

Frequently Asked Questions (FAQs) related to Carbon Offsetting and Reduction Scheme for International Aviation (CORSA)

As of May 2017

Note:

*The information included in the responses to the selected “Frequently Asked Questions” makes reference to the “**Resolution A39-3: Consolidated statement of continuing ICAO policies and practices related to environmental protection – Global Market-based Measure (MBM) scheme**”, adopted by the 39th Session of the ICAO Assembly in October 2016.*

1. Why ICAO decided to develop a global MBM scheme for international aviation?

Environmental Protection is one of the ICAO’s Strategic Objectives. ICAO has been working in this area since the late 1960s, first focusing on the establishment of international policies and standards related to aircraft noise, but gradually expanding to other subject areas such as local air quality and subsequently climate change.

According to most recent figures from the Intergovernmental Panel on Climate Change (IPCC), aviation (domestic and international) accounts for approximately 2 per cent of global CO₂ emissions produced by human activity; international aviation is responsible for approximately 1.3 per cent of global CO₂ emissions.

Significant technological progress has been made in the aviation sector, with aircraft produced today being about 80 per cent more fuel efficient per passenger kilometre than in the 1960s.

However, 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 are largely surpassed by forecasted traffic growth of around 5 per cent per year. 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.

In October 2013, the 38th Session of the ICAO Assembly adopted Resolution A38-18, which 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 CO₂ 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).

The aggregate environmental benefit achieved by non-MBMs measures will be insufficient for the international aviation sector to reach its aspirational goal of carbon-neutral growth from 2020. A global MBM scheme complements a broader package of measures to achieve the aspirational goal. This is a preferred approach than having a patchwork of regional and local measures that are not harmonized and could create inefficiencies in the system without any certainty of delivering environmental benefits.

Secondary questions

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 was the request from the 2013 ICAO Assembly on a global MBM scheme?

Under Resolution A38-18, paragraph 19, the ICAO Assembly requested the Council, with the support of ICAO Member States, to conduct work and report its results, for decision at the 39th session of the ICAO Assembly (27 September to 7 October 2016). Within this mandate, the Council is requested to:

- a) 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;
- b) organize seminars, workshops on a global scheme for international aviation participated by officials and experts of Member States as well as relevant organizations;
- c) identify the major issues and problems, including 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, and the mechanisms for the implementation of the scheme from 2020 as part of a basket of measures which also include technologies, operational improvements and sustainable alternative fuels to achieve ICAO’s global aspirational goals.

1.3. What was the process and actions taken since the 2013 ICAO Assembly to develop a global MBM scheme?

Since the 2013 Assembly, the ICAO Council has established the Environment Advisory Group (EAG), which was composed of 17 Council Representatives and representatives from IATA. The EAG, under the direction of the Council, was mandated to oversee all the work related to the development of a global MBM scheme and make recommendations to the Council. The EAG pursued progress, starting with a “Strawman” approach, in which a basic proposal for a global offsetting scheme was tabled with a view to generating discussion and analyses for improvements.

The EAG met 15 times in total from March 2014 to January 2016, and was supported in its technical and analytical work by the Council's Committee on Aviation Environmental Protection (CAEP). A series of analyses requested by the EAG and the Council were undertaken by CAEP, including:

- Volumes of future CO₂ emissions from international aviation and overall cost impacts to achieve the carbon neutral growth from 2020;
- Cost impacts of using different combinations for individual operator's growth factor and the international aviation sector's growth factor;
- Various approaches for distribution of offsetting requirements to individual aircraft operators (e.g., route-based approach, accumulative approach, and comparison of these approaches); and
- Adjustments of offsetting requirements, technical exemptions and exemptions of routes to/ from low emitting States.

In addition, work on technical aspects of the global MBM scheme (e.g. monitoring, reporting and verification (MRV); emissions units criteria (EUC) and registries) was also undertaken by CAEP, in support of the discussion by the EAG and Council.

The EAG/15 meeting in January 2016 considered a draft Assembly Resolution text on a global MBM scheme, which was developed by taking into account the progress achieved and views expressed during previous EAG deliberations.

The EAG/15 meeting recommended, and the Council endorsed, that a High-level Group on a Global MBM Scheme (HLG-GMBM) be established to facilitate the convergence of views in order to finalize draft Assembly Resolution text on a global MBM scheme, for consideration by the Council. The HLG-GMBM was composed of 18 high-level aviation and/or transport representatives, and met twice (24 to 25 February and 13 to 15 April 2016) and made progress in improving and clarifying a number of provisions in the draft Assembly Resolution text.

Based on the results of the HLG-GMBM, the Council in April 2016 decided on the draft Assembly Resolution text on a global MBM scheme, to be presented for consideration of the High-level Meeting on a Global MBM Scheme (HLM-GMBM) held at ICAO Headquarters in Montréal, Canada from 11 to 13 May 2016.

The High-level Meeting focused on deliberations on draft Assembly Resolution text on a global MBM scheme and clarified and improved a number of provisions in the draft text, while it recognized a number of concerns and possible alternative approaches and ideas, in particular for paragraphs related to phased implementation and distribution of offsetting requirements). The Meeting encouraged Member States to continue bilateral and multilateral consultations to bridge their views and find possible compromise text.

The Friends of the President Informal Group Meeting was convened in Montréal, Canada from 22 to 23 August 2016 to consider the results of the bilateral and multilateral consultations by Member States related to the draft Assembly Resolution text, with a view to developing compromise text for consideration by the Council. Based on the outcome of bilateral and multilateral consultations that had taken place prior to the meeting, a new

approach for the phased implementation was presented and well-received by the meeting: voluntary participation by States in the pilot phase and first phase, followed by the second phase in which all other States except for exempted ones will participate. The meeting focused on how to operationalize the approach, and the results of the meeting were reported to the Council on 26 August 2016, where the draft Assembly Resolution text was approved for submission to the 39th Session of the Assembly.

1.4. What was the role of the two rounds of Global Aviation Dialogues (GLADs) on MBMs in 2015 and 2016?

The Global Aviation Dialogues (GLADs) are the response to the ICAO Assembly's request in Resolution A38-18, paragraph 19 b), for the Council to organize seminars and workshops on a global scheme for international aviation. The GLADs aimed to allow for well-informed deliberations on a global MBM scheme in the ICAO process toward the 39th Session of the ICAO Assembly.

The first round of GLADs was organized throughout April 2015 across the ICAO regions in Peru, Kenya, Egypt, Singapore and Spain, with 362 participants in total from 79 States and 22 International Organizations. The second round of GLADs was organized in March/April 2016 in Egypt, Senegal, Indonesia, the Netherlands and Mexico, with 390 participants in total from 60 States and 20 International Organizations.

The GLADs was a forum for information sharing and exchange of ideas, rather than a forum for decision-making. The main objective of the GLADs was to reach out to those States that are not directly engaged in the Council or CAEP. To facilitate the engagement of participants, the GLADs used a unique small-group format to organize thematic dialogue sessions on design elements and implementation aspects of a global MBM scheme. Each dialogue session was held in a small-group format: a facilitator was assigned to each group, group members discussed specific common questions, and each group nominated a speaker to report back its summary of discussion to the plenary.

All documentation including presentations, dialogue questions, reference material, as well as the compiled summaries of small group dialogues are available on the 2015 GLADs website (<http://www.icao.int/meetings/GLADs-2015/Pages/default.aspx>) and the 2016 GLADs website (<http://www.icao.int/Meetings/GLADs-2016/Pages/default.aspx>) respectively.

1.5. Why were international aviation emissions not included in the Paris Agreement at COP 21?

The Convention on International Civil Aviation (so-called "Chicago Convention") and the United Nations Framework Convention on Climate Change (UNFCCC) are two international treaties signed in 1944 and 1992 respectively. The Chicago Convention's 191 Member States and the UNFCCC's 197 Parties to the Convention are basically the same countries, as both treaties have nearly universal membership.

As a specialized UN agency to address all matters related to international civil aviation, including environmental protection, ICAO has been diligently addressing emissions from international aviation.

The ICAO Assembly, comprised of all Member States, requested its Council to ensure that ICAO exercises continuous leadership on all environmental issues relating to international civil aviation, including GHG emissions. This is reflected in paragraph 2. a) of Assembly Resolution A39-2, which constitutes the consolidated statement of continuing ICAO policies and practices related to environmental protection – climate change.

Emissions from domestic aviation, as other domestic sources, are addressed under the UNFCCC and calculated as part of the national GHG inventories and are included in national totals (part of the Nationally Determined Contributions (NDCs)), while emissions from the so-called “bunker fuels” (i.e. fuel used in international aviation and maritime transport) are reported separately. Also following a decision of the ICAO Assembly, ICAO provides information to the UNFCCC process on a regular basis, on international aviation emissions and on the activities undertaken to address these emissions.

The Paris Agreement is an international agreement linked to the UNFCCC; the legal relationship between the Paris Agreement and the UNFCCC is established by means of the former being an instrument to enhance the implementation of the Convention (i.e. UNFCCC). This legal relationship is similar to the one existing between the Kyoto Protocol and the Convention.

The ICAO agreement on a global MBM scheme for international aviation complements the ambition of the 2015 UNFCCC Paris Agreement and constitute the most significant climate agreement since its adoption.

1.6. What was the process and actions taken so far since the adoption of CORSIA at the 2016 ICAO Assembly?

The 39th ICAO Assembly in October 2016 adopted Resolution A39-3: *Consolidated statement of continuing ICAO policies and practices related to environmental protection – Global Market-based Measure (MBM) Scheme.*

The Council in its 209th session in November 2016 endorsed the overall plan of CORSIA preparatory activities on the development of CORSIA related SARPs/guidance (in accordance with paragraph 20 of A39-3) and capacity building and assistance to States (in accordance with paragraph 22 of A39-3). The Advisory Group on CORSIA (AGC) was newly established and the Council decided the governance structure and relations between the Council, CAEP and the AGC.

As requested by the Assembly, a series of five regional seminars were held in the following venues: Rio de Janeiro, Brazil (27 to 30 March 2017); Bonn, Germany (3 to 6 April 2017); Jakarta, Indonesia (10 to 13 April 2017); Nairobi, Kenya (10 to 13 April 2017); and Cairo, Egypt (18 to 20 April 2017) and an additional seminar on CORSIA was held in ICAO headquarters in Montreal. The objectives of the regional seminars were to share information on CORSIA’s design elements and implementation aspects and to provide an opportunity for States to share their existing readiness for CORSIA implementation, with the assessment of further assistance needs. The objectives of the CORSIA seminar held at ICAO Headquarters in Montréal were expanded to discuss the outcome and lessons learned from the regional seminars to seek commonality in terms of expected next steps. In total, 582 participants from

102 States and 21 International Organizations participated in the 2017 ICAO Seminars on CORSIA.

All documentation including presentations, exercises and reference material are available on the website of the 2017 ICAO Regional Seminars on States' Action Plans and CORSIA (www.icao.int/Meetings/RS2017/Pages/default.aspx) and the website of the 2017 ICAO Seminar on CORSIA (www.icao.int/Meetings/CORSIAHQ17/Pages/default.aspx) respectively.

2. What is CORSIA and how does it work?

According to Assembly Resolution A39-3, paragraph 4, the role of a global MBM scheme is to complement a broader package of measures to achieve the global aspirational goal (of carbon-neutral growth from 2020 onwards).

Paragraph 5 of the Assembly Resolution decides to implement a global MBM scheme in the form of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) to address any annual increase in total CO₂ emissions from international civil aviation (i.e. civil aviation flights that depart in one country and arrive in a different country) above the 2020 levels, taking into account special circumstances and respective capabilities.

According to the Assembly Resolution, the average level of CO₂ emissions from international aviation covered by the scheme between 2019 and 2020 represents the basis for carbon neutral growth from 2020, against which emissions in future years are compared. In any year from 2021 when international aviation CO₂ emissions covered by the scheme exceed the average baseline emissions of 2019 and 2020, this difference represents the sector's offsetting requirements for that year.

As in paragraph 9 of the Assembly Resolution, the CORSIA is implemented in phases, starting with participation of States on a voluntary basis, followed by participation of all States except the States exempted from offsetting requirements, as follows:

- Pilot phase (from 2021 through 2023) and first phase (from 2024 through 2026) would apply to States that have volunteered to participate in the scheme; and
- Second phase (from 2027 through 2035) would apply to all States that have an individual share of international aviation activities in RTKs in year 2018 above 0.5 per cent of total RTKs or whose cumulative share in the list of States from the highest to the lowest amount of RTKs reaches 90 per cent of total RTKs, except Least Developed Countries (LDCs), Small Island Developing States (SIDS) and Landlocked Developing Countries (LLDCs) unless they volunteer to participate in this phase.

States that voluntarily decide to participate the CORSIA may join the scheme from the beginning of a given year, and should notify ICAO of their decision to join by June 30 the preceding year.

In addition to paragraph 9 on the participation of States in the CORSIA, paragraph 10 defines the coverage of the scheme on the basis of routes between States: a route will be covered by

the scheme if both States connecting the route are participating in the scheme; similarly, a route will not be covered by the scheme if one or both of States connecting the route are not participating in the scheme.

Once participation of States and routes covered by the CORSIA is defined in a given year from 2021, and offsetting requirements in the given year (i.e. increased emissions beyond the average baseline emissions of 2019 and 2020) are set, the requirements are distributed among aircraft operators participating in the scheme, as per the formula in paragraph 11 of the Assembly Resolution.

Paragraph 11 of the Assembly Resolution includes a concept of “a dynamic approach” for the distribution of offsetting requirements, which moves gradually from the use of 100 per cent sectoral approach (and 0 per cent individual approach) from 2021 to 2029, towards the use of individual approach of at least 20 per cent from 2030 to 2032; and at least 70 per cent from 2033 to 2035. “Sectoral approach” represents the international aviation sector’s global average growth factor of emissions in a given year, while “individual approach” represents an individual operator’s growth factor of emissions in a given year.

Secondary questions

2.1. What are the design elements in the CORSIA to address “administrative simplicity”, “environmental integrity” and “cost-effectiveness”?

Participants in the 2015 Global Aviation Dialogues (GLADs) identified “administrative simplicity”, “environmental integrity” and “cost effectiveness” as three most important considerations for the design of a global MBM scheme. Participants in the 2016 GLADs highlighted that paragraphs 9 (phased implementation), 11 (distribution of offsetting requirements) and 13 (technical exemptions) were closely linked to such major considerations.

2.2. What are the design elements in the CORSIA to address “differentiation” in a practical way without impacting non-discrimination?

Participants in the 2016 GLADs highlighted paragraphs 9 (phased implementation), 10 (route-based exemptions) and 11 (distribution of offsetting requirements) as the design elements to address differentiation in a practical way without impacting the non-discrimination principle.

2.3. What is the rationale for the phased implementation of the CORSIA?

Paragraph 9 of the Assembly Resolution A39-3 on phased implementation intends to address “special circumstances and respective capabilities of States, in particular developing States, in terms of vulnerability to the impacts of climate change, economic development levels, and contributions to international aviation emissions” (as acknowledged in paragraph 8 of the Assembly Resolution).

Under the phased implementation, States choose to voluntarily participate in the CORSIA at a pilot phase starting in 2021, or at a first phase starting in 2024. Second phase starting in 2027 would apply to all States that have an individual share of international aviation activities

in RTKs in year 2018 above 0.5 per cent of total RTKs or whose cumulative share in the list of States from the highest to the lowest amount of RTKs reaches 90 per cent of total RTKs, except the exempted States.

2.4. What is the difference between the pilot phase (from 2021 through 2023) and the first phase (from 2024 through 2026)?

Participating in the pilot phase and the first phase is voluntary. States participating in the pilot phase have two options to determine the basis of their aircraft operator's offsetting requirement: they may either apply an aircraft operator's emissions covered by the CORSIA in a given year (i.e. 2021; 2022 and 2023), or refer back to an aircraft operator's emissions covered in a single year of 2020, in the calculation of offsetting requirements by paragraph 11.

For the first phase, calculation to determine an aircraft operator's offsetting requirement is based on the emissions in a given year (i.e. 2024; 2025 and 2026).

2.5. Which criteria determine the participation or exemption from offsetting requirements for States under CORSIA in its 2nd phase from 2027? What is the relation of these criteria? How are RTK shares calculated?

Paragraph 9 of the Assembly Resolution A39-3 determines the participation of States in CORSIA. Unlike the voluntary participation of States in the pilot and first phases from 2021 to 2026, the 2nd phase of CORSIA from 2027 applies to all Member States, with two categories of exemptions based on aviation-related criteria, and socio-economic criteria. These criteria for the exemption of States from the CORSIA offsetting requirements in the 2nd phase is defined in A39-3 paragraph 9 e).

For aviation-related criteria, there are two thresholds which are:

- States with an individual share of international aviation activities in Revenue Tonne Kilometers (RTKs), in year 2018 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.

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 for a longer distance, the RTK levels of the operator get higher. 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 ICAO Statistics Programme, and published in the Annual Report of ICAO Council. RTK data for the year 2018 will be used for the purposes of determining the exemptions of States from offsetting requirements in the 2nd phase of CORSIA.

A State's individual RTK share is calculated by dividing the State's RTKs by the total RKTs of all States. Those States who have an individual RTK share below 0.5 percent of the total RTK, will be exempt from offsetting requirements, unless the cumulative RTK share is less than 90 percent.

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 if a State might be exempted from offsetting requirements in CORSIA afterwards.

In other words, a State whose individual RTK share is less than 0.5 percent but is part of the 90% cumulative RTK, is included in the 2nd phase. A State whose individual RTK share is less than 0.5 percent and not part of the 90% cumulative RTK, is exempted from offsetting requirements in the 2nd phase. The goal is to cover at least 90% of the international aviation activities in the 2nd phase of CORSIA.

The second set of exemption criteria from offsetting requirements is based on socio-economic criteria. These States are defined as: Least Developed Countries (LDCs); Small Island Developing States (SIDS); and Landlocked Developing Countries (LLDCs). Regardless of the level of international aviation RTK share, these LDCs, SIDS and LLDCs are also exempted from offsetting requirements in the 2nd phase of CORSIA.

Nevertheless, these exempted States from offsetting requirements by aviation-related criteria and socio-economic criteria are still encouraged to voluntarily participate in CORSIA.

2.6. What is the rationale for the route-based approach?

Paragraph 10 of the Assembly Resolution A39-3 defines the coverage of the CORSIA 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 design approach is to provide equal treatment of all aircraft operators on a given route: a route is covered by the scheme if both States connecting the route are participating in the scheme, and a route is not included in the scheme if one or both States connecting the route are not participating in the scheme.

By following this approach, when an aircraft operator calculates its CO₂ emissions covered by the CORSIA in a given year, the operator needs to take into consideration emissions from its operations on all the routes covered by the scheme as per paragraph 10 of the Assembly Resolution.

2.7. What does it mean by “participation of States and the route-based approach” and do those exempted States and operators need to do anything under CORSIA?

According to paragraph 20 of the Assembly Resolution A39-3, all States whose aircraft operator undertakes international flights need to undertake a monitoring, reporting and verification (MRV) of CO₂ emissions from international flights starting from 1 January 2019. The data is used for the calculation of the CORSIA baseline, which is the average of 2019 and 2020 emissions. On the other hand, States are encouraged to participate as part of the CORSIA offsetting requirements in all Phases. Due to the route-based approach, only flights between participating States will be included in the offsetting requirements under CORSIA.

2.8. According to the route-based approach, can the characterization of a route as “covered” or “not covered” by the CORSIA change over time?

Paragraph 10 of the Assembly Resolution A39-3 allows for the characterization of a route as “covered” or “not covered” by the CORSIA, on the basis of whether the States connecting the route are participating or not in the CORSIA.

For example, in line with paragraph 9 of the Assembly Resolution, some States could voluntarily participate in the scheme in the pilot or first phases, while other States participate in from the second phase. Therefore, any additional participation by a State in the scheme could add the routes to and from that State into the scheme, depending on the status of the other States connecting to the routes.

To give certainty of all the routes to be covered by the scheme, the Assembly Resolution 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.

2.9. What would happen to the emissions coverage by CORSIA if an operator of a non-participating State flies on the routes between participating States (e.g. fifth-freedom traffic right)

Because CORSIA is a route-based approach, these routes between participating States would be subject to the coverage of emissions offsetting requirements under CORSIA.

2.10. What would happen to the emissions coverage by CORSIA if a State without an operator undertaking international flights decides to participate in CORSIA?

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 CORSIA’s offsetting requirements, due to the route-based approach. The total international emissions coverage would ultimately increase, as more flights would require an emissions offsetting.

2.11. How will the CORSIA apply to aircraft operators that will initiate activities after the entry into force of the scheme (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 scheme, 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 entrants are 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 emissions of a new entrant are still to be reported from the beginning, regardless of the exemptions from the CORSIA's offsetting requirements.

2.12. Does the CORSIA include provisions for very low international aviation activities?

Paragraph 13 of the Assembly Resolution A39-3 provides the provisions to exempt low levels of international aviation activity from the application of the CORSIA, such as humanitarian, medical and firefighting operations. Aircraft operators using aircraft for such operations will not take into considerations emissions from these operations for the purpose of the scheme.

This paragraph also defines exemptions for aircraft operators with a low level of annual emissions from their international aviation operations (10,000 metric tonnes of CO₂ emissions per year), as well as for aircraft with less than 5,700 kg of Maximum Take Off Mass (MTOM), with a view to avoiding administrative burden from the application of the CORSIA for low international aviation activities.

It should be clarified that the exemptions of States from the 2nd phase (A39-3 paragraph 9), route-based approach (paragraph 10) and exemptions of new entrants (paragraph 12) are related to the coverage of emissions for offsetting requirements and those exempted emissions still need to be part of reporting requirements.

However, technical exemptions under the paragraph 13 apply both to offsetting requirements and reporting requirements. In other words, these low levels of international activity are outside the scope of CORSIA.

2.13. How are aircraft operator's offsetting requirements calculated?

According to paragraphs 9, 10, 12 and 13 of A39-3, the coverage of emissions for CORSIA offsetting requirements is based on the participation of States in different phases and the route-based approach, together with the exemptions for new entrants and for very low international aviation activities. As the total emissions covered by CORSIA are expected to increase year by year, the emissions increase above the baseline levels would be the total amount of CO₂ emissions to be offset in a given year.

Paragraph 11 of the Assembly Resolution A39-3 addresses the distribution of the total amount of CO₂ emissions to be offset in a given year among individual aircraft operators participating in the scheme. A dynamic approach for the distribution of offsetting requirements is introduced in this paragraph, starting from the use of 100 per cent sectoral approach (and 0 per cent individual approach) and moving gradually to higher percentages of individual approach in accordance with the following steps:

a) for the pilot and first phases as well as the first compliance cycle of the second phase (from 2021 through 2029), 100 per cent sectoral approach (and 0 per cent individual approach) would be applied. "Sectoral approach" represents the international aviation sector's global average growth factor of emissions in a given year, which will be solely used as a single

factor to all individual operators participating in the scheme for their calculation of offsetting requirements; and

b) from the second compliance cycle of the second phase (2030 through 2032), at least 20 per cent individual approach would be applied; and at least 70 per cent individual approach would be applied from 2033 to 2035, with the Council recommending to the Assembly in 2028 whether and to what extent to adjust the individual percentage. “Individual” represents an individual operator’s growth factor of emissions in a given year, which will start to be used from 2030 together with the sectoral percentage, gradually to higher percentages of the individual percentage, in order to calculate the offsetting requirements of individual operators participating in the scheme.

In the Assembly Resolution, dynamic approach is applied from 2030, rather than from the start of the second implementation phase (2027), which provides equal treatment between aircraft operators participating in the first and second phase of the CORSIA in terms of calculation offsetting requirements.

2.14. Please explain the details of the formula used to distribute offsetting requirements to individual operators.

Paragraph 11 of the Assembly Resolution A39-3 addresses a formula used to distribute offsetting requirements to individual operators. The formula is defined as the “operator’s annual emissions” multiplied by a growth factor, which gives you the CO₂ offset requirements of the operator.

The concept behind the formula is based on the fact that there are different sizes of operators and that operators’ emissions will grow at different levels, yet a sector-wide growth factor calculated every year should be commonly used for all operators for the first 9 years of CORSIA, or from 2021 through 2029. During this period, a sectoral growth factor in a given year is multiplied by the operator’s emissions covered by CORSIA in that year, which will give the operator’s offsetting requirement in that year. This is defined as using a 100 percent sectoral approach.

Every year from 2021 to 2029, based on the reporting of emissions data from aircraft operators to States, and from States to ICAO, a single sectoral growth factor will be calculated by ICAO and the single number will be universally used to calculate individual operator’s offsetting requirements.

It should be noted that Resolution A39-3 provides flexibility to States in the first 3 years of CORSIA, or the pilot phase, where each State can choose to use in the formula either:

- the operator’s emissions in year 2021, 2022 or 2023; or
- the operator’s emissions referring back to a single year of 2020.

From 2030 through 2032, a more dynamic approach will be implemented where an individual operator’s emissions growth will be used at least 20 percent in calculating offsetting requirements, meaning that the use of the sectoral approach is up to 80 percent. From 2033 through 2035, the percent for the use of the individual approach will be raised to at least 70

percent in calculating offsetting requirements, meaning that the use of the sectoral approach is up to 30 percent. According to the Assembly Resolution A39-3, paragraph 11, the exact percent shares of sectoral approach and individual approach for these periods will be determined by the Assembly in 2028.

2.15. Why does the baseline of 2019-2020 average emissions need to change over time?

From 2021, CORSIA is to offset the increase of emissions beyond the sectoral baseline, and the sectoral baseline is the average of total CO₂ emissions between 2019 and 2020, with the route coverage by CORSIA in a given year from 2021.

Emissions data for ALL international flights, regardless of being covered or not by CORSIA offsetting requirements, will be reported to ICAO from 2019. The baseline emissions for years 2019 and 2020 depend on the routes covered by CORSIA in a given year from 2021, and the baseline will change when the number of States participating in CORSIA changes.

Paragraph 11(g) of the Assembly Resolution A39-3, notes that sectoral baseline will be re-calculated when the routes included in CORSIA change, for example, when new States volunteer to participate. This is done at the start of each year.

2.16. How does a new entrant (or operator) affect the baseline?

The sectoral baseline calculation will not be affected since the baseline for CORSIA includes the flights in 2019 to 2020 only.

2.17. What is the difference between the “growth factor” used by the formula under CORSIA and the generally-used term “growth rate”?

The growth factor is the percent increase in the amount of emissions from the baseline to a given year from 2021, compared to the emissions in that given year. Generally, the term growth rate refers to the percent increase in the amount of emissions from the baseline to a given year from 2021, compared to the emissions in the baseline.

The growth factor as defined above is used by CORSIA, as the growth factor is multiplied with the individual operator’s emissions in that given year (not the individual operator’s emissions in the baseline) to calculate the individual offsetting requirements; thus total offsetting requirements would match with the increase of total emissions covered by CORSIA in that given year.

2.18. Why do we need to know total emissions from international aviation? Why aren’t the total emissions covered by CORSIA sufficient?

Knowing the total emissions from international aviation is important, due to several reasons:

- 1) To assess the overall emissions coverage of CORSIA and track progress in achievement of 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 be changed to reflect the route-based coverage by CORSIA in a given year from 2021. Total emissions from all international flights/routes need to be reported from 2019 to

reflect the route-based coverage by CORSIA in a given year from 2021, into the calculation of the baseline emissions.

- 3) The total emissions from international aviation in 2020 is a reference value, for which the exemptions are given for a new entrant whose annual emissions do not exceed 0.1% of the total 2020 emissions.

2.19. Does the CORSIA include provisions to review its implementation and make adjustments if needed?

Paragraph 9 g) of the Assembly Resolution A39-3 includes a provision that the 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, and the results of this assessment will serve as an important basis for the Council to consider adjustments to the next implementation phase or compliance cycle, and as appropriate, to recommend such adjustments to the Assembly for decision.

In addition, the purpose of the periodic review, as elaborated in paragraph 18 of the Assembly Resolution is to contribute to the sustainable development of the international aviation sector and to the effectiveness of the scheme. 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. Review will also involve consideration of the scheme's improvements that would support the purpose of the Paris Agreement; and update the scheme's design elements.

A special review will be performed by the end of 2032 on termination of the scheme, its extension or any other improvements of the scheme beyond 2035.

3. What would be the impact of joining CORSIA?

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 are surpassed by forecasted traffic growth of around 5 per cent each year. The international aviation fuel consumption is estimated to grow somewhere between 2.8 to 3.9 times by 2040 compared to the 2010 levels.

A global MBM scheme is a complementary way for international aviation to meet its aspirational goal of keeping the global net CO₂ emissions from international aviation from 2020 at the same level (so-called "carbon neutral growth from 2020"), as part of a basket of measures.

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 CO₂ emissions from international aviation based on the CAEP CO₂ 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 CO₂ in 2025; and 443 to 596 million tons of CO₂ in 2035, with these ranges being determined by the definitions of nine scenarios for the CAEP CO₂ trends assessment from the most optimistic scenario to the less optimistic one.

Final quantity to offset (in million tonnes of CO₂ 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)

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 CO₂ emissions from international aviation.

Considering carbon prices ranging from the low assumption of 6 to 10 \$/ton CO₂-eq to the high assumption of 20 to 33 \$/ton CO₂-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 CO₂-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 lesser 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, which means 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.

When it comes to the cost impacts of CORSIA for individual States or individual aircraft operators, we need to take into account the specific design features of CORSIA, such as phased implementation and exemptions (coverage of total emissions by the scheme), as well as the way to distribute the total offsetting requirements to individual operators participating in the scheme. Please refer to Question 2 for details on the design features of the global MBM scheme. Further technical analyses are currently undertaken to analyze the impacts of CORSIA.

4. What are the mechanisms for the CORSIA implementation? How will ICAO support States to implement the CORSIA?

Paragraph 20 of Assembly Resolution A39-3 requested that the ICAO Council, with technical contribution of the Committee on Aviation Environmental Protection (CAEP), to develop Standards and Recommended Practices (referred to as SARPs) and related guidance material for the implementation of the Monitoring and Reporting and Verification (MRV) System. This material is under development and expected to be adopted by the Council by 2018. Paragraph 20 also requested all ICAO Member States, who have aircraft operators operating international flights, to implement an MRV System from 1 January 2019, and do necessary arrangements for the implementation of the MRV System in accordance with the MRV SARPs.

The reason behind why the MRV system should start to collect CO₂ emissions data from 2019 comes from the need to set the CORSIA's sectoral baseline as the average emissions of 2019 and 2020. It is important to note that, regardless of the phased implementation or exemptions under the CORSIA, all States with aircraft operators undertaking international flights are requested to compile and transmit emissions information of their operators to ICAO, as part of the MRV system.

Paragraph 6 of A39-3 also requested the development of a methodology to ensure that an operators' offsetting requirement can be reduced through the use of sustainable alternative fuels in the MRV System.

The CORSIA calls for international aviation to address and offset its emissions through the reduction of emissions elsewhere (outside of the international aviation sector), involving the concept of "emissions units". One emissions unit thereby represents one tonne of CO₂. Two

main types of emissions units exist: “offset credits” from crediting mechanisms and “allowances” from emissions trading schemes.

Offsetting could be through the purchase and cancellation of emissions units, 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 platforms at carbon markets. Carbon markets, like other markets, are influenced by the law of supply (eligible emissions units offered from different sources) and demand (eligible emissions units purchased by aircraft operators to offset their international aviation emissions under the CORSIA).

As per the request by Assembly Resolution A39-3 paragraph 20, ICAO Council, with technical contribution from CAEP, will determine the eligible emissions units for use by the CORSIA.

There are some areas where support to States would be needed for the implementation of the CORSIA, such as the establishment of the MRV system, and the development of national and regional registries. For example, as a result of the GLAD 2016 dialogues, most States expressed that further assistance would be needed to implement a MRV system and a registry for the purpose of a global MBM scheme, including the need for ICAO to provide capacity building and training.

With regard to the support for the implementation of a MRV system, the following provisions are included in the Assembly Resolution A39-3:

- According to paragraph 22 a), the Council shall also take necessary action to expand the provision of capacity building and assistance for the preparation and implementation on Member States’ action plans, in order to accommodate capacity building and assistance for implementation of the MRV system by Member States from 1 January 2019, including organization of seminars and training in all regions from 2017, and facilitation of financial support where needed, in particular for those States that volunteer to participate in the pilot phase and require support to do so.
- According to paragraph 22 b), Member States are encouraged to build partnerships among themselves to cooperate on the implementation of the MRV system.

In this context, it is worth noting that the Aviation Environmental System (AES) has been developed and operationalized as part of ICAO-EU partnership project to assist the development of State Action Plans in 14 African and Caribbean States. The AES is a tool to facilitate States to monitor CO₂ emissions from international aviation at the State level. The AES could be adapted to support the preparation and implementation of the MRV system required under the CORSIA.

With regard to the support for the implementation of registries, the following provisions are included in the Assembly Resolution A39-3:

- According to paragraph 22 c), the Council shall also take necessary action to expand the provision of capacity building and assistance for the preparation and implementation on

Member States' action plans, in order to accommodate capacity building and assistance for establishment of registries by States, including organization of seminars and training in all regions from 2017, and facilitation of financial support where needed, in particular for those States that volunteer to participate in the pilot phase and require support to do so.

- According to paragraph 22 d), Member States are encouraged to build partnerships among themselves to cooperate on the establishment of their own registries or group registries established by groups of States, and possible pilot implementation.

Building upon existing assistance projects in this area, ICAO is already exploring possible partnerships with Member States and international organizations to facilitate provision of technical and financial assistance for ensuring full implementation of the MRV system and registries under the CORSIA.

As requested by the Assembly, a series of five regional seminars were held in the following venues: Rio de Janeiro, Brazil (27 to 30 March 2017); Bonn, Germany (3 to 6 April 2017); Jakarta, Indonesia (10 to 13 April 2017); Nairobi, Kenya (10 to 13 April 2017); and Cairo, Egypt (18 to 20 April 2017). The objectives of the regional seminars were to share information on CORSIA's design elements and implementation aspects and to provide an opportunity for States to share their existing readiness for CORSIA implementation, with the assessment of further assistance needs. The objectives of the CORSIA seminar held at ICAO Headquarters in Montréal, Canada in May 2017 were expanded to discuss the outcome and lessons learned from the regional seminars to seek commonality in terms of expected next steps.

Secondary questions

4.1. What are the components of CORSIA MRV system?

The MRV (Monitoring, Reporting and Verification) system consists of three components: First, the purpose of monitoring of fuel use is to collect accurate information on the fuel burn per each flight. CO₂ emissions are being calculated from the fuel burn by multiplying by 3.16, which is a constant factor, representing the number of tonnes of CO₂ produced by burning a tonne of aviation fuel.

After monitoring the fuel burn and calculating CO₂ emissions, necessary information will be reported from operators to their State Authority, and from States to ICAO, using harmonized templates and procedures. ICAO consolidates the CO₂ emissions data, calculates the annual sectoral growth factor, and communicates the growth factor to States/aircraft operators.

Verification of 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 body checks that everything has been done correctly, similar to the accounting practices that are performed in the financial world.

4.2. What are the procedures for “verification” of CO₂ emissions?

CAEP experts are working to develop specific recommendations to the Council on this topic.

Verification on emissions data aims to ensure the consistency of information, and to identify any potential errors in the aircraft operator's annual emissions report. There is a three-step verification pathway, which provides a role for each stakeholder:

As Step 1, an internal pre-verification by the aircraft operator is performed, where the aircraft operator conducts a verification of its data.

As Step 2, an external verification is performed before the operator reports to the State Authority. The requirements for external verification will be based on agreed and existing Standards from the International Organization for Standardization (ISO). A verifier is contracted by an aircraft operator.

As Step 3, the State Authority conducts an order of magnitude review. This is the check performed by a State to verify the data, for example, against various databases that the State has.

4.3. What is the requirement to be an external verifier, and who accredits the verifier ?

CAEP experts are working to develop specific recommendations to the Council on this topic.

4.4. How to account for the use of sustainable alternative fuels in the MRV system?

CAEP experts are working to develop specific recommendations to the Council on this topic.

Paragraph 6 of Assembly Resolution A39-3 requests the Council to develop a methodology, to ensure that an aircraft operator's offsetting requirements under the scheme can be reduced through the use of sustainable alternative fuels.

For the purposes of the CORSIA MRV system, aviation alternative fuels need to meet requirements defined in sustainability criteria, and have a default value for life-cycle emissions reduction for each feedstock or production pathway.

There will be a need to track the quantity of sustainable alternative fuels based on fuel purchase records. Typically, aviation fuels are blended during the distribution of the fuels, and therefore it is not feasible to determine the alternative fuel content by the uptake to an aircraft. To address this issue, CAEP continues to work toward developing the recommendations, on how to best track the fuel purchase records, all the way from the fuel producer to the aircraft operator, and how the environmental benefits from the use of such fuel can be accounted for.

4.5. What levels of aggregated emissions data will be reported to which stakeholders ?

CAEP experts are working to develop specific recommendations to the Council on this topic.

4.6. What is the reporting timeline every year?

CAEP experts are working to develop specific recommendations to the Council on this topic.

4.7. What levels of information to be available on the public?

CAEP experts are working to develop specific recommendations to the Council on this topic.

4.8. What are simplified procedures for MRV and related ICAO tool?

CAEP experts are working to develop specific recommendations to the Council on this topic.

4.9. What happens in case a late reporting or not reporting at all?

CAEP experts are working to develop specific recommendations to the Council on this topic.

4.10. What is an emissions unit / carbon credit?

The concept of an emissions unit originates from an emissions reduction achieved by the implementation of a specific project. These projects can be derived in various sectors, within and outside of the aviation sector. The emissions unit is sometimes also called as a carbon credit.

One emissions unit is equivalent to the reduction of 1 metric tonne of CO₂, as a direct result of the implementation of a project, compared to the absence of that project which is also referred to as the baseline scenario. These emissions units are issued by crediting schemes through mechanisms, programmes, or projects.

This is how emissions units are generated, then sold and purchased by aircraft operators in the carbon market, and ultimately the units are cancelled by aircraft operators to comply with their offsetting requirements under CORSIA.

4.11. What's the difference between "purchase" of an emissions unit and "cancel" of an emissions unit?

An aircraft operator purchases emissions units from the carbon market, then the "cancelling" is the action by which the operator demonstrates that the purchased emissions unit is used to comply with the offsetting requirements by CORSIA and that the same unit is no longer be used for other purposes.

4.12. When can operators purchase emissions units/ carbon credits?

An operator can purchase emissions units or carbon credits at any time. However, the risk becomes whether or not those credits / units are eligible under CORSIA. Paragraph 20. d) of the Assembly Resolution A39-3, requests the 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.

The criteria to evaluate offsetting programmes are very important to ensure the integrity and transparency of CORSIA. A significant amount of work and consideration by CAEP has already been undertaken regarding the criteria determining eligible programmes and units.

It is important to note that it is not aircraft operators or States who will determine which programmes and units are eligible, but it is the ICAO to make such decisions in future. States

and aircraft operators will then receive information on the eligible programmes, and how to cancel these eligible emissions units to meet offsetting requirements under CORSIA.

4.13. What happens if operators don't cancel enough emissions units / carbon credits to meet their offsetting requirements?

CAEP experts are working to develop specific recommendations to the Council on this topic.

5. Top 3 misconceptions about CORSIA

Given the fact that CORSIA will be the first of its kind applicable to a whole industry sector (international aviation), lack of familiarity with the topic can sometimes lead to wrong interpretations of the nature of the scheme. When trying to put in context the implementation of CORSIA, certain misconceptions are repeatedly used; the most frequent ones are listed below:

1. The aviation sector is not included in UNFCCC's Paris Agreement.

WRONG

Emissions from domestic aviation are considered under the UNFCCC. Therefore, Parties to the UNFCCC have the possibility of addressing these emissions in their Nationally Determined Contributions (NDCs) under the Paris Agreement, as part of their actions aimed at reducing greenhouse gas emissions from domestic sources. As a specialized UN agency to address all matters related to international aviation, including environmental protection, ICAO has been diligently addressing emissions from international aviation.

In the spirit of cooperation between the two international treaties, ICAO provides information to the UNFCCC process on a regular basis, on international aviation emissions and on the activities undertaken to address these emissions.

2. The international aviation sector accounts for more than 2 per cent of greenhouse gas emissions.

WRONG

According to most recent figures from the Intergovernmental Panel on Climate Change (IPCC), aviation (domestic and international) accounts for approximately 2 per cent of global CO₂ emissions produced by human activity.

On the other hand, international aviation is responsible for approximately 1.3 per cent of global CO₂ emissions. CORSIA is part of a broader package defined by ICAO and its Member States as a basket of measures to address that 1.3 per cent of global CO₂ emissions. Implementation of this basket of measures will contribute to the achievement of ICAO's global aspirational goal of keeping the global net CO₂ emissions from international aviation from 2020 at the same level.

3. Agreement on the CORSIA does not contribute to the level of ambition set by the Paris Agreement.

WRONG

CORSIA will address CO₂ emissions from international aviation, which are not included under the UNFCCC and its Paris Agreement, and therefore are not included in countries' Nationally Determined Contributions (NDCs) under the Paris Agreement.

Agreement on a global MBM scheme for international aviation (CORSIA) therefore complements the level of ambition set by the 2015 UNFCCC Paris Agreement.

Agreement on CORSIA would constitute the most significant climate agreement since adoption of the Paris Agreement, and a resolute step from the international community in its efforts to mitigate greenhouse gas emissions by taking sector-wide action at a global level.

— END —