 emissions from international aviation above the 2020 levels (Assembly Resolution A39-3).

CORSIA is the first global market-based measure for any sector and represents a cooperative approach that moves away from a "patchwork" of national or regional regulatory initiatives through the implementation of a global scheme that has been developed through global consensus among governments, industry, and international organizations. It offers a harmonized way to reduce emissions from international aviation ensuring that there is no market

FIGURE 1: ICAO Global Environmental Trends on CO_2 Emissions and Contribution of Measures for Reducing International Aviation Net CO_2 Emissions



distortion, while respecting the special circumstances and respective capabilities of ICAO Member States.

CORSIA complements the other elements of the basket of measures by offsetting the amount of CO_2 emissions that cannot be reduced through the use of technological improvements, operational improvements, and sustainable aviation fuels (Figure 1) with emissions units from the carbon market. It is estimated that between 2021 and 2035, the international aviation sector would have to offset about 2.5 billion tonnes of CO_2 emissions to achieve carbon neutral growth.

HOW CORSIA WORKS

CORSIA will be implemented in three phases: a pilot phase from 2021 through 2023, a first phase from 2024 through 2026, and a second phase from 2027 through 2035. For the first two phases (2021 to 2026), participation is voluntary. As of June 2019, 80 States – representing 76.63% of international aviation Revenue Tonne-Kilometres (RTKs) – have announced their intention to participate in the CORSIA from its outset. From 2027 onwards, participation will be determined based on 2018 RTK data. Specifically, CORSIA will cover all States with an individual share of 2018 RTKs higher than 0.5 per cent of total RTKs or whose cumulative share in the list of States from the highest to the lowest amount of RTKs reaches 90 per cent of total RTKs. According to Assembly Resolution A39-3, Least Developed Countries (LDCs), Small Island Developing States (SIDS) and Landlocked Developing Countries (LLDCs) are exempt from participation (even if they fulfill these RTK conditions), but they can participate in the Scheme on a voluntary basis.

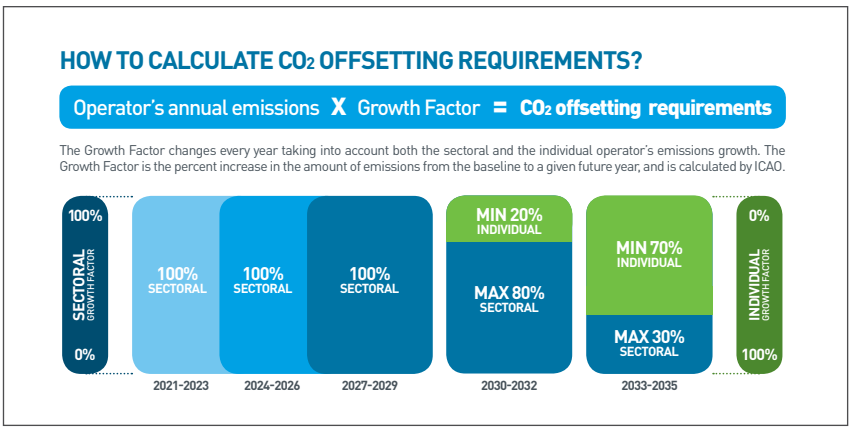
To eliminate market distortion, emissions coverage under CORSIA is based on a route-based approach. This means that emissions from **all** aeroplane operators performing international flights between two States where both the origin and destination States participate in CORSIA are covered by the offsetting requirements of the Scheme. In contrast, emissions from international flights between two States where the origin and/or destination States do not participate in CORSIA are excluded from the offsetting requirements of the Scheme. The route-based approach ensures that all aeroplane operators with flights on the same international routes are treated equally irrespective of whether the States to which they are attributed participate in CORSIA. According to Assembly Resolution A39-3, exemptions also apply to aeroplane operators with less than 10 000 tonnes of annual CO_2 emissions, to aeroplanes with less than 5 700kg take-off weight, and to humanitarian, medical and firefighting operations.

Once participating States and routes covered by the CORSIA are defined (starting in 2021), the amount of CO_2 offsetting requirements for individual aircraft operators is calculated, as follows (see Figure 2):

a) from 2021 through 2029, the amount of CO_2 offsetting requirements is calculated by multiplying the operators' annual emissions with the international aviation sector's growth factor every year, following a so-called 100 per cent sectoral approach; and
b) from 2030 onwards, the amount of CO_2 offsetting requirements is calculated taking into account both the sector's growth factor and the growth factor of an individual operator; the individual factor's contribution to the calculation will be at least 20 per cent from 2030 to 2032; and at least 70 per cent from 2033 to 2035.

Starting in 2022, CORSIA will be periodically reviewed, every three years, by the Council. The review will include, among other features, the assessment of its impact on

FIGURE 2: Calculation of offsetting requirements under CORSIA



the growth of international aviation, and the results of this assessment will serve as an important basis for the Council to recommend, as appropriate, adjustments to the scheme for the consideration by the Assembly.

CORSIA IMPLEMENTATION

The success of the implementation of CORSIA relies on the establishment of a robust and transparent monitoring, reporting and verification (MRV) system, which includes procedures on how to monitor the fuel use, collect data and calculate CO_2 emissions; report CO_2 emissions data; and verify CO_2 emissions data to ensure accuracy and avoid mistakes.

At the request of the 39th ICAO Assembly in 2016, the Council requested the Committee on Aviation Environmental Protection (CAEP), to develop Standards and Recommended Practices (SARPs) and related guidance material to facilitate the implementation of the MRV system under the CORSIA. Part of the CAEP work included the development of criteria for the eligibility of emissions units that are to be purchased and cancelled by aeroplane operators for the purposes of the Scheme.

In fact the implementation of CORSIA required a "package" of CORSIA-related SARPs and guidance which comprise of three distinct but interrelated components:

a) Annex 16, Volume IV, which provides the required actions by States and aeroplane operators (the "what" and "when") to implement CORSIA;
b) Environmental Technical Manual (Doc 9501), Volume IV, which provides the guidance on the process (the "how") to implement CORSIA; and
c) Five CORSIA Implementation Elements, which are reflected in 14 ICAO documents and are approved by the Council prior to their publication. These ICAO documents are directly referenced in Annex 16, Volume IV and are essential for the implementation of CORSIA.

The Council adopted the First Edition of Annex 16, Volume IV in June 2018. Following its adoption, the First Edition of Annex 16, Volume IV became applicable on 1 January 2019.

The First Edition of the Environmental Technical Manual (Doc 9501), Volume IV was issued under the authority of the ICAO Secretary General in August 2018. This manual will be periodically revised to make the most recent information available to administrating authorities, aeroplane operators, verification bodies and other interested parties in a timely manner, aiming at achieving the highest degree of harmonisation possible.

The ICAO Council has been undertaking work, with the contribution of the CAEP, on the development of the five CORSIA Implementation Elements, namely:

- **CORSIA States for Chapter 3 State Pairs** is the list of States participating in CORSIA and will be used to define route-based emissions coverage every year from 2021 onwards;
- **ICAO CORSIA CO_2 Estimation and Reporting Tool (CERT)** aims to simplify the estimation and reporting of CO_2 emissions from international flights for those operators with low levels of activity to fulfil their monitoring and reporting requirements under CORSIA (for more details, see the dedicated article in this chapter);
- **CORSIA Eligible Fuels** cover aviation fuels used for the purposes of CORSIA to reduce the offsetting requirements of aeroplane operators (for more details, see the dedicated article in this chapter);
- **CORSIA Eligible Emissions Units** are emissions units from the carbon market that can be purchased by aeroplane operators to fulfill the offsetting requirements under CORSIA (for more details, see the dedicated article in this chapter); and
- **CORSIA Central Registry (CCR)** is an information management system that will allow the input and storage of CORSIA-relevant information reported by States, as well as calculations and reporting by ICAO, in accordance with the CORSIA MRV requirements as contained in the Annex 16, Volume IV (for more details, see the dedicated article in this chapter).

In June 2018, to ensure that *No Country is Left Behind*, the Council endorsed the ICAO ACT-CORSIA (Assistance, Capacity-building and Training for the CORSIA) Programme, emphasizing the importance of a coordinated

approach under ICAO to harmonize and bring together all relevant actions and promote coherence to capacity building efforts related to CORSIA implementation.

By the end of June 2019, CORSIA buddy partnerships under ACT-CORSIA had been established, involving 15 donor States and 98 recipient States. For more details on ACT-CORSIA see the dedicated article in this chapter.

CONCLUSIONS

CORSIA offers a success story of firsts: the first sector-wide carbon offsetting programme; the first such programme to tackle emissions from a single industry on a global level; the first time international aviation will experience carbon neutral growth; the first global partnership to help build capacity on CORSIA in all countries of the world. But being first also comes with great challenges that the Organization was able to address with the support of its Members States, industry, other actors and society as a whole.

While ICAO celebrates its successes over the last 75 years, it also acknowledges the challenges ahead. Starting in 2019, ICAO and its Member States are working together to implement the first stages of CORSIA focusing on ensuring that States have in place the necessary regulatory frameworks to facilitate the smooth implementation of CORSIA. More activities are scheduled and will continue over the coming years and decades. The international aviation sector is ready to tackle the future challenges and ensure that international flights are going to be built on a much greener foundation, but this will only be possible with the cooperation and support of all stakeholders involved.