International Civil Aviation Organization

Thirty-Third Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/33)

Bali, Indonesia, Hybrid Meeting, 22 to 24 November 2022

Agenda Item 2: Global and Inter Regional Activities

RECENT DEVELOPMENTS IN ICAO ON INTERNATIONAL AVIATION AND ENVIRONMENTAL PROTECTION

(Presented by the Secretariat)

SUMMARY

This paper presents the recent developments in ICAO on international aviation and environment, including the results of the 41st Session of the ICAO Assembly and background information on the long-term global aspirational goal (LTAG) (LTAG) process. The paper provides information the work of the Committee on Aviation Environmental Protection (CAEP), on relevant deliverables from the twelfth meeting of CAEP (CAEP/12), the recently launched the ICAO Assistance, Capacity-building and Training for Sustainable Aviation Fuels (ACT-SAF) initiative, and covers related planned outreach activities by the ICAO Secretariat.

Action by APANPIRG is in paragraph 5.

Strategic Objectives:

E***: Environmental Protection*** *— Minimize the adverse environment effects of civil aviation activities.*

1. INTRODUCTION

1.1 The 41st Session of the ICAO Assembly considered the proposals presented on aviation and environment matters, including noise, local air quality, and climate change. The discussions are summarized in A41-WPs 657, 658, and 659, which supported the adoption of three associated Resolutions below:

— Resolution A41-20: Consolidated statement of continuing ICAO policies and practices related to environmental protection - General provisions, noise and local air quality

— Resolution A41-21: Consolidated statement of continuing ICAO policies and practices related to environmental protection - Climate change

— Resolution A41-22: Consolidated statement of continuing ICAO policies and practices related to environmental protection - Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

1.2 At the 41st Session of the ICAO Assembly, ICAO Member States adopted a collective long-term global aspirational goal (LTAG) of net-zero carbon emissions by 2050. The achievement of the LTAG will rely on the combined effect of multiple CO_2 emissions reduction measures, including the accelerated adoption of new and innovative aircraft technologies, streamlined flight operations, and the increased production and deployment of sustainable aviation fuels (SAF).

1.3 The Assembly (in Assembly Resolution A41-21) recognized the continuing developments in drop-in fuels such as Sustainable Aviation Fuel (SAF) and Lower Carbon Aviation Fuel (LCAF) to reduce aviation CO_2 emissions, and welcomed the development of new fuels and cleaner energy sources for aviation, including the use of hydrogen and renewable electricity. States were requested to set a coordinated approach in national administrations for policy actions and investment to accelerate the appropriate research, development, deployment and use of cleaner and renewable energy sources for aviation. States were also requested to consider incentives to encourage the deployment of cleaner and renewable energies sources for aviation, including SAF and LCAF.

1.4 The Assembly recognized that means of implementation commensurate to the level of ambition, including financing, will promote the achievement of the LTAG. This requires substantial investments for States, according to their national circumstances, and that various possible modalities and/or funding mechanisms could be used by ICAO to facilitate financing and investment support for implementation of specific aviation CO_2 emissions reduction measures.

1.5 Industry, financial institutions and other international organizations are invited to get involved in the implementation of LTAG by actively participating in the exchange of information and best practices, and facilitating the establishment of partnerships and the defining policies that will further promote the transition to cleaner, renewable sources of energy for aviation, including SAF and LCAF.

1.6 The 41st Session of the ICAO Assembly also included the completion of the first periodic review of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). States agreed on a new CORSIA baseline from 2024 onwards, defined as 85% of CO2 emissions in 2019, and on revised percentages for the sectoral and individual growth factors to be used for the calculation of offsetting requirements from 2030 onwards.

2. BACKGROUND ON THE ICAO LTAG PROCESS

2.1 Following the request of the 40th ICAO Assembly in 2019, ICAO made dedicated efforts to explore the feasibility of a LTAG for international aviation, including data collection and information sharing; technical assessment of aviation CO_2 emissions reduction scenarios with analyses of costs and necessary investments; consultation and dialogues amongst stakeholders; and engagement of high-level representatives to facilitate the decision.

2.2 The 2020[1] and 2021[2] ICAO Stocktaking events were held in September 2020 and September 2021, respectively, as part of the ICAO LTAG work to collect data and share information on aviation in-sector CO_2 emissions reductions. Additionally, ICAO created a number of Tracker Tools[3] in order to provide a single, regularly updated source of information for all the most recent CO_2 reduction innovations for aviation. The trackers include the most recent information on initiatives to reduce aviation CO_2 emissions and are updated in three areas: technology, operations, and fuels; they also cover initiatives to achieve aviation net zero emissions.

[1] https://www.icao.int/Meetings/Stocktaking2020/Pages/default.aspx
[2] https://www.icao.int/Meetings/Stocktaking2021/Pages/default.aspx
[3] https://www.icao.int/environmental-protection/SAC/Pages/GCSA%20main%20page.aspx

2.3 Over the last two years, the ICAO Committee on Aviation Environmental Protection (CAEP) undertook its technical work on the feasibility study on LTAG. It has focused on the attainability and readiness of aviation in-sector CO_2 reduction measures including innovative aircraft technologies, operations and fuels. At the end of intensive work, CAEP developed the LTAG report[4] which includes scenarios that highlight the potential for substantial CO_2 reductions from innovative aircraft technologies, operations, and fuels, with the assessment of required costs and investments. This was recommended by CAEP at its twelfth meeting from 7 to 17 February 2022, and was approved by the Council in March 2022. The LTAG report is available on the ICAO website.

2.4 ICAO organized the LTAG Global Aviation Dialogues (GLADs) as a series of five regional meetings conducted both in May 2021[5] and March/April 2022[6] as part of the consultative process on LTAG involving ICAO Member States and stakeholders. The GLADs supported the well-informed deliberations at the High Level Meeting on LTAG[7] (HLM-LTAG), held in July 2022 and this paved the way to the 41st ICAO Assembly.

3. CAEP WORK

3.1 The twelfth meeting of CAEP was held virtually from 7 to 17 February 2022 and was attended by over 470 participants, including 31 Members, 20 Observers, and their advisers.

3.2 The CAEP/12 meeting produced a number of significant technical recommendations on the amendments to Volumes I (Aircraft Noise), II (Engine Emissions), III (Aeroplane CO_2 emissions), and IV (CORSIA) of Annex 16 to the Chicago Convention, ensuring that the Standards are up - to - date for use by ICAO Member States.

3.3 The ICAO CAEP developed a new ICAO Manual “Operational Opportunities to Reduce Noise” (a sister manual to ICAO Doc.10013 “Operational Opportunities to Reduce Fuel Burn and Emissions”), three State of Play reports: “Environmental Metrics”; “The Environmental Impacts of Unmanned Aircraft (UA) at and Around Airports”; and, an “Investigation of Possible Indicators on Encroachment”, as well as several reports on the first global analysis on vertical flight efficiency (VFE) and a report on aviation stakeholder community engagement.

3.4 ICAO CAEP recommended the manual on “Operational Opportunities to Reduce Aircraft Noise” be issued as an ICAO Document and state-of-play reports on “Environmental Metrics of Relevance to the Global Aviation System” and “Investigation of Possible Indicators on Encroachment” be published on the ICAO website and ICAO Council approved these recommendations.

3.5 The new ICAO Manual "Operational Opportunities to Reduce Aircraft Noise" was developed in order to identify and review both standard and innovative operational opportunities and techniques for minimizing noise in civil aviation operations.

3.6 The manual provides background on current practices that are available to aircraft operators, airport operators, air navigation services providers (ANSPs), other industry organizations and States to reduce aircraft noise impacts. Additionally, it highlights the recent developments, resulting from emerging innovation, and considers what concepts and enabling technologies currently being developed by the aerospace manufacturing industry and airspace service providers may become available in the near future. The manual will be made available at ICAO Store in 2023.

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[4] https://www.icao.int/environmental-protection/LTAG/Pages/LTAGreport.aspx
[5] https://www.icao.int/Meetings/2021-ICAO-LTAG-GLADS/Pages/default.aspx
[6] https://www.icao.int/Meetings/2022-ICAO-LTAG-GLADS/Pages/default.aspx
[7] https://www.icao.int/Meetings/HLM-LTAG/Pages/default.aspx

3.7 In CAEP/12, the first global Vertical Flight Efficiency (VFE) analysis was delivered with the work initially focusing on the climb and descent phases with the availability of sufficient global data from Flightradar24. This analysis revealed that for the descent phase, the average per flight inefficiency (or non-optimized Continuous Descent Operation (CDO)), generated an average extra consumption of 41kg fuel per flight across all ICAO regions. Table 1 below shows the results of the climb and descent parts of the global VFE study per ICAO Region.

	CDO		CCO	
ICAO Region	**Excess fuel / CO2 (kg)**	**Fuel costs (million $)**	**Excess fuel / CO2 (kg)**	**Fuel costs (million $)**
APAC	47/149	336.9	13/41	94.2
ESAF	23/73	8.2	2/6	0.6
EUR/NAT	37/117	218.7	4/13	22.5
MID	60/190	50.9	9/28	7.9
NAM	43/136	336.6	5/16	41.2
CAR/SAM	24/76	44.3	3/9	6.4
WACAF	20/63	2.7	1/3	0.1
Total	**41/130**	**992.2**	**7/22**	**161.5**

Table 1: Results of the climb and descent parts of the global VFE study per ICAO region

3.8 As the environmental KPA plays a major role in the performance of a post-COVID aviation system, stakeholders are currently thinking about developing new environmental metrics to quantify the benefits of any operational changes. If new metrics based on fuel burn / CO2 emissions are to be developed, they should focus on fuel efficiency related to the actions of all stakeholders involved in the ATM system. CAEP/12 approved a State of Play "Report on Environmental Metrics" delivered, with the objective to provide an overview of common metrics used by States and operational stakeholders to assess the environmental performance of aviation. The State of Play report will be made publically available on ICAO web-site.

3.9 Work on metrics is likely going to be a significant focus both globally and regionally in the upcoming years. At the global level, the GANP - PEG (GANP - Performance Expert Group) has been set up to define the performance framework of the ASBU framework, with the current emphasis on the Environment KPA. It is expected that in the future there will be a need to develop this framework to include new environmental performance ambitions, objectives and indicators together with focus areas around which to build the framework.

4. ICAO INITIATIVES AND UPCOMING ICAO ENVIRONMENT EVENTS

4.1 **ACT-SAF Programme** - On 1 June 2022, the ICAO Assistance, Capacity-building and Training for Sustainable Aviation Fuels (ACT-SAF)[8] programme was officially launched. The programme aims to provide tailored support for States in various stages of SAF development and deployment, facilitate partnerships and cooperation on SAF initiatives under ICAO coordination, and serve as a platform to facilitate knowledge sharing and recognition of all SAF initiatives around the globe.

[8] https://www.icao.int/environmental-protection/Pages/act-saf.aspx

4.2 In this regard, the ICAO ACT-SAF platform has been developed and is accessible on the programme's webpage, where the engaging partners and projects are recognized. As of 11 October 2022, 45 Member States and 12 organisations have expressed interest to join, from which several have agreed to its Terms and Conditions (T&Cs) to become a partner. ICAO is currently coordinating with States and other interested parties on the needs and contributions of the interested parties and developing a detailed roadmap for the programme. The ICAO Assembly underscored the importance of financing and investment support to the new CO_2 emissions goal's attainment and fully supported the ACT-SAF programme.

4.3 **2023 ICAO Stocktaking -** Building upon the continued success of the 2020, 2021 and 2022 ICAO Stocktaking events, and in response to the Assembly request to monitor the progress toward the achievement of the LTAG, the Secretariat will organize the 2023 ICAO Stocktaking on aviation in-sector CO_2 emissions reductions (to be confirmed). This 2023 Stocktaking event will cover a broad range of new innovations in the fields of technology and operations, but will be focused on SAF, LCAF and cleaner energy sources in preparation for the CAAF/3 meeting.

4.4 **Third Conference on Aviation and Alternative Fuels (CAAF/3) -** Assembly Resolution A41-21 requested the Council to convene the CAAF/3 in 2023 for reviewing the 2050 ICAO Vision for SAF, including LCAF and other cleaner energy sources for aviation, in order to define a global framework in line with the No Country Left Behind (NCLB) initiative and taking into account national circumstances and capabilities. In that regard, the third ICAO Conference on Aviation and Alternative Fuels (CAAF/3) is being proposed to be held in late 2023 (to be confirmed), as an in-person event, with a view to updating the 2050 ICAO Vision to include a quantified proportion of SAF to be used by 2050. The Secretariat is currently discussing the hosting of CAAF/3 with potential host States.

5. ACTION BY THE MEETING

5.1 The Meeting is invited to:

a) note the 41st ICAO Assembly decisions on environment and the information presented in this paper;

b) continue to consider environmental issues in the planning and implementation of regional air navigation systems;

c) bring to the attention of the ICAO Secretariat specific areas where additional guidance on environmental benefits would be valuable.

— END —