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**GLOBAL**

ICAO: UNITING AVIATION ON CLIMATE CHANGE  
([HTTP://WWW.ICAO.INT/ENV](http://www.icao.int/env))

## UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)

### The Thirty-eighth Session of the UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA38) (3 to 14 June 2013 – Bonn, Germany)

#### Agenda Item 10 (e)

#### Emissions from fuel used for international aviation and maritime transport

(Submission by the International Civil Aviation Organization (ICAO))

#### Executive Summary

ICAO and its Member States are taking concrete steps for coordinated and comprehensive actions to address CO<sub>2</sub> emissions from international aviation, in order to reach our ultimate goal of ensuring the sustainable future of international aviation.

Following the adoption of Resolution A37-19 by the 37th Session of the ICAO Assembly, which invited ICAO Member States to voluntarily submit of action plans on CO<sub>2</sub> emissions reduction activities, since 2011, the Organization has undertaken intense capacity-building activities facilitating, within just a few years, the preparation and submission of States' action plans that represent approximately 80 per cent of global air traffic, and this coverage is expected to reach 90 per cent by the end of 2013.

ICAO has continued to develop policies, Standards, guidance and tools to facilitate the implementation of “a basket of measures”, from which Member States select in their action plans. Progress has been achieved in all the elements of the basket, including technical Standards, operational measures, sustainable alternative fuels and market-based measures. Each element of the basket can be used to achieve ICAO's collective global aspirational goals of improving annual fuel efficiency by 2 per cent and stabilizing global CO<sub>2</sub> emissions at 2020 levels.

The Organization is also focusing on how to best support Member States that need assistance for the implementation of measures identified in their action plans. ICAO has been exploring partnerships with other international organizations, with a view to establishing processes that can facilitate finance to Member States that need such assistance.

The achievement of global aspirational goals for the international aviation sector require adequate financial resources within the sector itself. In this regard, the ICAO Council in March 2013 agreed that ICAO and its Member States need to express a clear concern, in particular through the UNFCCC process, to ensure that international aviation would not be targeted as a source of mobilizing revenue for long-term climate finance in a disproportionate manner.

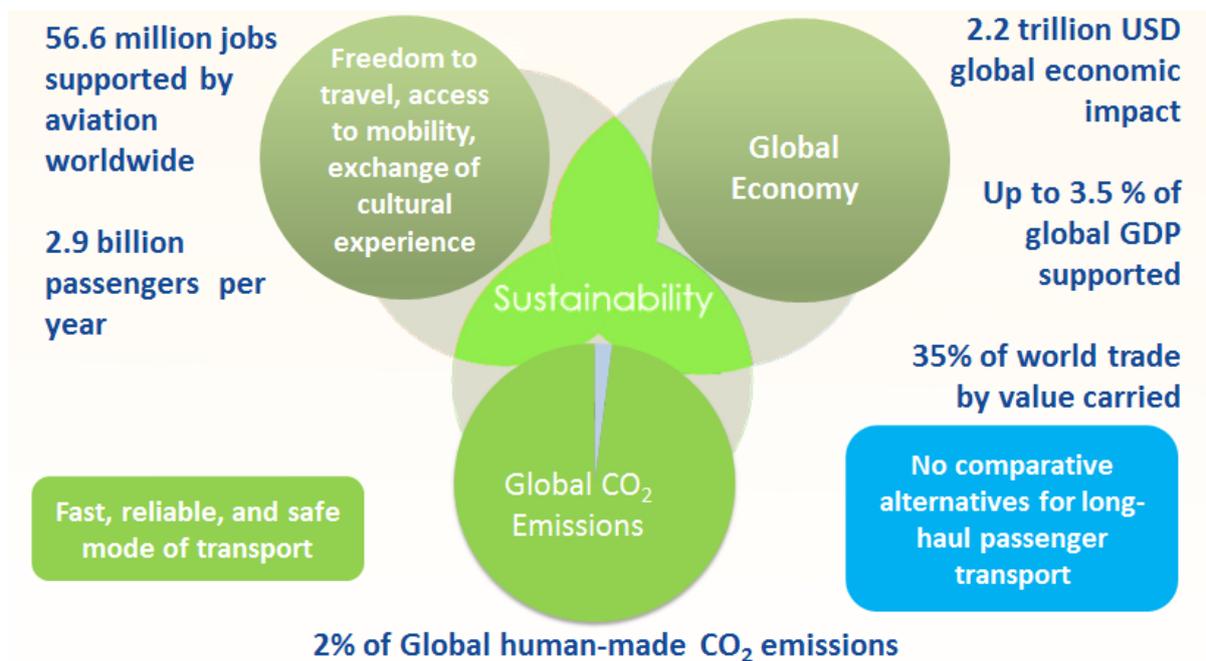
Significant progress has been achieved since the last Assembly, which was shared during the ICAO Symposium held in May 2013 (<http://www.icao.int/Meetings/Green>), to facilitate well-informed decision-making at the upcoming 38th ICAO Assembly in September 2013. ICAO is working with its Member States and relevant international organizations in moving forward on a global solution to address emissions from international aviation, aiming at achieving further progress at the 38th Assembly, bringing ICAO one step closer to the ultimate goal of a sustainable future of international aviation.

## 1. INTRODUCTION

1.1 ICAO and its Member States, in cooperation with the aviation industry, are engaged in various initiatives to meeting our responsibilities for the sustainable future of international aviation, maximizing its support for social benefits and economic development, while reducing its impact on the environment (Figure 1). Through the increased use of low-carbon technologies, environmentally friendly materials, new aircraft systems and sustainable energy sources, the air transport sector is also making significant advances across the environmental pillar of sustainable development.

1.2 Resolution A37-19<sup>1</sup> adopted by the 37th ICAO Assembly in 2010 was an important step towards a sustainable air transport future, and made international aviation the first sector with global aspirational goals of improving annual fuel efficiency by 2 per cent and stabilizing its global CO<sub>2</sub> emissions at 2020 levels.

1.3 Since the Assembly, ICAO and its Member States have been engaged in various initiatives and made important progress in the field of international aviation and climate change, focusing on: 1) technological and operational measures; 2) sustainable alternative fuels for aviation; 3) market-based measures; 4) States' action plans; 5) assistance to States; and 6) global aspirational goals, in order to move international aviation closer to a sustainable future.



Source: ICAO, Intergovernmental Panel on Climate Change (IPCC), Air Transport Action Group (ATAG)

Figure 1: Aviation's contributions to three pillars of sustainability<sup>2</sup>.

## 2. ICAO PROGRESS AND NEXT STEPS

### Technological and Operational Measures

2.1 A major area of activity in the field of international aviation and climate change is the development of a technical CO<sub>2</sub> certification Standard for aircraft, being undertaken by the ICAO Committee on Aviation Environmental Protection (CAEP). Significant efforts were directed to achieving the consensus agreement of certification requirements at the ninth CAEP meeting in

<sup>1</sup> <http://www.icao.int/environmental-protection/Pages/Assembly.aspx>

<sup>2</sup> <http://www.icao.int/Meetings/Green/Documents/day%201pdf/opening%20speeches/Opening-Hupe.pdf>

February 2013, which allowed ICAO to move to the next stages on the analysis of an appropriate regulatory limit for the Standard.

2.2 Operational measures are also one of the elements in a basket of measures available to States to reduce aviation emissions. In order to provide States with the ability to assess the environmental benefits of operational measures, the ICAO Fuel Savings Estimation Tool (IFSET) and guidance for environmental assessment of operational improvements were developed. ICAO is also assessing environmental benefits of the first modules of the Aviation System Block Updates (ASBU) strategy, which is a major initiative under ICAO to improve global air navigation efficiency.

### Sustainable Alternative Fuels for Aviation

2.3 Sustainable alternative fuels for aviation may offer one of the most promising opportunities for reducing the aviation sector's greenhouse gas (GHG) emissions. ICAO has been providing a forum for the exchange of information on the state of worldwide activities in this area. Today, the use of drop-in biofuels in aviation is a reality as they do not require changes to aircraft or fuel delivery infrastructure, and airlines are already using such fuels from a variety of feedstocks in their commercial flights. On the occasion of the United Nations Conference on Sustainable Development (UNCSD, Rio+20 Conference) in June 2012, ICAO organized, in close cooperation with the industry partners, a series of four connecting commercial flights from Montréal to Rio de Janeiro, which were all powered by sustainable alternative fuels. All the initiatives being undertaken worldwide are updated at the ICAO Global Framework for Aviation Alternative Fuels (GFAAF) web-based platform (See Figure 2).



Figure 2: ICAO Global Framework for Aviation Alternative Fuels (GFAAF)<sup>3</sup>.

2.4 Technological aspects of alternative fuels for aviation have proven to be viable. The next challenge is to enable such fuels to be available in a timely and commercially viable manner with sufficient quantities for use in aviation. In 2012, building upon the existing policies and measures, and current initiatives and best practices undertaken by States and organizations, an ICAO expert group undertook work to develop a set of policy recommendations to promote and further facilitate the

<sup>3</sup> <http://www.icao.int/environmental-protection/Pages/alternative-fuels.aspx>

development and deployment of sustainable alternative fuels for aviation, which will be considered by the ICAO Council in June 2013.

## Market-based Measures (MBMs)

2.5 The 37th ICAO Assembly agreed on the development of a framework for MBMs, and decided to explore a global MBM scheme for international aviation. In cooperation with experts nominated by Member States and international organizations, ICAO has been undertaking intensive work on the development of a framework to guide the application of national or regional MBMs for international aviation, as well as the feasibility of options for a global MBM scheme, including the consideration of practical means to accommodate special circumstances and respective capabilities of Member States, as well as quantitative assessment of the economic impacts of a global MBM scheme on international aviation.

2.6 In November 2012, the Council agreed on the establishment of a High-level Group that would focus on fundamental policy issues, including those related to MBMs. The High-level Group met three times, the outcome of which will be considered by the Council in June 2013, and a proposal of the Council will subsequently be considered by the 38th Assembly in September 2013.

## States' Action Plans

2.7 In addition to the traditional “Standards and policies setting” role of ICAO related to international aviation and climate change, Resolution A37-19 transitioned the Organization’s policy outlook to a more action-oriented “implementation mode”. The action plans allow States to identify their basket of mitigation measures and assistance needs to implement such measures. In turn, the compilation of information contained in the States’ action plans enables ICAO to assess the progress toward achieving the global aspirational goals, as well as identify the areas of implementation assistance needed towards the provision of such assistance to States.

2.8 To assist States to voluntarily submit action plans prior to June 2012, as set forth by the Assembly, ICAO developed a guidance document, template and web interface (Figure 3), as well as organized eight hands-on workshops, by which 91 Member States representing 93 per cent of global international air traffic were trained (Figure 4). Over 200 teleconferences have been organized thus far to directly contact national focal points and provide further support.

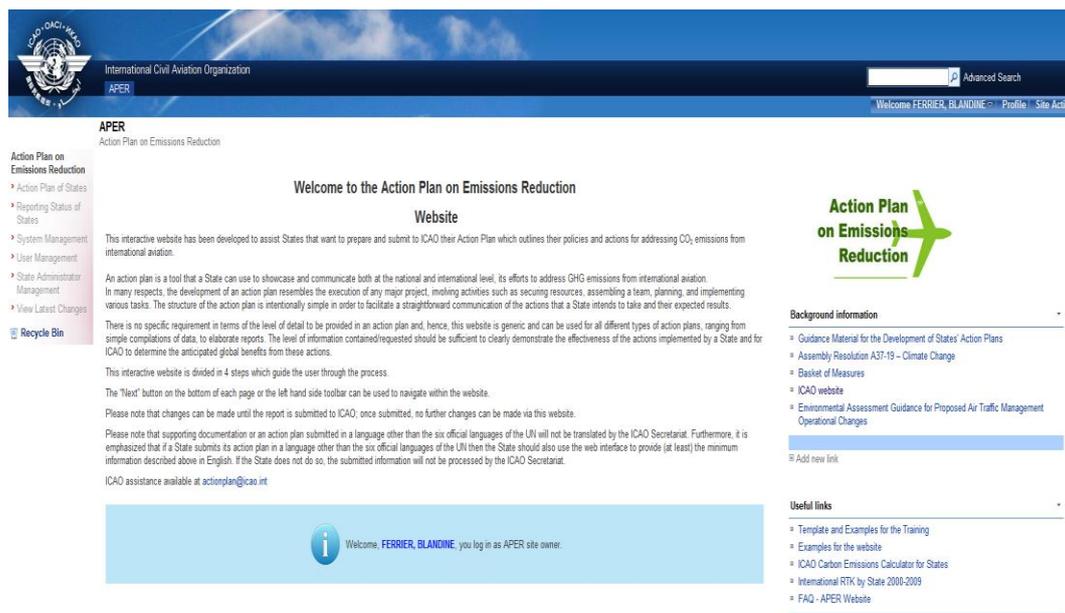


Figure 3: ICAO Web-Interface to assist preparation and submission of Member States' action plans<sup>4</sup>.

<sup>4</sup> <http://www.icao.int/environmental-protection/Pages/action-plan.aspx>

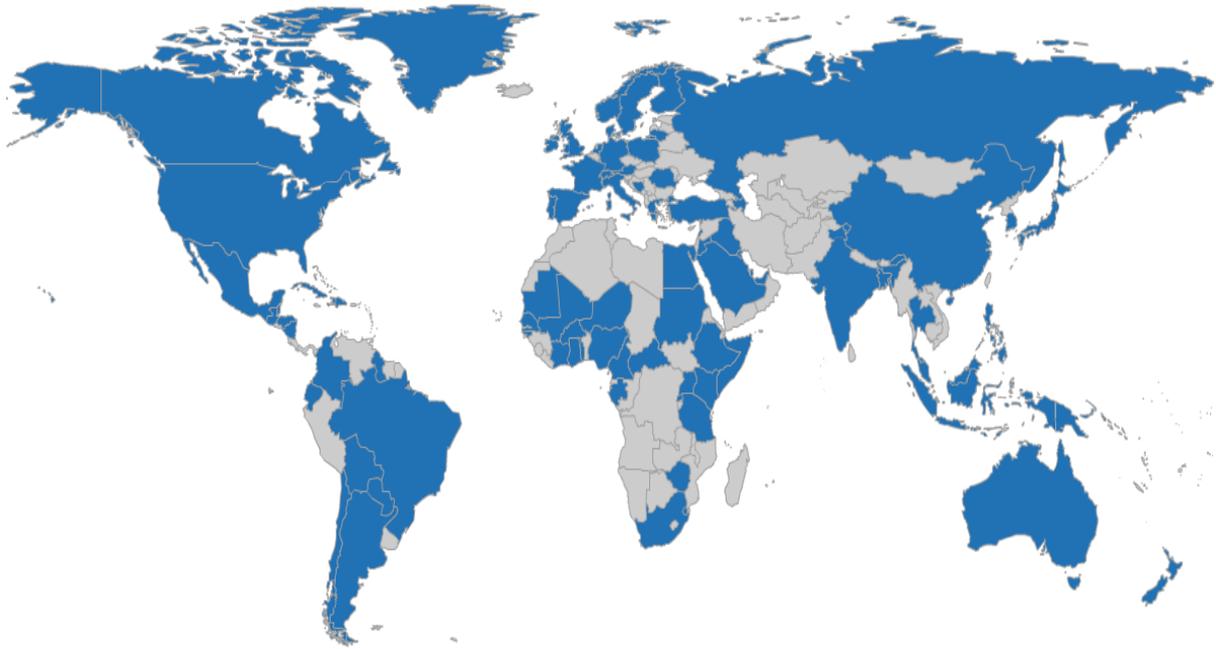


Figure 4: ICAO hands-on workshops trained 91 Member States, representing 93% of global traffic<sup>5</sup>.

2.9 As of April 2013, Member States, representing more than 77 per cent of global international air traffic, prepared and submitted action plans to ICAO. It is expected that submission of additional action plans by the end of 2013 will bring the total coverage of global international air traffic to more than 90 per cent (Figure 5). Building upon the experience and following the review of information provided in action plans submitted, ICAO is considering the means to enhance the quality of action plans, help harmonize the data contained therein, and further increase the number of action plans to be prepared and updated.

**59 States, representing 77.41% international RTK,  
submitted an Action Plan as of April 2013**

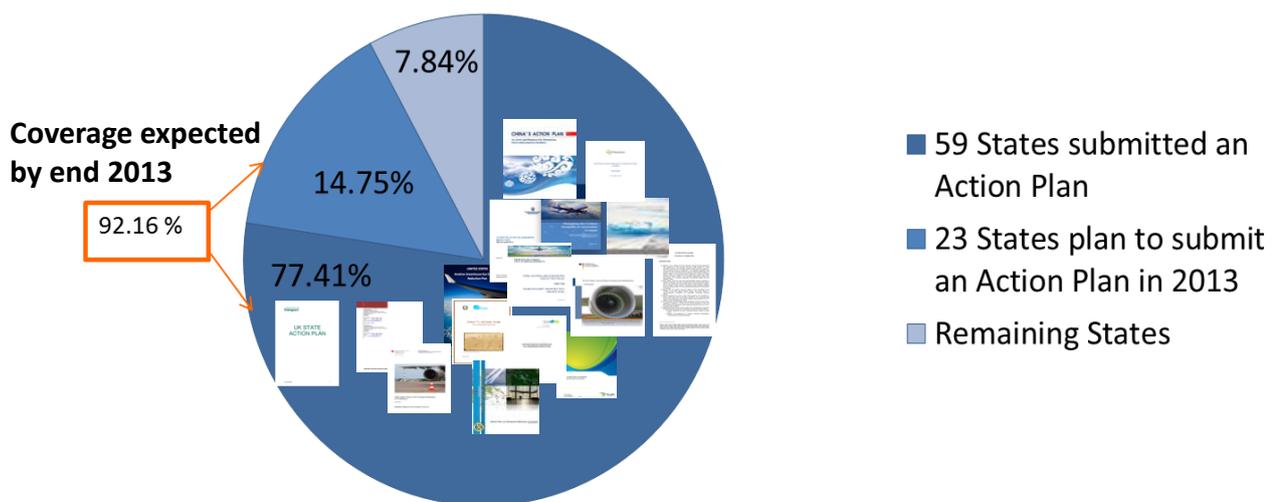


Figure 5: Status of submission of ICAO Member States' action plans.

<sup>5</sup> <http://www.icao.int/Meetings/Green/Documents/DAY3/State%20Action%20Plan/7-Ferrier.pdf>

## **Assistance to States**

2.10 After the successful completion of the first phase of provision of assistance to States in the preparation and submission of their action plans, focus is now to support States that need assistance in implementing the CO<sub>2</sub> emissions reduction measures identified in action plans. In also responding to the request of the 37th Assembly to facilitate the provision of technical and financial assistance, as well as facilitate access to existing and new financial resources, technology transfer and capacity building to developing countries, the ICAO “Assistance for Action – Aviation and Climate Change” Seminar in October 2012 shared information and identified opportunities to support provision of assistance required (<http://www.icao.int/meetings/acli/Pages/default.aspx>).

2.11 ICAO has been exploring synergies and partnerships with the climate change mitigation activities of ICAO Member States, other international organizations and multilateral funding agencies, and constructively engaging with those that have funds earmarked and dedicated for climate change mitigation activities, so as to make different financing options available to Member States requesting assistance.

## **Global Aspirational Goals**

2.12 In April 2013, CAEP finalized work to update the CO<sub>2</sub> trends assessment by estimating the contribution of various categories of mitigation measures to reduce aviation CO<sub>2</sub> emissions (technologies, operational improvements and alternative fuels) in order to measure current and estimate future progress toward the achievement of global aspirational goals (Figure 6).

2.13 Substantial input from Member States and Observer Organizations, including those representing airlines, airports, aircraft manufacturers, air navigation service providers, environmental NGOs and academia, contributed to the development of the CO<sub>2</sub> trends, including through sophisticated models, databases and expertise<sup>6</sup>. They were reviewed by and reflect the consensus of CAEP. This ensures that decisions being taken by the ICAO Assembly are based on a single, agreed, set of trends. As the ICAO Member States are also represented as Parties to the UNFCCC, ICAO invites the UNFCCC to refer to ICAO’s trends as the basis for all discussions related to international aviation emissions.

2.14 Work to measure the current global fuel consumption from international aviation will directly support the request of the 37th ICAO Assembly to regularly report CO<sub>2</sub> emissions from international aviation to the UNFCCC process. The updated CO<sub>2</sub> trends assessment for the period of 2010 to 2050, prepared by CAEP, will support the review of the global aspirational goals by the Council and subsequently by the 38th Assembly.

## **Environmental Tools<sup>7</sup>**

2.15 The ICAO Fuel Savings Estimation Tool (IFSET) assists Member States and air navigation service providers in assessing expected fuel savings from implementation of various operational improvements. The IFSET will also support the preparation of States’ action plans and facilitate the assessment of environmental benefits from the Aviation System Block Upgrades (ASBU) strategy.

2.16 The ICAO Carbon Emissions Calculator allows its users to estimate the emissions from air travel. The methodology applies the best publicly available data to account for various factors such as aircraft types, route specific data, passenger load factors and cargo carried, while it is simple to use and requires only a limited amount of information from the user. The Carbon Calculator was endorsed as an official tool to estimate the air travel portion of the UN greenhouse gas emissions inventories, as part of UN Climate Neutral initiative. ICAO’s support to the UN system was further

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<sup>6</sup> <http://www.icao.int/environmental-protection/Pages/modelling-and-databases.aspx>

<sup>7</sup> <http://www.icao.int/environmental-protection/Pages/Tools.aspx>

extended through the development of the ICAO Green Meetings Calculator (IGMC), a tool designed to support decision-making in reducing the carbon emissions from air travel to attend meetings.

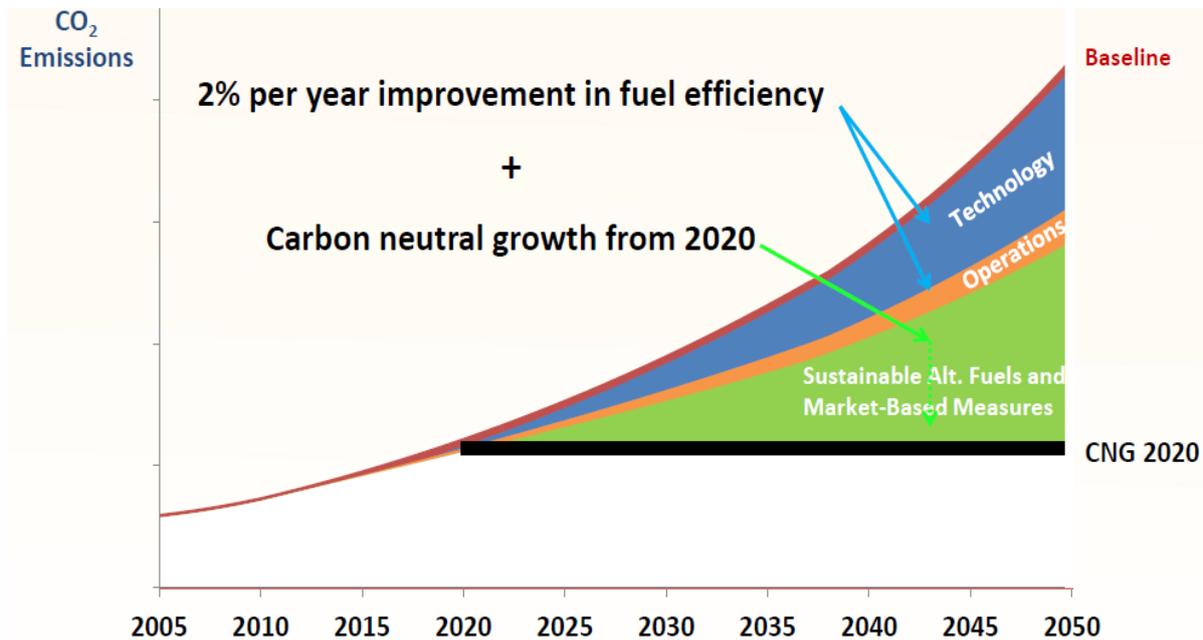


Figure 6: CAEP's work on CO<sub>2</sub> trends assessment (conceptual image)<sup>8</sup>.

### 3. UNFCCC – CLIMATE FINANCE

3.1 The UNFCCC Doha Conference adopted a series of decisions which included the extension of the work programme on long-term climate finance for one year by the end of 2013, to further analyse options for the mobilization of USD 100 billion per year by 2020 from a wide variety of potential sources. Some Parties expressed concern with the proposals to use international aviation as a potential source for mobilizing such revenue. Such proposals are included in the report of the High-level Advisory Group on Climate Financing (AGF) in 2010 and the report of the World Bank (WB)/International Monetary Fund (IMF) under the G20 process in 2011. The WB/IMF report explored global carbon charges of USD 25 per tonne of CO<sub>2</sub> on international transport, which it suggests could raise USD 12 billion per year by 2020 from international aviation.

3.2 It should be highlighted that the global aspirational goals for the international aviation sector, adopted by the 37th ICAO Assembly, will require adequate financial resources within the sector itself, enabling it to effectively respond to the global climate change challenge. It is of utmost importance that the design and implementation of market-based measures for international aviation be treated as one element of a basket of mitigation measures to achieve the global aspirational goals, and not in isolation.

3.3 In this regard, the ICAO Council in March 2013 agreed that ICAO and its Member States need to express a clear concern, in particular through the UNFCCC process, to ensure that international aviation would not be targeted as a source of revenue for long-term climate finance in a disproportionate manner, including through the reflection of this concern in Resolution text on international aviation and climate change to be considered by the 38th ICAO Assembly.

<sup>8</sup> <http://www.icao.int/Meetings/Green/Documents/day%201pdf/openning%20speeches/Opening-Hupe.pdf>

#### 4. COOPERATION WITH OTHER ORGANIZATIONS

4.1 In addition to providing the UNFCCC process with information and perspectives on matters related to international aviation, ICAO has also continued its cooperation with other international organizations, such as Intergovernmental Panel on Climate Change (IPCC), World Meteorological Organization (WMO), United Nations Environmental Programme (UNEP), United Nations Conference on Sustainable Development (UNCSD), International Maritime Organization (IMO), United Nations Development Programme (UNDP), Global Environment Facility (GEF) and World Tourism Organization (UNWTO), with a view to obtaining a better scientific understanding of aviation's impact on the environment as well as exploring possible synergies in policy-making and the implementation of measures to limit or reduce aviation emissions.

4.2 For example, ICAO and UNWTO signed a Joint Statement in March 2013, acknowledging the intention of the two UN agencies to begin cooperating more closely on areas of common interest, including the reduction of GHG emissions from aviation and tourism. In addition, on the occasion of the ICAO Symposium on Aviation and Climate Change held in May 2013<sup>9</sup>, ICAO and the Air Transport Action Group (ATAG) signed a Joint Statement to strengthen collaboration to better promote and communicate to governments and the aviation industry on all developments and initiatives related to the sustainable development of global air transport.

#### 5. CONCLUSIONS

5.1 With the increasing engagement of Member States, together with close cooperation with the aviation industry and other stakeholders, ICAO expects greater willingness of its Member States in moving forward to global solutions to address GHG emissions from international aviation, to be reached at the 38th ICAO Assembly, bringing ICAO one step closer to the ultimate goal of a sustainable future of international civil aviation.

5.2 ICAO expects the UNFCCC process to deliver an agreement that acknowledges ICAO's achievements as the specialized UN agency for international aviation in the area of climate change, and encourages its Member States to continue to work further through ICAO.

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<sup>9</sup> <http://www.icao.int/Meetings/Green/Pages/default.aspx>