



SUMMARY OF DISCUSSIONS

ICAO MID REGIONAL SEMINAR ON CORSIA AND SAP

(AMMAN, JORDAN, 23 – 26 MAY 2022)

1. INTRODUCTION

1.1 The ICAO MID Regional Seminar on CORSIA and SAP was successfully held in Amman, Jordan from 23 to 26 May 2022.

1.2 The Seminar's objective is to address the following:

- a) update on ICAO's environmental work;
- b) an overview of the "state of play" in CORSIA and Annex 16, Volume IV requirements;
- c) CORSIA MRV System;
- d) information on the CORSIA Offsetting requirement;
- e) CORSIA eligible fuel;
- f) the use of the CORSIA Central Registry (CCR);
- g) State Action Plan Development Process; and
- h) Interactive Tool Training

1.3 The seminar served as a platform for States, international organization and Industry to share their experiences and lessons learned regarding CORSIA implementation and SAP development and update.

1.4 The Seminar was attended by a total of Forty One (41) participants from seven (7) States (Iraq, Jordan, Lebanon, Libya, Oman, Qatar and Saudi Arabia) and three (3) Organizations/Industries (AACO, ACAO and IATA). The list of participants is at **Attachment A**.

2. OPENING REMARKS

2.1 Mr. Salah Al Amoush, Deputy Chief Commissioner/CEO, CARC, Jordan, welcomed all participants to Jordan and wished them a successful meeting.

2.2 Mr. Radhouan Aissaoui, Regional officer Information Management, ICAO Middle East Regional Office also welcomed participants thank the host, the Civil Aviation Regulatory Commission CARC – Jordan which provided enormous assistance and support in organizing this important regional event. He greeted Jordan and extended warm wishes, to all Jordanians as they celebrate the 76th Independence Day on the 25th of May.

2.3 Mr. Radhouan Aissaoui expressed sincere appreciation to QCAA represented by Mr. Mohammed AlMarzooqi, Mr. Rachid Rahim, for joining ICAO effort and accepting the invitation to providing a training session on the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) as part of the third phase of ACT-CORSIA Buddy Partnerships.

2.4 Mr. Radhouan Aissaoui recalled that the 39th ICAO Assembly adopted Resolution A39-2 Consolidated statement of continuing ICAO policies and practices related to environmental protection — Climate change which reiterated the two global aspirational goals for the international aviation sector of 2% annual fuel efficiency improvement through 2050 and carbon neutral growth from 2020 onwards, as established at the 37th Assembly back to 2010.

2.5 It was reiterated that the 39th ICAO Assembly through Resolution A39-3 requested:

- a) ICAO Council to 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, including organization of seminars and training, 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; and

- b) Member States to build partnerships among themselves to cooperate on the implementation of the MRV system.

2.6 Accordingly, and noting that a significant challenge for the MID Region involves the implementation of the MRV system under the CORSIA, this seminar is taking place and it is part of the ICAO capacity building activities. It is organized for aviation experts from the MID Region, with participants and the support of the ICAO Secretariat, and champion State.

2.7 Through such a forum, participants learned from each other the successes and lessons in the CORSIA implementation; understand better the various aspects of CORSIA, including Monitoring, reporting and verification seen from the perspectives of different States, the regulators and the regulated; and gain valuable insight of different regulatory approaches.

3. LANGUAGE

3.1 Discussions were conducted in English and documentation was issued in English.

4. WORK PROGRAMME

4.1 The seminar programme is organized into 13 session's that total twenty-two hours of intensive work, broken into four days:

- Session 1: Introduction to ICAO's environmental work
- Session 2: Overview of CORSIA: Annex 16, Volume IV
- Session 3: CORSIA MRV System: Monitoring of CO2 emissions
- Session 4: CORSIA feedback from States
- Session 5: CORSIA MRV System: Reporting of CO2 emissions Q&A
- Session 6: CORSIA offsetting requirements
- Session 7: CORSIA eligible fuel
- Session 8: CORSIA Central Registry (CCR)
- Session 9: State Action Plan Development Process
- Session 10: MID States SAP experience and Examples
- Session 11: Interactive Tool Training
- Session 12: Mitigation measures from the Stakeholders
- Session 13: Basket of measures

4.2 The Seminar's materials including, presentations and the Summary of Discussion are available at:

<https://www.icao.int/MID/Pages/2022/CORSIA%20Seminar.aspx>

5. DISCUSSIONS

5.1 Introduction to ICAO's environmental work

5.1.1 This session was provided in PPT1 presented by Mr. Radhouan Aissaoui, Regional Officer, Information Management ICAO MID Cairo, Egypt.

5.1.2 It was highlighted that ICAO serves as a multilateral platform for cooperation on international aviation environmental protection. Over the years, the national governments who participate together under the Chicago Convention, also commonly referred to as 'ICAO Member States', have agreed to concentrate their aviation environmental collaboration on three core areas:

- Climate change and aviation emissions
- Aircraft noise
- Local air quality

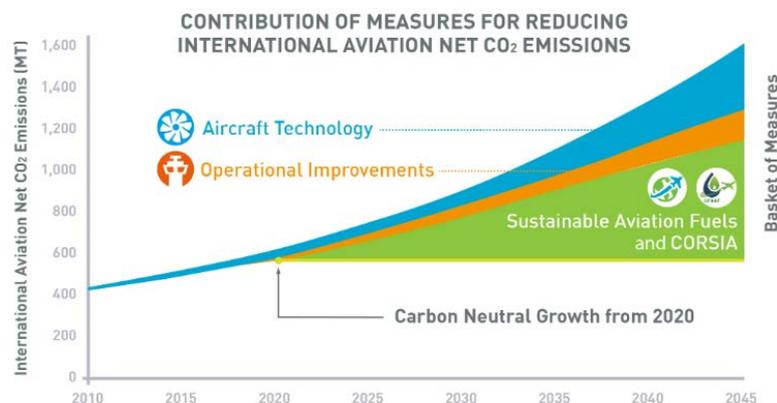
5.1.3 The seminar noted the ICAO's Strategic Objectives which are strongly linked to 15 of the 17 United Nations Sustainable Development Goals (SDGs).

5.1.4 With a view to minimize the adverse effects of international civil aviation on the global climate, it was highlighted that ICAO formulates policies, develops and updates Standards and Recommended Practices (SARPs) on aircraft emissions, and conducts outreach activities. These activities are conducted by the Secretariat and the Committee on Aviation and Environmental Protection (CAEP). In pursuing its activities, ICAO also cooperates with other United Nations bodies and international organizations.

5.1.5 It was noted also that ICAO Assembly at its 40th Session in 2019 adopted Resolution A40-18: Consolidated statement of continuing ICAO policies and practices related to environmental protection — Climate change. It reiterated the two global aspirational goals for the international aviation sector of 2% annual fuel efficiency improvement through 2050 and carbon neutral growth from 2020 onwards, as established at the 37th Assembly in 2010.

5.1.6 To achieve the global aspirational goals and to promote sustainable growth of international aviation, ICAO is pursuing a basket of measures including aircraft technology improvements, operational improvements, sustainable aviation fuels, and market-based measures (CORSIA).

5.1.7 It was stressed, inter alia, that ICAO is also exploring the feasibility of a long-term global aspirational goal for international aviation, as requested by the 40th Session of the ICAO Assembly (Reference: ICAO Assembly Resolution A40-18, paragraph 9).



5.1.8 In term of ICAO High-Level LTAG Timeline, it was noted the following:

- 2020 : Data gathering, workshops and Stocktaking: Technology, Operations, Fuels, Climate Science;

- 2021 : Regional/Global consultation: Scenario development and Final analysis;
- 2022: presentation to High-level meeting, CAEP/12 meeting 4 and 1st Session of ICAO Assembly.

5.1.9 It was indicated that ICAO made available In-sector aviation CO₂ emissions reduction initiatives - Tracker tool which provides a variety of information on initiatives related to technologies and innovation aimed at reducing the environmental footprint of aviation, including details of past and ongoing initiatives.

5.1.10 It was pointed out that in the interest of ICAO's "No Country Left Behind" initiative, ICAO Environment carries out a number of capacity-building and assistance activities. These assistance activities are most often related to the ICAO State Action Plan initiative and Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

5.2 *Overview of CORSIA: Annex 16, Volume IV*

5.2.1 This session was provided in PPT2 presented by Mrs. Blandine Ferrier, Associate Regional Officer, OSG/EUR-NAT, Paris, France.

5.2.2 In her presentation, Mrs. Blandine Ferrier:

- Provided an overarching presentation of CORSIA and the CORSIA and SARPs that Trainers could also use for the on-site training;
- Highlighted key elements of CORSIA and Annex 16, Volume IV;
- Presented some information from Frequently Asked Questions (FAQs) published on the CORSIA website.

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

5.2.4 At the 39th Session of the ICAO Assembly in 2016, States finally adopted a global market-based measure scheme for international aviation, in the form of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), to address the increase in total CO₂ emissions from international aviation above the 2020 levels (Assembly Resolution A39-3). CORSIA is the first global market-based measure for any sector and represents a cooperative approach that moves away from a "patchwork" of national or regional regulatory initiatives through the implementation of a global scheme that has been developed through global consensus among governments, industry, and international organizations. It offers a harmonized way to reduce emissions from international aviation ensuring that there is no market distortion, while respecting the special circumstances and respective capabilities of ICAO Member States. CORSIA complements the other elements of the basket of measures by offsetting the amount of CO₂ emissions that cannot be reduced through the use of technological improvements, operational improvements, and sustainable aviation fuels (Figure 1) with emissions units from the carbon market. It is estimated that between 2021 and 2035, the international aviation sector would have to offset about 2.5 billion tonnes of CO₂ emissions to achieve carbon neutral growth.

5.2.5 It was indicated that the approach for CORSIA is based on comparing the total CO₂ emissions for a year (from 2021 onwards) against a baseline level of CO₂ emissions, which is defined as the average of CO₂ emissions from international aviation covered by the CORSIA for the years 2019 and 2020.

5.2.6 The Key design features of CORSIA were presented :

- Phased implementation (paragraph 9)
- Emissions coverage: route-based approach (paragraph 10)
- Offsetting requirements (paragraph 11)
- New entrants (paragraph 12)

- Technical exemptions (paragraph 13)
- Review mechanism (paragraphs 9g and 18)

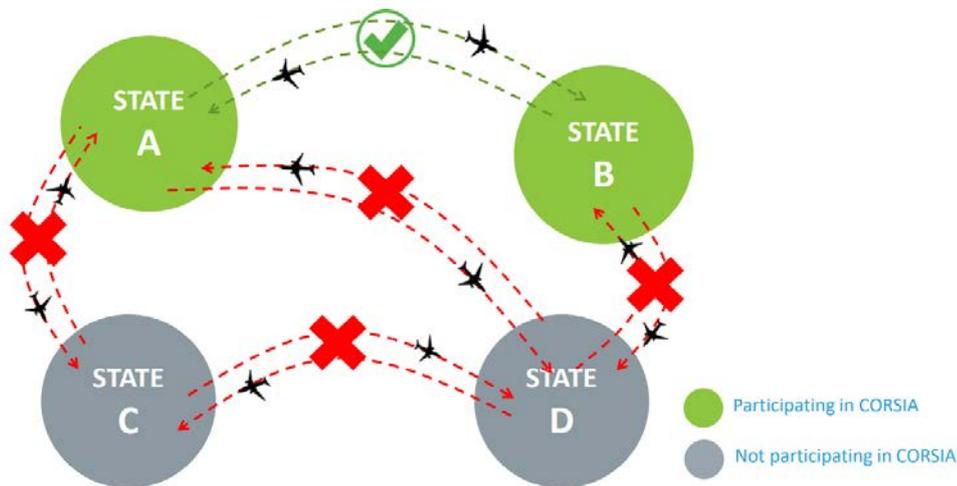
5.2.7 The CORSIA implementation features include Monitoring, Reporting and Verification (paragraphs 15, 20a and 20b).

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

5.2.9 With regard the difference between the pilot and the first phase, it was noted that:

- 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:
 - Option 1: Use the aircraft operator’s emissions covered by CORSIA in a given year (i.e. 2021, 2022 and 2023)
 - 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).

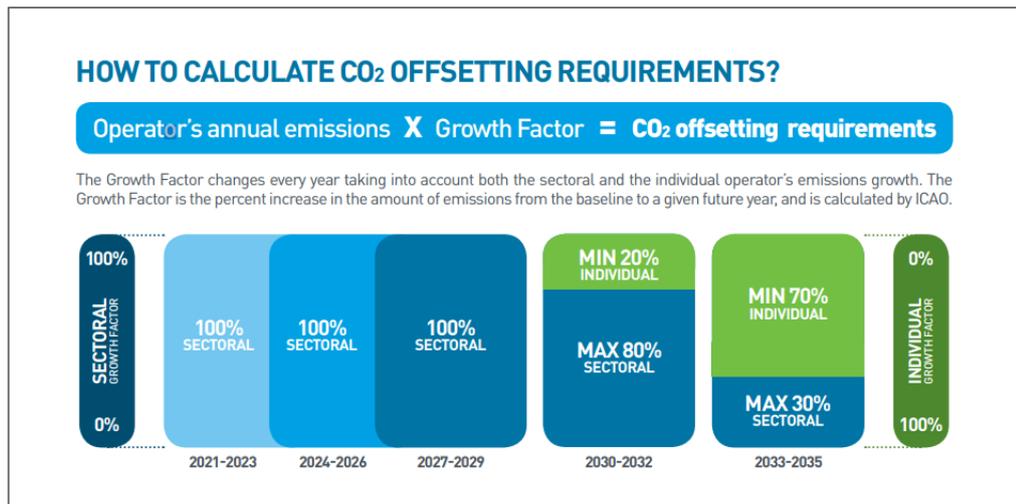
5.2.10 It was indicated that Emissions Coverage: Route-based Approach as per Reference: Assembly Resolution A39-3, Paragraph 10 as follows :



5.2.11 Once participating States and routes covered by the CORSIA are defined (starting in 2021), the amount of CO₂ offsetting requirements for individual aircraft operators is calculated, as follows :

- a) from 2021 through 2029, the amount of CO₂ offsetting requirements is calculated by multiplying the operators’ annual emissions with the international aviation sector’s growth factor every year, following a so-called 100 per cent sectoral approach; and
- b) from 2030 onwards, the amount of CO₂ offsetting requirements is calculated taking into account both the sector’s growth factor and the growth factor of an individual operator; the individual factor’s contribution to the calculation will be at least 20 per cent from 2030 to 2032; and at least 70 per cent from 2033 to 2035.

5.2.12 It was presented how the offsetting requirements under CORSIA is calculated:



5.2.13 For the review mechanism it was noted that starting in 2022, CORSIA will be periodically reviewed, every three years, by the Council. The review will include, among other features, the assessment of its impact on the growth of international aviation, and the results of this assessment will serve as an important basis for the Council to recommend, as appropriate, adjustments to the scheme for the consideration by the Assembly.

5.3 ***CORSIA MRV system: Monitoring, Reporting and Verification of CO₂ emissions (Annex 16, Volume IV)***

5.3.1 Two sessions were dedicated to cover CORSIA MRV requirements provided in PPT3 and PPT4 presented respectively by Mrs. Blandine Ferrier, Associate Regional Officer, OSG/EUR-NAT, Paris, France and Mr. Rachid Rahim, Head of Aviation Environment Protection at Qatar CAA.

5.3.2 It was explained that under CORSIA, the MRV of CO₂ emissions has to be undertaken if these are generated:

- From an operator that produces annual CO₂ emissions greater than 10,000 tonnes;
- From international operations on or after 1 January 2019;
- From the use of an aeroplane with a maximum certificated take-off mass of greater than 5,700 kg, and
- With the exception of humanitarian, medical and firefighting operations.

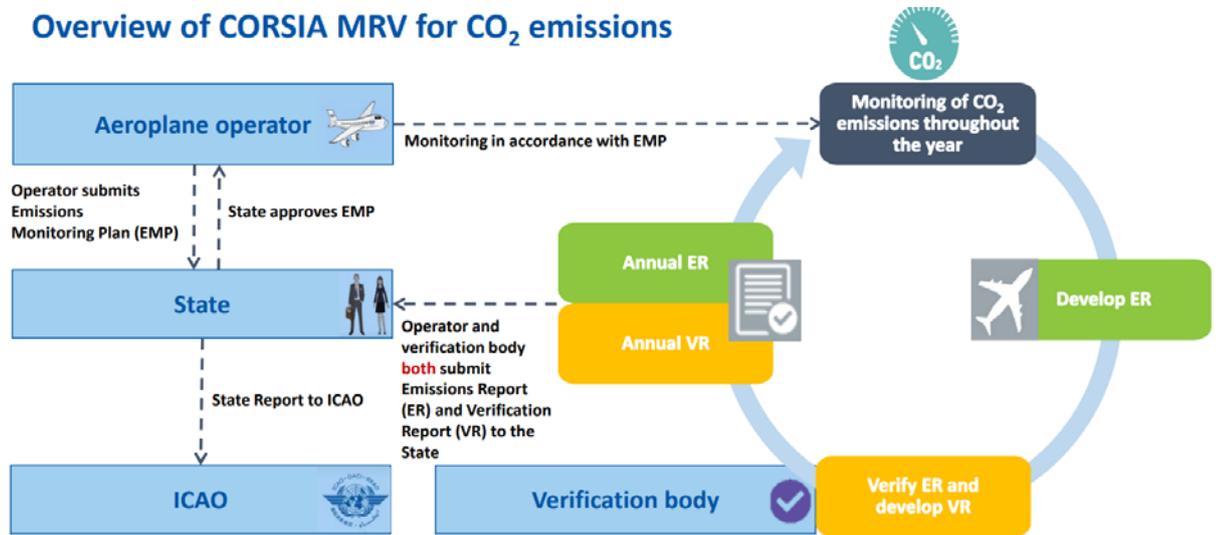
5.3.3 It was noted also that the implementation of CORSIA relies on the establishment of a robust and transparent monitoring, reporting and verification (MRV) system, which includes procedures on how to monitor the fuel use, collect data and calculate CO₂ emissions; report CO₂ emissions data; and verify CO₂ emissions data to ensure accuracy and avoid mistakes.

5.3.4 It was further explained that the monitoring, reporting and verification (MRV) system is a key component of CORSIA implementation:

- Implementation of the MRV system from 1 January 2019 for all international flights is essential to establish CORSIA's baseline (2019-2020)
- Purpose of MRV is to collect information on international aviation CO₂ emissions on an annual basis and compare emissions against the baseline emissions
- Components of the MRV system:
 - Monitoring of fuel use on each flight and calculation of CO₂ emissions
 - Reporting of CO₂ emissions information between aeroplane operators, States and ICAO

- Verification of reported emissions data to ensure completeness and to avoid misstatements.

5.3.5 The following cycle was presented and explained in details:



5.3.6 Timing of Reporting was presented as follows:

Information type	Baseline		Pilot Phase			First Phase		
	2019	2020	2021	2022	2023	2024	2025	2026
Aeroplane Operators	✓	✓	✓	✓	✓	✓	✓	✓
Verification Bodies	✓	✓	✓	✓	✓	✓	✓	✓
CO ₂ Emissions		✓ <i>2019 data</i>	✓ <i>2020 data</i>	✓ <i>2021 data</i>	✓ <i>2022 data</i>	✓ <i>2023 data</i>	✓ <i>2024 data</i>	✓ <i>2025 data</i>
CORSIA Eligible Fuels*		<i>Optional 2019 data</i>	<i>Optional 2020 data</i>	✓ <i>2021 data</i>	✓ <i>2022 data</i>	✓ <i>2023 data</i>	✓ <i>2024 data</i>	✓ <i>2025 data</i>
Cancelled Emissions Units							✓ <i>2021-2023 data</i>	

5.3.7 It was highlighted that the Standards and Recommended Practices for the MRV of CO₂ emissions are included in Annex 16, Volume IV, Part II, Chapter 2 :

- 2.1 Applicability of MRV requirements
- 2.2 Monitoring of CO₂ emissions (+ Appendices 2, 3, 4)
- 2.3 Reporting of CO₂ emissions (+ Appendix 5)
- 2.4 Verification of CO₂ emissions (+ Appendix 6)
- 2.5 Data gaps
- 2.6 Error correction to Emissions Reports

5.4 *CORSIA feedback from States*

5.4.1 Jordan, Lebanon and Qatar provided feedbacks on the CORSIA implementation in their respective states.

5.4.2 Saudi Arabia also shared the experience in particular the Saudi Arabia regulation and eBook for CORSIA, which are accessible through the following links:

- List for all regulations <https://gaca.gov.sa/web/en-gb/page/new-regulations>
- List for all eBooks <https://gaca.gov.sa/web/en-gb/page/e-book>

5.5 *CORSIA offsetting requirements*

5.5.1 This session was provided in PPT6 presented by Mr. Rachid Rahim, Head of Aviation Environment Protection at Qatar CAA with the objective to provide an overarching presentation of CORSIA Offsetting Requirements.

5.5.2 It was noted that CORSIA complements the other elements of the basket of measures by offsetting the amount of CO₂ emissions that cannot be reduced through the use of technological improvements, operational improvements, and sustainable aviation fuels with emissions units from the carbon market. It is estimated that between 2021 and 2035, the international aviation sector would have to offset about 2.5 billion tonnes of CO₂ emissions to achieve carbon neutral growth.

5.5.3 It was examined what is offsetting and how does it work, in particular :

- Offsetting through the purchase and cancellation of emissions units:
 - Different sources of emissions reductions (mechanisms, programmes, projects)
 - Buying and selling of eligible emissions units through the carbon market
 - Price of the emissions units influenced by law of supply and demand
- “Cancelling” means the permanent removal and single use of an emissions unit.
 - Done after an aeroplane operator has purchased emissions units from the carbon market

5.6 *CORSIA eligible fuel*

5.6.1 This session was provided in PPT5 presented by Mrs. Blandine Ferrier, Associate Regional Officer, OSG/EUR-NAT, Paris, France.

5.6.2 It was noted that CORSIA allows aircraft operators to reduce its offsetting requirements through the use of CORSIA eligible fuels, which include CORSIA sustainable aviation fuels and CORSIA lower carbon aviation fuels.

5.6.3 It was indicated that the ICAO CORSIA Implementation Element "CORSIA eligible fuels" is reflected in five ICAO documents referenced in Annex 16, Volume IV. They are available in the following documents :

- CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes First Edition, November 2019;
- CORSIA Approved Sustainability Certification Schemes* First Edition, November 2020
- CORSIA Sustainability Criteria for CORSIA Eligible Fuels Second Edition, November 2021
- CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels, Third Edition, November 2021; and
- CORSIA Methodology for Calculating Actual Life Cycle Emissions Values Second Edition, March 2021.

5.6.4 The above documents were presented in details.

5.6.5 It was highlighted that two means for an aeroplane operator to comply with CORSIA:

- Offsetting with Emissions Units
- Claiming Emissions Reductions from CORSIA Eligible Fuels

5.6.6 And two types of CORSIA Eligible Fuels (CEF) :

- “CORSA Sustainable Aviation Fuel”: renewable or waste-derived fuel
- “CORSA Lower Carbon Aviation Fuel”: fossil-based fuel

5.7 ***CORSA Central Registry (CCR)***

5.7.1 An interactive session was provided by Mr. Rachid Rahim, Head of Aviation Environment Protection at Qatar CAA on the use of the CCR which has been implemented by ICAO as an online web application supported by a database.

5.8 ***State Action Plan Development Process***

5.8.1 This session was provided in PPT8 presented by Mrs. Blandine Ferrier, Associate Regional Officer, OSG/EUR-NAT, Paris, France.

5.8.2 It was recalled that Assembly Resolution A40-18 Para. 4. States and relevant organizations will work through ICAO to achieve a global annual average fuel efficiency improvement of 2 per cent until 2020 and an aspirational global fuel efficiency improvement rate of 2 per cent per annum from 2021 to 2050... and Para. 6. ...work together to strive to achieve a collective medium term global aspirational goal of keeping the global net carbon emissions from international aviation from 2020 at the same level.

5.8.3 It was noted that the State Action Plans are a voluntary planning and reporting tool for States to communicate information on their activities to address CO₂ emissions from international civil aviation to ICAO – It is a living document and should be updated at least every three years. This initiative was established in 2010 as a result of Assembly Resolution A37-19 and support was reaffirmed in 2013 (A38-18), and 2016 (A39-2).

5.8.4 The benefits of Developing a State Action Plan were highlighted, in particular :

State Action Plans give ICAO Member States the ability to:

- Promote cooperation
- Establish partnerships
- Facilitate technology transfer
- Obtain assistance

They provide an organized means for the State to:

- Highlight their commitment to addressing environmental challenges
- Outline their respective policies and actions

5.8.5 The State Action Plan Minimum Contents were presented in details as follows:

- State Action Plan Focal Point contact information
- Baseline scenario – fuel international consumption, CO₂ emissions and traffic data projected to 2050 (without action)
- List of selected emissions mitigation measures
- Expected results – international fuel consumption and CO₂ emissions projected to 2050 (with the actions in #3, and
- Assistance needs (if needed)

5.8.6 The above were explained in details.

5.9 ***MID States SAP experience and Examples***

5.9.1 In this session, Mrs. Ms. Elham Al-Rawashdeh , the Director of Economic Regulator at CARC presented Jordan State Action Plan for Aviation Emissions Reduction with particular emphasis on :

- Background information

- Baseline and expected results, and
- Measures to mitigate CO2 emissions

5.9.2 For his part, Lebanon State Action plan focal point Dr. Ali Adnan Echaar, the Head of General Climate Section at Lebanon CAA presented their State Action Plan. In his presentation, he covered:

- Aviation History in Lebanon
- Air transport in Lebanon
- Aviation and Environment in Lebanon
- Lebanon Action Plan Goals
- CORSIA implementation in Lebanon
- SWOT Analysis.
- Summing Up and Future Steps

5.10 *Interactive Tool Training*

5.10.1 ICAO Supporting Tools States' Action Plan were presented by Mrs. Blandine Ferrier, Associate Regional Officer, OSG/EUR-NAT, Paris, France. The session presented the following tools:

- ICAO Carbon Emissions Calculator – for States which allows passengers to estimate CO2 emissions from their air travel
- ICAO Fuel Savings Estimation Tool (IFSET): To assist States in estimating fuel savings from operational improvements
- ICAO CORSIA CO2 Estimation and Reporting Tool (CERT) : To assist States and aeroplanes operators - monitoring and reporting requirements
- ICAO E-Learning Course – Module 1. State Action Plan
- ICAO Green Meetings Calculator: To support decision making in minimizing CO2 emissions from air travel to attend meetings
- ICAO EBT – Environmental Benefit Tool, and
- *ICAO MAC Curves*

5.10.2 The Action Plan Emissions Reduction (APER) Website was also presented.

5.11 *Mitigation measures from the Stakeholders*

5.11.1 In this session, the seminar was appraised by the presentation from the QUEEN ALIA INTERNATIONAL AIRPORT. The seminar noted that the QAIA is managed by Airport International Group which is a Jordanian company comprising local and international investors with proven experience in airport rehabilitation, enhancement, operation and management. The presentation also highlighted the substantial improvements that the airport has made in bolstering passenger capacity and traffic. Since the Jordanian company Airport International Group assumed the responsibility of managing the rehabilitation, expansion and operation of Queen Alia International Airport in 2007.

5.11.2 It was highlighted that the Airport International Group continually deployed best environmental and energy conservation practices that positioned the airport as a national, regional and global leader in environmental management and the first carbon neutral airport in the Middle East.

5.11.3 The seminar noted with thanks the AIG Environment Management System including the Carbon Management and QAIA ROAD MAP TOWARD NEUTRALITY.

5.11.4 The Summary of QAIA main actions planned to further reduce emissions include :

- Energy Efficiency Measures: Implement Energy saving projects as per Energy saving action plan
- Onsite Renewable Energy: Establish 4.8 MW solar farm
- Vehicle Fleet Decarbonization
- Boiler Operation : Replace diesel with low carbon source gas (such natural gas)
- Shut down APU at gate/stand: Using Electrical fixed power OR GPU

- Carbon Management: Working closely with stakeholders develop their own carbon management plan, and reduction target
- Waste Management: Wet waste is being transport to Bio-gas waste treatment center

5.11.5 The seminar noted also the challenges/pressure to achieve NETZERO CARBON BY 2050.

5.11.6 Jordan ANSP provided a presentation covering some examples of the measures that CARC is implementing to improve efficiency and reduce emissions including:

- New technologies to making air traffic management more efficient. Automation and modern surveillance systems enable aircraft to safely reduce their separation distances from each other, thereby increasing capacity and reducing delays.
- The use of Performance-based navigation (PBN) and implementation of RNAV routes rather than fixed ground-based beacons, allowing aircraft to fly more efficient routes with greater accuracy, thus reducing CO2 emissions.
- ATCOs providing ‘Tactical Directs’ during actual flights to ensure routes are the most efficient. Thus, reducing fuel burn through improved operational measures.
- Implementation of the concept of Flexible Use of Airspace “FUA”.
- Noise Abatement Procedures applied at airports.

5.11.7 Royal Jordanian (RJ) provided a presentation on RJ environment commitments and how to achieve it and presented also the RJ Roadmap to Net Zero Emissions. Some challenges faced RJ to implement to roadmap were presented, including :

- COVID 19 and aviation sector recovery;
- Alternative fuels not available within RJ network and it is not economically feasible; and uncertainty in regulations.

5.11.8 In addition, RJ expressed the need to to carbon offset with projects inside Jordan.

5.11.9 The seminar received the presentations from Jordan Stakeholders with great appreciation.

5.12 *States’ strategy to deal with international aviation CO2 emissions: Mitigation Measures*

5.12.1 This session was provided in PPT14 presented by Mrs. Blandine Ferrier, Associate Regional Officer, OSG/EUR-NAT, Paris, France.

5.12.2 The seminar noted that with a view to minimize the adverse effects of international civil aviation on the global climate, ICAO formulates policies, develops and updates Standards and Recommended Practices (SARPs) on aircraft emissions, and conducts outreach activities. These activities are conducted by the Secretariat and the Committee on Aviation and Environmental Protection (CAEP). In pursuing its activities, ICAO also cooperates with other United Nations bodies and international organizations.

5.12.3 The presentation covered the Mitigation Measures including the Seven (7) categories of measures, as follows:

- 1) aircraft-related technology development;
- 2) sustainable aviation fuels
- 3) improved air traffic management and related infrastructure use
- 4) more efficient operations
- 5) economic/market-based measures
- 6) regulatory measures/other; and
- 7) airport improvements

5.12.4 The Mitigation Measures were explained in details including guidance on Selecting Measures and some Examples of Mitigation Measures.

6. SEMINAR CONCLUSIONS AND RECOMMENDATIONS

6.1 Mr. Radhouan Aissaoui, Regional Officer Information Management, ICAO MID Regional Office, thanked all participants for their active participation and fruitful discussion and valuable outcomes. He indicated that from an ICAO perspective, the objectives of the seminar were met as the seminar shared information on the background, requirements and best implementation practices of ICAO Provisions related to SAP and CORSIA.

6.2 Mr. Radhouan Aissaoui expressed his gratefulness to the speakers from QCAA, LCAA, Jordan CARC and Royal Jordanian.

6.3 Mr. Radhouan Aissaoui concluded the seminar with a few key messages:

- ICAO Member States are requested to establish a long-term strategy on climate change for the international aviation sector, involving all interested parties at national level. These parties are encouraged to work together to define a quantified baseline scenario, select appropriate emissions mitigation measures from ICAO's basket of measures, and calculate the expected results of implementing those measures. The level of detail will be described in a State Action Plan (SAP).
- For the continuous success of the ICAO State Action Plans initiative, a substantial involvement and cooperation of both States and other stakeholders is needed to provide quantified and qualified input. This is a continual process to ensure that State Action Plans are updated and reflective of the States' situation and future planning. Currently the State Action Plans are required to be updated by each State every three years.
- States are still facing some challenges with the development of SAP and CORSIA compliance mainly related to the lack of training and resources.
- In this respect participants were reminded that ICAO Environment carries out a number of capacity-building and assistance activities. These assistance activities are most often related to the ICAO State Action Plan initiative and Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), which include:
 - ICAO State Action Plan Buddy Programme: States that have not yet developed, or are in the process of developing, a State Action Plan are invited to establish a partnership with a State that has already developed and submitted a State Action Plan to ICAO. States interested in participating as beneficiaries or supporters of the State Action Plan Buddy Programme are invited to contact ICAO at actionplan@icao.int; and
 - CORSIA Buddy Partnerships: based on the success of the ICAO State Action Plan Buddy programme, ICAO has also established CORSIA Buddy Partnerships to support States with their preparations for CORSIA Implementation.



List of Participants

State Org/Industries	Contact	Title
Iraq	Mr. Zaidan Hasam Ali	Approach Procedures Manager
	Mr. Ismael Ibrahim Saihood	Responsible for Env. Iraqi Airways
	Mrs. Noor Ali Khudhair	CO2 Accounts Iraqi Airways
	Mrs. Shifaa Mohammed Muhi	Ground Safety Officer – UR Airlines
	Mr. Hussein Hayder M. Hosa	Safety - Al-Rafidain Falcon
Jordan	Mr. Khaled Arabit	Director, Legal Affairs Directorate & Air Traffic Management (ATM)
	Ms. Elham Al-Rawashdeh	Director of Economic Regulatory
	Mr. Sami Nawaf Alawneh	Chief of Safety and Environment
	Mr. Mohammad Salem Al-Kharabsheh	Head of Environment
	Mr. Omar Ibraheem AlSheikh	Dispatch Manager
	Mrs. Narman Issat As'ad	Chief of ATM Training Division
	Mr. Mohammed Salamah Abu Gheith	Acting Director of Air Navigation Service
	Mr. Mohammad S. Mofarrij	Air Traffic Controller
	Mr. Husam Jawhareih	Senior Manager
	Mr. Ahmad Musallam	Flight Operations Engineer
	Mr. Mohammad Shafe Abdul Hadi	Flight Dispatch Manager
	Mr. Mohammed Farouq Doqa	ANS Inspector
	Mr. Abdelrahman Abujbara	Aerodrome Safety Inspector
	Ms. Rula Dawood	Manager, Environment, Health and Safety
	Mr. Akram Abdulkarim Darwish	Coordinator - Aqaba Development Corporation
	Ms. Manar Abu Hazzim	Head of Mitigation Section in Climate Change – Ministry of Environment
	Ms. Noura Hamad Qasam Alshraa	Researcher – Ministry of Environment
	Ms. Batool Alqatawneh	Air Traffic Controller
	Mr. Yousef I. Al-Aghwani	Air Traffic Controller
	Mr. Alpros Hamzouq	Director Quality Risk and Safety
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Libya	Mrs. Mariam Mohamed Kayekh	Chief of Environment
Oman	Ms. Asmahan Alrahbi	Chief of Environment Protection
Qatar	Mr. Majed Al Atawi	Director Air Safety Department
	Mr. Ahmed Abdulla Ali	Consultant at the President Office
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