



WORKING PAPER

COMMITTEE ON AVIATION ENVIRONMENTAL PROTECTION (CAEP)

TWELFTH MEETING

7 to 18 February 2022

Agenda Item 16: Future work

VIEWS OF THE UNITED STATES ON FUTURE WORK IN THE CAEP/13 CYCLE

(Presented by the United States of America)

SUMMARY

This paper presents the views of the United States on several “CAEP-wide” items for CAEP’s consideration. In particular, the paper highlights the need to prioritize CAEP tasks and increase transparency within CAEP. In addition, specific future work tasks suggested by the United States are captured in individual papers.

Action by the CAEP is in paragraph 5.

1. INTRODUCTION

1.1 The United States has identified in other WPs specific future work items for the CAEP/13 cycle. See CAEP/12-WP/63 for items related to Emerging Technology Aircraft; CAEP/12-WP/64 for items related to Supersonic Noise; CAEP/12-WP/62 for items related to Emissions Future Work, and CAEP/12-WP/60 for items related to WG4. In addition to those specific items, this paper provides several overarching considerations for CAEP that apply across the entire work program along with proposed future work within the ISG, which are focused on non-CO₂ climate impacts.

2. PRIORITIZATION AND THE OVERALL CAEP WORK PROGRAMME

2.1 CAEP/12, again, saw a significant increase to the CAEP work programme, due in large part to two specific items: (1) the work to explore the feasibility of a long-term aspirational goal on climate, and (2) the analyses carried out to assess the impacts of and forecasting the recovery from the COVID-19 pandemic. These tasks resulted in a significant strain on CAEP resources. In addition, these unexpected work items came during CAEP’s transition to a new and untested virtual meeting environment. While the virtual CAEP environment has allowed groups to “meet” without travel, the frequency of these meetings

has, in some cases, reduced the effectiveness of the work between meetings, as the time to work on the tasks was limited.

2.2 To help address the issue of workload and resources, we recommend that the CAEP prioritize work items when developing the work program.

2.3 CAEP's responsibility for tasking to various working groups and task forces includes ensuring that tasks have adequate resources. The United States recommends that as CAEP agrees to the CAEP/13 work programme recommendations at this meeting, CAEP give due consideration to "prioritization" of tasks.

2.4 Prioritization is always a challenge across the CAEP work program. However, in establishing priorities, CAEP should consider both (1) the resources needed to complete each individual task and the number of experts provided by each Member and Observer who will actively participate in the completion of that task, and (2) the breadth of support for an individual task within CAEP. When considering the CAEP/13 work programme, we recommend asking each of these questions for every proposal and based on the responses assign each task a "priority ranking" from 1 (highest priority) to 3 (lowest priority).

3. **TRANSPARENCY**

3.1 The United States recommends that CAEP should seek to increase the transparency of its decision-making processes to improve its accountability to the public it seeks to serve. In line with other UN bodies, transparency could best be achieved by making all papers for key CAEP decision meetings publicly available in advance of the meetings. Such practice would be aligned with other UN bodies, notably the UNFCCC¹ and International Maritime Organization.²

3.2 However, as a Committee of the Council, CAEP is limited in the unilateral actions it can take to publicize its documentation by the Council's rules. Nevertheless, we are confident that within its remit and Terms of Reference, there are opportunities for CAEP to allow for increased transparency in a way that is beneficial to stakeholders, Member States, and ICAO.

3.3 To help facilitate increased transparency within CAEP, we propose that interested CAEP Members establish a small group to discuss possibilities on this front, with a goal of submitting a proposal to increase transparency to SG1 for consideration. The United States commits to lead by example by making available all U.S. papers in advance of annual CAEP Steering Group as well as triennial CAEP meetings.

4. **CAEP/13 ISG FUTURE WORK**

4.1 **Air Quality and Climate Impacts Interdependencies and Trade-Offs**

4.1.1 Sustainable Aviation Fuels (SAF) will be key for aviation to reduce its climate impacts. Neat SAF are also free of sulphur and aromatic hydrocarbons. Drop-in SAF blends result in a large reduction in fuel sulphur and aromatics, leading to lower sulphur and non-volatile particulate matter (nvPM) emissions. A reduction in these non-CO₂ pollutants have a direct impact on air quality, health and climate impacts. These emissions also have an indirect impact on the formation of contrails and contrail radiative forcing. The benefits of SAF usage extend beyond just mitigating CO₂ climate impacts.

¹ UNFCCC COP26 meeting documents: <https://unfccc.int/documents?f%5B0%5D=conference%3A4301>.

² Public registration for IMO web account: <https://webaccounts.imo.org>.

4.1.2 As the market penetration of SAF increases, there will be corresponding reductions in Sulphur Oxides (SO_x) and non-volatile particulate matter (nvPM) emissions. From a climate perspective, sulphur particles contribute to cooling and the non-volatile particulate matter (nvPM or black carbon) to warming. From an air quality perspective, both contribute to overall particulate matter concentrations that have negative health consequences. In contrast, use of SAF does not affect the emissions of Nitrogen Oxides (NO_x). The general focus from a technology perspective has been to improve fuel efficiency and recent studies show that this results in increased NO_x emissions and therefore has a negative impact on air quality and health impacts. In addition, both air quality and climate impacts have a strong dependence on the evolution of background chemical composition in the future.

4.1.3 In this context, a scientific assessment on the impact of other pollutant emissions on both climate and air quality will be timely. If scientific findings for a range of future scenarios are available in the literature, it will help inform CAEP of likely future aviation impacts. Therefore, the United States proposes ISG develop a report on the air-quality and climate impacts of SO_x, NO_x, and nvPM emissions (i.e., non-CO₂) summarizing the latest scientific knowledge and the levels of uncertainty for the past, present, and likely future scenarios. This report should also include any known interdependencies and trade-offs in mitigating both air quality and climate impacts.

4.2 Aviation Induced Cloudiness (AIC)

4.2.1 Recent literature estimates positive radiative forcing (i.e., warming) from AIC to be of the same order as aviation CO₂, though the uncertainty in AIC radiative forcing is quite large. Recent measurement campaigns have been conducted and other modelling efforts are in progress to quantify the impacts of AIC for current and future aviation scenarios. Results from these efforts are likely to be published in the scientific literature in the next year. There are also efforts underway to develop decision support tools to avoid contrail formation by effective rerouting of aircraft. With these advancements, our understanding of the contrail radiative forcing and mitigation approaches will improve during the next CAEP cycle.

4.2.2 In this context, the United States recommends ISG conduct a workshop for ISG to obtain input from internationally recognized contrail science experts. Based on the knowledge gathered from this workshop, the United States proposes ISG develop a summary report on: a) state of knowledge of AIC radiative forcing along with uncertainties; b) impact of SAF on AIC climate impacts; c) state of knowledge of contrail prediction and accuracy; and d) status of warming contrail mitigation efforts. As the need to reduce aviation's climate footprint is becoming more urgent, this report will provide the state of science and the need and inform CAEP of the available pathways for mitigating persistent warming contrails.

5. ACTION BY THE CAEP

5.1 The CAEP is invited to:

- a) agree to the suggested approach for prioritizing CAEP future work in section 2.4;
- b) agree to establish a small group of interested CAEP Members to discuss opportunities to increase transparency within CAEP and submit a proposal to Steering Group 2022; and
- c) agree to the ISG future work proposals outlined in paragraphs 4.1 and 4.2 for the CAEP/13 cycle.