



WORKING PAPER

HIGH-LEVEL MEETING ON INTERNATIONAL AVIATION AND CLIMATE CHANGE

Montréal, 7 to 9 October 2009

Agenda Item 3: Means to measure progress

MEANS TO MEASURE PROGRESS

(Presented by the Secretariat)

SUMMARY

This paper outlines the work by ICAO to estimate greenhouse gas emissions from aviation, summarizes the discussions by the GIACC on means to measure progress toward achieving emissions reduction goals for international aviation, and describes the reporting requirements of the UNFCCC, for the consideration of the HLM-ENV.

Action by the HLM-ENV is in paragraph 5.

1. INTRODUCTION

1.1 The availability of reliable information on greenhouse gas (GHG) emissions as well as on how governments are implementing their commitments under the United Nations Framework Convention on Climate Change (UNFCCC) process has been recognized as one of the key issues for the success of the Convention and its Kyoto Protocol. Estimating emissions from aviation has been a challenge for a number of countries primarily due to lack of the necessary statistical information. The methodology used by the UNFCCC to estimate GHG emissions from international aviation was developed by the Intergovernmental Panel on Climate Change (IPCC) with the support of ICAO. In the context of the Bali Action Plan, the concept of measurable, reportable and verifiable action by all Parties is one of the main elements under negotiation within the UNFCCC process.

1.2 For nearly four decades, ICAO has been improving estimates of aircraft emissions through the use of models and complex methodologies and has a longstanding and close working relationship with the IPCC on aviation related matters. This cooperation includes providing the IPCC with fuel consumption and emissions data from validated aviation models; delivering revised and updated emissions factors; and recommending options for improving the methodologies for estimating and reporting GHG emissions from international aviation. At ICAO's request, the IPCC prepared a special

report titled “Aviation and the Global Atmosphere,” and its third and fourth assessment reports have discussed approaches to accounting for the effects of GHG emissions released by aircraft in flight.

2. ICAO’S WORK TO ESTIMATE GHG EMISSIONS

2.1 ICAO’s Committee on Aviation Environmental Protection (CAEP) has devoted significant resources towards developing a robust capability to estimate GHG emissions from aviation. During the current CAEP analysis cycle, which began in 2007, four models were reviewed and found acceptable for preparing these estimates. Using a range of scenarios, preliminary estimates of CO₂ emissions for the period 2006 through 2050 were presented to GIACC/4.

2.2 In addition, ICAO has developed an impartial and peer reviewed on-line tool, the “ICAO Carbon Emissions Calculator” that is publicly available through the ICAO website. This Calculator estimates the CO₂ emissions from air travel for use in offset programs. It allows passengers to estimate the emissions attributed to their air travel through a simple interface that requires the user to enter only their origin and destination airports, and their class of service. The methodology used by the calculator was developed through CAEP and 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. This calculator is being used throughout the United Nations system to prepare inventories of CO₂ emissions from air travel in support of the Climate Neutral UN initiative.

3. GIACC DISCUSSIONS ON MEANS TO MEASURE PROGRESS

3.1 The third meeting of GIACC agreed that States should report traffic and fuel consumption annually in accordance with ICAO requirements under Article 67, and that the Secretariat should continue to provide technical assistance to States regarding the reporting procedures. It also agreed to request that the Secretariat report to GIACC/4, elaborating on how ICAO could improve or enhance the data collection process to support monitoring of progress toward goals. In addressing this issue, data available from other sources, including the aviation industry as well as the scope of the UNFCCC reporting requirements, should be taken into consideration in order to avoid, as much as possible, any duplication of efforts.

3.2 In order to better understand the challenges associated with collection of fuel data for aviation, the ICAO Secretariat convened a meeting on fuel data collection that brought together more than 20 experts in international policy, inventory preparation, sources of available data, and verification procedures. These experts provided their perspective regarding the future collection of aviation fuel consumption data and its use to carry out environmental analyses and assessments. The meeting noted the importance of the ability to compare the collected data with those from other organizations, to produce consistent estimates, and to define accurately the data that are to be provided. The meeting recognized that the collection of fuel consumption data enhances the ability of the Organization to conduct environmental analysis and complements other more sophisticated evaluation tools currently used such as modelling based on trajectory data. However, the conclusion of the meeting made clear that a single form of data collection cannot address the full range of possible aviation environmental analyses.

3.3 The issue of the burden placed on States to report fuel consumption data both to ICAO and the UNFCCC was discussed during the fourteenth meeting of the ICAO Statistics Panel (STAP/14) held in March 2009, with a view to arriving at a harmonization of these two processes. The panel noted

that since the data reporting procedures of ICAO and UNFCCC are based on different principles (ICAO by air carriers as described in Article 67 of Chicago Convention, and the UNFCCC by country of departure) and serve (in certain respects) different purposes, it would be difficult to harmonize them. Moreover, it was confirmed that the data reported to the UNFCCC do not come from the same sources as the data being reported under the Article 67 mechanism of ICAO.

3.4 The STAP/14 concluded that the collection of data on fuel consumption by air carriers would be needed to estimate the actual global air transport fuel consumption, and endorsed the change to the ICAO Statistics Programme by recommending the introduction of a new form for reporting fuel consumption by commercial air carriers. The tenth session of the Statistics Division (STA/10) in November 2009 will consider the STAP/14's proposal regarding the implementation of fuel consumption data collection by commercial air carriers, in order to make a recommendation to the Air Transport Committee and the Council to modify the ICAO Statistics Programme by adding this new data collection requirement.

3.5 The final report of the GIACC recommended that the ICAO "Council direct the Secretariat to develop and implement a mechanism under Article 67 of the Convention to collect annually from States data on traffic and fuel consumption" and that the "cumulative progress achieved by States on a global level should be reported by ICAO on a triennial basis to the Assembly."

3.6 Data collected under Article 67 of the Convention will provide a perspective on the progress achieved in line with quality of the data received. As with the other data collected by ICAO through Article 67, there are regional differences in the level of response and in the quality of information provided to ICAO. There is therefore a need for an independent means of verifying the data received, so as to account for data gaps and to assess data errors. Modelling of traffic and fuel consumption provides a means of overcoming these limitations by delivering a global estimate generated through an independent means. While ICAO does not currently have the modelling capabilities to provide this type of verification/validation of global aviation system efficiency, the models evaluated through CAEP show tremendous promise in this area. With an appropriate investment, the ability to integrate data collected through Article 67 with a modelled result, such as that generated by CAEP, to deliver a more reliable and verifiable means of measuring progress becomes possible.

3.7 These data could also be reported to the UNFCCC on a regular basis and could be used to assess progress made by the international aviation sector in the context of sector-specific activities implemented as part of a future global agreement on climate change.

3.8 The GIACC also recommended the development and reporting of action plans by States on their policies and actions to address emissions from their international aviation sector to enable ICAO to measure progress made in implementing measures to reduce aviation emissions.

4. DATA REPORTING REQUIREMENTS OF THE UNFCCC

4.1 In accordance with the UNFCCC reporting guidelines on national greenhouse gas inventories, GHG emissions from international aviation and maritime transport should be calculated as part of the national GHG inventories of Parties to the UNFCCC, but should be excluded from national totals, and be reported separately. Information submitted by developed countries undergoes a thorough technical assessment as part of the review process established under the UNFCCC process.

4.2 According to the guidelines for GHG inventories under the Convention and the Kyoto Protocol, emissions from international aviation should be estimated in accordance with the methodologies developed by the IPCC. Currently, the methodologies that are being used are the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories as elaborated by the IPCC Good Practice Guidance and uncertainty management for national GHG inventories. These guidelines contain definitions for domestic and international flights that are based on the point of origin and destination of passengers or freight and should be applied irrespective of the nationality of the carrier/operator.¹

4.3 The calculation of GHG emissions is based on the fuel consumption and the use of specific emission factors for different GHGs. The IPCC guidelines provide different Tiers of methods (the higher the tier the more complex the methodology) for use with the available fuel consumption data. These methodologies need to be applied consistently over time to ensure the consistency of the emissions time-series.

4.4 Although the estimation and reporting of these emissions have improved over time, there are still challenges associated with obtaining disaggregated fuel data. For instance, there is no uniform approach for data collection (e.g. some countries distinguish between domestic and international fuels using surrogate data such as fuel taxation, expenditures and information on the flag or country of registration of carriers, while others rely on data provided by oil companies or from operators). Furthermore, in some countries there are multiple definitions of international transport that are used by different national agencies/authorities. In some instances, such problems have led to the assumption that all fuel has been used either for international or for domestic transport. For Annex I Parties such an assumption could lead to the miscalculation of total national emissions and, consequently, to potential compliance problems.

4.5 In addition to the information reported by developed countries annually, developing countries also report information on GHG emissions from international aviation and maritime transport provided that they have the necessary disaggregated data. Developing countries, however, are not required to provide emissions estimates for all the years since 1990. Following the provisions in the reporting guidelines, the majority of developing countries report data either for 1990 or for 1994. Therefore, under the UNFCCC process, there are no data for the whole sector covering all countries and all years from 1990 to the present year.

4.6 The UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA), at its twenty-eighth session, received information from ICAO on the ongoing work related to emissions from fuel used for international aviation. During this meeting, the SBSTA recognized the need to continue the cooperation and information exchange between ICAO and the UNFCCC. SBSTA 28 agreed to further consider issues relevant to this issue at SBSTA 32 (tentatively scheduled for 31 May - 11 June 2010).

5. ACTION BY THE HIGH-LEVEL MEETING

5.1 The HLM-ENV is invited to:

- a) emphasize the leading role of ICAO especially in regard to its experience and expertise with the collection, processing and publication of reliable data on the international aviation sector;

¹ The IPCC 2006 Guidelines for National Greenhouse Gas Inventories contain simpler definitions for domestic and international flights and sea voyages that involve only their final destination. No decision has been taken on the possible use of these guidelines within the UNFCCC process.

- b) recognize the importance for ICAO to have adequate aviation emissions-related information and modelling capabilities, as indicated in paragraph 3.6, in order to assess and measure progress made in implementing measures to reduce its contribution to climate change;
- c) request that ICAO establish a mechanism to measure/estimate and verify global GHG emissions from international aviation;
- d) request States to support the work of ICAO on measuring progress through the reporting of annual data on traffic and fuel consumption;
- e) request States to develop and report action plans which outline policies and actions to address emissions from their international aviation sector;
- f) request States to continue to support the efforts of ICAO on enhancing the reliability of measuring/estimating global GHG emissions from international aviation through, inter alia, the improvement of the modelling capabilities of the Organization; and
- g) request that ICAO regularly report GHG emissions from international aviation to the UNFCCC as part of its contribution to assessing progress made in the implementation of actions in the sector.

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