



**WORKING PAPER**

**HIGH LEVEL MEETING ON THE FEASIBILITY OF A LONG-TERM  
ASPIRATIONAL GOAL FOR INTERNATIONAL AVIATION CO<sub>2</sub> EMISSIONS  
REDUCTIONS (HLM-LTAG)**

Montréal, 19 to 22 July 2022

**Agenda Item 1: CO<sub>2</sub> emissions reduction scenarios and options for a long-term global aspirational goal for international aviation**

**Agenda Item 3: Means of monitoring progress and next steps**

**Agenda Item 4: Conclusions and Recommendations of the Meeting**

**TOWARDS AN AMBITIOUS LONG-TERM GLOBAL ASPIRATIONAL GOAL FOR  
INTERNATIONAL AVIATION**

(Presented by Czechia on behalf of the European Union and its Member States<sup>1</sup> and the other Member States of the European Civil Aviation Conference<sup>2</sup>)

**SUMMARY**

Significant CO<sub>2</sub> emissions reductions from international aviation in line with the temperature goals of the Paris Agreement are needed. The Long-Term Aspirational Goal (LTAG) report prepared by CAEP contains an analysis of scenarios on CO<sub>2</sub> emissions, costs and impacts on aviation growth, in all countries especially developing countries.

A monitoring system should be set up, to be adopted by the Council by the end of 2023. It should take account of trajectory milestones at least for 2030 and 2040.

An ambitious LTAG should cover in-sector CO<sub>2</sub> emissions no higher than one third of 2019 levels in 2050, with a net-zero CO<sub>2</sub> emissions aspiration by 2050.

Action by the Meeting is in paragraph 4.

**1. CO<sub>2</sub> EMISSIONS REDUCTION SCENARIOS AND OPTIONS FOR A LONG-TERM  
GLOBAL ASPIRATIONAL GOAL FOR INTERNATIONAL AVIATION**

1.1 The Special Report ‘Global Warming of 1.5°C’ of the Intergovernmental Panel on Climate Change (IPCC)<sup>3</sup> warned that without significant reductions in global emissions, we might reach a temperature increase of 1.5°C as early as 2030. The IPCC recently identified aviation as one of “the fastest growing sources of sub-sector emissions from 2010 to 2019”<sup>4</sup> and found that “additional CO<sub>2</sub> emissions mitigation technologies

<sup>1</sup> Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.

<sup>2</sup> Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Georgia, Iceland, Moldova, Monaco, Montenegro, North Macedonia, Norway, San Marino, Serbia, Switzerland, Turkey, Ukraine and United Kingdom.

<sup>3</sup> [www.ipcc.ch/sr15/](http://www.ipcc.ch/sr15/)

<sup>4</sup> “Climate change 2022 – Mitigation of Climate Change – IPCC, 04.04.2022. [IPCC\\_AR6\\_WGIII\\_FinalDraft\\_FullReport.pdf](https://www.ipcc.ch/report/ar6/wgiii/)

for aviation and shipping will be required”. It further found that “current sectoral levels of ambition vary, with emission reduction aspirations in international aviation and shipping lower than in many other sectors”.

1.2 This calls for the international aviation sector not only to meet ICAO’s aspirational goal of Carbon Neutral Growth from 2020 onwards (CNG2020) but to achieve significant emissions reductions in line with the temperature goals of the Paris Agreement.

1.3 The States presenting this paper strongly support the ICAO basket of measures as key means to achieving ICAO’s CNG2020 target, and the aspirational global fuel efficiency improvement rate of 2 per cent per annum from 2021 to 2050. These States and their aviation industries have taken action, as reported in the 2022 European Aviation and Environment Report (EAER)<sup>5</sup> and in State Action Plans.

1.4 ICAO has made good progress but its efforts so far are not sufficient to secure global long term sustainable development of aviation. Responding to Resolution A40-18, the ICAO Council explored the feasibility of a long-term global aspirational goal (LTAG) for international aviation CO<sub>2</sub> emissions reductions. The Committee on Aviation Environmental Protection (CAEP) presented the LTAG report to the Council, which at its 225<sup>th</sup> Session approved its publication and agreed that it serves as the basis for consideration of a LTAG.

1.5 The report, widely acclaimed for its quality, thoroughness and depth, follows an analysis of scenarios on CO<sub>2</sub> emissions and associated costs and impacts on aviation growth, in all countries especially developing countries. Through its integrated scenarios, it shows that different levels of investment in research and development, in penetration of technologies, sustainable aviation fuels (SAF) and operational improvements lead to various long-term emission trajectories. The report has demonstrated the feasibility of a long-term global aspirational goal for international aviation: all three integrated scenarios are feasible at varying levels of effort. The report contains roadmaps corresponding to the different scenarios.

1.6 While these scenarios represent the range of readiness and attainability, other combinations of measures could reach similar levels of emissions at equivalent or lower cost. Any forecast into the long-term future inevitably attracts significant uncertainty, as documented in the LTAG report. Additional time and data would neither significantly reduce this uncertainty nor change the overall results.

1.7 The report places the integrated scenarios in the context of latest consensus climate science, showing the share of international aviation emissions in relation to wider economy emissions reduction targets in different scenarios. It shows that international aviation can significantly reduce its emissions by the middle of this century using in-sector measures. It also shows that there will be residual emissions in any scenario based on in-sector measures alone. In view of the IPCC global CO<sub>2</sub> emissions pathways, this means aviation may need to rely on permanent removals of carbon to be fully consistent with 1.5°C.

1.8 The authors of this paper would like to emphasise their understanding of an “aspirational” goal. This is a global goal that all States should strive to attain collectively, where the sum of actions, in light of different national circumstances and respective capabilities, should equal the goal, while not setting specific obligations in the form of emission reduction goals on individual States. Different States may make varying progress in meeting the goal. Due to the cross-boundary nature of international aviation, the LTAG should be global and be addressed by ICAO.

## 2. MEANS OF MONITORING PROGRESS AND NEXT STEPS

2.1 It will be essential to monitor progress towards any aspirational goal. A monitoring system should be set up, to be adopted by the Council by the end of 2023 avoiding duplication with existing mechanisms and processes as far as possible. The Council should adopt the monitoring, reporting and verification rules taking into account trajectory milestones at least for 2030 and 2040.

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<sup>5</sup> [www.easa.europa.eu/eaer](http://www.easa.europa.eu/eaer)

- 2.2 Initial views on monitoring, reporting and verification are that the system to be established is to:
- Build upon the monitoring, reporting and verification established under CORSIA.
  - Not only fuel burn, but also changes in the aviation value chain: technology advances, deployment of new aircraft, sustainable aviation fuels, operational improvements should be monitored.
  - Take into account CORSIA rules such as CO<sub>2</sub> life-cycle values for CORSIA eligible fuels.
  - Consider out-of-sector measures for carbon sinks/ permanent removals while ensuring that no double counting may arise for emission reductions in the context of Nationally Determined Contributions under the Paris Agreement.
- 2.3 Guidance on the format of State Action Plans should be elaborated and communicated to States by end of 2023 building, as appropriate, on the information already provided in the State Action Plans.
- 2.4 A global stocktake process on the updated State Action Plans received, and initial evaluation of their cumulated ambition should be carried out by the ICAO Secretariat.

### 3. CONCLUSIONS AND RECOMMENDATIONS

- 3.1 In order to keep up with other sectors' ambition, a long-term emissions reduction trajectory including an "aspirational" goal for the global aviation sector needs to be set at the 41st Session of the Assembly. Establishing a common aspiration will enhance certainty for the aviation industry and incentivise investment and innovation focused on this common goal which would benefit the sector. Further, it would strengthen rather than challenge ICAO's leadership in promoting sustainable aviation.
- 3.2 The States presenting this paper underline the importance of addressing the impact of international aviation on climate change with an ambitious long-term perspective and call for ICAO to agree on a long-term aspirational goal for international aviation, consistent with the 1.5°C goal of the Paris Agreement and in line with the commitments of the industry to a net zero goal in 2050.
- 3.3 As with CNG2020, the long-term goal would need to take into account special circumstances and respective capabilities.
- 3.4 The authors consider that an ambitious Long-term Aspirational Goal should cover the following:
- In-sector CO<sub>2</sub> emissions no higher than one third of 2019 levels in 2050, which means around 200 MtCO<sub>2</sub>.
  - Trajectory milestones of in-sector annual emissions of around 500 MtCO<sub>2</sub> in 2030 and around 400 MtCO<sub>2</sub> in 2040.
  - A net-zero CO<sub>2</sub> emissions aspiration by 2050 with a primary role of in-sector reductions and limited out-of-sector reductions through carbon sinks / permanent greenhouse gas removals.
- 3.5 Each element of the basket of measures should be used based on a decision by the Assembly on a LTAG. The LTAG report indicates that in all scenarios, the biggest share of emission reductions comes from use of SAF. ICAO should work on a global framework for their deployment in a sustainable manner at the ICAO Conference on Aviation and Alternative Fuels (CAAF/3) in 2023.
- 3.6 The authors also underline the importance of developing means of implementation for assisting countries in the implementation of LTAG as well as means of monitoring.

### 4. ACTION BY THE HLM-LTAG

- 4.1 The HLM-LTAG is invited to:
- a) agree to retain options for a LTAG that include a goal consistent with the temperature goals of the Paris Agreement, such as net-zero international aviation CO<sub>2</sub> emissions by 2050, with milestones at least for 2030 and 2040 and with marginal reliance on carbon sinks/ permanent removals;

- b) agree to launch a process towards establishing, by the end of 2023, the means to monitor, report and verify the progress for the achievement of a LTAG; and
- c) recognise the major role of sustainable aviation fuels in reducing the CO<sub>2</sub> emissions, and agree to set at CAAF/3 in 2023 a global framework for their deployment in a sustainable manner.

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