



INTERNATIONAL CIVIL AVIATION ORGANIZATION

**TWENTY SEVENTH MEETING OF THE ASIA/PACIFIC AIR
NAVIGATION PLANNING AND IMPLEMENTATION REGIONAL
GROUP (APANPIRG/26)**

Bangkok, Thailand, 5 – 8 September 2016

Agenda Item 3: Performance Framework for Regional Air Navigation Planning and Implementation
3.6: Other Air Navigation Matters

**RECENT DEVELOPMENTS IN ICAO
ON INTERNATIONAL AVIATION AND CLIMATE CHANGE**

(Presented by the Secretariat)

SUMMARY

ICAO and its Member States are taking concrete steps to undertake coordinated and comprehensive actions to address CO₂ emissions from international aviation, in order to reach the ultimate goal of ensuring a sustainable future for international aviation.

This paper provides a summary of the main developments on the actions requested by the 38th Session of the ICAO Assembly in the field of international aviation and climate change, in particular those actions relating to the following key areas: 1) technological and operational measures; 2) sustainable alternative fuels for aviation; 3) market-based measures; 4) States' action plans; and 5) assistance to States

Action by APANPIRG is in paragraph 9.

Strategic Objective E: Environmental Protection — **minimize the adverse environment effects of civil aviation activities.**

1. INTRODUCTION

1.1 The 38th Session of the ICAO Assembly, held from 24 September to 4 October 2013, adopted Resolution A38-18: *Consolidated statement of continuing ICAO policies and practices related to environmental protection – Climate change*. This paper presents an update on the actions requested by the Assembly.

1.2 This paper also presents outcomes of the 10th meeting of the Committee on Aviation Environmental Protection (CAEP), held from 1 February to 12 February 2016.

2. ICAO ENVIRONMENTAL REPORT

2.1 The 2016 ICAO Environmental Report¹ highlights the progress of ICAO's environmental activities over the last three years. This fourth edition of the report provides an update

¹ <http://www.icao.int/environmental-protection/Pages/ENV2016.aspx>

on the current state of aviation and the environment by presenting the work of CAEP, showcasing key partnerships and illustrating quantifiable benefits of mitigation actions through case studies. The full report is available free of charge on the ICAO website at the link provided above.

3. CAEP OUTCOMES

3.1 The 10th Meeting of CAEP concluded on 12 February 2016 in Montreal, Canada. Several areas from across the basket of measures to reduce aviation environmental impacts reported achievements throughout the CAEP/10 cycle.

3.1.1 CAEP/10 approved updated projections for aircraft noise and emissions. These updated trends will be the basis for environmental decisions to be made during the 39th Session of the ICAO Assembly later this month. Future work on trends will include putting these trends into the context of a 2 degree Celsius emissions budget scenario.

3.1.2 The trends highlight the possibility of “neutral noise growth” from 2030, under an advanced technology and operational improvements scenario. This scenario demonstrates how ICAO’s noise Standards are working, leading to the possibility of a decoupling of aircraft noise from traffic growth.

3.1.3 CAEP/10 delivered recommendations for both an aeroplane CO₂ emissions certification Standard and a non-volatile Particulate Matter (nvPM) aircraft engine emissions certification Standard. This is the first time in which two new Standards were recommended by CAEP in the same triennium.

3.1.4 CAEP/10 approved a new methodology to quantify the CO₂ emissions associated with air cargo. The new methodology complements ICAO carbon calculator for passenger air travel emissions.

3.1.5 A robust analysis of the environmental benefits of ASBU Block 0 was agreed and the results are presented in the 2016 Air Navigation Report².

3.1.5.1 For CAEP/11 a similar analysis for ASBU Block 1 is underway and support from states and ANSPs in the form of information on benefits and implementation planes will be critical for its success.

3.1.6 Technical work continued on sustainability criteria for alternative fuels and the projection of future production and life-cycle environmental benefits of such fuels.

3.1.7 CAEP conducted analyses in support of the Global Market Based Measure (GMBM) for international aviation emissions. These analyses provide input for discussions of the GMBM at the 39th Session of the ICAO Assembly.

4. ENVIRONMENTAL TOOLS TO SUPPORT QUANTIFICATION

4.1 The ICAO Fuel Savings Estimation Tool (IFSET) is one of the many tools developed by the Secretariat to assist States. It was developed with support from States and international organizations to estimate fuel savings in a manner consistent with the models approved by CAEP and aligned with the Global Air Navigation Plan. It is provided to assist those States that do not have detailed measurement or modeling capabilities.

² http://www.icao.int/airnavigation/Documents/ICAO_AN%202016_final_19July.pdf

4.2 A new web-based version of the IFSET is in the final stages of development and will soon become available on the ICAO public website. Providing this tool in an online format will make it easier to use and make the tool more accessible for States.

4.3 The ICAO Carbon Emissions Calculator allows passengers to estimate the emissions attributed to their air travel. The methodology applies the best publicly available industry data to account for various factors such as aircraft types, route specific data, passenger load factors and cargo carried. The Secretariat is currently developing an update to expand the scope of the ICAO Carbon Emissions Calculator to allow users to estimate the CO₂ emissions associated with shipments by air cargo, consistent with the methodology that was recommended by CAEP/10.

4.4 The ICAO Green Meetings Calculator is a tool designed to support decision-making in reducing the carbon emissions from air travel to attend meetings. The calculator generates an optimal location for a meeting in terms of CO₂ emissions, taking into consideration the city of origin and the number of participants, as well as other parameters. While many factors may affect the decision for where a meeting should be held, the calculator helps facilitate the planning process.

4.5 The *Guidance on the Development of States' Action Plans on CO₂ Emissions Reduction Activities* (ICAO Doc 9988) was updated by the Secretariat to include “Rules of Thumb” that can be used to estimate the benefits from the elements of the ICAO Basket of Measures to address CO₂ emissions from international aviation. A companion software tool, known as the Environmental Benefits Tool (EBT) was developed to automate the application of these “Rules of Thumb.” The combination of the revised Doc 9988 and EBT aims to ensure that all States are able to submit an action plan with quantified results.

5. MARKET BASED MEASURE (MBM)

5.1 The ICAO Assembly, at its 38th Session, defined a basket of measures to support Member States in achieving the global aspirational goal of “carbon neutral growth from 2020”; this basket of measures consists of both non-market-based and market-based measures.

5.2 Assembly Resolution A38-18 requested the Council, with support of Member States, to recommend a proposal for a global MBM scheme for decision by the 39th Session of the Assembly. This request reflects the strong support of ICAO Member States for a global solution to support the international aviation industry in its efforts to not increase global net CO₂ emissions from 2020.

5.3 Following the Assembly, the ICAO Council established the Environment Advisory Group (EAG), which held 15 meetings from March 2014 to January 2016. The EAG assessed various approaches for a global MBM scheme, with technical support provided by the Committee on Aviation Environmental Protection (CAEP) and the Secretariat, namely on monitoring, reporting and verification (MRV) system, criteria for emissions units, and development of a registry structure.

5.4 Assembly Resolution A38-18 also requested the Council to organize seminars and workshops on a global scheme for international aviation. Two rounds of Global Aviation Dialogues (GLADs) were held in April 2015 and in March-April 2016, covering all ICAO regions. The GLADs were a forum for information sharing and exchange of ideas aimed at facilitating deliberations on key design elements of a global MBM scheme, with a special focus on reaching out to those States that are not directly engaged in the Council or CAEP.

5.5 States have also had the opportunity to discuss the draft Assembly Resolution text and make recommendations for consideration by the Council at a High-level Group on a Global MBM Scheme (HLG-GMBM), which held two meetings in February and April 2016; and at a High-level Meeting on a Global MBM Scheme (HLM-GMBM) convened in May 2016. Following bilateral and

multilateral consultations, a “Friends of the President” informal group meeting was held in Montréal, Canada, from 22 to 23 August 2016, to evaluate the results of these consultations and develop compromise text. On 26 August 2016, the Council agreed on the draft Assembly Resolution text to be submitted to the 39th Session of the ICAO Assembly from 27 September to 7 October 2016.

6. ACTION PLANS

6.1 The 38th Session of the ICAO Assembly encouraged Member States to submit more complete and robust data in their action plans to facilitate the compilation of global emissions data by ICAO. It also encouraged the partnerships among ICAO, States and other organizations. To support States, the Secretariat developed additional guidance and tools and provided technical assistance. To date, 97 States have submitted action plans, representing 88.6 per cent of global traffic.

6.2 During the GMBM High-Level Meeting held in Montreal in May 2016, an action plan helpdesk was set up, to provide State representatives an opportunity to communicate directly with ICAO about the action plan of their State. This also provided an opportunity for ICAO to further encourage States to develop and submit an action plan. Side meetings were also organized during the Friends of the President Informal Group Meeting held in Montreal in August 2016 to support States that have not yet developed an action plan and States that have not submitted an update to their action plan.

6.3 The action plans are a key area of the Organization’s work priorities, providing a unique opportunity for States to both showcase their initiatives to improve fuel efficiency and reduce emissions, and to articulate their assistance needs. The information included in the plans will allow for the assessment of potential future progress toward the achievement of global aspirational goals set forward by ICAO Assembly Resolution A38-18. The active involvement of Member States is therefore critical to the success of this initiative and to the ability of ICAO to effectively develop policies and practices toward the environmental sustainability of air transport.

6.4 As of 25 August 2016, 12 APAC States have voluntarily submitted an Action Plan to ICAO. Of those 12 action plans, one action plan has been submitted by a SIDS in the APAC Region. ICAO is exploring possible ways to provide additional assistance specifically to SIDS in the APAC Region, based on the success of existing projects. One possibility for assisting APAC SIDS is the Buddy Programme, in which States that have already developed and submitted an action plan provide assistance directly to another state that requested assistance to develop or submit an action plan. The ICAO Secretariat is also exploring possible options to provide additional assistance for the implementation of a specific programme for APAC SIDS similar to the projects outlined in the Paragraph 7.3 below.

7. ASSISTANCE TO STATES

7.1 The high level of interest, cooperation and engagement of Member States and other stakeholders in the action plans initiative and the substantial progress made was due in large part to a robust capacity building programme. This programme needs to be continued and further strengthened.

7.2 As part of efforts to provide further assistance to States and facilitate access to financing for the development and implementation of States’ action plans, ICAO established partnerships with the European Union (EU), as well as with the United Nations Development Programme (UNDP) with the Global Environment Facility (GEF) financing.

7.3 ICAO-European Union Project

7.3.1 In December 2013, ICAO signed an agreement with the European Union on a joint assistance project, Capacity building for CO₂ mitigation from international aviation, which is a EUR

6.5 million project funded by the EU. Fourteen States from Africa and the Caribbean were selected to participate in this project. These States are as follows: Angola, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Democratic Republic of the Congo, Equatorial Guinea, Republic of the Congo, Dominican Republic, Gabon, Kenya, São Tomé and Príncipe, and Trinidad and Tobago.

7.3.2 The project encompasses three areas of activities in the selected States: development of States' action plans; setting up of an aviation environmental system for Monitoring, Reporting and Verification (MRV) of CO₂ emissions; and identification and implementation of measures to reduce aviation emissions.

7.3.3 Under this project, ICAO organized four capacity-building seminars in 2014 and 2015, focusing on the development of the States' voluntary action plans and the selection of mitigation measures, and on the Aviation Environmental System, which is a resource developed under the project and already installed in all the selected States as an MRV system to establish emission inventories and monitor CO₂ emissions from aviation. As of June 2016, the 14 selected States had submitted to ICAO their States' Action Plans on Emissions Reduction, in strict accordance with the requirements of the ICAO Doc. 9988.

7.3.4 Currently, the project is moving into the implementation of the mitigation measures selected in their action plans such as the installation of solar photovoltaic systems and a gate electrification retrofit equipment at international airports in two States in Africa as well as the improvement of Air Traffic Management (ATM) in other two States. In addition, five feasibility studies will be conducted on alternative fuels and use of renewable energy at airports, which will serve as a catalyst for further funding and assistance for implementation. These pilot projects, to be completed by the end of 2017, will become concrete examples that could be replicated by other States in their efforts to address climate change and aviation.

7.4 *UNDP-GEF Project*

7.4.1 In November 2014, GEF approved the joint ICAO- UNDP assistance project, Transforming the Global Aviation Sector: Emission Reduction from International Aviation.

7.4.2 The ICAO–UNDP joint assistance project is a global project that includes the development of guidance documents and supporting mechanisms to assist the identification and implementation of measures to reduce aviation CO₂ emissions.

7.4.3 An important element of this USD 2 million project is a practical pilot project in Jamaica, consisting of the implementation of a CO₂ reduction measure that could be replicated in other States. This pilot project will consist of a renewable energy initiative at two international airports that will include: the installation of solar panels, a convertor to transform the solar energy into electricity; and the acquisition of an electric Pre-Conditioned Air (PCA) unit and an electric Ground Power Unit (GPU). The PCA and GPU will be available at the gate and can replace fully the use of the APU, as soon as they are connected to the aircraft.

7.4.4 The pilot project will be completed in spring 2017 and the results and experiences will be disseminated amongst other SIDs along with the guidance documents to be produced through several international workshops aiming at replicating these initiatives in other States.

8. **ALTERNATIVE FUELS SEMINAR AND CONFERENCE**

8.1 The 38th Assembly highlighted the progress achieved in facilitating the development and deployment of sustainable alternative fuels for aviation, including information sharing on best practices among States and other stakeholders through ICAO's online platform, the Global

Framework for Aviation Alternative Fuels (GFAAF)³, which integrates data on hundreds of global activities and initiatives.

8.2 To further highlight the importance of alternative fuels as a mitigation measure for international aviation emissions, ICAO will be hosting the *ICAO Fuelling Aviation with Sustainable Alternative Energy* (IFASAE) Seminar from 8 – 9 February 2017 in Montreal, Canada. This event will provide a forum for exchanging information and will review the state of worldwide activities on the use of renewable energy in aviation. This event will also provide a networking opportunity among States and industry stakeholders involved in activities related to renewable energy and sustainable alternative fuels for aviation.

8.3 The Seminar will serve as an information session for an ICAO Conference on Alternative Aviation Fuels later in 2017.

9. ICAO 39TH TRIENNIAL ASSEMBLY

9.1 The 39th Session of the ICAO Assembly will be held at ICAO headquarters from 27 September to 7 October 2016. The Assembly will establish ICAO's policy and work programme on environmental protection for the upcoming triennium.

10. ACTION BY THE MEETING

10.1 The APANPIRG is invited to:

- a) note 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;
- d) support the analysis by CAEP, in particular the ASBU Block 1 benefits analysis, through sharing of information on operational and capacity improvement plans;
- e) promote further collaboration with State action plan national focal points for all the operational measures that States wish to develop, implement and/or include in their action plans;
- f) inform State action plan national focal points of the availability of further assistance, to be provided by the ICAO Secretariat, related to the preparation and submission of States' action plans;
- g) engage with the ICAO Secretariat to explore means of providing assistance projects for both development of action plans and implementation of measures contained in the action plans for APAC States in particular SIDS in the area; and
- h) note that the ICAO Secretariat will keep PIRGs informed of its future activities and developments related to environmental protection.

— END —

³ <http://www.icao.int/environmental-protection/GFAAF/Pages/default.aspx>