



## WORKING PAPER

### ASSEMBLY — 41ST SESSION

#### EXECUTIVE COMMITTEE

#### Agenda Item 16: Environmental Protection – General provisions, Aircraft Noise and Local Air Quality

#### ENHANCING TRANSPARENCY OF CAEP STANDARD SETTING PROCESS FOR THE “DUAL STRINGENCY”

(Presented by China and the 54 Member States of the African Civil Aviation Commission (AFCAC))

#### EXECUTIVE SUMMARY

The authors of this working paper recognize the progress achieved in CAEP/12 cycle and welcome the “dual stringency” process to handle the interdependency between environmental certification standards. The authors of this working paper also believe that it is essential for CAEP to maintain and update the data-driven analysis in standard-setting process. But in order to improve the robustness of the results from environmental trends and cost-benefit analysis, more transparency of the used model and database needs to be enhanced.

Data available from relevant certification authority should be used as the first input options for stringency analysis rather than data from models and databases. Meanwhile there is a need to conduct technical feasibility and economic cost analysis. This will lead to additional technical and financial cost and there is need for support for developing countries in a balanced manner in the final decision making.

**Action:** The Assembly is invited to:

- a) note the information in this working paper and welcome the CAEP's efforts and contributions to the amendments of the aviation environmental protection standards;
- b) recommend the Council to improve the CAEP standard setting process in a more transparent, pragmatic and robust manner; and
- c) recommend the Council to prioritize CAEP's work on New Aeroplane Type only for the “dual stringency” analysis of aircraft CO<sub>2</sub> emission standards.

<i>Strategic Objectives:</i>	This working paper relates to the Environmental Protection Strategic Objective.
<i>Financial implications:</i>	N/A
<i>References:</i>	Annex 16 — <i>Environmental Protection</i> Doc 9501, <i>Environmental Technical Manual</i> CAEP/12 Yellow Cover Report

## 1. INTRODUCTION

1.1 International Environmental Standards and Recommended Practices (SARPs) developed by CAEP, the technical committee of Council, have been adopted by a majority of ICAO Member States. Consequently, the civil aviation regulators have been updating the corresponding national regulations based on those SARPs.

1.2 A series of key technical recommendations, including amendments to Annex 16 Volume I (Aircraft Noise), Volume II (Engine Emissions), Volume III (Aeroplane CO<sub>2</sub> Emission) and Volume IV (CORSA) were developed at the CAEP/12 meeting in February 2022, ensuring that the (SARPs) are up to date for use by ICAO Member States.

1.3 During the CAEP/13 cycle, CAEP will “Conduct an integrated standard setting process, adhering to the CAEP’s ToR, for subsonic aeroplane CO<sub>2</sub> Emissions and LTO Noise with the outcome being more stringent regulatory levels of CO<sub>2</sub> emissions and LTO noise.”

## 2. DISCUSSION

2.1 In the Terms of Reference of CAEP, it is stated that “in its work the Committee shall take into account the effectiveness and reliability of certification schemes from the viewpoint of technical feasibility, economic reasonableness and environmental benefit to be achieved”.

2.2 CAEP also needs to consider the potential interdependence of measures taken to control noise and to control engine emissions, which is reflected in the “dual Stringency analysis” trial. That means in the next CAEP/13 cycle, CAEP will need to acquire the most available resources in order to amend the aeroplane CO<sub>2</sub> emissions and LTO noise standard together. For supersonic aircraft, CAEP will develop an SST LTO Noise SARPs together with engine emissions certification requirements. In the future, a possible integrated turbine engines NO<sub>x</sub> and nvPM standard setting process was also proposed.

2.3 To support CAEP's standards setting work, CAEP has developed a data-driven cost-benefit analysis process to support final decision-making. The use of environmental models and databases ensured the robustness and broad acceptance of the final standards. Those models and databases were also used in the analysis of environmental trends as well as for the feasibility of long-term aspirational climate goals (LTAG).

2.4 Considering the importance of databases and modelling for the standards setting, there is a need to enhance the transparency of modelling and decision making process.

2.5 Once the standards have been developed, on the basis of the TOR of CAEP, it is believed that only actual available data issued by relevant certification authorities for compliance demonstration should be used as the first input options to support the stringency analysis rather than certification-like data from other sources. The use of the actual data could increase the robustness of the final certification standards.

2.6 The latest aircraft Chapter 14 noise standards were fully implemented until 2020. While the relevant certification data shows that stringency could be appropriately increased, the potential cost of the in-service fleet update arising from any possible stringent requirement, especially those from developing countries, should be considered in the final decision making.

2.7 Since the A40-17 Appendix E on noise and air quality in paragraph 4 refers to “Further urges States not to permit the introduction of any operating restrictions aimed at the withdrawal of aircraft that comply , through either original certification or recertification, with the noise standards in Volume 1, Chapter 4 and Chapter 14 of Annex 16 and any further stringency levels adopted by the Council”, the authors of this working paper re-affirm that the “dual Stringency analysis” trial proposed during CAEP/13 cycle shall consider that any operational restrictions should not be imposed based on the noise certification levels only and will be applicable to the “New Types” of aeroplanes only.

2.8 For aeroplane CO<sub>2</sub> emission standards, since implementation from 1 January 2020, only one aeroplane model has completed CO<sub>2</sub> certification, which is not considered as sufficient to support a complete standard setting process. Therefore, although “dual stringency analysis” is a meaningful attempt to capture the interdependency of the standards, it is proposed not to update the existing CO<sub>2</sub> certification regulatory requirements. This could also allow national civil aviation authorities to accumulate enough experience for the possible update in the future.

2.9 It is well known that the international aviation industry is under significant pressure to reduce greenhouse gas emissions globally despite the post Covid-19 pandemic. However, this should not be a reason to update aeroplane CO<sub>2</sub> standards in a rushing manner. Meanwhile there is a need to conduct technical feasibility and economic cost analysis. This will lead to additional technical and financial cost and there is need for support for developing countries in a balanced manner in the final decision making.

### 3. CONCLUSION

3.1 The Assembly is invited to:

- a) note the information in this working paper and welcome the CAEP's efforts and contributions to the amendments of the aviation environmental protection standards;
- b) recommend the Council to improve the CAEP standard setting process in a more transparent, pragmatic and robust manner; and
- c) recommend the Council to prioritize CAEP’s work on New Aeroplane Type only for the “dual stringency” analysis of aircraft CO<sub>2</sub> emission standards.

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