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COMISSÃO LATINO-AMERICANA  
DE AVIAÇÃO CIVIL

LATIN AMERICAN CIVIL  
AVIATION COMMISSION

COMISIÓN LATINOAMERICANA DE AVIACIÓN CIVIL

SECRETARÍA  
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**VIGÉSIMO PRIMERA REUNIÓN DEL GRUPO DE EXPERTOS EN ASUNTOS POLÍTICOS,  
ECONÓMICOS Y JURÍDICOS DEL TRANSPORTE AÉREO (GEPEJTA/21)**

(Bogotá, Colombia, 18 al 20 de junio de 2008)

**Cuestión 2 del**

**Orden del Día: Gestión aeroportuaria y medio ambiente**

**Cuestión 2.1 del**

**Orden del Día: Política regional en materia de medio ambiente – Panel (México)**

(Nota de estudio presentada por México – Punto Focal “Gestión aeroportuaria y medio ambiente”)

**Acciones regionales en materia de medio ambiente (emisiones) por parte de los Estados de la CLAC  
con base en las resoluciones de la 36 Asamblea de la OACI**

**1. Antecedentes:**

1.1 La Resolución A36-22: *Declaración refundida de las políticas y prácticas permanentes de la OACI relativas a la protección del medio ambiente*, que adoptó el 36º período de sesiones de la Asamblea de la OACI en septiembre de 2007.

1.2 Dado que la OACI tiene la función de liderazgo entre los organismos de las Naciones Unidas con respecto a todos los asuntos de aviación civil internacional, El Objetivo estratégico C de la OACI: *Minimizar los efectos perjudiciales de la aviación civil mundial en el medio ambiente* requiere que la Organización aborde eficientemente la repercusión negativa en el medio ambiente que pueda estar relacionada con la actividad de la aviación civil. En consecuencia, es responsabilidad tanto de la OACI como de sus Estados contratantes lograr la compatibilidad máxima entre el desarrollo seguro y ordenado de la aviación civil y la calidad del medio ambiente.

1.3 En el Artículo 2.2 del Protocolo de Kyoto de la CMNUCC se hace un llamado a los países desarrollados (partes incluidas en el Anexo I) para que procuren limitar o reducir los gases de efecto invernadero (GEI) que provienen de los combustibles del transporte aéreo internacional, trabajando por conducto de la OACI. Además, el 36° período de sesiones de la Asamblea destacó la necesidad de que la OACI y la comunidad de la aviación continúen actuando en cooperación con las organizaciones de las Naciones Unidas que participan en la formulación de políticas sobre el cambio climático, principalmente la Convención Marco de las Naciones Unidas sobre el Cambio Climático (CMNUCC).

1.4 Recientemente, en el ámbito de la CMNUCC, se han producido algunas novedades que actualmente son objeto del examen del Grupo de trabajo *ad hoc* (AWG) y del Órgano Subsidiario de Asesoramiento Científico y Tecnológico (OSACT), y que podrían hacer que las decisiones relativas a las emisiones de GEI de la aviación se adoptaran fuera del proceso y del campo acordados por los Estados contratantes de la OACI en el 36° período de sesiones de la Asamblea.

1.5 Lo anterior pone de manifiesto la importancia extrema de que las Autoridades de aviación civil transmitan a todas las entidades de sus respectivos Gobiernos encargadas de política exterior y medio ambiente la Resolución A36-22 para asegurar que las posturas convenidas en la Asamblea se reflejen de manera coherente en las declaraciones y posturas de los representantes de sus Gobierno ante la CMNUCC y otros foros. Cabe señalar que las incongruencias en las posiciones de algunos Estados han facilitado la percepción errónea en los medios de comunicación de que la aviación es una actividad altamente contribuyente al cambio climático y que los responsables de la aviación civil no están haciendo nada al respecto.

1.6 Con el propósito de reafirmar el compromiso de la región Latinoamericana y del Caribe con el medio ambiente, durante la Conferencia “Wings of Change” de la IATA en Santiago de Chile, la Conferencia produjo la Declaración de Santiago (**Adjunto 1**).

## **2. Posibles medidas:**

2.1 Los Estados de la CLAC se han adherido la resolución A36-22 de la Asamblea de la OACI y por tanto se considera que la región y sus Estados deberían adoptar un conjunto de medidas consistentes con esta Resolución y que puedan contribuir al progreso de la aviación civil internacional para reducir o mitigar los efectos de las emisiones de los motores en el medio ambiente.

2.2 La CLAC podría aprovechar ciertas orientaciones de la OACI, principalmente las basadas en aplicación de mejores procedimientos operacionales, como las aproximaciones de descenso continuo (CDA); el estímulo de la aplicación del concepto CNS/ATM; la separación vertical mínima reducida (RVSM) y medidas basadas en criterios de mercado, específicamente aquellas sobre medidas voluntarias.

2.3 Adicionalmente los Estados también podrían considerar la mejor planificación de los aeropuertos y la planificación más racional de los terrenos.

2.4 Como punto de partida para abordar las medidas de carácter voluntario, los Estados de la CLAC podrían tener en cuenta la plantilla y orientaciones sobre medidas voluntarias de la OACI (**Adjunto 2 en inglés solamente**).

### Medidas propuestas al Comité Ejecutivo

Se invita al Comité Ejecutivo a:

- a) Tomar nota del párrafo 1.5 y solicitar a las Administraciones de Aviación Civil que transmitan a todas las entidades de sus respectivos Gobiernos encargadas de política exterior y medio ambiente la Resolución A36-22, particularmente el apéndice K de la misma para que la tengan en cuenta en sus posturas ante la CMNUCC y otros foros donde participen,
- b) Solicitar a la Secretaría se requiera el apoyo de los Estados miembros a fin de contar con las respuestas al cuestionario relativo a la protección del medio ambiente en el sector de la aviación civil en Estados miembros de la CLAC sobre ruido de aeronaves y al cuestionario sobre actividades de carácter voluntario para reducir o mitigar los GHG de la aviación regional, enviados por México y presentados en la reunión de GEPEJTA/19 con el propósito de contar con elementos para la evaluación de un diagnóstico regional sobre medio ambiente y aviación,
- c) Solicitar a la Secretaría la elaboración de una encuesta en los Estados miembros de la CLAC sobre consumo de combustibles por las aeronaves de la aviación civil internacional de la región y sobre los progresos en relación a medidas operacionales o tecnológicas, así como de planificación de aeropuertos que hayan o estén llevando a cabo y que directa o indirectamente estén contribuyendo a reducir el impacto de las emisiones de los motores de las aeronaves en el medio ambiente,
- d) Tomar nota que la información recopilada en el punto c) anterior deberá ser complementaria de la información obtenida en los cuestionarios del punto b) anterior,
- e) Establecer un panel sobre medio ambiente que examine la situación en la región y que apegándose a la Resolución A36-22 de la Asamblea de la OACI y los progresos alcanzados por esta Organización analice la viabilidad de establecer una política regional sobre medio ambiente y la aviación,
- f) Recomendar a los Estados la pertinencia de la plantilla y orientaciones sobre medidas voluntarias de la OACI a fin de que éstos la puedan utilizar en el establecimiento de medidas voluntarias con la industria y proveedores de servicios aeronáuticos, y
- g) Recomendar a los Estados miembros que consideren junto con su industria aeronáutica la posibilidad de difundir en los medios de comunicación y propaganda que estimen pertinentes, información sobre las acciones y resultados esperados de las medidas tomadas por cada Estado/industria para disminuir o mitigar el impacto de las emisiones de los motores de las aeronaves en el medio ambiente.

## DECLARACIÓN DE SANTIAGO: EL MEDIO AMBIENTE Y LA AVIACIÓN

El cambio climático y el impacto medioambiental son problemas de gran importancia para todos. CLAC, IATA y OACI seremos parte de la solución. Ya tenemos una clara Visión y una Meta de cero emisiones de carbono a futuro; pero, a medida que la industria crece tenemos que dar un paso adelante y crecer para llegar a ser una industria tan medioambientalmente eficiente como sea posible. Somos una parte pequeña de un gran problema. Nuestro actual desafío consiste en hacer las cosas aún mejor.

Esta es una declaración de la industria en la que todos aquellos que estamos presente - aerolíneas, aeropuertos, fabricantes aeronáuticos, ground handlers y autoridades – necesitamos comprometernos y transformarnos en agentes de cambio; es decir, en Green Aviation Partners. Juntos debemos convertirnos en una cadena que coopera e impulsa el cambio – tenemos el poder para cambiar, tanto a nivel individual -en casa con nuestra familia y amigos- como a nivel institucional y corporativo, integrando valores medioambientales en nuestras decisiones diarias.

La belleza de este planeta es digna de ser conservada. Necesitamos trabajar juntos para minimizar el impacto medioambiental de nuestras operaciones, generando una cultura corporativa “Green”, generando el cambio internamente. La industria debe trabajar mancomunadamente de manera de poder lograr sus objetivos financieros y cualitativos sin ignorar el impacto medioambiental que aquello implica. Necesitamos introducir métodos que permitan que nuestras operaciones se caractericen por el bajo consumo energético, el potencial de reciclaje y un mínimo de emisiones. Ha llegado la hora de ser sustentables.

Toda pequeña contribución hace una diferencia. Todos nosotros debemos contribuir para lograr una Industria Aeronáutica “Green”, haciendo todo lo posible por cambiar nuestra ética personal medioambiental, denunciando aquellas prácticas que no respeten el medio ambiente, tanto en casa como en el trabajo. Tenemos que comprometernos a tomar acción.

Trabajaremos para ser Pasajeros más ecológicos, Aerolíneas más ecológicas, Aeropuertos más ecológicos, Ground Handlers más ecológicos, y Proveedores más ecológicos; todo esto es posible. IATA luchará para que las autoridades y las instituciones aeronáuticas reconozcan aquellos actores de nuestra industria que sean “Green-oriented”. Los logros que se obtengan en esta área ameritan procesos más expeditos –un “fase-track”- para la tramitación de autorizaciones y permisos para seguir volando.

La industria aérea y de viajes y sus grupos de interés nos comprometemos con la preservación del medioambiente en América Latina. Para estos efectos adherimos a los siguientes 10 Principios de la “Green Aviation”:

- 1) Incorporar el criterio medioambiental en la toma de decisiones diaria.
- 2) Actuar de manera consciente y evaluar las consecuencias medioambientales.
- 3) Promover la responsabilidad y el cuidado medioambiental con nuestros grupos más cercanos.
- 4) Optimizar el uso de los recursos con la tecnología disponible, impulsando sistemas de gestión ambiental y programas de eco-eficiencia.
- 5) Impulsar la creación de nuevas iniciativas de cooperación multisectorial para minimizar el impacto ambiental.

- 6) Monitorear y tomar acción frente a situaciones que ponen en riesgo el medioambiente.
- 7) Promover la investigación y desarrollo de soluciones innovadoras para reducir el impacto ambiental que generan las actividades de la industria aérea y viajes.
- 8) Educar a los grupos y personas que nos rodean sobre la urgencia de preservar el medioambiente.
- 9) Comunicar en forma transparente la rentabilidad social de las acciones que minimizan el impacto medioambiental.
- 10) Adherir, promover, y reclutar 3 nuevos socios para ser "Green Aviation Partners".

Los invito a ponerse de pie y a darse la mano con las personas que están a su lado, como un juramento simbólico que demuestre nuestro compromiso de cambio y de acción. Cambiemos la percepción que existe respecto de nuestra industria; iniciemos la era de "Green Aviation" en América Latina. Somos los líderes de la industria, es ahora, o nunca.

## TEMPLATE AND GUIDANCE ON VOLUNTARY MEASURES

### PART I — TEMPLATE AGREEMENT MEMORANDUM OF UNDERSTANDING<sup>1</sup>

#### I. INTRODUCTION

A. This Memorandum of Understanding (MOU) is a voluntary agreement between PARTNER I and PARTNER G<sup>2</sup>. PARTNER I and PARTNER G are hereinafter referred to as the “Partners.”

B. The ICAO Assembly has expressed its commitment to limit or reduce the environmental impact of aircraft engine emissions and has directed the ICAO Council “*to facilitate actions . . . including [develop] a template voluntary agreement, as appropriate, and to work to ensure that those taking early action would benefit from such actions and would not subsequently be penalized for so doing.*”<sup>3</sup>

C. The purpose of this Partnership is to limit or reduce emissions of carbon dioxide (CO<sub>2</sub>) from aviation. It represents an important step towards addressing aviation’s contributions to global climate change. In order to ensure continuity, achievements resulting from the Partnership should be taken into account in the design and implementation of any future policy measures pursuing a similar purpose.

D. The template supports ICAO’s aim to encourage harmonized efforts. Specifically, it encourages States taking action to limit or reduce emissions that impact climate change, to do so “*in a consistent manner to both domestic and international aviation emissions.*”<sup>4</sup>

#### II. PARTNERSHIP GOAL

The Partnership Goal is [½ per cent or 1 per cent] annual improvement in fuel/RTK above the FESG base case scenario over a 12-year period from 1998-2010.<sup>5</sup>

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<sup>1</sup> An accompanying guidance document provides additional information explaining the provisions contained in this agreement and alternative approaches that may be considered .

<sup>2</sup> Partner I (industry) represents individual or groups of airlines and/or trade associations on behalf of their members (referred to as ‘participating companies’ in this document). Partner G (governments) represents individual States, regional groups of States, and/or international organizations on behalf of the States.

<sup>3</sup> ICAO Assembly Resolution A33-7

<sup>4</sup> Ibid

<sup>5</sup> These goals are illustrative only and are shown for the purposes of providing guidance to FESG for its economic analysis of voluntary measures. It is important to note that these goals are directly linked to projections of fuel efficiency undertaken by FESG. The current projections based on the FESG base case show a 24 per cent improvement in fuel efficiency over the 12-year period from 1998-2010. These illustrative goals would increase that fuel efficiency to 30 per cent and 36 per cent over this 12-year period. Issues related to selection of a goal and the choice of a metric are discussed in detail in the accompanying guidance document.

### III. BACKGROUND AND GENERAL PRINCIPLES

A. The Partners recognize that aviation is an integral part of society and the global economy. The Partners also recognize the projected continued growth of air transport demand worldwide and that efforts must be taken to address the environmental impacts associated with that growth. Further, Partners recognize the unique and critical safety and security requirements for aviation.

B. The Partners will use this MOU to support the global efforts to limit or reduce CO<sub>2</sub> emissions from aviation worldwide. The Partners recognize that to the extent practicable an industry-wide approach will result in greater environmental improvement by this highly globalized industry and will lessen negative competitive impacts.

C. Nothing in this MOU shall constrain the Partners from taking actions relating to CO<sub>2</sub> emissions or fuel use that are authorized or required by law.

### IV. PARTNER I RESPONSIBILITIES

A. **Emission Reductions.** PARTNER I will monitor progress toward the Partnership Goal and will support the Partners' efforts to limit or reduce CO<sub>2</sub> emissions by:

- (1) sharing information about operational opportunities and technologies that are not considered confidential;
- (2) adopting technically feasible, cost-effective and commercially available techniques and strategies for improving fuel efficiency for aircraft including, but not limited to, the strategies included in the attachment where these are cost effective and can be employed in a manner consistent with safety and security requirements;
- (3) recognizing the need to achieve CO<sub>2</sub> reductions when considering future purchases of aircraft taking emissions into account; and
- (4) if appropriate, achieving creditable emissions reductions in other industry sectors through mechanisms such as emissions trading.

B. **Emissions Reporting.** PARTNER I will collect the data and report to PARTNER G annually on [insert date]. The Report will include RTK information and other information deemed appropriate by the Partners.

C. **Data Quality.** PARTNER I will provide its annual RTK [*and any additional reporting parameters*] including a written explanation of the methodology used for the reporting. This information will be made available to PARTNER G. In order to allow the Partners to have continued confidence in the reliability of the reports, a qualified auditor will be given access [*each year or periodically*] to audit the reports and supporting documentation. PARTNER G and PARTNER I will select the appropriate auditor capable of independently verifying the reports for quality.

## V. PARTNER G RESPONSIBILITIES

A. **Support for Emission Reduction Efforts.** PARTNER G will support efforts to limit or reduce CO<sub>2</sub> and towards achieving the Partnership Goal by:

- 1) participating in and supporting activities to share information;
- 2) addressing barriers that may impede voluntary improvements of fuel efficiency for aircraft;
- 3) recognizing PARTNER I and the participating companies for their emission reduction commitment and technical leadership; and
- 4) endeavoring to ensure appropriate credit is given for such action.

B. **Data Quality.** PARTNER G will work with PARTNER I and participating companies to record and verify data and to ensure that emissions inventories are reliable, accurate and transparent. In all cases, PARTNER G will work to ensure that data are evaluated and reported in such a way as to protect confidential business information.

C. **Baseline Credit/Credit for Early Action.** PARTNER G will seek to ensure that proper credit is given to PARTNER I for efforts achieved under this MOU in any future system established to limit or reduce CO<sub>2</sub> emissions from aviation.

D. **International Harmonization.** PARTNER G will support efforts to encourage the use of coordinated international approaches to limit or reduce the environmental impacts of aviation.

E. **Industrial Harmonization.** PARTNER G will endeavor to support efforts to encourage the uses of coordination across industrial sectors to limit or reduce the environmental impacts of CO<sub>2</sub> emissions.

## VI. OTHER ISSUES

A. **Modification.** This MOU can be modified only by means of a document signed by both parties.

B. **Effective Date and Termination.** The Partners agree that the terms outlined in this MOU will become effective when signed by both Partners. The Partners agree that either Partner may terminate this MOU at any time, for any reason, with no penalty by giving notice in writing six months prior to the date of requested early termination. This MOU in any case terminates on the date the annual report for the last year covered by the agreement is provided to PARTNER G.

C. **Interim Progress.** The Partners agree to publish progress reports [*every second year, annually, periodically*] detailing the progress that has been made toward achieving the Partnership Goal. Such reports will include information provided by PARTNER I as well as other appropriate documentation. However, measures will be taken to ensure that all confidential information is protected. The Partners agree to inform the Committee on Aviation Environmental Protection on progress towards meeting the Partnership Goal at meetings of the CAEP, its Steering Group, and appropriate Working Groups.

**D. Technical Assistance.** Where relevant, the Partners may provide or arrange for technical assistance for participating companies that seek assistance in meeting goals or reporting results.

**E. Role of Third Parties.** The Partners shall work with airports, air traffic control providers, aviation manufacturers and environmental organizations to facilitate the goals of this agreement.

**F. Enforceability.** This is a voluntary MOU that expresses the good-faith intentions of the Partners and is not enforceable by any party.

**G. Authority.** The undersigned hereby execute this MOU on behalf of the Partners.

For PARTNER I:

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name:

Title:

For the PARTNER G:

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name:

Title:

*General notes:*

*If Partner I is a trade association, a list of names of the 'participating companies" may be required. Also, provisions may be required for companies to be allowed to drop out or to join the agreement.*

## ATTACHMENT

### OPERATIONAL OPPORTUNITIES AND TECHNOLOGY OPTIONS<sup>6</sup>

- a) fly the most fuel efficient aircraft type for the mission;
- b) taxi the most fuel efficient route;
- c) fly the most fuel efficient route;
- d) fly at the most fuel-efficient speed;
- e) operate at the most fuel efficient altitude;
- f) maximize the aircraft's load factor;
- g) minimize the empty weight of the aircraft;
- h) load the minimum fuel to safely complete the flight;
- i) minimize the number of non-revenue flights;
- j) maintain a clean and efficient airframe and engines;
- k) reduce aerodynamic drag by efficiently distributing load on board;
- l) install winglets where appropriate;
- m) engine retrofits and/or upgrades;
- n) re-engine aircraft;
- o) use polished aircraft; and
- p) more regular maintenance to correct aerodynamic deterioration.

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<sup>6</sup> The following list is illustrative of possible actions that some Partners might take on a voluntary basis to limit emissions toward an agreed upon goal. It contains both operation and technological options for reducing emissions of CO<sub>2</sub>. The operational measures were drawn from Circ 303, *Operational Opportunities to Minimize Fuel Use and Reduce Emissions*, CAEP/5-IP4.

**PART II — VOLUNTARY MECHANISMS:  
A GUIDANCE DOCUMENT FOR THE  
TEMPLATE MEMORANDUM OF UNDERSTANDING**

**1. INTRODUCTION**

**1.1 Background**

1.1.1 This guidance provides interested parties with a description of key elements of a Voluntary Agreement, options within each of these elements, and a checklist to use in developing a voluntary agreement.

1.1.2 Voluntary agreements between public and private sector partners encourage comprehensive, cost-effective energy efficiency and pollution prevention actions and allow companies the flexibility to achieve environmental goals at the least possible cost. A voluntary agreement can be particularly attractive as a first step toward demonstrating to governments and the public that the aviation industry is acting responsibly to address the concerns about global warming.

1.1.3 At the outset, it is useful to set out the essential characteristics that should be sought from an effective voluntary agreement; these include:

- a) administrative simplicity — to encourage partners to enter into agreements;
- b) flexibility — to enable partners to take those actions that will most effectively reduce emissions and to encourage innovation in emissions reduction;
- c) partnership and shared values — working cooperatively to achieve common goals;
- d) transparency and robustness — to further ensure the effectiveness of an agreement; and
- e) features that complement or at a minimum do not detract from other efforts to improve overall environmental performance.

1.1.4 Successful voluntary agreements minimize costs especially compared with the perceived cost of regulatory actions. As the action that needs to be taken to achieve a target becomes more costly — as costly as potential “command and control” regulations could be, the incentive to pursue a voluntary agreement diminishes. Therefore, successful voluntary agreements should be cost-effective.

**1.2 Policy objectives and tools**

1.2.1 Voluntary agreements can take many forms. The draft template agreement accompanying this guidance document (Part I) is a Memorandum of Understanding (MOU) between government (G) and industry (I). It sets forth the expectations of the partners, the goals, reporting requirements, and milestones. By its very nature, it is not legally enforceable; however, by entering such an agreement, partners are assumed to undertake good faith efforts to comply with the terms and conditions. If one or more partners are unable to comply with the agreement, the agreement can be terminated and alternative methods for reducing emissions can be pursued.

1.2.2 Another approach is a voluntary agreement that is itself legally binding, but where the partners enter into it voluntarily, this is sometimes referred to as a “negotiated agreement.” This type of agreement may be more suitable to certain types of circumstances. An MOU without legally binding consequences may be more likely to gain broad participation and serve as a first step. But a negotiated agreement may be more effective in controlling emissions. It is important to recognize that some parties may prefer a binding agreement and that neither the template nor this guidance is intended to preclude such agreements.

1.2.3 The policy objective of this Partnership (as presented in the MOU) is to voluntarily limit or reduce emissions of carbon dioxide (CO<sub>2</sub>) from aviation by meeting a specified goal. It represents an important step driven by the ICAO process towards fulfilling aviation’s commitment to address contributions to global climate change. In order to ensure continuity, achievements resulting from the Partnership should be taken into account in the design and implementation of any future policy measures pursuing a similar purpose.

1.2.4 Credibility is essential to all successful voluntary agreements. It requires that the agreements be developed and implemented in a manner that is transparent and accountable by the Partners directly involved and other interested stakeholders. The agreements must contain quantifiable goals that can be achieved in a verifiable manner.

### 1.3 **Partners**

1.3.1 Governments and industry interested in pursuing voluntary agreements should determine who would be the most appropriate partners for such an agreement. This document and the accompanying template were drafted with the greatest degree of flexibility concerning who the Partners in the agreement would be. Those entering into an agreement should be legally recognized entities. There are many examples of voluntary programmes in other sectors where the partners are trade associations, individual companies, regional government entities, or individual national or international entities.

1.3.2 It may be appropriate for a representative body, such as a trade association to sign an agreement. This arrangement can be administered more easily, allow for greater flexibility across the industry, and reduce the concerns that could arise if some companies enter an agreement and competitors do not. Other options include creating an agreement that all governments and all companies can enter without modification (a “one size fits all” approach) or one that establishes general principles and language, while allowing for each individual agreement between airlines and governments to vary in specific ways (a tailored approach).

### 1.4 **Role of ICAO**

1.4.1 While ICAO will not be a Partner to a voluntary agreement to reduce CO<sub>2</sub>, there are significant and continuing roles that ICAO could pursue to support a voluntary agreement programme in the aviation sector, such as:

- a) providing a framework for agreements;
- b) encouraging consistency between such agreements; and
- c) providing a forum to develop, review and promote the use and recognition of voluntary agreements.

1.4.2 Furthermore, ICAO's current role, providing a venue to develop and encourage the use of voluntary approaches, is invaluable.

## 2. PARTNERSHIP GOAL

### 2.1 Introduction

2.1.1 Government and industry interested in voluntary programmes should first establish a policy objective and a goal that meets that objective. The policy objectives and associated goals need to be clearly defined. Agreements based on unclear objectives, such as a desire to reduce emissions without any specified level of reduction are unlikely to be successful.

2.1.2 There are two related elements of the goal presented in the template MOU:

- a) the actual level of the targeted emissions reduction; and
- b) the metric used to measure that reduction.

2.1.3 The goal must be chosen on the basis of technically sound information as well as open discussion concerning environmental benefits, technical feasibility, and economic costs. It is important to consider historical performance, future projections and potential future technological changes. While voluntary agreements necessarily involve costs in meeting a goal, industries are interested in agreements where there are lower costs than if other approaches are pursued, and where there are flexible mechanisms available for meeting environmental goals. Therefore, while the environmental goals must be challenging, the projected costs of meeting those goals should be more cost-effective than the projected potential costs of a regulatory programme.

2.1.4 When setting a goal, it is important to consider what the impacts will be on other emissions and on noise, just as it is important to ensure that meeting that goal will not compromise safety and secure operations.

2.1.5 A quantitative goal is important for ensuring that the MOU is as simple and transparent as possible. If an agreement covers a long period of time, milestones, in the form of intermediate goals are necessary to ensure that progress towards meeting the goal is made. Often the goals are reviewed at agreed intervals -- such as biannually. Intermediate goals can facilitate triggering reviews and possibly consequential corrective action. A voluntary agreement that spans many years (e.g., 15 years) is more likely to include intermediate goals than a voluntary programme with a shorter timeframe (e.g., 3 years).

### 2.2 Selecting a metric

#### *Absolute or relative goals*

2.2.1 Choosing the proper metric for expressing a goal (e.g., percent below a base year, relative to a growth scenario, benchmarking, etc.) is a key element of any voluntary agreement. Depending on the approach taken in the voluntary programme, improvements in emissions can be measured as absolute or relative reductions and can be expressed using a variety of terms.

2.2.2 Voluntary agreements recognize actions taken to reduce emissions that exceed expectations. Such achievements can be evaluated against a baseline of actual past emissions or a projection of baseline forecasted emissions. Environmental improvements can be measured against future benchmarks or measured against past or current performance.

2.2.3 There are advantages and disadvantages with using either a relative goal or an absolute goal. The goals tend to emphasize different aspects of the overall environmental goal of improving fuel efficiency. The relative goals generally recognize improvements that can be realized whether the absolute emissions continue to grow or not. Absolute goals can demonstrate real reductions in actual emissions. The metric chosen must reflect the overarching goals of the programme.

2.2.4 Often a voluntary programme is based on reducing emissions to a level compared to the reported emissions for a given year. The given year, is the base year, and the target level of emissions (e.g., base year minus a percentage) is the goal that the voluntary partners agree to meet. Establishing an acceptable baseline is an important undertaking. Clearly there are always uncertainties that must be considered. However, given the tragic events of 11 September 2001, there are particular concerns and uncertainties that should be considered when determining an appropriate baseline for a voluntary agreement with the aviation industry. If for example, the decision is made to pursue a voluntary programme with an absolute goal, the goal could be based on the emissions data for 2000, or some other representational year and include a goal that is a certain percentage above or below the emissions for 2000. One advantage to this approach is that there is usually solid information concerning past emissions. However, it is not always appropriate to tie a voluntary programme to a stagnant set of data. As an industry evolves, its emissions will change. If a baseline year approach is used then the focus should be on selecting a proper year or group of years. Some agreements use absolute reductions in emissions (e.g., 10 per cent below 1990 levels). These have the advantage of greater certainty, but may be inappropriate given the expected growth in aviation. An alternative is to seek improvements in emissions per unit.

### ***Improvements per unit***

2.2.5 To successfully adopt a goal based on per unit improvements in efficiency, it is important to agree on the unit measurement and to agree on the anticipated future growth projections. Historic trends, economic analysis, technological advancements and more, can be used to construct future baseline emissions scenarios. Voluntary programmes can be established based on anticipated behaviors derived from such scenarios. The advantage to using such a projection is that it permits the voluntary programme to more closely track a likely growth scenario. However, the uncertainties surrounding such scenarios are disadvantages to their use.

2.2.6 Different improvement or reduction units (fuel intensity and fuel efficiency) can be considered. It is important to distinguish between them. For example, fuel intensity expresses the amount of fuel consumed per available seat kilometer (ASK), passenger kilometer (PK) or tonne kilometer (TK). Both fuel efficiency and fuel intensity are metrics used to characterize the amount of fuel required for a quantity of aircraft of productivity. Several important questions arise in considering the choice of metrics. For example, should the productivity metric be based on transport capability where the predominant aim is improvements based on technological progress (e.g. ASK) or both technological and operational improvements (e.g., revenue-tonne kilometer, RTK).

2.2.7 International Air Transport Association (IATA) fuel efficiency goal uses RTKs as the preferred metric. This metric was chosen because in combination with fuel use data it is thought to provide a better indication of the actual social-economic performance of the sector and would therefore also be better suited for communication with the public. A potential drawback of using RTK as a metric is that when a

declining economy results in lower load factors, the industry could be blamed for a perceived deterioration of environmental performance.

2.2.8 To be credible, the goal must reflect actions beyond those that would otherwise be taken in the absence of any agreement. Therefore, the Partners must discuss and agree on likely future base case scenarios. Flexibility to revise the goals based on changes in industry and the economy can be built into the programme. That is why periodic review and record-keeping is so necessary.

2.2.9 The accompanying template expresses the goal measured in fuel use per RTK, but other metrics such as ATKs or ASKs (used in a voluntary programme established by the Japanese government and their airlines) could be considered.

### ***Other approaches***

2.2.10 Another approach is a staged or tiered voluntary agreement. In this case the Partners agree on a specific target and timetable; however, they also agree that if certain market conditions develop, a more or less challenging goal would be pursued instead. These programmes can be structured by including two different implementation dates for the two different targets.

2.2.11 Finally, an alternative approach is to establish a voluntary programme that requires the use of specific technologies or the adoption of specific operating practices rather than a specified quantitative goal. In such cases, the programmes by their very nature may be more prescriptive.

## **3. BACKGROUND AND GENERAL PRINCIPLES**

3.1 When developing a voluntary programme, Partners must recognize the need for uniform understanding of the programme and recognition of what falls under the programme and what does not. A clear and mutually understood definition of what constitutes fulfillment of the agreement is essential. All Partners should be committed to meeting the goals and any terms established by the agreement.

3.2 Partners also must recognize that any voluntary agreement exists within the greater realm of regulatory and non-regulatory commitments. Therefore, entering a voluntary agreement does not negate the need to still comply with any applicable legally binding requirements.

3.3 Partners are expected to conduct, as appropriate, and share any necessary economic and policy analysis. The types of analysis will likely vary according to the needs of the individual parties and the degree to which more general analysis is readily available. A successful programme should seek to adopt technically feasible, cost-effective and commercially available techniques and strategies for improving fuel efficiency for aircraft and can be employed in a manner consistent with safety and security requirements.

## **4. INDUSTRY RESPONSIBILITIES**

### **4.1 Emissions reduction**

4.1.1 Several approaches to implementing voluntary agreements could be considered. For example, partners could agree to undertake specific actions, or they could agree to achieve a quantitative goal without stipulating in the agreement itself how the goal will be achieved. A further alternative is for the agreement

to set a target and provide a “menu” of options to limit or reduce emissions to meet the goal from which relevant Partners can select.

4.1.2 The last approach has several distinct advantages. First, it permits individual companies to analyze their unique situations and decide what options are most suited to their business objectives. Second, it allows for sharing of ideas amongst the partners as the menu of options is developed and expanded over time, should new options become possible. Third, it permits individual companies to utilize both technical and operational solutions.

4.1.3 The options themselves in a menu could come from a variety of sources and include both shorter and longer term technical and operations improvements. Engine and airframe manufacturers advance technologies incrementally as well as by large-scale improvements. There are some opportunities available today based on previous research efforts as well as after-market product development. Further, there is potential for increased use of certain technologies such as winglets and “best operational practices” such as those identified in Operational Opportunities to Minimize Fuel Use and Reduce Emissions – ICAO Circular 303. These are summarized in the annex to the MOU and described below.

4.1.4 To meet the agreement’s goals, the partners will benefit from sharing information about operational opportunities and technologies that are not considered confidential. The partners will want to make their own assessments and decisions about technically feasible and cost-effective techniques and strategies for improving fuel efficiency for aircraft in a manner consistent with all appropriate safety and security requirements.

4.1.5 ICAO Circular 303 on operational practices focuses on a compilation of operational measures that achieve near-term reductions in aircraft emissions, and in supporting ground operations. The circular is based on the understanding that the most effective way to minimize aircraft emissions is to minimize the fuel used in operating each flight. It identifies areas where improvements can be made. It is intended to inform and describe the knowledge gained by the civil aviation industry and not to be used as the basis for any regulatory action. According to the Circular 303 the operational opportunities and techniques to minimize aircraft fuel use can be categorized as follows:

- a) fly the most fuel efficient aircraft type for the sector;
- b) taxi the most fuel efficient route;
- c) fly the most fuel efficient route;
- d) fly at the most fuel-efficient speed;
- e) operate at the most economical altitude;
- f) maximize the aircraft’s load factor;
- g) minimize the empty weight of the aircraft;
- h) load the minimum fuel to safely complete the flight;
- i) minimize the number of non-revenue flights; and
- j) maintain a clean and efficient airframe and engines.

4.1.6 There are other operational options (e.g., reduce aerodynamic drag through efficient distribution of load) and technological options that should be considered as well. Clearly not all of these options will necessarily be practicable or cost effective, but some may offer useful approaches to reducing fuel use. Technological options could include:

- a) installation of winglets on a greater number of aircraft;
- b) engine retrofits and/or upgrades;
- c) re-engining aircraft;
- d) use of polished aircraft; and
- e) more regular maintenance to correct aerodynamic deterioration.

4.1.7 Some of the options listed above are more easily accomplished by the airlines. However, others require actions by other organizations that are not controlled by the airlines. For example, some options may require the involvement of airline employee unions, air traffic controllers, manufacturers, or other stakeholders. However, some airlines may find these options attractive and therefore choose to pursue them with the appropriate stakeholders.

4.1.8 This template agreement also allows the flexibility for industry partners to meet their goals through the purchase of emission reductions (or credits) from other sectors. Where appropriate, creditable emissions reductions in other industry sectors through mechanisms such as emissions offsets or trading may be considered. Partners will need to develop guidelines for what are and what are not creditable reductions.

## 4.2 Emissions reporting

4.2.1 Reporting should correspond directly to what the agreement is seeking to achieve. The accompanying template requires that the industry partners report progress towards achieving the goal on an annual basis. The reporting requirements are minimal and transparent. Ideally there will be global consistency with reporting requirements and procedures.

4.2.2 Many airlines already collect data regarding their environmental performance for their internal business planning purposes and some include detailed data as part of their public annual reports. Generally, data collection should be a by-product of good environmental and management practices. The more connected to the normal practices of the airline, the more likely the success of the data collection processes. Data collection should not be cumbersome, and should assist with operating the voluntary agreement. Therefore, the option included in the template seeks to build on current industry practices thus reducing burden.

4.2.3 There are many different options with regards to the type of information a partner in a voluntary programme may be asked to collect and report. However, it may be reasonable to limit requests. Any data collected should be used to gauge progress under the agreement. Furthermore, the Partners should establish safeguards (e.g., through aggregation) to limit how collected information may be used and to protect information that may be considered sensitive.

4.2.4 The data collection should accurately reflect the degree of detail within the agreement. If an agreement that varies significantly from the template includes actions that industry Partners agreed to undertake under specified conditions or at specified times, then reasonably the Partners may be asked to keep

records or report all relevant action taken to permit an assessment of the success of the agreement. However, a programme based on less specificity should require far less record-keeping and reporting, though still sufficient to enable the effect of the agreement to be judged.

4.2.5 The partnership nature of voluntary agreements makes it almost imperative that this approach produces publicly available reports of progress against commitments. Many existing voluntary programmes release annual progress reports. The public at large, may be an important audience for these reports. Their positive/negative reactions could be an added incentive for progress under an agreement. An important consideration is the extent to which any data is made available for public scrutiny. These decisions will partly depend on how detailed and commercially sensitive the agreements themselves are.

4.2.6 Appropriate procedures and practices for data collection improves reporting and can be used to evaluate progress. The general public and interested parties such as environmental NGOs will likely review available reports as well. The airline community itself will also have an interest in reviewing information. The accompanying template requires that the industry partners report progress towards achievement of the goal on an annual basis but recognizes the need to fully consider confidentiality issues. The reporting requirements are minimal and transparent.

### 4.3 **Data quality**

4.3.1 The industry partners will need to ensure the quality of the data reported. The template suggests that each company will need to provide information concerning RTKs (and any other metrics as agreed by the Partners) including a written explanation of the methodology used for the reporting.

4.3.2 To ensure continued confidence in the reliability of the reports, it may be apt for a qualified auditor to be given access to audit the reports and supporting documentation. The partners will need to select qualified auditors capable of independently verifying and auditing the reports for quality. The partners could develop a list of potential auditors in advance of the agreement or on an ad hoc basis. It is also possible that an international organization familiar with data collection may be available and agree to perform such functions.

## 5. **GOVERNMENT RESPONSIBILITIES**

### 5.1 **Support for emissions reductions efforts**

5.1.1 Voluntary agreements require genuine commitment from all partners. Governments must be willing to take a proactive role in seeking partners and establishing programmes. Governments must also support the efforts, recognize the partners for their commitment, and to the extent possible, ensure that credit for early action/baseline protection is provided, and in a harmonized approach across industries.

5.1.2 The template states that government partners should seek to address barriers that may impede improvements in fuel efficiency. One such impediment could be regulatory action that results in trade-offs between improvements in fuel efficiency and other emissions. Governments should seek to encourage actions that if possible both reduce emissions and produce fuel efficiency gains.

## 5.2 **Data quality**

5.2.1 Governments should ensure that aviation emissions inventories are reliable, accurate, and practical. Government partners should work with industry to develop agreed upon methodologies and reporting formats to record and verify data and ensure that data are evaluated and reported in such a way as to protect confidential business information.

## 5.3 **Credit for early action/baseline protection**

5.3.1 In Assembly Resolution A33-7 ICAO urges the Council to “work to ensure that those taking early action would benefit from such action and would not subsequently be penalized for so doing.” Government partners should ensure that proper credit is given to those that participate in voluntary efforts to reduce or limit emissions. The accompanying template states that baseline protection or appropriate credit should seek to be ensured in any future system established to reduce CO<sub>2</sub> emissions from aviation.

## 5.4 **Industrial and international harmonization**

5.4.1 Governments should encourage the use of coordinated international approaches to limit or reduce the environmental impacts of aviation. Such approaches should limit competitiveness issues. At the same time, governments should also encourage the use of coordination across industrial sectors to limit or reduce the environmental impacts of CO<sub>2</sub> emissions.

## 6. **OTHER ISSUES**

### 6.1 **Modification of an agreement**

6.1.1 Both governments and industry are unlikely to sign agreements that do not allow responses to changing economic and environmental circumstances. Given that flexibility is one of the main advantages for voluntary approaches, mechanisms to modify agreements are important. The agreement should allow for modification at request of either partner through a signed document. However, changes should only occur if agreed to by both the partners.

### 6.2 **Termination**

6.2.1 The progress reviews and modification provisions should always be used first to allow, perhaps with agreed revisions, for the continuation rather than premature termination of an agreement where possible. Nevertheless, terms should allow either party to terminate the agreement subject to reasonable written notification. The template includes six months written notification, and assumes that if either partner gives notice, a period of review and perhaps revisions could be agreed that would allow for the continuation of the agreement rather than termination.

### 6.3 **Interim progress**

6.3.1 The Partners should agree to publish reports on a regular schedule detailing the progress that has been made toward achieving the goal. The aim of these reviews should be to assess progress to date, and, if necessary, to determine whether and what actions are necessary to get the agreement back on track. However, if fundamental changes have occurred, these reviews also provide an opportunity for the partners to assess possible changes in the goal (either increases or decreases) or in the timeframe covered by the agreement. Recent events that have dramatically impacted the industry underscore the need to periodically

review progress and the applicability of the existing interim and final goals. However any changes to the original agreement can only take place if agreed to by all the relevant partners.

6.3.2 The template suggests that the Partnership Goal and progress towards meeting the goal could be used to inform meetings of the CAEP, its Steering Group, and all appropriate Working Groups regarding the progress towards meeting the partnership goals.

#### 6.4 **Technical assistance**

6.4.1 Auditors could provide assistance in data quality through auditing and could provide technical assistance for individual partners regarding meeting the goals of the MOU.

#### 6.5 **Role of third parties**

6.5.1 While this MOU is envisioned as an agreement between governments and airlines clearly there are potential roles for other parties. For example, governments may pursue agreements with these third parties or the third parties may take direct or indirect action as a response to an agreement between airlines and governments.

6.5.2 Aircraft manufacturers (including airframe and engine manufacturers) are critical to achieving long term reductions in aviation emissions. Any agreement between governments and manufacturers would look quite different to that with airlines - their actions in relation to achieving goals would differ, complying with an agreement also would differ. However, it is possible that a side agreement between airlines and manufacturers could be established; or that the airlines, as customers could urge the development of new emission-reducing technologies by the manufacturers to assist the airlines in meeting their commitments. Another example could include airports; especially those no longer owned or operated by government. Airports could become partners in assisting airlines to comply with their obligations under a side agreement. Or, governments could pursue agreements with airports that may urge modernization of facilities perhaps including the electrification of gates to minimize emissions from auxiliary power units. Air navigation service providers are obviously potentially important to the airlines' ability to meet commitments too. This is an area where governments could usefully consider taking steps to improve the contribution that ATC makes to achieve emission reductions.

#### 6.6 **Enforceability**

6.6.1 The accompanying template is an MOU, which by nature is not enforceable. However, it is believed that the governments and industry that are willing to enter into such agreement do so with the intention of fully complying with all of the terms of such agreement.

6.6.2 If a legally binding agreement were used, it would include agreed enforceability provisions. Such provisions could be financial, the introduction of more stringent regulatory programmes, or other mechanisms. The remedies for non-compliance with such an agreement would be established prior to the implementation of such an agreement.

#### 6.7 **Authority**

6.7.1 Those entering into an agreement must have proper authority. Partners could be trade associations, individual companies, regional government entities, individual national or international entities.

**ATTACHMENT**

**CHECKLIST**

The following checklist may be used as a guide for establishing voluntary programmes.

- C Policy Objective: Is there a clearly defined policy objective?
- C Partners: Are the Partners clearly identified? Are they legal entities? Can they negotiate in good faith a potential agreement?
- C Partnership Goal: Do the Partners agree on a quantifiable goal? Are base case, projections, and actions required clearly defined and well understood by the Partners?
- C Type of Agreement: Is an MOU or some other type of agreement appropriate?
- C Arrangements for information exchange: Are recording and reporting mechanisms established and clear? If necessary, are third-party auditors identified?
- C Timetable: Is there a clear timetable for implementing the voluntary programme? Are the dates for all reporting clearly identified? Are the dates for meeting the goal and dates for meeting any interim goals established?
- C Recognition of partners: Are the methods clear for recognizing the actions of the partners?
- C Fulfilment of the Agreement: Are the terms of successful fulfilment of the agreement clear?

— END —