Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

— Frequently Asked Questions (FAQs) —

(updated as of 8 February 2019)

Note:

The information included in the responses to the selected "Frequently Asked Questions" makes reference to the following documents:

- *Assembly Resolution A39-3:* Consolidated statement of continuing ICAO policies and practices related to environmental protection – Global Market-based Measure (MBM) scheme[1], *adopted by the 39th Session of the ICAO Assembly (27 September – 6 October 2016);*
- *First edition of Annex 16* — Environmental Protection, Volume IV – Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), *adopted by the ICAO Council at its 214th Session (11 - 29 June 2018); and*
- *First edition of the* Environmental Technical Manual *(Doc 9501), Volume IV,* — Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

— — — — — — — —

[1] https://www.icao.int/environmental-protection/CORSIA/Documents/Resolution_A39_3.pdf

TABLE OF CONTENTS

2.18	How are CORSIA eligible fuels accounted for in the calculation of offsetting requirements?
2.19	Can an aeroplane operator's CO_2 offsetting requirements be negative?
2.20	What are emissions units, in general?
2.21	Can an aeroplane operator already start purchasing CORSIA eligible emissions units?
2.22	Can an aeroplane operator implement a project that generates CORSIA eligible emissions units?
	Key design element 4: Exemptions and new entrants
2.23	Does the CORSIA include provisions to exempt very low international aviation activities?
2.24	How will the CORSIA apply to new operators that will initiate activities after the entry into force of the scheme (a so-called "new entrant")?
2.25	Will a new entrant operator affect the CORSIA baseline?
	Key design element 5: Review process
2.26	Does the CORSIA include provisions to review its implementation and to make adjustments if needed?
3.	**Questions about Annex 16, Volume IV - CORSIA**
	General questions related to Annex 16, Volume IV
3.1	What are the differences between: Annex 16, Volume IV; Environment Technical Manual, Volume IV; and CORSIA Implementation Elements?
3.2	What ICAO process was followed to develop Annex 16, Volume IV?
	Administrative aspects
3.3	What is the definition of international flight for CORSIA purposes?
3.4	How are diverted flights handled in CORSIA?
3.5	What does a "State pair" mean? Is it uni- or bidirectional?
3.6	Who will ensure that aeroplane operators comply with the requirements of Annex 16, Volume IV?
3.7	How is an international flight being attributed to a single aeroplane operator?
3.8	How is an aeroplane operator being attributed to a single State?
3.9	Can an aeroplane operator delegate its administrative requirements?
3.10	Can an aeroplane operator report together with one or more of its subsidiaries?
3.11	Can a State delegate its administration processes under the CORSIA to another State?
3.12	How long does a State and an aeroplane operator need to keep CORSIA-related records? What is included in those records?
	Monitoring, reporting and verification (MRV)
3.13	What are the components of the CORSIA MRV system?
3.14	What is the applicability of the CORSIA MRV requirements? Are they any exemptions?

3.15	Can an aeroplane operator with emissions of less than 10 000 tonnes of CO_2 per year be included in CORSIA?
3.16	What are the actions for an aeroplane operator, who has been covered by CORSIA, but now drops below the 10 000 tonnes of CO_2 threshold?
3.17	Are aeroplane manufacturers or airports subject to any requirements under Annex 16, Volume IV?
3.18	Is a re-positioning flight before or after an exempted humanitarian, medical or firefighting flight exempt?
3.19	Are helicopter operations covered by the CORSIA MRV system?
3.20	Are international flights by police, military, customs or State aircraft within the scope of applicability of the CORSIA MRV system?
3.21	How are diversions handled in CORSIA?
	Emissions Monitoring Plan
3.22	What is an Emissions Monitoring Plan and why is it needed?
3.23	What are the contents of an Emissions Monitoring Plan?
3.24	Is there a standardized template for an Emissions Monitoring Plan?
3.25	When should an aeroplane operator submit an Emissions Monitoring Plan to the State?
3.26	When will the Emissions Monitoring Plan be approved by the State?
3.27	Does the third-party verification body need to review the Emission Monitoring Plan prior to its review and approval by the State?
3.28	What happens if an aeroplane operator does not have an approved Emissions Monitoring Plan on 1 January 2019?
3.29	Does the Emissions Monitoring Plan have to be submitted annually?
3.30	What happens if there are changes to the information contained in an Emissions Monitoring Plan?
	Monitoring of CO_2 emissions
3.31	How does an aeroplane operator monitor its CO_2 emissions?
3.32	What is the ICAO CORSIA CO_2 Estimation and Reporting Tool (CERT)?
3.33	Where can one access the ICAO CORSIA CERT?
3.34	What are the five eligible Fuel Use Monitoring Methods? Are they different from ICAO CORSIA CERT?
3.35	Is it necessary to describe all five Fuel Use Monitoring Methods in the Emissions Monitoring Plan, even if not all are used?
3.36	Is it possible to use a Fuel Use Monitoring Method for reporting that is different to the method(s) described in the approved Emissions Monitoring Plan?
3.37	Can an aeroplane operator change its Fuel Use Monitoring Method?
3.38	How is “Block-off” and “Block-on” defined in Fuel Use Monitoring Method “Block-off / Block-on”?
3.39	What are the data requirements for the Fuel Use Monitoring Method “Fuel Allocation

	with Block Hour"?
3.40	How should missing data under the Fuel Use Monitoring Method "Fuel Allocation with Block Hour" be handled?
3.41	What will happen if an aeroplane operator exceeds the eligibility threshold to use ICAO CORSIA CERT during a given year?
3.42	How is fuel use treated while performing non-commercial activities (e.g., APU fuel use during maintenance)?
3.43	How are CO_2 emissions calculated from the fuel used?
3.44	Why do we need to know total CO_2 emissions from international aviation?
3.45	What are the requirements for fuel density?
3.46	What is the standard fuel density?
3.47	How to account for the use of CORSIA eligible fuels in the CORSIA MRV system?
3.48	Is induced land-use change taken into account for CORSIA eligible fuels?
3.49	Can an aeroplane operator claim all the CORSIA eligible fuel it has purchased?
3.50	Which date is relevant in order to claim a batch of CORSIA eligible fuel?
	Reporting of CO_2 emissions, CORSIA eligible fuels and eligible emissions unit cancellations
3.51	What is the timeline for reporting of CO_2 emissions, and who will report to whom?
3.52	Do all international routes have to be included in the Emissions Report, or only the international routes between participating States in the CORSIA offsetting?
3.53	What is the level of aggregation of the CO_2 emissions information that will be reported to which stakeholders?
3.54	What levels of information will be available to the public?
3.55	What is the CORSIA Central Registry (CCR)?
3.56	When will the CCR become available?
3.57	How does the reporting from a State to ICAO work before the CCR becomes operational (e.g., submission of list of aeroplane operators attributed to a State)?
3.58	Are there any provisions regarding the confidentiality of data if a route is only operated by one operator?
3.59	Are the reporting periods and compliance periods the same for all operators?
3.60	Is there an established template for reporting annual CO_2 emissions from an aeroplane operator to the State, and from the State to ICAO?
3.61	What if there are gaps identified in the reported data?
3.62	What is the threshold for data gaps? How can such data gaps be addressed?
3.63	What constitutes a data gap?
3.64	Is the 5 per cent data gap threshold based on CO_2 emissions or number of flights?
3.65	Is an alternative estimation approach (instead of using the ICAO CORSIA CERT) possible for addressing data gaps?
3.66	Will CORSIA's baseline emissions be affected due to an error correction to the

	Emissions Report?
3.67	What happens in case of late reporting or no reporting at all by an aeroplane operator or a State?
3.68	How does an aeroplane operator report the use of CORSIA eligible fuels?
3.69	How does the reporting of emissions unit cancellations work?
3.70	Can an aeroplane operator cancel emissions units prior to having received the final offsetting requirements from the State?
3.71	What happens if an operator does not cancel enough emissions units to meet its offsetting requirements?
	Verification
3.72	How does the verification of CO_2 emissions work in CORSIA? Who will do the verification?
3.73	Is it necessary for an aeroplane operator to perform an internal pre-verification of its Emissions Report, prior to the third-party verification?
3.74	Does the voluntary pre-verification substitute the third-party verification?
3.75	Is a third-party verification needed when using the ICAO CORSIA CERT?
3.76	What are the requirements for the verification of an Emissions Unit Cancellation Report, and by whom?
3.77	What are the requirements to be accredited as a verification body?
3.78	Who accredits the verification body?
3.79	Does an aeroplane operator have to be certified under ISO 14065?
3.80	How can an aeroplane operator identify an accredited verification body?
3.81	How much time is normally required for the third-party verification?
3.82	Who pays for the third-party verification and what will be the price? Is a price list included in the list of verification bodies to be compiled by ICAO?
3.83	Does the verification body have to be from the administrating State?
3.84	What if there is no national accreditation body in a State?
3.85	What can a State do if it has limited accreditation structure in place to support the verification process?
3.86	Must a State ensure to have accredited verification bodies through its National Accreditation Body by 30 April 2019?
3.87	What may a witness audit involve during the accreditation process of a verification body?
3.88	How does a verification team meet the knowledge requirements?
3.89	How does a verification team meet the technical expertise requirements?
3.90	How does an independent reviewer meet the knowledge and technical expertise requirements?
3.91	Can the independent review be outsourced to another verification body?
3.92	To avoid conflicts of interest, the leader of the verification team cannot undertake more

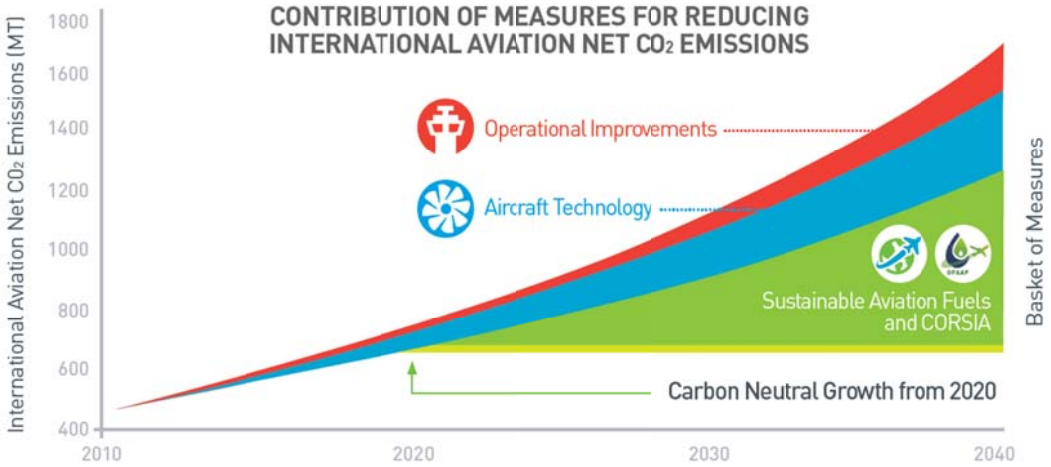
	than six verifications without a three consecutive year break. What if the leader performs three verifications, stops for one year, and then performs another three verifications?
4.	**Questions about the cost impact of CORSIA**
4.1	What is the estimated quantity to be offset under the CORSIA?
4.2	What is the estimated compliance cost for the CORSIA offsetting requirements by aeroplane operators?
4.3	What is the estimated administrative cost for the CORSIA implementation by States, aeroplane operators and ICAO?
5.	**Questions about capacity building and assistance for CORSIA implementation**
5.1	What is “ACT-CORSIA”?
5.2	What are the activities covered under the ACT-CORSIA?
5.3	What are CORSIA Buddy Partnerships?
5.4	How can my State contribute to ACT-CORSIA ?
5.5	What is ICAO doing to ensure the availability of verification bodies at the time when aeroplane operators will be required to have their Emissions Reports verified?

— — — — — — — —

Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

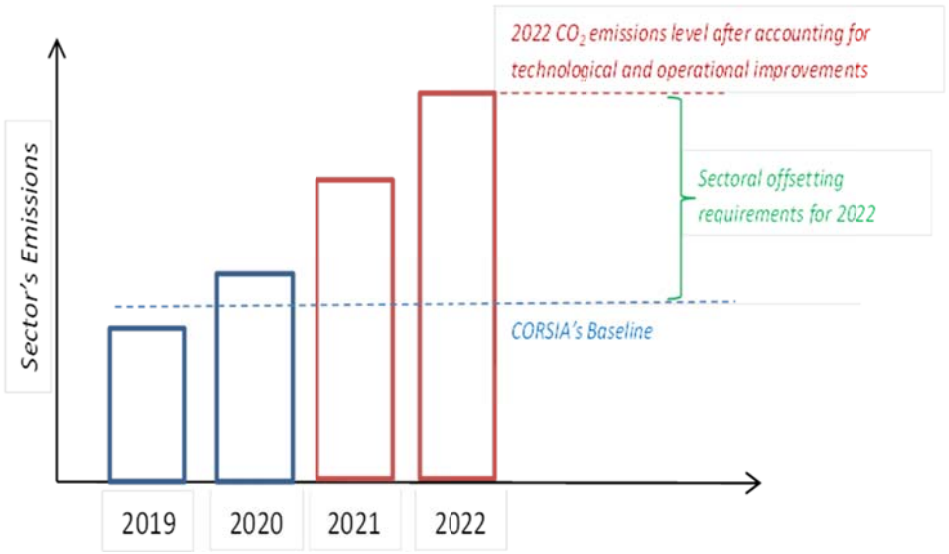
Frequently Asked Questions (FAQs)

1.	General questions about a market-based measure (MBM) and CORSIA
1.1	What is a market-based measure (MBM)?
	A market-based measure (MBM) is a policy tool that is designed to achieve environmental goals at a lower cost and in a more flexible manner than traditional regulatory measures. Examples of MBMs include levies, emissions trading systems, and carbon offsetting.
1.2	What is the contribution of aviation to global greenhouse gas emissions?
	According to the Intergovernmental Panel on Climate Change (IPCC), aviation (domestic and international) accounts for approximately 2 per cent of global CO_2 emissions produced by human activity. International aviation is responsible for approximately 1.3 per cent of global CO_2 emissions.
1.3	Why did ICAO decide to develop a global MBM scheme for international aviation?
	The ICAO Assembly has resolved that ICAO and its Member States, with relevant organizations, would work together to strive to achieve a collective medium term global aspirational goal of keeping the global net CO_2 emissions from international aviation from 2020 at the same level (so-called "carbon neutral growth from 2020"). The Assembly also defined a basket of measures designed to help achieve the ICAO's global aspirational goal. This basket includes aircraft technologies such as lighter airframes, higher engine performance and new certification standards, operational improvements (e.g., improved ground operations and air traffic management), sustainable alternative fuels, and market-based measures (MBMs). Based on the environmental trend assessment by the ICAO Council's Committee on Aviation Environmental Protection (CAEP), international aviation fuel consumption is estimated to grow somewhere between 2.8 to 3.9 times by 2040 compared to the 2010 levels (for further details on the CAEP assessment, please refer to Assembly Working Paper A39-WP/55 presented to the 39th Session of the ICAO Assembly). The aggregate environmental benefits achieved by non-MBMs measures will not be sufficient for the international aviation sector to reach its aspirational goal. According to the CAEP analysis, international aviation emissions are forecasted to grow in the coming decades, as the projected annual improvements in aircraft fuel efficiency of around 1 to 2 per cent (as result of technological and operational measures), and the reductions from the use of sustainable aviation fuels in the short- to medium-term are expected to be largely surpassed by the forecasted traffic growth of around 5 per cent per year. A global MBM scheme can help fill the emissions reductions gap, while further advancements in key technologies (e.g., engines, fuels) may result in further CO_2 emissions reductions in the future. The global MBM scheme is the preferred approach compared to having a patchwork of regional and local measures. The Figure below illustrates the contribution of different measures for reducing international aviation CO_2 emissions.



1.4	Why does the Paris Agreement not include international aviation emissions?
	The Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) is an international treaty that was agreed in December 2015 and entered into force in November 2016 to enhance the implementation of the UNFCCC. Its aim is "to strengthen the global response to the threat of climate change" by establishing specific goals for "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C". The Paris Agreement, adopted under the UNFCCC, addresses sectors and related greenhouse gas emissions following an approach similar to that of its overarching Convention. Specifically, governments working under the auspices of the UNFCCC have agreed that while all domestic GHG emissions are dealt with under the UNFCCC, GHG emissions associated with international aviation and maritime transport are to be dealt with under ICAO and International Maritime Organization (IMO), respectively. This approach is consistent with similar UNFCCC decisions that also apply to the Kyoto Protocol. In this regard, GHG emissions from domestic aviation, as per other domestic sources, are calculated as part of the UNFCCC national GHG inventories and are included in national totals (part of the Nationally Determined Contributions (NDCs) of the Paris Agreement), while GHG emissions from international aviation are reported separately and are not included in NDCs. ICAO, as a specialized UN agency to address all matters related to international civil aviation, including environmental protection, has been diligently addressing GHG emissions from international aviation. The ICAO agreement on carbon neutral growth and CORSIA complements the ambition of the Paris Agreement and constitutes the most significant international climate-related agreement since its adoption.
1.5	What ICAO process was followed to develop CORSIA?
	Discussions on the application of MBMs as a means to limit or reduce CO_2 emissions from international civil aviation had taken place prior to the 37th Session of the Assembly in 2010, which adopted Assembly Resolution A37-19: *Consolidated statement of continuing ICAO policies and practices related to environmental protection — Climate change*. Assembly Resolution A37-19 requested the Council, with the support of Member States and international organizations, to continue to explore the

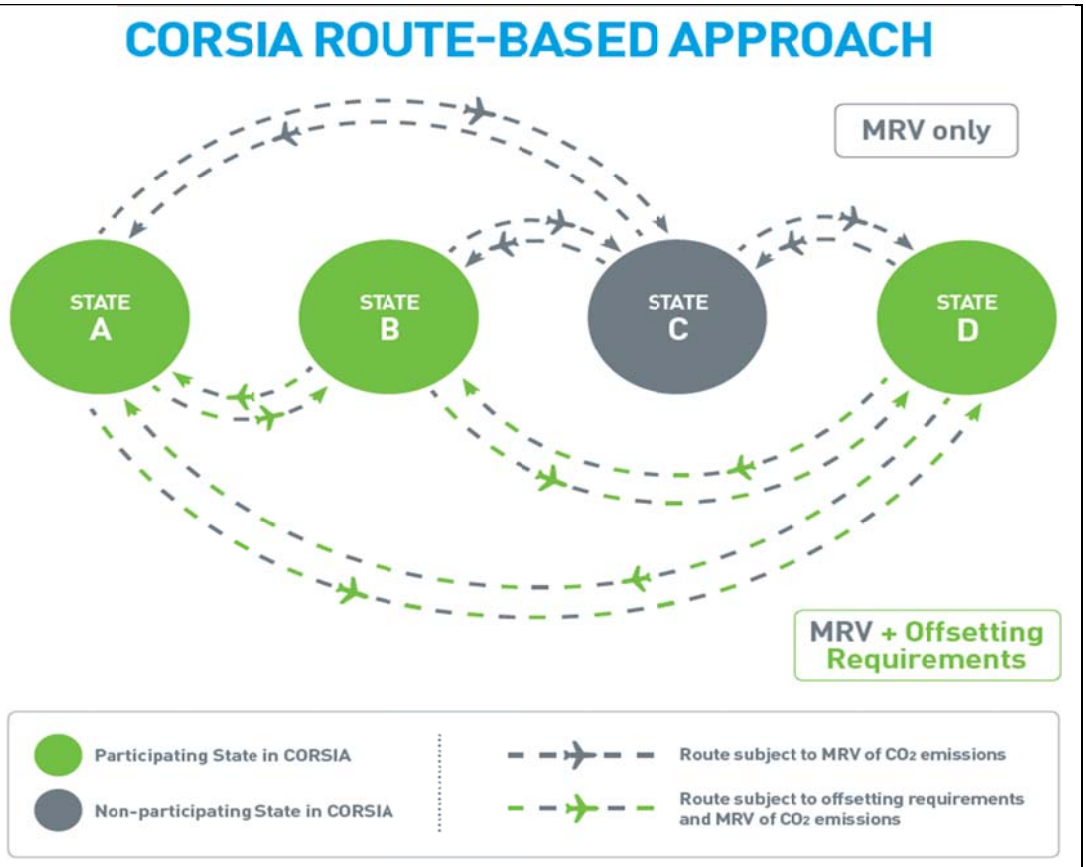
	feasibility of a global MBM scheme by undertaking further studies on the technical aspects, environmental benefits, economic impacts and the modalities of such a scheme, taking into account the outcome of the negotiations under the United Nations Framework Convention on Climate Change (UNFCCC) and other international developments, as appropriate, and report the progress for consideration by the 38th Session of the ICAO Assembly in 2013. The 37th Session of the Assembly also adopted global aspirational goals for the international aviation sector of annual average fuel efficiency improvement of 2 per cent, and keeping the global net carbon emissions from 2020 at the same level (also referred to as carbon neutral growth from 2020). The work requested by Resolution A37-19 focused on the qualitative and quantitative assessments of potential options for a global MBM scheme for international aviation. Building on this work, the 38th Session of the ICAO Assembly in 2013, through Resolution A38-18: *Consolidated statement of continuing ICAO policies and practices related to environmental protection — Climate change*, decided to develop a global MBM scheme for international aviation, and requested the Council, with the support of Member States, to finalize the work on the technical aspects, environmental and economic impacts and modalities of the possible options for a global MBM scheme, including on its feasibility and practicability, taking into account the need for development of international aviation, the proposal of the aviation industry and other international developments, as appropriate, and without prejudice to the negotiations under the UNFCCC. Assembly Resolution A38-18 further requested the Council to identify the major issues and problems, including those for Member States, and make a recommendation on a global MBM scheme that appropriately addresses them and key design elements, including a means to take into account special circumstances and respective capabilities of ICAO Member States. The Council was also requested to identify the mechanisms for the implementation of the scheme from 2020 as part of a basket of measures that also include technologies, operational improvements and sustainable aviation fuels to achieve ICAO's global aspirational goals. Following the 38th Session of the Assembly, the 200th Session of the Council in November 2013 supported that the Committee on Aviation Environmental Protection (CAEP) would continue to undertake technical tasks related to the development of a global MBM scheme, as requested by Resolution A38-18. The Council also decided upon the establishment of an Environment Advisory Group of the Council (EAG), which was mandated to oversee all the work related to the development of a global MBM scheme and make recommendations to the Council. The EAG focused its work on a mandatory carbon offsetting approach as the basis for a global MBM scheme for international aviation. The EAG/15 meeting in January 2016 considered a draft Assembly Resolution text on a global MBM scheme, which was further refined throughout 2016 by two meetings of a High-level Group on a Global MBM Scheme in February and April 2016, a High-level Meeting on a Global MBM Scheme in May 2016 and a Friends of the President Informal Meeting in August 2016. The Assembly, by adopting Resolution A39-3, requested the Council, with the technical contribution of CAEP, to develop the SARPs and related guidance material for the implementation of the Monitoring, Reporting and Verification (MRV) system under the

	CORSIA, and for Emissions Unit Criteria (EUC) to support the purchase of appropriate emissions units by aircraft operators under the scheme, taking into account relevant developments in the UNFCCC and Article 6 of the Paris Agreement; as well as policies and related guidance material to support the establishment of registries under the CORSIA. Following the Assembly, the 209th Session of the Council endorsed the overall plan of preparatory activities for the CORSIA implementation, including development of the CORSIA-related draft SARPs and guidance by CAEP. The CAEP developed International Standards and Recommended Practices for the CORSIA and, after amendment following the usual consultation with the Contracting States of the Organization, Annex 16, Volume IV was adopted by the Council at its 214th Session (11 – 29 June 2018).
1.6	What is CORSIA and how does it work, in general?
	The CORSIA has been adopted as complementary to the broader package of measures to help ICAO achieve its aspirational goal of carbon-neutral growth from 2020 onwards. CORSIA relies on the use of emissions units from the carbon market to offset the amount of CO_2 emissions that cannot be reduced through the use of technological and operational improvements, and sustainable aviation fuels. The approach for CORSIA is based on comparing the total CO_2 emissions for a year (from 2021 onwards) against a baseline level of CO_2 emissions, which is defined as the average of CO_2 emissions from international aviation covered by the CORSIA for the years 2019 and 2020 (see question 2.16 for more details on CORSIA's baseline). In the following years, any international aviation CO_2 emissions covered by the CORSIA that exceed the baseline level represent the sector's offsetting requirements for that year (see graph below for an illustrative example for year 2022).  The sectoral offsetting requirements are shared among aircraft operators participating in the CORSIA based on the sectoral growth factor and the individual CO_2 emissions of the operators. For more details on calculating offsetting requirements, please see question 2.14.

	The CORSIA will be implemented in three phases, starting with participation of States in the CORSIA offsetting on a voluntary basis (pilot phase and first phase), followed by participation of all States except the States exempted from offsetting requirements, as follows: • Pilot phase: from 2021 to 2023; • First phase: from 2024 to 2026; and • Second phase: from 2027 to 2035. See questions 2.1 – 2.6 for more information regarding the phased implementation of CORSIA, as well as on how to determine States' participation in different phases. It is important to note that all States whose aircraft operator undertakes international flights need to develop a monitoring, reporting and verification (MRV) system for CO_2 emissions from international flights starting from 1 January 2019. The requirement to monitor, report and verify CO_2 emissions from international aviation is independent from the offsetting requirements, and the data reported by States will be used for the calculation of the CORSIA's baseline, as well as for the basis of calculating aeroplane operators offsetting requirements, where applicable. See section 3 of these FAQs for more information on CORSIA MRV system.
2.	**Questions about CORSIA's key design elements**
	Key design element 1: Phased implementation of CORSIA
2.1	What is the rationale for the phased implementation of CORSIA?
	Paragraph 9 of the Assembly Resolution A39-3 determines the phased implementation of the CORSIA, and the participation of States in the CORSIA offsetting. According to this paragraph, phased implementation of CORSIA intends to accommodate "the special circumstances and respective capabilities of States, in particular developing States, while minimizing market distortion."
2.2	What are the different phases?
	The CORSIA has three phases: a pilot phase (2021-2023); a first phase (2024-2026); and a second phase (2027 – 2035). The difference between the phases is that the participation of States in the CORSIA offsetting in the pilot phase and first phase is voluntary, whereas the second phase applies to all ICAO Member States (See also questions 2.3 and 2.4 for details). States that voluntarily decide to participate in CORSIA offsetting may join the scheme from the beginning of a given year, and should notify ICAO of their decision to join by June 30 of the preceding year. The figure below illustrates the different phases of CORSIA.

	 • Participation of States in the pilot phase (2021 to 2023) and first phase (2024 to 2026) is voluntary. • For the second phase from 2027, all States with an individual share of international aviation activity in year 2018 above 0.5% of total activity or whose cumulative share reaches 90% of total activity, are included. Least Developed Countries, Small Island Developing States and Landlocked Developing Countries are exempt unless they volunteer to participate.
2.3	What is the difference between the pilot phase (from 2021 through 2023) and the first phase (from 2024 through 2026)?
	The requirements for the two phases are identical except for how the aircraft operator's offsetting requirements are determined by the State. Specifically: • For the pilot phase, States have two options to determine the basis of an aircraft operator's offsetting requirements: o Option 1: Use the aircraft operator's emissions covered by CORSIA in a given year (i.e. 2021, 2022 and 2023) o Option 2: Use the aircraft operator's emissions for the year 2020. • For the first phase, the calculation to determine an aircraft operator's offsetting requirements is based on the emissions in a given year (i.e. 2024, 2025 and 2026).
2.4	Which criteria determine the participation or exemption of States from CORSIA offsetting in its second phase from 2027 to 2035?
	Unlike the voluntary participation of States in the CORSIA offsetting in the pilot and first phases from 2021 to 2026, the second phase of the CORSIA from 2027 to 2035 applies to all Member States. There are, however, two categories of exemptions based on aviation-related and socio-economic criteria. These criteria for the exemption of States from the CORSIA offsetting requirements in the second phase are defined in A39-3 paragraph 9 e). For aviation-related criteria, there are two thresholds: • States whose individual share of international aviation activities in Revenue Tonne Kilometers (RTKs) in year 2018 is below 0.5 per cent of total RTKs; and • States that are not part of the list of States that account for 90 per cent of total RTKs when sorted from the highest to the lowest amount of individual RTKs. For socio-economic criteria, States that are defined as Least Developed Countries (LDCs); Small Island Developing States (SIDS); and Landlocked Developing Countries (LLDCs), regardless of their level of international aviation RTK share, are exempted from offsetting requirements in the second phase of CORSIA. Nevertheless, these States can voluntarily participate in the second phase of the CORSIA.

2.5	What is a “RTK”?
	Revenue Tonne Kilometers or RTKs is the utilized (or sold) capacity for passengers and cargo expressed in metric tonnes, multiplied by the distance flown. In other words the RTK levels correspond to the volume of air transport activity. As an aircraft operator carries more passengers and cargo over a longer distance, the RTK levels of the operator increase. A State’s RTK represent the total RTK levels of all aircraft operators registered to that State. Annual RTK data is being reported from Member States to ICAO as part of the ICAO Statistics Programme, and published in the Annual Report of the ICAO Council. RTK data for the year 2018 will be used for the purposes of determining the participation of States in the second phase of the CORSIA (see question 2.4).
2.6	How are RTK shares calculated?
	A State’s individual RTK share is calculated by dividing the State’s RTKs by the total RTKs of all States. **The cumulative RTK share** is calculated by sorting the individual RTK shares from the highest to lowest, then successively increasing the value by summing the RTK shares from highest to lowest until the value reaches 90%. The values of all States are considered for this calculation, regardless of whether a State is exempted or not from offsetting requirements under the CORSIA.
	Key design element 2: Route-based approach
2.7	What is the route-based approach of CORSIA?
	Paragraph 10 of the Assembly Resolution A39-3 defines the coverage of the CORSIA offsetting on the basis of routes between States, with a view to minimizing market distortions between aircraft operators on the same routes. For this purpose, the approach is to provide equal treatment of all aircraft operators on a given route. Specifically: • A route is covered by the CORSIA offsetting if both States connecting the route participate in the scheme. • A route is not covered by the CORSIA offsetting if one or both States connecting the route do not participate in the scheme. When an aircraft operator calculates its CO_2 emissions covered by the CORSIA offsetting in a given year, it needs to take into consideration emissions from its operations on all the routes covered by the scheme, as outlined in paragraph 10 of the Assembly Resolution. It should be noted that the coverage of CORSIA offsetting requirements and the coverage of CORSIA monitoring, reporting and verification (MRV) requirements are not the same. Even if an international flight is not covered by the offsetting requirements, it is still covered by the MRV requirements. See question 3.14 for more information on the applicability of CORSIA MRV requirements. The figure below illustrates CORSIA’s route-based approach, and the applicability of MRV and offsetting requirements.

	
2.8	What does “participation of States to CORSIA offsetting” mean?
	The term “participation of States to CORSIA offsetting” means that if a State participates in CORSIA offsetting, then all routes between this State and all other States participating in CORSIA offsetting are covered by offsetting requirements. Please see questions 2.2 and 2.4 for details on how the participation to CORSIA offsetting is being determined.
2.9	Can the characterization of a route as “covered” or “not covered” by the CORSIA offsetting change over time?
	Paragraph 10 of the Assembly Resolution A39-3 determines the characterization of a route as “covered” or “not covered” by the CORSIA offsetting requirements, on the basis of whether the States connecting the route participates in CORSIA offsetting. The voluntary participation of States in different phases of the CORSIA will determine the overall coverage of the scheme. To give certainty on the routes to be covered by the CORSIA offsetting requirements, the Assembly Resolution A39-3 sets a deadline of 30 June every year for States to notify ICAO of their intention to voluntarily participate in the scheme, or discontinue their participation, from 1 January of the following year.
2.10	Do States and aeroplane operators that do not participate in the CORSIA offsetting have any requirements under the CORSIA?
	According to paragraph 20 of the Assembly Resolution A39-3, all States whose aircraft operator undertakes international flights need to develop a monitoring, reporting and verification (MRV) system for CO_2 emissions from international flights starting from 1 January 2019. The requirement to monitor, report and verify CO_2 emissions from international aviation is independent from the offsetting requirement.

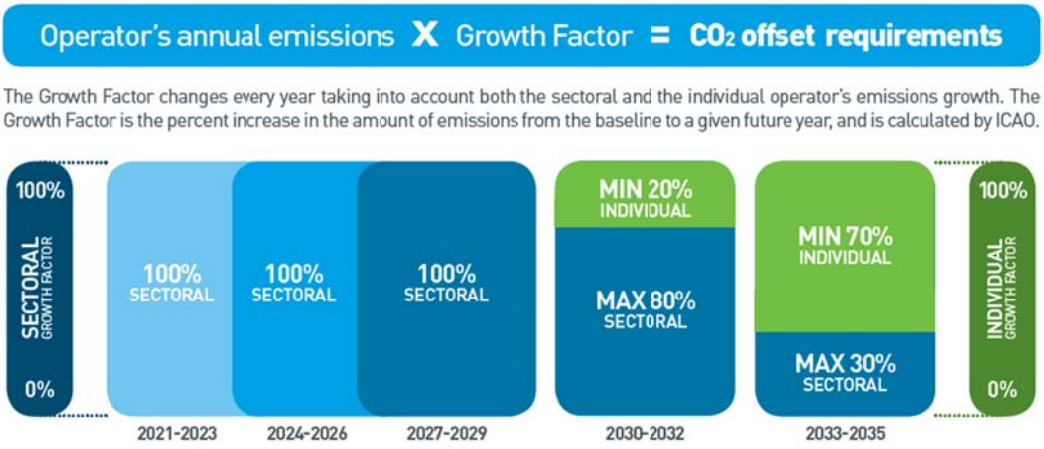
	The data reported by States will be used for the calculation of the CORSIA baseline, which is the average of 2019 and 2020 CO_2 emissions, as well as for the basis of calculating the aeroplane operators' offsetting requirements, where applicable.
2.11	What would happen to the CORSIA emissions coverage if an operator of a non-participating State flies on the routes between participating States (e.g. fifth-freedom traffic right)?
	Because of the CORSIA's route-based approach, these routes between participating States would be subject to the coverage of emissions offsetting requirements under the CORSIA. Thus, an operator of a non-participating State would be subject to offsetting requirements if it had a flight between two participating States.
2.12	What would happen to the CORSIA emissions coverage if a State without an operator undertaking international flights decides to participate in the CORSIA offsetting?
	States without an operator flying international flights are encouraged to participate in all phases of the CORSIA. If such a State decides to participate, flights to and from that State to other participating States are additionally included for the CORSIA's offsetting requirements, due to the route-based approach. The total international emissions covered by CORSIA offsetting would ultimately increase.
	Key design element 3: CORSIA offsetting requirements and eligible emissions units
2.13	What is offsetting and how does it work, in general?
	In general, offsetting is done through the purchase and cancellation of emissions units (see question 2.20), arising from different sources of emissions reductions achieved through mechanisms (e.g. UNFCCC's Clean Development Mechanism), programmes (e.g. REDD+) or projects (e.g. substituting coal-fired stoves with solar cookers). The buying and selling of eligible emissions units happens through carbon market. The price of the emissions units in the carbon market is influenced by the law of supply (availability of emissions units) and demand (level of offsetting requirements). "Cancelling" means the permanent removal and single use of an emissions unit so that the same emissions unit cannot be used more than once. This is done after an aeroplane operator has purchased emissions units from the carbon market. For CORSIA, an aeroplane operator is required to meet its offsetting requirements by cancelling CORSIA Eligible Emissions Units in a quantity equal to its total final offsetting requirements for a given compliance period. CORSIA Eligible Emissions Units are to be determined by the ICAO Council, and information on eligible units will be made available on the ICAO CORSIA website.
2.14	How are an aircraft operator's offsetting requirements calculated?
	Paragraph 11 of the Assembly Resolution A39-3 addresses the distribution of the total amount of CO_2 emissions to be offset in a given year among individual aircraft operators. This is accomplished by introducing a dynamic approach for the distribution of offsetting requirements, which takes into account: • The Sector's Growth Factor: represents the international aviation sector's global average growth of emissions in a given year. It will be applied as a common factor for all individual operators participating in the scheme for the calculation of their offsetting requirements. ICAO will calculate the Sector's Growth Factor every year based on the reported CO_2 emissions data from States to ICAO; and • The individual growth factor: represents an individual operator's growth factor of emissions in a given year. This variable will start to be used from 2030 together with the Sector's Growth Factor. It will increase gradually to represent more of an operator's offsetting requirement. Offsetting requirements will be calculated as follows:

a) From 2021 through 2029 a 100 per cent sectoral approach (and 0 per cent individual approach) will be applied. This applies to the pilot phase, the first phase, and the first compliance period of the second phase.
b) During the second compliance period of the second phase (2030 through 2032) at least 20 per cent of offsetting requirements would be calculated according to the "individual approach". From 2033 to 2035, at least 70 per cent of offsetting requirements would be calculated according to the "individual approach". In 2028, the Council will recommend to the Assembly whether and to what extent to adjust the individual percentage.

The sectoral/individual approach is applied from 2030, rather than from the start of the second implementation phase (2027), to provide for the equal treatment of the calculation of offsetting requirements between aircraft operators participating in the first and second phase of the CORSIA.

Once the sector's (and individual operator's, if applicable) growth factor for a given year becomes available, the State will calculate an operator's CO_2 offsetting requirements by multiplying the operator's annual emissions covered by CORSIA offsetting in the given year by the growth factor. Result of this calculation is the operator's offsetting requirements for a given year. For each compliance period (see question 2.15), the State will sum up the offsetting requirements for each year within that compliance period, and the result will be the operator's total offsetting requirement for that compliance period.

The figure below describes the calculation of an aeroplane operator's offsetting requirements.



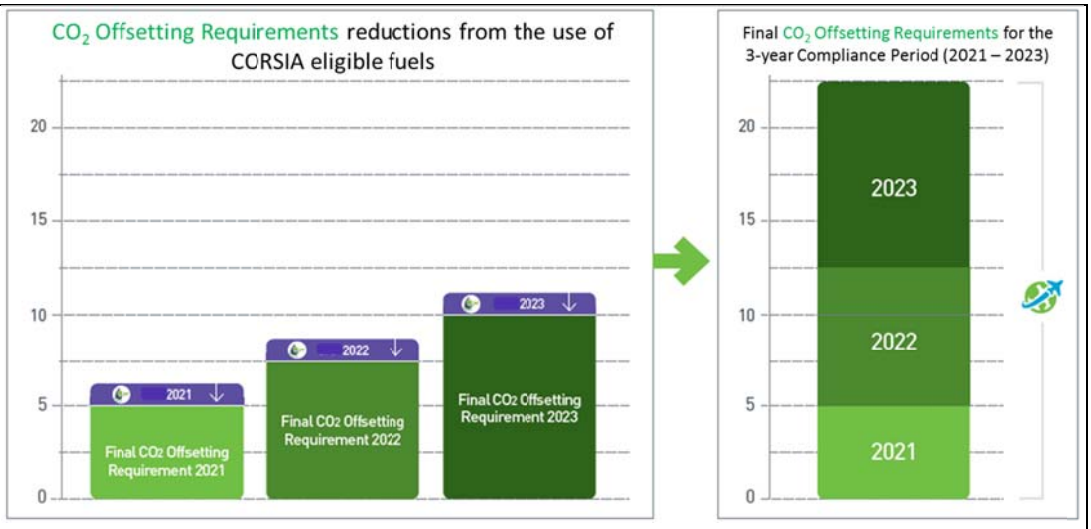
2.15	What are CORSIA's compliance periods?

Paragraph 16 of the Assembly Resolution A39-3 determines that CORSIA has three-years compliance cycles (also referred to as a compliance period), for which the operators need to reconcile their offsetting requirements. The compliance periods are:

- Compliance period 1: years 2021 – 2023;
- Compliance period 2: years 2024 – 2026;
- Compliance period 3: years 2027 – 2029;
- Compliance period 4: years 2030 – 2032;
- Compliance period 5: years 2033 – 2035.

It should be noted that an operator will report its CO_2 emissions on an annual basis,

	corresponding to calendar years. See question 3.59 for more information on the relationship between CORSIA's compliance periods and reporting periods.
2.16	What are CORSIA's baseline emissions?
	For the purposes of CORSIA, the sectoral baseline is defined as the average of total CO_2 emissions for the years 2019 and 2020 on the routes covered by CORSIA offsetting in a given year from 2021 onwards. Paragraph 11(g) of the Assembly Resolution A39-3 notes that the sectoral baseline will be re-calculated when the routes included in the CORSIA change. This can happen, for example, when new States volunteer to participate or States decide to withdraw their participation. The recalculation of the baseline will be done by ICAO at the start of each year.
2.17	What is the difference between the Sector's Growth Factor used by the formula under the CORSIA and the generally-used term "emission growth rate"?
	In general, the term "emissions growth rate" refers to the percentage increase in the amount of emissions from the baseline to a given year from 2021, compared to the baseline emissions. For the purposes of CORSIA, the Sector's Growth Factor is defined as the percentage increase in the amount of emissions from the baseline to a given year from 2021, compared to the emissions in that given year.
2.18	How are CORSIA eligible fuels accounted for in the calculation of offsetting requirements?
	From 2021 onwards, operators can reduce their CORSIA offsetting requirements by claiming emissions reductions from CORSIA eligible fuels. In order to do this, the operator will: • Use the amounts of CORSIA eligible fuels purchased, based on purchase records; • Use the life-cycle emissions values to determine emissions reduction factors for each CORSIA eligible fuel; • Submit valid sustainability certification document to the State; and • Report and claim verified reductions of its emissions from the use of CORSIA eligible fuels to the State. The State will calculate the operator's final offsetting requirements at the end of each compliance period by subtracting the emissions reductions from the use of CORSIA eligible fuels from the operator's offsetting requirements. The CORSIA Implementation Element "CORSIA Eligible Fuels" will provide the necessary methodologies to determine the emissions reductions from the use of CORSIA eligible fuels. The figure below provides an illustration of accounting the benefits from CORSIA eligible fuels.

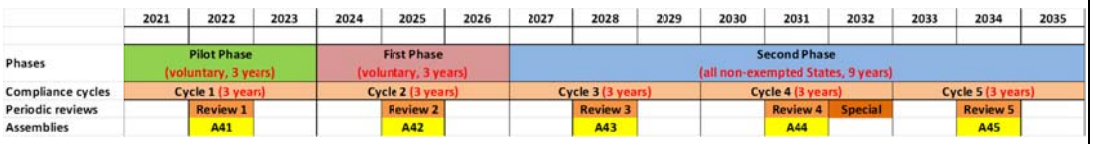
	
2.19	Can an aeroplane operator's CO_2 offsetting requirements be negative?
	Compliance periods for offsetting requirements are 3-year period, with the first period starting on 1 January 2021 and ending on 31 December 2023 (see also question 2.15). If, as a result of the calculation described in questions 2.14 and 2.18, an aeroplane operator's total final offsetting requirements during a compliance period are negative (i.e., the verified emissions reductions claimed by an operator are more than its offsetting requirements), the operator has no offsetting requirements for the compliance period. Negative offsetting requirements will not be carried forward to subsequent three-years compliance period. However, if an operator's offsetting requirements in a given year inside of a compliance period are negative, the operator will reduce its total final offsetting requirement for the three-year compliance period.
2.20	What are emissions units, in general?
	CORSIA calls for international aviation to offset part of its CO_2 emissions through the reduction of emissions elsewhere (outside of the international aviation sector), involving the concept of "emissions units". One emissions unit represents one tonne of CO_2 emissions reduced. Emissions units are generated when emissions from a specific project or programme are reduced, compared to a baseline (or business-as-usual), through the implementation of emission reductions techniques/technologies. These projects or programmes can be implemented in various sectors, within and outside of the aviation sector, such as electricity generation, industrial processes, agriculture, forestry, waste management etc. Emissions units are sometimes also referred to as carbon credits.
2.21	Can an aeroplane operator already start purchasing CORSIA eligible emissions units?
	An aeroplane operator can purchase emissions units at any time. However, aeroplane operators should be aware that they can use only eligible emissions units for the purpose of meeting their offsetting requirements under CORSIA. Paragraph 20 d) of the Assembly Resolution A39-3 requests the ICAO Council to establish, with the technical contribution of CAEP, a standing technical advisory body to make recommendations to the Council on the eligible emissions units for use by the CORSIA. In this regard, it is important to note that it is not the aeroplane operator or State who will determine which programmes and emission units are eligible in CORSIA,

	but the Council. Once determined by the Council, the CORSIA Eligible Emissions Units will be included in the ICAO document entitled "CORSIA Eligible Emissions Units". CORSIA eligible emissions units will meet the CORSIA Emissions Unit Eligibility Criteria. The criteria will be approved by the ICAO Council, with the technical contribution of CAEP, which has already done a significant amount of preparatory work regarding the criteria. Once determined and approved by the Council, the CORSIA Emissions Unit Eligibility Criteria will be included in the ICAO document entitled "CORSIA Emissions Unit Eligibility Criteria".
2.22	Can an aeroplane operator implement a project that generates CORSIA eligible emissions units?
	Yes – an aeroplane operator can implement emissions reduction project that generates emissions units. Equally to any other emissions unit, the emissions units generated from such a project need to meet the CORSIA Emissions Unit Eligibility Criteria, if the operator wishes to use the units to fulfill its offsetting requirements under CORSIA. It should be noted, however, that projects that reduce emissions from international flights would not be eligible to be used under CORSIA as this would result in double counting of emissions reductions.
	Key design element 4: Exemptions and new entrants
2.23	Does the CORSIA include provisions to exempt very low international aviation activities?
	Paragraph 13 of the Assembly Resolution A39-3 provides the following exemptions from the CORSIA offsetting requirements for the purposes of avoiding an administrative burden from the application of CORSIA due to low levels of international aviation activities: • Humanitarian, medical and firefighting operations; • Aircraft operators with a low level of annual emissions from their international aviation operations (less than 10 000 metric tonnes of CO_2 emissions per year), as well as for aircraft with less than 5 700 kg of Maximum Take Off Mass (MTOM) In addition to being exempted from CORSIA offsetting requirements, humanitarian, medical and firefighting operations; aircraft operators with a low level of annual emissions from their international aviation operations; and aircraft with less than 5 700 kg of Maximum Take Off Mass are also exempted from CORSIA MRV requirements (see question 3.14 for more information on the applicability of MRV requirements).
2.24	How will the CORSIA apply to operators that will initiate activities after the entry into force of the scheme (a so-called "new entrant")?
	Paragraph 12 of the Assembly Resolution A39-3 refers to "new entrants" as aircraft operators that commence an aviation activity falling within the scope of the CORSIA on or after its entry into force. This paragraph outlines criteria to determine when "new entrants" should start participating in the CORSIA offsetting, with the entry date being the earliest out of the following two: • After three years from commencing aviation activities; or • The year in which new entrant's annual emissions exceed 0.1 per cent of total emissions in 2020. In other words, new entrant is exempted from the application of the CORSIA offsetting requirements for the first 3 years, or until its annual emissions exceed 0.1% of total 2020 emissions from the international aviation sector. The condition that applies first will determine when a new entrant's emissions are subject to the offsetting requirements if it

	operates on the routes covered by CORSIA. It is important to note that the CO_2 emissions of a new entrant are still to be reported from the year after the new entrant falls under the applicability of CORSIA MRV requirements (also see question 3.14), regardless of the exemptions from the CORSIA offsetting requirements. In the example below, operators A and B start operations in year 2022 as shown in the table. According to the Assembly Resolution A39-3, operator A will have offsetting requirements starting in 2025, and operator B in 2024. However, both operators will need to comply the MRV requirements from 2023 onwards, assuming that they are within the CORSIA MRV applicability.

Operator	Emissions (% of total emissions in 2020)			
	2022	2023	2024	2025
A	0.02	0.04	0.06	0.08
B	0.06	0.11	0.16	0.21

2.25	Will a new entrant operator affect the CORSIA baseline?
	CORSIA's baseline is the average of CO_2 emissions from international aviation covered by the CORSIA offsetting for the years 2019 and 2020. As the CO_2 emissions of a new entrant are to be reported from the year after the CORSIA MRV system begins to apply to the operator (see question 2.24), emissions for year 2020 would be included in the CORSIA baseline, if the new entrant commences aviation activities in 2019, and falls within the applicability of CORSIA MRV requirements in year 2019. For subsequent periods, the CORSIA baseline will not be adjusted as a result of CO_2 emissions from a new entrant aeroplane operator.
	Key design element 5: Review process
2.26	Does the CORSIA include provisions to review its implementation and to make adjustments if needed?
	Paragraph 9 g) of the Assembly Resolution A39-3 includes a provision that the ICAO Council will conduct a review of the implementation of the CORSIA every three years, starting in 2022. This review will include an assessment of the impact of the CORSIA on the growth of international aviation. The results of this assessment will serve as an important basis for the Council to consider adjustments and make recommendations to the Assembly for decisions about the next implementation phase or compliance period, as appropriate. In addition - as elaborated in paragraph 18 of the Assembly Resolution A39-3 - the purpose of the periodic review is to contribute to the sustainable development of the international aviation sector and to the effectiveness of the scheme. The review will assess, inter alia: the progress towards achieving ICAO's global aspirational goal, the scheme's market and cost impact on States and aircraft operators and on international aviation, and the functioning of the scheme's design elements. The review will also

	involve consideration of the scheme's improvements that would support the purpose of the Paris Agreement or simply result in better design. A special review will be performed by the end of 2032 regarding the termination of the scheme, its extension or any other post-2035 improvements. The sequence of the phases of the CORSIA, compliance periods, periodic reviews, special review and ICAO Assemblies is summarized in the figure below. 
3.	**Questions about Annex 16, Volume IV – CORSIA**
	General questions related to Annex 16, Volume IV
3.1	What are the differences between: Annex 16, Volume IV; Environment Technical Manual, Volume IV; and CORSIA Implementation Elements?
	Annex 16, Volume IV and Environmental Technical Manual (ETM), Volume IV follow a similar structure to that of the Annex 16, Volumes I, II and III. This is the traditional ICAO Standards and Recommended Practices (SARPs) approach, where the implementation of the SARPs is supported by guidance material. The SARPs of Annex 16, Volume IV provide the necessary actions by States or operators (the "what" and "when") to implement CORSIA, whereas the Environmental Technical Manual (ETM), Volume IV provides the guidance on the process (the "how") to implement CORSIA. Due to CORSIA's specific characteristics, Implementation Elements are also being developed as another component of the CORSIA structure. The Implementation Elements are reflected in 14 ICAO documents, which are directly referenced in the SARPs and contain essential information for the implementation of CORSIA. These ICAO documents will be available on the ICAO CORSIA website, once available, and may only be amended by the ICAO Council.
3.2	What ICAO process was followed to develop Annex 16, Volume IV?
	Paragraph 20 of Assembly Resolution A39-3 requested the ICAO Council, with technical contribution of CAEP, to develop SARPs and related guidance material for the implementation of the Monitoring, Reporting and Verification (MRV) System, and for Emissions Unit Criteria (EUC) for adoption by the Council by 2018. Following the adoption of Assembly Resolution A39-3, the ICAO Council endorsed the overall plan of CORSIA preparatory activities on the development of CORSIA-related SARPs and guidance, in accordance with paragraph 20 of the Resolution. The Council also established an Advisory Group on CORSIA (AGC) to serve as an advisory body to the Council. CAEP was tasked to develop CORSIA-related draft SARPs and guidance and to deliver briefings to the Council to provide updates of the progress of work. Following CAEP's recommendation, preliminary reviews by the AGC and ICAO's Air Navigation Commission (ANC), consultation with ICAO's 192 Member States, and the final reviews by AGC and ANC, the CORSIA-related SARPs were adopted by the Council on 27 June 2018 in the form of Annex 16 — *Environmental Protection* to the *Convention on International Civil Aviation*, Volume IV — *Carbon Offsetting and*

	Reduction Scheme for International Aviation (CORSIA).
	Administrative aspects
3.3	What is the definition of international flight for CORSIA purposes?
	Reference in Annex 16, Volume IV: Part II, Chapter 1, 1.1.2. For the purposes of CORSIA, an international flight is defined as the operation of an aircraft from take-off at an aerodrome of a State or its territories, and landing at an aerodrome of another State or its territories.
3.4	How are diverted flights handled in CORSIA?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.1. Diversion of flights can lead to any of the following scenarios: a) A flight originally subject to MRV requirements, which continues to be subject to such requirements as a result of the diversion; b) A flight originally not subject to MRV requirements, which continues not to be subject to such requirements as a result of the diversion; c) A flight originally subject to MRV requirements, which is no longer subject to such requirements as a result of the diversion; or d) A flight originally not subject to MRV requirements, which is no longer subject to such requirements as a result of the diversion. Under CORSIA, in any of the scenarios listed above, the actual aerodromes of departure and arrival for a flight, rather than the scheduled ones, will be taken as a reference to determine whether or not that flight is subject to MRV requirements.
3.5	What does a “State pair” mean? Is it uni- or bidirectional?
	Reference in Annex 16, Volume IV: Part I, Chapter 1 – Definitions. In CORSIA, State pair is being defined as a group of two States composed of a departing State or its territories and an arrival State or its territories. For example, when reporting CO_2 emissions from international flights between States A and B, an aeroplane operator will report both directions as separate State pairs (A-B and B-A).
3.6	Who will ensure that aeroplane operators comply with the requirements of Annex 16, Volume IV?
	Reference in Annex 16, Volume IV: Part II, Chapter 1, 1.3.1. According to Assembly Resolution A39-3, paragraph 20 j), ICAO Member States will take necessary action to ensure that the national policies and regulatory framework be established for the compliance and enforcement of CORSIA. As per Annex 16, Volume IV, an aeroplane operator will be attributed to a State for administering CORSIA based on the rules for attribution (see question 3.8). The State is primarily responsible for ensuring that the aeroplane operator complies with the CORSIA requirements.
3.7	How is an international flight being attributed to a single aeroplane operator?
	Reference in Annex 16, Volume IV: Part II, Chapter 1, 1.1.3. It is important to identify all applicable international flights so that the CO_2 emissions from these flights are monitored and reported. Also, each international flight should be allocated to a single aeroplane operator. In order to achieve this, the following information will be used for attributing international flights to an aeroplane operator: • **ICAO Designator:** When Item 7 (aircraft identification) of the flight plan contains the ICAO Designator, that flight shall be attributed to the aeroplane

	operator that has been assigned this Designator; • **Registration marks:** When Item 7 (aircraft identification) of the flight plan contains the nationality or common mark, and registration mark of an aeroplane that is explicitly listed in an air operator certificate (AOC) (or equivalent) issued by a State, that flight shall be attributed to the aeroplane operator that holds the AOC (or equivalent); or • **Other**: When the aeroplane operator of a flight has not been identified via previous points, that flight shall be attributed to the aeroplane owner who shall then be considered the aeroplane operator.
3.8	How is an aeroplane operator being attributed to a single State?
	Reference in Annex 16, Volume IV: Part II, Chapter 1, 1.2. Under CORSIA, each aeroplane operator will report its CO_2 emissions to a single State. The rules for attributing an aeroplane operator to a State are based on: • **ICAO Designator:** Where the aeroplane operator has an ICAO Designator, the State to which the aeroplane operator fulfils its requirements under CORSIA shall be the Notifying State of the Designator; • **Air operator certificate:** Where the aeroplane operator does not possess an ICAO Designator, but has a valid air operator certificate (or equivalent), the State to which the aeroplane operator fulfils its requirements under CORSIA shall be the State that issued the air operator certificate (or equivalent); or • **Place of juridical registration**: Where the aeroplane operator does not possess an ICAO Designator or air operator certificate, the State where the aeroplane operator is registered as juridical person shall be the State to which the aeroplane operator fulfils its requirements under CORSIA. Where the aeroplane operator is a natural person, the State of residence and registration of this person shall be the State to which the aeroplane operator fulfils its requirements under CORSIA. The State is required to ensure the correct attribution of an aeroplane operator to it. In order to determine which aeroplane operators fall under its administration, the State should take the following steps: review operators' possible communications indicating that are likely to be administered by the State, review the contents of Doc 8585 — *Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services*, and identify those operators that are notified by the State, review AOCs issued by that State, and review of registered entities within that particular State (e.g., from the State's company register). It should be noted that the "place of juridical registration" refers to the State in which the entity (company or person) is legally registered. The purpose is to have jurisdictional clarity in cases of enforcement, such as international court measures. The place of juridical registration may differ from the principal place of business. Regarding the use of the expression "AOC (or equivalent)", the wording "or equivalent" is used because in some States the AOC is named differently. The "AOC" refers to an official document issued by a State that gives an aeroplane operator license to operate and that contains the identification of the aircraft operator and may also contain aircraft registration marks. The use of general aviation operating certificates and other certificates permitting non-commercial air transport could thus be appropriate as long as these certificates are issued/approved by a State. After identifying the aeroplane operators under its administration, the State is required to submit to ICAO information of those aeroplane operators that are attributed to it, and

	ICAO will publish a list of aeroplane operators and the States attributions on the ICAO CORSIA website, as a part of the ICAO document entitled "CORSIA Central Registry (CCR): Information and Data for Transparency".
3.9	Can an aeroplane operator delegate its administrative requirements?
	Reference in Annex 16, Volume IV: Part II, Chapter 1, 1.1.5. Yes, an aeroplane operator can delegate its CORSIA administrative requirements to a third party. However, this third party cannot be the same entity as the verification body. Also, liability for compliance with the CORSIA requirements will remain with the aeroplane operator.
3.10	Can an aeroplane operator report together with one or more of its subsidiaries?
	Reference in Annex 16, Volume IV: Part II, Chapter 1, 1.2.6. An aeroplane operator can report together with a subsidiary company, if the subsidiary is: • Wholly owned by the parent company; and • Legally registered in the same State as the parent company. If both conditions are met, an aeroplane operator with a subsidiary aeroplane operator can be treated as a single consolidated aeroplane operator liable for compliance with CORSIA requirements. Such an arrangement is subject to the approval of the State, and evidence shall be provided in the aeroplane operator's Emissions Monitoring Plan to demonstrate that the subsidiary aeroplane operator is wholly owned. If two aeroplane operators are treated as a single consolidated aeroplane operator, the two operators will be administered as a single entity, and their emissions aggregated. Therefore, the applicability of the requirements of Annex 16, Volume IV will be based on their aggregated emissions.
3.11	Can a State delegate its administration processes under the CORSIA to another State?
	Reference in Annex 16, Volume IV: Part II, Chapter 1, 1.3.2. Yes, a State may delegate administration processes of CORSIA to another State through an administrative partnership based on a bilateral agreement between the respective States. Nevertheless, the State shall not delegate enforcement of CORSIA requirements, or its administrative tasks towards ICAO, to another State. If such an arrangement is agreed upon, the State receiving capacity support must ensure that aeroplane operators attributed to that State are advised of the administrative arrangements.
3.12	How long does a State and an aeroplane operator need to keep CORSIA-related records? What is included in those records?
	Reference in Annex 16, Volume IV: Part II, Chapter 1, 1.4, and Appendix 4. An aeroplane operator is required to keep records relevant to demonstrating compliance with the requirements of Chapters 2, 3, and 4 of Annex 16, Volume IV, Part II, for a period of 10 years. It is also recommended that an aeroplane operator keep records relevant to its CO_2 emissions per State pair during the 2019-2020 period in order to allow the operator to cross-check its offsetting requirements calculated by the State during the 2030-2035 compliance periods, when the individual operator's growth factor will be applied in calculating the offsetting requirements. An operator is required to include a documentation and record keeping plan in its

	Emissions Monitoring Plan for the approval by the State. This plan will specify how (e.g., by using an IT system), and where the operator will store CORSIA-relevant information. The State shall keep records relevant to the aeroplane operator's CO_2 emissions per State pair during the period of 2019-2020 in order to calculate the aeroplane operator's offsetting requirements during the 2030-2035 compliance periods.
	Monitoring, reporting and verification (MRV)
3.13	What are the components of the CORSIA MRV system?
	Reference in Annex 16, Volume IV: Part II, Chapter 2. CORSIA's MRV (Monitoring, Reporting and Verification) system consists of three components: • Monitoring of CO_2 emissions is either based on a Fuel Use Monitoring Method, or the on use of the ICAO CORSIA CERT (see question 3.32). For the former, each operator has to collect accurate information on the fuel use per each flight and calculate CO_2 emissions by multiplying the amount of fuel used with a conversion factor representing the amount of tonnes of CO_2 produced from using one tonne of fuel. An aeroplane operator is required to describe its approach to CO_2 emissions monitoring in an Emissions Monitoring Plan (see question 3.22), which the operator will submit for approval by the State. • After monitoring and calculating CO_2 emissions, the necessary information will be reported from aeroplane operators to their State Authority, and from States to ICAO, by using harmonized templates and procedures. ICAO consolidates the CO_2 emissions data, calculates the annual sectoral growth factor, and communicates the growth factor to States. • Verification of CO_2 emissions information is to ensure that the data is accurate and free of errors. A very basic idea of verification is that a third party checks that everything has been done correctly. This is similar to the accounting practices that are performed in the financial world.
3.14	What is the applicability of the CORSIA MRV requirements? Are there any exemptions?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.1. All aeroplane operators conducting international flights are required to monitor, report and verify CO_2 emissions from these flights from 1 January 2019 until 31 December 2035. It should be noted that the requirement for the MRV of CO_2 emissions is independent from participation in CORSIA offsetting. As per Annex 16, Volume IV, the MRV requirements do not apply to: • An aeroplane operator that produces annual CO_2 emissions from international flights less than or equal to 10 000 tonnes; • Aeroplane(s) with a maximum certificated take-off mass less than or equal to 5 700 kg; • Humanitarian, medical and firefighting flights, as well as flights preceding or following a humanitarian, medical or firefighting flight, provided that such flights were conducted with the same aeroplane, and were required to accomplish the related humanitarian, medical or firefighting activities or to reposition thereafter the aeroplane for its next activity.
3.15	Can an aeroplane operator with emissions of less than 10 000 tonnes of CO_2 per year be included in CORSIA?

	Reference in Annex 16, Volume IV: Part II, Chapter 1, 1.2.6, Chapter 2, 2.1. An aeroplane operator that produces annual CO_2 emissions from international flights less than or equal to 10 000 tonnes is not subject to the requirements of Annex 16, Volume IV (see also question 3.14). However, if an aeroplane operator below the threshold of 10 000 tonnes of CO_2 is wholly-owned by and legally registered in the same State as another aeroplane operator, the two aeroplane operators can request to be treated as a single operator (see question 3.10). In this case the combined emissions of both aeroplane operators could exceed this threshold and become subject to the applicability of the MRV requirements of CORSIA.
3.16	What are the actions for an aeroplane operator, who has been covered by CORSIA, but now drops below the 10 000 tonnes of CO_2 threshold?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.1. If an aeroplane operator falls below the 10 000 tonnes threshold in a given year then they fall outside the scope of applicability of Annex 16, Volume IV and would not have any requirements in that year. In such an instance, it is suggested the aeroplane operator contact their State of attribution to advise them that they are below the threshold. The State may choose to engage with the operator to confirm that the aeroplane operator is out of the scope of applicability.
3.17	Are aeroplane manufacturers or airports subject to any requirements under Annex 16, Volume IV?
	No, aeroplane manufacturers and airports do not have requirements under Annex 16, Volume IV.
3.18	Is a re-positioning flight before or after an exempted humanitarian, medical or firefighting flight exempt?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.1. Yes. Flights preceding or following a humanitarian, medical or firefighting flights are also exempt if they were required to accomplish the humanitarian, medical or firefighting activities or to reposition the aeroplane thereafter. The operator will have to be able to provide evidence of the nature of the flight.
3.19	Are helicopter operations covered by the CORSIA MRV system?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.1. No. The applicability of the CORSIA MRV requirements covers aeroplanes, and helicopter operations are outside of the scope of applicability of CORSIA.
3.20	Are international flights by police, military, customs or State aircraft within the scope of applicability of the CORSIA MRV system?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.1. No, Annex 16, Volume IV only applies to international civil aviation; international flights from police, military, customs and State aircraft are excluded from the Chicago Convention as per Article 3, and thus are excluded from the scope of CORSIA.
3.21	How are diversions handled in CORSIA?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.1; Part II, Chapter 2, 2.2.1.3.3. A flight should be considered to be diverted when it makes an unplanned landing at an aerodrome different from the destination aerodrome indicated by the aeroplane operator in the last approved flight plan filed prior to the flight departure.

	A diverted flight and the subsequent flight are to be treated as two consecutive and separate flights operating, respectively, to and from the aerodrome the diverted flight actually landed at, rather than that which was originally planned. A diversion is by its nature unplanned. However, according to the rules of CORSIA, whether a flight is international, or subject to an offsetting requirements, is based on where it went, not where it meant to go. If in a given year an aeroplane operator is subject to the CORSIA offsetting requirements only because of diverted or subsequent flights (all other flights being operated on routes not subject to offsetting), the aeroplane operator will still be required to offset the emissions of those flights. Should an aeroplane operator that is approved to use the ICAO CORSIA CERT exceed in a given year the threshold of 50 000 tonnes of CO_2 on the routes subject to offsetting requirements due to diverted or subsequent flights, then the operator will still be permitted to use the ICAO CORSIA CERT in that year and the following year (year y+1). However, if the AO also exceeds the 50 000 tonnes threshold in that following year (year y+1), then it would be required to submit a new Emissions Monitoring Plan by 30th September in (Year y+2) and begin using a Fuel Use Monitoring Method from 1st January in Year y+3.
	Emissions Monitoring Plan
3.22	What is an Emissions Monitoring Plan and why is it needed?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.2 and Appendix 4. An aeroplane operator falling under the applicability of CORSIA MRV requirements is required to submit an Emissions Monitoring Plan to the State Authority for approval. An Emissions Monitoring Plan is a collaborative tool between the State and the aeroplane operator that identifies the most appropriate means and methods for CO_2 emissions monitoring on an operator-specific basis, and also facilitates the reporting of required information to the State. During the development and approval process of the Emissions Monitoring Plan, the State Authority and aeroplane operator should maintain clear and open communication. Working collaboratively during CORSIA preparation and implementation reduces potential errors and increases effectiveness of the CO_2 emissions monitoring.
3.23	What are the contents of an Emissions Monitoring Plan?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.2 and Appendix 4. An Emissions Monitoring Plan has four main components: • Aeroplane operator identification; • Fleet and operations data; • Methods and means of calculating emissions from international flights; and • Data management, data flow and control. Full contents of an Emissions Monitoring Plan are included in Annex 16, Volume IV, Appendix 4.
3.24	Is there a standardized template for an Emissions Monitoring Plan?
	A template for an Emissions Monitoring Plan is provided in the *Environmental Technical Manual* (Doc 9501), Volume IV – *Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).*

	The template is also available on the ICAO CORSIA webpage (https://www.icao.int/environmental-protection/CORSIA/Pages/Templates.aspx).
3.25	When should an aeroplane operator submit an Emissions Monitoring Plan to the State?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.2 and Appendix 1. Annex 16, Volume IV requires that aeroplane operators submit their Emissions Monitoring Plan to their State for approval by 28 February 2019. It is also recommended that, if possible, aeroplane operators submit their Emissions Monitoring Plans by 30 September 2018 in order to support preparations for implementation. The deadline of 30 September 2018 could not be required by the SARPs as Annex 16, Volume IV will only become applicable on 1 January 2019.
3.26	When will the Emissions Monitoring Plan be approved by the State?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.2 and Appendix 1. After receiving the Emissions Monitoring Plan from the aeroplane operator, the State Authority will review the plan. If the plan meets the requirements of Annex 16, Volume IV, then the State Authority will approve the Emissions Monitoring Plan. Guidance for the review and approval of an Emissions Monitoring plan is included in the *Environmental Technical Manual* (Doc 9501), Volume IV – *Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).* The recommended timeframe for State approval is by 30 November 2018 (if the aeroplane operator has submitted the plan by 30 September 2018). A deadline for approval is by 30 April 2019 (if the aeroplane operator has submitted the Plan by 28 February 2019).
3.27	Does the third-party verification body need to review the Emission Monitoring Plan prior to its review and approval by the State?
	Reference in Annex 16, Volume IV: Part I, Chapter 1,1.1.5. No. An Emissions Monitoring Plan is a tool to facilitate CORSIA-related communication between an aeroplane operator and a State Authority. A verification body is required to confirm during the verification of an Emissions Report that the aeroplane operator has monitored, quantified and reported its emissions in accordance with the approved Emissions Monitoring Plan.
3.28	What happens if an aeroplane operator does not have an approved Emissions Monitoring Plan on 1 January 2019?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.1.2. An aeroplane operator should prepare and submit an Emissions Monitoring Plan as soon as possible after becoming subject to the applicability of the CORSIA MRV requirements. According to Annex 16, Volume IV, if the aeroplane operator does not have an approved Emissions Monitoring Plan as of 1 January 2019, it shall monitor and record its CO_2 emissions in accordance with the eligible monitoring method outlined in the Emissions Monitoring Plan that it will submit, or has submitted, to the State to which it is attributed.
3.29	Does the Emissions Monitoring Plan have to be submitted annually?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.2. No. The Emissions Monitoring Plan has to be submitted only once unless there are material changes to the operator's procedures in which case the operator will have to re-

	submit the Emissions Monitoring Plan to the State authority for approval.
3.30	What happens if there are changes to the information contained in an Emissions Monitoring Plan?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.2. In general, an Emissions Monitoring Plan should reflect the current status of an aeroplane operator's operations. An operator is required to resubmit the Plan for review and approval by the State if a "material change" is made to the information contained within the Plan. Examples of a material change include: • A change to the information presented in the Plan that would affect the status or eligibility of an aeroplane operator for an option under the emissions monitoring requirements; • A change that would otherwise affect the decision by the State with regards to whether the aeroplane operator's approach to monitoring conforms with the requirements; or • A change in the identifying information for attributing the aeroplane operator to a State, or a change in the means for having international flights attributed to the operator. The aeroplane operator is also required to inform the State of changes that would affect the State's oversight. This applies even if the changes do not fall within the definition of a material change. Examples of such changes include a change in corporate name or address, or a change in the contact information for a person responsible for the operator's Emissions Monitoring Plan. Guidance on identifying material changes to an Emissions Monitoring Plan is provided in the *Environmental Technical Manual* (Doc 9501), Volume IV – *Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)*.
	Monitoring of CO_2 Emissions
3.31	How does an aeroplane operator monitor its CO_2 emissions?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.2. Appendix 2, and Appendix 3. Under CORSIA, there are two possible ways of monitoring the CO_2 emissions: either by tracking the fuel use by applying one of the five Fuel Use Monitoring Methods and then calculating CO_2 emissions from the fuel use, or by using the ICAO CORSIA CO_2 Estimation and Reporting Tool (CERT). Aeroplane operator's level of activity (see below for the activity thresholds) will determine whether the operator is eligible to use the ICAO CORSIA CERT, or it is required to apply a Fuel Use Monitoring Method. An aeroplane operator will select an appropriate method and include the selection in its Emissions Monitoring Plan that the operator will submit to the State for approval. An aeroplane operator with annual CO_2 emissions from international flights of less than 500 000 tonnes during the period of 2019-2020 can use the ICAO CORSIA CERT for estimating and reporting its CO_2 emissions under CORSIA (see question 3.32 for more information about the ICAO CORSIA CERT). An aeroplane operator with annual CO_2 emissions from international flights of more than or equal to 500 000 tonnes during the period of 2019-2020 is required to choose one of the five eligible "Fuel Use Monitoring Methods". The five eligible Fuel Use Methods are described more in details in Annex 16, Volume IV, Appendix 2 (see also

	question 3.34). For the period of 2021-2035, the eligibility threshold for the use of the ICAO CORSIA CERT changes. For this period, an aeroplane operator can use ICAO CORSIA CERT to estimate and report its annual CO_2 emissions, if the operator's emissions from international flights subject to offsetting requirements are less than 50 000 tonnes. Also, an operator can still use the ICAO CORSIA CERT to estimate and report those CO_2 emissions from international flights not covered by offsetting requirements.
3.32	What is the ICAO CORSIA CO_2 Estimation and Reporting Tool (CERT)?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.2, and Appendix 3. Assembly Resolution A39-3 requested the development of simplified MRV procedures as a part of the CORSIA MRV system. ICAO CORSIA CERT is a simplified tool that is designed to help aeroplane operators to estimate and report their international aviation emissions. All aeroplane operators can use the ICAO CORSIA CERT for a preliminary CO_2 assessment to support the determination of an appropriate eligible method for the monitoring of the CO_2 emissions. Eligible aeroplane operators can use ICAO CORSIA CERT for estimating and reporting of their annual CO_2 emissions (see question 3.31 for the eligibility criteria for using the ICAO CORSIA CERT).
3.33	Where can one access the ICAO CORSIA CERT?
	ICAO CORSIA CERT is available free of charge on the ICAO CORSIA webpage.

3.34	What are the five eligible Fuel Use Monitoring Methods? Are they different from ICAO CORSIA CERT?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.2, and Appendix 2. Not all aeroplane operators are eligible to use the ICAO CORSIA CERT for estimating and reporting their annual CO_2 emissions (see question 3.31). Operators which are ineligible to use the ICAO CORSIA CERT for compliance shall select and use one of the five eligible Fuel Use Monitoring Methods. The five methods are entitled as "Method A"; "Method B"; "Block-off / Block-on"; "Fuel Uplift"; and "Fuel Allocation with Block Hour", and are described in details in Annex 16, Volume IV, Appendix 2, as well as in the *Environmental Technical Manual* (Doc 9501), Volume IV – *Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)*. These five methods represent the most accurate established practices, and are equivalent; there is no hierarchy for selecting a method. The reason why there are five methods is to allow flexibility for the operator to choose a method that best fits its existing fuel use tracking procedures. The differences in results between the five Fuel Use Monitoring Methods are not significant, in particular over a full reporting period. A comparison of the methods performed by CAEP experts demonstrated that there are no major differences between the results of the methods for the purpose of CORSIA. An aeroplane operator can use a different Fuel Use Monitoring Method for different aeroplane types included in its fleet. The aeroplane operator is required to specify in its Emissions Monitoring Plan which method it will apply to which aeroplane type. Aeroplane types are included in Doc 8643 — *Aircraft Type Designators* (https://www.icao.int/publications/DOC8643/Pages/Search.aspx). It should be noted that if the aeroplane operator wants to change its monitoring method, this change must be reflected in the Emissions Monitoring Plan, and approved by the State Authority before the operator can start applying the new monitoring method. Difference between a Fuel Use Monitoring Method, and ICAO CORSIA CERT is that, a Fuel Use Monitoring Method tracks the quantity of fuel for each flight. ICAO CORSIA CERT is an emissions estimation tool to calculate CO_2 emissions based on the aeroplane type and aerodromes of origin and destination.
3.35	Is it necessary to describe all five Fuel Use Monitoring Methods in the Emissions Monitoring Plan, even if not all are used?
	No, an operator needs to describe only those methods that it will use for the fuel use monitoring; there's no need to describe all five methods in the Emissions Monitoring Plan.
3.36	Is it possible to use a Fuel Use Monitoring Method for reporting that is different to the method(s) described in the approved Emissions Monitoring Plan?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.2. An Emissions Monitoring Plan should reflect the current status of an aeroplane operator's operations, including the current monitoring method. If there is a change to the monitoring method, this would constitute a "material change" to the Emissions Monitoring Plan, and the operator would be required to resubmit the Plan for review and approval by the State.

3.37	Can an aeroplane operator change its Fuel Use Monitoring Method?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.1.1. and 2.2.1.2. Yes. An aeroplane operator can change its fuel monitoring method. However, an operator must use the same eligible monitoring method for the entire compliance period. In addition, an operator is recommended to use the same monitoring method for the 2019 – 2020 period that it expects to use during the 2021 – 2023 period. If an operator changes a monitoring method, this constitutes a material change to the Emissions Monitoring Plan, and the operator will need to submit a revised Emissions Monitoring Plan to the State for approval.
3.38	How is "Block-off" and "Block-on" defined in Fuel Use Monitoring Method "Block-off / Block-on"?
	Reference in Annex 16, Volume IV: Appendix 2, 2.4. ***Block-off:*** any time between last door closed and first engine on. Any deviation to this definition should be in accordance with the aeroplane operator's existing operational practices as defined in the Emissions Monitoring Plan. The aeroplane operator shall state in its Emissions Monitoring Plan the points at which block-off measurements will be taken, with a reference to the relevant aeroplane operator documentation, to be approved by the administrating authority. ***Block-on:*** any time between last engine out and first door open. Any deviation to this definition should be in accordance with the aeroplane operator's existing operational practices as defined in the Emissions Monitoring Plan. The aeroplane operator shall state in its Emissions Monitoring Plan the points at which block-on measurements will be taken, with a reference to the relevant aeroplane operator documentation, to be approved by the administrating authority.
3.39	What are the data requirements for the Fuel Use Monitoring Method "Fuel Allocation with Block Hour"?
	Reference in Annex 16, Volume IV: Appendix 2, 2.6. Fuel Use Monitoring Method "Fuel Allocation with Block Hour" requires data from all flights of each aeroplane type for the reporting year. This method requires data on block hour of the flight under consideration (BH) and data from other flights of the same aircraft type (ICAO aircraft type designator level) in the same year. There are two ways to implement the method: (1) When the aeroplane operator can clearly distinguish between fuel uplifts for domestic and international flights, it uses actual fuel use (determined using the fuel uplift methodology) and block hour per flight for all international flights of the aeroplane type in the reporting year; (2) When the aeroplane operator cannot be clearly distinguished between fuel uplifts for domestic and international flights, it uses fuel uplift and block hour of all flights of the aeroplane type in the reporting year. The average fuel burn ratios (AFBR) are computed for each aeroplane operator and aeroplane type used. The computation of average fuel burn ratios is done using the formula in Annex 16, Volume IV, Appendix 2, 2.6.1; the computation of fuel use for

	individual flights is defined in Annex 16, Volume IV, Appendix 2, 2.6.1 and 2.6.2. An illustrative calculation is provided in the *Environmental Technical Manual* (Doc 9501), Volume IV – *Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)*, Table 3-7 for the Fuel Allocation with Block Hour Method. The assumed average fuel burn (AFBR) is 7.270 tonnes/h.
3.40	How should missing data under the Fuel Use Monitoring Method "Fuel Allocation with Block Hour" be handled?
	Reference in Annex 16, Volume IV: Part II, 2.5.1; Appendix 2, 2.6. The fuel allocation with block hour method requires the collection of block time and fuel uplift data to calculate the average fuel burn ratio in a given year for a given aeroplane type. In the case where no primary and secondary data sources are available to determine the block time and/or fuel uplift for one or more flights (i.e. there are data gaps), the aeroplane operator will use the ICAO CORSIA CERT to estimate and report CO_2 emissions for each flight with data gaps. For all remaining flights (i.e., excluding flights with data gaps), the aeroplane operator will apply the fuel allocation with block hour for the respective aeroplane(s) in accordance with Annex 16, Volume IV, Appendix 2, section 2.6. The average fuel burn ratio should be computed without consideration of the flights for which a data gap occurred. The average fuel burn ratio is not to be applied on flights with data gaps.
3.41	What will happen if an aeroplane operator exceeds the eligibility threshold to use ICAO CORSIA CERT during a given year?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.1.3. If the emissions of an aeroplane operator increases above the 500 000 tonnes threshold during the 2019 – 2020 period, the State may authorize it to continue using the ICAO CORSIA CERT. From 2021 onwards, if an operator's annual CO_2 emissions from international flights increases above the 50 000 tonnes threshold in a given year (y) and stays above the threshold in the following year (y+1), the operator will have to submit a revised Emissions Monitoring Plan by 30 September of the subsequent year (y + 2) and start monitoring actual fuel use thereafter (from 1 January of year y+3).
3.42	How is fuel use treated while performing non-commercial activities (e.g., APU fuel use during maintenance)?
	Reference in Annex 16, Volume IV: Appendix 2. Sometimes an aeroplane does not perform a flight previous or subsequent to the flight for which fuel consumption is being monitored; this could happen, e.g., if the flight under consideration follows a major revision or maintenance. As a result of this, some of the fuel measurement points needed for the application of a certain Fuel Use Monitoring Method might not be available. In such cases the aeroplane operator may substitute the missing fuel measurement point with an alternative fuel measurement point for the flight under consideration, e.g., as recorded in the technical logs.
3.43	How are CO_2 emissions calculated from the fuel used?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.3.

	After an aeroplane has monitored its fuel use, the operator is required to determine the CO_2 emissions by using the following equation: *CO_2 Emissions = Mass of fuel × Fuel Conversion Factor of given fuel type* Fuel conversion factors are: • 3.16 kg CO_2/kg of fuel for Jet-A and Jet-A1 fuel; and • 3.10 kg CO_2/kg fuel for AvGas or Jet-B fuel. After conducting analysis on the matter, these fuel conversion factors were agreed by the CAEP as the appropriate factor to be used at a global level. The analysis took into consideration the work of the IPCC, information from petroleum quality surveys, information from national GHG inventories, other emissions trading schemes, worldwide and regional values for the CO_2 fuel conversion factor, as well as methods that are based on measuring hydrogen and sulphur contents to calculate carbon content. If an aeroplane operator is using the ICAO CORSIA CERT for CO_2 emissions monitoring, the tool automatically estimates the CO_2 emissions, and no separate calculation of emissions is needed.
3.44	Why do we need to know total CO_2 emissions from international aviation?
	Knowing the total emissions from international aviation is important for several reasons: 1) To assess the overall emissions coverage of CORSIA and track progress in achieving the aspirational goal of carbon neutral growth from 2020. 2) As States voluntarily participate in CORSIA and the route-based approach affects the emissions coverage of CORSIA, the baseline of average 2019 – 2020 emissions will change to reflect the route-based coverage by CORSIA (also refer to question 2.16 on the calculation of CORSIA baseline). 3) The total emissions from international aviation in 2020 is also a reference value that will be used to inform exemptions for new entrants whose annual emissions do not exceed 0.1% of the total 2020 emissions.
3.45	What are the requirements for fuel density?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.3. If fuel quantities are measured in units of volume instead of units of mass, then an aeroplane operator is required to convert the fuel volume into fuel mass by applying a fuel density value that is used for operational and safety reasons. For CORSIA purposes, the operator shall either use an actual density value, or a standard density value (0.8 kg/litre). The operator shall detail the procedure for using actual or standard density in its Emissions Monitoring Plan.
3.46	What is the standard fuel density?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.3. A standard density value of 0.8 kg per litre is being used under CORSIA.
3.47	How to account for the use of CORSIA eligible fuels in the CORSIA MRV system?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.4. Claims of emissions reductions from the use of CORSIA eligible fuels by an aeroplane operator are based on mass of CORSIA eligible fuels according to purchasing and blending records.

	For the purposes of the CORSIA MRV system, an aeroplane operator, that intends to claim for emissions reductions from the use of CORSIA eligible fuels, shall use a CORSIA eligible fuel that meets the CORSIA Sustainability Criteria. Also, only CORSIA eligible fuels from fuel producers that are certified by an approved Sustainability Certification Scheme are allowed under CORSIA. Such certification schemes need to meet specific requirements that are under development by CAEP. The emissions reductions from the use of a CORSIA eligible fuel are calculated in the context of the calculation of the operator's CO_2 offsetting requirements (see also question 2.18). These calculations use the approved life cycle emissions values for the CORSIA eligible fuels. All the relevant documentation on CORSIA eligible fuels will be available on the ICAO CORSIA website, once finalized.
3.48	Is induced land-use change taken into account for CORSIA eligible fuels?
	Yes. Emissions from Induced Land-Use Change (ILUC) are included in the life-cycle emissions values.
3.49	Can an aeroplane operator claim all the CORSIA eligible fuel it has purchased?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.2.4. No. An aeroplane operator cannot claim the amount of CORSIA eligible fuels that have been sold to a third party or claimed under another greenhouse gas emissions scheme. The aeroplane operator is required to provide a declaration of all other Greenhouse Gas schemes it participates in where the emissions reductions from the use of CORSIA eligible fuels may be claimed, and a declaration that it has not made claims for the same batches of CORSIA eligible fuel under these other schemes.
3.50	Which date is relevant in order to claim a batch of CORSIA eligible fuel?
	The blending date of the CORSIA eligible fuel is relevant. An aeroplane operator can only claim a reduction to its offsetting requirements from the use of such fuel if it was blended during the associated compliance period. An aeroplane operator may therefore purchase a batch of CORSIA eligible fuel at an earlier date and make the claim in a later compliance period during which the blending occurs.
	Reporting of CO_2 emissions, CORSIA eligible fuels and eligible emissions unit cancellations
3.51	What is the timeline for reporting of CO_2 emissions, and who will report to whom?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.3. and Appendix 1. **An aeroplane operator** is required to submit **to the State** a verified Emissions Report on an annual basis. The Emissions Report will include information on the previous calendar year's CO_2 emissions, and it shall be accompanied by a Verification Report that will be developed by a third-party verifier. The operator and the verification body shall both independently submit the verified Emissions Report and associated Verification Report to the State Authority (see also question 3.72 for more information on verification). CO_2 emissions from the calendar year of 2019 shall be reported to the State by 31 May 2020. CO_2 emissions from the calendar year of 2020 shall be reported by 31 May 2021. Regarding the CO_2 emissions for the period of 2021-2035, the reporting deadline of the previous calendar year's CO_2 emissions is 30 April.

	After the State has received the Emissions Reports from all of its aeroplane operators, **the State** shall submit required information regarding the CO_2 emissions **to ICAO**. This will take place by 31 August 2020 for 2019 emissions. For 2020 emissions, the State shall submit this information by 31 August 2021. Regarding CO_2 emissions from 2021-2035, the annual reporting deadline from States to ICAO is 31 July following the calendar year for which the CO_2 emissions are being reported.
3.52	Do all international routes have to be included in the Emissions Report, or only the international routes with the States that participate in the CORSIA offsetting?
	Reference in Annex 16, Volume IV: Part II, Appendix 5. All international routes need to be reported. Appendix 5 of Annex 16, Volume IV includes the content of an Emissions Report from aeroplane operator to State. The information to be reported includes the total CO_2 emissions from flights subject to offsetting requirements, **and** the total CO_2 emissions from international flights, that are not subject to offsetting requirements.
3.53	What is the level of aggregation of the CO_2 emissions information that will be reported to which stakeholder?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.3. and Appendix 5. The State shall decide on the level of aggregation (i.e., State pair or aerodrome pair) for which an aeroplane operator is required to report the number of international flights and CO_2 emissions. The annual Emissions Report from an aeroplane operator to the State includes CO_2 emissions from all international flights per aerodrome pair or State pair (as per State's decision), no matter whether these flights are subject to CORSIA offsetting requirements or not. A "State pair" in this context means a group of two States composed of a departing State or its territories and an arrival State or its territories (e.g., flights between two States, State A and State B, will be reported as separate State pairs: A-B, and B-A). In turn, the information to be reported from State to ICAO includes: • Total annual CO_2 emissions for each State pair aggregated for all aeroplane operators; • Total annual CO_2 emissions for each aeroplane operator; • Total aggregated annual CO_2 emissions for all State pairs subject to offsetting requirements for each aeroplane operator; and • Total aggregated annual CO_2 emissions for all State pairs not subject to offsetting requirements for each aeroplane operator. Complete information to be reported from aeroplane operators to States, and from States to ICAO is included in Annex 16, Volume IV Appendix 5.
3.54	What levels of information will be available to the public?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.3. and Appendix 5. The following information will be made available in the ICAO document entitled "CORSIA Central Registry (CCR): Information and Data for Transparency" that will be available on the ICAO CORSIA website: • List of verification bodies accredited in each State; • Total average CO_2 emissions for 2019 and 2020 aggregated for all aeroplane operators on each State pair;

	• Total annual CO_2 emissions aggregated for all aeroplane operators on each State pair, with identification of State pairs subject to offsetting requirements; and • For each aeroplane operator: o Aeroplane operator name; o State in which aeroplane operator is attributed; o Reporting year; o Total annual CO_2 emissions; o Total annual CO_2 emissions for State pairs subject to offsetting requirements; o Total annual CO_2 emissions for State pairs not subject to offsetting requirements; • Production year of the CORSIA eligible fuels claimed; • Producer of the CORSIA eligible fuels claimed; • Type of fuel, feedstock and conversion process used to create each CORSIA eligible fuel claimed; • Batch number(s) of each CORSI eligible fuel claimed; • Total mass of each batch of CORSIA eligible fuel claimed; • State reporting the information; • Information at a State and Global aggregate level for a specific compliance period: o Total final offsetting requirements over the compliance period; o Total quantity of emissions units cancelled over the compliance period to reconcile the total final offsetting requirements; and o Consolidated identifying information for cancelled emissions units.
3.55	What is the CORSIA Central Registry (CCR)?
	The CCR is a system that will be developed by ICAO as a tool for States to submit data and information to ICAO as part of the requirements to implement CORSIA. This tool will assist States in providing a standardized format and means to submit their CORSIA specific data, and allow ICAO to effectively and efficiently receive, consolidate and develop the necessary reports for CORSIA, as well as to make available the required information for transparency (see question 3.54 for the information to be made publically available).
3.56	When will the CCR become available?
	The ICAO Secretariat has initiated the process for the development of the CCR, which is expected to begin in early 2019. Testing of a beta version of the CCR is planned for the second half of 2019. According to this timeline, the CCR will become operational in early 2020 (see question 3.51 for the timelines for reporting).
3.57	How does the reporting from a State to ICAO work before the CCR becomes operational (e.g., submission of list of aeroplane operators attributed to a State)?
	The ICAO Secretariat is currently assessing the options of facilitating the communication (e.g., on the aeroplane operators attributed to the State, and on the verification bodies accredited in the State) between a State and ICAO for the time period before the CCR becomes fully operational. More information on this will be communicated to the CORSIA Focal Points.
3.58	Are there any provisions regarding the confidentiality of data if a route is only operated by one operator?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.3. When an aeroplane operator operates a very limited number of State pairs that are subject to offsetting requirements, and/or a very limited number of State pairs that are not subject to offsetting requirements, it may request to the State that such data not be

	published at the aeroplane operator level. The same applies when aggregated State pair data may be attributed to an identified aeroplane operator as a result of a very limited number of aeroplane operators conducting flights between that State pair. Based on the request, the State shall determine whether this data is confidential. All data recognized as confidential will be aggregated and published by ICAO without attribution to a specific aeroplane operator, or to a specific State pair. There will be distinction between State pairs subject to offsetting requirements, and those not subject to offsetting requirements.
3.59	Are the reporting periods and compliance periods the same for all operators?
	Reference in Annex 16, Volume IV: Appendix 1. Yes. All aeroplane operators are subject to the same reporting and compliance periods. Reporting periods are annual and correspond to calendar years. Compliance periods for offsetting requirements are 3-year periods, with the first period starting on 1 January 2021 and ending on 31 December 2023.
3.60	Is there an established template for reporting annual CO_2 emissions from an aeroplane operator to the State, and from the State to ICAO?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.3. It is recommended that an aeroplane operator uses the standardised Emissions Report template provided in the *Environmental Technical Manual* (Doc 9501), Volume IV – *Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).* The template is also available on the ICAO CORSIA webpage. Regarding the reporting from a State to ICAO, the CCR will provide a standardized format and means to submit the CORSIA specific data from a State to ICAO, and also allow ICAO to consolidate and develop the necessary reports for CORSIA.
3.61	What if there are gaps identified in the reported data?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.5.1. Data gaps may occur as a result of an aeroplane operator missing data that are needed for the determination of its fuel use on one or more international flights. In a case of a data gap, an aeroplane operator is required to correct issues identified with the data and information management system in a timely manner to mitigate ongoing data gaps and system weaknesses. As a part of its Emissions Monitoring Plan, an aeroplane operator has to identify secondary data sources to prevent data gaps. For example, if an aeroplane operator normally uses ACARS data and, due to a problem, is missing this data for a flight, it may still be able to source actual fuel data from fuel invoices or technical logs as the secondary sources.
3.62	What is the threshold for data gaps? How can such data gaps be addressed?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.5.1. If the data gap does not exceed 5 per cent of international flights for the 2019-2020 period, or 5 per cent of international flights subject to offsetting requirements for the 2021-2035 period, an aeroplane operator using a Fuel Use Monitoring Method is required to fill data gaps by using the ICAO CORSIA CERT. If there are data gaps that exceed a **5 per cent** threshold of total international flights, the

	operator is responsible for stating the percentage of data gaps, and for engaging with the State in order to address the issue.
3.63	What constitutes a data gap?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.5. Data gaps occur when an aeroplane operator is missing data relevant for the determination of its fuel use for one or more international flights. Gaps in emissions-related data can occur due to various reasons, including irregular operations, data feed issues or critical system failures. For example, a missing Block-off value, a missing fuel invoice, or a missing fuel density measurement, and no secondary source is available. It may, on occasion, include information about the actual flight itself, such as Aerodrome of Departure (ADEP) or Aerodrome of Destination (ADES) incorrectly recorded, or unavailable from, on board system. When data from a primary source is missing but an agreed secondary source can be used instead, as detailed and approved in the aeroplane operator's Emissions Monitoring Plan, this is sufficient to provide the information and it is not considered a data gap. The primary data source refers to the electronic or paper process and documentation which are used by default by the operator to record fuel data measurements. A secondary data source is any other process and documentation which can be used by the operator to record fuel data measurements required for the application of the approved fuel monitoring method. The secondary data source must provide a fuel data measurement and cannot be estimated or statistically reconstructed. The measurement must be equivalent to the measurement which would have been obtained through the primary source, and it should not be measured at a materially different point in time. Such secondary sources may include, for example, the technical log or a fuel invoice. Using a data source from an equivalent point in time as the missing measurement allows the approved monitoring method to be completed so as to achieve the measurement of fuel for the flight in question according to the requirements of that monitoring method. To use a simple example, the secondary data source for block-off / block-on provides a recorded measurement of block-off fuel at an equivalent time to when the regular block-off measurement would be taken and/or it provides a recorded measurement of block-on fuel at an equivalent time to when the regular block-on measurement would be taken. If such a data source is not available, it is not permitted, for example, to use the fuel uplift method instead for that flight but the fuel should be estimated with the ICAO CORSIA CERT. A data gap occurs when approved primary and secondary data are not available (i.e., the data is incomplete to calculate the emissions for the flight) and, as a result, the approved Fuel Use Monitoring Method cannot be applied to determine fuel use. In this case, the emissions for the flight in questions will be estimated using the ICAO CORSIA CERT.
3.64	Is the 5 per cent data gap threshold based on CO_2 emissions or number of flights?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.5.1. The 5 per cent threshold refers to the number of international flights (and **not** to the amount of CO_2 emissions).
3.65	Is an alternative estimation approach (instead of using the ICAO CORSIA CERT) possible for addressing data gaps?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.5.1. If an aeroplane operator has data gaps and system weaknesses that exceed the 5 per cent

	threshold, the operator shall engage with the State to address the issue. The operator shall also state the percentage of international flights that had data gaps, and provide an explanation to the State in the Emissions Report. The operator is required to fill all data gaps and correct systematic errors and misstatements prior to the submission of the Emissions Report. Alternative data sources, such as air traffic control (ATC) records, flight logs, flight plans, etc., are also possible for addressing data gaps and for estimating CO_2 emissions in such cases, however, Annex 16, Volume IV is clear in that an aeroplane operator using a Fuel Use Monitoring Method, shall fill data gaps using the ICAO CORSIA CERT, provided that the data gaps during a compliance period do not exceed the data gap thresholds (see also question 3.62).
3.66	Will CORSIA's baseline emissions be affected due to an error correction to the Emissions Report?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.6. No, there will not be adjustments made to the total sectoral CO_2 emissions or the Sector's Growth Factor as a result of error correction to Emissions Report.
3.67	What happens in case of late reporting or no reporting at all by an aeroplane operator or a State?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.5.2. If an aeroplane operator does not provide its annual Emissions Report in accordance with the reporting timeline, the State is required to take action and to engage with the aeroplane operator to clarify the situation. If this proves unsuccessful, then the State shall estimate the aeroplane operator's annual emissions using the best available information and tools, such as the ICAO CORSIA CERT. In a case where the State does not provide its annual Emissions Report to ICAO in accordance with the reporting timeline, then the data provided by ICAO shall be used to fill the missing information and to make relevant calculations. The State is required to take necessary action to ensure that the necessary national policies and regulatory framework be established for the compliance and enforcement of CORSIA (see also question 3.6).
3.68	How does an aeroplane operator report the use of CORSIA eligible fuels?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.3 and Appendix 5. An aeroplane operator shall report the use of CORSIA eligible fuels as a part of its annual Emissions Report. In addition, in order to claim emissions reductions from the use of such fuels, the operator will provide supplementary information to the Emissions Report, which includes the details of the CORSIA eligible fuels and associated emissions reductions. A template of a CORSIA eligible fuels supplementary information to the Emissions Report is provided in the *Environmental Technical Manual* (Doc 9501), Volume IV – *Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)*, and is also available on the ICAO CORSIA website.
3.69	How does the reporting of emissions unit cancellations work?
	Reference in Annex 16, Volume IV: Part II, Chapter 4, 4.3. An aeroplane operator is required to report to the State the cancellation of CORSIA Eligible Emissions Units to meet its total final offsetting requirements for a given

	compliance period, by submitting to the State a copy of the verified Emissions Unit Cancellation Report for approval and a copy of the associated Verification Report. The first deadline for reporting of emissions unit cancellations will be on 30 April 2025. By that time an aeroplane operator and the verification body are required to submit to the State Authority the verified Emissions Unit Cancellation Report and associated Verification Report for the 2021-2023 compliance period (see question 3.76 for more information on verification of an Emissions Unit Cancellation Report). The State shall then report aggregated information to ICAO through CORSIA Central Registry (CCR). The following information at a State and global aggregate level for a specific compliance period will be included in the ICAO document entitled "CORSIA Central Registry (CCR): Information and Data for Transparency" that will be available on the ICAO CORSIA website: • Total final offsetting requirements over the compliance period; • Total quantity of emissions units cancelled over the compliance period to reconcile the total final offsetting requirements; and • Consolidated identifying information for cancelled emissions units.
3.70	Can an aeroplane operator cancel emissions units prior to having received the final offsetting requirements from the State?
	Yes. An aeroplane operator can purchase and cancel emissions units at any time, and does not need to wait until the operator has been notified of its final offsetting requirements at the end of the compliance period.
3.71	What happens if an operator does not cancel enough emissions units to meet its offsetting requirements?
	The State is required to take necessary action to ensure that the necessary national policies and regulatory framework be established for the compliance and enforcement of CORSIA (see also question 3.6).
	Verification
3.72	How does the verification of CO_2 emissions work in CORSIA? Who will do the verification?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.4. and Appendix 6. Verification on emissions data ensures the consistency of information, and identifies any potential errors in the aeroplane operator's annual Emissions Report. CORSIA foresees a three-step verification pathway: • At Step 1, a voluntary internal pre-verification **by the aeroplane operator** is recommended. This means that the aeroplane operator conducts a verification of its data before submitting it to the verification body. Internal pre-verification is likely to increase the quality of the Emissions Report, but it does not replace the requirement for third-party verification. • At Step 2, a third-party verification is performed by an independent third-party **verification body**, before the operator reports to the State Authority. The requirements for the third-party verification will be based on existing Standards from the International Organization for Standardization (ISO), as well as on CORSIA-specific requirements from Annex 16, Volume IV. A verification body is contracted by an aeroplane operator. • At Step 3, **the State Authority** conducts an order of magnitude review. This is the check performed by a State to verify the data against different sources of information that the State has access to.
3.73	Is it necessary for an aeroplane operator to perform an internal pre-verification of its Emissions Report, prior to the third-party verification?

	Reference in Annex 16, Volume IV: Part II, Chapter 4, 2.4.1.2. Voluntary pre-verification is a recommended practice for an aeroplane operator. Pre-verification will provide the operator with an opportunity to identify potential irregularities and take corrective actions prior to third-party verification, thereby having a potential to save time and resources later on in the process. The *Environmental Technical Manual* (Doc 9501), Volume IV – *Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)* provides a recommended checklist approach for the internal pre-verification.
3.74	Does the voluntary pre-verification substitute the third-party verification?
	Reference in Annex 16, Volume IV: Part II, Chapter 4, 2.4.1.2. No. The voluntary pre-verification does not substitute the third-party verification. Voluntary pre-verification is not a requirement, although aeroplane operators are recommended to consider preparing for the third-party verification process by conducting a pre-verification.
3.75	Is a third-party verification needed when using the ICAO CORSIA CERT?
	Reference in Annex 16, Volume IV: Part II, Chapter 4, 2.4.1. Yes, an aeroplane operator shall engage a third-party verification body for the verification of its annual Emissions Report also when the ICAO CORSIA CERT has been used for generating an Emissions Report.
3.76	What are the requirements for the verification of an Emissions Unit Cancellation Report, and by whom?
	Reference in Annex 16, Volume IV: Part II, Chapter 4, 4.4. Verification of an Emissions Unit Cancellation Report follows very similar process and requirements as the verification of an annual Emissions Report. In order to be eligible to verify the Emissions Unit Cancellation Report of the aeroplane operator under CORSIA, a verification body must be accredited to ISO Standard 14065:2013 (Greenhouse gases – Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition), and to the relevant requirements described in Annex 16, Volume IV, Appendix 6. Accreditations are granted by a national accreditation bodies. National accreditation bodies are required to work in accordance with ISO/IEC 17011 (Conformity assessment – General requirements for accreditation bodies accrediting conformity assessment bodies). Once accredited, the verification body is required to conduct the verification according to ISO Standard 14064-3:2006 (Greenhouse gases – Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions), and in accordance with the relevant requirements in Annex 16, Volume IV, Appendix 6. It should be noted that an aeroplane operator may choose to use the same verification body for the verification of an Emissions Units Cancellation Report as it has engaged for the verification of the Emissions Report, although the operator is not obligated to do so. *Note - Please note that CAEP experts are working to provide the necessary guidance on the verification of the Emissions Units Cancellation Report to be included in a future revision of the* Environmental Technical Manual *(Doc 9501), Volume IV* – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for

	International Aviation (CORSIA).
3.77	What are the requirements to be accredited as a verification body?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.4. and Appendix 6. In order to be eligible to verify the Emissions Report of the aeroplane operator under CORSIA, a verification body must be accredited to ISO Standard 14065:2013 (*Greenhouse gases – Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition*), and to the relevant requirements described in Annex 16, Volume IV, Appendix 6. Once accredited, the verification body is required to conduct the verification according to ISO Standard 14064-3:2006 (Greenhouse gases – Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions), and to the relevant requirements in Annex 16, Volume IV, Appendix 6.
3.78	Who accredits the verification body?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.4 Accreditations are granted by national accreditation bodies. National accreditation bodies are required to work in accordance with ISO/IEC 17011 (Conformity assessment – General requirements for accreditation bodies accrediting conformity assessment bodies).
3.79	Does an aeroplane operator have to be certified under ISO 14065?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.4. and Appendix 6. No. The verification body is required to be accredited to ISO 14065, but not the aeroplane operator. The verification body must be independent from the aeroplane operator, so even if an operator were to be certified to ISO 14065, it could not undertake the verification of its own Emissions Report.
3.80	How can an aeroplane operator identify an accredited verification body?
	Reference in Annex 16, Volume IV: Part II, Chapter 1, 1.3.7. The State is required to submit to ICAO a list of nationally-accredited verification bodies. ICAO will compile this information, and make available a list of verification bodies accredited in each State as a part of the ICAO document entitled “CORSIA Central Registry (CCR): Information and Data for Transparency” that will be available on the ICAO CORSIA website. An aeroplane operator may consult this list in order to identify and contract a verification body for the verification of the Emissions Report.
3.81	How much time is normally required for the third-party verification?
	The time required for the verification process will vary on a case by case basis. The time required relates to, e.g., the size of the operator and whether simplified procedures, such as the ICAO CORSIA CERT, have been used.
3.82	Who pays for the third-party verification and what will be the price? Is a price list included in the list of verification bodies to be compiled by ICAO?
	An aeroplane operator will be responsible for covering the cost of the third-party verification of its Emissions Reports and Emissions Unit Cancellation Reports. Details of the verification (including the price of the verification service) will be agreed and included in the contract between an aeroplane operator and a verification body.
3.83	Does the verification body have to be from the administrating State?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.4.2. An aeroplane operator may engage a verification body accredited in another State, as long as the State in which the aeroplane operator has been attributed to recognises this

	accreditation.
3.84	What if there is no national accreditation body in a State?
	Reference in Annex 16, Volume IV: Part II, Chapter 2, 2.4. An aeroplane operator may engage a verification body accredited in another State, subject to rules and regulations affecting the provision of verification services in the State to which the aeroplane operator is attributed.
3.85	What can a State do if it has limited accreditation structure in place to support the verification process?
	Reference in Annex 16, Volume IV: Appendix 6 If a State has not (yet) installed a national accreditation body (NAB) (or a similar institution which operates in accordance with ISO 17011) or has made a deliberate decision to not implement an ISO 14065 accreditation scope through its NAB, the following alternative options can be assessed by the State: (1) A State may include in its national CORSIA regulation a provision to accept verification statements of verification bodies accredited by a specific foreign regional NAB (by naming the specific NAB). To gain guidance and an overview of the accreditation situation of other States in the geographical region, contact with the regional accreditation cooperation bodies is recommended (please see below). • For Africa SADCA (Southern African Development Community in Accreditation); • For Africa AFRAC (African Accreditation Cooperation); • For Asia-Pacific PAC (Pacific Accreditation Cooperation); • For America IAAC (Inter American Accreditation Cooperation); • For Arabian Peninsula ARAC (Arab Accreditation Cooperation); • For Europe EA (European Accreditation). However, it is strongly advised to analyse the specific accreditation scope of a NAB before the verification statements of accredited verification bodies could be accepted as it is important to ensure that the accreditation is indeed based on the requirements of Annex 16, Volume IV and the corresponding *Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)*. This is important as States have the freedom to adapt the accreditation scope to their specific national requirements (e.g. technical provisions on data submission). (2) Alternatively, a State could directly refer in its national legislation to the ICAO CORSIA Implementation Elements as ICAO will publish a list of verification bodies accredited in each State. This, however, is not the preferred approach as a direct link to the ICAO CORSIA Implementation Elements would lead to an automatic acceptance of all published verification bodies, including those accredited by foreign NABs solely to Annex 16, Volume IV and the corresponding *Environmental Technical Manual* (Doc 9501), Volume IV – *Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA*), and those accredited by NABs that included deviating provisions in the accreditation scope (specific national requirements). Similar with (1), the State is strongly advised to analyse the specific accreditation scope of a NAB before accepting the verification statements of accredited verification bodies.

	(3) In addition to a national CORSIA accreditation scope, some NABs may also offer verification bodies an (additional) accreditation on the basis of an internationally applicable CORSIA scope (unbiased by any regional legal characteristics, solely based on Annex 16, Volume IV and the corresponding *Environmental Technical Manual (Doc 9501), Volume IV – Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)*. Such a 'clean' accreditation scope can be recommended to be used for verifications in States with a limited accreditation infrastructure. Similar as with option 1, contact to the regional accreditation cooperation bodies is recommended to identify any NABs in the geographical region which offer such an international CORSIA accreditation scope. Moreover, most NABs would also accept to accredit foreign verification bodies. Consequently, a NAB offering an international CORSIA scope could potentially also accredit an organization which is based in a State which itself has only a limited accreditation infrastructure.
3.86	Must a State ensure to have accredited verification bodies through its National Accreditation Body by 30 April 2019?
	Reference in Annex 16, Volume IV: Part II, Chapter 1, 1.3.7; and Appendix 1, No. States are asked to submit a list of verification bodies accredited in the State to ICAO at least once a year. The first time this is requested is by 30 April 2019. In addition, a State may submit updates to this list on a more frequent basis. As the accreditation process takes time to be accomplished, it might not be the case that all States will submit extensive lists of accredited verification bodies before 30 April 2019. However, as the number of verification bodies is expected to increase over time and will not be tied to the annual 30 April deadline, States may submit updates to the list on a more frequent basis as needed.
3.87	What may a witness audit involve during the accreditation process of a verification body?
	Reference in Annex 16, Volume IV: Appendix 6, 2.12. The accreditation process of a verification body normally involves a witness audit where the NAB monitors the verification approach taken by the witnessed verification body during an actual audit. For a new scheme such as CORSIA it can prove challenging for a NAB not just to schedule witness audits during the (short) verification period (e.g. 1 January till 31 May 2020) but to also finish the remaining administrative accreditation process within this period to enable the verification body to present a valid verification statement of an accredited verification body to its customer. Obviously this approach includes risks for the aeroplane operator as well. At the beginning of the scheme, aeroplane operators would need to select a not yet accredited verification body and somehow assess whether the verification body will indeed pass the accreditation process. There is always a remaining risk that the verification body would fail and therefore the aeroplane operator (within the remaining time) would not be able to source verification services from another verification body in time. To address the issue, the verification body may demonstrate its abilities by pre-auditing data of the aeroplane operator in 2019 already, subject to the agreement of the aeroplane operator. The aeroplane operator would prepare the emissions data and Emissions Report with data from the first month of 2019 and the verification body would perform the witnessed audit on the basis of this (limited) report. This is also a good opportunity for the aeroplane operator to identify issues within the data gathering process at a very

	early stage which still leaves sufficient time to also resolve methodical errors. Assuming that the witness audit (within the pre-audit) would take place between June and August 2019, the remaining time is enough for the NAB to finish the administrative part of the accreditation process. Consequently, with the beginning of 2020 aeroplane operators would have clear knowledge which verification bodies have successfully qualified for the CORSIA accreditation scope. An aeroplane operator could then either continue with its verification body (beyond the pre-audit engagement) or source a verification body which has successfully passed the accreditation process.
3.88	How does a verification team meet the knowledge requirements?
	Reference in Annex 16, Volume IV: Appendix 6, 2.5. *Note: The information contained in the answer to this question is of primary interest to verification bodies.* With the exception of any relevant national additional provisions required by Annex 16, Volume IV, Appendix 6, 2.5.1 e) or relevant national stipulations(*), the knowledge requirements listed in Annex 16, Volume IV, Appendix 6, section 2.5 can be fully met by an in-depth study of Annex 16, Volume IV and the corresponding *Environmental Technical Manual* (Doc 9501), Volume IV – *Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA*). Since knowledge of these requirements is of upmost importance, other means may be important additions for the overall education of verification teams. The following list of options can facilitate the development of training approaches to ensure knowledgeable verification teams. ***Internal training:*** this type of training refers to an individual or group study within the verification body. Internal courses are prepared by internal trainers or verifiers based on Annex 16, Volume IV, Appendix 6, the *Environmental Technical Manual* (Doc 9501), Volume IV – *Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA*), and other potentially relevant or supporting information, e.g. ICAO website. It is essential to document the courses, including documenting the content of the training, training material, time and duration of meetings and lists of attendees. It is recommended to conclude these training courses with a written knowledge test and a minimum pass rate. ***Contracting an external trainer (customized training):*** verification bodies can contract with an external trainer to receive training for their teams. This does not replace an internal process within the verification body to ensure that the full content of Annex 16, Volume IV and the *Environmental Technical Manual* (Doc 9501), Volume IV – *Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA*) was included in the training and that the training was documented. This approach can reduce overall demands on the verification body but the availability of external trainers might be limited, especially at the beginning of the scheme. ***Attendance on external training course or participation in external information session*:** the verification body can place team members on an external training course or have them participate in external information sessions (e.g. ICAO or State organized events). The verification body would retain responsibility for ensuring that the full content of Annex 16, Volume IV and the *Environmental Technical Manual* (Doc 9501),

	Volume IV – *Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA*) was included in the training, and that the training was documented and completed to a satisfactory standard e.g. with an exam and minimum pass rate at the end. However, it is recognised that there may be limited availability of such courses at the beginning of the scheme. ***Combination of options outlined above*:** in order to reach a sufficient understanding of the CORSIA provisions (including the specific national legislation), verification bodies might use different sources of information, such as an internal training approach with self-study based on available ICAO information, followed by a one-day customised internal training to address any open or remaining questions. Finally, any information sessions provided by States should be attended so that team members can inform themselves about the relevant national legislation and CORSIA characteristics. *(*) e.g. Decision by the State to require aeroplane operators to submit data on a State pair or aerodrome pair level (Emissions Report). It is important to point out that the verification body would also need to demonstrate knowledge of any additional relevant national requirements, or procedures for determining national requirements related to flexibilities within Annex 16, Volume IV.*
3.89	How does a verification team meet the technical expertise requirements?
	Reference in Annex 16, Volume IV: Appendix 6, 2.6. *Note: The information contained in the answer to this question is of primary interest to verification bodies.* The technical expertise requirements listed in Annex 16, Volume IV, Appendix 6, 2.6 refer in most cases to expertise which cannot be obtained by an intensive study of Annex 16, Volume IV and the corresponding *Environmental Technical Manual* (Doc 9501), Volume IV – *Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA*). However, the listed items form the minimum technical understanding which is necessary for a verification team to conduct a verification. During the accreditation, the verification body must demonstrate that it has processes in place to ensure the appointment of technically competent verification teams. One example of such a process involves conducting a detailed comparison of the requirements outlined in Annex 16, Volume IV, Appendix 6, 2.6.1 and 2.6.2 in the form of a matrix, specifying for each verification team member to what extent each of the requirements listed are being met (gap analysis) and which documents were used to prove a specific expertise. After analysing the verification team technical expertise, it is the task of the verification body to analyse whether the identified distribution of competencies throughout the potential verifiers could be combined into a team that meets all the requirements in Annex 16, Volume IV, Appendix 6, 2.6. Depending on the results of this review, several options are possible. If the result of the review is that the verification body already has a team of verifiers that satisfy each of the competencies listed in Annex 16, Volume IV, Appendix 6, 2.6.1 and 2.6.2, including members who have sufficient expertise to fulfil the role of the independent reviewer, the verification body can use its existing verifiers to conduct the CORSIA verification. If the result of the review indicates there is a gap in technical competency, the

	verification body needs to develop and document a training approach to resolve the deficits in accordance with its established internal processes. These are similar to the approaches described above in the guidance for Annex 16, Volume IV, Appendix 6, 2.5, such as internal or external training, as well as the applied training options described in the corresponding section of the *Environmental Technical Manual* (Doc 9501), Volume IV – *Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA*). However, as Annex 16, Volume IV, Appendix 6, 2.6 has a strong emphasis on both expertise and experience, hiring of additional staff is an alternative, which should be considered by the verification body.
3.90	How does an independent reviewer meet the knowledge and technical expertise requirements?
	Reference in Annex 16, Volume IV: Appendix 6, 2.5 and 2.6. *Note: The information contained in the answer to this question is of primary interest to verification bodies.* Independent reviewers are also required to meet the provisions of Annex 16, Volume IV, Appendix 6, 2.5 and 2.6, given that only comprehensive knowledge and expertise enables the independent reviewer to satisfactorily fulfil its task. This includes the critical analysis of the verification approach taken by the verification team such as reviewing the provided information and data, identifying contradictory information, ensuring completeness and integrity of documentation and potentially questioning the proposed verification statement. The approaches and options to meet the knowledge and expertise requirements outlined for the verification teams in the previous FAQs are applicable for the independent reviewer as well. This also includes the option that an independent review could be performed by two or more people with complementary knowledge and expertise to satisfy all provisions in Annex 16, Volume IV, Appendix 6, 2.5 and 2.6. Annex 16, Volume IV, Appendix 6, 2.9 enables the verification body to establish a partnership to outsource the independent review to a qualified entity. Nevertheless, this option should only be chosen if the verification body itself is not in the position to identify among its own staff people not involved in the verification engagement who meet the knowledge requirements to perform the independent review, and also if this approach is duly covered by its accreditation. In this regard, it is important to establish sufficient means in the internal documentation of the verification body to give the independent reviewer appropriate authority and access to necessary data and information to carry out the review.
3.91	Can the independent review be outsourced to another verification body?
	Reference in Annex 16, Volume IV: Appendix 6, 2.9. No. Outsourcing within the Annex 16, Volume IV refers to contracted external verifiers who are part of the verification body and therefore covered by the accreditation.
3.92	To avoid conflicts of interest, the leader of the verification team cannot undertake more than six verifications without a three consecutive year break. What if the leader performs three verifications, stops for one year, and then performs another three verifications?
	Reference in Annex 16, Volume IV: Appendix 6, 2.2. The requirement to take a three consecutive year break also applies in cases where the

six annual verifications are not consecutive. Therefore, a three consecutive year break will still be required if the leader performs three verifications, stops for one year, and then performs another three verifications.

4. Questions about the impact of joining CORSIA

4.1 What is the estimated quantity to be offset under the CORSIA?

Since the 38th ICAO Assembly, CAEP provided a significant amount of technical analyses regarding the impacts of different approaches for a global MBM scheme' design, as requested by the Council and the Environment Advisory Group (EAG). The analyses included quantification of the total quantities of CO_2 emissions from international aviation based on the CAEP CO_2 trends assessment, and estimation of the total quantities of offsets. Based on the analyses, the estimated quantity to be offset to achieve the carbon neutral growth from 2020 would be of the order of 142 to 174 million tons of CO_2 in 2025; and 443 to 596 million tons of CO_2 in 2035, with these ranges being determined by the definitions of nine scenarios for the CAEP CO_2 trends assessment from the most optimistic scenario to the less optimistic one.

Final quantity to offset (in million tonnes of CO_2 emissions)	**2020**	**2025**	**2030**	**2035**
Less optimistic scenario	-	174	376	596
Optimistic scenario	-	142	288	443

(Source: CAEP analysis presented at EAG/15 in January 2016)

4.2 What is the estimated compliance cost for the CORSIA offsetting requirements by aeroplane operators?

CAEP also analyzed possible costs of a global MBM scheme by multiplying the estimated quantities of offsets with the assumed emissions unit prices. It should be noted that the emissions unit prices drive difference in total cost impacts of offsetting CO_2 emissions from international aviation.

Considering carbon prices ranging from the low assumption of 6 to 10 \$/ton CO_2-eq to the high assumption of 20 to 33 \$/ton CO_2-eq (based on 2020 and 2030 estimates), the estimated costs vary from 1.5 to 6.2 billion US\$ in 2025; and from 5.3 to 23.9 billion US\$ in 2035. Putting into a business perspective, the analysis also shows that the cost of carbon offsetting for operators would range from 0.2 to 0.6 per cent of total revenues from international aviation in 2025; and 0.5 to 1.4 per cent of total revenues from international aviation in 2035.

Carbon price assumptions ($/ton CO_2-eq)	**2020**	**2030**	**2035**
IEA High	20	33	40

IEA Low	8	15	20
Additional Low	6	10	12

Offsetting cost (in 2012 Billion $)	**2025**	**2030**	**2035**
Less optimistic scenario (with IEA High carbon price)	6.2	12.4	23.9
Optimistic scenario (with Additional low carbon price)	1.5	2.9	5.3

(Source: CAEP analysis presented at EAG/15)

According to a cost analysis conducted by IATA, the offsetting costs related to the implementation of a global MBM scheme are expected to have a much lower impact on international aviation than that caused by fuel price volatility. The estimated offsetting cost in 2030 is equivalent to that of a 2.6 US$ rise in jet fuel price per barrel. This means that 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.

4.3	What is the estimated administrative cost for the CORSIA implementation by States, aeroplane operators and ICAO?
	According the CAEP analysis, the vast majority (i.e., 98%) of the total cost resulting from the CORSIA is comprised of costs from offsetting requirements (see question 4.2 for estimated cost of CORSIA offsetting requirements). These costs represent a small fraction of total operating costs or revenue from international aviation. Cost for the implementation of the MRV system and Registry are borne by aeroplane operators, ICAO Member States and ICAO, and represent approximately 1.6%; 0.5%; and 0.02% of total cost from the CORSIA respectively.
5.	**Questions about capacity building and assistance for CORSIA implementation**
5.1	What is “ACT-CORSIA”?
	The **A**ssistance, **C**apacity building and **T**raining programme on CORSIA (ACT-CORSIA) is aimed at supporting ICAO Member States to implement CORSIA’s monitoring, reporting and verification (MRV) requirements as per Annex 16, Volume IV. ACT-CORSIA, which was officially launched during the ICAO Seminar on CORSIA (Montréal, Canada, 2-3 July 2018), responds to ICAO Council’s endorsement of the Secretariat plan for the CORSIA-related outreach and capacity building activities. It is designed to harmonize and bring together all relevant actions, promoting coherence to CORSIA capacity building efforts, and includes a number of activities and products, namely: CORSIA buddy partnerships; example regulatory framework; frequently asked questions (FAQs); brochures and leaflets; videos; seminars and related materials; online tutorials; and other background information. All information on ACT-CORSIA is accessible through the ICAO CORSIA website (https://www.icao.int/corsia).

5.2	What are the activities covered under the ACT-CORSIA?
	ACT-CORSIA includes a number of activities and products, namely: CORSIA buddy partnerships; example regulatory framework; frequently asked questions (FAQs); brochures and leaflets; videos; seminars and related materials; online tutorials; and other background information.
5.3	What are CORSIA Buddy Partnerships?
	CORSIA Buddy Partnerships are a cornerstone of ICAO's plan to support States to prepare for CORSIA implementation. Under the partnerships, technical experts provided by donor States will work together with the CORSIA focal points of recipient States to provide on-site training, and to closely follow-up on the preparation and implementation of the recipient States' CORSIA MRV system, in particular on the development and approval of Emissions Monitoring Plans, as well as on the establishment of national and/or regional regulatory frameworks).
5.4	How can my State contribute to ACT-CORSIA ?
	All ICAO States are encouraged to inform the ICAO Secretariat of their assistance needs. States in a position to do so are encouraged to contribute additional resources through voluntary funding and/or other in-kind contributions to ACT-CORSIA.
5.5	What is ICAO doing to ensure the availability of verification bodies at the time when aeroplane operators will be required to have their Emissions Reports verified?
	ICAO is assessing the options of providing the necessary training and guidance material to the national accreditation bodies and third-party verifiers, in order to facilitate the availability of verification services by the time when aeroplane operators will be required to submit their Emissions Report for the third-party verification.

— END —