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ICAO's Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) and MRV provisions

A summary of the MRV and implementation requirements for ICAO's CORSIA scheme

1. Contents

1.1 Introduction

The purpose of this report is to provide a description of the International Civil Aviation Organization (ICAO)'s Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), in particular its provisions with regards to Monitoring, Reporting and Verification (MRV). The report also discusses best practice in accreditation and verification systems for aviation carbon emissions and emissions reductions in the UK and EU.

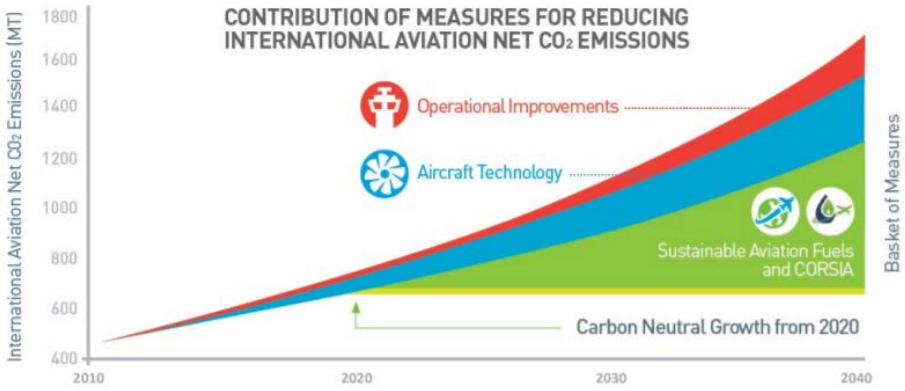
It is the author's intention that this document is used to inform relevant stakeholders on the merits and weaknesses or the CORSIA approach to MRV, the potential impact of this scheme for the Russian Federation and lessons learned in establishing MRV systems that may be of value to Russia in pursuing similar goals.

The following research questions are addressed:

1. What is ICAO's CORSIA and what is its relevance to Russia?
2. What are the provisions of the CORSIA scheme with regards to national Measurement, Reporting and Verification?
3. What systems are participant airline companies or countries required to have in place, and by when?
4. What other relevant international standards exist for accreditation and verification systems for aviation carbon emissions in the EU?
5. How will CORSIA be administered? How does this work in the UK, by way of example?

1.2 What is ICAO's CORSIA and what is its relevance to Russia?

Aviation is not included in the Paris Agreement, but it is responsible for 2% of global carbon emissions. If other greenhouse gases are taken into account, this figure could be significantly higher. The industry is expected to grow significantly over the coming decades and some are predicting that aviation could consume more than a quarter of the world's carbon budget to keep



temperature rise within 1.5°C by 2050.[1]

The Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) was adopted at the 39th session of the ICAO Assembly in 2016. CORSIA is a global market-based measure (MBM) scheme aiming to offset annual increases in CO_2 emissions from international civil aviation above 2020 levels. It was designed to tackle this by requiring airlines to offset their emissions by funding carbon reduction projects in other sectors. From 2020, it aims to offset global aviation emissions by 80% until 2035. CORSIA is the first global market-based mechanism scheme for any industrial sector.[2]

The average level of CO_2 emissions from international aviation covered by the scheme from 2019-2020 represents the baseline emission level. In any year from 2021 when international aviation CO_2 emissions covered by the scheme exceeds this baseline, the difference represents the sector's carbon offsetting requirements for the year. This baseline will change annually as the number of states participating in CORSIA changes.

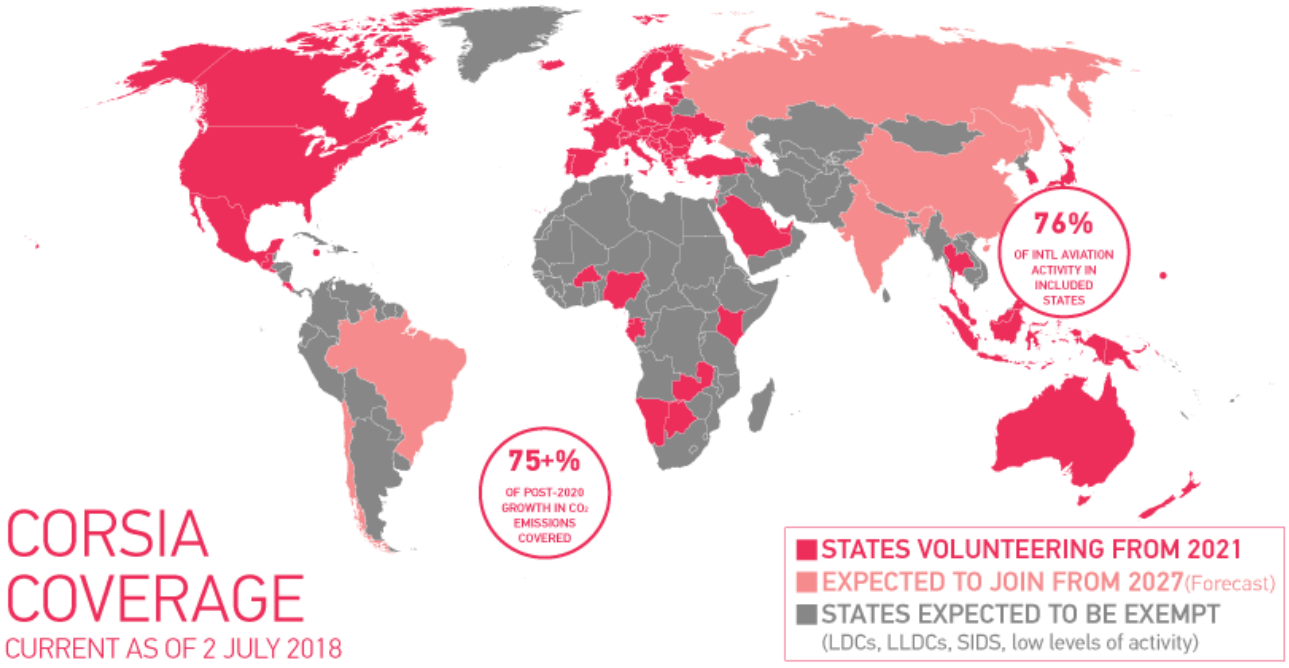
CORSIA will be implemented in phases:

- Pilot phase (2021-2023) and first phase (2024-2026) apply to states that have volunteered to participate.
- Second phase (2027-2035) applies to all states that have an individual share of international aviation activities in RTKs (revenue tonne kilometres) in 2018 either above 0.5% of total RTKs, or whose cumulative share in the list of states from highest to lowest amount of RTKs reaches 90% of total RTKs.

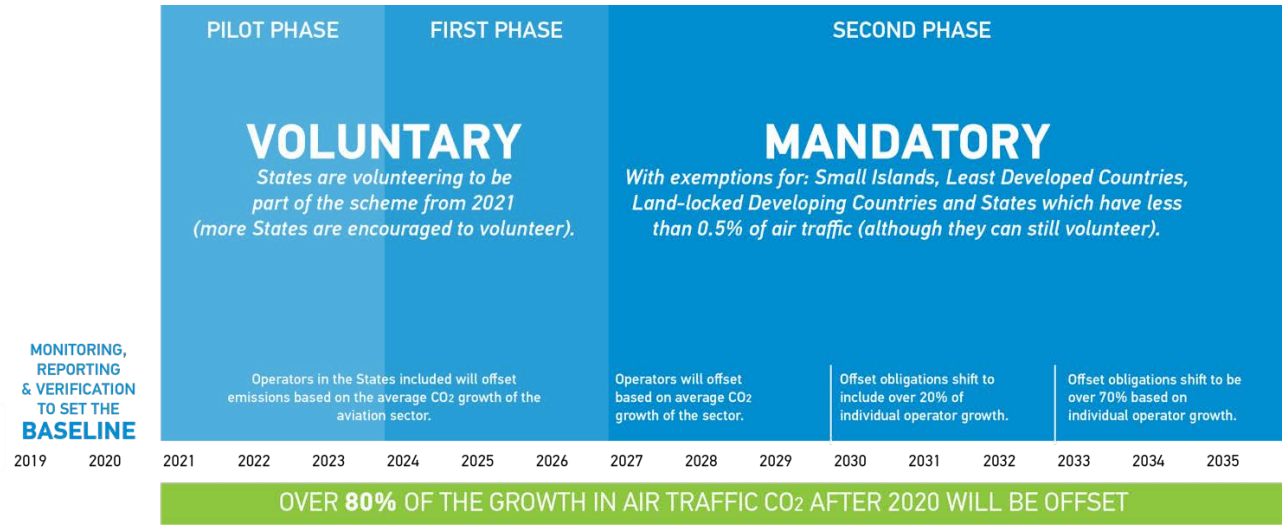
All aircraft operators conducting international flights are required to monitor, report and verify CO_2 emissions from these flights every year starting 1st Jan 2019. Humanitarian, medical and firefighting operators are exempt. Least developed countries (LDCs), small island developing states (SIDS) and landlocked developing countries (LLDCs) are exempt unless they volunteer to participate in this phase. The requirement for MRV of CO_2 emissions is independent from participation in CORSIA offsetting (see 1.3 for further detail on MRV).

[1] Pidock, R. & Yeo, S., Carbon Brief, Analysis: Aviation could consume a quarter of 1.5C carbon budget by 2050 (8/8/016), Accessed at: https://www.carbonbrief.org/aviation-consume-quarter-carbon-budget

[2] ICAO Overview of CORSIA (2018) www.icao.int/Meetings/CORSIAHQ18/Documents/1_1_Introduction_to_CORSIA_and_A39-3.pdf



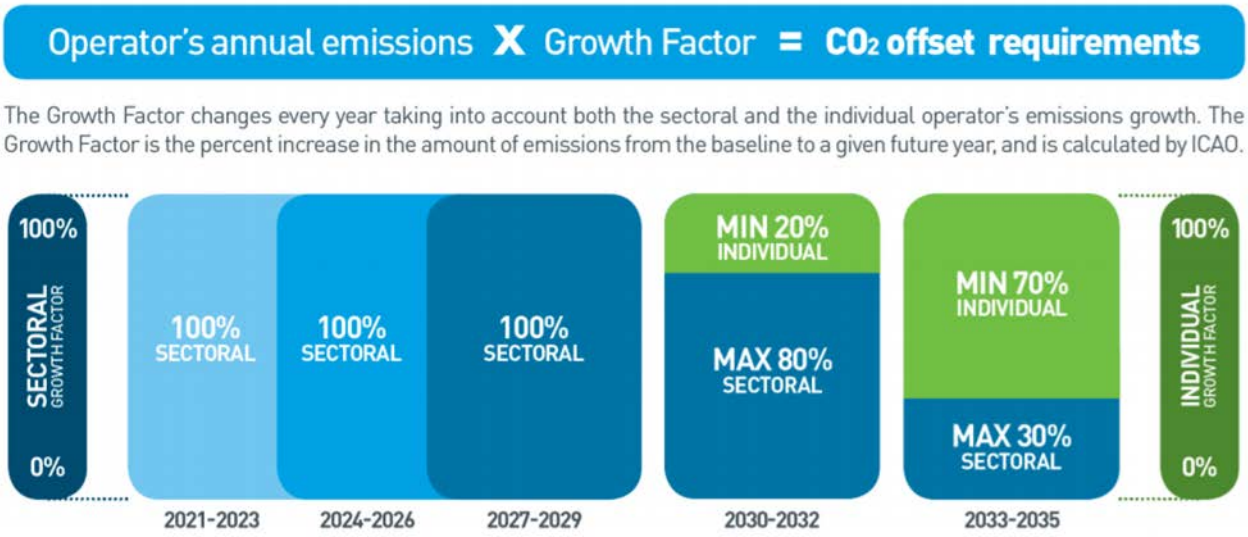
To date, 73 countries have volunteered for the pilot phase of CORSIA (2021-2023).[3] All flights between these nations will be subject to CORSIA, plus the participation of a broader set of nations in subsequent years. This means that c.78% of international aviation emissions above 2020 levels will be covered by CORSIA and more if further nations opt-in.[4]



From 2021 – 2029, individual operators' offsetting requirements will be calculated using a single sectoral growth factor multiplied by the operator's emissions covered by CORSIA in

[3] ICAO (January 2018). https://www.icao.int/environmental-protection/Pages/market-based-measures.aspx.
[4] "ICAO's market-based measure," Environmental Defense Fund (EDF), 2018, https://www.edf.org/ climate/icaos-market-based-measure

that year. This is defined as using a 100 % sectoral approach. From 2030 onwards a more dynamic approach will be implemented using individual operator's emissions growth factors.



1.2.1 Benefits of participation

- Contribution to meeting ICAO global aspirational goal of carbon neutral growth from 2020.
- Voluntary participants will be given priority access to capacity building and assistance.
- Early participation will increase demand for emissions units for purchase by operators, thus increasing incentives to invest in emissions reductions projects in participating states.

IATA cost analysis indicates that the offsetting costs related to the implementation of a global MBM scheme are expected to have a lesser impact on international aviation than that caused by fuel price volatility.[5] The estimated offsetting cost in 2030 is equivalent to that of a 2.6 US$ increase in jet fuel price (per barrel); an extra 10 US$ per barrel on the price of jet fuel would cost the industry about four times the estimated cost of offsets in 2030. To give a reference on magnitude, over the past decade the standard deviation of the jet fuel price annually has been almost 40 US$ per barrel, meaning that airlines have managed to cope with oil price volatility (mostly upwards) of more than 15 times the size of the estimated offsetting cost in 2030.

[5] ICAO CORSIA FAQs (2018). https://www.icao.int/Meetings/HLM-MBM/Pages/FAQ3.aspx

1.2.2 Relevance to Russia

The Russian Federation has a rapidly growing aviation sector, with over 12% growth in 2016 for passenger services and similar growth in air freight.[6] The latest estimates show that aviation and aviation-enabled tourism supports 1.1 million jobs and 1.6% of Russian GDP.

Russia has not currently committed to participate in the voluntary stage of CORSIA. In June 2017, the International Air Transport Association (IATA) called on Russia to volunteer, in order to "send a powerful signal that Russia is taking a leadership position in global aviation affairs".[7]

The scheme is potentially of significance to Russia for two key reasons: (1) capacity building, and (2) a boosted market for carbon offsets and associated projects.

1.2.2.1 Capacity building

CORSIA provides an opportunity to build institutional capacity of Measuring, Reporting and Verification (MRV) at a sector-level. This provides an opportunity to generate valuable lessons and learnings to allow MRV to be successfully and cost-effectively applied in other industries and sectors. The aviation sector is a useful sector to trial this approach. It is highly consolidated with a small number of individual operators – a feature which makes the creation and administration of an MRV system more straightforward.[8]

The CORSIA scheme considers the materiality of each entity's emissions as a proportion of the total in determining whether or not it qualifies for participation. Only organisations which contribute 0.5% of the total emissions of ICAO's scope, and which are within the top 90% of overall emissions, are mandated to comply. This element could be extended within a wider Russian MRV/carbon regulation approach by including sectors based on a) the materiality of their emissions as a proportion of the total and b) the ease of implementation of energy efficiency/carbon emission saving measures. This encourages the most efficient allocation of resources in terms of decarbonisation, reduces costly and time-consuming compliance activities for small emitters, and reduces complexity and cost of administering the scheme by reducing the number of participants while maximising the scope of emissions coverage. It will also ensure fairness through a 'polluter pays' mechanism.

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[6] IATA 'Global standards the key for sustainable Russian aviation growth' (June 2017) https://www.iata.org/pressroom/pr/Pages/2017-06-27-01.aspx

[7] IATA 'Global standards the key for sustainable Russian aviation growth' (June 2017) https://www.iata.org/pressroom/pr/Pages/2017-06-27-01.aspx

[8] Faber & Schep – CE Delft, MRV regulation assessment of impacts of delegated and implementing acts (April 2016) https://ec.europa.eu/clima/sites/clima/files/transport/shipping/docs/assessment_of_impact_delegated_implementing_acts_en.pdf

According to the CORSIA rules, states that voluntarily participate in the pilot phase of the CORSIA (from 2021 through 2023) and require assistance will be given priority capacity building assistance. International experience has shown that building engagement and buy-in from participating entities is important in determining the success of a scheme, but also challenging. Offering support to early movers will help to build momentum in the scheme and motivate collaboration between the scheme administrators and participants.

The MRV system for CORSIA will be in operation for 2 years before the pilot phase. This enables a baseline to be calculated for the tracking of progress in the subsequent phases of the scheme's operation. This baseline will be up-to-date and will inform the scheme administrator of the scale and distribution of the GHG emissions of entities covered by the scheme. It will also allow participants to become familiar with the MRV requirements before the main phases of the scheme. Experience has shown that carbon regulation schemes can fail by introducing too many complex reporting and administrative requirements simultaneously, and this will allow the processes to be phased in over time.

For CORSIA, a forum has been established to discuss design and implementation of the scheme. By reaching agreement on broad design principles at this stage, the design and implementation process can be made smoother and the sustainability of the scheme improved.

1.2.2.2 Carbon offsets

Analysis has shown that CORSIA will create a potential global demand of more than 2 billion tonnes of investment-grade emissions reductions from 2021 to 2035.[9] Estimates show that cumulative international aviation emissions may exceed 2020 levels by more than 500 million tonnes carbon dioxide equivalent (tCO_2) during the Pilot Phase and First Phase of the CORSIA (2021 to 2026). Countries responsible for 65% of these emissions have voluntarily opted into the scheme, implying a global demand from their airline companies of at least 325 million tCO_2 over the first five years during the Pilot Phase and First Phase. Projected excess emissions during the Second Phase (2027 to 2035) are higher still: about 2,600 million tCO_2. Covered routes are expected to represent at least 79 percent of these emissions, resulting in a global demand of 2,050 million tCO_2 or larger. These figures are summarized below in Table 1.[10]

[9] Climate Advisers, Using aviation emission reduction markets to reduce deforestation in Peru (March 2017) https://www.climateadvisers.com/using-aviation-emission-reduction-markets-to-reduce-deforestation-in-peru/
[10] Climate Advisers, Linking the ICAO global market-based mechanism to REDD+ in Colombia (August 2017) https://www.climateadvisers.com/wp-content/uploads/2017/08/Brief-Linking-CORSIA-demand-to-REDD-in-Colombia.pdf

Table 1. Projected global demand for offset credits (million tCO_2)[4]

Phase	Timeline	Emissions Above 2020 Levels	Projected Demand
Pilot Phase and First Phase	2021 to 2026	500	≥ 325 (65%)
Second Phase	2027 to 2035	2,600	≥ 2,050 (79%)

Source: ICAO's Market-Based Measure, Environmental Defense Fund

Servicing this new demand for carbon offsets represents a potentially significant economic opportunity for Russia. In order to capitalise on this opportunity the Russian Federation needs to ensure that there is a pipeline of attractive domestic offset projects generating credits which are deemed to be of a sufficient high quality standard. This will bring a number of potential benefits:

- The value of carbon credits varies from scheme to scheme, depending on the perception by the market of the quality of the standard by the carbon market. An MRV approach underpinned with reliability and transparency will contribute to improved attractiveness to buyers and a price premium for the associated credits.
- There is pressure on large multinational companies to buy carbon credits from reputable sources with the requisite quality standards. In an extreme situation, there is a chance that unless the credits generated by a given project comply with a given minimum quality standard (in terms of MRV and other areas), they will not desirable to buyers. There may always be 'better' credits on offer to satisfy the buyers in the market.
- If Russia is able to create a pipeline of domestic offset projects and sell the generated credits internationally, Russia will be able to attract foreign investment directly into the country. This will be beneficial for two reasons. The first of these is economically, by motivating greater inward investment and the flow of finance into the Russia economy. There may be a corollary tax benefit, with a larger number of financial transactions taking place within the Russian tax system rather than Russian and foreign businesses instead choosing to invest in carbon credits from projects outside of Russia.
- The second benefit is that this may enable Russia to finance its own domestic decarbonisation efforts. This will depend on the rules that are in place to handle 'joint implementation'.

The use of offsetting to 'cancel out' emissions from airlines will only succeed in delivering carbon neutrality if the emission reductions which are motivated are truly additional.[11] Demand created by CORSIA for offsets needs to drive the development of new emission

[11] New Climate Institute, Robust eligibility restrictions for offset credits (March 2018) https://newclimate.org/2018/03/22/robust-eligibility-restrictions-for-offset-credits-are-needed-for-corsia-to-truly-compensate-for-the-growth-in-aviations-carbon-emissions/

reduction projects, or continue existing projects that could not without further financial support. See Section 1.2.3 for a summary of an analysis of the potential demand for credits from existing and new CDP projects as a result of CORSIA.

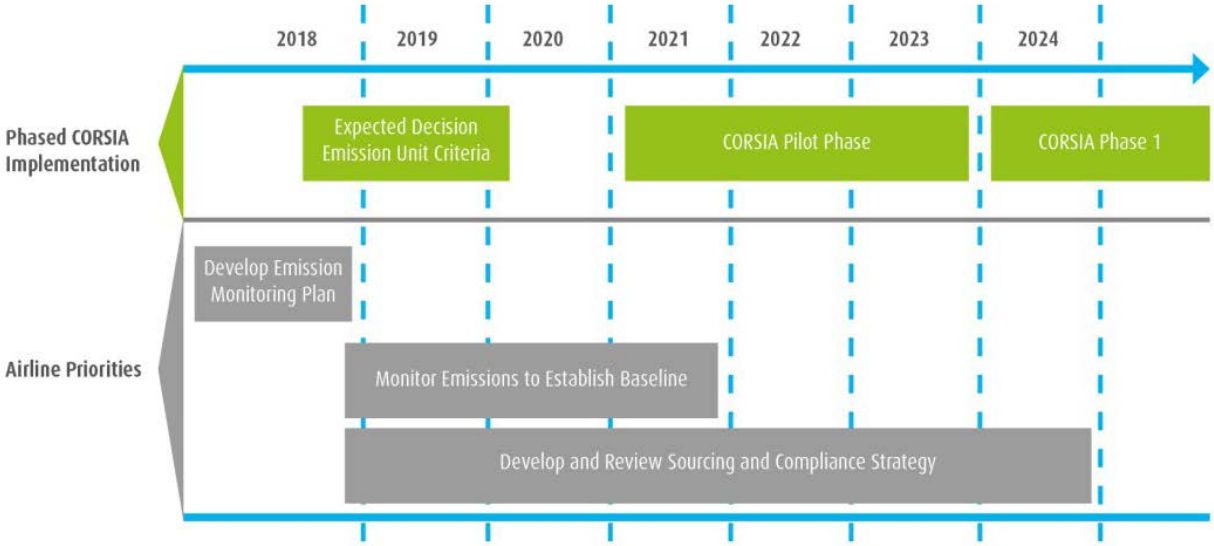
1.2.3 Recent developments, and next steps

On 28th June 2018, ICAO's governing 36-State Council adopted a series of Standards and Recommended Practices (SARPs) for CORSIA which come into effect from 2019.[12] As part of the SARP letter, ICAO outlined a schedule of what needs to be done on their side and on that of airline companies.

The priority for CORSIA members will be on developing Emission Monitoring Plans (EMPs) in 2018 and monitoring in 2019 and 2020. The ICAO is continuing to develop what are known as the Emissions Unit Criteria – the standards to which offsets must conform to be eligible for compliance in CORSIA.

Work is also still ongoing in relation to Article 6 of the Paris Agreement which offers parties the opportunity to cooperate with one another when implementing their Nationally Determined Contributions (NDCs). These issues will both affect the availability of carbon offsets which can be used for CORSIA compliance. Once this becomes clearer, operators with international flights that fly to countries participating in the Pilot Phase will focus on developing their Sourcing and Compliance Strategies.

[12] Green Air Online, Challenges over CORSIA sustainability criteria (June 2018) http://www.greenaironline.com/news.php?viewStory=2499



A series of other issues are currently undergoing debate in relation to availability of carbon credits:[13]

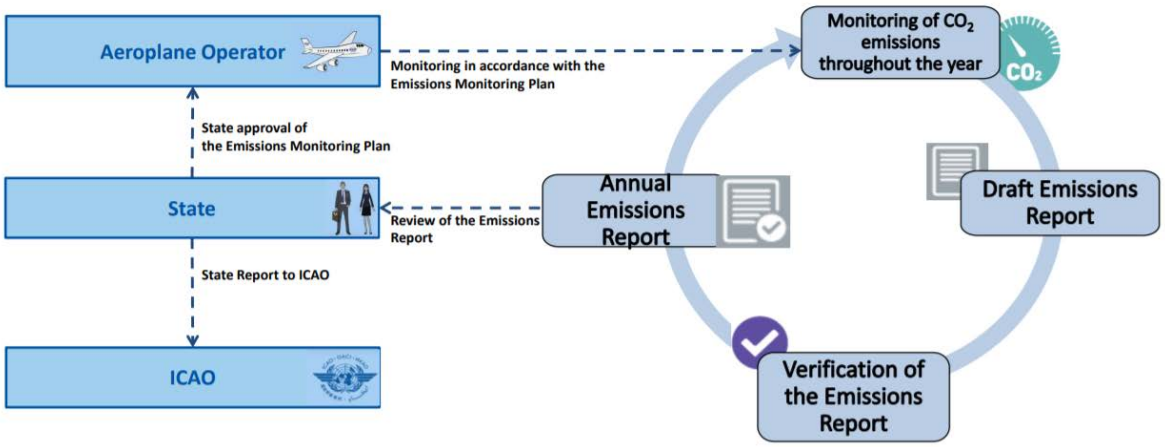
- Further developments to the criteria may include so-called 'vintage restrictions' such as carbon offsets created after a certain date only being eligible, or there may be some program restrictions, such as excluding certain project types. It was originally thought that the final eligibility criteria would be approved in the summer of 2018 but this may take longer than previously expected. As of September 2018 discussions are ongoing.
- Based on current knowledge, it is expected that good quality projects from the following programs from both the compliance and voluntary carbon markets will be eligible: Clean Development Mechanism, Verified Carbon Standard, Gold Standard, Climate Action Reserve, American Carbon Registry, and a new mechanism which is being developed under the Paris Agreement.
- Whether or not supply will be plenty depends predominantly on the eligibility of CDM projects and vintages, and the interaction between CORSIA and the implementation of the Paris Agreement.

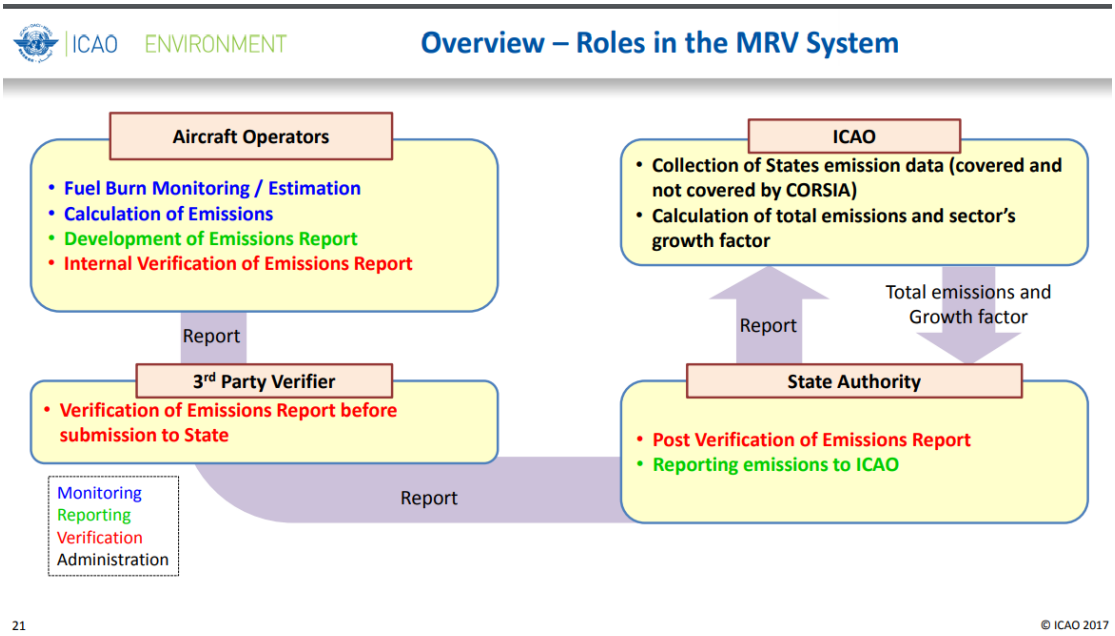
[13] First climate, SARP update (2018) https://www.firstclimate.com/corsia/sarp-update/

1.3 What are the provisions of the CORSIA scheme with regards to national Measurement, Reporting and Verification?

The MRV system for CORSIA will be in operation for 2 years before the pilot phase. This enables a baseline to be calculated for the tracking of progress in the subsequent phases of the scheme's operation. This baseline will be up-to-date and will inform the scheme administrator of the scale and distribution of the GHG emissions of entities covered by the scheme.

The MRV process itself involves the monitoring of fuel use on each international flight and calculation of the related CO_2 emissions, reporting of CO_2 emissions information between operators, states and ICAO, and verification of reported emissions data to ensure completeness and to avoid misstatements.





Source: https://www.icao.int/Meetings/CORSIAHQ18/Documents/2_1_CORSIA_MRV%20System_Monitoring.pdf

1.3.1 Overview of Monitoring, Reporting and Verification procedures

All aircraft operators conducting international flights are required to monitor, report and verify CO_2 emissions from these flights every year starting 1st Jan 2019. Humanitarian, medical and firefighting operators are exempt. Requirement for the MRV of CO_2 emissions is independent from participation in CORSIA offsetting.

Criteria for operators that are required to implement MRV:

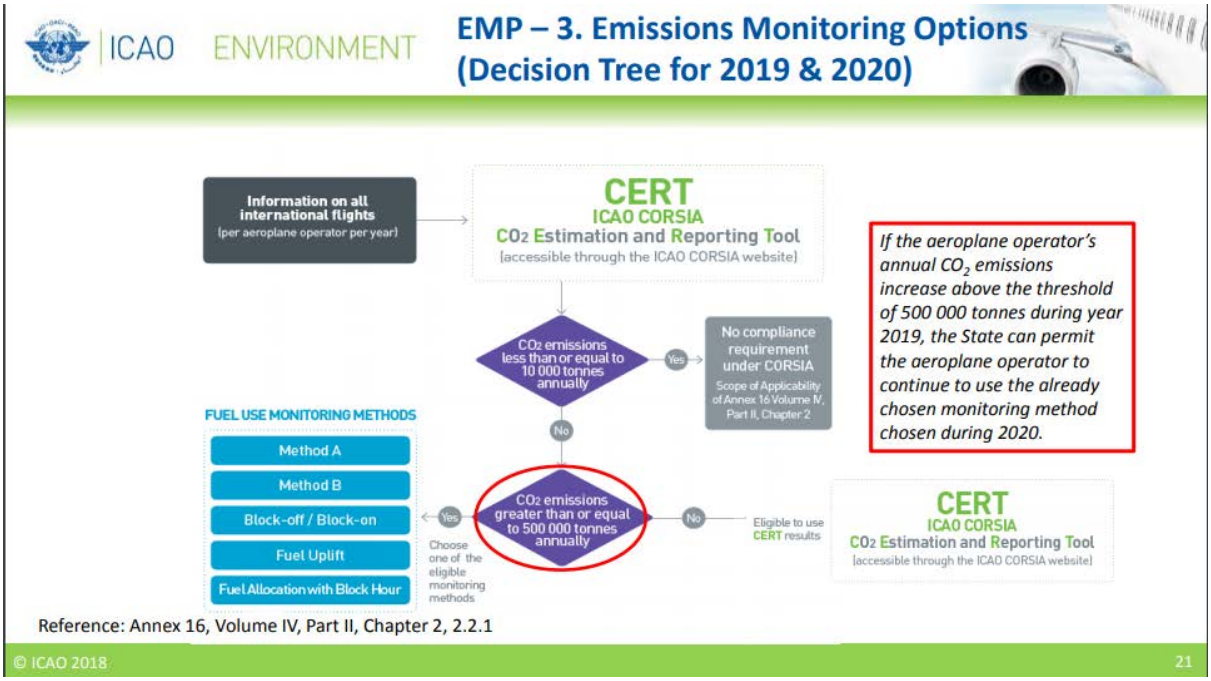
- Aircraft with maximum certified take-off mass greater than 5,700kg
- Conducting international operations on or after 1st Jan 2019
- Operator producing annual CO_2 emissions greater than 10,000 tonnes

Components of MRV system:

- Monitoring of fuel use on each flight & calculation of CO_2 emissions
- Reporting of emissions between operators, states and ICAO
- Verification of reported emissions data to ensure completeness & avoid misstatements

Emission Unit Criteria (EUC) and MRV are to be based on ICAO 'Standards and Recommended Practices' (SARPs). CORSIA-related SARPs were fast-tracked for final review by the ICAO Council in June 2018, with a deadline for disapproval or filing of differences in September 2018, and applicability from 1st Jan 2019 onward.

1.3.2 Monitoring



Source: https://www.icao.int/Meetings/CORSIAHQ18/Documents/2_1_CORSIA_MRV%20System_Monitoring.pdf

ICAO has a tool called CERT (CO_2 Estimation and Reporting Tool) to help operators estimate and report their international aviation emissions. This tool can be used by all operators for a preliminary CO_2 assessment and for filling data gaps. The CERT will be available on the ICAO website, to operators who produce <500,000 tonnes CO_2 on all international flights in the monitoring phase (2019-2020). From 2021, the CERT will only be available to operators who produce <50,000 tCO_2 on international flights with offsetting obligations (2021-2035)

All operators with emissions greater than these thresholds annually must use one of five other fuel use monitoring methods, specifications of which are contained in Annex 16, Volume IV, Appendix 2. Guidance material is included in the Environmental Technical Manual, Volume IV. If an operator doesn't have sufficient information to use one of the five monitoring methods, the state can approve the usage of CERT until 30th June 2019.

1.3.3 Reporting

Reporting templates are available on the CORSIA website.

- **Operators Emissions Report**

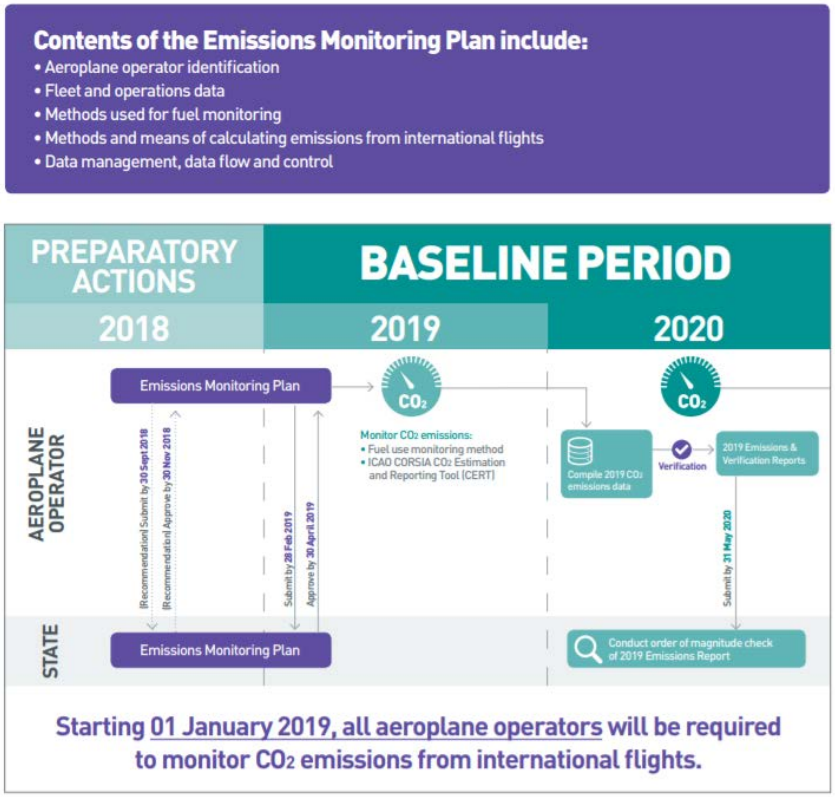
Each operator will submit an emissions monitoring plan (EMP) to the state to which it is attributed for approval. The EMP identifies the most appropriate means and methods for CO_2

emissions monitoring on an operator-specific basis, and facilitates the reporting of required information to the state. The operator must resubmit the EMP to the state for approval if a material change is made to the plan. A standard template is available on the CORSIA website.

Aircraft operators that meet the MRV applicability criteria must draft an annual Emissions Report based on the approved Emissions Monitoring Plan (EMP). The Emissions Report must contain operator information, reference to the EMP, list of operator's fleet, details on use of CERT (if eligible), total mass per type of fuel (if not using CERT), no. of international flights during the reporting period, CO2 emissions and information on the verification body that verified the report. This report will be submitted to the state to which the operator is associated.

Operators must also provide a declaration of other GHG schemes in which emissions reductions from CORSIA eligible fuels may be claimed and a declaration that it has not made claims for the same batches of CORSIA eligible fuels under other schemes.

New entrants must submit an EMP within 3 months of falling under the applicability requirements.



- **CORSIA eligible fuels report (supplement to Emissions Report):**

Operators can claim emissions reductions by reporting on CORSIA eligible fuels from 2021 onwards, either on an annual basis or through one-time reporting within a given compliance period. When reporting, operators must subtract any fuel traded or sold to a third party from its total reported quantity to avoid double-counting. For each CORSIA eligible fuel type, total mass, approved life cycle emissions values and emissions reductions claimed must be reported. This report should be included with the submission of the Emissions Report to the associated state.

- **State report**

Total annual CO_2 emissions in tonnes per state pair are to be reported in 2019 & 2020. For each state pair, data must be aggregated for all operators attributed to the state that conduct operations in the state pair. There should be no operator-specific data and emissions from operators not attributed to the state are not reported.

From 2021 the report should include the total annual CO_2 emissions per state pair, aggregated for all operators attributed to the state, with subtotals for pairs subject to offsetting requirements and pairs not subject to offsetting requirements. It should also contain total annual CO_2 emissions for each operator attributed to the state, with one value per operator and an indication of when CERT is used by the operator.

1.3.4 Verification

Verification ensures accuracy of information related to:

- The amount of CO_2 emissions from intl. flights
- Purchase of emissions units from eligible programmes to address offsetting requirements
- Cancellation of eligible emissions units
- Confirmation of single use of eligible emissions units

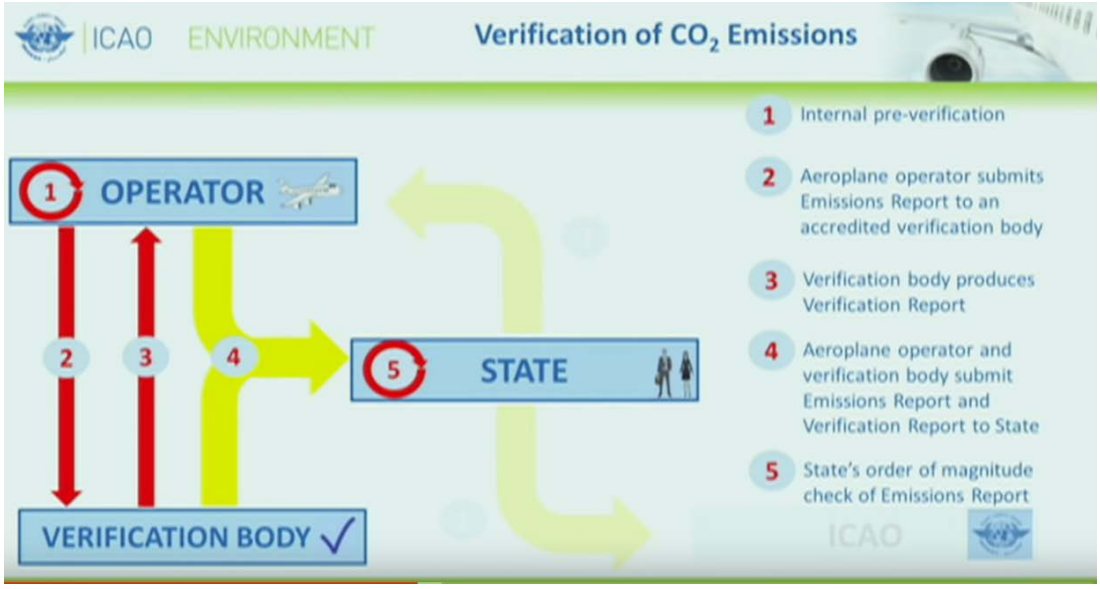
Annual operator's Emissions Report will be subject to verification procedure:

1. Operator conducts voluntary internal pre-verification of Emissions Report. Guidance will be made available to support operators in this task, but each operator decides how to conduct this verification.

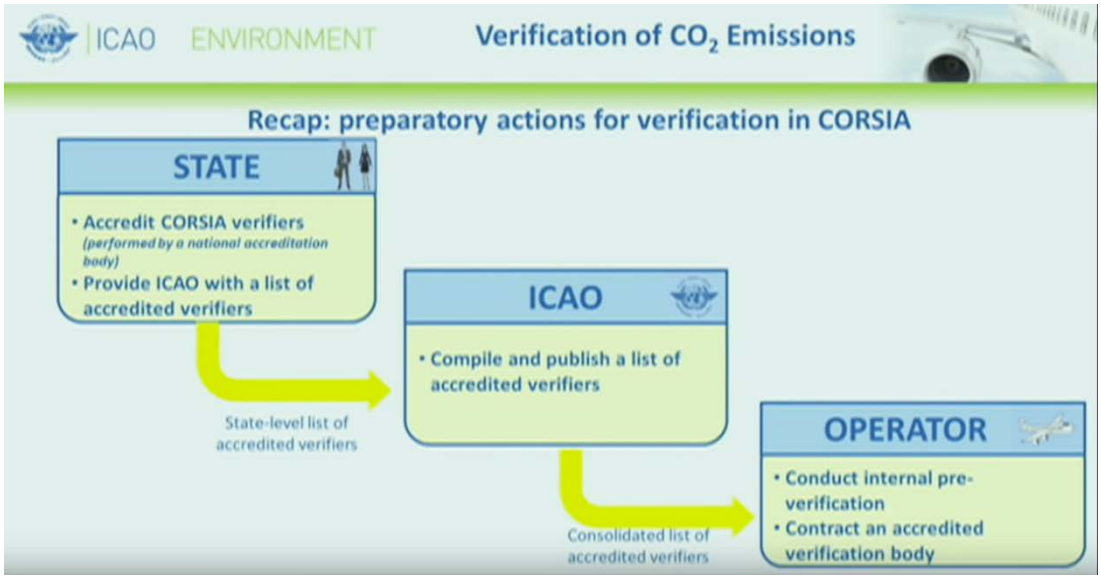
2. Operator engages an accredited verification body to verify annual Emissions Report.
3. Following the verification of the Emissions Report, the verification body produces a Verification Report which will be shared with the operator.
4. Operator and verification body both submit a copy of the Emissions Report and the Verification Report to the State
5. The State performs an order of magnitude check of the Emissions Report to assess the data completeness, as reported by the operator, based on the State's knowledge of the operator's activities. This should take approx. 3 hours.

To ensure sufficient availability of accredited verification bodies, ICAO is working towards providing training on CORISA verification requirements to both national accreditation and verification bodies, and an annually published list of accredited verification bodies.

There is the possibility of a state with no accreditation body, so operators are free to choose any verification body from ICAO published list. Accreditation of verified bodies can take up to 2 years, so ISO accredited verification bodies can be used, if they meet the additional CORSIA specific requirements as explained above. Operators must pay for verification; the burden is not on the state to pay for verification.



Source: ICAO website (https://www.icao.int/environmental-protection/CORSIA/Pages/default.aspx)



Source: ICAO website (https://www.icao.int/environmental-protection/CORSIA/Pages/default.aspx)

1.3.5 Data Gaps

Operators using a Fuel Use Monitoring Method should fill data gaps using ICAO CERT tool, provided that gaps do not exceed 5% of international flights (2019-2020) or 5% of international flights subject to offsetting requirements (2021-2035). If gaps exceed these thresholds, a percentage of flights affected and an explanation must be provided in report.

If the Operator does not provide the Emissions Report according to the agreed timeline, the state must engage with the operator to obtain necessary information. If this is unsuccessful, the State must estimate operator's annual emissions using best available information & tools (i.e. CERT). If the state does not report to ICAO on time, ICAO will fill data gaps to calculate total sectoral CO_2 emissions & related calculations. Any errors should be reported to ICAO by the state, and the reported emissions subsequently updated to address the error.

1.4 What systems are participant airline companies or countries required to have in place, and by when?

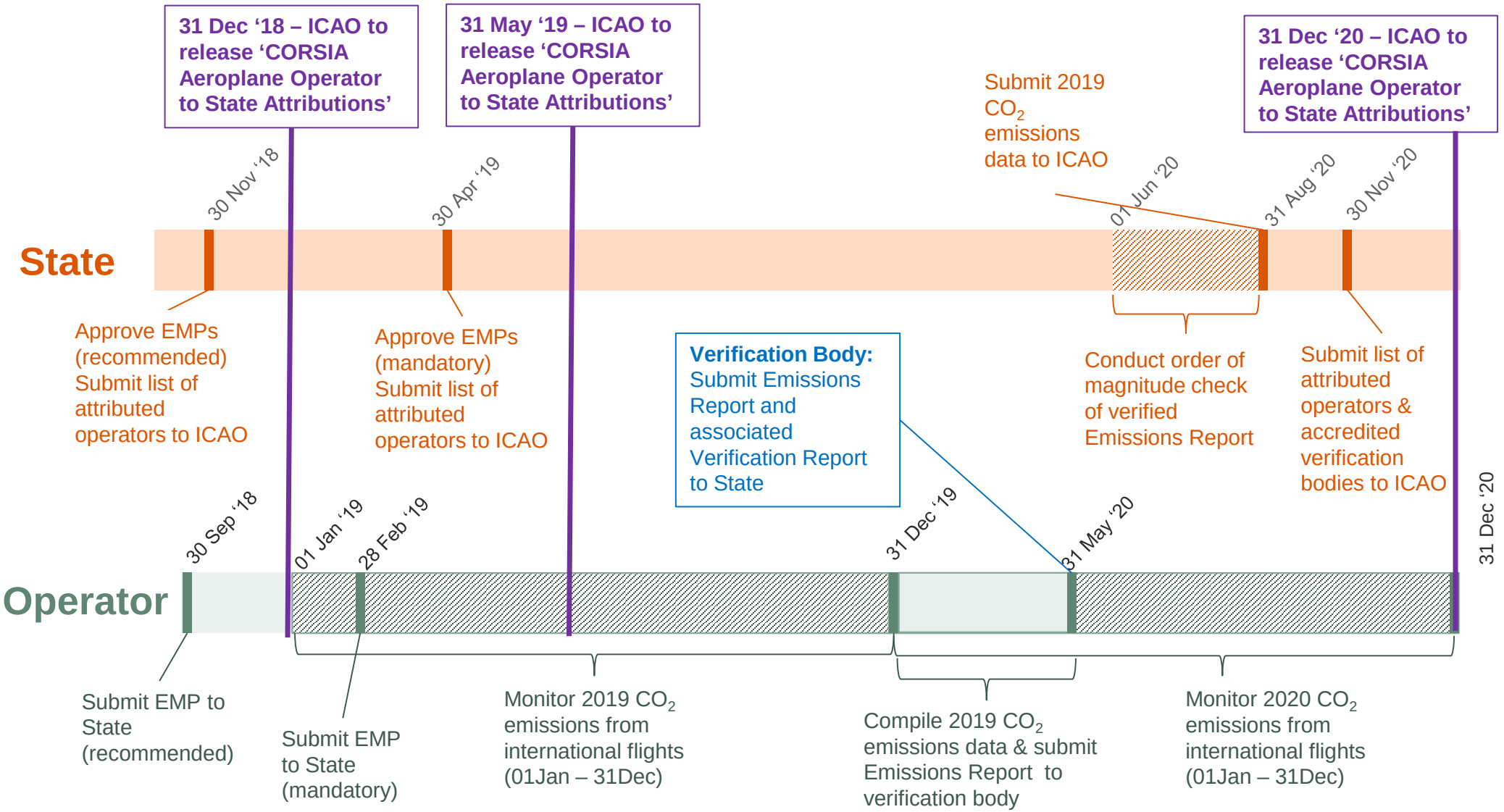
The table and figure on the following pages summarise the requirements for states, operators and ICAO in establishing CORSIA.

The focus for **operators** in the first instance is on collecting and monitoring baseline data in advance of the commencement of the first pilot phase of the scheme. This takes the form of an Emissions Monitoring Plan, which must be submitted by the 28th February 2019, but is recommended to be submitted before the commencement of 2019. During 2019, operators must gather data on their emissions and prepare an Emissions Report to be submitted to the state, along with a Verification report by the 31t May 2020.

For the **State**, the focus is on approving EMPs and submitting a list of attributed operators to ICAO by the 30th April 2019. Following the gathering and review of Emissions Reports after the end of 2019, the State must submit 2019 CO2 emissions data to ICAO by the 31st August 2020. In November 2020, the State must submit a list of attributed operators & accredited verification bodies to ICAO.

Timeline	Responsibility	Action
30 Sep '18	Operator	Submit EMP to State (recommended)
30 Nov '18	State	Approve EMPs (recommended)
30 Nov '18	State	Submit list of attributed operators to ICAO
31 Dec '18	ICAO	Release ICAO document 'CORSIA Aeroplane Operator to State Attributions'
1 Jan -31 Dec '19	Operator	Monitor 2019 CO_2 emissions from international flights
28 Feb '19	Operator	Submit EMP to State (mandatory)
30 Apr '19	State	Approve EMPs (mandatory)
30 Apr '19	State	Submit to ICAO: - List of operators attributed to state - List of verification bodies accredited in the state
31 May '19	ICAO	Release ICAO document 'CORSIA Aeroplane Operator to State Attributions'
1 Jan -31 Dec '20	Operator	Monitor 2020 CO_2 emissions from international flights
1 Jan-31 May '20	Operator	Compile 2019 CO_2 emissions data to be verified by verification body Submit the Emissions Report (covering 2019 CO2 emissions) to selected verification body
31 May '20	Operator & Verification Body	Submit Emissions Report and associated Verification Report to the state
1 Jun-31 Aug '20	State	Conduct an order of magnitude check of verified Emissions Report from operators
31 Aug '20	State	Submit 2019 CO2 emissions data to ICAO
30 Nov '20	State	Submit to ICAO: - List of operators attributed to state - List of verification bodies accredited in the state
31 Dec '20	ICAO	Release ICAO document 'CORSIA Aeroplane Operator to State Attributions'

Table 1: Timeline for CORIA implementation


31 Dec '18 – ICAO to release 'CORSIA Aeroplane Operator to State Attributions'
31 May '19 – ICAO to release 'CORSIA Aeroplane Operator to State Attributions'
Submit 2019 CO_2 emissions data to ICAO
31 Dec '20 – ICAO to release 'CORSIA Aeroplane Operator to State Attributions'
30 Nov '18
30 Apr '19
01 Jun '20
31 Aug '20
30 Nov '20
State
Approve EMPs (recommended) Submit list of attributed operators to ICAO
Approve EMPs (mandatory) Submit list of attributed operators to ICAO
Verification Body: Submit Emissions Report and associated Verification Report to State
Conduct order of magnitude check of verified Emissions Report
Submit list of attributed operators & accredited verification bodies to ICAO
30 Sep '18
01 Jan '19
28 Feb '19
31 Dec '19
31 May '20
31 Dec '20
Operator
Submit EMP to State (recommended)
Submit EMP to State (mandatory)
Monitor 2019 CO_2 emissions from international flights (01Jan – 31Dec)
Compile 2019 CO_2 emissions data & submit Emissions Report to verification body
Monitor 2020 CO_2 emissions from international flights (01Jan – 31Dec)

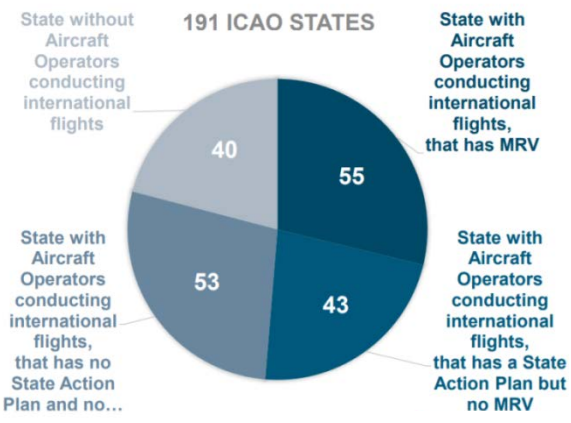
1.5 What other relevant international standards exist for accreditation and verification systems for aviation carbon emissions in the UK, EU and representative countries worldwide?

CORSIA rules state that a verification body must be accredited by a national accreditation body in order to be eligible to verify Emissions Reports in CORSIA:

- ISO 14065:2013 "Greenhouse gases - Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition" (published on: 2013-04)
- CORSIA-specific requirements as described in Annex 16 Volume IV, Appendix 6
- Russian equivalent GOST R ISO 14065:2010 – Greenhouse gases. Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition

A national accreditation body will need to work in accordance with ISO/IEC 17011 "Conformity assessment - General requirements for accreditation bodies accrediting conformity assessment bodies"

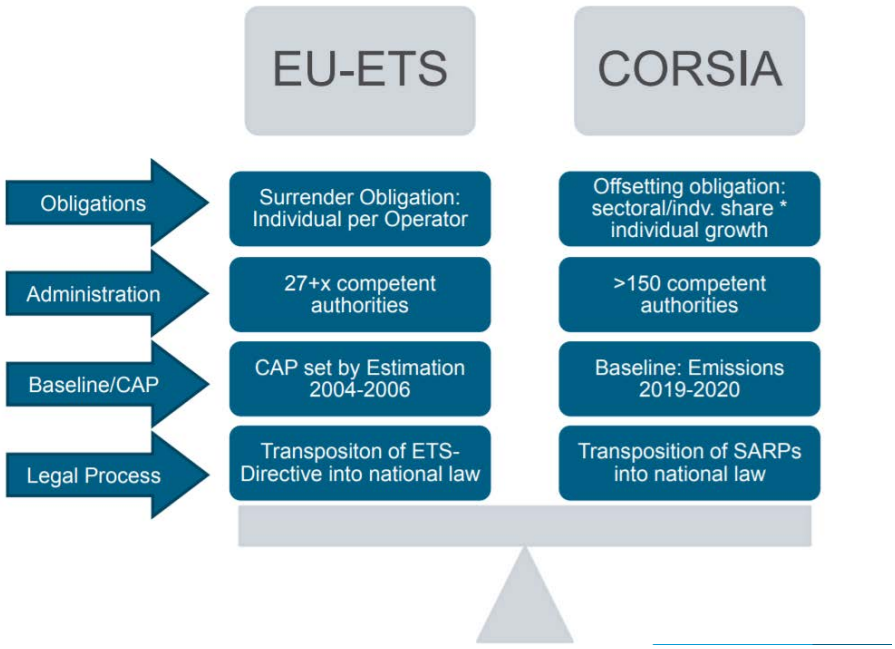
- National accreditation bodies need to have the required knowledge to provide accreditation to verification bodies
    - ICAO is exploring means to provide training to national accreditation bodies on CORSIA verification requirements
- Operators need to have access to verification bodies accredited for CORSIA
    - Draft Annex 16, Volume IV does not limit an operator from working with a verification body accredited by the national accreditation body of another State
    - ICAO will compile and publish, on an annual basis, a list of verification bodies accredited for CORSIA to facilitate operators' access to accredited verification bodies
- Russian equivalent GOST R ISO/IEC 17011:2008– Conformity assessment. General requirements for accreditation bodies accrediting conformity assessment bodies]



Of the 191 ICAO states, just over a quarter (55) have aircraft operators conducting international

flights and have an MRV system in place. A further 43 have a State Action Plan but no MRV is in place. 53 have no State Action Plan of MRV system in place. Even for States that are not participating in the First Voluntary phase of CORSIA, the monitoring and reporting of emissions remains mandatory. This means that c.150 states will participate in the monitoring and reporting of emissions.[14]

There are similar aspects within CORSIA to the implementation of EU-ETS. The main differences are that CORSIA has more participants, a wider scope and requires greater coordination because of the phased approach.[15]



[14] Umwelt Bundesamt, CORSIA regional seminar and capacity building (June 2017) https://www.carbon-mechanisms.de/fileadmin/media/dokumente/sonstige_downloads/CTI_Workshop_2017/9_Hussels_170626_CTI-Workshop_Hussels.pdf

[15] Umwelt Bundesamt, CORSIA regional seminar and capacity building (June 2017) https://www.carbon-mechanisms.de/fileadmin/media/dokumente/sonstige_downloads/CTI_Workshop_2017/9_Hussels_170626_CTI-Workshop_Hussels.pdf

The implementation of the EU ETS for aviation provides a useful case study for the implementation of MRV for CORSIA.

Aviation's inclusion in the EU ETS originates at an amendment of the EU-ET Directive in 2008. Monitoring Plans were then submitted by Member States for approval at the end of 2009. The first Emissions Reports were produced for 2010, and the first surrendering obligation took place in 2012. The compliance cycle is one year long.

In terms of how this was implemented in individual Member States, the following general steps were taken in Germany to ensure compliance and the necessary institutional capacity.

- Transposition of Directive into national law
- Calculation of Cap (by European Commission)
- Determination of Competent Authority
- Development of necessary IT Systems for Monitoring plans, reports and internal processes
- First Enforcement Tasks carried out by interdisciplinary Project Team
- Establishment of a new Unit at The German Emissions Trading Authority (DEHSt) for aircraft operators in 2011

The Accreditation and Verification Regulation (Commission Regulation (EU) No 600/2012 of 21 June 2012 on the verification of greenhouse gas emission reports and tonne-kilometre reports and the accreditation of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council - AVR) introduced for phase 3 of the European Union Emission Trading Scheme (EU ETS), and beyond, an EU-wide harmonised approach towards the accreditation of verifiers. AVR entered into force on 1 August 2012 and applies from 1 January 2013.

The AVR introduces the model, where verifiers are answerable to the accreditation body. Based on Article 65 of the AVR, EU Member States must also monitor the performance of their national accreditation bodies.

A report dated 23 November 2017 from the Commission to the European Parliament and to the Council on the functioning of the European carbon market (COM(2017) 693 final) also confirmed that the mutual recognition of verifiers among participating countries was working successfully: most countries (29, all except FR and LV) reported at least one foreign verifier active in their territory.

Verifiers who are a legal person or a legal entity must be accredited by a National Accreditation Body in order to carry out verifications in compliance with the AVR. According to a report dated 18 November 2015, in practice, only one EU Member State has reported to have such system in place for certification, and only one verifier has been certified under that system.

Under Article 21 of the EU ETS Directive, Member States are required to report the number of verifiers accredited per accreditation scope. A report dated 18 November 2015 refers to 1044 verifiers accredited across all scopes (given verifiers do multiple scopes, so this does not equal the total number of verifiers).

The total number of verifiers is not reported in Article 21 reports, but the EU estimates the number accredited for combustion (the primary scope of accreditation) at the level of at least 130 different accredited verifiers overall concerning 2016 verifications. Article 21 submissions in 2017 indicate that there were 47 individual verifiers accredited for 2016 concerning aviation.

1.6 How will CORSIA be administered? How does this work in the UK?

Each of the participating Member States will need to identify an institution to undertake the data monitoring and verification, and introduce domestic regulations that actually require airlines to comply with the scheme, along with enforcement measures for non-compliance (e.g. either failing to report emissions, failing to buy enough offset credits, or buying credits that don't meet the criteria).

The UK Environment Agency will be taking on the role of the UK administering authority for CORSIA purposes. The administering authority role will include:

- Authorising Emissions Monitoring Plans, which set out the methodology to be used by the operator to monitor their emissions;
- Reporting aggregated emissions and emissions units cancelled to ICAO; and

- Providing guidance and support to operators to help them comply with the scheme. What will operators subject to the scheme need to do?

Operators who are subject to the scheme will be required to:

- Submit an Emissions Monitoring Plan to the UK Environment Agency for approval by the end of September 2018.
- Monitor and report their emissions from 1st January 2019 until 31st December 2020, after which operators will start to accrue offsetting obligations for their emissions above the 2020 baseline.
- Every 3 years, an operator will have to purchase and cancel enough emissions units to meet their offsetting obligations, with the first such deadline in January 2025.

Operators that are subject to the scheme are recommended to focus on creating their Emissions Monitoring Plan in time for the requirement to submit this to the UK Environment Agency for approval by the end of September 2018.

Following ICAO Governing Council's adoption of the international Standards and Recommended Practices (SARPs) supporting 'CORSIA', ICAO announced a new 'ACT CORSIA' capacity-building initiative in July 2018. The purpose of ACT CORSIA will be to help countries work together to provide training for national aviation experts on the CORSIA Monitoring, Reporting and Verification (MRV) provisions and implementation tools, and also to help them make needed adaptations to their national regulatory frameworks.

From Oct '17 to Mar '18, some project participants tested the MRV provisions; the main conclusion was that CORSIA MRV is feasible for implementation.

Phase 1 – Emissions Monitoring Plan (EMP):

- Most participants assessed EMP development/approval as simple or manageable. For most operators, drafting of the EMP took 1 to 7 days. For all States, approval of the EMP took 1 to 5 days.

Phase 2 – Emissions Reporting and Verification:

- Most participants assessed activities in the project phase 2 as simple or manageable. For most operators, completing the Emissions Report took 2 to 8 hours. For all States, approving the Emissions Report took 2 to 4 hours.

1.7 Further information

ACT-CORSIA is a comprehensive programme to provide Assistance, Capacity-building and Training for CORSIA implementation. Online tutorials provided:

https://www.youtube.com/watch?v=tjF7JB0bTnU&list=PLOoOa5RwilZKDtfJ2H2CuyMzVE4jo6U85

Feedback from 2018 Regional Seminars: (presentations available on CORSIA website)

- No major/substantial issues raised on CORSIA SARPs text
- Recognition of urgency for CO2 Emissions Monitoring Plans development/approval
- Technical/clarification questions – FAQs to be updated on ICAO webpage
- More capacity building, seminars and training required to support CORSIA implementation, including support for establishment of national/regional regulatory frameworks
- More partnerships needed among States themselves and with ICAO

1.8 Resources

Action checklist & timeline
https://www.icao.int/environmental-protection/Documents/CorsiaLeaflet-04_Web.pdf

CERT infographic:
https://www.icao.int/environmental-protection/Documents/CorsiaLeaflet-03_Web.pdf

CERT tool:
https://www.icao.int/environmental-protection/CORSIA/Pages/CERT.aspx

Offsetting requirement steps:
https://www.icao.int/environmental-protection/Documents/CorsiaLeaflet-05_Web.pdf

Case studies & best practices:
https://www.icao.int/Meetings/CORSIAHQ18/Documents/7_ACT_CORSIA.pdf

FAQ – What is CORSIA & how does it work?
https://www.icao.int/environmental-protection/Pages/A39_CORSIA_FAQ2.aspx

FAQ – What would be the impact of joining CORSIA?
https://www.icao.int/environmental-protection/Pages/A39_CORSIA_FAQ3.aspx

ICAO Seminar on CORSIA – Montreal July 2018: Presentations
https://www.icao.int/Meetings/CORSIAHQ18/Pages/Presentations.aspx

Reporting templates:
https://www.icao.int/environmental-protection/CORSIA/Pages/Templates.aspx

CORSIA online tutorials:
https://www.youtube.com/watch?v=tjF7JB0bTnU&list=PLOoOa5RwilZKDtfJ2H2CuyMzVE4jo6U85

ICAO Seminar Montreal – Session 4: MRV
https://www.icao.int/Meetings/CORSIAHQ18/Documents/4_1_CORSIA_MRV_System_Reporting_and_Verification.pdf

Appendix A: Case study: Demand for project credits from CORSIA

A recent analysis by the New Climate Institute looked at the potential source of credits flowing from projects arising from the Clean Development Mechanism, by way of example.

The Clean Development Mechanism (CDM) is the largest offsetting programme in the world with more than 8,000 registered projects or programmes and more than 1.8 billion Certified emission reduction units (CERs) issued by the end of 2017. A large number of projects have stopped requesting issuance of CERs, but still continue reducing emissions, because the costs associated with requesting CERs are not sufficiently compensated by the current market price.

New Climate Institute looked at the data on registered CDM projects that could request issuance of CERs in response to demand signals from CORSIA for emission reductions in the period 2013 to 2020.1 This was reviewed under different eligibility scenarios – in cases without restrictions on offset eligibility, and in cases where the requirements were more stringent.

NCI found that, without restrictions on offset eligibility, CORSIA will not incentivise further emission reductions beyond those that will happen without the scheme and will also not provide price signals that reward previous investments in CDM projects. If ICAO allows airlines to use any offset credits to compensate for their emissions, then most operators will seek out the cheapest credits. The cheapest credits are most likely to come from projects that would continue reducing emissions even without new demand. Existing projects registered under the CDM alone could supply up to 3.8 billion CERs, each representing one avoided tonne of CO2, for less than €1 per unit in the period up to 2020. The vast majority of this supply comes from projects that, once built and operating, receive alternative sources of revenue to those from the sale of emission reduction credits. Current projections suggest around 3 billion tonnes of CO_2 may need to be offset under CORSIA over the proposed timeframe for the scheme from 2021 to 2035. The price may be so low that that it offers insufficient return on the administrative costs of credit verification and issuance.

The ICAO Assembly resolution mentions the option of applying a “vintage and timeframe” restriction for offsets. This could limit the supply of offset credits to emission reductions taking place or projects starting after a certain date. NCI argue that the best way to do this would be to only allow credits from projects where the investment decision was made following ICAO’s decision to proceed with CORSIA. This approach is favoured by the EU. Norway has gone further, advocating that projects should only be eligible to supply CORSIA if they start in or after 2020. When talks resume in September emerging economies such as Brazil and

China are expected to push for all carbon credits under UN Climate Change mechanisms to be eligible for the scheme, regardless of how old the projects are, according to Climate Home News.

An additional option is to only allow offset credits from project types that are likely to need further financing to continue reducing emissions. NCI identified the CDM project types that are likely to require further financial support to continue their activities, e.g. projects which reduce methane emissions or industrial waste gases. These could supply up to 700 million CERs for their emission reduction activities between 2013 and 2020. This number will fall over time as projects cease or end the issuance of CERs. If offset eligibility were restricted to credits from these so-called 'vulnerable' projects, the demand from CORSIA would indeed create demand for new projects.