



INFORMATION PAPER

**HIGH-LEVEL MEETING ON A GLOBAL MARKET-BASED
MEASURE SCHEME**

Montréal, 11 to 13 May 2016

Agenda Item 1: Review of draft Assembly Resolution text on a global MBM scheme for international aviation

Agenda Item 2: Recommendations to the 208th Session of the Council

BASKET OF MEASURES (NON-MBM) AND THE STATE ACTION PLANS INITIATIVE

(Presented by the Secretariat)

EXECUTIVE SUMMARY

This working paper provides information on the progress of the Organization's work for the development and implementation of "a basket of measures" to reduce aviation CO₂ emissions (non-MBM related), as well as the ICAO State Action Plan initiative. It aims to inform on the wider context of the comprehensive strategy adopted by ICAO on international aviation and climate change.

This working paper encompasses the elements of the basket of measures that are not related to the development of a global market based measure (MBM) scheme for international aviation, namely: aircraft technologies, operational improvements and sustainable alternative fuels for aviation.

In addition, the working paper covers the latest progress on the ICAO State Action Plans initiative to support the implementation of the basket of measures, including capacity building and other assistance activities to States, which is an integral part of ICAO's strategy on international aviation and climate change.

1. INTRODUCTION

1.1 Assembly Resolution A38-18 requested the Organization's work in the development and implementation of a "basket of measures", serve as a means to achieve the global aspirational goals for the international aviation sector of 2 per cent annual fuel efficiency improvements and carbon neutral growth from 2020. The "basket of measures" to reduce aviation CO₂ emissions consists of the following four pillars: a) aircraft technologies; b) operational improvements; c) sustainable alternative fuels for aviation; and d) a global market-based measure (MBM) scheme for international aviation.

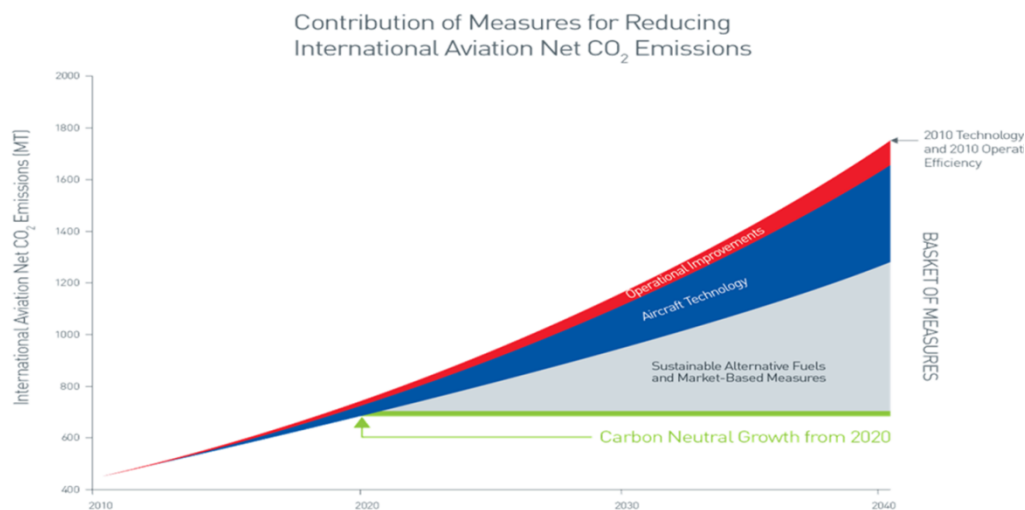
1.2 Assembly Resolution A38-18 also invited States to submit their new or updated action plans for reducing CO₂ emissions from international aviation, on a voluntary basis, by June 2015 (Resolution A38-18, paragraph 11). In so doing, States are encouraged to select mitigation measures from the "basket of measures" and to quantify their expected emissions reduction benefits against the baseline emissions from international aviation. By compiling the information on submitted action plans by States,

the ICAO State Action Plans initiative provides an overview of the implementation of climate change actions by its Member States (Resolution A38-18, paragraph 12).

1.3 In the context of on-going work on the development of a global MBM scheme for international aviation, it is of utmost importance to highlight that all different elements of the basket of measures contribute to emissions reduction and how much progress can be reported on the non-MBM elements of the basket.

1.4 The present and future trends on international aviation CO₂ emissions, which are developed and updated every three years by the ICAO's Committee on Aviation Environmental Protection (CAEP) based on intensive data collection and modelling efforts (Figure 1 refers), capture the expected contribution of each element of the "basket of measures" towards the achievement of the global aspirational goals.

Figure 1- Trends on CO₂ emissions from international aviation



2. BASKET OF MEASURES

2.1 Aircraft Technologies

2.1.1 Over the past 50 years, aeroplane's have become 80 per cent more fuel efficient as a result of industry successfully developing new technologies and integrating them into aeroplane designs. A continuation of this technological innovation is an essential element of ICAO's "basket of measures", and the decision by the 37th Session of the Assembly (Resolution A37-19) in 2010 to request the development of an ICAO CO₂ emissions Standard aimed to encourage aircraft manufacturers to integrate more fuel efficient technologies into aeroplane designs.

2.1.2 In February 2016, CAEP finalized its recommendation on an aeroplane CO₂ emissions certification Standard. This new Standard is the first global Standard for CO₂ emissions of any sector, and will apply to new aeroplane type designs from 2020 and to those that are already in production from 2023. This means that if an in-production aeroplane design is changed after 2023, the aeroplane would have to comply with the CO₂ emissions Standard. Furthermore, in 2028, there is a production cut-off, meaning that in-production aeroplanes that do not meet the standard from 2028 can no longer be produced, unless the designs are modified to comply with the CO₂ emissions certification Standard.

2.1.3 ICAO environmental Standards are designed to be environmentally effective, technically feasible, reasonable in terms of cost, while considering environmental interdependencies. The CO₂ emissions certification Standard covers the full range of aircraft weights and types and is especially stringent where it will have the greatest impact: for larger aircraft weighing over 60 tonnes, which accounts for more than 90 per cent of international aviation emissions. This recognizes the fact that the larger aeroplane designs have had access to the broadest range of emissions reduction technologies. The CO₂ emissions certification Standard is designed to equitably recognize the broad range of technology improvements across the full range of aeroplane types and designs.

2.1.4 The new CO₂ emissions certification Standard is recommended as being adopted as an entirely new Volume to Annex 16 (Volume III). Airframe, aero-engine and aircraft systems manufacturers continued to drive to develop new and innovative technologies. Progress continues to be made today in, among others, advanced aerodynamics, aircraft systems, lighter airframe structures, and improved propulsive efficiency. The new aeroplane CO₂ emissions Standard plays an important role in reducing the sectors fuel burn by ensuring that these latest fuel efficiency technologies are being employed in the latest aeroplane designs.

2.2 Operational Improvements

2.2.1 Forecasted air traffic growth, if not properly supported by the appropriate funding necessary for Air Traffic Management (ATM) infrastructure, can lead to significant capacity challenges, increased safety risks and adverse environmental impacts. The Aviation System Block Upgrades (ASBU) strategy was developed to reflect and build consensus around the series of technologies, procedures and operational concepts needed to meet future capacity and ATM challenges. This strategy is laid out in the ICAO Global Air Navigation Plan (GANP).

2.2.2 Recognizing that many of the improvements defined in the GANP offer the potential to deliver fuel savings and therefore CO₂ emissions reductions, an analysis of environmental benefits from the implementation of ASBU Block 0 was conducted by CAEP. A detailed analysis suggests that by 2018, the implementation of Block 0 modules could lead to fuel efficiency gains of 0.69 per cent to 1.38 per cent of total global fuel burn. This represents a potential saving of 7.8 million to 15.4 million tonnes of CO₂.

2.3 Sustainable Alternative Fuels

2.3.1 The “basket of measures” recognizes that the use of drop-in sustainable alternative fuels is an important contributor for a sector fully reliant on fuel. ICAO facilitates the deployment of such fuels, including through the establishment of sustainability criteria.

2.3.2 Pursuant to Assembly Resolution A38-18 paragraph 33, ICAO has continued to support States and stakeholders in their efforts to develop and deploy alternative fuels. This includes regular updates to the web-based ICAO Global Framework for Aviation Alternative Fuels (GFAAF)¹, which has enabled the Organization to report on an increasing number of States’ and stakeholders’ initiatives and of cooperative agreements worldwide in the area of sustainable alternative fuels for aviation. There are currently 22 on-going partnerships listed in ICAO’s Global Framework for Aviation Alternative Fuels (GFAAF).

2.3.3 Building on the GFAAF information, ICAO has worked towards providing a range of alternative jet fuels production estimates out to 2050 and the associated potential CO₂ emissions reductions, through the work of CAEP on sustainability criteria of alternative fuels over their life-cycle.

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

2.4 Renewable Energy

2.4.1 ICAO recognizes the need to explore and facilitate aviation's access to renewable energy, including through its cooperation with the Sustainable Energy for All (SE4ALL) initiative. For example, through States' action plans on CO₂ emissions reduction activities (see paragraph 3 below), a number of States intend to engage in the use of renewable energy at airports. As part of its cooperation with the UNFCCC Secretariat, the ICAO Secretariat has been developing aviation methodologies under the UNFCCC Clean Development Mechanism (CDM), including "solar power for domestic aircraft at-gate operations" which is expected to be approved by the CDM Executive Board in May 2016.

3. ICAO STATE ACTION PLANS INITIATIVE

3.1 As per Assembly Resolution A38-18, States were invited to submit their new or updated voluntary action plans for reducing CO₂ emissions from international aviation, and the action plans allow States to identify mitigation actions from a "basket of measures" as well as the assistance needed to implement such measures. In turn, the compilation of information contained in States' action plans facilitates the assessment of progress toward the achievement of the global aspirational goals, as well as to identify the areas of implementation support for States (Resolution A38-18, paragraphs 11 and 12).

3.2 By 25 April 2016, 92 Member States, representing more than 88 per cent of global international air traffic prepared and submitted action plans to ICAO. This result demonstrates the high level of interest and engagement of Member States in this initiative, as well as the effect of ICAO's assistance and capacity-building activities, including the development of guidance material, an interactive website and tools, organization of regional seminars, and the establishment of partnerships with other international organizations, such as those developed with the European Union (EU) and with United Nations Development Programme (UNDP) and the Global Environment Facility (GEF).

3.3 These ICAO partnerships with the EU and UNDP/GEF have facilitated the access of Member States to financial resources, as requested by Resolution A38-18, paragraph 31, with the overarching objective of contributing to international, regional and national efforts to address emissions from international aviation.

3.4 The capacity building and assistance provided by the Organization in connection with the preparation of States' action plans and the active involvement and cooperation by Member States and other stakeholders, have been extensive. However, some challenges remain in terms of the quality of the action plans submitted.

3.5 An initial assessment of the action plans shows that:

- a) Forty (40) States representing 42.46 per cent of global international aviation Revenue Tonne Kilometres (RTKs) included quantified baseline and expected emissions through 2050;
- b) Three (3) States, representing 10.34 per cent of global international aviation RTKs provided partially quantified information; and
- c) Forty-nine (49) States, representing 35.25 per cent of global international aviation RTKs did not provide data or sufficient information to allow a quantified analysis.

3.6 Due to the lack of quantified and robust data in the action plans from States that represent 35.25 percent of global RTK, it was not possible for the Secretariat to compile the global reduction in

CO₂ emissions, with an acceptable level of confidence in the results. This will have to be improved in the next round of submission of action plans, in order to monitor the collective contribution of ICAO Member States to the implementation of the “basket of measures” and the achievement of the global aspirational goals.

3.7 All information related to ICAO State Action Plan initiative and Assistance to States is available at: http://www.icao.int/environmental-protection/Pages/ClimateChange_ActionPlan.aspx

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